

Series G Circuit Breakers



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Revision notes

Volume 4—Circuit Protectors, CA08100005E

Tab 2—Molded Case Circuit Breakers

| Revision date | Section | Change page(s) | Description |
|---------------|---------|----------------|---|
| 06/28/2017 | 2.2 | V4-T2-66 | Content edit |
| 06/28/2017 | 2.2 | V4-T2-67 | Content edit |
| 06/28/2017 | 2.2 | V4-T2-68 | Content edit |
| 07/05/2017 | All | All | Footer revision date changed to July to match updated print version |



Powering Business Worldwide

Series G E-Frame and Series C F-Frame Molded Case Circuit Breakers



Product Overview

Series G vs. Series C

Eaton's Electrical Sector, under the Eaton brand, offers the widest variety of molded case circuit breakers available today. Designed for electrical and machinery OEMs serving a range of industries and applications, these proven designs incorporate the latest in innovation with the high reliability that has been our hallmark since the advent of the circuit breaker in the 1920s.

The Series C family ranges from 15–2500 amperes, and includes thermal-magnetic breakers, electronic trip breakers, molded case switches, motor circuit protectors, and specially designed breakers for engine generator, DC and mining applications.

The new Series G line features an average 35% size reduction, common field-installable internal accessories, and advanced trip unit functionality that eliminates the need for rating plugs. These breakers meet the requirements of UL®, CSA®, IEC, CCC and CE, allowing the OEM to standardize on a design that meets the needs of their global customer base.

Application Description

Eaton molded case circuit breakers cover the widest range of applications in the industry:

- Electrical OEMs
- Machinery OEMs
- Navy breakers:
 - UL 489 Supplement SB
 - MIL-C-17588
 - MIL-C-17361
 - ABS/NVR
- Mining breakers up to 1100 Vac
- Earth leakage
- DC breakers 125–750 Vdc
- Engine generator breakers 15–1200 amperes
- Current limiting breakers

Typical Applications

Machine Tool Control Panels and Motor Control Centers

Designed for these equipment requirements, including new world-class accessories.

Panelboards

As both main and branch circuit protection devices.

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Feeder Pillars

In distribution systems to provide main and branch circuit protection.

Switchgear

In distribution systems to provide main and branch circuit protection up to 2500 amperes (RG-Frame).

Busbar Trunking Tap-Offs

In busbar trunking tap-offs to provide circuit protection.

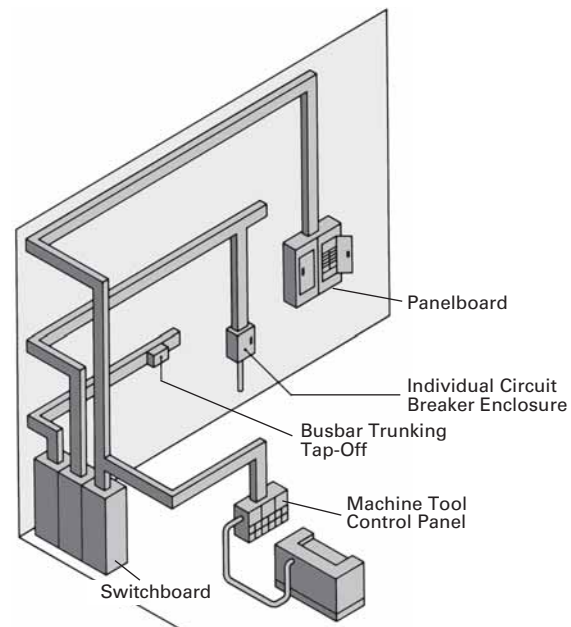
Individual Enclosures

Completely assembled in enclosures to meet specific customer requirements.

Additional Applications

Special versions of each Eaton frame are available to provide safe equipment control and protection in mining and other applications. Contact your Eaton agent or distributor for additional information.

Typical Eaton Applications



Eaton Molded Case Circuit Breakers in Assemblies

Applications

| Frame | Ampere Range | Panelboards | | | | | | | | Switchboards | | | Motor Control Centers | | | Enclosed Control | Bus Plugs | Enclosed Breaker | |
|-----------------|--------------|-------------|----|-------|-------|----|----|---|----|--------------|----|-------|-----------------------|---------|---------|------------------|-----------|------------------|----|
| | | 1A | 2A | 1A-LX | 2A-LX | 3A | 3E | 4 | 4B | 4D | 5P | PRL-C | PRL-i | PRL-C/i | Freedom | | | | // |
| Series G | | | | | | | | | | | | | | | | | | | |
| EG | 15–160 ① | — | — | — | — | — | ■ | — | — | — | — | — | — | — | ■ | ■ | ■ | — | — |
| JG | 20–250 | — | — | — | — | — | — | — | — | — | ■ | — | — | — | — | — | — | — | — |
| LG | 100–630 ② | ■ | ■ | — | — | ■ | ■ | ■ | ■ | ■ | — | ■ | — | ■ | — | — | — | — | ■ |
| NG | 400–1600 | — | — | — | — | — | — | — | ■ | ■ | — | ■ | ■ | ■ | ■ | ■ | — | — | ■ |
| RG | 800–2500 ③ | — | — | — | — | — | — | — | — | — | — | ■ | — | ■ | ■ | ■ | — | — | — |
| Series C | | | | | | | | | | | | | | | | | | | |
| FD/ED | 15–225 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | — | ■ | ■ | ■ | ■ | ■ |
| JD | 70–250 | ■ | ■ | — | — | ■ | — | ■ | ■ | ■ | ■ | ■ | ■ | — | ■ | ■ | ■ | ■ | ■ |
| KD | 70–400 | ■ | ■ | — | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| LD | 400–600 | — | — | — | — | ■ | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| MDL | 300–800 | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| ND | 400–1200 | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| RD | 800–2500 | — | — | — | — | — | — | — | — | — | ■ | ■ | — | ■ | ■ | — | — | — | — |

Notes

- ① 125 amperes is the maximum UL and CSA rating for EG.
- ② 600 amperes is the maximum UL and CSA rating for LG.
- ③ 1200 amperes is the maximum UL and CSA rating for NG.

Series G, 15–2500 Amperes for UL, CSA and IEC Applications

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Product Overview

Series G, 15–2500 Amperes for UL, CSA and IEC Applications

Eaton Series G molded case circuit breakers provide increased performance in considerably less space than standard circuit breakers or comparable fusible devices.

The “G” signifies global applications: Series G circuit breakers are marked with UL, CSA, CE, IEC and KEMA KEUR listings. Other advantages include:

- Field-fit accessories
- Common accessories through 630 amperes
- Electronic trip units from 20 to 2500 amperes
- UL-listed and IEC-rated, 30 mA ground fault/earth leakage modules
- Built-in ground fault protection down to 20 amperes

The EG, JG and LG frames are designed around space-saving footprints. The NG and RG use the proven Eaton Series C ND and RD designs.

The Series G family includes five frame sizes in ratings from 15 to 2500 amperes. Series G offers a choice of several interrupting capacities up to 200 kA at 480 volts AC (200 kA at 240 volts AC).

Series G molded case circuit breakers are also available in direct current options. Please see Specialty Breakers **Section 2.6** for more details.

Standard calibration is 40 °C. For applications in high ambient temperature conditions, 50 °C factory calibration is available on thermal-magnetic breakers (not UL).

The Most Logically Designed Contact Assembly

The flexibility and outstanding performance characteristics of Eaton circuit breakers are made possible by the best contact designs in circuit breaker history. Our technology creates a high-speed “blow-open” action using the electromechanical forces produced by high-level fault currents.

Eaton circuit breakers are operated by a toggle-type mechanism that is mechanically trip-free from the handle so that the contacts cannot be held closed against short circuit currents. Tripping due to overload or short circuits is clearly indicated by the position on the handle. This remarkably fast and dependable contact action is designed to enhance safety.

Thorough In-Plant Testing

The quality, dependability and reliability of every Eaton Circuit Breaker is ensured by a thorough program of in-plant testing. Two calibration tests are conducted on every pole of every circuit breaker to verify the trip mechanism, operating mechanism, continuity and accuracy.

Current Limiting Characteristics

Circuit breakers are current limiting because of their high repulsion contact arrangement and use of state-of-the-art arc extinguishing technology.

Eaton offers one of the most complete lines of current limiting breakers in the industry. The industrial breakers are available in current limiting versions with interrupting capacities up to 200 kA at 480 V without fuses in the same physical size as standard and high interrupting capacity breakers.

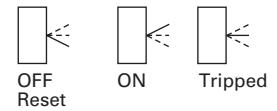
Operating Mechanisms

Eaton circuit breakers have a toggle handle operating mechanism, which also serves as a switching position indicator. The indicator shows the positions of: ON, OFF and TRIPPED.

The toggle handle snaps into the TRIPPED position if the breaker is tripped by one of its overcurrent, short circuit, shunt or undervoltage releases. Before the circuit breaker can be reclosed following a trip-out, the toggle handle must be brought beyond the OFF position (RESET). The circuit breaker can then be reclosed.

As an additional switching position indicator for EG- to RG-Frame circuit breakers, there are two windows on the right and on the left of the toggle handle, in which the switching state is indicated by means of the colors red, green and white corresponding to the ON, OFF and TRIPPED positions respectively.

Positions of the Toggle Handle Drive



Standards and Certifications

Eaton Series G circuit breakers meet applicable UL 489 and IEC 60947-2 standards.

Molded case circuit breakers from Eaton are designed to conform with the following international standards:

- Australian Standard AS 2184 and AS 3947-2 molded case circuit breakers
- British Standards Institution Standard EN60947.2
- International Electromechanical Commission Recommendations IEC 60947.2 circuit breakers
- CE
- Japanese T-Mark standard molded case circuit breakers
- National Electrical Manufacturers Association Standards Publication No. AB1-1993 molded case circuit breakers
- South African Bureau of Standards, Standard SANS 156, Standard Specification for molded case circuit breakers
- Swiss Electro-Technical Association Standard SEV 947.2, Safety Regulations for circuit breakers
- Union Technique de l'Electricite Standard NF C 63-120, low voltage switchgear and control gear circuit breaker requirements
- Verband Deutscher Elektrotechnike (Association of German Electrical Engineers) Standard VDE 0660, low voltage switchgear and control gear, circuit breakers

Global Third-Party Certification

Certification marks ensure product compliance with the total standard via the third party witnessing of tests by globally recognized independent certification organizations.

KEMA is a highly recognized, independent international organization that offers certification and inspection facilities for equipment in many industries. The KEMA-KEUR mark is the highest certification an electrical product can receive from KEMA. Our IEC 60947-2 molded case circuit breakers are KEMA tested and certified. These breakers are also listed in accordance with UL 489, as well as CSA C22.2 No. 5-02.

KEMA, UL and CSA provide ongoing follow-up testing and inspections to ensure that Eaton molded case circuit breakers continue to meet their exacting standards.

ISO Certification

Eaton circuit breakers are manufactured in ISO® certified facilities.

Product Selection Overview

Electronic Trip Units (Digitrip RMS Trip Units)—Multi-Function Electronic Trip Units for All Applications

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True rms Sensing

Digitrip RMS trip units use Eaton's microprocessor-based intelligence to provide true rms sensing, permitting increased accuracy and reliable system protection. True rms sensing is not susceptible to nuisance tripping when waveforms containing high harmonic currents are present.

Digitrip RMS 310+

Digitrip RMS 310+ electronic trip units are available with Eaton Series G circuit breakers JG, LG, NG and RG, as well as Series C FD, KD, LD and MDL circuit breakers.

Digitrip 310+ trip units are equipped with an integrated I_r switch that allows users to modify the continuous current rating of the breaker without having to replace a rating plug. This provides further flexibility for coordination in systems. The trip units may be used in 50 Hz or 60 Hz applications. The Digitrip 310+ offers true rms sensing, is front adjustable and has an optional local display of current and cause of trip.

Curve Shaping

When selectively coordinated systems are called for, Digitrip RMS 310+ will provide a cost-effective solution for a variety of applications.

The standard Digitrip RMS 310+ includes an adjustable short time pickup setting encompassing an I^2t ramp function that provides the basic LS curve shaping function.

Digitrip 310+ trip units also include selectable long time delay (t_{LD}) and pickup settings (I_p). A rating plug is not required.

The optional Digitrip RMS 310+ LSI and LSI G provide additional flat response short time delay adjustments and an instantaneous setting to provide LSI curve shaping capability.

Digitrip RMS 310+ LSG and LSI G units are available with ground fault pickup and flat response ground fault delay. Ground fault alarm options are available with trip and no trip functionality as a means to notify users of a ground fault condition with the option to maintain the breaker online.

Digitrip RMS 310+ trip units can effectively coordinate with both sophisticated upstream power breakers as well as downstream thermal-magnetic breakers, making Digitrip RMS 310+ trip units the cost-effective reliable choice for selectively coordinated systems.

Thermal Memory

All Digitrip RMS trip units incorporate a long delay. Thermal memory prevents the system from cumulative overheating due to repeated overcurrent events that may occur in quick succession.

Field Testing

A field test kit is available for Digitrip RMS 310+ trip units.

Arcflash Reduction Maintenance Mode (ARMS)

ARMS is an available feature on KD, LG, LD, MDL, NG and RG frames with 310+ electronic trip units. This feature increases worker safety by providing an accelerated instantaneous trip unit to reduce arc flash. Additionally, LG, NG and RG frames with the ARMS feature include a fully adjustable instantaneous setting.

Digitrip RMS 610 and 910

Digitrip RMS 610 and 910 trip units are available with Eaton R-Frame circuit breakers 800 through 2500 amperes. Digitrip 610 and 910 trip units provide unparalleled system protection with the added convenience of a local display.

Curve Shaping

Digitrip RMS 610 and 910 trip units are available with up to nine curve shaping choices achieved by adjusting up to seven switches on the front of the unit for optimum system coordination. Maximum curve shaping flexibility is provided by dependent long and short delay adjustments that are long delay pickup (I_r) based, depicted on the front of the unit by the blue portion of the time-current curve.

Additional coordination capability can be provided by utilizing the short delay and ground fault zone selective interlocking features available on these trip units.

System Diagnostics

Digitrip RMS 610 and 910 models of trip units provide long delay, short delay, instantaneous, and ground fault cause of trip LEDs on the front of the unit. Their display shows a magnitude of trip information, as well as remote signal contacts, for improved system alarming.

System Monitoring

Digitrip 610 and 910 trip units have the capability to monitor phase currents, as well as neutral or ground currents. This information is displayed on a large digital display mounted on the unit.

Digitrip RMS 910 trip units can also provide the user with power and energy monitoring capability. Peak power demand, present power demand, and total energy, as well as forward and reverse energy can be monitored with this unit.

Digitrip RMS 910 trip units have the additional capability of monitoring line-to-line voltage, as well as system power factor. Both parameters are displayed in the digital display window and are supported by LEDs to indicate which parameter is being displayed.

Harmonics Monitoring

Digitrip RMS 910 trip units are capable of displaying values of current harmonics in the digital display window. Percentage of harmonic content can be monitored for each phase, up to the 27th harmonic. Additionally, a total harmonic distortion value can be calculated and displayed.

Communications

Digitrip RMS 910 units have built-in communications options to allow all protection, monitoring, and control information to be transmitted back to a central location via the Eaton PowerNet™ system.

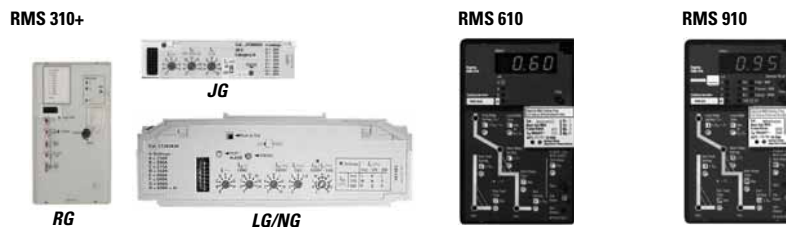
Field Testing

Integral field testing capability is provided on all 610 and 910 trip units. No additional test set is needed to perform both trip and no trip field testing.

Product Selection Guide

Electronic Trip Units

Digitrip—RMS 310+, 610 and 910



| Breaker Type | | | | | |
|------------------------------|--|-----------------------------|-------------------------|----------------------------------|----------------------------------|
| Series G frame(s) | | JG-, LG-, NG- and RG-Frames | | RG-Frame | RG-Frame |
| Ampere rating | | 20–2500 A | | 800–2500 A | 800–2500 A |
| Interrupting rating at 415 V | | 35, 70, 100 kA | | 70, 100 kA | 70, 100 kA |
| Trip Unit Sensing | | | | | |
| rms sensing | | Yes | | Yes | Yes |
| Protection and Coordination | | | | | |
| Protection | Ordering options | LS, LSG | LSI, LSIG | LI, LS, LSI, LIG, LSG, LSIG | LI, LS, LSI, LIG, LSG, LSIG |
| | Fixed rating plug (I_n) ^① | Yes | Yes | Yes | Yes |
| | Overtemperature trip | Yes | Yes | Yes | Yes |
| Long delay | Adjustable I_r switch | Yes | Yes | No | No |
| | Long delay setting | VAR/frame | VAR/frame | 0.5–1.0 x (I_n) | 0.5–1.0 x (I_n) |
| | Long delay time I^2t at 6x | 10 seconds ^② | 10 seconds ^② | 2–24 seconds | 2–24 seconds |
| | Long delay thermal memory | Yes | Yes | Yes | Yes |
| | High load alarm | 1.05 I_r | 1.05 I_r | 0.85 x I_r | 0.85 x I_r |
| Short delay | Short delay setting | VAR/frame ^④ | VAR/frame ^④ | 200–600% S1 and S2 x (I_r) | 200–600% S1 and S2 x (I_r) |
| | Short delay time I^2t | 100 ms | No | 100, 300, 500 ms | 100, 300, 500 ms |
| | Short delay time flat | No | 1–300 ms | 100–500 ms | 100–500 ms |
| | Short delay time ZSI | No | Yes | Yes | Yes |
| Instantaneous | Independent adjustable Inst. setting | No | Yes ^⑤ | Yes | Yes |
| | Instantaneous setting | No | VAR/frame | 200–600% M1 and M2 x (I_n) | 200–600% M1 and M2 x (I_n) |
| | Discriminator | No | No | Yes ^⑥ | Yes ^⑥ |
| | Instantaneous override | Yes | Yes | Yes | Yes |
| Ground fault | Ground fault setting | VAR/Frame ^⑦ | VAR/Frame ^⑦ | 25–100% x (I_n) ^⑦ | 25–100% x (I_n) ^⑦ |
| | Ground fault delay I^2t at 0.62x | No | No | 100, 300, 500 ms | 100, 300, 500 ms |
| | Ground fault delay flat | 1–300 ms | 1–300 ms | 100–500 ms | 100–500 ms |
| | Ground fault ZSI | No | Yes | Yes | Yes |
| | Ground fault thermal memory | No | No | Yes | Yes |

Notes

I_n = Rating plug rating.
 I_r = Long delay setting.

① 310+ trip units have selectable settings instead of a rating plug.

② 310+ trip units have adjustable long delay times of 2–24 seconds, except NG 310+ for 800 A frame, for which it is 2–14 seconds.

③ 310+ details are included by frame in **Pages V4-T2-44** (JG), **V4-T2-62** (LG), **V4-T2-72** (NG), and **V4-T2-83** (RG).

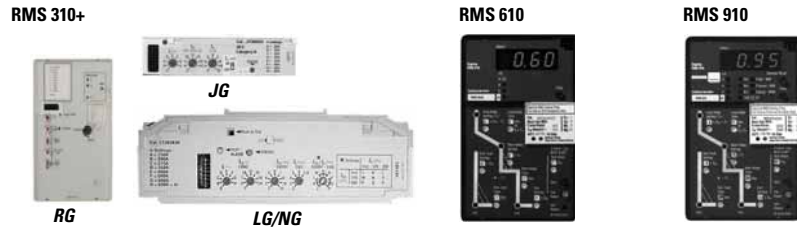
④ JG/LG: 2X–14X (I_n); NG: 2X–8X (I_n); RG: 2X–9X (I_n); 2500 ampere RG-Frame 2X–6X x (I_n).

⑤ LG, NG and RG ALSI and ALSIG 310+ trip units include an independently adjustable Instantaneous (I_i) setting.

⑥ LS, LSG only.

⑦ Not to exceed 1200 amperes.

Digitrip—RMS 310+, 610 and 910, continued



| | LS, LSG | LSI, LSIG | LSI, LSIG, LSIG (A) | LSI (A), LSIG |
|-------------------------------|-----------------------|-----------------------|---------------------|---------------|
| System Diagnostics | | | | |
| Cause of trip LEDs | Yes ^{①②} | Yes ^{①②} | Yes | Yes |
| Magnitude of trip information | No | No | Yes | Yes |
| Remote signal contacts | No | No | Yes | Yes |
| System Monitoring | | | | |
| Digital display | Yes ^③ | Yes ^③ | Yes | Yes |
| Current | Yes ^③ | Yes ^③ | Yes | Yes |
| Voltage | No | No | No | Yes |
| Power and energy | No | No | No | Yes |
| Power quality—harmonics | No | No | No | Yes |
| Power factor | No | No | No | Yes |
| System Communications | | | | |
| PowerNet | No | No | No | Yes |
| Field Testing | | | | |
| Testing method | Test set ^④ | Test set ^④ | Integral | Integral |

Notes

- ① Using cause of trip module (catalog number **TRIP-LED**).
- ② RG 310+ trip units include integrated cause of trip LEDs.
- ③ Using ammeter or remote ammeter/cause of trip display (catalog number **DIGIVIEW** and **DIGIVIEWR06**).
- ④ Test kit available for field testing 310+ trip units (catalog number **MTST230V**).

Technical Data and Specifications

Ratings

Frames EG, JG and LG

EG



JG



LG



| Maximum rated current (amperes) | | 125, 160 ^① | | | | | | | | 250 | | | | | | 400, 630 ^② | | | | | | |
|---|--------------------------|-----------------------|-----------------|---------|-----------------|-----------------|-----------------|-----------------|------|-------------------------------|---------|---------|------|------|------|-------------------------------|------|------|------|------|------|-----|
| Breaker type ^③ | | B | B | E | S | S | H | H | C | E | S | H | C | U | X | E | S | H | C | U | X | |
| Number of poles | | 1 | 2, 3, 4 | 2, 3, 4 | 1 | 2, 3, 4 | 1 | 2, 3, 4 | 3, 4 | 2, 3, 4 | 2, 3, 4 | 2, 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | |
| Breaker Capacity (kA rms) Vac 50–60 Hz | | | | | | | | | | | | | | | | | | | | | | |
| NEMA [®] , UL, CSA | 240 Vac | 25 | 25 | 35 | 85 | 85 | 100 | 100 | 200 | 65 | 85 | 100 | 200 | 200 | 200 | 65 | 85 | 100 | 200 | 200 | 200 | |
| | 480 Vac | — | 18 | 25 | — | 35 | — | 65 | 100 | 25 | 35 | 65 | 100 | 150 | 200 | 35 | 50 | 65 | 100 | 150 | 200 | |
| | 600 Vac ^④ | — | — | 18 | — | 22 | — | 25 | 35 | 18 | 18 | 25 | 35 | 50 | 50 | 18 | 25 | 35 | 50 | 65 | 65 | |
| | 125/250 Vdc ^⑤ | 10 ^⑥ | 10 | 10 | 35 ^⑥ | 35 | 42 ^⑥ | 42 | 42 | 42 | 10 | 22 | 22 | 42 | 50 | 50 | 22 | 22 | 42 | 42 | 50 | 50 |
| IEC 60947-2 | 220–240 Vac | <i>I_{CU}</i> | 25 | 25 | 35 | 85 | 85 | 100 | 100 | 200 | 65 | 85 | 100 | 200 | 200 | 200 | 65 | 85 | 100 | 200 | 200 | 200 |
| | | <i>I_{CS}</i> | 25 | 25 | 35 | 43 | 43 | 50 | 50 | 200 | 65 | 85 | 100 | 200 | 200 | 200 | 65 | 85 | 100 | 200 | 200 | 200 |
| | 380–415 Vac | <i>I_{CU}</i> | — | 18 | 25 | — | 40 | — | 70 | 100 | 25 | 40 | 70 | 100 | 150 | 200 | 35 | 50 | 70 | 100 | 150 | 200 |
| | | <i>I_{CS}</i> | — | 18 | 25 | — | 30 | — | 35 | 100 | 25 | 40 | 70 | 100 | 150 | 200 | 35 | 50 | 53 | 100 | 150 | 200 |
| | 660–690 Vac | <i>I_{CU}</i> | — | — | — | — | — | — | — | — | 12 | 12 | 14 | 16 | 18 | 18 | 12 | 20 | 25 | 30 | 35 | 35 |
| | | <i>I_{CS}</i> | — | — | — | — | — | — | — | — | 6 | 6 | 7 | 12 | 14 | 14 | 6 | 10 | 13 | 15 | 18 | 18 |
| | 125/250 Vdc ^⑤ | <i>I_{CU}</i> | 10 ^⑥ | 10 | 10 | 35 ^⑥ | 35 | 42 ^⑥ | 42 | 42 | 10 | 22 | 22 | 42 | 50 | 50 | 22 | 22 | 42 | 42 | 50 | 50 |
| | | <i>I_{CS}</i> | 10 ^⑥ | 10 | 10 | 35 ^⑥ | 35 | 42 ^⑥ | 42 | 42 | 10 | 22 | 22 | 42 | 50 | 50 | 22 | 22 | 42 | 42 | 50 | 50 |
| Ampere range | | 15–160 A ^① | | | | | | | | 20–250 A | | | | | | 100–630 A ^② | | | | | | |
| Trip Units | | FT-FM | | | | | | | | FT-AM | | | | | | FT-AM | | | | | | |
| F = Fixed | | AT-FM | | | | | | | | AT-AM | | | | | | AT-AM | | | | | | |
| A = Adjustable | | | | | | | | | | Electronic (Digitrip RMS 310) | | | | | | Electronic (Digitrip RMS 310) | | | | | | |
| T = Thermal | | | | | | | | | | | | | | | | | | | | | | |
| M = Magnetic | | | | | | | | | | | | | | | | | | | | | | |
| Interchangeable | | — | — | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Built-in | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Thermal magnetic | Fixed thermal | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | Adjustable thermal | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | Magnetic | Fixed | | | | | | | | Adjustable | | | | | | Adjustable | | | | | | |
| Electronic RMS ^⑦ | LS | — | — | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | LSI | — | — | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | LSG | — | — | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | LSIG | — | — | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | ALSI | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | |
| | ALSIG | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ■ | ■ | ■ | ■ | ■ | ■ | |
| Utilization category | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | |

Notes

- ① 125 amperes is the maximum UL and CSA rating for the EG.
- ② 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.
- ③ Breaker type C, U and X are current limiting per UL 489.
- ④ EG breaker rated 600/347 Vac.
- ⑤ Two poles in series.
- ⑥ 125 Vdc only for single-pole breakers.
- ⑦ Not suitable for DC application. Four-pole ground fault not available.

2.2

Molded Case Circuit Breakers

Series G

Frames NG and RG

NG



RG



| | | | | | | | | | |
|--|-----------------|-----------------------------------|-----------------|-----------------|-------------------|---|------------------|------------------|-----------------|
| Maximum rated current (amperes) | | 800, 1200 | 800, 1200 | 800, 1200 | 1600 ^① | 800 | 1600, 2000, 2500 | 1600, 2000, 2500 | |
| Breaker type | | S | H | C ^② | S | U | H | C ^② | |
| Number of poles | | 2, 3, 4 | 2, 3, 4 | 2, 3, 4 | 3 | 3 | 3, 4 | 3, 4 | |
| Breaker Capacity (kA rms) AC 50–60 Hz | | | | | | | | | |
| NEMA, UL, CSA | 240 Vac | 85 | 100 | 200 | — | 200 | 125 | 200 | |
| | 480 Vac | 50 | 65 | 100 | — | 150 | 65 | 100 | |
| | 600 Vac | 25 | 35 | 65 | — | 65 | 50 | 65 | |
| IEC 60947-2 | 220–240 Vac | I_{cu} | 85 | 100 | 200 | 85 | — | 135 | 200 |
| | | I_{cs} | 85 | 100 | 100 | 85 | — | 100 | 100 |
| | 380–415 Vac | I_{cu} | 50 | 70 | 100 | 50 | — | 70 | 100 |
| | | I_{cs} | 50 | 50 | 50 | 50 | — | 50 | 50 |
| | 660–690 Vac | I_{cu} | 20 ^③ | 25 ^③ | 35 | 20 ^③ | — | 25 ^③ | 35 ^③ |
| | | I_{cs} | 10 | 13 | 18 | 10 | — | 13 | 18 |
| 250 Vdc | I_{cu} | — | — | — | — | — | — | — | |
| | I_{cs} | — | — | — | — | — | — | — | |
| Ampere range | | 400–1200 A | 400–1200 A | 400–1200 A | 1600 A | 800 A | 800–2500 A | 800–2500 A | |
| Trip units | | Electronic (Digitrip RMS 310+) | | | | Electronic (Digitrip RMS 310+ and 910) | | | |
| | Interchangeable | — | — | — | — | — | ■ ^⑤ | ■ ^⑤ | |
| | Built-in | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Electronic ^④ | LI | — | — | — | — | — | ■ ^⑥ | ■ ^⑥ | |
| | LS | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | LSI | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | LIG | — | — | — | — | — | ■ ^⑥ | ■ ^⑥ | |
| | LSG | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | LSIG | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | ALSI | ■ | ■ | ■ | ■ | — | ■ | ■ | |
| | ALSIG | ■ | ■ | ■ | ■ | — | ■ | ■ | |
| Utilization category | | A | A | A | A | A | A | A | |

Notes

- ① NG 1600 ampere frame is not UL or CSA listed.
- ② Not KEMA-KEUR listed.
- ③ IEC 60947-2 H.5 Annex H is not KEMA-KEUR tested.
- ④ Not suitable for DC application. Four-pole ground fault not available.
- ⑤ RG 310+ are interchangeable with the exception of: FROM not ground fault equipped TO ground fault equipped
- ⑥ Available only on Digitrip 910 trip units.

General Specifications

All Series G Frames

| | EG | | JG | | LG | | NG | | RG | |
|---|--------------------|------|----------------|------|-------------------------|------|--------------------------------|------|--------------------|------|
| Maximum rated current I_n depending on the version | 160 A ^① | | 250 A | | 400, 630 A ^② | | 800, 1200, 1600 A ^③ | | 1600, 2000, 2500 A | |
| Rated insulation voltage U, according to IEC 60947-2 | | | | | | | | | | |
| Main conducting paths | 500 Vac | | 750 Vac | | 750 Vac | | 750 Vac | | 750 Vac | |
| Auxiliary circuits | 500 Vac | | 690 Vac | | 690 Vac | | 690 Vac | | 690 Vac | |
| Rated impulse withstand voltage U_{imp} | | | | | | | | | | |
| Main conducting paths | 6 kV | | 8 kV | | 8 kV | | 8 kV | | 8 kV | |
| Auxiliary circuits | 4 kV | | 4 kV | | 4 kV | | 4 kV | | 4 kV | |
| Rated operational voltage U_e | | | | | | | | | | |
| IEC | 415 Vac | | 690 Vac | | 690 Vac | | 690 Vac | | 690 Vac | |
| NEMA | 600Y/347 Vac | | 600 Vac | | 600 Vac | | 600 Vac | | 600 Vac | |
| UL and CSA listed | Yes ^① | | Yes | | Yes ^② | | Yes ^③ | | Yes | |
| Permissible ambient temperature | -20 ° to 70 °C | | -20 ° to 70 °C | | -20 ° to 70 °C | | -20 ° to 70 °C | | -20 ° to 70 °C | |
| Permissible load for various ambient temperatures close to the circuit breaker, related to the rated current of the circuit breaker | ④ ⑤ | | ④ ⑤ | | ④ ⑤ | | — | | — | |
| Circuit breakers for plant protection | | | | | | | | | | |
| At 40 °C | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| At 50 °C | 96% | 92% | 96% | 94% | 96% | 91% | 91% | 91% | 91% | 91% |
| At 55 °C | 93% | 87% | 94% | 90% | 93% | 86% | 85% | 85% | 85% | 85% |
| At 60 °C | 91% | 83% | 92% | 87% | 90% | 82% | 81% | 81% | 81% | 81% |
| At 70 °C | 86% | 73% | 88% | 80% | 84% | 70% | 70% | 70% | 70% | 70% |
| Circuit breakers for motor protection | | | | | | | | | | |
| At 40 °C | — | | 100% | | 100% | | — | | — | |
| At 50 °C | — | | 100% | | 100% | | — | | — | |
| At 55 °C | — | | 100% | | 100% | | — | | — | |
| At 60 °C | — | | 100% | | 100% | | — | | — | |
| At 70 °C | — | | 90% | | 90% | | — | | — | |
| Circuit breakers for starter combinations and isolating circuit breakers | | | | | | | | | | |
| At 40 °C | 100% | | 100% | | 100% | | 100% | | 100% | |
| At 50 °C | 100% | | 100% | | 100% | | 91% | | 91% | |
| At 55 °C | 96% | | 96% | | 95% | | 85% | | 85% | |
| At 60 °C | 91% | | 82% | | 90% | | 81% | | 81% | |
| At 70 °C | 86% | | 88% | | 84% | | — | | — | |
| Rated short-circuit breaking capacity (DC) Not for circuit breakers for motor protection (Time constant $t = 10$ rms) | | | | | | | | | | |
| Two conducting paths in series For EG to LG up to 250 Vdc | 42 kA max. | | 42 kA max. | | 42 kA max. | | ⑥ | | ⑥ | |
| NEMA (time constant $t = 8$ rms) Two conducting paths in series 250 Vdc | 42 kA max. | | 42 kA max. | | 42 kA max. | | ⑥ | | ⑥ | |

Notes

- ① 125 amperes is the maximum UL and CSA rating for the EG.
- ② 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA rating for the LG.
- ③ 1200 amperes is the maximum UL and CSA rating for the NG.
- ④ Thermal overload release set to the lower value.
- ⑤ Thermal overload release set to the upper value.
- ⑥ Not suitable for DC switching.

All Series G Frames, continued

2

| | EG | JG | LG | NG | RG | |
|--|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|
| Main switch characteristics according to IEC 60947-2 in combination with lockable rotary drives | Yes | Yes | Yes | Yes | Yes | |
| Rated short circuit breaking capacity according to IEC 60947-2 (at AC 50/60 Hz) | For rated short circuit breaking capacity, see Page V4-T2-9 . | | | | | |
| Endurance (operating cycles) | 10,000 | 10,000 | 8,000 | 3,000 | 3,000 | |
| Maximum switching frequency | 300 1/h | 240 1/h | 240 1/h | 60 1/h | 60 1/h | |
| Conductor cross sections and terminal types for main conductors | Box terminals | Box terminals | Box terminals | Flat bar terminals | Flat bar terminals | Flat bar terminals |
| Solid or stranded | 2.5 to 95 mm ² | 50 to 150 mm ² | 95 to 240 mm ² | — | — | — |
| Finely stranded with end sleeve | 2.5 to 50/70 mm ² | 35 to 120 mm ² | 70 to 150 mm ² | — | — | — |
| Busbar | — | — | — | 600 A | Optional | Optional |
| Tightening torque for box terminals | 5.6 Nm | 20 Nm | 42 Nm | 31 Nm | 31 Nm | — |
| Tightening torque for busbar connection pieces | 5.6 Nm | 15 Nm | 30 Nm | 6 Nm | 50 Nm | 20 Nm |
| Conductor cross sections for auxiliary circuits with terminal connection or terminal strip | | | | | | |
| Solid | 0.75 to 2.5 mm ² | 0.75 to 2.5 mm ² | 0.75 to 2.5 mm ² | Up to 2x4 mm ² | Up to 2x4 mm ² | |
| Finely stranded with end sleeve | 0.75 to 2.5 mm ² | 0.75 to 2.5 mm ² | 0.75 to 2.5 mm ² | Up to 2x2.5 mm ² | Up to 2x2.5 mm ² | |
| With brought-out cable ends | — | 0.82 (AWG 18) mm ² | 0.82 (AWG 18) mm ² | 0.82 (AWG 18) mm ² | 0.82 (AWG 18) mm ² | |
| Tightening torque for fitting screws | — | 0.8 to 1.4 Nm | 0.8 to 1.4 Nm | 0.8 to 1.4 Nm | 0.8 to 1.4 Nm | |
| Power loss per circuit breaker at maximum rated current I _n (the power losses of the undervoltage releases ("r" releases) must be observed if necessary) at three-phase symmetrical load) | | | 400 A: | 600 A: | | |
| For plant protection | 40 W | 45 W | 65 W | 120 W | 87/210 W | 220/270/400 W |
| As isolating circuit breaker | 40 W | 45 W | 65 W | 120 W | 87/210 W | 220/270/400 W |
| For starter combinations | 40 W | 45 W | 65 W | 120 W | — | — |
| For motor protection | — | 45 W | 65 W | 120 W | — | — |
| Permissible mounting position | | | | | | |
| Arc spacing— suitable for reverse-feed applications | Yes (except HMCPE) | Yes | Yes | Yes | Yes | |
| Auxiliary Switches | | | | | | |
| Rated thermal current I _{th} | 6A | 6A | 6A | 6A | 6A | |
| Rated making capacity | 20 A | 20 A | 20 A | 20 A | 20 A | |
| | AC-14 | AC-14 | AC-14 | AC-15 | AC-15 | |
| Rated operational voltage | 230/400/600 V | 230/400/600 V | 230/400/600 V | 600 V | 600 V | |
| Rated operational current | 6/3/0.25 A | 6/3/0.25 A | 6/3/0.25 A | 6A | 6A | |
| | | | | DC-13 | DC-13 | |
| Rated operational voltage | 125/250V | 125/250V | 125/250V | 125/250V | 125/250V | |
| Rated operational current | 0.5/0.15 A | 0.5/0.15 A | 0.5/0.15 A | 0.5/0.25 A | 0.5/0.25 A | |
| Backup fuse | 6/4/4 A | (4) 6/4/4 A | (4) 6/4/4 A | (4) 6/4/4 A | (4) 6/4/4 A | |
| Miniature circuit breaker | 6/4 A | 6/4 A | 6/4 A | 6/4 A | 6/4 A | |

All Series G Frames, continued

| | EG | JG | LG | NG | RG |
|---|-----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Releases | | | | | |
| Undervoltage releases ("r" releases) | | | | | |
| Response voltage: | | | | | |
| Drop (breaker tripped) U_s | 35–70% | 35–70% | 35–70% | 35–70% | 35–70% |
| Pickup (breaker may be switched on) U_s | 85–110% | 85–110% | 85–110% | 85–110% | 85–110% |
| Power consumption in continuous operation at: | | | | | |
| 50/60 Hz 12 Vac | — | — | — | 1.9 VA | 2.9 VA |
| 50/60 Hz 24 Vac | 0.72 VA | 3.9 VA | 3.9 VA | 2.4 VA | 3.1 VA |
| 50/60 Hz 48–60 Vac | 1.15–1.78 VA | 2.5–3.8 VA | 2.5–3.8 VA | 2.3–4.1 VA | 3.4–6.0 VA |
| 50/60 Hz 110–127 Vac | 0.96–1.25 VA | 1.8–2.4 VA | 1.8–2.4 VA | 3.4–4.2 VA | 3.3–3.8 VA |
| 50/60 Hz 208–240 Vac | 1.28–1.68 VA | 2.7–3.8 VA | 2.7–3.8 VA | 4.8–6.5 VA | 4.2–7.2 VA |
| 50/60 Hz 380–500 Vac | 2.2–3.9 VA | 3.4–5.8 VA | 3.4–5.8 VA | 6.8–12.0 VA | 3.8–10.0 VA |
| 50/60 Hz 525–600 Vac | 3.4–4.3 VA | 3.4–4.3 VA | 3.4–4.3 VA | — | — |
| 12 Vdc | — | — | — | 2.6W | 3.4W |
| 24 Vdc | 0.70 W | 3.1W | 3.1W | 3.6W | 4.3W |
| 48–60 Vdc | 1.12–1.76W | 2.0–3.1W | 2.0–3.1W | 3.5–5.5W | 4.8–7.2W |
| 110–125 Vdc | 0.94–1.21W | 1.6–2.2W | 1.6–2.2W | 2.9–3.6W | 3.3–3.8W |
| 220–250 Vdc | 1.45–1.86W | 3.1–4W | 3.1–4W | 4.8–6.3W | 6.6–7.5W |
| Maximum opening time | 50 ms | 50 ms | 50 ms | 62 ms | 62 ms |
| Shunt Trips | | | | | |
| Shunt trips ("f" releases) | | | | | |
| Response voltage: | | | | | |
| Pickup (breaker tripped) U_s | 70–110% | 70–110% | 70–110% | 70–110% | 70–110% |
| Power consumption in (short time) at: | | | | | |
| 50/60 Hz 24 Vac | 10–41 VA | 87–405 VA | 87–405 VA | 98–475 VA | 612 VA |
| 50/60 Hz 48–60 Vac | 139–210 VA | 710–1105 VA | 710–1105 VA | 24–50 VA | 403–666 VA |
| 50/60 Hz 48–127 Vac | — | — | — | — | — |
| 50/60 Hz 110–240 Vac | 83–360 VA | 66–432 VA | 66–432 VA | 67–432 VA | 396–1896 VA |
| 50/60 Hz 380–440 Vac | — | 127–188 VA | 127–188 VA | 76–110 VA | 1596–2156 VA |
| 50/60 Hz 380–600 Vac | 418–1080 VA | — | — | — | — |
| 50/60 Hz 480–600 Vac | — | 34–60 VA | 34–60 VA | 19–42 VA | 230–384 VA |
| 12–24 Vdc | 29–120 W | 164–631 W | 164–631 W | 145–610 W | 396 W |
| 48–60 Vdc | 475–720 W | 830–1580 W | 830–1580 W | 67–102 W | 341–528 W |
| 110–125 Vdc | 99–121 W | 112–150 W | 112–150 W | 121–150 W | 264–350 W |
| 220–250 Vdc | — | 40–58W | 40–58 W | 46–55 W | 374–475 W |
| Maximum load duration | Interrupts automatically | Interrupts automatically | Interrupts automatically | Interrupts automatically | Interrupts automatically |
| Maximum opening time | 50 ms | 50 ms | 50 ms | 62 ms | 62 ms |
| Molded Case Switch (with High Magnetic Trip) | | | | | |
| Unfused kAIC at 480 Vac (415 Vac) | 65 (70) | 65 (70) | 65 (70) | 65 (70) | 65 (70) |
| Self-protected, will trip above | 1250 for EG125; 1600 for EG160 | 2500 | 4000/6300 | 12,500 | 20,000 |



Dimensions and Weights

Approximate Dimensions in Inches (mm)

2

Series G—Frame EG, JG and LG

| | EG | | | JG | | | LG | | |
|--------------------|--------------|--------------|-------------|--------------|--------------|-------------|---------------|--------------|--------------|
| | H | W | D | H | W | D | H | W | D |
| Single-pole | 5.50 (139.7) | 1.00 (25.4) | 2.99 (76.0) | — | — | — | — | — | — |
| Two-pole | 5.50 (139.7) | 2.00 (50.8) | 2.99 (76.0) | 7.00 (177.8) | 4.13 (105.0) | 3.57 (87.4) | — | — | — |
| Three-pole | 5.50 (139.7) | 3.00 (76.2) | 2.99 (76.0) | 7.00 (177.8) | 4.13 (105.0) | 3.57 (87.4) | 10.13 (258.0) | 5.48 (140.0) | 4.09 (104.0) |
| Four-pole | 5.50 (139.7) | 4.00 (101.6) | 2.99 (76.0) | 7.00 (177.8) | 5.34 (135.6) | 3.57 (87.4) | 10.13 (258.0) | 7.22 (183.0) | 4.09 (104.0) |

Series G—Frame NG and RG

| | NG | | | RG | | |
|--------------------|---------------|---------------|--------------|---------------|---------------|--------------|
| | H | W | D | H | W | D |
| Single-pole | — | — | — | — | — | — |
| Two-pole | — | — | — | — | — | — |
| Three-pole | 16.00 (406.0) | 8.25 (210.0) | 5.50 (140.0) | 16.00 (406.0) | 15.50 (394.0) | 9.75 (229.0) |
| Four-pole | 16.00 (406.0) | 11.13 (280.0) | 5.50 (140.0) | 16.00 (406.0) | 20.00 (508.0) | 9.75 (229.0) |

Approximate Shipping Weight in Lbs (kg)

Series G—Frame EG, JG and LG

| | EG | JG | LG | NG | RG |
|--------------------|-------------|------------------------------------|--------------------------------------|-------------|--------------|
| Single-pole | 0.85 (0.39) | — | — | — | — |
| Two-pole | 1.57 (0.71) | 11.3 (5.13) | — | — | — |
| Three-pole | 2.28 (1.04) | 5.06 (2.30) T/M 5.31 (2.41) ETU | 12.36 (5.61) T/M 13.04 (5.92) ETU | 46.8 (21.3) | 103.0 (47.0) |
| Four-pole | 2.85 (1.29) | 6.76 (3.07) T/M 7.12 (3.23) ETU | 16.27 (7.39) T/M 16.92 (7.68) ETU | 62.0 (28.3) | 118.4 (54.0) |

EG-Frame (15–125 Amperes)**EG-Frame (15–125 Amperes)****Product Description**

EG breaker is HACR rated.

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| NG-Frame (320–1200 Amperes) | V4-T2-65 |
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2.2

Molded Case Circuit Breakers

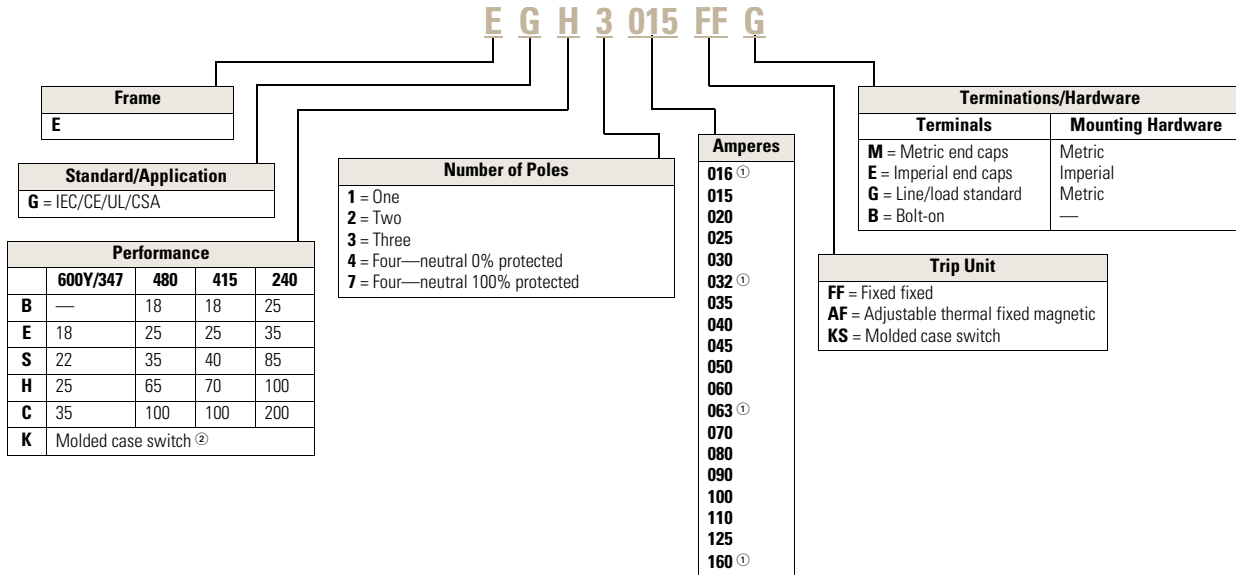
Series G

2

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

Series G—EG-Frame (15–125 Amperes)



Notes

- ^① Cannot be UL rated.
- ^② Available only as 125 and 160 A sizes.

Product Selection

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware) IC Rating at 415/480 Volts

EG-Frame



EG-Frame—18/18

| Maximum Continuous Amps at 40 °C ① | Single-Pole | Two-Pole | Three-Pole | Adjustable ② Thermal, Fixed Magnetic | Four-Pole ③ | Adjustable ② Thermal, Fixed Magnetic |
|------------------------------------|--|--|--|--|--|--|
| | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number |
| 15 | EGB1015FFG | EGB2015FFG | EGB3015FFG | — | EGB4015FFG | — |
| 16 | EGB1016FFG | EGB2016FFG | EGB3016FFG | — | EGB4016FFG | — |
| 20 | EGB1020FFG | EGB2020FFG | EGB3020FFG | — | EGB4020FFG | EGB4020AFG |
| 25 | EGB1025FFG | EGB2025FFG | EGB3025FFG | EGB3025AFG | EGB4025FFG | EGB4025AFG |
| 30 | EGB1030FFG | EGB2030FFG | EGB3030FFG | — | EGB4030FFG | — |
| 32 | EGB1032FFG | EGB2032FFG | EGB3032FFG | EGB3032AFG | EGB4032FFG | EGB4032AFG |
| 35 | EGB1035FFG | EGB2035FFG | EGB3035FFG | — | EGB4035FFG | — |
| 40 | EGB1040FFG | EGB2040FFG | EGB3040FFG | EGB3040AFG | EGB4040FFG | EGB4040AFG |
| 45 | EGB1045FFG | EGB2045FFG | EGB3045FFG | — | EGB4045FFG | — |
| 50 | EGB1050FFG | EGB2050FFG | EGB3050FFG | EGB3050AFG | EGB4050FFG | EGB4050AFG |
| 60 | EGB1060FFG | EGB2060FFG | EGB3060FFG | — | EGB4060FFG | — |
| 63 | EGB1063FFG | EGB2063FFG | EGB3063FFG | EGB3063AFG | EGB4063FFG | EGB4063AFG |
| 70 | EGB1070FFG | EGB2070FFG | EGB3070FFG | — | EGB4070FFG | — |
| 80 | EGB1080FFG | EGB2080FFG | EGB3080FFG | EGB3080AFG | EGB4080FFG | EGB4080AFG |
| 90 | EGB1090FFG | EGB2090FFG | EGB3090FFG | — | EGB4090FFG | — |
| 100 | EGB1100FFG | EGB2100FFG | EGB3100FFG | EGB3100AFG | EGB4100FFG | EGB4100AFG |
| 110 | EGB1110FFG | EGB2110FFG | EGB3110FFG | — | EGB4110FFG | — |
| 125 | EGB1125FFG | EGB2125FFG | EGB3125FFG | EGB3125AFG | EGB4125FFG | EGB4125AFG |
| 160 | — | — | EGB3160FFG | EGB3160AFG | EGB4160FFG | EGB4160AFG |

Notes

① 16, 32, 63 and 160 A are not UL listed ratings.

② Adjustable thermal are not UL listed.

③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on the LH side.

2.2

Molded Case Circuit Breakers

Series G

EG-Frame—25/25 Single-Pole Unavailable

2

EG-Frame

EG-Frame—25/25



| Maximum Continuous Amps at 40 °C ^① | Two-Pole | Three-Pole | Adjustable ^② Thermal, Fixed Magnetic Catalog Number | Four-Pole ^③ | Adjustable ^② Thermal, Fixed Magnetic Catalog Number |
|---|---|---|--|---|--|
| | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | | Fixed Thermal, Fixed Magnetic Catalog Number | |
| 15 | EGE2015FFG | EGE3015FFG | — | EGE4015FFG | — |
| 16 | EGE2016FFG | EGE3016FFG | — | EGE4016FFG | — |
| 20 | EGE2020FFG | EGE3020FFG | — | EGE4020FFG | EGE4020AFG |
| 25 | EGE2025FFG | EGE3025FFG | EGE3025AFG | EGE4025FFG | EGE4025AFG |
| 30 | EGE2030FFG | EGE3030FFG | — | EGE4030FFG | — |
| 32 | EGE2032FFG | EGE3032FFG | EGE3032AFG | EGE4032FFG | EGE4032AFG |
| 35 | EGE2035FFG | EGE3035FFG | — | EGE4035FFG | — |
| 40 | EGE2040FFG | EGE3040FFG | EGE3040AFG | EGE4040FFG | EGE4040AFG |
| 45 | EGE2045FFG | EGE3045FFG | EGE3050AFG | EGE4045FFG | — |
| 50 | EGE2050FFG | EGE3050FFG | — | EGE4050FFG | EGE4050AFG |
| 60 | EGE2060FFG | EGE3060FFG | — | EGE4060FFG | — |
| 63 | EGE2063FFG | EGE3063FFG | EGE3063AFG | EGE4063FFG | EGE4063AFG |
| 70 | EGE2070FFG | EGE3070FFG | — | EGE4070FFG | — |
| 80 | EGE2080FFG | EGE3080FFG | EGE3080AFG | EGE4080FFG | EGE4080AFG |
| 90 | EGE2090FFG | EGE3090FFG | — | EGE4090FFG | — |
| 100 | EGE2100FFG | EGE3100FFG | EGE3100AFG | EGE4100FFG | EGE4100AFG |
| 125 | EGE2125FFG | EGE3125FFG | EGE3125AFG | EGE4125FFG | EGE4125AFG |
| 160 | — | EGE3160FFG | EGE3160AFG | EGE4160FFG | EGE4160AFG |

Notes

- ① 16, 32, 63 and 160 A are not UL listed ratings.
- ② Adjustable thermal are not UL listed.
- ③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on the LH side.

EG-Frame



EG-Frame—40/35

| Maximum Continuous Amps at 40 °C ^① | Single-Pole | Two-Pole | Three-Pole | Adjustable Thermal, Fixed Magnetic ^② Catalog Number | Four-Pole ^③ | Adjustable ^② Thermal, Fixed Magnetic Catalog Number |
|---|---|---|---|---|---|--|
| | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | | Fixed Thermal, Fixed Magnetic Catalog Number | |
| 15 | EGS1015FFG | EGS2015FFG | EGS3015FFG | — | EGS4015FFG | — |
| 16 | EGS1016FFG | EGS2016FFG | EGS3016FFG | — | EGS4016FFG | — |
| 20 | EGS1020FFG | EGS2020FFG | EGS3020FFG | — | EGS4020FFG | EGS4020AFG |
| 25 | EGS1025FFG | EGS2025FFG | EGS3025FFG | EGS3025AFG | EGS4025FFG | EGS4025AFG |
| 30 | EGS1030FFG | EGS2030FFG | EGS3030FFG | — | EGS4030FFG | — |
| 32 | EGS1032FFG | EGS2032FFG | EGS3032FFG | EGS3032AFG | EGS4032FFG | EGS4032AFG |
| 35 | EGS1035FFG | EGS2035FFG | EGS3035FFG | — | EGS4035FFG | — |
| 40 | EGS1040FFG | EGS2040FFG | EGS3040FFG | EGS3040AFG | EGS4040FFG | EGS4040AFG |
| 45 | EGS1045FFG | EGS2045FFG | EGS3045FFG | — | EGS4045FFG | — |
| 50 | EGS1050FFG | EGS2050FFG | EGS3050FFG | EGS3050AFG | EGS4050FFG | EGS4050AFG |
| 60 | EGS1060FFG | EGS2060FFG | EGS3060FFG | — | EGS4060FFG | — |
| 63 | EGS1063FFG | EGS2063FFG | EGS3063FFG | EGS3063AFG | EGS4063FFG | EGS4063AFG |
| 70 | EGS1070FFG | EGS2070FFG | EGS3070FFG | — | EGS4070FFG | — |
| 80 | EGS1080FFG | EGS2080FFG | EGS3080FFG | EGS3080AFG | EGS4080FFG | EGS4080AFG |
| 90 | EGS1090FFG | EGS2090FFG | EGS3090FFG | — | EGS4090FFG | — |
| 100 | EGS1100FFG | EGS2100FFG | EGS3100FFG | EGS3100AFG | EGS4100FFG | EGS4100AFG |
| 125 | EGS1125FFG | EGS2125FFG | EGS3125FFG | EGS3125AFG | EGS4125FFG | EGS4125AFG |
| 160 | — | — | EGS3160FFG | EGS3160AFG | EGS4160FFG | EGS4160AFG |

Notes

- ^① 16, 32, 63 and 160 A are not UL listed ratings.
^② Adjustable thermal are not UL listed.
^③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on the LH side.

EG-Frame



EG-Frame—70/65

| Maximum Continuous Amps at 40 °C ^① | Single-Pole | Two-Pole | Three-Pole | Adjustable ^② Thermal, Fixed Magnetic Catalog Number | Four-Pole ^③ | Adjustable ^② Thermal, Fixed Magnetic Catalog Number |
|---|--|--|--|--|--|--|
| | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | | Fixed Thermal, Fixed Magnetic Catalog Number | |
| 15 | EGH1015FFG | EGH2015FFG | EGH3015FFG | — | EGH4015FFG | — |
| 16 | EGH1016FFG | EGH2016FFG | EGH3016FFG | — | EGH4016FFG | — |
| 20 | EGH1020FFG | EGH2020FFG | EGH3020FFG | EGH3020AFG | EGH4020FFG | EGH4020AFG |
| 25 | EGH1025FFG | EGH2025FFG | EGH3025FFG | EGH3025AFG | EGH4025FFG | EGH4025AFG |
| 30 | EGH1030FFG | EGH2030FFG | EGH3030FFG | — | EGH4030FFG | — |
| 32 | EGH1032FFG | EGH2032FFG | EGH3032FFG | EGH3032AFG | EGH4032FFG | EGH4032AFG |
| 35 | EGH1035FFG | EGH2035FFG | EGH3035FFG | — | EGH4035FFG | — |
| 40 | EGH1040FFG | EGH2040FFG | EGH3040FFG | EGH3040AFG | EGH4040FFG | EGH4040AFG |
| 45 | EGH1045FFG | EGH2045FFG | EGH3045FFG | — | EGH4045FFG | EGH4050AFG |
| 50 | EGH1050FFG | EGH2050FFG | EGH3050FFG | EGH3050AFG | EGH4050FFG | — |
| 60 | EGH1060FFG | EGH2060FFG | EGH3060FFG | — | EGH4060FFG | — |
| 63 | EGH1063FFG | EGH2063FFG | EGH3063FFG | EGH3063AFG | EGH4063FFG | EGH4063AFG |
| 70 | EGH1070FFG | EGH2070FFG | EGH3070FFG | — | EGH4070FFG | — |
| 80 | EGH1080FFG | EGH2080FFG | EGH3080FFG | EGH3080AFG | EGH4080FFG | EGH4080AFG |
| 90 | EGH1090FFG | EGH2090FFG | EGH3090FFG | — | EGH4090FFG | — |
| 100 | EGH1100FFG | EGH2100FFG | EGH3100FFG | EGH3100AFG | EGH4100FFG | EGH4100AFG |
| 125 | EGH1125FFG | EGH2125FFG | EGH3125FFG | EGH3125AFG | EGH4125FFG | EGH4125AFG |

Notes

- ① 16, 32, 63A are not UL listed ratings.
- ② Adjustable thermal are not UL listed.
- ③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on the LH side.

EG-Frame—100/100 Current Limiting (Single-Pole and Two-Pole Unavailable)

EG-Frame



EG-Frame — 100/100

| Maximum Continuous Amps at 40 °C ^① | Three-Pole | | Four-Pole 0% Protected Neutral ^③ | |
|---|--|--|--|--|
| | Fixed Thermal, Fixed Magnetic Catalog Number | Adjustable ^② Thermal, Fixed Magnetic Catalog Number | Fixed Thermal, Fixed Magnetic Catalog Number | Adjustable ^② Thermal, Fixed Magnetic Catalog Number |
| 15 | EGC3015FFG | — | EGC7015FFG | — |
| 16 | EGC3016FFG | — | EGC7016FFG | — |
| 20 | EGC3020FFG | EGC3020AFG | EGC7020FFG | EGC7020AFG |
| 25 | EGC3025FFG | EGC3025AFG | EGC7025FFG | EGC7025AFG |
| 30 | EGC3030FFG | — | EGC7030FFG | — |
| 32 | EGC3032FFG | EGC3032AFG | EGC7032FFG | EGC7032AFG |
| 35 | EGC3035FFG | — | EGC7035FFG | — |
| 40 | EGC3040FFG | EGC3040AFG | EGC7040FFG | EGC7040AFG |
| 45 | EGC3045FFG | — | EGC7045FFG | — |
| 50 | EGC3050FFG | EGC3050AFG | EGC7050FFG | EGC7050AFG |
| 60 | EGC3060FFG | — | EGC7060FFG | — |
| 63 | EGC3063FFG | EGC3063AFG | EGC7063FFG | EGC7063AFG |
| 70 | EGC3070FFG | — | EGC7070FFG | — |
| 80 | EGC3080FFG | EGC3080AFG | EGC7080FFG | EGC7080AFG |
| 90 | EGC3090FFG | — | EGC7090FFG | — |
| 100 | EGC3100FFG | EGC3100AFG | EGC7100FFG | EGC7100AFG |
| 125 | EGC3125FFG | EGC3125AFG | EGC7125FFG | EGC7125AFG |

Molded Case Switches ^④

Catalog Number

EGK3125KSG

EGK7125KSG

EGK3160KSG

EGK7160KSG

Notes

- ① 16, 32, 63A are not UL listed ratings.
- ② Adjustable thermal is not UL listed.
- ③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on LH side.
- ④ Molded case switches may open above 1250 A.

EG Bolt-On Complete Breaker (Includes Frame, Trip Unit and Mounting Hardware)

2

EG-Frame**EG-Frame—18 kAIC at 480 Vac**

| Maximum Continuous Amps at 40 °C | Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^① | Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^② | Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^③ |
|----------------------------------|---|--|--|
| 15 | EGB1015FFB | EGB2015FFB | EGB3015FFB |
| 20 | EGB1020FFB | EGB2020FFB | EGB3020FFB |
| 25 | EGB1025FFB | EGB2025FFB | EGB3025FFB |
| 30 | EGB1030FFB | EGB2030FFB | EGB3030FFB |
| 35 | EGB1035FFB | EGB2035FFB | EGB3035FFB |
| 40 | EGB1040FFB | EGB2040FFB | EGB3040FFB |
| 45 | EGB1045FFB | EGB2045FFB | EGB3045FFB |
| 50 | EGB1050FFB | EGB2050FFB | EGB3050FFB |
| 60 | EGB1060FFB | EGB2060FFB | EGB3060FFB |
| 70 | EGB1070FFB | EGB2070FFB | EGB3070FFB |
| 80 | EGB1080FFB | EGB2080FFB | EGB3080FFB |
| 90 | EGB1090FFB | EGB2090FFB | EGB3090FFB |
| 100 | EGB1100FFB | EGB2100FFB | EGB3100FFB |
| 110 | EGB1110FFB | EGB2110FFB | EGB3110FFB |
| 125 | EGB1125FFB | EGB2125FFB | EGB3125FFB |

EG-Frame**EG-Frame—35 kAIC at 480 Vac**

| Maximum Continuous Amps at 40 °C | Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^① | Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^② | Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^③ |
|----------------------------------|---|--|--|
| 15 | EGS1015FFB | EGS2015FFB | EGS3015FFB |
| 20 | EGS1020FFB | EGS2020FFB | EGS3020FFB |
| 25 | EGS1025FFB | EGS2025FFB | EGS3025FFB |
| 30 | EGS1030FFB | EGS2030FFB | EGS3030FFB |
| 35 | EGS1035FFB | EGS2035FFB | EGS3035FFB |
| 40 | EGS1040FFB | EGS2040FFB | EGS3040FFB |
| 45 | EGS1045FFB | EGS2045FFB | EGS3045FFB |
| 50 | EGS1050FFB | EGS2050FFB | EGS3050FFB |
| 60 | EGS1060FFB | EGS2060FFB | EGS3060FFB |
| 70 | EGS1070FFB | EGS2070FFB | EGS3070FFB |
| 80 | EGS1080FFB | EGS2080FFB | EGS3080FFB |
| 90 | EGS1090FFB | EGS2090FFB | EGS3090FFB |
| 100 | EGS1100FFB | EGS2100FFB | EGS3100FFB |
| 110 | EGS1110FFB | EGS2110FFB | EGS3110FFB |
| 125 | EGS1125FFB | EGS2125FFB | EGS3125FFB |

Notes

- ① For bulk pack 24, add suffix BP24 and order quantities of 24.
 ② For bulk pack 12, add suffix BP12 and order quantities of 12.
 ③ For bulk pack 8, add suffix BP8 and order quantities of 8.

EG-Frame



EG-Frame—65 kAIC at 480 Vac

| Maximum Continuous Amps at 40 °C | Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^① | Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^② | Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number ^③ |
|----------------------------------|---|--|--|
| 15 | EGH1015FFB | EGH2015FFB | EGH3015FFB |
| 20 | EGH1020FFB | EGH2020FFB | EGH3020FFB |
| 25 | EGH1025FFB | EGH2025FFB | EGH3025FFB |
| 30 | EGH1030FFB | EGH2030FFB | EGH3030FFB |
| 35 | EGH1035FFB | EGH2035FFB | EGH3035FFB |
| 40 | EGH1040FFB | EGH2040FFB | EGH3040FFB |
| 45 | EGH1045FFB | EGH2045FFB | EGH3045FFB |
| 50 | EGH1050FFB | EGH2050FFB | EGH3050FFB |
| 60 | EGH1060FFB | EGH2060FFB | EGH3060FFB |
| 70 | EGH1070FFB | EGH2070FFB | EGH3070FFB |
| 80 | EGH1080FFB | EGH2080FFB | EGH3080FFB |
| 90 | EGH1090FFB | EGH2090FFB | EGH3090FFB |
| 100 | EGH1100FFB | EGH2100FFB | EGH3100FFB |
| 110 | EGH1110FFB | EGH2110FFB | EGH3110FFB |
| 125 | EGH1125FFB | EGH2125FFB | EGH3125FFB |

Load Terminals

| Maximum Breaker Amps | Terminal, Body Material | Wire Type | Metric Wire Range mm ² | AWG Wire Range | (Package of Three Terminals) Catalog Number |
|---|-------------------------|-----------|-----------------------------------|----------------|---|
| Standard Cu/Al Pressure Type Terminals | | | | | |
| 15–50 | Aluminum | Cu/Al | 2.5–50 | #14–1/0 | 3TA125EF |
| 60–125 | Aluminum | Cu/Al | 16–70 | #6–3/0 | 3TA150EF |

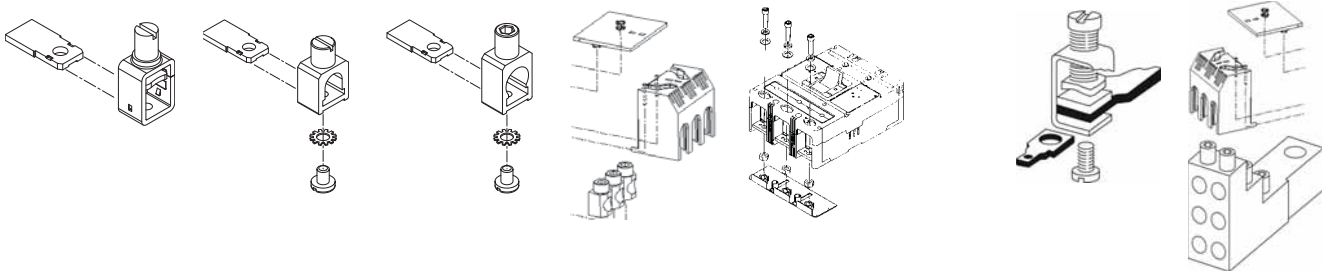
Notes

- ① For bulk pack 24, add suffix BP24 and order quantities of 24.
 ② For bulk pack 12, add suffix BP12 and order quantities of 12.
 ③ For bulk pack 8, add suffix BP8 and order quantities of 8.

Accessories Selection Guide and Ordering Information

2

EG-Frame



3T125EF

3TA125EF

3TA150EF

3TA160EFK

EF2RTWK, Two-Pole–Metric
EF3RTWK, Three-Pole–Metric
EF4RTWK, Four-Pole–Metric
EF2RTDK, Two-Pole–Imperial
EF3RTDK, Three-Pole–Imperial
EF4RTDK, Four-Pole–Imperial

Control Wire
Terminal Kit
GCWTK

Multiwire
Connectors

Line and Load Terminals

| Maximum Breaker Amps | Terminal Body Material | Wire Type | Metric Wire Range mm ² | AWG Wire Range | (Package of Three Terminals) Catalog Number |
|---|------------------------|-----------|-----------------------------------|----------------|---|
| Standard Cu/Al Pressure Type Terminals | | | | | |
| 125 | Steel | Al | 4–6 | #14-3/0 | 3T125EF ① |
| 125 | Steel | Cu | 2.5–95 | #14-3/0 | 3T125EF ① |
| 125 | Aluminum | Cu/Al | 2.5–50 | #14-1/0 | 3TA125EF |
| 160 | Aluminum | Cu/Al | 16–70 | #6-3/0 | 3TA150EF |
| 160 | Aluminum | Cu/Al | 35–120 | #3-250 | 3TA160EFK |
| 160 | Aluminum | Cu/Al | 35–120 | #3-250 | 4TA160EFK ② |

EG-Frame circuit breakers and molded case switches have line and load terminals as standard equipment.

Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer.

Caution: Collar must surround conductor.

Insert collar enclosing conductor and center on extrusion. Tighten securely with screw and washer. Endcap kits are used on the E-Frame breaker line side to connect busbar or similar electrical connections. Includes hardware.

Notes

- ① Standard line and load terminals.
- ② Four-pole kit with four terminals.

Control Wire Terminal Kit

| | Catalog Number |
|-----------------------------------|-------------------|
| Control wire terminal kit | 5652B38G01 |
| Package of 12—priced individually | |

For use with steel or stainless steel standard line and load terminals only.

Interphase Barriers

| | Catalog Number |
|-----------------------------------|-------------------|
| Interphase barriers | EIPBK |
| Package of 12—priced individually | |

The interphase barrier is available for extended insulation between circuit breaker poles. Specify quantity when ordering.

Base Mounting Hardware—DIN Rail Mounting

| | Catalog Number |
|--------------------------------------|-------------------|
| DIN rail adapter—single-pole | EF1DIN |
| DIN rail adapter—two-pole | EGDIN |
| DIN rail adapter—three- or four-pole | EF34DIN |
| Metal DIN rail adapter—three-pole | EGDDIN |

Metric base mounting hardware is included with a circuit breaker or molded case switch. (Included with breaker.) If required separately, order S/N 8703C80G08.

Note: English mounting hardware kit can be supplied separate. Catalog number is **BMHE #6–32** x 3 inches for two-, three- and four-pole. Single-pole mounting hardware metric order **8703C80G11**. English hardware **8703C80G12**. Both sold in quantities of 100.

Terminal Shields

The terminal shield is available for line terminal areas in three- and four-pole circuit breakers. Special terminal shields are also available for use when an electrical (solenoid) operator is mounted on the circuit breaker. The standard style number by pole for each terminal shield is for a package of 10 and is priced per each package. Special terminal shields are packaged individually.

Terminal Shields—IP30 Protection

| Number of Poles | Catalog Number |
|--------------------|-------------------|
| 3 | EFTS3K |
| 4 | EFTS4K |

Terminal End Covers (Gas Barrier)

The terminal end cover is available for three-pole circuit breakers only. Two conductor opening sizes are available. Specify quantity (one per circuit breaker) when ordering.

Terminal End Covers

| Conductor Opening Diameter Inches (mm) | Catalog Number |
|---|-------------------|
| 6.35 (0.25) | EEC3K |
| 10.41 (0.41) | EEC4K |

Multiwire Connectors

Field-installed multiwire connectors for the load side (OFF) end terminals. They are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include mounting hardware, terminal shield insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

EG-Frame Multiwire Connectors Ordering Information (Package of 3) [Ⓢ]

| Maximum Amperes | Wires per Terminal | Wire Size Range AWG Cu | Kit Catalog Number |
|--------------------|-----------------------|---------------------------|-----------------------|
| 125 | 3 | 14–2 | 3TA125E3K |
| 125 | 6 | 14–6 | 3TA125E6K |

Note

[Ⓢ] For four-pole kit, change “3” at beginning of catalog number to “4.”

Accessories

2

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

EG-Frame Accessories

| Description | Reference Page | Single-Pole | Two-Pole | | Three-Pole | | | Four-Pole | | | Neutral |
|---|----------------|-------------|----------|-------|------------|--------|-------|-----------|--------|-------|---------|
| | | Center | Left | Right | Left | Center | Right | Left | Center | Right | |
| Internal Accessories (Only one internal accessory per pole) | | | | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-109 | — | — | ■ | — | — | ■ | — | — | ■ | — |
| Alarm lockout (2Make/2Break) | V4-T2-109 | — | — | ■ | — | — | ■ | — | — | ■ | — |
| Auxiliary switch (1A, 1B) | V4-T2-109 | — | — | ■ | — | — | ■ | — | — | ■ | — |
| Auxiliary switch (2A, 2B) | V4-T2-109 | — | — | ■ | — | — | ■ | — | — | ■ | — |
| Auxiliary switch and alarm switch combination | V4-T2-109 | — | — | ■ | — | — | ■ | — | — | ■ | — |
| Shunt trip—standard | V4-T2-109 | — | — | — | ■ | — | — | ■ | — | — | — |
| Undervoltage release mechanism | V4-T2-110 | — | — | — | ■ | — | — | ■ | — | — | — |
| External Accessories | | | | | | | | | | | |
| End cap kit | V4-T2-25 | — | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Control wire terminal kit | V4-T2-25 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Multiwire connectors | V4-T2-25 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Base mounting hardware | V4-T2-25 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Terminal shields | V4-T2-25 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Terminal end covers | V4-T2-25 | — | — | — | ● | ● | ● | — | — | — | — |
| Interphase barriers | V4-T2-25 | — | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Non-padlockable handle block | V4-T2-107 | ■ | ■ | — | — | ■ | — | — | ■ | — | — |
| Snap-on padlockable handle lock hasp | V4-T2-107 | ■ | ■ | — | — | ■ | — | — | ■ | — | — |
| Padlockable handle lock hasp | V4-T2-107 | — | — | ■ | □ | — | □ | □ | — | □ | — |
| Walking beam interlock—requires two breakers | V4-T2-107 | — | — | — | ● | ● | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-107 | — | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Electrical operator | V4-T2-107 | — | — | — | ● | ● | ● | — | — | — | — |
| Handle mechanisms | V4-T2-419 | — | — | — | ● | ● | ● | — | — | — | — |
| Modifications (Refer to Eaton) | | | | | | | | | | | |
| Moisture fungus treatment | V4-T2-105 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application, UL 489 Supplement SA and SB | — | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Technical Data and Specifications

UL 489/IEC 60947-2 Interrupting Capacity (Symmetrical Amperes) (kA) Ratings

| Circuit Breaker Type | Number of Poles | Volts AC (50/60 Hz) | | | | | | | | | | Volts DC ^① | | | | | |
|----------------------|-----------------|---------------------|-----------------|-----------------|-----|-----|-----------------|-----------------|-----|----------|-----------------|-----------------------|-----------------|-----------------|-----------------|-------------------|----|
| | | 220–240 | | | | | 380–415 | | | | | 690 ^② | | 125 | | 250 ^{③④} | |
| | | 120 | I _{CU} | I _{CS} | 277 | 347 | I _{CU} | I _{CS} | 480 | 600Y/347 | I _{CU} | I _{CS} | I _{CU} | I _{CS} | I _{CU} | I _{CS} | |
| EGB125 | 1 | 35 | 25 | 25 | 18 | — | — | — | — | — | — | — | — | 10 | 10 | — | — |
| | 2, 3, 4 | — | 25 | 25 | — | — | 18 | 18 | 18 | — | — | — | — | — | — | 10 | 10 |
| EGE125 | 2, 3, 4 | — | 35 | 35 | — | — | 25 | 25 | 25 | 18 | — | — | — | — | — | 10 | 10 |
| | 1 | 100 | 85 | 43 | 35 | 22 | — | — | — | — | — | — | — | 35 | 35 | — | — |
| EGS125 | 2, 3, 4 | — | 85 | 43 | — | — | 40 | 30 | 35 | 22 | — | — | — | — | — | 35 | 35 |
| | 1 | 200 | 100 | 50 | 65 | 25 | — | — | — | — | — | — | — | 42 | 42 | — | — |
| EGH125 | 2, 3, 4 | — | 100 | 50 | — | — | 70 | 35 | 65 | 25 | — | — | — | — | — | 42 | 42 |
| | 3, 4 | — | 200 | 200 | — | — | 100 | 100 | 100 | 35 | — | — | — | — | — | 42 | 42 |
| EGC125 ^⑤ | 3, 4 | — | 200 | 200 | — | — | 100 | 100 | 100 | 35 | — | — | — | — | — | 42 | 42 |
| EGB160 ^② | 3, 4 | — | 25 | 25 | — | — | 18 | 18 | 18 | — | — | — | — | — | — | 10 | 10 |
| EGE160 ^② | 3, 4 | — | 35 | 35 | — | — | 25 | 25 | 25 | 18 | — | — | — | — | — | 10 | 10 |
| EGS160 ^② | 3, 4 | — | 85 | 43 | — | — | 40 | 30 | 35 | 22 | — | — | — | — | — | 35 | 35 |

UL 489 Current Limiting Data

| Frame | Circuit | I _p (kA) | I ² T (10 ⁶ A ² S) |
|-------|--------------|---------------------|---|
| EGC | 240 V/200 kA | 24.5 | 0.6310 |
| EGC | 480 V/100 kA | 24.5 | 0.6310 |
| EGC | 600 Y/35 kA | 20.0 | 1.392 |

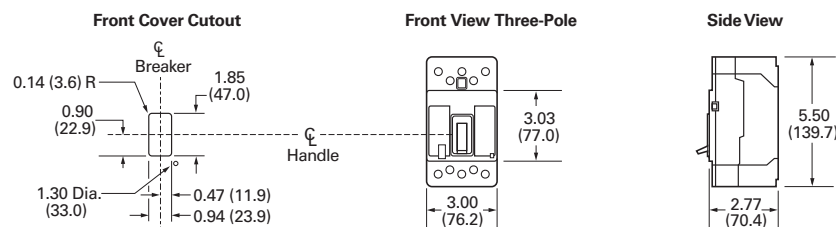
Dimensions and Weights

Approximate Dimensions in Inches (mm)

EG-Frame

| Number of Poles | Width | Height | Depth |
|-----------------|--------------|--------------|-------------|
| 1 | 1.00 (25.4) | 5.50 (139.7) | 2.99 (75.9) |
| 2 | 2.00 (50.8) | 5.50 (139.7) | 2.99 (75.9) |
| 3 | 3.00 (76.2) | 5.50 (139.7) | 2.99 (75.9) |
| 4 | 4.00 (101.6) | 5.50 (139.7) | 2.99 (75.9) |

EG-Frame



Approximate Shipping Weight in Lbs (kg)

EG-Frame

| EG Breaker Type | Number of Poles | | | |
|-----------------|-----------------|------------|------------|------------|
| | 1 | 2 | 3 | 4 |
| EGB125 | 1.5 (0.68) | 2.0 (0.91) | 3.0 (1.36) | 4.9 (1.82) |

Notes

- ① DC ratings apply to substantially non-inductive circuits.
- ② IEC only.
- ③ Two-pole circuit breaker, or two poles of three-pole circuit breaker.
- ④ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 42 kA.
- ⑤ Current limiting per UL 489.

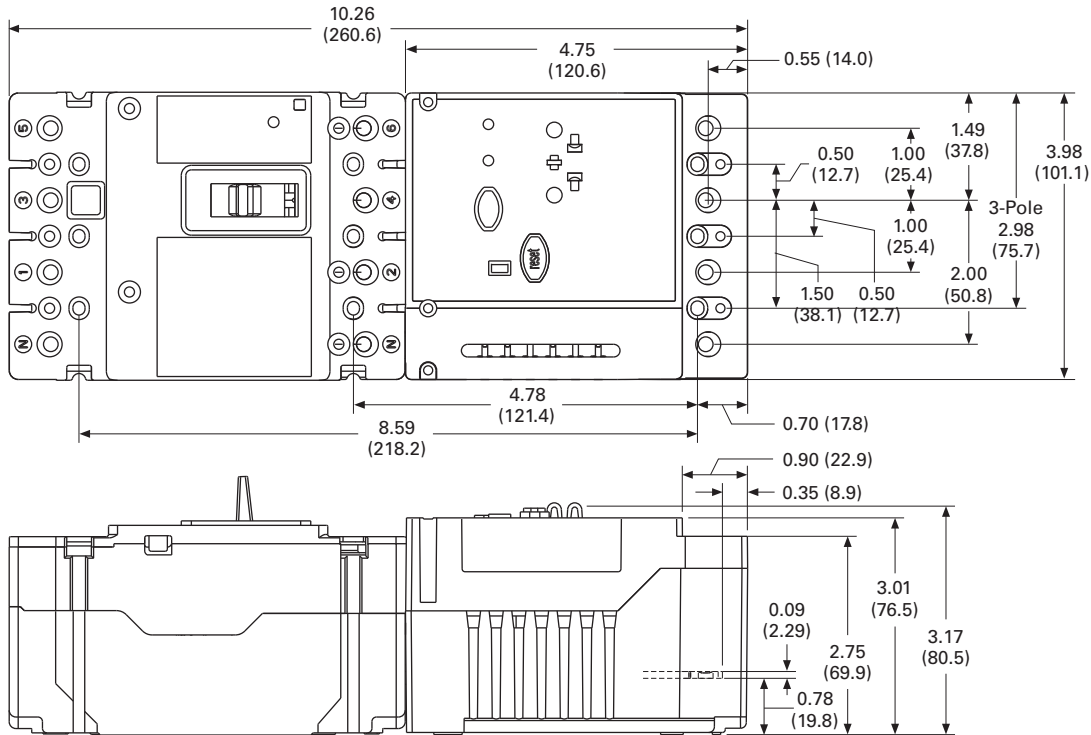
2.2

Molded Case Circuit Breakers

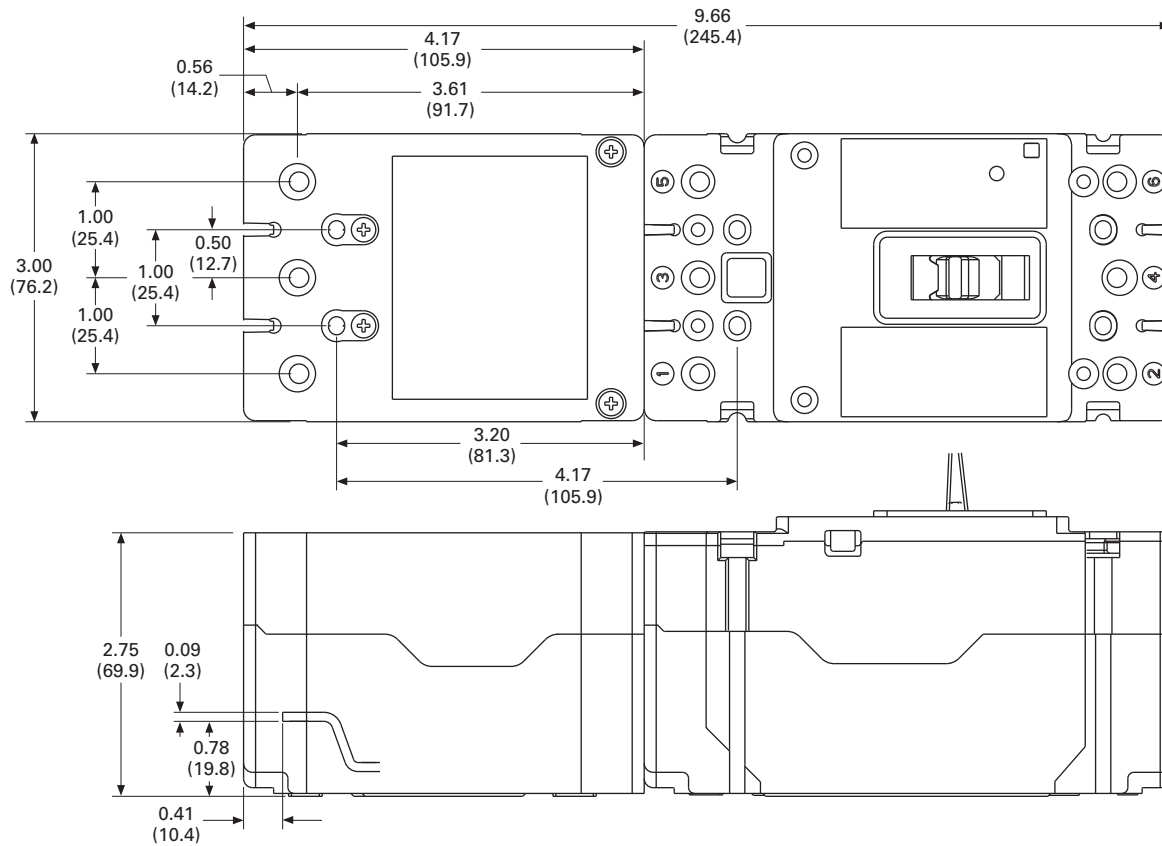
Series G

EG-Frame With Earth Leakage Module

2



EG-Frame With Current Limiter Module



JG-Frame (63–250 Amperes)**JG-Frame (63–250 Amperes)****Product Description**

JG breaker is HACR rated.

Contents

| Description | Page |
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| EG-Frame (15–125 Amperes) | V4-T2-15 |
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| Catalog Number Selection | V4-T2-30 |
| Product Selection | V4-T2-31 |
| Accessories | V4-T2-42 |
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| Motor Circuit Protectors (MCP) | V4-T2-85 |
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| High Instantaneous Circuit Breaker for | |
| Selective Coordination | V4-T2-101 |
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| Motor Operators | V4-T2-112 |
| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | V4-T2-115 |

2.2

Molded Case Circuit Breakers

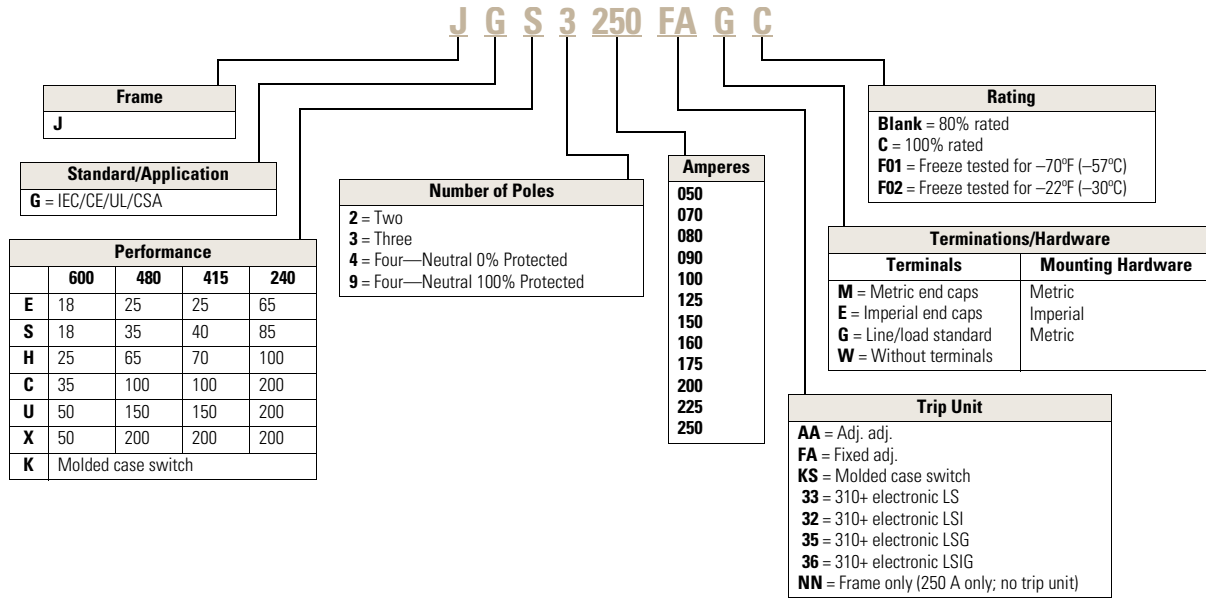
Series G

Catalog Number Selection

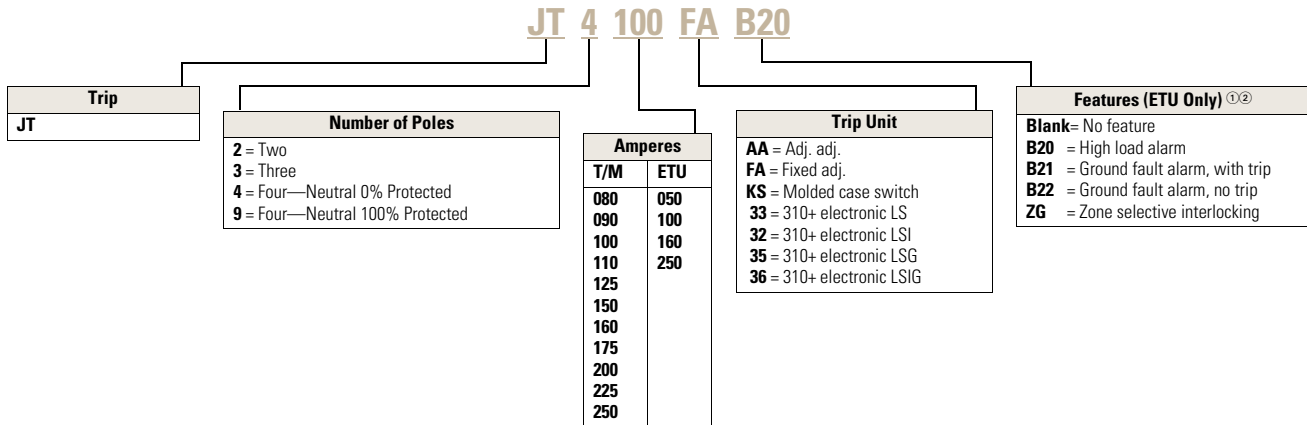
This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

2

Series G—JG-Frame (63–250 Amperes)



Trip Unit



Notes

- ① Bxx features cannot be combined with other Bxx features.
- ② B21 and B22 available with LSG and LSIG trip units.

Product Selection

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)—IC Rating at 415/480 Volts

JG-Frame



JG-Frame—IEC/CE/UL/CSA—25/25

| Maximum Continuous Amperes | Magnetic Range | Two-Pole | Three-Pole | Adjustable Thermal, Adjustable Magnetic ^① | Four-Pole 0% ^② | Adjustable Thermal, Adjustable Magnetic ^① |
|----------------------------|----------------|------------------------------------|------------------------------------|--|------------------------------------|--|
| | | Fixed Thermal, Adjustable Magnetic | Fixed Thermal, Adjustable Magnetic | | Fixed Thermal, Adjustable Magnetic | |
| | | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 70 | 350–700 | JGE2070FAG | JGE3070FAG | — | JGE4070FAG | — |
| 90 | 450–900 | JGE2090FAG | JGE3090FAG | — | JGE4090FAG | — |
| 100 | 500–1000 | JGE2100FAG | JGE3100FAG | JGE3100AAG | JGE4100FAG | JGE4100AAG |
| 125 | 625–1250 | JGE2125FAG | JGE3125FAG | JGE3125AAG | JGE4125FAG | JGE4125AAG |
| 150 | 750–1550 | JGE2150FAG | JGE3150FAG | — | JGE4150FAG | — |
| 160 | 800–1600 | — | — | JGE3160AAG | — | JGE4160AAG |
| 175 | 875–1750 | JGE2175FAG | JGE3175FAG | — | JGE4175FAG | — |
| 200 | 1000–2000 | JGE2200FAG | JGE3200FAG | JGE3200AAG | JGE4200FAG | JGE4200AAG |
| 225 | 1125–2250 | JGE2225FAG | JGE3225FAG | — | JGE4225FAG | — |
| 250 | 1250–2500 | JGE2250FAG | JGE3250FAG | JGE3250AAG | JGE4250FAG | JGE4250AAG |

JG-Frame



JG-Frame—IEC/CE/UL/CSA—40/35, Two-Pole

| Maximum Continuous Amperes | Magnetic Range | Two-Pole | Three-Pole | Adjustable Thermal, Adjustable Magnetic ^① | Four-Pole 0% ^② | Adjustable Thermal, Adjustable Magnetic ^① |
|----------------------------|----------------|------------------------------------|------------------------------------|--|------------------------------------|--|
| | | Fixed Thermal, Adjustable Magnetic | Fixed Thermal, Adjustable Magnetic | | Fixed Thermal, Adjustable Magnetic | |
| | | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 70 | 350–700 | JGS2070FAG | JGS3070FAG | — | JGS4070FAG | — |
| 90 | 450–900 | JGS2090FAG | JGS3090FAG | — | JGS4090FAG | — |
| 100 | 500–1000 | JGS2100FAG | JGS3100FAG | JGS3100AAG | JGS4100FAG | JGS4100AAG |
| 125 | 625–1250 | JGS2125FAG | JGS3125FAG | JGS3125AAG | JGS4125FAG | JGS4125AAG |
| 150 | 750–1550 | JGS2150FAG | JGS3150FAG | — | JGS4150FAG | — |
| 160 | 800–1600 | — | — | JGS3160AAG | — | JGS4160AAG |
| 175 | 875–1750 | JGS2175FAG | JGS3175FAG | — | JGS4175FAG | — |
| 200 | 1000–2000 | JGS2200FAG | JGS3200FAG | JGS3200AAG | JGS4200FAG | JGS4200AAG |
| 225 | 1125–2250 | JGS2225FAG | JGS3225FAG | — | JGS4225FAG | — |
| 250 | 1250–2500 | JGS2250FAG | JGS3250FAG | JGS3250AAG | JGS4250FAG | JGS4250AAG |

Notes

- ^① EC-EN 60947-2 only. Adjustment is 0.8 and 1.0.
^② 9 for 0–100% neutral protection. Neutral is on LH side.

JG-Frame



JG-Frame—IEC/CE/UL/CSA—70/65

| Maximum Continuous Amperes | Magnetic Range | Two-Pole Fixed Thermal, Adjustable Magnetic Catalog Number | Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Fixed Magnetic ^① Catalog Number | Four-Pole 0% ^② Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Fixed Magnetic ^① Catalog Number |
|----------------------------|----------------|---|---|---|--|---|
| 70 | 350–700 | JGH2070FAG | JGH3070FAG | — | JGH4070FAG | — |
| 90 | 450–900 | JGH2090FAG | JGH3090FAG | — | JGH4090FAG | — |
| 100 | 500–1000 | JGH2100FAG | JGH3100FAG | JGH3100AAG | JGH4100FAG | JGH4100AAG |
| 125 | 625–1250 | JGH2125FAG | JGH3125FAG | JGH3125AAG | JGH4125FAG | JGH4125AAG |
| 150 | 750–1550 | JGH2150FAG | JGH3150FAG | — | JGH4150FAG | — |
| 160 | 800–1600 | — | — | JGH3160AAG | — | JGH4160AAG |
| 175 | 875–1750 | JGH2175FAG | JGH3175FAG | — | JGH4175FAG | — |
| 200 | 1000–2000 | JGH2200FAG | JGH3200FAG | JGH3200AAG | JGH4200FAG | JGH4200AAG |
| 225 | 1125–2250 | JGH2225FAG | JGH3225FAG | — | JGH4225FAG | — |
| 250 | 1250–2500 | JGH2250FAG | JGH3250FAG | JGH3250AAG | JGH4250FAG | JGH4250AAG |

Notes

^① EC-EN 60947-2 only. Adjustment is 0.8 and 1.0.

^② 9 for 0–100% neutral protection. Neutral is on LH side.

Two-Pole not available in IEC/CE/UL/CSA 100/100, 150/150

JG-Frame



JG-Frame—IEC/CE/UL/CSA—100/100, Current Limiting

| Maximum Continuous Amperes | Magnetic Range | Three-Pole | | Four-Pole 0% ^② | |
|----------------------------|----------------|---|---|---|---|
| | | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^① Catalog Number | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^① Catalog Number |
| 70 | 350–700 | JGC3070FAG | — | JGC4070FAG | — |
| 80 | 400–800 | — | JGC3080AAG | — | JGC4080AAG |
| 90 | 450–900 | JGC3090FAG | — | JGC4090FAG | — |
| 100 | 500–1000 | JGC3100FAG | JGC3100AAG | JGC4100FAG | JGC4100AAG |
| 125 | 625–1250 | JGC3125FAG | JGC3125AAG | JGC4125FAG | JGC4125AAG |
| 150 | 750–1550 | JGC3150FAG | — | JGC4150FAG | — |
| 160 | 800–1600 | — | JGC3160AAG | — | JGC4160AAG |
| 175 | 875–1750 | JGC3175FAG | — | JGC4175FAG | — |
| 200 | 1000–2000 | JGC3200FAG | JGC3200AAG | JGC4200FAG | JGC4200AAG |
| 225 | 1125–2250 | JGC3225FAG | — | JGC4225FAG | — |
| 250 | 1250–2500 | JGC3250FAG | JGC3250AAG | JGC4250FAG | JGC4250AAG |

JG-Frame



JG-Frame—IEC/CE/UL/CSA—150/150, Current Limiting

| Maximum Continuous Amperes | Magnetic Range | Three-Pole | | Four-Pole 0% ^② | |
|----------------------------|----------------|---|---|---|---|
| | | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^① Catalog Number | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^① Catalog Number |
| 70 | 350–700 | JGU3070FAG | — | JGU4070FAG | — |
| 80 | 400–800 | — | JGU3080AAG | — | JGU4080AAG |
| 90 | 450–900 | JGU3090FAG | — | JGU4090FAG | — |
| 100 | 500–1000 | JGU3100FAG | JGU3100AAG | JGU4100FAG | JGU4100AAG |
| 125 | 625–1250 | JGU3125FAG | JGU3125AAG | JGU4125FAG | JGU4125AAG |
| 150 | 750–1550 | JGU3150FAG | — | JGU4150FAG | — |
| 160 | 800–1600 | — | JGU3160AAG | — | JGU4160AAG |
| 175 | 875–1750 | JGU3175FAG | — | JGU4175FAG | — |
| 200 | 1000–2000 | JGU3200FAG | JGU3200AAG | JGU4200FAG | JGU4200AAG |
| 225 | 1125–2250 | JGU3225FAG | — | JGU4225FAG | — |
| 250 | 1250–2500 | JGU3250FAG | JGU3250AAG | JGU4250FAG | JGU4250AAG |

Notes

- ① EC-EN 60947-2 only. Adjustment is 0.8 and 1.0.
 ② 9 for 0–100% neutral protection. Neutral is on LH side.

2.2

Molded Case Circuit Breakers

Series G

Two-Pole not available in IEC/CE/UL/CSA 200/200

2

JG-Frame



JG-Frame—IEC/CE/UL/CSA 200/200, Current Limiting

| Maximum Continuous Amperes | Magnetic Range | Three-Pole | | Four-Pole ^② | |
|----------------------------|----------------|---|---|---|---|
| | | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^① Catalog Number | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^① Catalog Number |
| 70 | 350–700 | JGX3070FAG | — | JGX4070FAG | — |
| 80 | 400–800 | — | JGX3080AAG | — | JGX4080AAG |
| 90 | 450–900 | JGX3090FAG | — | JGX4090FAG | — |
| 100 | 500–1000 | JGX3100FAG | JGX3100AAG | JGX4100FAG | JGX4100AAG |
| 125 | 625–1250 | JGX3125FAG | JGX3125AAG | JGX4125FAG | JGX4125AAG |
| 150 | 750–1550 | JGX3150FAG | — | JGX4150FAG | — |
| 160 | 800–1600 | — | JGX3160AAG | — | JGX4160AAG |
| 175 | 875–1750 | JGX3175FAG | — | JGX4175FAG | — |
| 200 | 1000–2000 | JGX3200FAG | JGX3200AAG | JGX4200FAG | JGX4200AAG |
| 225 | 1125–2250 | JGX3225FAG | — | JGX4225FAG | — |
| 250 | 1250–2500 | JGX3250FAG | JGX3250AAG | JGX4250FAG | JGX4250AAG |

Molded Case Switches ^③

Catalog Number

JGK3250KSG

JGK7250KSG

Notes

- ① EC-EN 60947-2 only. Adjustment is 0.8 and 1.0.
- ② 9 for 0–100% neutral protection. Neutral is on LH side.
- ③ Molded case switches will trip above 2500 amperes.

Frame—IC Rating at 415/480 Volts

| Maximum Amperes | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole 0% Catalog Number |
|---|-------------------------|---------------------------|-----------------------------|
| 25/25 | | | |
| 250 | JGE2250NN | JGE3250NN | JGE4250NN |
| 40/35 | | | |
| 250 | JGS2250NN | JGS3250NN | JGS4250NN |
| 70/65 | | | |
| 250 | JGH2250NN | JGH3250NN | JGH4250NN |
| 100/100 Current Limiting Per UL 489 | | | |
| 250 | — | JGC3250NN | JGC4250NN |
| 150/150 Current Limiting Per UL 489 | | | |
| 250 | — | JGU3250NN | JGU4250NN |
| 200/200 Current Limiting Per UL 489 | | | |
| 250 | — | JGX3250NN | JGX4250NN |
| 25/25 100% Rated Per UL 489 ^② | | | |
| 250 | — | JGE3250NNC | — |
| 40/35 100% Rated Per UL 489 ^② | | | |
| 250 | — | JGS3250NNC | — |
| 70/65 100% Rated Per UL 489 ^② | | | |
| 250 | — | JGH3250NNC | — |

Thermal-Magnetic Trip Unit

| Ampere Rating | Range | Catalog Number | | Range | Catalog Number | | Catalog Number |
|---------------|-----------|----------------|----------|-----------------------|----------------|----------|-----------------------|
| 70 | 350–700 | JT2070FA | JT3070FA | — | — | JT4070FA | — |
| 80 | 400–800 | — | JT3080FA | JT3080AA ^③ | 64–100 | — | JT4080AA ^③ |
| 90 | 450–900 | JT2090FA | JT3090FA | — | — | JT4090FA | — |
| 100 | 500–1000 | JT2100FA | JT3100FA | JT3100AA ^③ | 80–100 | JT4100FA | JT4100AA ^③ |
| 125 | 625–1250 | JT2125FA | JT3125FA | JT3125AA ^③ | 100–125 | JT4125FA | JT4125AA ^③ |
| 150 | 750–1550 | JT2150FA | JT3150FA | — | — | JT4150FA | — |
| 160 | 800–1600 | — | — | JT3160AA ^③ | 128–160 | — | JT4160AA ^③ |
| 175 | 875–1750 | JT2175FA | JT3175FA | — | — | JT4175FA | — |
| 200 | 1000–2000 | JT2200FA | JT3200FA | JT3200AA ^③ | 160–200 | JT4200FA | JT4200AA ^③ |
| 225 | 1125–2250 | JT2225FA | JT3225FA | — | — | JT4225FA | — |
| 250 | 1250–2500 | JT2250FA | JT3250FA | JT3250AA ^③ | 200–250 | JT4250FA | JT4250AA ^③ |

Notes

- ① Standard line and load terminals.
- ② Components—100% rated frame.
- ③ Adjustable thermal trip units are typically used in IEC markets and are not UL or CSA listed.

310+ Electronic Trip Units

See 310+ adjustability specifications on **Page V4-T2-44**.

2

JG 310+ Electronic Trip Units

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|--------------------------------|----------------------|-----------------------|-----------------------|------------------------|--|
| Three-Pole | | | | | |
| 50 | JT305033 | JT305032 | JT305035 | JT305036 | JGFCT050 |
| 100 | JT310033 | JT310032 | JT310035 | JT310036 | JGFCT100 |
| 160 | JT316033 | JT316032 | JT316035 | JT316036 | JGFCT160 |
| 250 | JT325033 | JT325032 | JT325035 | JT325036 | JGFCT250 |
| Four-Pole ^{②③} | | | | | |
| 50 | JT405033 | JT405032 | JT405035 | JT405036 | — |
| 100 | JT410033 | JT410032 | JT410035 | JT410036 | — |
| 160 | JT416033 | JT416032 | JT416035 | JT416036 | — |
| 250 | JT425033 | JT425032 | JT425035 | JT425036 | — |

310+ Electronic Trip Unit Accessories

| Description | Catalog Number |
|--|----------------|
| Electronic portable test kit | MTST230V |
| Trip unit tamper protection wire seal | 5108A03H01 |
| External neutral sensor (250 A) | JGFCT250 |
| External neutral sensor (160 A) | JGFCT160 |
| External neutral sensor (100 A) | JGFCT100 |
| External neutral sensor (80 A) | JGFCT050 |
| Breaker-mount cause-of-trip indication | TRIP-LED |
| Breaker-mount ammeter module | DIGIVIEW |
| Remote-mount ammeter module | DIGIVIEWR06 |

Notes

- ① For use on a three-pole breaker used in a four-wire system if ground fault protection for the neutral is required.
- ② Neutral protection 4 = 0%, 7 = 100% electronic trip unit neutral protection is not adjustable.
- ③ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

Complete Breaker with 310+ Electronic Trip UnitsSee 310+ adjustability specifications on **Page V4-T2-44**.**IEC/UL/CSA—25/25**

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|-------------------------------|-------------------|--------------------|--------------------|---------------------|---|
| Three-Pole | | | | | |
| 50 | JGE305033G | JGE305032G | JGE305035G | JGE305036G | JGFCT050 |
| 100 | JGE310033G | JGE310032G | JGE310035G | JGE310036G | JGFCT100 |
| 160 | JGE316033G | JGE316032G | JGE316035G | JGE316036G | JGFCT160 |
| 250 | JGE325033G | JGE325032G | JGE325035G | JGE325036G | JGFCT250 |
| Four-Pole ^② | | | | | |
| 50 | JGE405033G | JGE405032G | JGE405035G | JGE405036G | — |
| 100 | JGE410033G | JGE410032G | JGE410035G | JGE410036G | — |
| 160 | JGE416033G | JGE416032G | JGE416035G | JGE416036G | — |
| 250 | JGE425033G | JGE425032G | JGE425035G | JGE425036G | — |

IEC/UL/CSA—40/35

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|--------------------------------|-------------------|--------------------|--------------------|---------------------|---|
| Three-Pole | | | | | |
| 50 | JGS305033G | JGS305032G | JGS305035G | JGS305036G | JGFCT050 |
| 100 | JGS310033G | JGS310032G | JGS310035G | JGS310036G | JGFCT100 |
| 160 | JGS316033G | JGS316032G | JGS316035G | JGS316036G | JGFCT160 |
| 250 | JGS325033G | JGS325032G | JGS325035G | JGS325036G | JGFCT250 |
| Four-Pole ^{②③} | | | | | |
| 50 | JGS405033G | JGS405032G | JGS405035G | JGS405036G | — |
| 100 | JGS410033G | JGS410032G | JGS410035G | JGS410036G | — |
| 160 | JGS416033G | JGS416032G | JGS416035G | JGS416036G | — |
| 250 | JGS425033G | JGS425032G | JGS425035G | JGS425036G | — |

IEC/UL/CSA—70/65

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|-------------------------------|-------------------|--------------------|--------------------|---------------------|---|
| Three-Pole | | | | | |
| 50 | JGH305033G | JGH305032G | JGH305035G | JGH305036G | JGFCT050 |
| 100 | JGH310033G | JGH310032G | JGH310035G | JGH310036G | JGFCT100 |
| 160 | JGH316033G | JGH316032G | JGH316035G | JGH316036G | JGFCT160 |
| 250 | JGH325033G | JGH325032G | JGH325035G | JGH325036G | JGFCT250 |
| Four-Pole ^② | | | | | |
| 50 | JGH405033G | JGH405032G | JGH405035G | JGH405036G | — |
| 100 | JGH410033G | JGH410032G | JGH410035G | JGH410036G | — |
| 160 | JGH416033G | JGH416032G | JGH416035G | JGH416036G | — |
| 250 | JGH425033G | JGH425032G | JGH425035G | JGH425036G | — |

Notes^① Required for four-wire systems if neutral protection is required.^② Neutral protection 4 = 0%, 7 = 100% electronic trip unit neutral protection is not adjustable.^③ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

IEC/UL/CSA—100/100, Current Limiting Per UL 489

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|-------------------------------|-------------------------|--------------------------|--------------------------|---------------------------|--|
| Three-Pole | | | | | |
| 50 | JGC305033G | JGC305032G | JGC305035G | JGC305036G | JGFCT050 |
| 100 | JGC310033G | JGC310032G | JGC310035G | JGC310036G | JGFCT100 |
| 160 | JGC316033G | JGC316032G | JGC316035G | JGC316036G | JGFCT160 |
| 250 | JGC335033G | JGC325032G | JGC325035G | JGC325036G | JGFCT250 |
| Four-Pole ^② | | | | | |
| 50 | JGC405033G | JGC405032G | JGC405035G | JGC405036G | — |
| 100 | JGC410033G | JGC410032G | JGC410035G | JGC410036G | — |
| 160 | JGC416033G | JGC416032G | JGC416035G | JGC416036G | — |
| 250 | JGC435033G | JGC425032G | JGC425035G | JGC425036G | — |

IEC/UL/CSA—150/150, Current Limiting Per UL 489

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|--------------------------------|-------------------------|--------------------------|--------------------------|---------------------------|--|
| Three-Pole | | | | | |
| 50 | JGU305033G | JGU305032G | JGU305035G | JGU305036G | JGFCT050 |
| 100 | JGU310033G | JGU310032G | JGU310035G | JGU310036G | JGFCT100 |
| 160 | JGU316033G | JGU316032G | JGU316035G | JGU316036G | JGFCT160 |
| 250 | JGU335033G | JGU325032G | JGU325035G | JGU325036G | JGFCT250 |
| Four-Pole ^{②③} | | | | | |
| 50 | JGU405033G | JGU405032G | JGU405035G | JGU405036G | — |
| 100 | JGU410033G | JGU410032G | JGU410035G | JGU410036G | — |
| 160 | JGU416033G | JGU416032G | JGU416035G | JGU416036G | — |
| 250 | JGU435033G | JGU425032G | JGU425035G | JGU425036G | — |

IEC/UL/CSA—200/200, Current Limiting Per UL 489

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|-------------------------------|-------------------------|--------------------------|--------------------------|---------------------------|--|
| Three-Pole | | | | | |
| 50 | JGX305033G | JGX305032G | JGX305035G | JGX305036G | JGFCT050 |
| 100 | JGX310033G | JGX310032G | JGX310035G | JGX310036G | JGFCT100 |
| 160 | JGX316033G | JGX316032G | JGX316035G | JGX316036G | JGFCT160 |
| 250 | JGX325033G | JGX325032G | JGX325035G | JGX325036G | JGFCT250 |
| Four-Pole ^② | | | | | |
| 50 | JGX405033G | JGX405032G | JGX405035G | JGX405036G | — |
| 100 | JGX410033G | JGX410032G | JGX410035G | JGX410036G | — |
| 160 | JGX416033G | JGX416032G | JGX416035G | JGX416036G | — |
| 250 | JGX425033G | JGX425032G | JGX425035G | JGX425036G | — |

Notes

- ① Required for four-wire systems if neutral protection is required.
 ② Neutral protection 4 = 0%, 7 = 100% electronic trip unit neutral protection is not adjustable.
 ③ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

JG 100% Rated Circuit Breaker—Thermal-Magnetic Trip Unit**Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)—IC Rating at 415/480 Volts****JG-Frame****JG-Frame—IEC/CE/UL/CSA—25/25**

| Maximum Continuous Amperes | Magnetic Range | Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number |
|----------------------------|----------------|--|
| 70 | 350–700 | JGE3070FAGC |
| 90 | 450–900 | JGE3090FAGC |
| 100 | 500–1000 | JGE3100FAGC |
| 125 | 625–1250 | JGE3125FAGC |
| 150 | 750–1550 | JGE3150FAGC |
| 160 | 800–1600 | — |
| 175 | 875–1750 | JGE3175FAGC |
| 200 | 1000–2000 | JGE3200FAGC |
| 225 | 1125–2250 | JGE3225FAGC |
| 250 | 1250–2500 | JGE3250FAGC |

JG-Frame—IEC/CE/UL/CSA—70/65

| Maximum Continuous Amperes | Magnetic Range | Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number |
|----------------------------|----------------|--|
| 70 | 350–700 | JGH3070FAGC |
| 90 | 450–900 | JGH3090FAGC |
| 100 | 500–1000 | JGH3100FAGC |
| 125 | 625–1250 | JGH3125FAGC |
| 150 | 750–1550 | JGH3150FAGC |
| 160 | 800–1600 | — |
| 175 | 875–1750 | JGH3175FAGC |
| 200 | 1000–2000 | JGH3200FAGC |
| 225 | 1125–2250 | JGH3225FAGC |
| 250 | 1250–2500 | JGH3250FAGC |

JG-Frame—IEC/CE/UL/CSA—40/35

| Maximum Continuous Amperes | Magnetic Range | Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number |
|----------------------------|----------------|--|
| 70 | 350–700 | JGS3070FAGC |
| 90 | 450–900 | JGS3090FAGC |
| 100 | 500–1000 | JGS3100FAGC |
| 125 | 625–1250 | JGS3125FAGC |
| 150 | 750–1550 | JGS3150FAGC |
| 160 | 800–1600 | — |
| 175 | 875–1750 | JGS3175FAGC |
| 200 | 1000–2000 | JGS3200FAGC |
| 225 | 1125–2250 | JGS3225FAGC |
| 250 | 1250–2500 | JGS3250FAGC |

2.2

Molded Case Circuit Breakers

Series G

JG 100% Rated 310+ Electronic Trip Unit Circuit Breaker

See 310+ adjustability specifications on **Page V4-T2-44**.

2

IEC/UL/CSA—25/25

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|---------------|-------------------|--------------------|--------------------|---------------------|---|
| 50 | JGE305033GC | JGE305032GC | JGE305035GC | JGE305036GC | JGFCT050 |
| 100 | JGE310033GC | JGE310032GC | JGE310035GC | JGE310036GC | JGFCT100 |
| 160 | JGE316033GC | JGE316032GC | JGE316035GC | JGE316036GC | JGFCT160 |
| 250 | JGE325033GC | JGE325032GC | JGE325035GC | JGE325036GC | JGFCT250 |

IEC/UL/CSA—40/35

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|---------------|-------------------|--------------------|--------------------|---------------------|---|
| 50 | JGS305033GC | JGS305032GC | JGS305035GC | JGS305036GC | JGFCT050 |
| 100 | JGS310033GC | JGS310032GC | JGS310035GC | JGS310036GC | JGFCT100 |
| 160 | JGS316033GC | JGS316032GC | JGS316035GC | JGS316036GC | JGFCT160 |
| 250 | JGS325033GC | JGS325032GC | JGS325035GC | JGS325036GC | JGFCT250 |

IEC/UL/CSA—70/65

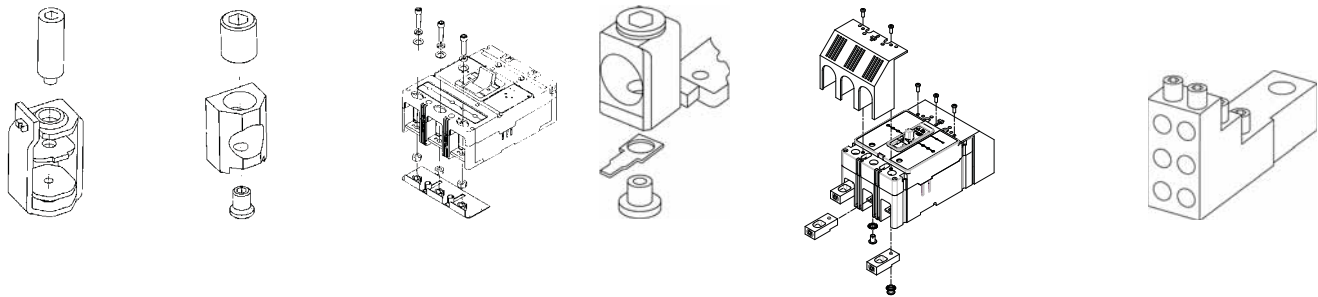
| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|---------------|-------------------|--------------------|--------------------|---------------------|---|
| 50 | JGH305033GC | JGH305032GC | JGH305035GC | JGH305036GC | JGFCT050 |
| 100 | JGH310033GC | JGH310032GC | JGH310035GC | JGH310036GC | JGFCT100 |
| 160 | JGH316033GC | JGH316032GC | JGH316035GC | JGH316036GC | JGFCT160 |
| 250 | JGH325033GC | JGH325032GC | JGH325035GC | JGH325036GC | JGFCT250 |

Note

^① Required for four-wire systems if neutral protection is required.

Accessories Selection Guide and Ordering Information

JG-Frame



| | | | | | |
|--------|---------|------------|---------------------------|--------------------|----------------------|
| T250FJ | TA250FJ | Endcap Kit | Control Wire Terminal Kit | Rear Fed Terminals | Multiwire Connectors |
|--------|---------|------------|---------------------------|--------------------|----------------------|

Load and Line Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | Metric Wire Range mm ² | AWG Wire Range/ Number of Conductors | Catalog Number |
|---|------------------------|-----------|-----------------------------------|--------------------------------------|----------------|
| Standard Pressure Type Terminals | | | | | |
| 250 | Stainless steel | Cu | 25–185 | #4–350 (1) | T250FJ ① |
| 250 | Aluminum | Cu/Al | 10–185 | #8–350 (1) | TA250FJ ①② |

JG-Frame circuit breakers include aluminum terminals TA250FJ as standard. When optional stainless steel only terminals are required, order by catalog number.

Endcap Kits

| Number of Poles | Catalog Number | |
|-----------------|----------------|----------|
| | Metric | Imperial |
| 3 | FJ3RTWK | FJ3RTDK |
| 4 | FJ4RTWK | FJ4RTDK |

Endcap kits are used on J250-Frame breaker to connect busbar or similar electrical connections. Includes hardware.

Control Wire Terminal Kit

| Description | Catalog Number |
|-------------------------------------|----------------|
| Package of 14 (priced individually) | FJCWTK |

For use with aluminum or copper terminals only.

Rear Fed Terminals

| Maximum Amperes | Wire Size Range AWG Cu | Catalog Number |
|-----------------|------------------------|----------------|
| 250 | #4–350 kcmil | TA250JGRF |
| | | 3TA250JGRF |

Rear fed terminals allow the cable to connect to the breaker from the back instead of the top. Terminal shields or interphase barriers are included with each rear fed terminal kit (depending on frame size). When catalog number starts with a 3, it indicates a kit with three terminals in each kit. Catalog number beginning with a TA indicates one terminal.

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or molded case switch. (Included with breaker.) If required separately, order 66A2546G02.

Terminal Shields IP30

| Location | Number of Poles | Catalog Number |
|--------------|-----------------|----------------|
| Line or Load | 2, 3 | FJTS3K |
| | 4 | FJTS4K |

Interphase Barriers

| Number of Poles | Catalog Number |
|-----------------|----------------|
| 3 | FJIPBK ③ |
| 4 | FJIPBK4 ③ |

Multiwire Connectors

Field-installed multiwire connectors for the load side (OFF) end terminals are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include terminal shield, mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

JG-Frame Multiwire Connectors Ordering Information (Package of 3)

| Maximum Amperes | Wires per Terminal | Wire Size Range AWG Cu | Kit Catalog Number |
|-----------------|--------------------|------------------------|--------------------|
| 250 | 3 | 14–2 | 3TA250FJ3 |
| 250 | 6 | 14–6 | 3TA250FJ6 |

Notes

- ① Individually packed.
- ② Standard line and load.
- ③ Individually priced.

Accessories

2

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

JG-Frame Accessories

| Description | Reference Page | Two- and Three-Pole | | | Four-Pole | | | |
|--|----------------|---------------------|--------|-------|-----------|--------|-------|---------|
| | | Left | Center | Right | Left | Center | Right | Neutral |
| Internal Accessories (Only one internal accessory per pole) | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-109 | — | — | ■ | — | — | ■ | — |
| Auxiliary switch (1A, 1B) | V4-T2-109 | — | — | ■ | — | — | ■ | — |
| Auxiliary switch (2A, 2B) | V4-T2-109 | — | — | ■ | — | — | ■ | — |
| Auxiliary switch and alarm switch combination | V4-T2-109 | — | — | ■ | — | — | ■ | — |
| Shunt trip—standard | V4-T2-109 | ■ | — | — | ■ | — | — | — |
| Undervoltage release mechanism | V4-T2-110 | ■ | — | — | ■ | — | — | — |
| External Accessories | | | | | | | | |
| End cap kit | V4-T2-41 | ● | ● | ● | ● | ● | ● | ● |
| Control wire terminal kit | V4-T2-41 | ● | ● | ● | ● | ● | ● | ● |
| Rear fed terminals | V4-T2-41 | ● | ● | ● | ● | ● | ● | ● |
| Multiwire connectors | V4-T2-41 | ● | ● | ● | ● | ● | ● | ● |
| Base mounting hardware | V4-T2-41 | ● | ● | ● | ● | ● | ● | ● |
| Interphase barriers | V4-T2-41 | ● | ● | ● | ● | ● | ● | ● |
| Padlockable handle block | V4-T2-107 | — | ■ | — | — | ■ | — | — |
| Padlockable handle lock hasp | V4-T2-107 | □ | — | □ | □ | — | □ | — |
| Key interlock kit | V4-T2-107 | □ | — | □ | □ | — | □ | — |
| Sliding bar interlock—requires two breakers | V4-T2-107 | ● | ● | ● | — | — | — | — |
| Electrical operator | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-419 | ● | ● | ● | ● | ● | ● | ● |
| Earth leakage/ground fault protector | V4-T2-92 | ● | ● | ● | ● | ● | ● | ● |
| Drawout cassette | V4-T2-115 | ● | ● | ● | ● | ● | ● | ● |
| Digitrip 310+ test kit | V4-T2-36 | ● | ● | ● | ● | ● | ● | ● |
| Ammeter/cause of trip display | V4-T2-106 | ● | ● | ● | ● | ● | ● | ● |
| Cause of trip LED module | V4-T2-106 | ● | ● | ● | ● | ● | ● | ● |
| Modifications (Refer to Eaton) | | | | | | | | |
| Moisture fungus treatment | V4-T2-105 | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application, UL 489 supplement SA and SB | ① | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Note

① Contact Eaton.

Technical Data and Specifications

UL 489/IEC 60947-2 Interrupting Capacity (Symmetrical Amperes) (kA) Ratings

| Circuit Breaker Type | Number of Poles | Volts AC (50/60 Hz) | | | | | | | | Volts DC ^① |
|----------------------|-----------------|---------------------|-----------------|-----------------|-----------------|-----|-----|------------------|-----------------|-----------------------|
| | | 220–240 | | 380–415 | | 480 | 600 | 690 ^② | | 250 ^{②③} |
| | | I _{cu} | I _{cs} | I _{cu} | I _{cs} | | | I _{cu} | I _{cs} | |
| JGE250 | 2, 3, 4 | 65 | 65 | 25 | 25 | 25 | 18 | 12 | 6 | 10 |
| JGS250 | 2, 3, 4 | 85 | 85 | 40 | 40 | 35 | 18 | 12 | 6 | 22 |
| JGH250 | 2, 3, 4 | 100 | 100 | 70 | 70 | 65 | 25 | 14 | 7 | 22 |
| JGC250 ^④ | 3, 4 | 200 | 200 | 100 | 100 | 100 | 35 | 16 | 12 | 42 |
| JGU250 ^④ | 3, 4 | 200 | 200 | 150 | 150 | 150 | 50 | 18 | 14 | 50 |
| JGX250 ^④ | 3, 4 | 200 | 200 | 200 | 200 | 200 | 50 | 18 | 14 | 50 |

UL 489 Current Limiting Data

| Frame | Circuit | I _p (kA) | I ² T (10 ⁶ A ² S) |
|-------|--------------|---------------------|---|
| JGC | 240 V/200 kA | 45.1 | 1.820 |
| JGC | 480 V/100 kA | 45.1 | 1.820 |
| JGC | 600 V/35 kA | 32.8 | 2.140 |
| JGU | 240 V/200 kA | 45.1 | 1.820 |
| JGU | 480 V/150 kA | 45.1 | 1.820 |
| JGU | 600 V/50 kA | 32.8 | 2.140 |
| JGX | 240 V/200 kA | 45.1 | 1.820 |
| JGX | 480 V/200 kA | 45.1 | 1.820 |
| JGX | 600 V/50 kA | 32.8 | 2.140 |

JG 310+ Specifications

| Description | Specification |
|---|--------------------------|
| Trip Unit Type | Digitrip RMS 310+ |
| Breaker Type | |
| Frame designation | JG |
| Frames available | 50 A, 100 A, 160 A 250 A |
| Continuous current range (A) | 20–250A |
| Ground fault pickup (A) | 10–250A |
| Interrupting capacities at 480 Vac (kAIC) | 35, 65, 100, 150, 200 |
| 100% rated | Yes |
| Protection | |
| Ordering options | LS, LSI, LSG, LSIG |
| Arcflash reduction maintenance system (or maintenance mode) | No |
| Interchangeable trip unit | Yes |
| High load alarm (suffix B20) ^⑤ | Yes |
| Ground fault alarm with trip (suffix B21) ^⑤ | Yes |
| Ground fault alarm, no trip (suffix B22) ^⑤ | Yes |
| Zone selective interlocking (suffix ZG) | LSI, LSIG |
| Cause of trip indication | Yes |
| Thru-cover accessories | Yes |

Notes

- ① DC ratings apply to substantially non-inductive circuits.
- ② Two-pole circuit breaker, or two poles of three-pole circuit breaker.
- ③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.
- ④ Current limiting per UL 489.
- ⑤ B2x suffixes cannot be combined with B2x suffixes.

JG 310+ Adjustability Specifications

| 310+ Settings | | JG Frame | | | |
|---|--------------|----------|----------|----------|----------|
| | | 50 A | 100 A | 160 A | 250 A |
| I_r = continuous current or long delay pickup (amperes) (All 310+) | I_r | | | | |
| | A | 20 | 40 | 63 | 100 |
| | B | 20 | 45 | 80 | 125 |
| | C | 25 | 50 | 90 | 150 |
| | D | 30 | 63 | 100 | 160 |
| | E | 32 | 70 | 110 | 175 |
| | F | 40 | 80 | 125 | 200 |
| | G | 45 | 90 | 150 | 225 |
| | H (= I_n) | 50 | 100 | 160 | 250 |
| t_r = long delay time (seconds) (All 310+) | Position 1 | 2 | 2 | 2 | 2 |
| | Position 2 | 4 | 4 | 4 | 4 |
| | Position 3 | 7 | 7 | 7 | 7 |
| | Position 4 | 10 | 10 | 10 | 10 |
| | Position 5 | 12 | 12 | 12 | 12 |
| | Position 6 | 15 | 15 | 15 | 15 |
| | Position 7 | 20 | 20 | 20 | 20 |
| | Position 8 | 24 | 24 | 24 | 24 |
| I_{sd} (x I_r) = short delay pickup (All 310+) | Position 1 | 2x | 2x | 2x | 2x |
| | Position 2 | 3x | 3x | 3x | 3x |
| | Position 3 | 4x | 4x | 4x | 4x |
| | Position 4 | 5x | 5x | 5x | 5x |
| | Position 5 | 6x | 6x | 6x | 6x |
| | Position 6 | 7x | 7x | 7x | 7x |
| | Position 7 | 8x | 8x | 8x | 8x |
| | Position 8 | 10x | 10x | 10x | 10x |
| | Position 9 | 14x | 14x | 14x | 14x |
| t_{sd} = short delay time I^2t (milliseconds) (LS, LSG) | Fixed | 67 at10x | 67 at10x | 67 at10x | 67 at10x |
| | | | | | |
| t_{sd} = short delay time flat (milliseconds) (LSI, LSIG) | Position 1 | Inst | Inst | Inst | Inst |
| | Position 2 | 120 | 120 | 120 | 120 |
| | Position 3 | 300 | 300 | 300 | 300 |
| I_g = ground fault pickup (amperes) (LSG, LSIG) | Position 1 | 10 | 20 | 32 | 50 |
| | Position 2 | 15 | 30 | 48 | 75 |
| | Position 3 | 20 | 40 | 64 | 100 |
| | Position 4 | 30 | 60 | 96 | 150 |
| | Position 5 | 40 | 80 | 128 | 200 |
| | Position 6 | 50 | 100 | 160 | 250 |
| t_g = ground fault delay time (milliseconds) (LSG, LSIG) | Position 1 | Inst | Inst | Inst | Inst |
| | Position 2 | 120 | 120 | 120 | 120 |
| | Position 3 | 300 | 300 | 300 | 300 |
| Independently Adjustable Instantaneous (I_i) setting ^① | | N/A | | | |
| Maintenance Mode pickup (2.5 x I_n) (amperes) ^② | | N/A | | | |

Notes

① Not available for JG. Independently adjustable I_i setting available in LG, NG and RG ALSI and ALSIG trip units.

② Maintenance Mode not available for JG frames. It is available for KD, LD, MDL, LG, NG, and RG.

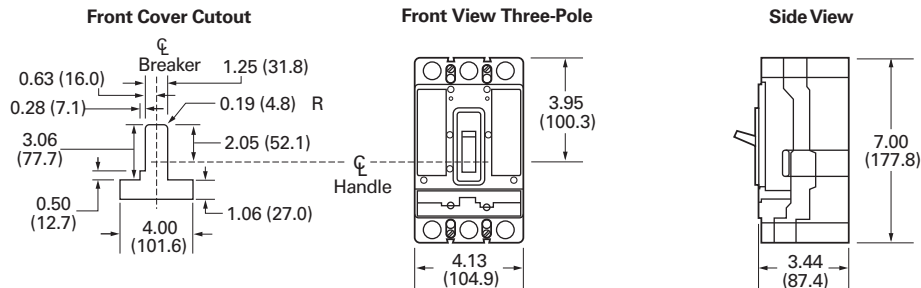
Dimensions and Weights

Approximate Dimensions in Inches (mm)

JG-Frame

| Number of Poles | Width | Height | Depth |
|-----------------|--------------|--------------|-------------|
| 2, 3 | 4.13 (104.9) | 7.00 (177.8) | 3.57 (90.7) |
| 4 | 5.34 (135.6) | 7.00 (177.8) | 3.57 (90.7) |

JG-Frame



Approximate Shipping Weight in Lbs (kg)

JG-Frame

| Breaker Type | Number of Poles | |
|--------------|-----------------|-------------|
| | 2, 3 | 4 |
| JGC | 6.00 (2.70) | 8.00 (3.60) |
| JGE | 6.00 (2.70) | 8.00 (3.60) |
| JGH | 6.00 (2.70) | 8.00 (3.60) |
| JGS | 6.00 (2.70) | 8.00 (3.60) |
| JGU | 6.00 (2.70) | 8.00 (3.60) |
| JGX | 6.00 (2.70) | 8.00 (3.60) |

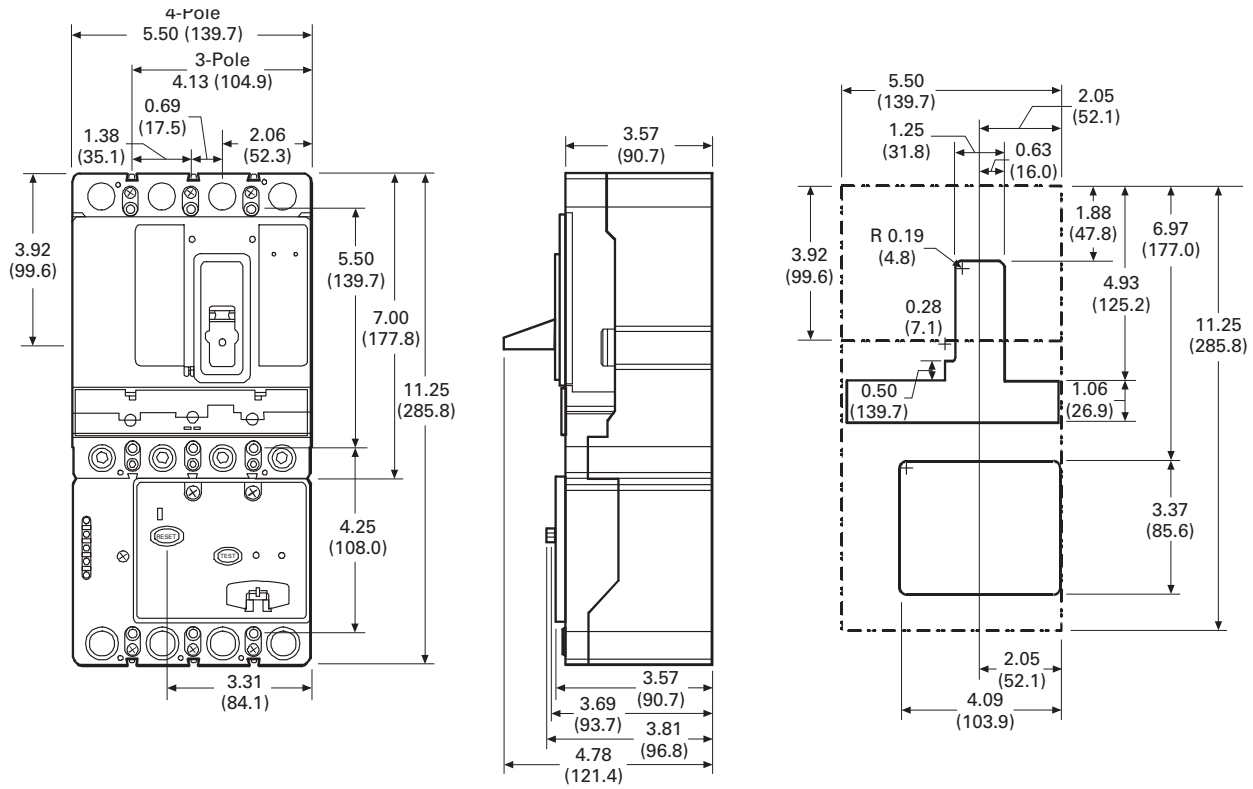
2.2

Molded Case Circuit Breakers

Series G

JG-Frame With Earth Leakage Module

2



LG-Frame (250–630 Amperes)**LG-Frame (250–630 Amperes)****Product Description**

LG breaker is HACR rated.

Contents**Description****Page**

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| EG-Frame (15–125 Amperes) | V4-T2-15 |
| JG-Frame (63–250 Amperes) | V4-T2-29 |
| LG-Frame (250–630 Amperes) | |
| Catalog Number Selection | V4-T2-48 |
| Product Selection | V4-T2-49 |
| Accessories | V4-T2-60 |
| Technical Data and Specifications | V4-T2-61 |
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| RG-Frame (800–2500 Amperes) | V4-T2-74 |
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| Motor Protector Circuit Breakers (MPCB). | V4-T2-89 |
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| Selective Coordination | V4-T2-101 |
| Special Features and Accessories. | V4-T2-104 |
| Motor Operators | V4-T2-112 |
| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | V4-T2-115 |

2.2

Molded Case Circuit Breakers

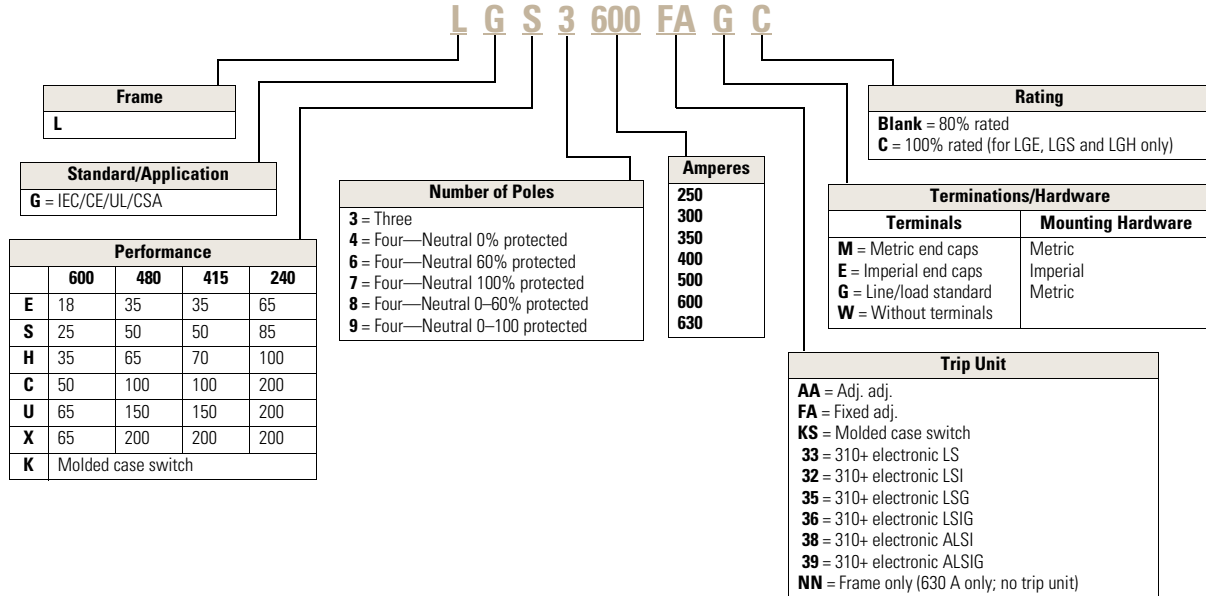
Series G

Catalog Number Selection

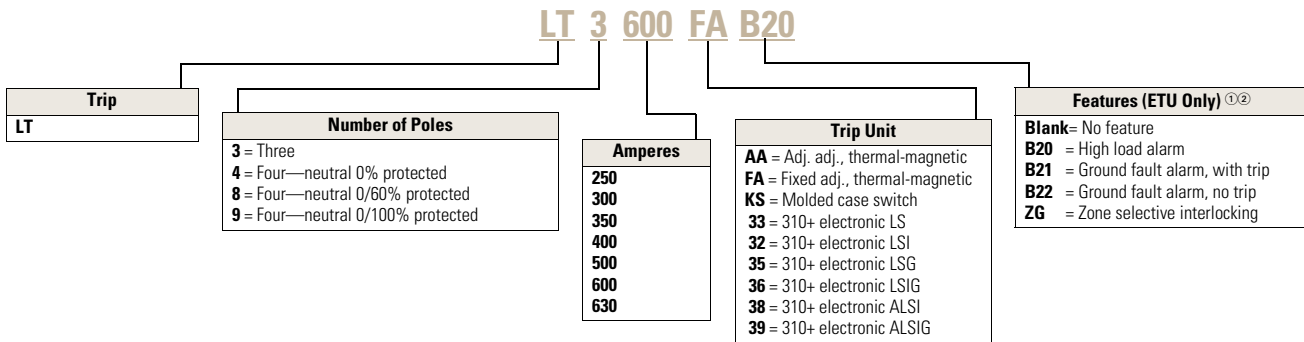
This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

2

Series G—LG-Frame (250–630 Amperes)



Trip Unit



Notes

- ① Bxx features cannot be combined with other Bxx features.
- ② B21 and B22 available with LSG and LSIG trip units.

Product Selection

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)

LG-Frame


LG-Frame—630 Amperes (600 Amperes UL, CSA)
 IC Rating: 35 kAIC at 415 and 480 Vac ^①

| Ampere Rating | Three-Pole ^② | | Four-Pole (0%) ^③ | |
|------------------|--|---|--|---|
| | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number |
| 250 | LGE3250FAG | LGE3250AAG | LGE4250FAG | LGE4250AAG |
| 300 | LGE3300FAG | — | LGE4300FAG | — |
| 320 | — | LGE3320AAG | — | LGE4320AAG |
| 350 | LGE3350FAG | — | LGE4350FAG | — |
| 400 | LGE3400FAG | LGE3400AAG | LGE4400FAG | LGE4400AAG |
| 500 | LGE3500FAG | LGE3500AAG | LGE4500FAG | LGE4500AAG |
| 600 | LGE3600FAG | — | LGE4600FAG | — |
| 630 ^④ | — | LGE3630AAG | — | LGE4630AAG |

LG-Frame


LG-Frame—630 Amperes (600 Amperes UL, CSA)
 IC Rating: 50 kAIC at 415 and 480 Vac ^①

| Ampere Rating | Three-Pole ^② | | Four-Pole (0%) ^③ | |
|------------------|--|---|--|---|
| | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number |
| 250 | LGS3250FAG | LGS3250AAG | LGS4250FAG | LGS4250AAG |
| 300 | LGS3300FAG | — | LGS4300FAG | — |
| 320 | — | LGS3320AAG | — | LGS4320AAG |
| 350 | LGS3350FAG | — | LGS4350FAG | — |
| 400 | LGS3400FAG | LGS3400AAG | LGS4400FAG | LGS4400AAG |
| 500 | LGS3500FAG | LGS3500AAG | LGS4500FAG | LGS4500AAG |
| 600 | LGS3600FAG | — | LGS4600FAG | — |
| 630 ^④ | — | LGS3630AAG | — | LGS4630AAG |

LG-Frame


LG-Frame—630 Amperes (600 Amperes UL, CSA)
 IC Rating: 70 kAIC at 415, 65 kAIC at 480 Vac ^①

| Ampere Rating | Three-Pole ^② | | Four-Pole (0%) ^③ | |
|------------------|--|---|--|---|
| | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number | Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number |
| 250 | LGH3250FAG | LGH3250AAG | LGH4250FAG | LGH4250AAG |
| 300 | LGH3300FAG | — | LGH4300FAG | — |
| 320 | — | LGH3320AAG | — | LGH4320AAG |
| 350 | LGH3350FAG | — | LGH4350FAG | — |
| 400 | LGH3400FAG | LGH3400AAG | LGH4400FAG | LGH4400AAG |
| 500 | LGH3500FAG | LGH3500AAG | LGH4500FAG | LGH4500AAG |
| 600 | LGH3600FAG | — | LGH4600FAG | — |
| 630 ^④ | — | LGH3630AAG | — | LGH4630AAG |

Notes

- ① Replace suffix "G" with "W" for no line and load terminals.
 ② For two-pole applications, use two outer poles.
 ③ Neutral protection is indicated by the fourth character: 4 = 0%, 7 = 100%, 8 = adjustable 0–60% and 9 = 0–100%. Neutral is on LH side.
 ④ 320/630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA rating for the LG.
 ⑤ Adjustable thermal units are typically used in IEC markets and are not UL or CSA listed.

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)

2

LG-Frame**LG-Frame—630 Amperes (600 Amperes UL, CSA), Current Limiting Per UL 489**
IC Rating: 100 kAIC at 415 and 480 Vac ^①

| Ampere Rating | Three-Pole ^② Fixed Thermal, Adjustable Magnetic | | Four-Pole (0%) ^③ Fixed Thermal, Adjustable Magnetic | |
|------------------|---|---|---|---|
| | Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number | Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number |
| 250 | LGC3250FAG | LGC3250AAG | LGC4250FAG | LGC4250AAG |
| 300 | LGC3300FAG | — | LGC4300FAG | — |
| 320 | — | LGC3320AAG | — | LGC4320AAG |
| 350 | LGC3350FAG | — | LGC4350FAG | — |
| 400 | LGC3400FAG | LGC3400AAG | LGC4400FAG | LGC4400AAG |
| 500 | LGC3500FAG | LGC3500AAG | LGC4500FAG | LGC4500AAG |
| 600 | LGC3600FAG | — | LGC4600FAG | — |
| 630 ^④ | — | LGC3630AAG | — | LGC4630AAG |

LG-Frame**LG-Frame—630 Amperes (600 Amperes UL, CSA), Current Limiting Per UL 489**
IC Rating: 150 kAIC at 415 and 480 Vac ^①

| Ampere Rating | Three-Pole ^② Fixed Thermal, Adjustable Magnetic | | Four-Pole (0%) ^③ Fixed Thermal, Adjustable Magnetic | |
|------------------|---|---|---|---|
| | Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number | Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number |
| 250 | LGU3250FAG | LGU3250AAG | LGU4250FAG | LGU4250AAG |
| 300 | LGU3300FAG | — | LGU4300FAG | — |
| 320 | — | LGU3320AAG | — | LGU4320AAG |
| 350 | LGU3350FAG | — | LGU4350FAG | — |
| 400 | LGU3400FAG | LGU3400AAG | LGU4400FAG | LGU4400AAG |
| 500 | LGU3500FAG | LGU3500AAG | LGU4500FAG | LGU4500AAG |
| 600 | LGU3600FAG | — | LGU4600FAG | — |
| 630 ^④ | — | LGU3630AAG | — | LGU4630AAG |

LG-Frame**LG-Frame—630 Amperes (600 Amperes UL, CSA), Current Limiting Per UL 489**
IC Rating: 200 kAIC at 415 and 480 Vac ^①

| Ampere Rating | Three-Pole ^② Fixed Thermal, Adjustable Magnetic | | Four-Pole (0%) ^③ Fixed Thermal, Adjustable Magnetic | |
|------------------|---|---|---|---|
| | Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number | Catalog Number | Adjustable Thermal, Adjustable Magnetic ^{④⑤} Catalog Number |
| 250 | LGX3250FAG | LGX3250AAG | LGX4250FAG | LGX4250AAG |
| 300 | LGX3300FAG | — | LGX4300FAG | — |
| 320 | — | LGX3320AAG | — | LGX4320AAG |
| 350 | LGX3350FAG | — | LGX4350FAG | — |
| 400 | LGX3400FAG | LGX3400AAG | LGX4400FAG | LGX4400AAG |
| 500 | LGX3500FAG | LGX3500AAG | LGX4500FAG | LGX4500AAG |
| 600 | LGX3600FAG | — | LGX4600FAG | — |
| 630 ^④ | — | LGX3630AAG | — | LGX4630AAG |

Notes

- ① Replace suffix "G" with "W" for no line and load terminals.
- ② For two-pole applications, use two outer poles.
- ③ Neutral protection is indicated by the fourth character: 4 = 0%, 7 = 100%, 8 = adjustable 0–60% and 9 = 0–100%. Neutral is on LH side.
- ④ 320/630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA rating for the LG.
- ⑤ Adjustable thermal units are typically used in IEC markets and are not UL or CSA listed.

Molded Case Switches ^①

| Ampere Rating | Number of Poles | Catalog Number |
|------------------|-----------------|----------------|
| 400 | 3 ^② | LGK3400KSG |
| | 4 | LGK4400KSG |
| 630 ^③ | 3 ^② | LGK3630KSG |
| | 4 | LGK4630KSG |

Frame—IC Rating at 415/480 Volts

| Maximum Amperes ^③ | Three-Pole ^② Catalog Number | Four-Pole 0% Catalog Number |
|--|---|--------------------------------|
| 35/35 | | |
| 630 ^③ | LGE3630NN | LGE4630NN |
| | LGE3630NNWC | — |
| 50/50 | | |
| 630 ^③ | LGS3630NN | LGS4630NN |
| | LGS3630NNWC | — |
| 70/53 | | |
| 630 ^③ | LGH3630NN | LGH4630NN |
| | LGH3630NNWC | — |
| 100/100 Current Limiting Per UL 489 | | |
| 630 | LGC3630NN | LGC4630NN |
| 150/150 Current Limiting Per UL 489 | | |
| 630 | LGU3630NN | LGU4630NN |
| 200/200 Current Limiting | | |
| 630 | LGX3630NN | LGX4630NN |

Thermal-Magnetic Trip Unit

| Ampere Rating | Three-Pole ^② Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^④ Catalog Number | Four-Pole (0%) ^⑤ Fixed Thermal, Adjustable Magnetic Catalog Number | Adjustable Thermal, Adjustable Magnetic ^④ Catalog Number |
|---------------|--|---|--|---|
| | 250 | LT3250FA | LT3250AA | LT4250FA |
| 300 | LT3300FA | — | LT4300FA | — |
| 320 | — | LT3320AA | — | LT4320AA |
| 350 | LT3350FA | — | LT4350FA | — |
| 400 | LT3400FA | LT3400AA | LT4400FA | LT4400AA |
| 500 | LT3500FA | LT3500AA | LT4500FA | LT4500AA |
| 600 | LT3600FA | — | LT4600FA | — |
| 630 | — | LT3630AA | — | LT4630AA |

Notes

- ^① Molded case switches will trip above 6300 amperes.
^② For two-pole applications, use two outer poles.
^③ 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA rating for the LG.
^④ Adjustable thermal, adjustable magnetic trip units are typically used in IEC markets and are not UL or CSA listed.
^⑤ Neutral protection is indicated by the third character: 4 = 0%, 7 = 100%, 8 = adjustable 0–60% and 9 = 0–100%.
^⑥ 100% rated frame.

Digitrip 310+ Electronic Trip UnitsSee 310+ adjustability specifications on **Page V4-T2-62**.

2

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|--------------------------------|-------------------|--------------------|--------------------|---------------------|---|
| Three-Pole | | | | | |
| 250 | LT325033 | LT325032 | LT325035 | LT325036 | LGFACT250 |
| 400 | LT340033 | LT340032 | LT340035 | LT340036 | LGFACT400 |
| 600 | LT360033 | LT360032 | LT360035 | LT360036 | LGFACT600 |
| 630 ^② | LT363033 | LT363032 | LT363035 | LT363036 | LGFACT600 |
| Four-Pole ^{③④} | | | | | |
| 250 | LT425033 | LT425032 | LT425035 | LT425036 | — |
| 400 | LT440033 | LT440032 | LT440035 | LT440036 | — |
| 600 | LT460033 | LT460032 | LT460035 | LT460036 | — |
| 630 ^② | LT463033 | LT463032 | LT463035 | LT463036 | — |

310+ Electronic Trip Unit Accessories

| Description | Catalog Number |
|--|----------------|
| Electronic portable test kit | MTST230V |
| Trip unit tamper protection wire seal | 5108A03H01 |
| External neutral sensor (630 A) | LGFACT630 |
| External neutral sensor (600 A) | LGFACT600 |
| External neutral sensor (400 A) | LGFACT400 |
| External neutral sensor (250 A) | LGFACT250 |
| Breaker-mount cause-of-trip indication | TRIP-LED |
| Breaker-mount ammeter module | DIGIVIEW |
| Remote-mount ammeter module | DIGIVIEWR06 |

Notes

- ① Required for four-wire systems if neutral protection is desired.
- ② 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.
- ③ Neutral protection: 4= 0%, 6 = 60%, 7 = 100%. Electronic trip unit neutral protection is not adjustable.
- ④ Four-pole LSG and LSIG trip units are only available with 0% neutral protection.

IC Rating at 415/480 V**Complete LG Breakers with Electronic Trip Unit (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware) ①**See 310+ adjustability specifications on **Page V4-T2-62**.**IC Rating: 35 kAIC at 415 and 480 Vac**

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ② Catalog Number |
|---------------------|-------------------------|--------------------------|--------------------------|---------------------------|---|
| Three-Pole ③ | | | | | |
| 250 | LGE325033G | LGE325032G | LGE325035G | LGE325036G | LGFACT250 |
| 400 | LGE340033G | LGE340032G | LGE340035G | LGE340036G | LGFACT400 |
| 600 | LGE360033G | LGE360032G | LGE360035G | LGE360036G | LGFACT600 |
| 630 ④ | LGE363033G | LGE363032G | LGE363035G | LGE363036G | LGFACT600 |
| Four-Pole ⑤ | | | | | |
| 250 | LGE425033G | LGE425032G | LGE425035G | LGE425036G | — |
| 400 | LGE440033G | LGE440032G | LGE440035G | LGE440036G | — |
| 600 | LGE460033G | LGE460032G | LGE460035G | LGE460036G | — |
| 630 ④ | LGE463033G | LGE463032G | LGE463035G | LGE463036G | — |

IC Rating: 50 kAIC at 415 and 480 Vac

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ② Catalog Number |
|---------------------|-------------------------|--------------------------|--------------------------|---------------------------|---|
| Three-Pole ③ | | | | | |
| 250 | LGS325033G | LGS325032G | LGS325035G | LGS325036G | LGFACT250 |
| 400 | LGS340033G | LGS340032G | LGS340035G | LGS340036G | LGFACT400 |
| 600 | LGS360033G | LGS360032G | LGS360035G | LGS360036G | LGFACT600 |
| 630 ④ | LGS363033G | LGS363032G | LGS363035G | LGS363036G | LGFACT600 |
| Four-Pole ⑤⑥ | | | | | |
| 250 | LGS425033G | LGS425032G | LGS425035G | LGS425036G | — |
| 400 | LGS440033G | LGS440032G | LGS440035G | LGS440036G | — |
| 600 | LGS460033G | LGS460032G | LGS460035G | LGS460036G | — |
| 630 ④ | LGS463033G | LGS463032G | LGS463035G | LGS463036G | — |

IC Rating: 70 kAIC at 415 Vac, 65 kAIC at 480 Vac

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ② Catalog Number |
|---------------------|-------------------------|--------------------------|--------------------------|---------------------------|---|
| Three-Pole ③ | | | | | |
| 250 | LGH325033G | LGH325032G | LGH325035G | LGH325036G | LGFACT250 |
| 400 | LGH340033G | LGH340032G | LGH340035G | LGH340036G | LGFACT400 |
| 600 | LGH360033G | LGH360032G | LGH360035G | LGH360036G | LGFACT600 |
| 630 ④ | LGH363033G | LGH363032G | LGH363035G | LGH363036G | LGFACT600 |
| Four-Pole ⑤⑥ | | | | | |
| 250 | LGH425033G | LGH425032G | LGH425035G | LGH425036G | — |
| 400 | LGH440033G | LGH440032G | LGH440035G | LGH440036G | — |
| 600 | LGH460033G | LGH460032G | LGH460035G | LGH460036G | — |
| 630 ④ | LGH463033G | LGH463032G | LGH463035G | LGH463036G | — |

Notes

- ① Replace suffix "G" with "W" for no line and load terminals.
- ② Required for four-wire systems if neutral protection is desired.
- ③ For two-pole applications, use two outer poles.
- ④ 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.
- ⑤ Neutral protection: 4= 0%, 6 = 60%, 7 = 100%. Electronic trip unit neutral protection is not adjustable.
- ⑥ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

IC Rating at 415/480 V**Complete LG Breakers with Electronic Trip Unit (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)**^①See 310+ adjustability specifications on **Page V4-T2-62**.**IC Rating: 100 kAIC at 415 Vac and 480 Vac, Current Limiting Per UL 489**

| Ampere Rating | LS | LSI | LSG | LSIG | Neutral CT for LSG and LSIG ^② |
|--------------------------------|----------------|----------------|----------------|----------------|--|
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| Three-Pole ^③ | | | | | |
| 250 | LGC325033G | LGC325032G | LGC325035G | LGC325036G | LGFACT250 |
| 400 | LGC340033G | LGC340032G | LGC340035G | LGC340036G | LGFACT400 |
| 600 | LGC360033G | LGC360032G | LGC360035G | LGC360036G | LGFACT600 |
| 630 ^④ | LGC363033G | LGC363032G | LGC363035G | LGC363036G | LGFACT600 |
| Four-Pole ^{⑤⑥} | | | | | |
| 250 | LGC425033G | LGC425032G | LGC425035G | LGC425036G | — |
| 400 | LGC440033G | LGC440032G | LGC440035G | LGC440036G | — |
| 600 | LGC460033G | LGC460032G | LGC460035G | LGC460036G | — |
| 630 ^④ | LGC463033G | LGC463032G | LGC463035G | LGC463036G | — |

IC Rating: 150 kAIC at 415 Vac and 480 Vac, Current Limiting Per UL 489

| Ampere Rating | LS | LSI | LSG | LSIG | Neutral CT for LSG and LSIG ^② |
|--------------------------------|----------------|----------------|----------------|----------------|--|
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| Three-Pole ^③ | | | | | |
| 250 | LGU325033G | LGU325032G | LGU325035G | LGU325036G | LGFACT250 |
| 400 | LGU340033G | LGU340032G | LGU340035G | LGU340036G | LGFACT400 |
| 600 | LGU360033G | LGU360032G | LGU360035G | LGU360036G | LGFACT600 |
| 630 ^④ | LGU363033G | LGU363032G | LGU363035G | LGU363036G | LGFACT600 |
| Four-Pole ^⑤ | | | | | |
| 250 | LGU425033G | LGU425032G | LGU425035G | LGU425036G | — |
| 400 | LGU440033G | LGU440032G | LGU440035G | LGU440036G | — |
| 600 | LGU460033G | LGU460032G | LGU460035G | LGU460036G | — |
| 630 ^④ | LGU463033G | LGU463032G | LGU463035G | LGU463036G | — |

IC Rating: 200 kAIC at 415 Vac and 480 Vac, Current Limiting Per UL 489

| Ampere Rating | LS | LSI | LSG | LSIG | Neutral CT for LSG and LSIG ^② |
|--------------------------------|----------------|----------------|----------------|----------------|--|
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| Three-Pole ^③ | | | | | |
| 250 | LGX325033G | LGX325032G | LGX325035G | LGX325036G | LGFACT250 |
| 400 | LGX340033G | LGX340032G | LGX340035G | LGX340036G | LGFACT400 |
| 600 | LGX360033G | LGX360032G | LGX360035G | LGX360036G | LGFACT600 |
| 630 ^④ | LGX363033G | LGX363032G | LGX363035G | LGX363036G | LGFACT600 |
| Four-Pole ^⑤ | | | | | |
| 250 | LGX425033G | LGX425032G | LGX425035G | LGX425036G | — |
| 400 | LGX440033G | LGX440032G | LGX440035G | LGX440036G | — |
| 600 | LGX460033G | LGX460032G | LGX460035G | LGX460036G | — |
| 630 ^④ | LGX463033G | LGX463032G | LGX463035G | LGX463036G | — |

Notes

- ① Replace suffix "G" with "W" for no line and load terminals.
- ② Required for four-wire systems if neutral protection is desired.
- ③ For two-pole applications, use two outer poles.
- ④ 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.
- ⑤ Neutral protection: 4= 0%, 6 = 60%, 7 = 100%. Electronic trip unit neutral protection is not adjustable.
- ⑥ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

LG 100% Rated Circuit Breaker—Thermal-Magnetic Trip Unit**Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)****LG-Frame**

LG-Frame—630 Amperes (600 Amperes UL, CSA) IC Rating: 35 kAIC at 415 and 480 Vac ^①

| Ampere Rating | Three-Pole ^② Fixed Thermal, Adjustable Magnetic Catalog Number |
|------------------|--|
| 250 | LGE3250FAGC |
| 300 | LGE3300FAGC |
| 320 | — |
| 350 | LGE3350FAGC |
| 400 | LGE3400FAGC |
| 500 | LGE3500FAGC |
| 600 | LGE3600FAGC |
| 630 ^④ | — |

LG-Frame—630 Amperes (600 Amperes UL, CSA) IC Rating: 50 kAIC at 415 and 480 Vac ^①

| Ampere Rating | Three-Pole ^② Fixed Thermal, Adjustable Magnetic Catalog Number |
|------------------|--|
| 250 | LGS3250FAGC |
| 300 | LGS3300FAGC |
| 320 | — |
| 350 | LGS3350FAGC |
| 400 | LGS3400FAGC |
| 500 | LGS3500FAGC |
| 600 | LGS3600FAGC |
| 630 ^④ | — |

LG-Frame—630 Amperes (600 Amperes UL, CSA) IC Rating: 70 kAIC at 415, 65 kAIC at 480 Vac ^①

| Ampere Rating | Three-Pole ^② Fixed Thermal, Adjustable Magnetic Catalog Number |
|------------------|--|
| 250 | LGH3250FAGC |
| 300 | LGH3300FAGC |
| 320 | — |
| 350 | LGH3350FAGC |
| 400 | LGH3400FAGC |
| 500 | LGH3500FAGC |
| 600 | LGH3600FAGC |
| 630 ^④ | — |

Notes

- ^① Replace suffix "G" with "W" for no line and load terminals.
^② For two-pole applications, use two outer poles.

LG 100% Rated Electronic Breaker Per UL 489See 310+ adjustability specifications on **Page V4-T2-62**.

2

IEC/UL/CSA 35 kAIC at 415 and 480 Vac

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|------------------|----------------------|-----------------------|-----------------------|------------------------|---|
| 250 | LGE325033GC | LGE325032GC | LGE325035GC | LGE325036GC | LGFACT250 |
| 400 | LGE340033GC | LGE340032GC | LGE340035GC | LGE340036GC | LGFACT400 |
| 600 | LGE360033GC | LGE360032GC | LGE360035GC | LGE360036GC | LGFACT600 |
| 630 ^② | LGE363033GC | LGE363032GC | LGE363035GC | LGE363036GC | LGFACT600 |

IEC/UL/CSA 50 kAIC at 415 and 480 Vac

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|------------------|----------------------|-----------------------|-----------------------|------------------------|---|
| 250 | LGS325033GC | LGS325032GC | LGS325035GC | LGS325036GC | LGFACT250 |
| 400 | LGS340033GC | LGS340032GC | LGS340035GC | LGS340036GC | LGFACT400 |
| 600 | LGS360033GC | LGS360032GC | LGS360035GC | LGS360036GC | LGFACT600 |
| 630 ^② | LGS363033GC | LGS363032GC | LGS363035GC | LGS363036GC | LGFACT600 |

IEC/UL/CSA 70 kAIC at 415 and 480 Vac

| Ampere Rating | LS Catalog Number | LSI Catalog Number | LSG Catalog Number | LSIG Catalog Number | Neutral CT for LSG and LSIG ^① Catalog Number |
|------------------|----------------------|-----------------------|-----------------------|------------------------|---|
| 250 | LGH325033GC | LGH325032GC | LGH325035GC | LGH325036GC | LGFACT250 |
| 400 | LGH340033GC | LGH340032GC | LGH340035GC | LGH340036GC | LGFACT400 |
| 600 | LGH360033GC | LGH360032GC | LGH360035GC | LGH360036GC | LGFACT600 |
| 630 ^② | LGH363033GC | LGH363032GC | LGH363035GC | LGH363036GC | LGFACT600 |

Notes^① Required for four-wire systems if neutral protection is required.^② 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.

LG Electronic Breaker with Arcflash Reduction Maintenance System

See 310+ adjustability specifications on **Page V4-T2-62**.

Series G LG circuit breakers are available with the Arcflash Reduction Maintenance System™ integrated into the electronic trip units helping to improve safety by providing a

simple and reliable method to reduce fault clearing time. The Arcflash Reduction Maintenance System unit utilizes a separate analog trip circuit that provides faster

interruption times than the standard (digital) “instantaneous” protection. Work locations downstream of a circuit breaker with an Arcflash Reduction

Maintenance System unit can have a significantly lower incident energy level, reducing arc flash potential to the system.

LG with Arcflash Reduction Maintenance System**LG Electronic Breaker with Arcflash Reduction Maintenance System**

| Ampere Rating | ALSI Catalog Number | ALSIG Catalog Number | Neutral CT for LSG and LSIG ① Catalog Number |
|--|---------------------|----------------------|--|
| IEC/UL/CSA 35 kAIC at 415 and 480 Vac | | | |
| 250 | LGE325038G | LGE365039G | LGFACT250 |
| 400 | LGE340038G | LGE340039G | LGFACT400 |
| 600 | LGE360038G | LGE360039G | LGFACT600 |
| 630 | LGE363038G | LGE363039G | LGFACT600 |
| IEC/UL/CSA 50 kAIC at 415 and 480 Vac | | | |
| 250 | LGS325038G | LGS365039G | LGFACT250 |
| 400 | LGS340038G | LGS340039G | LGFACT400 |
| 600 | LGS360038G | LGS360039G | LGFACT600 |
| 630 | LGS363038G | LGS363039G | LGFACT600 |
| IEC/UL/CSA 70 kAIC at 415 and 480 Vac | | | |
| 250 | LGH325038G | LGH365039G | LGFACT250 |
| 400 | LGH340038G | LGH340039G | LGFACT400 |
| 600 | LGH360038G | LGH360039G | LGFACT600 |
| 630 | LGH363038G | LGH363039G | LGFACT600 |
| IEC/UL/CSA 100 kAIC at 415 and 480 Vac, Current Limiting Per UL 489 | | | |
| 250 | LGC325038G | LGC365039G | LGFACT250 |
| 400 | LGC340038G | LGC340039G | LGFACT400 |
| 600 | LGC360038G | LGC360039G | LGFACT600 |
| 630 | LGC363038G | LGC363039G | LGFACT600 |
| IEC/UL/CSA 150 kAIC at 415 and 480 Vac, Current Limiting Per UL 489 | | | |
| 250 | LGU325038G | LGU365039G | LGFACT250 |
| 400 | LGU340038G | LGU340039G | LGFACT400 |
| 600 | LGU360038G | LGU360039G | LGFACT600 |
| 630 | LGU363038G | LGU363039G | LGFACT600 |
| IEC/UL/CSA 200 kAIC at 415 and 480 Vac, Current Limiting Per UL 489 | | | |
| 250 | LGX325038G | LGX365039G | LGFACT250 |
| 400 | LGX340038G | LGX340039G | LGFACT400 |
| 600 | LGX360038G | LGX360039G | LGFACT600 |
| 630 | LGX363038G | LGX363039G | LGFACT600 |

LG Electronic Trip Units with Arcflash Reduction Maintenance System

| Ampere Rating | ALSI Catalog Number | ALSIG Catalog Number | Neutral CT for LSG and LSIG ① Catalog Number |
|---------------|---------------------|----------------------|--|
| 250 | LT325038 | LT325039 | LGFACT250 |
| 400 | LT340038 | LT340039 | LGFACT400 |
| 600 | LT360038 | LT360039 | LGFACT600 |
| 630 | LT363038 | LT363039 | LGFACT600 |

Note

① Required for four-wire systems if neutral protection is required.

Accessories Selection Guide and Ordering Information

2

Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire Range/ Number of Conductors | Metric Wire Range (mm ²) | Number of Terminals Included | Catalog Number |
|-------------------------|------------------------|-----------|---|--------------------------------------|------------------------------|------------------------|
| 400 | Aluminum | Cu/Al | 500–750 (1) | 240–380 (1) | 3 | 3TA631LK ^① |
| 400 | Aluminum | Cu/Al | 500–750 (1) | 240–380 (1) | 4 | 4TA631LK ^① |
| 400 | Copper | Cu | 500–750 (1) | 240–380 (1) | 3 | 3T631LK ^① |
| 400 | Copper | Cu | 500–750 (1) | 240–380 (1) | 4 | 4T631LK ^① |
| 630 | Aluminum | Cu/Al | 2–500 (2) | 35–240 (2) | 1 | TA632L |
| 630 | Aluminum | Cu/Al | 2–500 (2) | 35–240 (2) | 3 | 3TA632LK ^{①②} |
| 630 | Aluminum | Cu/Al | 2–500 (2) | 35–240 (2) | 4 | 4TA632LK ^{①②} |
| 630 | Copper | Cu | 2–500 (2) | 35–240 (2) | 3 | 3T632LK ^① |
| 630 | Copper | Cu | 2–500 (2) | 35–240 (2) | 4 | 4T632LK ^① |
| 400 | Aluminum | Cu/Al | 3–500 (1) | 35–240 (1) | 1 | TA350LK ^② |
| 400 | Copper | Cu | 3–500 (1) | 35–240 (1) | 1 | T350LK |

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or molded case switch. (Included with breaker.) If required separately, order 66A4560G03.

Terminal Covers

| Description | Catalog Number |
|--|----------------|
| Three-pole terminal cover ^③ | LTS3K |
| Four-pole terminal cover ^③ | LTS4K |

End Cap Kits (MIO Metric Nuts)

| Number of Poles | Catalog Number |
|-----------------|----------------|
| 3 | L3RTWK |
| 4 | L4RTWK |

Control Wire Terminal Kit

| Description | Terminal Body Type | Catalog Number |
|----------------|--------------------|----------------|
| Three-pole kit | Aluminum | 3TA632LKW |
| Four-pole kit | Aluminum | 4TA632LKW |
| Three-pole kit | Copper | 3T632LKW |
| Four-pole kit | Copper | 4T632LKW |

Terminal Spreaders

| Number of Poles | Catalog Number |
|-----------------|----------------|
| 3 | LGTEW3 |
| 4 | LGTEW4 |

Terminal Extensions

| Number of Poles | Catalog Number |
|-----------------|----------------|
| 3 | LGTES3 |
| 4 | LGTES4 |

Handle Extension

| Description | Catalog Number |
|------------------|----------------|
| Handle extension | HEXLG |

Interphase Barrier

| Package of 2 | Catalog Number |
|--------------------|----------------|
| Interphase barrier | IPB3 |

Rear Fed Terminals

| Maximum Amperes | Wire Size Range AWG Cu | Catalog Number |
|-----------------|------------------------|----------------|
| 400 | 2–500 kcmil | TA350LKRF |
| 400 | 2–500 kcmil | 3TA350LKRF |
| 630 | 2–500 (2) kcmil | TA632LKRF |
| 630 | 2–500 (2) kcmil | 3TA632LKRF |

Rear fed terminals allow the cable to connect to the breaker from the back instead of the top. Terminal shields or interphase barriers are included with each rear fed terminal kit (depending on frame size). When catalog number starts with a 3, it indicates a kit with three terminals in each kit. Catalog number beginning with a TA indicates one terminal.

Multiwire Connectors

Field-installed multiwire connectors for the load side (OFF) end terminals are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include terminal shield, mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

LG-Frame Multiwire Connectors Ordering Information (Package of 3)

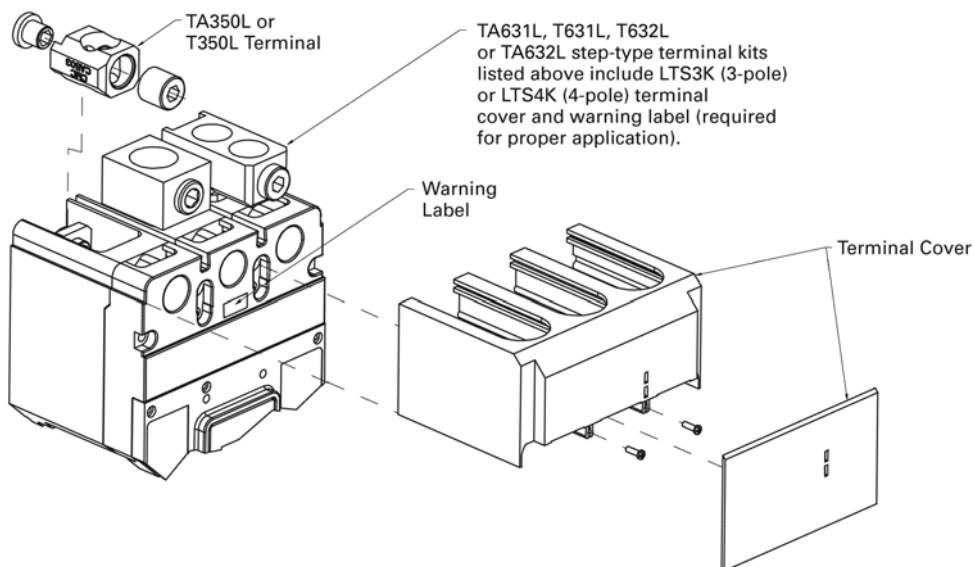
| Maximum Amperes | Wires per Terminal | Wire Size Range AWG Cu | Kit Catalog Number |
|-----------------|--------------------|------------------------|--------------------|
| 600 | 6 | 14–1/0 | 3TA600L6K |

Notes

- ① Includes LTS3K (three-pole) or LTS4K (four-pole) terminal covers.
- ② Standard terminal included with complete breaker.
- ③ Included in TA631L, T631L, TA632L kits listed above.

Terminals and Terminal Cover for the LG Breaker—Includes LTS3K (Three-Pole) or LTS4K (Four-Pole) Terminal Covers

Note: Extended terminal covers add 2.13 inches (54.0 mm) to breaker length.



Accessories

2

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or molded case switch. (Included with breaker.) If required separately, order 66A4560G03.

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

LG-Frame Accessories

| Description | Reference Page | Three-Pole | | | Four-Pole | | | Neu. |
|--|----------------|------------|--------|-------|-----------|--------|-------|------|
| | | Left | Center | Right | Left | Center | Right | |
| Internal Accessories (Only One Internal Accessory Per Pole) | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-109 | | | ■ | | | ■ | |
| Auxiliary switch (1A, 1B) | V4-T2-109 | | | ■ | | | ■ | |
| Auxiliary switch (2A, 2B) | V4-T2-109 | | | ■ | | | ■ | |
| Auxiliary switch and alarm switch combination | V4-T2-109 | | | ■ | | | ■ | |
| Shunt trip—standard | V4-T2-109 | ■ | | | ■ | | | |
| Undervoltage release mechanism | V4-T2-110 | ■ | | | ■ | | | |
| External Accessories | | | | | | | | |
| End cap kit | V4-T2-58 | ● | | | ● | | | |
| Handle extension | V4-T2-58 | ● | | | ● | | | |
| Terminal cover | V4-T2-58 | ● | | | ● | | | |
| Rear fed terminals | V4-T2-58 | ● | ● | ● | ● | ● | ● | ● |
| Multewire connectors | V4-T2-58 | ● | ● | ● | ● | ● | ● | ● |
| Padlockable handle block | V4-T2-107 | | ■ | | | ■ | | |
| Padlockable handle lock hasp | V4-T2-107 | □ | | □ | □ | | □ | |
| Key interlock kit | V4-T2-107 | □ | | □ | □ | | □ | |
| Sliding bar interlock—requires two breakers | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Electrical operator | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Rear connecting studs | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-419 | ● | ● | ● | ● | ● | ● | ● |
| Earth leakage/ground fault protector | V4-T2-92 | ● | ● | ● | ● | ● | ● | ● |
| Drawout cassette | V4-T2-115 | ● | ● | ● | ● | ● | ● | ● |
| Digitrip 310+ test kit | V4-T2-52 | ● | ● | ● | ● | ● | ● | ● |
| Ammeter/cause of trip display | V4-T2-106 | ● | ● | ● | ● | ● | ● | ● |
| Cause of trip LED module | V4-T2-106 | ● | ● | ● | ● | ● | ● | ● |
| Modifications (Refer to Eaton) | | | | | | | | |
| Moisture fungus treatment | V4-T2-105 | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application, UL 489 Supplement SA and SB | ① | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Note

① Contact Eaton.

Technical Data and Specifications

Interrupting Capacity Ratings

UL 489/IEC 60947-2 Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA rms Symmetrical Amperes) (kA) | | | | | | | | Volts DC ^① | |
|----------------------|-----------------|---|-----|---------|-----|-----|-----|-----|-----|-----------------------|-----|
| | | Volts AC (50/60 Hz) | | | | | | | | 250 ^{②③} | |
| | | 240–240 | | 380–415 | | 480 | 600 | 690 | | Icu | Ics |
| LGE630 | 3, 4 | Icu | Ics | Icu | Ics | Icu | Ics | Icu | Ics | Icu | Ics |
| LGE630 | 3, 4 | 65 | 65 | 35 | 35 | 35 | 18 | 12 | 6 | 22 | 22 |
| LGS630 | 3, 4 | 85 | 85 | 50 | 50 | 50 | 25 | 20 | 10 | 22 | 22 |
| LGH630 | 3, 4 | 100 | 100 | 70 | 70 | 65 | 35 | 25 | 13 | 42 | 42 |
| LGC630 ^④ | 3, 4 | 200 | 200 | 100 | 100 | 100 | 50 | 30 | 15 | 42 | 42 |
| LGU630 ^④ | 3, 4 | 200 | 200 | 150 | 150 | 150 | 65 | 35 | 18 | 50 | 50 |
| LGX630 ^④ | 3, 4 | 200 ^⑤ | 200 | 200 | 200 | 200 | 65 | 35 | 18 | 50 | 50 |

UL 489 Current Limiting Data

| Frame | Circuit | I _p (kA) | I ² T (10 ⁶ A ² S) |
|-------|--------------|---------------------|---|
| LGC | 240 V/200 kA | 56.4 | 5.873 |
| LGC | 480 V/100 kA | 56.4 | 5.873 |
| LGC | 600 V/50 kA | 56.4 | 6.690 |
| LGU | 240 V/200 kA | 77.7 | 7.320 |
| LGU | 480 V/150 kA | 77.7 | 7.320 |
| LGU | 600 V/65 kA | 50.6 | 6.690 |
| LGX | 240 V/200 kA | 77.7 | 7.320 |
| LGX | 480 V/200 kA | 77.7 | 7.320 |
| LGX | 600 V/65 kA | 50.6 | 6.690 |

LG 310+ Specifications

| Description | Specification |
|---|---------------------------------|
| Trip Unit Type | Digitrip RMS 310+ |
| Breaker Type | |
| Frame designation | LG |
| Frames available | 250 A, 400 A, 600 A |
| Continuous current range (A) | 100–600 A |
| Ground fault pickup (A) | 50–600 A |
| Interrupting capacities at 480 Vac (kAIC) | 35, 65, 100, 150, 200 |
| 100% rated | Yes |
| Protection | |
| Ordering options | LS, LSI, LSG, LSIG, ALSI, ALSIG |
| Arcflash reduction maintenance system (or maintenance mode) | Yes |
| Interchangeable trip unit | Yes |
| High load alarm (suffix B20) ^⑤ | Yes |
| Ground fault alarm with trip (suffix B21) ^⑤ | Yes |
| Ground fault alarm, no trip (suffix B22) ^⑤ | Yes |
| Zone selective interlocking (suffix ZG) | LSI, LSIG, ALSI, ALSIG |
| Cause of trip indication | Yes |
| Thru-cover accessories | Yes |

Notes

- ① DC rating apply to substantially non-inductive circuits.
- ② Two-pole circuit breaker, or two poles of three-pole circuits.
- ③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at –kA.
- ④ Current limiting per UL 489.
- ⑤ B2x suffixes cannot be combined with B2x suffixes.

LG 310+ Adjustability Specifications

2

| 310+ Settings | | LG Frame | | |
|---|--|--------------------------------------|--------------------------------------|--------------------------------------|
| | | 250 A | 400 A | 600 A |
| I_r = continuous current or long delay pickup (amperes) (All 310+) | I_r | | | |
| | A | 100 | 160 | 250 |
| | B | 125 | 200 | 300 |
| | C | 150 | 225 | 315 |
| | D | 160 | 250 | 350 |
| | E | 175 | 300 | 400 |
| | F | 200 | 315 | 450 |
| | G | 225 | 350 | 500 |
| | H (= I_n) | 250 | 400 | 600 |
| t_r = long delay time (seconds) (All 310+) | Position 1 | 2 | 2 | 2 |
| | Position 2 | 4 | 4 | 4 |
| | Position 3 | 7 | 7 | 7 |
| | Position 4 | 10 | 10 | 10 |
| | Position 5 | 12 | 12 | 12 |
| | Position 6 | 15 | 15 | 15 |
| | Position 7 | 20 | 20 | 20 |
| | Position 8 | 24 | 24 | 24 |
| | I_{sd} (x I_r) = short delay pickup (All 310+) | Position 1 | 2x | 2x |
| Position 2 | | 3x | 3x | 3x |
| Position 3 | | 4x | 4x | 4x |
| Position 4 | | 5x | 5x | 5x |
| Position 5 | | 6x | 6x | 6x |
| Position 6 | | 7x | 7x | 7x |
| Position 7 | | 8x | 8x | 8x |
| Position 8 | | 10x | 10x | 10x |
| Position 9 | | 12x | 12x | 12x |
| t_{sd} = short delay time I^2t (milliseconds) (LS, LSG) | Fixed | 67 at10x | 67 at10x | 67 at10x |
| t_{sd} = short delay time flat (milliseconds) ① (LSI, LSIG, ALSI, ALSIG) | Position 1 | Inst | Inst | Inst |
| | Position 2 | 120 | 120 | 120 |
| | Position 3 | 300 | 300 | 300 |
| I_g = ground fault pickup (amperes) (LSG, LSIG, ALSIG) | Position 1 | 50 | 80 | 120 |
| | Position 2 | 75 | 120 | 180 |
| | Position 3 | 100 | 160 | 240 |
| | Position 4 | 150 | 240 | 360 |
| | Position 5 | 200 | 320 | 480 |
| | Position 6 | 250 | 400 | 600 |
| t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG) | Position 1 | Inst | Inst | Inst |
| | Position 2 | 120 | 120 | 120 |
| | Position 3 | 300 | 300 | 300 |
| Independently Adjustable Instantaneous (I_i) setting (ALSI, ALSIG) | Yes | 2.5x, 4x, 6x, 7x, 8x, 10x, 12x | 2.5x, 4x, 6x, 7x, 8x, 10x, 12x | 2.5x, 4x, 6x, 7x, 8x, 10x, 12x |
| Maintenance Mode (remote) pickup ($2.5 \times I_n$) ② (ALSI, ALSIG) | Fixed | 2.5x | | |

Notes

① 50 ms for ALSI and ALSIG trip units.

② Maintenance Mode is enabled remotely using a 24 Vdc circuit.

Dimensions and Weights

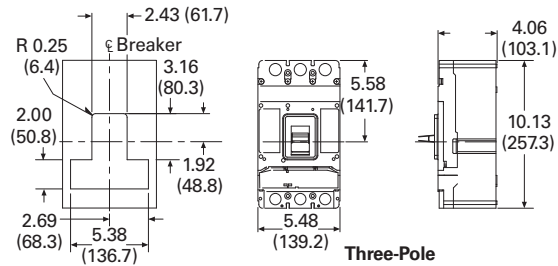
Approximate Dimensions in Inches (mm)

LG-Frame

| Number of Poles | Width | Height | Depth |
|-----------------|--------------|---------------|--------------|
| 2, 3 | 5.48 (139.2) | 10.13 (257.3) | 4.09 (103.9) |
| 4 | 7.22 (183.4) | 10.13 (257.3) | 4.09 (103.9) |

LG-Frame

Note: TA631L, T631L, T632L, TA632L terminals add 1.19 inches (30.2 mm) to line or load side of LG. LTS3K or LTS4K terminal covers add 2.13 inches (54.1 mm) to line or load side of LG.



Approximate Shipping Weight in Lbs (kg)

LG-Frame

| Breaker Type | Two- and Three-Pole | Four-Pole |
|------------------------------|---------------------|-----------|
| LGE, LGS, LGH, LGC, LGU, LGX | 16 (7.3) | 20 (9.1) |

Notes

- ① DC rating apply to substantially non-inductive circuits.
- ② Two-pole circuit breaker, or two poles of three-pole circuits.
- ③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at -kA.
- ④ Three-poles in series. 750 Vdc ratings available (four-pole in series, not UL listed). Contact Eaton.
- ⑤ IEC rating is 300 kA at 240 Vac.
- ⑥ Current limiting per UL 489.

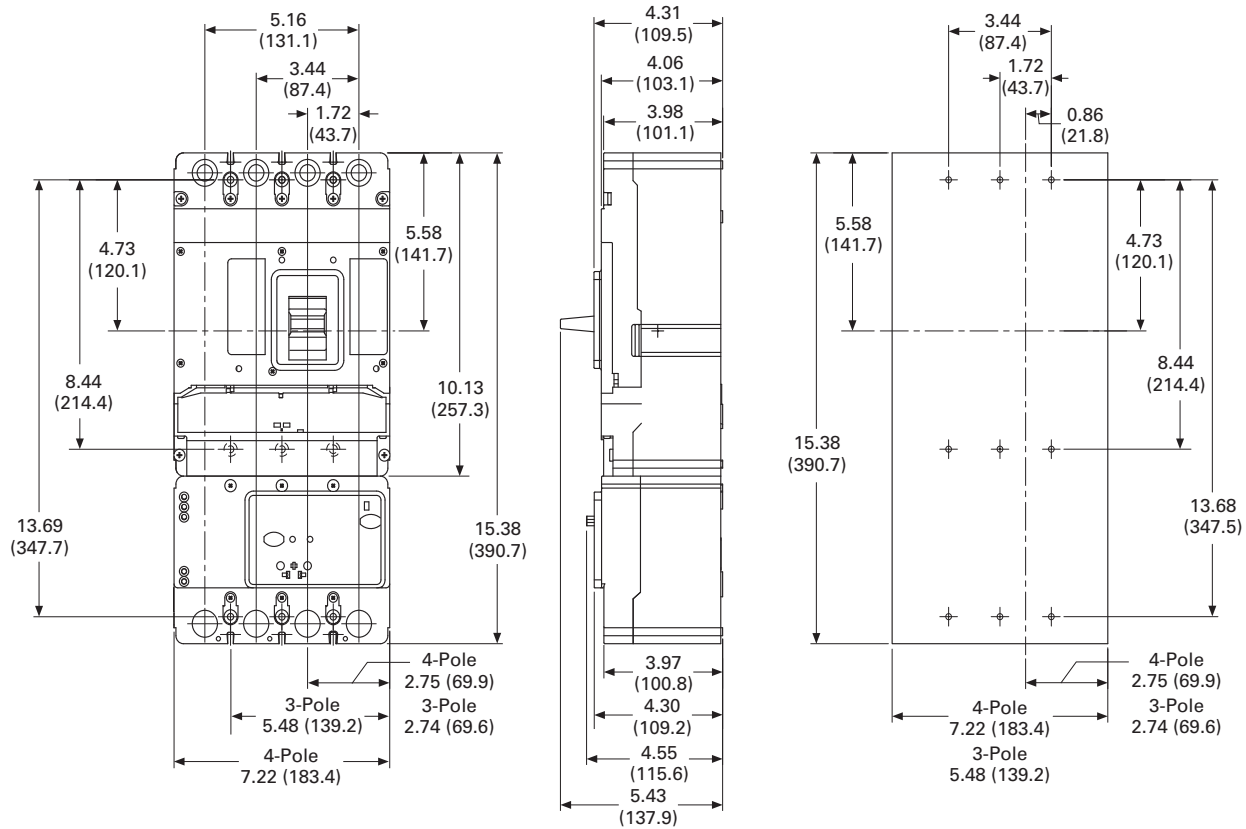
2.2

Molded Case Circuit Breakers

Series G

LG-Frame With Earth Leakage Module

2



NG-Frame (1200 Ampere)**Contents**

| Description | Page |
|--|------------------|
| EG-Frame (15–125 Amperes) | V4-T2-15 |
| JG-Frame (63–250 Amperes) | V4-T2-29 |
| LG-Frame (250–630 Amperes) | V4-T2-47 |
| NG-Frame (320–1200 Amperes) | |
| Catalog Number Selection | V4-T2-66 |
| Product Selection Guide and Ordering Information | V4-T2-67 |
| Accessories | V4-T2-70 |
| Technical Data and Specifications | V4-T2-71 |
| Dimensions and Weights | V4-T2-73 |
| RG-Frame (800–2500 Amperes) | V4-T2-74 |
| Motor Circuit Protectors (MCP) | V4-T2-85 |
| Motor Protector Circuit Breakers (MPCB) | V4-T2-89 |
| 30 mA Ground Fault (Earth Leakage) Module | V4-T2-92 |
| Current Limiting Circuit Breaker Module | V4-T2-96 |
| High Instantaneous Circuit Breaker for Selective Coordination | V4-T2-101 |
| Special Features and Accessories | V4-T2-104 |
| Motor Operators | V4-T2-112 |
| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | V4-T2-115 |

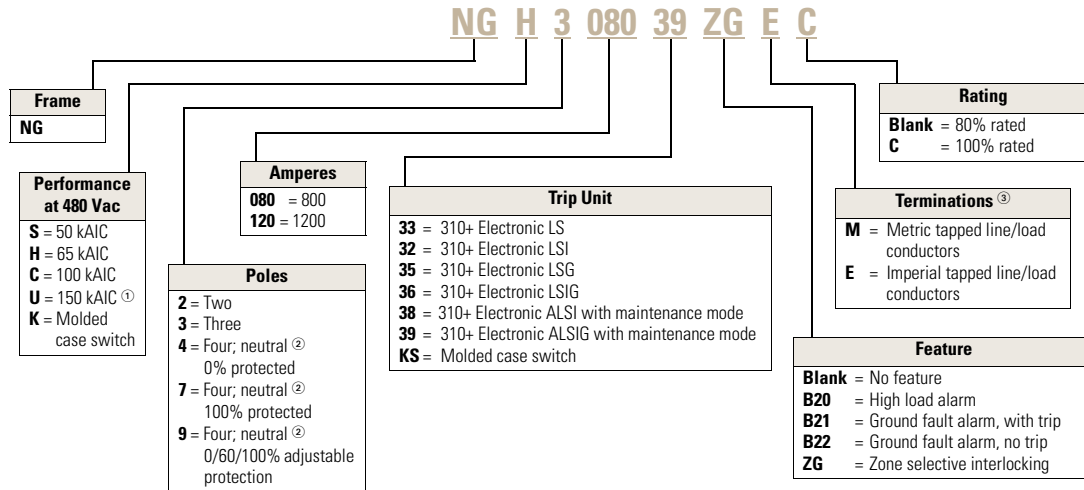
NG-Frame (320–1200 Amperes)**Product Description**

- All Eaton NG-Frame circuit breakers are suitable for reverse feed use
- All NG-Frame circuit breakers are HACR rated

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

NG Circuit Breaker with 310+ Electronic Trip Unit



Notes

- ① 800 A only.
 - ② Neutral inn left pole on GN; right pole on NG.
 - ③ Breakers do not ship with lugs.
- Trip units are factory installable only.

Product Selection Guide and Ordering Information

Type NGS Standard Interrupting Capacity— U_e Max. 690 Vac, 50 kA I_{cu} at 480 Vac or 415 Vac

See 310+ adjustability specifications on [Page V4-T2-72](#).

| Maximum Continuous Ampere Rating at 40 °C ^{①②} | Number of Poles | Circuit Breaker Frame Including Digitrip Electronic Trip Unit with Imperial Tapped Conductors | | | | | | Neutral CT for LSG and LSIG ^③ |
|---|-----------------|---|------------|-------------------------|-------------------------|------------|-------------------------|--|
| | | LS | LSI | LSG | LSIG | ALSI | ALSIG | |
| 800 | 2 | NGS208033E | NGS208032E | NGS208035E | NGS208036E | — | — | — |
| | 3 | NGS308033E | NGS308032E | NGS308035E | NGS308036E | NGS308038E | NGS308039E | NGFCT120 |
| | 4 | NGS408033E | NGS408032E | NGS408035E ^④ | NGS408036E ^④ | NGS408038E | NGS408039E ^④ | — |
| | 4 ^⑤ | NGS708033E | NGS708032E | — | — | NGS708038E | — | — |
| | 4 ^⑥ | NGS908033E | NGS908032E | — | — | NGS908038E | — | — |
| 1200 ^⑥ | 2 | NGS212033E | NGS212032E | NGS212035E | NGS212036E | — | — | — |
| | 3 | NGS312033E | NGS312032E | NGS312035E | NGS312036E | NGS312038E | NGS312039E | NGFCT120 |
| | 4 | NGS412033E | NGS412032E | NGS412035E ^④ | NGS412036E ^④ | — | NGS412039E ^④ | — |
| | 4 ^⑤ | NGS712033E | NGS712032E | — | — | NGS712038E | — | — |
| | 4 ^⑥ | NGS912033E | NGS912032E | — | — | NGS912038E | — | — |

Molded Case Switches ^{⑦⑧⑨⑩}

U_e Maximum 690 Vac

| Ampere Rating | Three-Pole | Catalog Number | Four-Pole | Catalog Number |
|---------------|---|----------------|---|----------------|
| 800 | MCS with Imperial line and load terminals | NGK3080KSE | MCS with Imperial line and load terminals | NGK4080KSE |
| 1200 | MCS with Imperial line and load terminals | NGK3120KSE | MCS with Imperial line and load terminals | NGK4120KSE |
| 1250 | MCS with Imperial line and load terminals | NGK3125KSE | MCS with Imperial line and load terminals | NGK43125KSE |

Notes

- ① For AC use only.
- ② NG MCCBs are suitable for 40 °C or 50 °C applications. Order suffix V3 to eliminate standard 40 °C labeling.
- ③ Required for four-wire systems if neutral protection is desired. Sold separately.
- ④ Neutral 0% protected. NG, neutral in right pole; GN, neutral in left pole.
- ⑤ Neutral 100% protected (denoted by 7 in digit four); no neutral protection available with LSG or LSIG trip units.
- ⑥ Neutral 0%/60%/100% adjustable protection (denoted by 9 in digit four).
- ⑦ Non-UL listed NG 1250 with 1250 ampere trip unit is also available.
- ⑧ For AC use only. Molded case switch will trip above 14,000 amperes.
- ⑨ For two-pole applications, use outer poles of three-pole molded case switch.
- ⑩ Add "M" to above catalog numbers for metric tapped line/load conductors.

Type NGH High Interrupting Capacity— U_e Max. 690 Vac, 65 kA I_{cu} at 480 Vac or 415 VacSee 310+ adjustability specifications on **Page V4-T2-72**.

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| Maximum Continuous Ampere Rating at 40 °C ^{①②} | Number of Poles | Circuit Breaker Frame Including Digitrip Electronic Trip Unit | | | | | | Neutral CT for LSG and LSIG ^③ |
|---|-----------------|---|------------|-------------------------|-------------------------|------------|-------------------------|--|
| | | LS | LSI | LSG | LSIG | ALSI | ALSIG | |
| 800 | 2 | NGH208033E | NGH208032E | NGH208035E | NGH208036E | — | — | — |
| | 3 | NGH308033E | NGH308032E | NGH308035E | NGH308036E | NGH308038E | NGH308039E | NGFCT120 |
| | 4 | NGH408033E | NGH408032E | NGH408035E ^④ | NGH408036E ^④ | NGH408038E | NGH408039E ^④ | — |
| | 4 ^⑤ | NGH708033E | NGH708032E | — | — | NGH708038E | — | — |
| | 4 ^⑥ | NGH908033E | NGH908032E | — | — | NGH908038E | — | — |
| 1200 | 2 | NGH212033E | NGH212032E | NGH212035E | NGH212036E | — | — | — |
| | 3 | NGH312033E | NGH312032E | NGH312035E | NGH312036E | NGH312038E | NGH312039E | NGFCT120 |
| | 4 | NGH412033E | NGH412032E | NGH412035E ^④ | NGH412036E ^④ | — | NGH412039E ^④ | — |
| | 4 ^⑤ | NGH712033E | NGH712032E | — | — | NGH712038E | — | — |
| | 4 ^⑥ | NGH912033E | NGH912032E | — | — | NGH912038E | — | — |

Type NGC Very High Capacity— U_e Max. 690 Vac, 100 kA I_{cu} at 480 Vac or 415 VacSee 310+ adjustability specifications on **Page V4-T2-72**.

| Maximum Continuous Ampere Rating at 40 °C ^{①②} | Number of Poles | Circuit Breaker Frame Including Digitrip Electronic Trip Unit | | | | | | Neutral CT for LSG and LSIG ^③ |
|---|-----------------|---|------------|-------------------------|-------------------------|------------|-------------------------|--|
| | | LS | LSI | LSG | LSIG | ALSI | ALSIG | |
| 800 | 2 | NGC208033E | NGC208032E | NGC208035E | NGC208036E | — | — | — |
| | 3 | NGC308033E | NGC308032E | NGC308035E | NGC308036E | NGC308038E | NGC308039E | NGFCT120 |
| | 4 | NGC408033E | NGC408032E | NGC408035E ^④ | NGC408036E ^④ | NGC408038E | NGC408039E ^④ | — |
| | 4 ^⑤ | NGC708033E | NGC708032E | — | — | NGC708038E | — | — |
| | 4 ^⑥ | NGC908033E | NGC908032E | — | — | NGC908038E | — | — |
| 1200 | 2 | NGC212033E | NGC212032E | NGC212035E | NGC212036E | — | — | — |
| | 3 | NGC312033E | NGC312032E | NGC312035E | NGC312036E | NGC312038E | NGC312039E | NGFCT120 |
| | 4 | NGC412033E | NGC412032E | NGC412035E ^④ | NGC412036E ^④ | — | NGC412039E ^④ | — |
| | 4 ^⑤ | NGC712033E | NGC712032E | — | — | NGC712038E | — | — |
| | 4 ^⑥ | NGC912033E | NGC912032E | — | — | NGC912038E | — | — |

Type NGU Ultra High Capacity— U_e Max. 600 Vac, 150 kA at 480 VacSee 310+ adjustability specifications on **Page V4-T2-72**.

| Maximum Continuous Ampere Rating at 40 °C ^{①②} | Number of Poles | Circuit Breaker Frame Including Digitrip Electronic Trip Unit | | | | | | Neutral CT for LSG and LSIG ^③ |
|---|-----------------|---|------------|------------|------------|------------|------------|--|
| | | LS | LSI | LSG | LSIG | ALSI | ALSIG | |
| 800 | 3 | NGU308033E | NGU308032E | NGU308035E | NGU308036E | NGU308038E | NGU308039E | NGFCT120 |

Notes

- ① For AC use only.
- ② NG MCCBs are suitable for 40 °C or 50 °C applications. Order suffix V3 to eliminate standard 40 °C labeling.
- ③ Required for four-wire systems if neutral protection is desired. Sold separately.
- ④ Neutral 0% protected. NG, neutral in right pole; GN, neutral in left pole.
- ⑤ Neutral 100% protected (denoted by 7 in digit four); no neutral protection available with LSG or LSIG trip units.
- ⑥ Neutral 0%/60%/100% adjustable protection (denoted by 9 in digit four).

Accessories Selection Guide and Ordering Information

Line and Load Terminals

N-Frame circuit breakers do not include terminals as standard. When copper or Cu/Al terminals are required, order by catalog number.

Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire (Number of Conductors) | AWG Wire Catalog Number ^① | Metric Wire Range mm ² | Metric Catalog Number ^① |
|--|------------------------|-----------|---------------------------------|--------------------------------------|-----------------------------------|------------------------------------|
| Standard Cu/Al Pressure Terminals | | | | | | |
| 700 | Aluminum | Cu/Al | 1–500 (2) | TA700NB1 | 50–240 | TA700NB1M |
| 1000 | Aluminum | Cu/Al | 3/0–400 (3) | TA1000NB1 | 95–185 | TA1000NB1M |
| 1200 | Aluminum | Cu/Al | 4/0–500 (4) | TA1200NB1 | 120–240 | TA1200NB1M |
| 1200 | Aluminum | Cu/Al | 500–750 (3) | TA1201NB1 | 300–400 | TA1201NB1M |
| Optional Copper and Cu/Al Pressure Type Terminals | | | | | | |
| 700 | Copper | Cu | 2/0–500 (2) | T700NB1 | 70–240 | T700NB1M |
| 1000 | Copper | Cu | 3/0–500 (3) | T1000NB1 | 95–240 | T1000NB1M |
| 1200 | Copper | Cu | 3/0–400 (4) | T1200NB3 | 95–185 | T1200NB3M |

310+ Electronic Trip Unit Accessories

| Description | Catalog Number |
|---|-------------------|
| Electronic portable test kit | MTST230V |
| Trip unit tamper protection wire seal | 5108A03H01 |
| External neutral sensor (1200 A) ^② | NGFCT120 |
| External neutral sensor (800 A) ^② | NGFCT120 |
| Breaker-mount cause-of-trip indication | TRIP-LED |
| Breaker-mount ammeter module | DIGIVIEW |
| Remote-mount ammeter module | DIGIEWR06 |

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or molded case switch.

Base Mounting Hardware ^③

| Number of Poles | Description | Catalog Number |
|----------------------|--|----------------|
| Three- and four-pole | Imperial hardware: 0.3125–18 x 1.25 pan-head steel screws and lock washers | BMH5 |
| Three- and four-pole | Metric hardware: M8 pan-head steel screws and lock washers | BMH5M |

Terminal Shield

Terminal Shield

| Description | Catalog Number |
|----------------------------|----------------|
| Three-pole terminal shield | NTS3K |

Conductor Extension Kit

Conductor Extension Kit ^④

| Description | Catalog Number |
|------------------------------|-------------------|
| Three-pole both ends Metric | 5104A24G04 |
| Three-pole both ends English | 5104A24G02 |

Keeper Nut

Not required on NG-Frame. Terminals are threaded.

Handle Extension

Included with breaker. Additional handle extensions are available.

Handle Extension

| Description | Catalog Number |
|-------------------------|----------------|
| Single handle extension | HEX5 |

Interphase Barriers

The interphase barriers provide additional electrical clearance between circuit breaker poles for special termination applications. Barriers are high dielectric insulating plates that are installed in the molded slots between the terminals. (Field installation only.)

Interphase Barriers

| Description | Catalog Number |
|----------------------------------|----------------|
| Interphase barriers ^④ | IPB5 |

Notes

- ^① Single terminals individually packed.
- ^② Required for four-wire systems if neutral protection is desired. Sold separately.
- ^③ Metric hardware included with breaker.
- ^④ Included as standard on 100% rated 1200 A breakers only.

Accessories

2

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

NG-Frame Accessories

| Description | Reference Page | Three-Pole | | | Four-Pole | | | Neu. |
|--|----------------|------------|--------|-------|-----------|--------|-------|------|
| | | Left | Center | Right | Left | Center | Right | |
| Internal Accessories (Only One Internal Accessory Per Pole) | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-109 | ● | | ■ | ● | | ■ | |
| Auxiliary switch (1A, 1B) | V4-T2-109 | ● | | ■ | ● | | ■ | |
| Auxiliary switch (2A, 2B) | V4-T2-109 | ● | | ■ | ● | | ■ | |
| Auxiliary switch and alarm switch combination | V4-T2-109 | ● | | ■ | ● | | ■ | |
| Shunt trip—standard | V4-T2-109 | ■ | | | ■ | | | |
| Undervoltage release mechanism | V4-T2-110 | ■ | | | ■ | | | |
| External Accessories | | | | | | | | |
| Base mounting hardware | V4-T2-69 | ● | ● | ● | ● | ● | ● | ● |
| Interphase barriers | V4-T2-69 | ● | ● | ● | ● | ● | ● | ● |
| Non-padlockable handle block | V4-T2-107 | | ■ | | | ■ | | |
| Padlockable handle lock hasp | V4-T2-107 | □ | | □ | □ | | □ | |
| Key interlock kit | V4-T2-107 | □ | | □ | □ | | □ | |
| Sliding bar interlock—requires two breakers | V4-T2-107 | ● | ● | ● | | | | |
| Electrical operator | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-114 | ● | ● | ● | ● | ● | ● | ● |
| Rear connecting studs | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-419 | ● | ● | ● | ● | ● | ● | ● |
| Drawout cassette | V4-T2-115 | ● | ● | ● | ● | ● | ● | ● |
| Handle extension | V4-T2-69 | ● | ● | ● | ● | ● | ● | ● |
| Ammeter/cause of trip display | V4-T2-106 | ● | ● | ● | ● | ● | ● | ● |
| Cause of trip LED module | V4-T2-106 | ● | ● | ● | ● | ● | ● | ● |
| Digitrip 310+ test kit | V4-T2-106 | ● | ● | ● | ● | ● | ● | ● |
| Modifications (Refer to Eaton) | | | | | | | | |
| Moisture fungus treatment | V4-T2-105 | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● |
| Marine/Naval application, UL 489 Supplement SA and SB | ① | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Note

① Contact Eaton.

Technical Data and Specifications

Interrupting Capacity Ratings

UL 489/IEC 60947-2 Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | | | | | | |
|----------------------|-----------------|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | Volts AC (50/60 Hz) | | | | | | | | | |
| | | 220–240 | | 380–415 | | 480 | | 600 | | 690 | |
| | | I _{cu} | I _{cs} | I _{cu} | I _{cs} | I _{cu} | I _{cs} | I _{cu} | I _{cs} | I _{cu} | I _{cs} |
| NGS ^① | 2, 3, 4 | 65 | 85 | 85 | 50 | 50 | 50 | 25 | 20 | 10 | |
| NGH | 2, 3, 4 | 100 | 100 | 100 | 70 | 50 | 65 | 35 | 25 | 13 | |
| NGC | 2, 3, 4 | 200 | 200 | 100 | 100 | 50 | 100 | 65 | 35 | 18 | |
| NGU | 3, 4 | 200 | — | — | — | — | 150 | 65 | — | — | |

NG-Frame Digitrip Specifications

NG 310+ Specifications

| Description | Specification |
|---|---------------------------------|
| Trip Unit Type | Digitrip RMS 310+ |
| Breaker Type | |
| Frame designation | NG |
| Frames available | 800 A, 1200 A |
| Continuous current range (A) | 320–1200A |
| Ground fault pickup (A) | 160–1200A |
| Interrupting capacities at 480 Vac (kAIC) | 35, 65, 100, 150 |
| 100% rated | Yes |
| Protection | |
| Ordering options | LS, LSI, LSG, LSIG, ALSI, ALSIG |
| Arcflash reduction maintenance system (or maintenance mode) | Yes |
| Interchangeable trip unit | No |
| High load alarm (suffix B20) ^② | Yes |
| Ground fault alarm with trip (suffix B21) ^② | Yes |
| Ground fault alarm, no trip (suffix B22) ^② | Yes |
| Zone selective interlocking (suffix ZG) | LSI, LSIG, ALSI, ALSIG |
| Cause of trip indication | Yes |
| Thru-cover accessories | No |

Notes

^① 1600 amperes is not a UL or CSA listed rating. 1200 amperes is the maximum UL and CSA rating for NG.

^② B2x suffixes cannot be combined with B2x suffixes.

NG 310+ Adjustability Specifications

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| 310+ Settings | NG Frame | | |
|---|--------------|-----------------------------------|-----------------------------------|
| | 800 A | 1200 A | |
| I_r = continuous current or long delay pickup (amperes) (All 310+) | I_r | | |
| | A | 320 | 500 |
| | B | 400 | 600 |
| | C | 450 | 630 |
| | D | 500 | 700 |
| | E | 600 | 800 |
| | F | 630 | 900 |
| | G | 700 | 1000 |
| | H (= I_n) | 800 | 1200 |
| t_r = long delay time (seconds) (All 310+) | Position 1 | 2 | 2 |
| | Position 2 | 4 | 4 |
| | Position 3 | 6 | 7 |
| | Position 4 | 8 | 10 |
| | Position 5 | 10 | 12 |
| | Position 6 | 12 | 15 |
| | Position 7 | 14 | 20 |
| | Position 8 | 14 | 24 |
| I_{sd} (x I_r) = short delay pickup (All 310+) | Position 1 | 2x | 2x |
| | Position 2 | 3x | 3x |
| | Position 3 | 4x | 4x |
| | Position 4 | 5x | 5x |
| | Position 5 | 6x | 6x |
| | Position 6 | 7x | 7x |
| | Position 7 | 8x | 8x |
| | Position 8 | 9x | 9x |
| | Position 9 | 9x | 9x |
| t_{sd} = short delay time I^2t (milliseconds) (LS, LSG) | Fixed | 67 at10x | 67 at10x |
| t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG) ① | Position 1 | Inst | Inst |
| | Position 2 | 120 | 120 |
| | Position 3 | 300 | 300 |
| I_g = ground fault pickup (amperes) (LSG, LSIG, ALSIG) | Position 1 | 160 | 240 |
| | Position 2 | 240 | 360 |
| | Position 3 | 320 | 480 |
| | Position 4 | 480 | 720 |
| | Position 5 | 640 | 960 |
| | Position 6 | 800 | 1200 |
| t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG) | Position 1 | Inst | Inst |
| | Position 2 | 120 | 120 |
| | Position 3 | 300 | 300 |
| Independently Adjustable Instantaneous (I_i) setting (ALSI, ALSIG) | Yes | 2.5x, 4x, 6x, 7x, 8x, 10x, 18x | 2.5x, 4x, 6x, 7x, 8x, 10x, 12x |
| Maintenance Mode (remote) pickup ($2.5 \times I_n$) (ALSI, ALSIG) ② | Fixed | 2.5x | 2.5x |

Notes

① 50 ms for ALSI and ALSIG trip units.

② Maintenance Mode is enabled remotely using a 24 Vdc circuit.

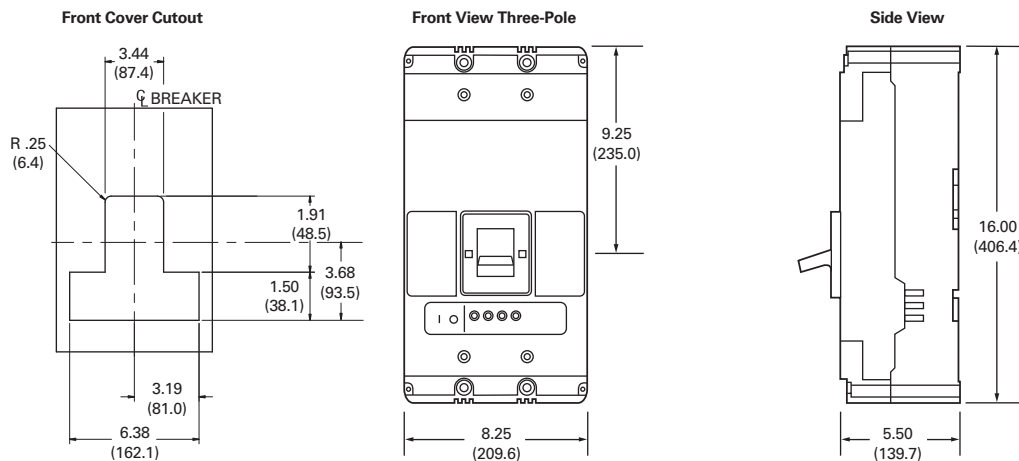
Dimensions and Weights

Approximate Dimensions in Inches (mm)

NG-Frame

| Number of Poles | Width | Height | Depth |
|-----------------|---------------|---------------|--------------|
| 3 | 8.25 (209.6) | 16.00 (406.4) | 5.50 (139.7) |
| 4 | 11.13 (282.6) | 16.00 (406.4) | 5.50 (139.7) |

NG-Frame



Approximate Shipping Weight in Lbs (kg)

NG-Frame

| Breaker Type | Complete Breaker | |
|---------------|------------------|-----------|
| | Three-Pole | Four-Pole |
| NGS, NGH, NGC | 45 (20.4) | 58 (26.3) |

RG-Frame (800–2500 Amperes)

2



Contents

| <i>Description</i> | <i>Page</i> |
|---|--------------------|
| EG-Frame (15–125 Amperes) | V4-T2-15 |
| JG-Frame (63–250 Amperes) | V4-T2-29 |
| LG-Frame (250–630 Amperes) | V4-T2-47 |
| NG-Frame (320–1200 Amperes) | V4-T2-65 |
| RG-Frame (800–2500 Amperes) | |
| Catalog Number Selection | V4-T2-75 |
| Product Selection | V4-T2-76 |
| Accessories | V4-T2-81 |
| Technical Data and Specifications | V4-T2-82 |
| Dimensions and Weights | V4-T2-84 |
| Motor Circuit Protectors (MCP) | V4-T2-85 |
| Motor Protector Circuit Breakers (MPCB) | V4-T2-89 |
| 30 mA Ground Fault (Earth Leakage) Module | V4-T2-92 |
| Current Limiting Circuit Breaker Module | V4-T2-96 |
| High Instantaneous Circuit Breaker for | |
| Selective Coordination | V4-T2-101 |
| Special Features and Accessories | V4-T2-104 |
| Motor Operators | V4-T2-112 |
| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | V4-T2-115 |

RG-Frame (800–2500 Amperes)

Product Description

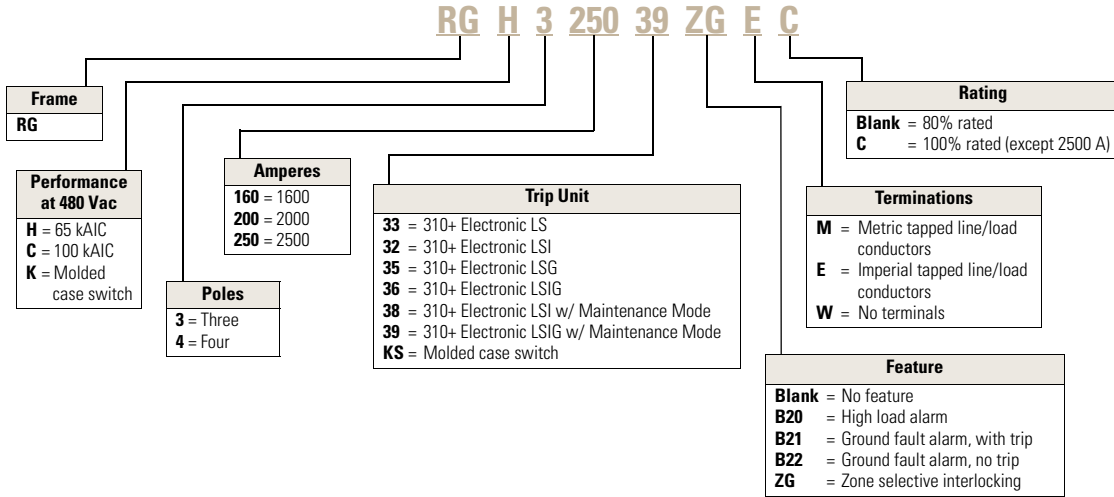
- Eaton's RG-Frame circuit breakers are available as frame (which includes trip unit), rating plug and terminals
- All R-Frame circuit breakers are suitable for reverse feed use

Catalog Number Selection

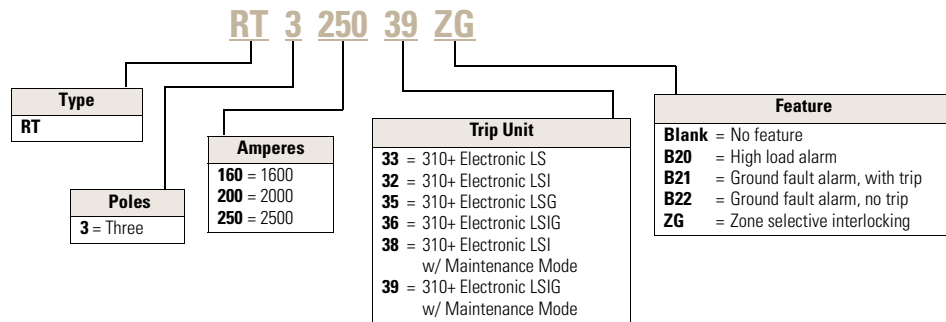
This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

70 kA at 415 Vac and 65 kA at 480 Vac

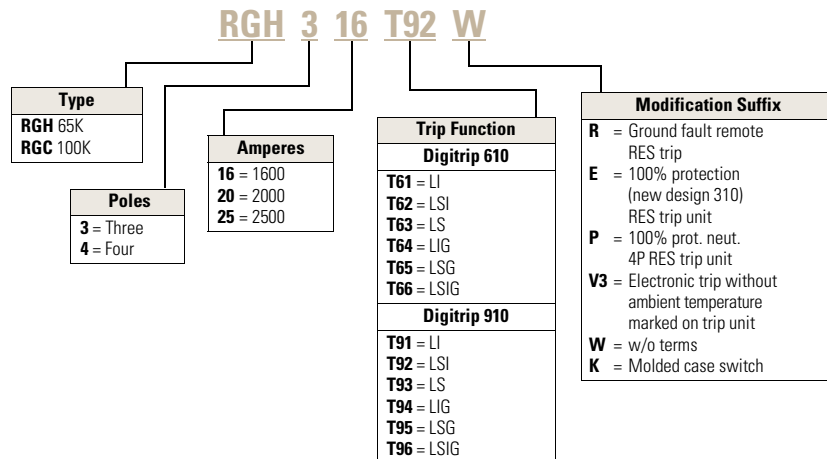
RG Circuit Breaker With 310+ Electronic Trip Unit



RG 310+ Electronic Trip Unit



RG Circuit Breaker with OPTIM 610 and 910 Electronic Trip Unit



Product Selection

70 kA at 415 Vac and 65 kA at 480 Vac

Type RGH with Digitrip 310+ High Interrupting Capacity— U_e Maximum 690 Vac, 70 kA I_{cu} at 415 Vac

See 310+ adjustability specifications on Page V4-T2-83.

| Maximum Continuous Ampere Rating at 40 °C ① | Number of Poles | Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit with Adjustable Rating Plugs—Catalog Number ② | | | | | | Neutral CT for LSG and LSIG ④ |
|---|-----------------|--|------------|------------|------------|------------|------------|-------------------------------|
| | | LS | LSI | LSG ③ | LSIG ③ | ALSI | ALSIG | |
| 1600 ① | 3 | RGH316033E | RGH316032E | RGH316035E | RGH316036E | RGH316038E | RGH316039E | RGFCT160A |
| 2000 | 3 | RGH320033E | RGH320032E | RGH320035E | RGH320036E | RGH320038E | RGH320039E | RGFCT200A |
| 2500 | 3 | RGH325033E | RGH325032E | RGH325035E | RGH325036E | RGH325038E | RGH325039E | RGFCT250A |

100 kA at Both 415 Vac and 480 Vac

Type RGH with Digitrip 310+ High Interrupting Capacity— U_e Maximum 690 Vac, 70 kA I_{cu} at 415 Vac

See 310+ adjustability specifications on Page V4-T2-83.

| Maximum Continuous Ampere Rating at 40 °C ① | Number of Poles | Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit with Adjustable Rating Plugs—Catalog Number ② | | | | | |
|---|-----------------|--|------------|--------|---------|------------|----------|
| | | LS | LSI | LSG ③⑤ | LSIG ③⑤ | ALSI | ALSIG ③⑤ |
| 1600 ① | 4 ⑥ | RGH416033E | RGH416032E | — | — | RGH416038E | — |
| 2000 | 4 ⑥ | RGH420033E | RGH420032E | — | — | RGH420038E | — |
| 2500 | 4 ⑥ | RGH425033E | RGH425032E | — | — | RGH425038E | — |

Notes

① For SCR application, use 2000 ampere frame.

② Order terminals separately. Mounting hardware not included.

③ Ground fault equipped trip units available with remote indicating panel. Add "R" to catalog number, for example, "RGH316035RW."

④ Required for four-wire systems if neutral protection is desired. Sold separately.

⑤ No neutral protection available on four-pole breakers with LSG or LSIG trip units.

⑥ Unprotected left pole neutral. Add "P" to catalog number for 100% protected left pole neutral, add "E" for 60% protected, for example, "RGH416033PW," "RGH416033EW."

RG MCCBs have English threading on line and load conductors. Use suffix "M" for metric threading.

100 kA at Both 415 Vac and 480 Vac**Type RGC with Digitrip 310+ Very High Interrupting Capacity— U_e Maximum 690 Vac, 100 kA I_{cu} at 415 Vac**See 310+ adjustability specifications on **Page V4-T2-83**.

| Maximum Continuous Ampere Rating at 40 °C ① | Number of Poles | Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit with Adjustable Rating Plugs—Catalog Number ② | | | | | | Neutral CT for LSG and LSIG ④ |
|---|-----------------|--|------------|------------|------------|------------|------------|-------------------------------|
| | | LS | LSI | LSG ③ | LSIG ③ | ALSI | ALSIG | |
| 1600 ① | 3 | RGC316033E | RGC316032E | RGC316035E | RGC316036E | RGC316038E | RGC316039E | RGFCT160A |
| 2000 | 3 | RGC320033E | RGC320032E | RGC320035E | RGC320036E | RGC320038E | RGC320039E | RGFCT200A |
| 2500 | 3 | RGC325033E | RGC325032E | RGC325035E | RGC325036E | RGC325038E | RGC325039E | RGFCT250A |

Type RGC with Digitrip 310+ Very High Interrupting Capacity— U_e Maximum 690 Vac, 100 kA I_{cu} at 415 Vac, continuedSee 310+ adjustability specifications on **Page V4-T2-83**.

| Maximum Continuous Ampere Rating at 40 °C ① | Number of Poles | Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit with Adjustable Rating Plugs—Catalog Number ② | | | | | |
|---|-----------------|--|------------|--------|---------|------------|----------|
| | | LS | LSI | LSG ③⑤ | LSIG ③⑤ | ALSI | ALSIG ③⑤ |
| 1600 ① | 4 ⑥ | RGC416033E | RGC416032E | — | — | RGC416038E | — |
| 2000 | 4 ⑥ | RGC420033E | RGC420032E | — | — | RGC420038E | — |
| 2500 | 4 ⑥ | RGC425033E | RGC425032E | — | — | RGC425038E | — |

Molded Case Switches ⑦

| Ampere Rating | Number of Poles | Catalog Number |
|---------------|-----------------|----------------|
| 1600 | 3 | RGK3160KSE |
| 2000 | 3 | RGK3200KSE |
| 1600 | 4 | RGK4160KSE |
| 2000 | 4 | RGK4200KSE |

Notes

- ① For SCR application, use 2000 ampere frame.
- ② Order terminals separately. Mounting hardware not included.
- ③ Ground fault equipped trip units available with remote indicating panel. Add "R" to catalog number, for example, "RGH316035RW."
- ④ Required for four-wire systems if neutral protection is desired. Sold separately.
- ⑤ No neutral protection available on four-pole breakers with LSG or LSIG trip units.
- ⑥ Unprotected left pole neutral. Add "P" to catalog number for 100% protected left pole neutral, add "E" for 60% protected, for example, "RGH416033PW," "RGH416033EW."
- ⑦ Molded case switch will trip above 17,500 amperes.

RG MCCBs have English threading on line and load conductors. Use suffix "M" for metric threading.

Type RG with Digitrip 610 and 910

| Circuit Breaker Frame Including Digitrip RMS 610 and 910 Electronic Trip Unit with Rating Plugs Order as Individual Component—Catalog Number ① | | | | | | | Digitrip RMS Interchangeable Rating Plug (Order as Individual Component) | Fixed Rating Plug |
|---|--------------------|--------------------------|----------------------|--------------------------|-----------------------------|-----------------------------|--|---------------------------------|
| Maximum Continuous Ampere Rating at 40 °C | Number of Poles | LI | LS | LSI | LIG | LSG | | |
| Long Delay Pickup | | 0.5–1.0 x I _n | 0.5–1.0 _n | 0.5–1.0 x I _n | 0.5–1.0 x I _n | 0.5–1.0 x I _n | 0.5–1.0 x I _n | |
| Long Delay Time | | 2–24 Seconds | 2–24 Seconds | 2–24 Seconds | 2–24 Seconds | 2–24 Seconds | 2–24 Seconds | |
| Short Time Range | | 2–6 x I _r | 2–6 x I _r | 2–6 x I _r | 2–6 x I _r | 2–6 x I _r | 2–6 x I _r | |
| Short Time Delay | | — | 100–500 ms | 100–500 ms | — | 100–500 ms | 100–500 ms | |
| Instantaneous | | 2–6 x M1 and M2 | — | 2–6 x M1 and M2 | 2–6 x M1 and M2 | — | 2–6 x M1 and M2 | |
| Ground Fault Pickup | | — | — | — | 0.25–1.0 x I _n ② | 0.25–1.0 x I _n ② | 0.25–1.0 x I _n ② | Ampere |
| Ground Fault Delay | | — | — | — | 100–500 ms | 100–500 ms | 100–500 ms | Catalog Number |

Type RGH with Digitrip 610 High Interrupting Capacity—U_e Max. 690 Vac, 70 kA I_{cu} at 415 Vac

| | | | | | | | | | |
|------------------------------------|---|---------------|---------------|---------------|---------------|---------------|---------------|------|------------|
| 1600 | 3 | RGH316T61WP44 | RGH316T63WP44 | RGH316T62WP44 | RGH316T64WP44 | RGH316T65WP44 | RGH316T66WP44 | 800 | RP6R16A080 |
| | | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | | 1250 | RP6R16A125 |
| | | | | | | | | 1600 | RP6R16A160 |
| Includes 1600 A rating plug | | | | | | | | | |
| 2000 | 3 | RGH320T61WP49 | RGH320T63WP49 | RGH320T62WP49 | RGH320T64WP49 | RGH320T65WP49 | RGH320T66WP49 | 1000 | RP6R20A100 |
| | | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | | 1250 | RP6R20A125 |
| | | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | | 2000 | RP6R20A200 |
| Includes 2000 A rating plug | | | | | | | | | |
| 2500 | 3 | RGH325T61WP53 | RGH325T63WP53 | RGH325T62WP53 | RGH325T64WP53 | RGH325T65WP53 | RGH325T66WP53 | 1600 | RP6R25A160 |
| | | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | | 2500 | RP6R25A250 |

Type RGC with Digitrip 610 Very High Interrupting Capacity—U_e Max. 690 Vac, 100 kA I_{cu} at 415 Vac

| | | | | | | | | | |
|------------------------------------|---|---------------|---------------|---------------|---------------|---------------|---------------|------|------------|
| 1600 | 3 | RGC316T61WP44 | RGC316T63WP44 | RGC316T62WP44 | RGC316T64WP44 | RGC316T65WP44 | RGC316T66WP44 | 800 | RP6R16A080 |
| | | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | | 1250 | RP6R16A125 |
| | | | | | | | | 1600 | RP6R16A160 |
| Includes 1600 A rating plug | | | | | | | | | |
| 2000 | 3 | RGC320T61WP49 | RGC320T63WP49 | RGC320T62WP49 | RGC320T64WP49 | RGC320T65WP49 | RGC320T66WP49 | 1000 | RP6R20A100 |
| | | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | | 1250 | RP6R20A125 |
| | | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | | 2000 | RP6R20A200 |
| Includes 2000 A rating plug | | | | | | | | | |
| 2500 | 3 | RGC325T61WP53 | RGC325T63WP53 | RGC325T62WP53 | RGC325T64WP53 | RGC325T65WP53 | RGC325T66WP53 | 1600 | RP6R25A160 |
| | | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | | 2500 | RP6R25A250 |

Notes

① Order terminals separately. Mounting hardware not included.

② Not to exceed 1200 ampere ground fault pickup.

RG MCCBs have metric threading on line and load conductors. Use RD MCCBs if imperial threading is required.

Type RG with Digitrip 610 and 910, continued

| Circuit Breaker Frame Including Digitrip RMS 610 and 910 Electronic Trip Unit with Rating Plugs Order as Individual Component—Catalog Number ① | | | | | | | | Digitrip RMS Interchangeable Rating Plug (Order as Individual Component) | Fixed Rating Plug |
|---|-----------------|------------------------------------|----------------------|--------------------------|-----------------------------|-----------------------------|-----------------------------|--|-------------------|
| Maximum Continuous Ampere Rating at 40 °C | Number of Poles | L | S | I | G | LS | LSIG | | |
| Long Delay Pickup | | 0.5–1.0 x I _n | 0.5–1.0 _n | 0.5–1.0 x I _n | 0.5–1.0 x I _n | 0.5–1.0 x I _n | 0.5–1.0 x I _n | | |
| Long Delay Time | | 2–24 Seconds | 2–24 Seconds | 2–24 Seconds | 2–24 Seconds | 2–24 Seconds | 2–24 Seconds | | |
| Short Time Range | | 2–6 x I _r | 2–6 x I _r | 2–6 x I _r | 2–6 x I _r | 2–6 x I _r | 2–6 x I _r | | |
| Short Time Delay | | — | 100–500 ms | 100–500 ms | — | 100–500 ms | 100–500 ms | | |
| Instantaneous | | 2–6 x M1 and M2 | — | 2–6 x M1 and M2 | 2–6 x M1 and M2 | — | 2–6 x M1 and M2 | | |
| Ground Fault Pickup | | — | — | — | 0.25–1.0 x I _n ② | 0.25–1.0 x I _n ② | 0.25–1.0 x I _n ② | Ampere Rating | |
| Ground Fault Delay | | — | — | — | 100–500 ms | 100–500 ms | 100–500 ms | Catalog Number | |
| Type RGH with Digitrip 910 High Interrupting Capacity—U_e Max. 690 Vac, 70 kA I_{cu} at 415 Vac | | | | | | | | | |
| 1600 | 3 | RGH316T91WP44 | RGH316T93WP44 | RGH316T92WP44 | RGH316T94WP44 | RGH316T95WP44 | RGH316T96WP44 | 800 | RP6R16A080 |
| | | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | | 1250 | RP6R16A125 |
| | | Includes 1600 A rating plug | | | | | | 1600 | RP6R16A160 |
| 2000 | 3 | RGH320T91WP49 | RGH320T93WP49 | RGH320T92WP49 | RGH320T94WP49 | RGH320T95WP49 | RGH320T96WP49 | 1000 | RP6R20A100 |
| | | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | | 1250 | RP6R20A125 |
| | | | | | | | | 1600 | RP6R20A160 |
| | | Includes 2000 A rating plug | | | | | | 2000 | RP6R20A200 |
| 2500 | 3 | RGH325T91WP53 | RGH325T93WP53 | RGH325T92WP53 | RGH325T94WP53 | RGH325T95WP53 | RGH325T96WP53 | 1600 | RP6R25A160 |
| | | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | | 2500 | RP6R25A250 |
| | | Includes 2500 A rating plug | | | | | | | |
| Type RGC with Digitrip 910 Very High Interrupting Capacity—U_e Max. 690 Vac, 100 kA I_{cu} at 415 Vac | | | | | | | | | |
| 1600 | 3 | RGC316T91WP44 | RGC316T93WP44 | RGC316T92WP44 | RGC316T94WP44 | RGC316T95WP44 | RGC316T96WP44 | 800 | RP6R16A080 |
| | | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | | 1250 | RP6R16A125 |
| | | Includes 1600 A rating plug | | | | | | 1600 | RP6R16A160 |
| 2000 | 3 | RGC320T91WP49 | RGC320T93WP49 | RGC320T92WP49 | RGC320T94WP49 | RGC320T95WP49 | RGC320T96WP49 | 1000 | RP6R20A100 |
| | | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | | 1250 | RP6R20A125 |
| | | | | | | | | 1600 | RP6R20A160 |
| | | Includes 2000 A rating plug | | | | | | 2000 | RP6R20A200 |
| 2500 | 3 | RGC325T91WP53 | RGC325T93WP53 | RGC325T92WP53 | RGC325T94WP53 | RGC325T95WP53 | RGC325T96WP53 | 1600 | RP6R25A160 |
| | | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | | 2500 | RP6R25A250 |
| | | Includes 2500 A rating plug | | | | | | | |

Notes

① Order terminals separately. Mounting hardware not included.

② Not to exceed 1200 ampere ground fault pickup.

RG MCCBs have metric threading on line and load conductors. Use RD MCCBs if imperial threading is required.

Accessories Selection Guide and Ordering Information

2

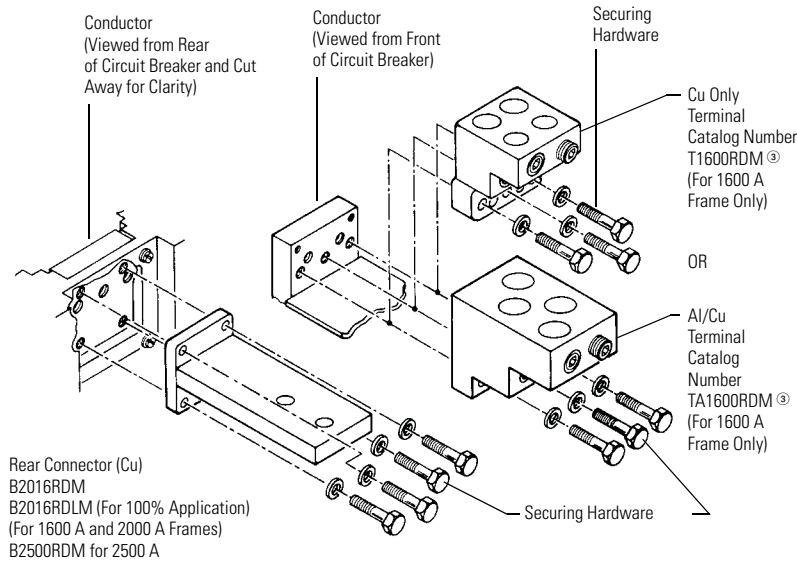
Line and Load Terminals

R-Frame circuit breakers use Cu/Al terminals as standard and copper only terminals as an option. Specify if factory installation is required. Must have terminals for 100% rated and or freeze testing requirements.

Line and Load Terminals

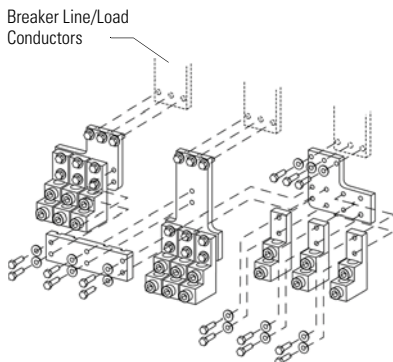
| Maximum Breaker Amperes | Terminal Body Material | Wire Type | Hardware | AWG/kcmil Wire Range/ Number of Conductors | Metric Wire Range mm ² | Catalog Number |
|-------------------------|------------------------|-----------|----------|--|-----------------------------------|--------------------|
| Wire Terminals | | | | | | |
| 1600 | Aluminum | Cu/Al | Metric | 500–1000 (4) | 300–500 | TA1600RDM ① |
| 1600 | Copper | Cu | Metric | 1–600 (4) | 50–300 | T1600RDM ① |
| 2000 | Aluminum | Cu/Al | Metric | 2–600 (6) | 35–300 | TA2000RDM ② |
| Rear Connectors | | | | | | |
| 2000 | Copper | — | Metric | — | — | B2016RDM ① |
| 2000 | Copper | — | Metric | — | — | B2016RDLM ① |
| 2500 | Copper | — | Metric | — | — | B2500RDM ① |

RG Rear Connector Exploded View



TA2000RD Wire Terminal

Note: Order one TA2000RDM kit per three poles. Catalog number includes bus connection, terminals and hardware for either line side or load side of three-pole breaker.



Base Mounting Hardware

Supplied by customer.

Handle Extension

Included with breaker. Additional handle extensions are available.

Handle Extension

| Description | Catalog Number |
|-------------------------|----------------|
| Single handle extension | HEX6 |

Wire Seal

The wire seal can be used to secure the cover on the trip unit to prevent adjustments after settings are confirmed.

Wire Seal

| Description | Catalog Number |
|-------------|-------------------|
| Wire seal | 5108A03H01 |

Notes

- ① Order one per pole—single terminals individually packed.
- ② Order one TA2000RD kit per three poles. Catalog number includes bus connection, terminals and hardware for either line side or load side of three-pole breaker.
- ③ For use with 2500 A Frame. Do not order separately unless for replacement purposes. Included in breaker carton when 2500 A frame is ordered.

RG MCCBs have metric threading on line and load conductors. Use RD MCCBs if imperial threading is required.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

RG-Frame Accessories

| Description | Reference Page | Three-Pole | | | Four-Pole | | | |
|--|----------------|------------|--------|-------|-----------|--------|-------|---------|
| | | Left | Center | Right | Left | Center | Right | Neutral |
| Internal Accessories (Only One Internal Accessory Per Pole) | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-109 | | | ■ | | | ■ | |
| Auxiliary switch (1A, 1B) | V4-T2-109 | | | ■ | | | ■ | |
| Auxiliary switch (2A, 2B) | V4-T2-109 | | | ■ | | | ■ | |
| Auxiliary switch and alarm switch combination | V4-T2-109 | | | ■ | | | ■ | |
| Shunt trip—standard | V4-T2-109 | | | ● | | | ● | |
| Undervoltage release mechanism | V4-T2-110 | | | ● | | | ● | |
| External Accessories | | | | | | | | |
| Base mounting hardware | V4-T2-80 | ● | ● | ● | ● | ● | ● | ● |
| Padlockable handle lock hasp | V4-T2-107 | □ | | □ | □ | | □ | |
| Key interlock kit | V4-T2-107 | □ | | □ | □ | | □ | |
| Electrical operator | V4-T2-107 | ● | ● | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-419 | ● | ● | ● | ● | ● | ● | ● |
| Handle extension | V4-T2-80 | ● | ● | ● | ● | ● | ● | ● |
| Digitrip 310+ test kit | V4-T2-106 | ● | ● | ● | ● | ● | ● | ● |
| Modifications (Refer to Eaton) | | | | | | | | |
| Moisture fungus treatment | V4-T2-105 | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application, UL 489 Supplement SA and SB | ① | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

310+ Electronic Trip Unit Accessories

| Description | Catalog Number |
|--|----------------|
| Electronic portable test kit | MTST230V |
| Trip unit tamper protection wire seal | 5108A03H01 |
| External neutral sensor (2500 A) ② | RGFCT250A |
| External neutral sensor (2000 A) ② | RGFCT200A |
| External neutral sensor (1600 A) ② | RGFCT160A |
| Breaker-mount cause-of-trip indication ③ | — |
| Breaker-mount ammeter module | DIGIVIEW |
| Remote-mount ammeter module | DIGIEWR06 |

Notes

- ① Contact Eaton.
- ② Required for four-wire systems if neutral protection is desired. Sold separately.
- ③ Cause-of-trip indication LEDs integrated in RG 310+ trip units.

Technical Data and Specifications

2

UL 489/CSA Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | |
|----------------------|-----------------|--|-----|-----|-----|
| | | Volts AC (50/60 Hz) | | | |
| | | 240 | 277 | 480 | 600 |
| RGH | 3, 4 | 125 | — | 65 | 50 |
| RGC | 3, 4 | 200 | — | 100 | 65 |

IEC 947-2 Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | |
|----------------------|-----------------|--|-----|-----|
| | | Volts AC (50/60 Hz) | | |
| | | 240 | 415 | 690 |
| RGH | 3, 4 | | | |
| I_{cu} | | 135 | 70 | 25 |
| I_{cs} | | 100 | 50 | 13 |
| RGC | 3, 4 | | | |
| I_{cu} | | 200 | 100 | 35 |
| I_{cs} | | 100 | 50 | 18 |

RG 310+ Specifications

| Description | Specification |
|---|---------------------------------|
| Trip Unit Type | Digitrip RMS 310+ |
| Breaker Type | |
| Frame designation | RG |
| Frames available | 1600 A, 2000 A, 2500 A |
| Continuous current range (A) | 800–2500 A |
| Ground fault pickup (A) | 200–1200 A |
| Interrupting capacities at 480 Vac (kAIC) | 65, 100 |
| 100% rated | Yes |
| Protection | |
| Ordering options | LS, LSI, LSG, LSIG, ALSI, ALSIG |
| Arcflash reduction maintenance system (or maintenance mode) | Yes |
| Interchangeable trip unit | Yes |
| High load alarm (suffix B20) ^② | Yes |
| Ground fault alarm with trip (suffix B21) ^② | Yes |
| Ground fault alarm, no trip (suffix B22) ^② | Yes |
| Zone selective interlocking (suffix ZG) | LSI, LSIG, ALSI, ALSIG |
| Cause of trip indication | Yes |
| Thru-cover accessories | No |

Notes

^① Utilization Category A circuit breakers.

^② B2x suffixes cannot be combined with B2x suffixes.

See **Page V4-T2-74** for trip unit specifications.

RG 310+ Adjustability Specifications

| 310+ Settings | | RG Frame | | |
|---|--------------|------------------------------|-----------------------------|---------------------|
| | | 1600 A | 2000 A | 2500 A |
| I_r = continuous current or long delay pickup (amperes) (All 310+) | I_r | | | |
| | A | 800 | 1000 | 1600 |
| | B | 900 | 1200 | 1700 |
| | C | 1000 | 1400 | 1800 |
| | D | 1100 | 1600 | 2000 |
| | E | 1200 | 1700 | 2100 |
| | F | 1400 | 1800 | 2200 |
| | G | 1500 | 1900 | 2400 |
| | H (= I_n) | 1600 | 2000 | 2500 |
| t_r = long delay time (seconds) (All 310+) | Position 1 | 2 | 2 | 2 |
| | Position 2 | 4 | 4 | 4 |
| | Position 3 | 7 | 7 | 7 |
| | Position 4 | 10 | 10 | 10 |
| | Position 5 | 12 | 12 | 12 |
| | Position 6 | 15 | 15 | 15 |
| | Position 7 | 20 | 20 | 20 |
| | Position 8 | 24 | 24 | 24 |
| I_{sd} ($\times I_r$) = short delay pickup (All 310+) | Position 1 | 2x | 2x | 2x |
| | Position 2 | 3x | 3x | 2x |
| | Position 3 | 4x | 4x | 2x |
| | Position 4 | 5x | 5x | 3x |
| | Position 5 | 6x | 6x | 4x |
| | Position 6 | 7x | 7x | 5x |
| | Position 7 | 8x | 8x | 6x |
| | Position 8 | 8x | 8x | 6x |
| | Position 9 | 9x | 9x | 6x |
| t_{sd} = short delay time I^2t (milliseconds) (LS, LSG) | Fixed | 67 at10x | 67 at10x | 67 at10x |
| t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG) ① | Position 1 | Inst | Inst | Inst |
| | Position 2 | 120 | 120 | 120 |
| | Position 3 | 300 | 300 | 300 |
| I_g = ground fault pickup (amperes) (LSG, LSIG, ALSIG) | Position 1 | 200 | 200 | 200 |
| | Position 2 | 400 | 400 | 400 |
| | Position 3 | 600 | 600 | 600 |
| | Position 4 | 800 | 800 | 800 |
| | Position 5 | 1000 | 1000 | 1000 |
| | Position 6 | 1200 | 1200 | 1200 |
| t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG) | Position 1 | Inst | Inst | Inst |
| | Position 2 | 120 | 120 | 120 |
| | Position 3 | 300 | 300 | 300 |
| Independently Adjustable Instantaneous (I_r) setting (ALSI, ALSIG) | Yes | 2.5x, 4x, 6x, 7x, 8x, 11x | 2.5x, 4x, 6x, 7x, 8x, 9x | 2.5x, 4x, 6x, 7x |
| Maintenance Mode (remote) pickup ($2.5 \times I_n$) (ALSI, ALSIG) ② | Fixed | 2.5x | 2.5x | 2.5x |

Notes

- ① 50 ms for ALSI and ALSIG trip units.
 ② Maintenance Mode is enabled remotely using a 24 Vdc circuit.

2.2

Molded Case Circuit Breakers

Series G

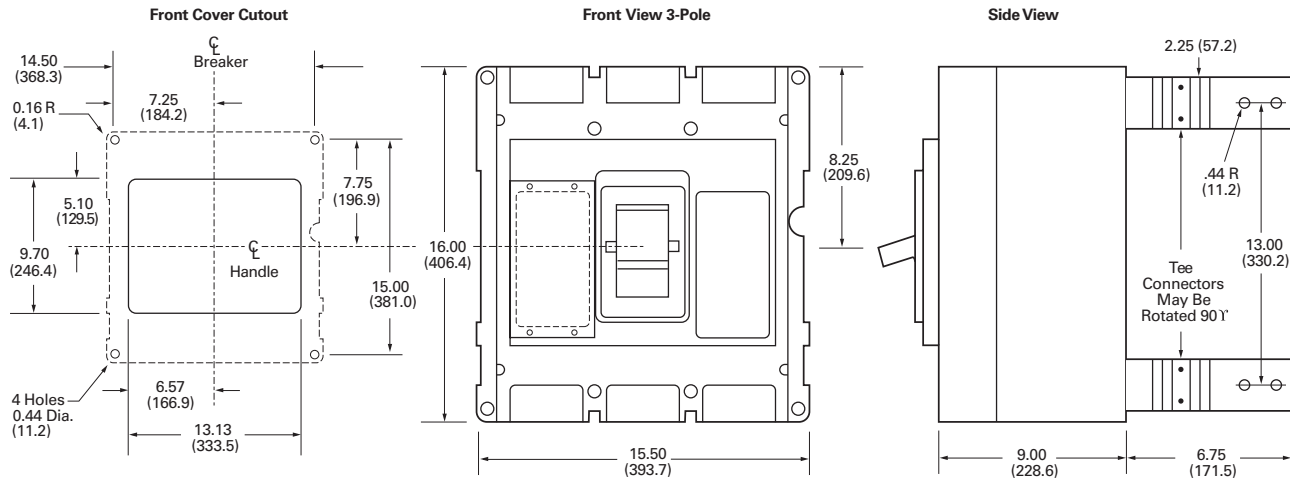
Dimensions and Weights

Approximate Dimensions in Inches (mm)

2

RG-Frame

| Number of Poles | Width | Height | Depth |
|-----------------|---------------|---------------|--------------|
| 3 | 15.50 (393.7) | 16.00 (406.4) | 9.75 (247.7) |
| 4 | 20.00 (508.0) | 16.00 (406.4) | 9.75 (247.7) |



Approximate Shipping Weight in Lbs (kg)

RG-Frame

| Breaker Type | Complete Breaker | |
|---------------------|----------------------------|------------|
| | Number of Poles Three-Pole | Four-Pole |
| 1600 Amperes | | |
| RGH, RGC | 102 (46.3) | 135 (61.2) |
| 2000 Amperes | | |
| RGH, RGC | 102 (46.3) | 135 (61.2) |
| 2500 Amperes | | |
| RGH, RGC | 135 (61.2) | 182 (82.6) |

Motor Circuit 480 Vac, Protectors



Motor Circuit Protectors (MCP)

Contents

| <i>Description</i> | <i>Page</i> |
|---|------------------|
| EG-Frame (15–125 Amperes) | V4-T2-15 |
| JG-Frame (63–250 Amperes) | V4-T2-29 |
| LG-Frame (250–630 Amperes) | V4-T2-47 |
| NG-Frame (320–1200 Amperes) | V4-T2-65 |
| RG-Frame (800–2500 Amperes) | V4-T2-74 |
| Motor Circuit Protectors (MCP) Product Selection Guide and Ordering Information | V4-T2-86 |
| Motor Protector Circuit Breakers (MPCB). | V4-T2-89 |
| 30 mA Ground Fault (Earth Leakage) Module. | V4-T2-92 |
| Current Limiting Circuit Breaker Module | V4-T2-96 |
| High Instantaneous Circuit Breaker for Selective Coordination | V4-T2-101 |
| Special Features and Accessories. | V4-T2-104 |
| Motor Operators | V4-T2-112 |
| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | V4-T2-115 |

Product Selection Guide and Ordering Information

2

EG-Frame—480 Vac, 600Y/347 Vac Maximum ^①

| Continuous Amperes | Cam Setting | Motor Full Load Current Amperes ^② | MCP Trip Setting ^③ | MCP Catalog Number |
|--------------------|-------------|--|-------------------------------|--------------------|
| 3 | A | 0.69–0.91 | 9 | HMCPE003A0C |
| | B | 1.1–1.3 | 15 | |
| | C | 1.6–1.7 | 21 | |
| | D | 2.0–2.2 | 27 | |
| | E | 2.3–2.5 | 30 | |
| | F | 2.6–2.8 | 33 | |
| 7 | A | 1.5–2.0 | 21 | HMCPE007C0C |
| | B | 2.6–3.1 | 35 | |
| | C | 3.7–3.9 | 49 | |
| | D | 4.8–5.2 | 63 | |
| | E | 5.3–5.7 | 70 | |
| | F | 5.8–6.1 | 77 | |
| 15 | A | 3.4–4.5 | 45 | HMCPE015E0C |
| | B | 5.7–6.8 | 75 | |
| | C | 8.0–9.1 | 105 | |
| | D | 10.4–11.4 | 135 | |
| | E | 11.5–12.6 | 150 | |
| | F | 12.7–13.0 | 165 | |
| 30 | A | 3.9–9.1 | 90 | HMCPE030H1C |
| | B | 11.5–13.7 | 150 | |
| | C | 16.1–18.3 | 210 | |
| | D | 20.7–22.9 | 270 | |
| | E | 23.0–25.2 | 300 | |
| | F | 25.3–26.1 | 330 | |

Notes

- ① UL listed for use with Eaton Motor Starters.
- ② Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- ③ For DC applications, actual trip levels are approximately 40% higher than values shown.

EG-Frame—480 Vac, 600Y/347 Vac Maximum, continued ^①

| Continuous Amperes | Cam Setting | Motor Full Load Current Amperes ^② | MCP Trip Setting ^③ | MCP Catalog Number |
|--------------------|-------------|--|-------------------------------|--------------------|
| 50 | A | 11.5–15.2 | 150 | HMCPE050K2C |
| | B | 19.2–22.9 | 250 | |
| | C | 26.9–30.6 | 350 | |
| | D | 34.6–38.3 | 450 | |
| | E | 38.4–42.1 | 500 | |
| | F | 42.2–43.5 | 550 | |
| 70 | A | 16.1–30.6 | 210 | HMCPE070M2C |
| | B | 26.9–32.2 | 350 | |
| | C | 37.6–42.9 | 490 | |
| | D | 48.4–53.7 | 630 | |
| | E | 53.8–59.1 | 700 | |
| | F | 59.2–60.9 | 770 | |
| 100 | A | 23.0–30.6 | 300 | HMCPE100R3C |
| | B | 38.4–46.0 | 500 | |
| | C | 53.8–61.4 | 700 | |
| | D | 69.2–76.8 | 900 | |
| | E | 76.9–84.5 | 1000 | |
| | F | 84.6–87.0 | 1100 | |
| 100 | A | 38.4–46.0 | 500 | HMCPE100T3C |
| | B | 57.6–65.2 | 750 | |
| | C | 76.9–84.5 | 1000 | |
| | D | ④ | 1250 | |
| | E | ④ | 1375 | |
| | F | ④ | 1500 | |

JG-Frame—600 Vac Maximum, 250 Vdc Maximum ^①

| Continuous Amperes | MCP Trip Range (Amperes) | MCP Catalog Number |
|--------------------|--------------------------|--------------------|
| 250 | 500–1000 | HMCPJ250D5L |
| | 625–1250 | HMCPJ250F5L |
| | 750–1500 | HMCPJ250G5L |
| | 875–1750 | HMCPJ250J5L |
| | 1000–2000 | HMCPJ250K5L |
| | 1125–2250 | HMCPJ250L5L |
| | 1250–2500 | HMCPJ250W5L |

Notes

- ^① UL listed for use with Eaton Motor Starters.
- ^② Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- ^③ For DC applications, actual trip levels are approximately 40% higher than values shown.
- ^④ Settings above $10 \times I_n$ are for special applications. Where the ampere rating of the disconnecting means cannot be less than 115% of the motor full load ampere rating.

2.2

Molded Case Circuit Breakers

Series G

LG-Frame—600 Vac Maximum, 250 Vdc Maximum ^①

2

| Continuous Amperes | MCP Trip Range (Amperes) | MCP Catalog Number |
|--------------------|--------------------------|--------------------|
| 600 | 1250–2500 | HMCPL600L6G |
| | 1500–3000 | HMCPL600N6G |
| | 1750–3500 | HMCPL600R6G |
| | 2000–4000 | HMCPL600X6G |
| | 2250–4500 | HMCPL600Y6G |
| | 2500–5000 | HMCPL600P6G |
| | 3000–6000 | HMCPL600M6G |

Notes

^① UL listed for use with Eaton Motor Starters.

800 and 1200 ampere, 600 Vac maximum motor circuit protectors are available as Series C HMCP product.

Series G Motor Protector Circuit Breakers (MPCB)



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| EG-Frame (15–125 Amperes) | V4-T2-15 |
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| NG-Frame (320–1200 Amperes) | V4-T2-65 |
| RG-Frame (800–2500 Amperes) | V4-T2-74 |
| Motor Circuit Protectors (MCP) | V4-T2-85 |
| Motor Protector Circuit Breakers (MPCB) | |
| Product Selection | V4-T2-90 |
| Technical Data and Specifications | V4-T2-91 |
| 30 mA Ground Fault (Earth Leakage) Module | V4-T2-92 |
| Current Limiting Circuit Breaker Module | V4-T2-96 |
| High Instantaneous Circuit Breaker for | |
| Selective Coordination | V4-T2-101 |
| Special Features and Accessories | V4-T2-104 |
| Motor Operators | V4-T2-112 |
| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | V4-T2-115 |

Motor Protector Circuit Breakers (MPCB)

Product Description

- Eliminates need for separate overload relay

Application Description

- Can be used with contactor to eliminate need for overload relay and still create manual motor control
- Meets requirement for motor branch protection, including:
 - Disconnecting means
 - Branch circuit short circuit protection
 - Overload protection

Features and Benefits

- Phase unbalance protection
- Phase loss protection
- Hot trip/cold trip
- High load alarm
- Pre-detection trip relay option
- Class 10, 15, 20, 30 protection

Standards and Certifications

- IEC 60947-2
- UL 489 100% rated
- UL 508
- CSA C22.2



Product Selection

2

JGMP Catalog Numbers

| Continuous Amperes | 35 kAIC Catalog Number | 65 kAIC Catalog Number |
|--------------------|------------------------------|------------------------------|
| 50 | JGMPS050G | JGMPH050G |
| 100 | JGMPS100G | JGMPH100G |
| 160 | JGMPS160G | JGMPH160G |
| 250 | JGMPS250G | JGMPH250G |

JGMP FLA Ie Dial Setting

| Continuous Amperes | A | B | C | D | E | F | G | H |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 | 20 | 20 | 25 | 30 | 32 | 40 | 45 | 50 |
| 100 | 40 | 45 | 50 | 63 | 70 | 80 | 90 | 100 |
| 160 | 63 | 80 | 90 | 100 | 110 | 125 | 150 | 160 |
| 250 | 100 | 125 | 150 | 160 | 175 | 200 | 225 | 250 |

LGMP Catalog Numbers

| Continuous Amperes | 50 kAIC Catalog Number | 65 kAIC Catalog Number |
|--------------------|------------------------------|------------------------------|
| 250 | LGMP250G | LGMPH250G |
| 400 | LGMP400G | LGMPH400G |
| 600 | LGMP600G | LGMPH600G |
| 630 ① | LGMP630G | LGMPH630G |

LGMP FLA Ie Dial Setting

| Continuous Amperes | A | B | C | D | E | F | G | H |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| 250 | 100 | 125 | 150 | 160 | 175 | 200 | 225 | 250 |
| 400 | 160 | 200 | 225 | 250 | 300 | 315 | 350 | 400 |
| 600 | 250 | 300 | 315 | 350 | 400 | 450 | 500 | 600 |
| 630 ① | 250 | 300 | 315 | 350 | 400 | 500 | 600 | 630 |

Notes

① 630 amperes is not a UL listed rating. 600 amperes is the maximum UL or CSA for LG breaker.

For pre-trip alarm option, order Style Number 5721B31G02.

For additional breaker solutions, see **Page V4-T2-267**.

Technical Data and Specifications

JGMPS and JGMPH Rating and Ampere Range

| Breaker Capacity (kA rms) AC 50–60 Hz | | | Maximum Rated Current—250 A | |
|---------------------------------------|-------------|------|-----------------------------|--------|
| | | | Breaker Type | |
| | | | JGMPS | JGMPH |
| IEC 60947-2 | 220–240 Vac | I cu | 85 | 100 |
| | | I cs | 85 | 100 |
| | 380–415 Vac | I cu | 40 | 70 |
| | | I cs | 40 | 70 |
| | 660–690 Vac | I cu | 12 | 14 |
| | | I cs | 6 | 7 |
| NEMA UL 489 | 240 Vac | | 85 | 100 |
| | 480 Vac | | 35 | 65 |
| | 600 Vac | | 25 | 35 |
| Number of poles | | | 3 | 3 |
| Ampere range | | | 50–250 | 50–250 |

LGMP5 and LGMPH Rating and Ampere Range

| Breaker Capacity (kA rms) AC 50–60 Hz | | | Maximum Rated Current—630 A ^① | |
|---------------------------------------|-------------|------|--|----------------------|
| | | | Breaker Type | |
| | | | LGMP5 | LGMPH |
| IEC 60947-2 | 220–240 Vac | I cu | 85 | 100 |
| | | I cs | 85 | 100 |
| | 380–415 Vac | I cu | 50 | 70 |
| | | I cs | 50 | 53 |
| | 660–690 Vac | I cu | 20 | 25 |
| | | I cs | 10 | 13 |
| NEMA UL 489 | 240 Vac | | 85 | 100 |
| | 480 Vac | | 50 | 65 |
| | 600 Vac | | 25 | 35 |
| Number of poles | | | 3 | 3 |
| Ampere range | | | 250–630 ^① | 250–630 ^① |

Notes

^① 630 amperes is not a UL listed rating. 600 amperes is the maximum UL or CSA for LG breaker.

For pre-trip alarm option, order Style Number 5721B31G02.

30 mA Ground Fault (Earth Leakage) Modules



**Clockwise from Left:
JG, LG, EG MCCBs Shown with
Ground Fault (Earth Leakage) Module**

30 mA Ground Fault (Earth Leakage) Module

Product Description

Eaton offers three- and four-pole 30 mA ground fault (earth leakage) protection modules for Series G E-, J- and L-frame molded case circuit breakers (MCCBs). Separate UL listed and IEC rated devices are available for each frame.

The modules are bottom mounted and are available for each frame circuits up to:

- EG: 125 amperes
- JG: 150 (UL), 160 (IEC) or 250 amperes
- LG: 400, 600 (UL) or 630 (IEC) amperes

The module is completely self contained, including a current sensor, relay and power supply inside the device. Current pickup settings are selectable from 0.03 to 10 amperes for all devices, except for the UL listed module, for which settings are selectable from 0.03 to 30 amperes. Time delays are also selectable from Instantaneous to 1.0 second for pickup settings of 0.10 amperes and above. The current pickup setting of 0.03 amperes defaults to an Instantaneous time setting regardless of the time dial's position.

Two alarm contacts are included with each device, which can be wired externally for remote indication. Both of these are also indicated by an LED on the front of the device:

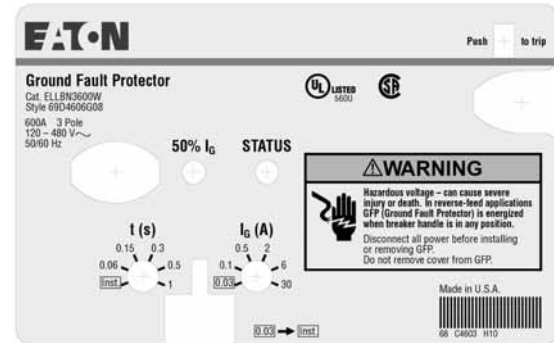
1. 50% pre-trip: alarms when the earth leakage current reaches 50% of the set pickup setting value.
2. 100% after trip: alarms when the breaker reaches the set pickup setting value and the breaker trips.

Contents

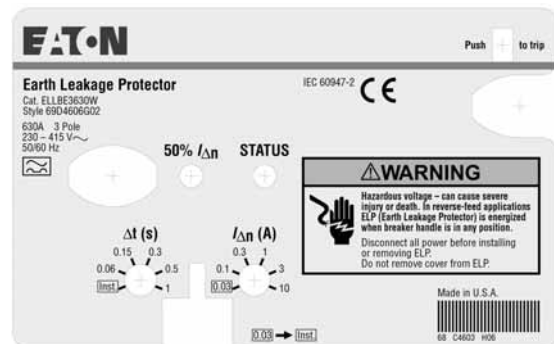
Description

| | <i>Page</i> |
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| RG-Frame (800–2500 Amperes) | V4-T2-74 |
| Motor Circuit Protectors (MCP) | V4-T2-85 |
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| 30 mA Ground Fault (Earth Leakage) Module | |
| Product Selection | V4-T2-93 |
| Dimensions | V4-T2-94 |
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| High Instantaneous Circuit Breaker for | |
| Selective Coordination | V4-T2-101 |
| Special Features and Accessories | V4-T2-104 |
| Motor Operators | V4-T2-112 |
| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | V4-T2-115 |

UL-Rated LG-Frame Earth Leakage Module Faceplate



IEC-Rated LG-Frame Earth Leakage Module Faceplate



Product Selection

EG-Frame


EG-Frame Ground Fault Modules, UL-Rated (Bottom Mounted, 120–480 Vac, 50/60 Hz) ①

| Ampere Rating | Number of Poles | Catalog Number |
|---------------|-----------------|----------------|
| 125 | 3 | ELEBN3125G |
| 125 | 4 | ELEBN4125G |

EG-Frame Earth Leakage Modules, IEC-Rated (Bottom Mounted, 230–415 Vac, 50/60 Hz)

| Ampere Rating | Number of Poles | Catalog Number |
|---------------|-----------------|----------------|
| 125 | 3 | ELEBE3125G |
| 125 | 4 | ELEBE4125G |

JG-Frame


JG-Frame Ground Fault Modules, UL-Rated (Bottom Mounted, 120–480 Vac, 50/60 Hz)

| Ampere Rating | Number of Poles | Catalog Number |
|---------------|-----------------|----------------|
| 150 | 3 | ELJBN3150W |
| 150 | 4 | ELJBN4150W |
| 250 | 3 | ELJBN3250W |
| 250 | 4 | ELJBN4250W |

JG-Frame Earth Leakage Modules, IEC-Rated (Bottom Mounted, 230–415 Vac, 50/60 Hz)

| Ampere Rating | Number of Poles | Catalog Number |
|---------------|-----------------|----------------|
| 160 | 3 | ELJBE3160W |
| 160 | 4 | ELJBE4160W |
| 250 | 3 | ELJBE3250W |
| 250 | 4 | ELJBE4250W |

Note

① Shunt trip and undervoltage release cannot be used in an EG breaker connected to an earth leakage module.

LG-Frame


LG-Frame Ground Fault Modules, UL-Rated (Bottom Mounted, 120–480 Vac, 50/60 Hz)

| Ampere Rating | Number of Poles | Catalog Number |
|---------------|-----------------|----------------|
| 400 | 3 | ELLBN3400W |
| 400 | 4 | ELLBN4400W |
| 600 | 3 | ELLBN3600W |
| 600 | 4 | ELLBN4600W |

LG-Frame Earth Leakage Modules, IEC-Rated (Bottom Mounted, 230–415 Vac, 50/60 Hz)

| Ampere Rating | Number of Poles | Catalog Number |
|---------------|-----------------|----------------|
| 400 | 3 | ELLBE3400W |
| 400 | 4 | ELLBE4400W |
| 630 | 3 | ELLBE3630W |
| 630 | 4 | ELLBE4630W |

2.2

Molded Case Circuit Breakers

Series G

Dimensions

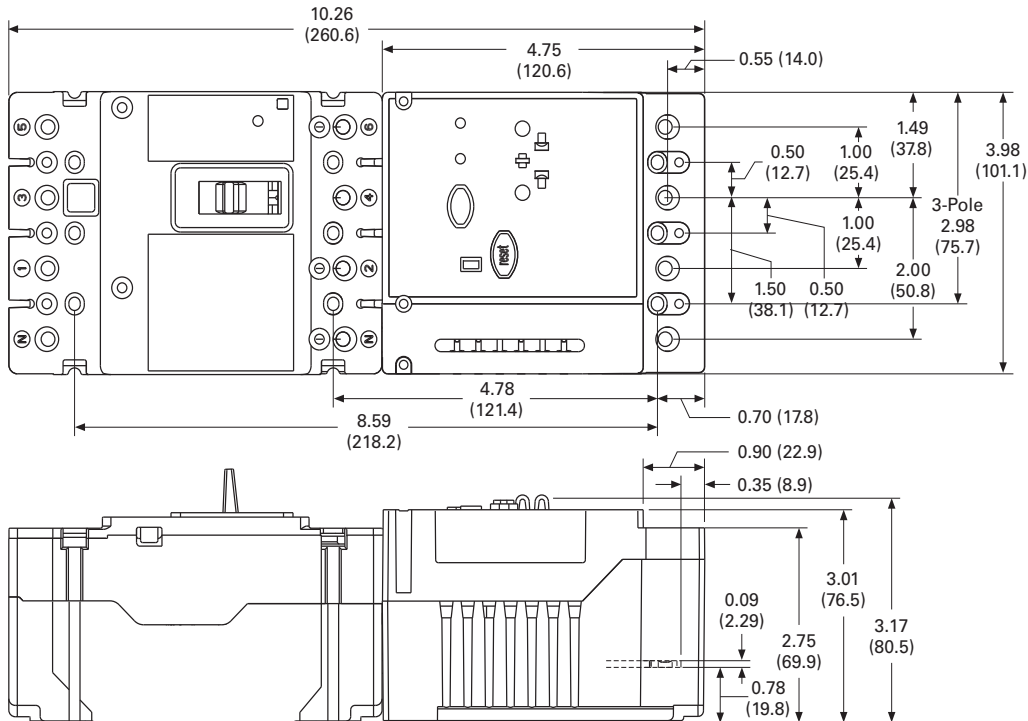
Approximate Dimensions in Inches (mm)

2

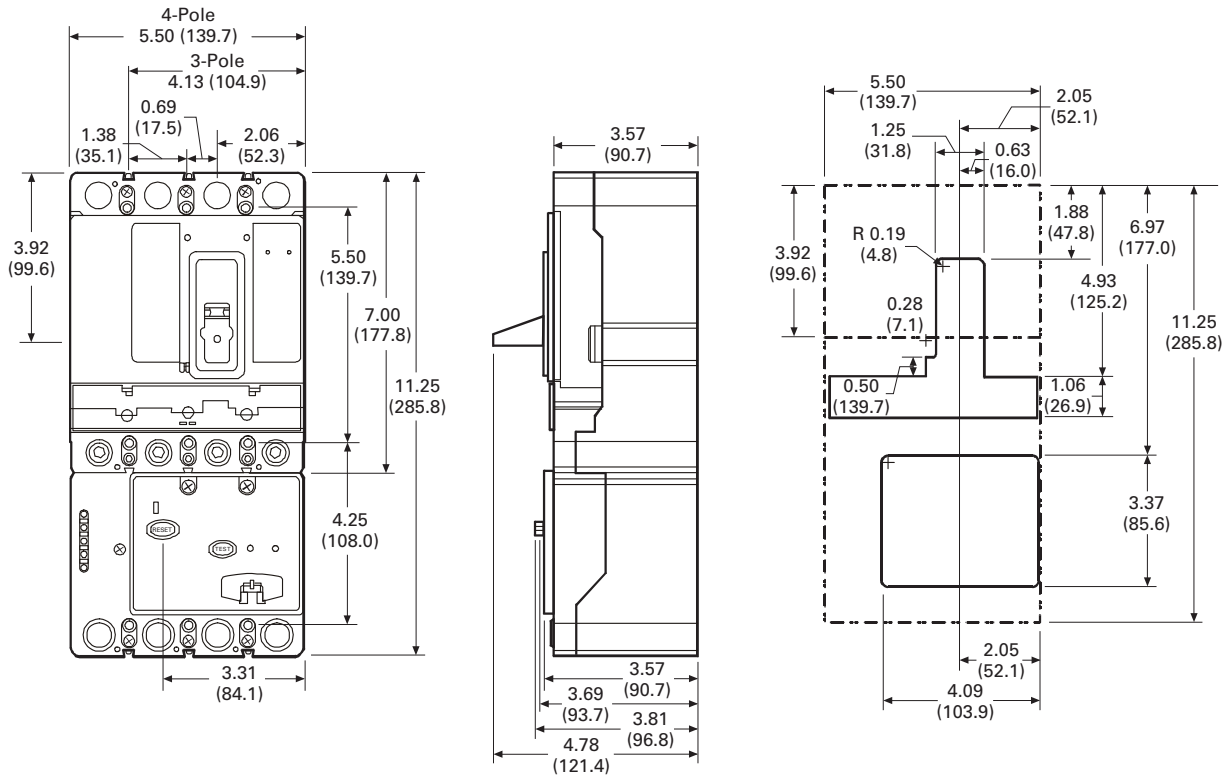
Assembled Breaker and Earth Leakage Module

| Frame | Height | Width | Depth |
|-------------------|---------------|--------------|--------------|
| Three-Pole | | | |
| EG | 10.25 (260.3) | 3.00 (76.2) | 2.98 (75.8) |
| JG | 11.25 (285.8) | 4.13 (104.9) | 3.57 (90.7) |
| LG | 15.38 (390.7) | 5.48 (139.2) | 4.06 (103.1) |
| Four-Pole | | | |
| EG | 10.25 (260.3) | 4.00 (101.6) | 2.98 (75.8) |
| JG | 11.25 (285.8) | 5.50 (139.7) | 3.57 (90.7) |
| LG | 15.38 (390.7) | 7.23 (183.6) | 4.06 (103.1) |

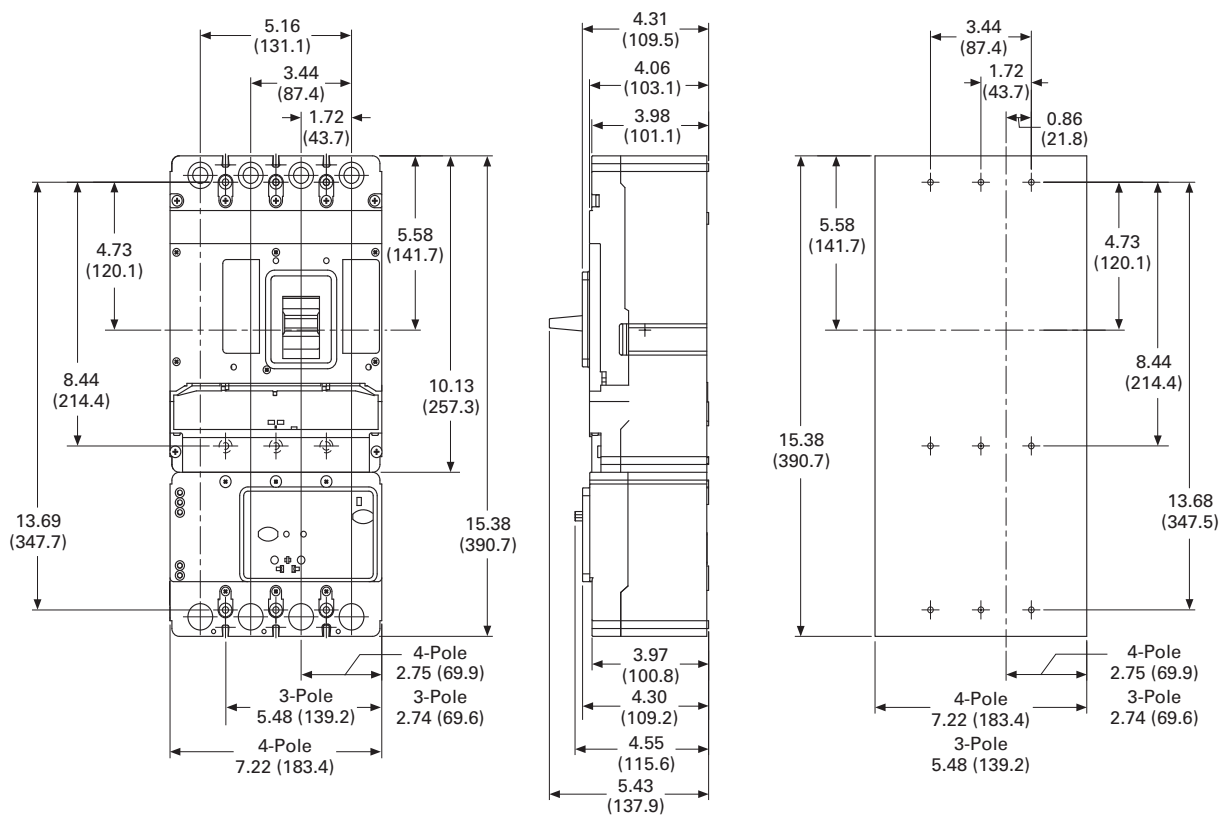
EG-Frame With Earth Leakage Module



JG-Frame With Earth Leakage Module



LG-Frame With Earth Leakage Module



Current Limiting Circuit Breaker Modules



Current Limiting Circuit Breaker Module

Product Overview

Power demand continues to grow in new and existing facilities. To meet increased demand, larger utility supplies, spot networks and large facility transformers are installed. The increased capacity of the electrical source results in increased fault currents in excess of 100 kA short-circuit protection. Eaton manufactures non-fused current limiting modules with interrupting capacities up to 200 kA at 600 Vac or 70 kA at 690 Vac. Unlike fused current limiters with a one-time use, a current limiter module provides an automatic reset of the module after a short-circuit event. Resetting the molded-case circuit breaker is the only action required to restore critical power to the system; there is no time wasted with sourcing the correct replacement fuses or module to bring system back online.

Product Description

The current limiting breaker modules use a unique contact design to enhance the system protection similar to that of the circuit breaker. When high short-circuit current is flowing through the contacts of these modules, the design results in very high interrupting capacities and improved current limiting characteristics.

Application Description

High-performance breakers are most commonly applied when very high fault levels are available and with applications where the current limiting capability is used upstream of the final load to limit current. Typical loads include lighting, power distribution, and motor control applications.

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| Motor Protector Circuit Breakers (MPCB) | V4-T2-89 |
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| Current Limiting Circuit Breaker Module | |
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| Selective Coordination | V4-T2-101 |
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| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | V4-T2-115 |

Features and Benefits

Superior system protection:

- Auto reset improves system uptime and eliminates the need for finding replacement parts
- No fuses to replace, reducing the overall cost of ownership and the waste created by fuses
- Overloads, by using inverse time current tripping characteristics of the molded-case circuit breaker
- Low-level short circuits, by using instantaneous and/or short-time delay tripping characteristics of the molded-case circuit breaker
- High-level short circuits, by using ultra-high-speed, blow-apart contacts of the current limiting module in series with the circuit breaker contacts
- Let-through currents, by improved opening speed of the contacts, the resultant rapid rise of arc voltage introduces impedance into the system

Standards and Certifications

- IEC 60947-2
- UL 489
- CSA C22.2



Product Selection

Series G High Performance Family Offering

| Type | Product | Amperes | 480 Vac (UL) | | 415 Vac (IEC) | | 690 Vac (IEC) | |
|-------------------------|--------------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | I _{cu} | I _{cs} | I _{cu} | I _{cs} | I _{cu} | I _{cs} |
| EGC 3P thermal-magnetic | Breaker only | 15–125 | 100 | 35 ① | 100 | 100 | — | — |
| | With limiter | 15–100 | 150 | 100 ① | 150 | 150 | — | — |
| JG 3P thermal-magnetic | Breaker only | 70–250 | 200 | 50 | 200 | 200 | 18 | 14 |
| | With limiter | 70–225 | 200 | 200 | 200 | 150 | 70 | 18 |
| JG 3P electronic | Breaker only | 20–250 | 200 | 50 | 200 | 200 | 18 | 14 |
| | With limiter | 100–250 | 200 | 200 | 200 | 150 | 70 | 18 |
| LG 3P thermal-magnetic | Breaker only | 250–600 | 200 | 65 | 200 | 200 | 35 | 18 |
| LG3P electronic | Breaker only | 100–600 | 200 | 65 | 200 | 200 | 35 | 18 |

EG-Frame



EG IC Rating—150 kAIC at 415 and 480 Vac

| UL Listed (NEMA/IEC Rated) Base Molded Case Circuit Breaker | Breaker with Line Side Mounted Current Limiter | Breaker with Load Side Mounted Current Limiter | Line and Load Terminations Included ② | Interphase Barrier Included for Limiter |
|---|--|--|---------------------------------------|---|
| EGC3015FFG | EGC3015FFGQ01 | EGC3015FFGQ02 | T125EF | EIPBSK |
| EGC3016FFG | EGC3016FFGQ01 | EGC3016FFGQ02 | T125EF | EIPBSK |
| EGC3020FFG | EGC3020FFGQ01 | EGC3020FFGQ02 | T125EF | EIPBSK |
| EGC3025FFG | EGC3025FFGQ01 | EGC3025FFGQ02 | T125EF | EIPBSK |
| EGC3030FFG | EGC3030FFGQ01 | EGC3030FFGQ02 | T125EF | EIPBSK |
| EGC3032FFG | EGC3032FFGQ01 | EGC3032FFGQ02 | T125EF | EIPBSK |
| EGC3035FFG | EGC3035FFGQ01 | EGC3035FFGQ02 | T125EF | EIPBSK |
| EGC3040FFG | EGC3040FFGQ01 | EGC3040FFGQ02 | T125EF | EIPBSK |
| EGC3045FFG | EGC3045FFGQ01 | EGC3045FFGQ02 | T125EF | EIPBSK |
| EGC3050FFG | EGC3050FFGQ01 | EGC3050FFGQ02 | T125EF | EIPBSK |
| EGC3060FFG | EGC3060FFGQ01 | EGC3060FFGQ02 | T125EF | EIPBSK |
| EGC3063FFG | EGC3063FFGQ01 | EGC3063FFGQ02 | T125EF | EIPBSK |
| EGC3070FFG | EGC3070FFGQ01 | EGC3070FFGQ02 | T125EF | EIPBSK |
| EGC3080FFG | EGC3080FFGQ01 | EGC3080FFGQ02 | T125EF | EIPBSK |
| EGC3090FFG | EGC3090FFGQ01 | EGC3090FFGQ02 | T125EF | EIPBSK |
| EGC3100FFG | EGC3100FFGQ01 | EGC3100FFGQ02 | T125EF | EIPBSK |

Notes

① 600Y/347V.

② Two interphase barriers included on line end mounted limiter; (2) line end of limiter. Four interphase barriers included on load end mounted limiter; (2) line end of breaker (2) load end of limiter.

Technical Data and Specifications

2

UL 489 Current Limiting Data

| Frame | Circuit | I _p (kA) | I ² T (10 ⁶ A ² S) |
|---------|--------------|---------------------|---|
| EGC...Q | 240 V/150 kA | 21.80 | 0.277 |
| EGC...Q | 480 V/150 kA | 21.80 | 0.277 |
| EGC...Q | 600 V/100 kA | 22.60 | 0.387 |

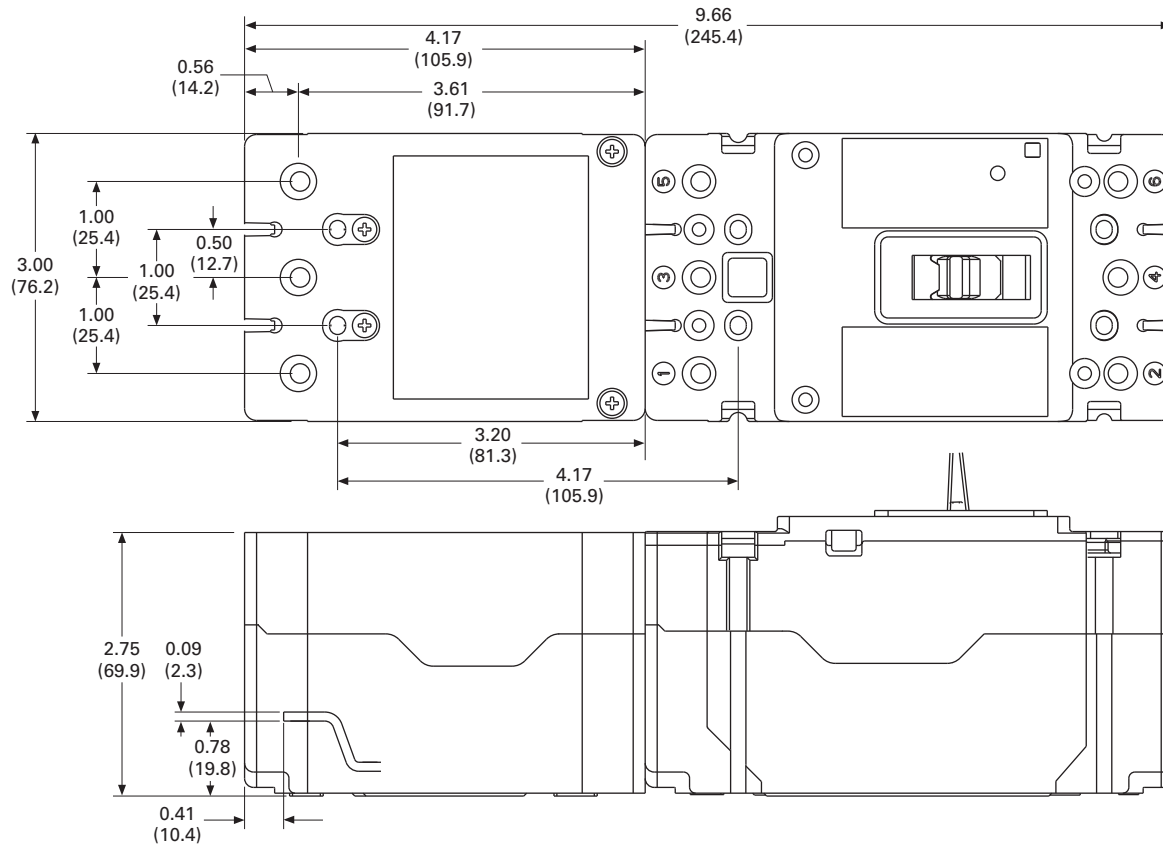
Dimensions and Weights

Approximate Dimensions in Inches (mm)

Assembled Breaker and Current Limiting Module

| Frame | Height | Width | Depth | Weight in lbs (kg) |
|-------|--------------|-------------|-------------|--------------------|
| EG | 9.66 (245.7) | 3.00 (76.2) | 2.98 (75.8) | 2.91 (1.32) |
| HMCP | 9.66 (245.7) | 3.00 (76.2) | 2.98 (75.8) | 4.18 (1.90) |

EG-Frame With Current Limiter Module



JG Frame



JG IC Rating—200 kAIC at 600 Vac and 70 kAIC at 690 Vac

| Ampere Rating | Magnetic Range | UL Listed, IEC Rated Breaker With Line Side Mounted Current Limiter ^① | UL Listed, IEC Rated Breaker With Load Side Mounted Current Limiter ^② | IEC Rated Breaker With Line Side Mounted Current Limiter ^① | IEC Rated Breaker With Load Side Mounted Current Limiter ^② |
|-----------------------------|----------------|--|--|---|---|
| | | Fixed Thermal, Adjustable Magnetic | Magnetic | Adjustable Thermal, Adjustable Magnetic | Magnetic |
| 70 | 350–700 | JGH3070FAGQ01 | JGH3070FAGQ02 | — | — |
| 90 | 450–900 | JGH3090FAGQ01 | JGH3090FAGQ02 | — | — |
| 100 | 500–1000 | JGH3100FAGQ01 | JGH3100FAGQ02 | JGH3100AAGQ01 | JGH3100AAGQ02 |
| 125 | 625–1250 | JGH3125FAGQ01 | JGH3125FAGQ02 | JGH3125AAGQ01 | JGH3125AAGQ02 |
| 150 | 750–1550 | JGH3150FAGQ01 | JGH3150FAGQ02 | — | — |
| 160 | 800–1600 | — | — | JGH3160AAGQ01 | JGH3160AAGQ02 |
| 175 | 875–1750 | JGH3175FAGQ01 | JGH3175FAGQ02 | — | — |
| 200 | 1000–2000 | JGH3200FAGQ01 | JGH3200FAGQ02 | JGH3200AAGQ01 | JGH3200AAGQ02 |
| 225 | 1125–2250 | JGH3225FAGQ01 | JGH3225FAGQ02 | — | — |
| Electronic Trip LS | | | | | |
| 250 | — | JGH325033GQ01 | JGH325033GQ02 | — | — |
| Electronic Trip LSI | | | | | |
| 250 | — | JGH325032GQ01 | JGH325032GQ02 | — | — |
| Electronic Trip LSG | | | | | |
| 250 | — | JGH325035GQ01 | JGH325035GQ02 | — | — |
| Electronic Trip LSIG | | | | | |
| 250 | — | JGH325036GQ01 | JGH325036GQ02 | — | — |

Series G HMCP

| Ampere Rating | Motor Circuit Protector with Line Side Mounted Current Limiter | Breaker with Load Side Mounted Current Limiter |
|---------------|--|--|
| 250 | HMCPJ250D5LQ01 | HMCPJ250D5LQ02 |
| 250 | HMCPJ250F5LQ01 | HMCPJ250F5LQ02 |
| 250 | HMCPJ250G5LQ01 | HMCPJ250G5LQ02 |
| 250 | HMCPJ250J5LQ01 | HMCPJ250J5LQ02 |
| 250 | HMCPJ250K5LQ01 | HMCPJ250K5LQ02 |
| 250 | HMCPJ250L5LQ01 | HMCPJ250L5LQ02 |

Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | Metric Wire Range mm ² | AWG Wire Range/ Number of Conductors | Catalog Number |
|---|------------------------|-----------|-----------------------------------|--------------------------------------|----------------------|
| Standard Pressure Type Terminals | | | | | |
| 250 | Aluminum | Cu/Al | 10–185 | #8–350 (1) | TA250FJ ^③ |

Notes

- ① Two interphase barriers provided, mounted on line end of limiter, catalog number **FJIPBK**.
 ② Four interphase barriers provided, (2) line end of breaker, (2) load end of limiter.
 ③ Line and load terminals included with products listed above.

Technical Data and Specifications

2

UL 489 Current Limiting Data

| Frame | Circuit | I_p (kA) | I^2T ($10^6 A^2S$) |
|---------|--------------|------------|------------------------|
| JGH...Q | 240 V/200 kA | 48.60 | 2.47 |
| JGH...Q | 480 V/200 kA | 48.60 | 2.47 |
| JGH...Q | 600 V/200 kA | 48.60 | 2.47 |

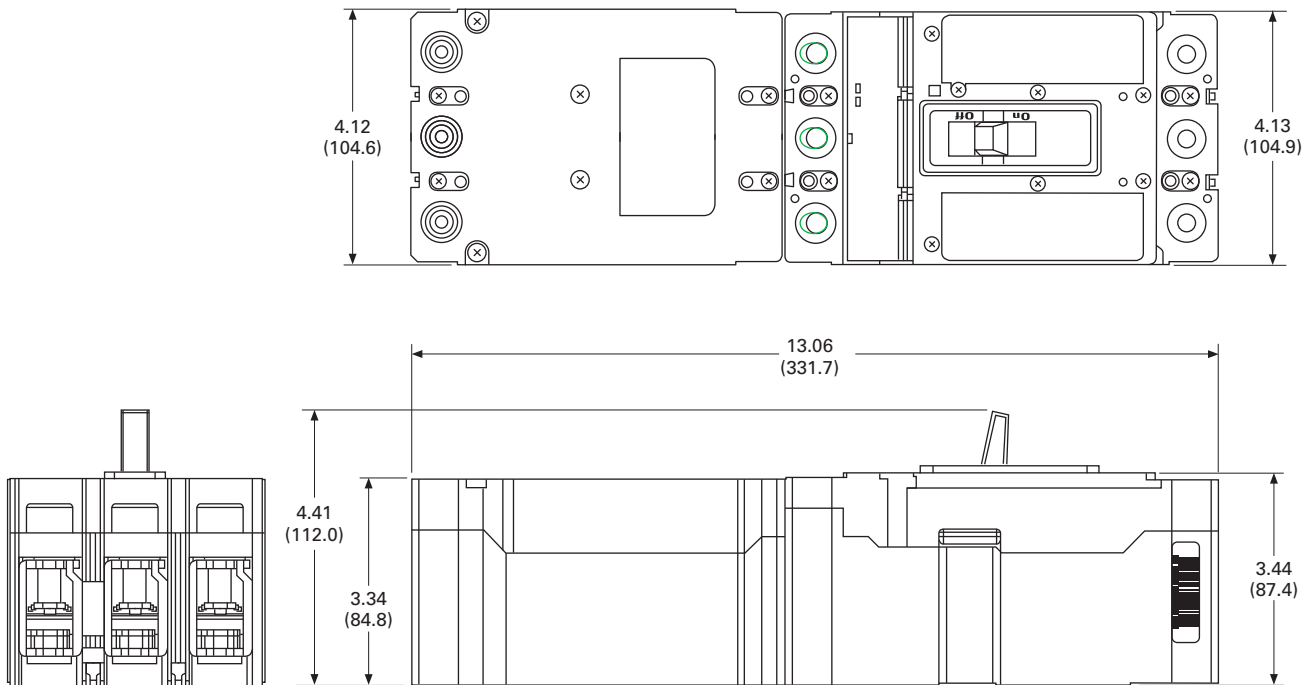
Dimensions and Weights

Approximate Dimensions in Inches (mm)

Assembled Breaker and Current Limiting Module

| Frame | Height | Width | Depth | Weight in lbs (kg) |
|--------------|---------------|--------------|-------------|--------------------|
| JG + limiter | 13.06 (331.7) | 4.13 (104.9) | 3.44 (87.4) | 9.87 (4.48) |
| HMCP | 13.06 (331.7) | 4.13 (104.9) | 3.44 (87.4) | 9.87 (4.48) |

JG-Frame With Current Limiter Module



High Instantaneous Circuit Breaker for Selective Coordination**Contents**

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| LG-Frame (250–630 Amperes) | V4-T2-47 |
| NG-Frame (320–1200 Amperes) | V4-T2-65 |
| RG-Frame (800–2500 Amperes) | V4-T2-74 |
| Motor Circuit Protectors (MCP) | V4-T2-85 |
| Motor Protector Circuit Breakers (MPCB). | V4-T2-89 |
| 30 mA Ground Fault (Earth Leakage) Module. | V4-T2-92 |
| Current Limiting Circuit Breaker Module | V4-T2-96 |
| High Instantaneous Circuit Breaker for Selective Coordination | |
| Product Selection. | V4-T2-102 |
| Technical Data and Specifications | V4-T2-103 |
| Dimensions | V4-T2-103 |
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| Motor Operators | V4-T2-112 |
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| Drawout Cassette | V4-T2-115 |

High Instantaneous Circuit Breaker for Selective Coordination**Product Description**

Eaton's Electrical Sector introduces new high-magnetic withstand molded case circuit breakers, specifically designed for critical operations and selective coordination requirements. The high-magnetic withstand LHH and NHH frames continue the legacy of circuit breaker innovation for which Eaton is recognized throughout the world. The LHH and NHH breakers are equipped with 125 to 400 ampere trip units with high-magnetic capability. This design enables the breakers to withstand up to 90 times rated current before opening under short-circuit conditions.

The LHH and NHH circuit breakers incorporate a higher level of instantaneous pickup, thus allowing for higher current levels of selective coordination. Standard molded case circuit breakers typically are furnished with a magnetic pickup or electronic instantaneous adjustment or instantaneous override set at 10 times (10x) the continuous trip rating.

Features, Benefits and Functions

Eaton's new LHH and NHH molded case circuit breakers are furnished with a higher level of magnetic pickup or electronic instantaneous settings as indicated in table on **Page V4-T2-103**. These higher levels of magnetic pickup and electronic instantaneous values in turn allow the system designer to obtain selective coordination at fault current levels up to these higher ratings. Greater values of selective coordination are available based on manufacturer tested combinations using the LHH and NHH as line-side breakers and standard breakers as load-side devices. Refer to IA01200002E to determine the maximum fault values that selective coordination achieves. When the line-side and load-side molded case circuit breaker trip ratings are chosen to coordinate in the overload range, they also can be selectively coordinated in the fault range up to the values listed in the table on **Page V4-T2-103** or IA01200002E. For overcurrents protected by circuit breakers on the load-side of the LHH or NHH, only the effected load-side

circuit breaker will open, while the line-side LHH and/or NHH circuit breakers remain closed, thus providing continuity of power to the other critical loads supplied by the LHH or NHH circuit breakers.

Benefits of Using the LHH and NHH Molded Case Circuit Breakers

Customer expectations and codes are driving product development to protect customers' critical operations. NEC® 2005 and 2008 requires circuits with elevators, emergency systems, legally required standby systems, health care essential systems and critical operation power systems to be selectively coordinated. Simply stated, only the closest protective device directly protecting the circuit having an overcurrent (overload or fault) condition should open.

All other overcurrent protective devices within these systems shall remain closed. Similarly, backup power system designs of a critical nature that are not code mandated may also require overcurrent protective devices to be selectively coordinated as much as practicable to provide a higher level of uptime.

Product Selection

LHH



LHH and NHH Catalog Numbers

| Ampere Rating | Thermal-Magnetic Trip Unit | | LSI Electronic Trip Unit |
|---------------|----------------------------|---------------|--------------------------|
| | LHH Frame | NHH Frame | |
| 125 | LHH3125FFG | — | |
| 150 | LHH3150FFG | NHH3150T52X15 | |
| 175 | LHH3175FFG | NHH3175T52X15 | |
| 200 | LHH3200FFG | NHH3200T52X15 | |
| 225 | LHH3225FFG | NHH3225T52X15 | |
| 250 | LHH3250FFG | NHH3250T52X15 | |
| 300 | LHH3300FFG | NHH3300T52X15 | |
| 350 | LHH3350FFG | NHH3350T52X15 | |
| 400 | LHH3400FFG | — | |

2 Proven Technology and Performance

The LHH is based on the Series G L-Frame circuit breaker, sharing the same small footprint and field-fit accessories as the L-Frame breaker. The NHH is based on the Series G N-Frame circuit breaker and shares the same footprint and accessories as the N-Frame breaker. NHH accessories must be factory installed.

The LHH incorporates a thermal-magnetic trip unit with fixed thermal and fixed magnetic settings. The NHH has an OPTIM™ electronic trip unit with LSI adjustment capabilities. The instantaneous setting is adjustable from 1000–4000 A or may be turned off to default to the frame override of 14,000 A. A hand-held OPTIMizer must be used with the NHH to adjust short-time delay and instantaneous, however, the long delay pickup is fixed and cannot be adjusted.

The LHH and NHH breakers are available in Eaton's panelboards and switchboards.

Standards and Certifications

- UL
- CSA



Technical Data and Specifications

- Three-pole
- 65 kAIC at 480 Vac
- 125–400 ampere LHH
- 150–350 ampere NHH
- Trip units:
- LHH—thermal-magnetic
- NHH—LSI electronic trip unit
- No rating plugs required
- Factory-sealed breakers
- LHH uses same internal and external accessories as standard Series G L-Frame circuit breaker
- NHH uses same internal and external accessories as standard Series G N-Frame circuit breaker

LHH and NHH Electrical Characteristics

Short-Circuit Current Ratings (kA rms) AC 50–60 Hz

| Description | Breaker Type | |
|------------------------------|--------------|-----------|
| | LHH | NHH |
| Max. rated current (amperes) | 400 | 350 |
| NEMA UL 489 | | |
| 240 Vac | 100 | 100 |
| 480 Vac | 65 | 65 |
| 600 Vac | 35 | 35 |
| 250 Vac | 42 | — |
| IEC 60947-2 | | |
| 220 Vac | 100 | 100 |
| 415 Vac | 70 | 70 |
| 690 Vac | 25 | 25 |
| 125/250 Vdc | 22 | — |
| Number of poles | 3 | 3 |
| Ampere range | 125–400 A | 150–350 A |

Continuous Current Ratings

| Continuous Current Rating (I _c) | Magnetic Trip Point | Continuous Current Multiplier | Instantaneous Trip Point | Continuous Current Multiplier | Short Delay Pickup |
|---|---------------------|-------------------------------|--------------------------|-------------------------------|--------------------|
| 125 A | 2500 A | 20x | — | — | — |
| 150 A | 2500 A | 16x | 14,000 A | 93x | 225–1200 A |
| 175 A | 4000 A | 22x | 14,000 A | 80x | 260–1400 A |
| 200 A | 4000 A | 20x | 14,000 A | 70x | 300–1600 A |
| 225 A | 6000 A | 26x | 14,000 A | 62x | 338–1800 A |
| 250 A | 6000 A | 24x | 14,000 A | 56x | 375–2000 A |
| 300 A | 6000 A | 20x | 14,000 A | 47x | 450–2400 A |
| 350 A | 6000 A | 17x | 14,000 A | 40x | 525–2800 A |
| 400 A | 6000 A | 15x | — | — | — |

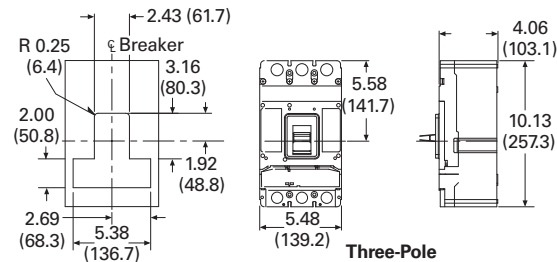
Dimensions

Approximate Dimensions in Inches (mm)

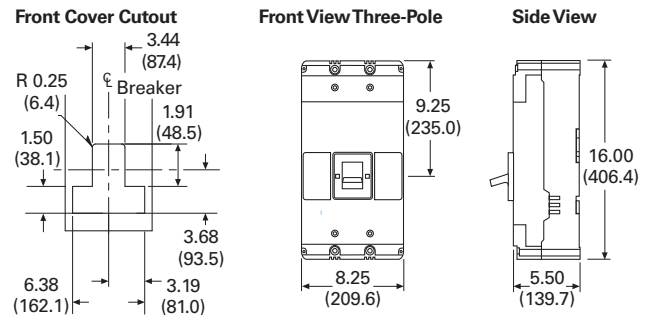
Dimensions

| Description | Height | Width | Depth | Weight in Lbs (kg) |
|-------------|---------------|--------------|--------------|--------------------|
| LHH | 10.13 (257.3) | 5.48 (139.2) | 4.09 (103.9) | 12.36 (5.6) |
| NHH | 16.00 (406.4) | 8.25 (209.5) | 5.50 (139.7) | 46.80 (21.2) |

L-Frame



N-Frame



Contents

| <i>Description</i> | <i>Page</i> |
|--|------------------|
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| JG-Frame (63–250 Amperes) | V4-T2-29 |
| LG-Frame (250–630 Amperes) | V4-T2-47 |
| NG-Frame (320–1200 Amperes) | V4-T2-65 |
| RG-Frame (800–2500 Amperes) | V4-T2-74 |
| Motor Circuit Protectors (MCP) | V4-T2-85 |
| Motor Protector Circuit Breakers (MPCB) | V4-T2-89 |
| 30 mA Ground Fault (Earth Leakage) Module | V4-T2-92 |
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Special Features and Accessories

Eaton’s molded case circuit breakers are designed to provide circuit protection for low voltage distribution systems. They are described by NEMA as, “... a device for closing and interrupting a circuit between separable contacts under both normal and abnormal conditions,” and furthermore as, “... a breaker assembled as an integral unit in a supporting and enclosing housing of insulating material.” The National Electrical Code (NEC) describes them as, “A device designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating.”

So designed, Eaton circuit breakers protect conductors against overloads and conductors and connected apparatus, such as motors and motor starters, against short circuits.

In low voltage distribution systems, there are many varied applications of molded case circuit breakers. Eaton offers the most comprehensive family of molded case circuit breakers in the industry.

This section of circuit breakers includes:

- Thermal-magnetic trip breakers
- Electronic rms trip breakers
- Molded case switches
- Motor circuit protectors
- Current limiting breakers
- Special application breakers

Modified Breakers

Eaton breakers can be ordered with internal accessories installed. These modified breakers will be subject to an addition charge.

Special Calibration

Special non-UL listed calibrations are available for certain ambient temperatures other than 40 °C and for frequencies other than 50/60 Hz or DC. Reduced interrupting ratings will apply for 400 Hz applications.

- Add suffix H01 to breaker catalog number for 400 Hz rating

50 °C Calibration

Note: Breakers equipped with electronic trip units can operate reliably in ambient temperatures of 50 °C. Add suffix “V3” to NG MCCBs to remove standard 40 °C labeling.

Add suffix “V” to catalog number for complete thermal magnetic breaker when ordering listed ampere ratings for breakers to be used in 50 °C ambients. 50 °C ambient MCCBs are not UL listed.

Contact Eaton for availability.

Calibrations and Treatment

| Description | Frame | | | | |
|---------------------------|-------|----|----|----|----|
| | EG | JG | LG | NG | RG |
| Special calibration | ■ | ■ | ■ | ■ | ■ |
| Moisture-fungus treatment | ■ | ■ | ■ | ■ | ■ |

Moisture-Fungus Treatment

All Eaton circuit breaker cases are molded from glass-polyester, which does not support the growth of fungus. Any parts that are susceptible to the growth of fungus will require special treatment.

Order by description.

- Add suffix J01 to breaker catalog number

Freeze-Tested Circuit Breakers

The circuit breakers may be ordered with freeze testing. This option uses special lubrication and mechanical operation is verified at -40°C .

- Add suffix F01 to catalog number -57°F , F02 -30°F

Marine Applications

E- to R-Framed circuit breakers can be supplied to meet the following marine specifications:

- U.S. Coast Guard CFR 46; ABS—American Bureau of Shipping; IEEE 45; DNV; and Lloyds

These specifications generally require molded case circuit breakers to be supplied with 50°C ambient, and plug-in adapter kits. When plug-in adapter kits are used, no terminals need be supplied (switchboard applications).

Circuit breakers can also be supplied to meet UL 489 Supplement SA (Marine use) and UL 489 Supplement SB (Naval Use).

UL 489 Supplement SA applies to vessels over 65 feet (19.8m) in length.

Requirements include 40°C ambient calibration, special labeling, and no use of aluminum conductors or terminals. (No 50°C .)

- Add suffix H08

Or you can choose to add 50°C ambient but then there is no "UL" mark.

- Add suffix VH08

UL 489 Supplement SB requires partial 50°C ambient calibration, vibration testing, special nameplating and no use of aluminum conductors or terminals. Eaton chooses to always fully calibrate to 50°C ambient. ("Naval" labeled per UL but no "UL" mark due to 50°C label.)

- Add suffix VH09

Certified Test Reports

Eaton breakers can be ordered with certified test reports at the time of order entry. Test report documents the thermal and magnetic or electronic tripping characteristics of the individual breaker. Breaker and test report must be ordered together. Add suffix 12 to breaker catalog number and enter separate line item on order for certified test report.

Standards and Certifications

Molded case circuit breakers are designed to conform with the following standards:

- Underwriters Laboratories Inc., Standard UL 489, molded case circuit breakers and circuit breaker enclosures
- National Electrical Manufacturers Association (NEMA) Standards Publication No. AB1-1993, molded case circuit breakers
- Australian Standard AS 2184, molded case circuit breakers
- British Standards Institution Standard BS 4752: Part 1, switchgear and control gear Part 1: circuit breakers
- Canadian Standards Association (CSA) Standard C22.2 No. 5, service entrance and branch circuit breakers
- International Electrotechnical Commission Recommendations IEC 60947-2, circuit breakers
- Japanese T-Mark Standard molded case circuit breakers
- South African Bureau of Standards, Standard SABS 156, Standard Specification for molded case circuit breakers
- Swiss Electro-Technical Association Standard SEV 157-1, safety regulations for circuit breakers
- Union Technique de l'Electricite Standard NF C 63-120, low voltage switchgear and control gear circuit breaker requirements
- Verband Deutscher Elektrotechniker (Association of German Electrical Engineers) Standard VDE 0660, low voltage switchgear and control gear, circuit breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

Open breakers do not have service entrance ratings. Service entrance rating is part of the enclosure.



Internal Accessories

2

Alarm Lockout

The alarm switches operate when the circuit breaker is tripped by a short circuit or overcurrent, but also when it is tripped by a shunt trip or undervoltage release.

Auxiliary Switches

Auxiliary switches are used for signaling and control purposes. The various functions of the auxiliary switches (changeover) are shown on **Page V4-T2-108**.

Shunt Trips

The shunt trip is used for remote tripping.

The coil of the shunt trip is rated only for short-time operation.

It is not permissible with the circuit breaker open to apply a continuous opening command to the shunt trip in order to prevent the breaker from closing. This means that interlocking circuits with continuous commands may not be set up with shunt trips.

Undervoltage Releases

The circuit breaker cannot be closed until the undervoltage release is energized. If the release is not energized, the circuit breaker can only perform an idle switching operation.

Frequent idle switching actions should be avoided as they shorten the endurance of the circuit breaker.

Digitrip 310+ Electronic Trip Unit Accessories

Cause of Trip Display/Remote Mount Cause of Trip Display

The Cause of Trip Display can be field-installed on any Digitrip RMS 310+ trip unit. The device provides breaker information through an LCD screen, such as cause of trip, phrase current, ground current and low loads. The display is ideal for troubleshooting common trips such as ground fault, long delay, and instantaneous/short delay. The DIGIVIEW version will provide a local display at the breaker without additional wiring by connecting directly onto the trip unit. The DIGIVIEWR06 version has a 6 foot cable that allows users to mount the display on the outside of an enclosure door and connect to the trip unit that is contained inside the enclosure.

The DIGIVIEWR06 is NEMA 3R rated.

Cause of Trip Display/Remote Mount Cause of Trip Display

Catalog
Number

DIGIVIEW

DIGIVIEWR06

Cause of Trip LED Module

The Cause of Trip LED Module can be field-installed on any Digitrip RMS 310+ trip unit. The device provides a cause of trip indication via LED. The Cause of Trip LED Module connects directly onto the trip unit. When the breaker trips, the module indicates the cause of trip (long delay, short delay, instantaneous and ground) via LED indication. The module is reset after the breaker is reset.

Cause of Trip LED Module

Catalog
Number

TRIP-LED

Electronic Portable Test Kit

The electronic portable test kit provides a means to complete field tests using secondary injection on all 310+ trip units. The same test kit is also capable of secondary injection testing on Magnum and Series NRX low voltage power circuit breakers' 520 and 1150 trip units.

Electronic Portable Test Kit

Catalog
Number

MTST230V

Wire Seal

The wire seal can be used to secure the cover of the trip unit to prevent adjustments after settings are confirmed.

Wire Seal

Catalog
Number

5108A03H01

External Accessories and Test Kit

External Accessories

| Description | Fit Type | Frame | | | | |
|---|--------------|-----------|-----------|-----------|----------|----------|
| | | EG | JG | LG | NG | RG |
| Non-padlockable handle block | Field | EFHB | — | — | LKD4 | — |
| Padlockable handle block | Field | EFPHB | — | — | — | — |
| Padlockable handle block off-only | Field | EFPHBOFF | FJPHBOFF | LBHPOFF | — | — |
| Padlockable handle lock hasp | Field | EFPLK | FJPHL | LPHL | PLK5 | HLK6 |
| Padlockable handle lock hasp off-only | Field | EFPHLOFF | FJPHLOFF | LPHLOFF | PLK55OFF | HLK60FF |
| Kirk key interlock kit ^{①②} | Field | — | KYKJG | KYKLG | KYK4 | KYK6 |
| Castell key interlock kit ^{②③} | Field | — | CTKJG | CTKLG | CTK4 | CTK6 |
| Slide bar interlock ^④ | Field | EFSBI | FJSBI | LGSBI | SBK5 | — |
| Walking beam interlock ^④ | Three-pole | EG3WBI | JG3WBI | LG3WBI | WBL5 | WBL6 |
| | Four-pole | EG4WBI | JG4WBI | LG4WBI | WBL5 | — |
| Electrical operator ^⑤ | 120 Vac | MOPEG240C | MOPJG120C | MOPLG120C | EOP5T07 | EOP6T08K |
| | 240 Vac | MOPEG240C | MOPJG240C | MOPLG240C | EOP5T11 | EOP6T11K |
| | 24 Vdc | MOPEG48D | MOPJG24D | MOPLG24D | EOP5T21 | — |
| | 48 Vdc | MOPEG48D | — | — | EOP5T22 | EOP6T21K |
| | 125 Vdc | MOPEG120C | MOPJG120C | MOPLG120C | EOP5T26 | — |
| | 220 Vdc | — | MOPJG240C | MOPLG240C | — | — |
| | 250 Vdc | — | MOPJG240C | MOPLG240C | — | — |
| Plug-in adapters | Three-pole | PAD3E | PAD3J | PAD3L | PAD53 | — |
| | Four-pole | PAD4E | PAD4J | PAD4L | — | — |
| Wohner busbar adapter | Field top | EG-BUS-T | JG-BUS-TB | LG-BUS-TB | — | — |
| | Field bottom | EG-BUS-B | JG-BUS-TB | LG-BUS-TB | — | — |

Series G MCCB Frames EG, JG, and LG to mount to the SASY 60 mm Wohner Classic System

- UL file # E197132
- Compact design
- UL508 tested and certified using Wohner system with Eaton breakers
- No line side wiring required
- Up to 630 A MCCB
- Reverse feed possible

Wohner Busbar Adapter**Wohner Busbar Adapters**

| Breaker Frame | Busbar Adapter | Connection Point |
|---------------|----------------|------------------|
| EG | EG-BUS-T | Top |
| EG | EG-BUS-B | Bottom |
| JG | JG-BUS-TB | Top or bottom |
| LG | LG-BUS-TB | Top or bottom |

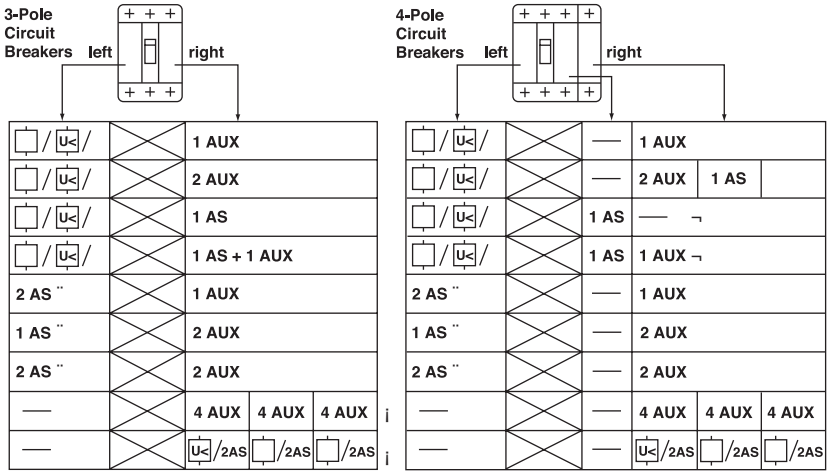
Notes

- ① Provision only.
- ② See **Page V4-T2-318** for bolt projection dimensions.
- ③ Castell bolt mounting hole must be 10 mm.
- ④ Requires two breakers.
- ⑤ Contact Eaton for availability of operators for EG- and NG-Frames before December 2004.

Accessory Configurations for EG–RG Circuit Breakers

2

Internal Accessory Configurations



$\square / U_C /$ = Shunt Trip or Undervoltage Release

AUX = Auxiliary Switch

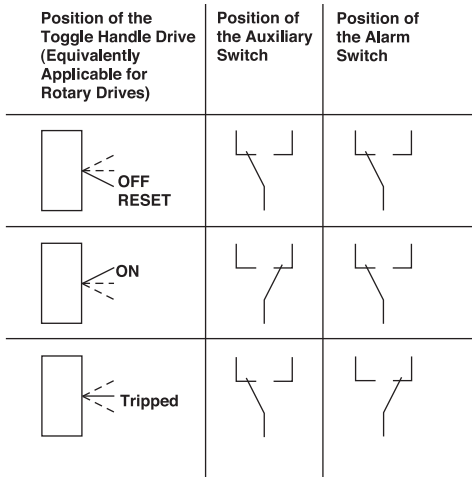
AS = Alarm Switch

" = For N-Frame Circuit Breakers Only

≠ = For R-Frame Circuit Breakers Only

↔ = For N and R-Frame Circuit Breakers Only

Contact Making by the Auxiliary and Alarm Switches as a Function of the Switching Position of the Circuit Breaker



Accessories

Field Fit Kit Catalog Numbers

Alarm Lockout

| Description | Pole Location | Frame | | |
|----------------|---------------|---------------|---------|---------|
| | | EG, JG and LG | NG | RG ① |
| Make/Break | Left | — | A1L5LPK | — |
| | Right | ALM1M1BEPK ② | A1L5RPK | A1L6RPK |
| 2 Make/2 Break | Left | — | A2L5LPK | — |
| | Right | ALM2M2BEPK ③ | A2L5RPK | A2L6RPK |

| Description | Pole Location | For Use in Frame | Contact Type | Catalog Number |
|-----------------|---------------|------------------|--------------|----------------|
| Make/Break | Right | EG | Silver | ALM1M1BEPK |
| 2 Make/ 2 Break | Right | EG | Silver | ALM2M2BEPK |
| Make/Break | Right | JG and LG | Silver | ALM1M1BJPK |
| 2 Make/ 2 Break | Right | JG and LG | Silver | ALM2M2BJPK |
| Make/Break | Right | EG | Gold | ALM1M1BEEPK |
| 2 Make/ 2 Break | Right | EG | Gold | ALM2M2BEEPK |
| Make/Break | Right | JG and LG | Gold | ALM1M1BEJPK |
| 2 Make/ 2 Break | Right | JG and LG | Gold | ALM2M2BEJPK |

Auxiliary Switch

| Description | Pole Location | Frame | | |
|-------------|---------------|---------------|---------|---------|
| | | EG, JG and LG | NG | RG ① |
| 1A, 1B | Left | — | A1X5PK | — |
| | Right | AUX1A1BPK | A1X5PK | — |
| 2A, 2B | Left | — | A2X5PK | — |
| | Right | AUX2A2BPK | A2X5PK | A2X6RPK |
| 3A, 3B | Left | — | A3X5LPK | — |
| | Right | — | A3X5RPK | — |
| 4A, 4B | Left | — | — | — |
| | Right | — | — | A4X6RPK |

| Description | Pole Location | For Use in Frame | Contact Type | Catalog Number |
|-------------|---------------|------------------|--------------|----------------|
| 1A, 1B | Right | EG/JG/LG | Silver | AUX1A1BPK |
| 2A, 2B | Right | EG/JG/LG | Silver | AUX2A2BPK |
| 1A, 1B | Right | EG/JG/LG | Gold | AUX1E1BPK |
| 2A, 2B | Right | EG/JG/LG | Gold | AUX2E2BPK |

Auxiliary Switch/Alarm Lockout

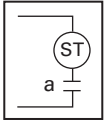
| Description | Pole Location | Frame | | |
|-------------|---------------|---------------|----------|------|
| | | EG, JG and LG | NG | RG ① |
| — | Left | — | AA115LPK | — |
| | Right | AUXALRMEPK ④ | AA115RPK | — |

| Description | Pole Location | For Use in Frame | Contact Type | Catalog Number |
|---------------|---------------|------------------|--------------|----------------|
| 1A/1B & 1M/1B | Right | EG | Silver | AUXALRMEPK |
| 1A/1B & 1M/1B | Right | JG and LG | Silver | AUXALRMJPK |
| 1A/1B & 1M/1B | Right | EG | Gold | AUXALRMEEPK |
| 1A/1B & 1M/1B | Right | JG and LG | Gold | AUXALRMEJPK |

Notes

- ① All accessories mount in the RH cavity which will accept one each of shunt trip, UVR, auxiliary switch and alarm switch.
- ② Part number for JG and LG is ALM1M1BJPK.
- ③ Part number for JG and LG is ALM2M2BJPK.
- ④ Part number for JG and LG is AUXALRMJPK.

Shunt Trip—Standard



Shunt Trip—Standard

| Description | Pole Location | Frame | | |
|----------------------------|---------------|----------------------------|-----------|-----------------|
| | | EG, JG and LG ^① | NG | RG ^② |
| 48–60 Vac | Left | SNT4860CPK | SNT5LP05K | — |
| | Right | — | — | SNT6P05K |
| 110–240 Vac | Left | SNT120CPK | SNT5LP11K | — |
| | Right | — | — | SNT6P11K |
| 380–600 Vac | Left | SNT480CPK ^③ | — | — |
| | Right | — | — | — |
| 220–250 Vdc or 380–440 Vac | — | — | SNT5LP14K | SNT6P14K |
| 480–600 Vac | — | — | SNT5LP18K | SNT6P18K |
| 12 Vdc | Left | SNT012CPK | — | — |
| | Right | — | — | — |
| 24 Vac/dc | Left | SNT024CPK | SNT5LP03K | — |
| | Right | — | — | SNT6P03K |
| 48–60 Vdc | Left | SNT4860CPK | SNT5LP23K | — |
| | Right | — | — | SNT6P23K |
| 110–125 Vdc | Left | SNT125DPK | SNT5LP26K | — |
| | Right | — | — | SNT6P26K |
| 250 Vdc | Left | SNT250DPK | — | — |
| | Right | — | — | — |

Shunt Trip—Low Energy

| Description | Pole Location | Frame | | |
|-------------|---------------|---------------|---------|-----------------|
| | | EG, JG and LG | NG | RG ^② |
| — | Left | — | LST5LPK | — |
| — | Right | — | — | LST6RPK |

Undervoltage Release Mechanism

| Description | Pole Location | Frame | | |
|-------------|---------------|----------------------------|------------------------|------------------------|
| | | EG, JG and LG ^① | NG | RG ^② |
| 110–127 Vac | Left | UVR120APK | UVH5LP08K | — |
| | Right | — | — | UVH6RP08K |
| 208–240 Vac | Left | UVR240APK | UVH5LP11K | — |
| | Right | — | — | UVH6RP11K |
| 24 Vdc | Left | UVR024DPK | UVH5LP21K ^④ | — |
| | Right | — | — | UVH6RP21K ^④ |
| 24 Vac | Left | UVR024APK | UVH5LP21K ^④ | — |
| | Right | — | — | UVH6RP21K ^④ |
| 48–60 Vdc | Left | UVR048DPK | UVH5LP23K | — |
| | Right | — | — | UVH6RP23K |
| 48–60 Vac | Left | UVR048APK | UVH5LP05K | — |
| | Right | — | — | UVH6RP05K |
| 120 Vdc | Left | UVR125DPK | UVH5LP26K | — |
| | Right | — | — | UVH6RP26K |
| 220–250 Vdc | Left | UVR250DPK | UVH5LP28K | — |
| | Right | — | — | UVH6RP28K |
| 380–500 Vac | Left | UVR480APK | UVH5LP29K | — |
| | Right | — | — | UVH6RP29K |
| 525–600 Vac | Left | UVR600APK | — | — |
| | Right | — | — | — |
| 12 Vdc | Left | — | UVH5LP20K | — |
| | Right | — | — | UVH6RP20K |
| 12 Vac | Left | — | UVH5LP02K | — |
| | Right | — | — | UVH6RP02K |

Notes

- ① LH cavity not available for EG frame with earth leakage module.
 ② All accessories mount in the RH cavity which will accept one each of shunt trip, UVR, auxiliary switch and alarm switch.
 ③ 380–600 Vdc, 50/60 Hz.
 ④ 24 Vdc only use UVH5LP03K (NG) UVH6RP03K (RG) for 24 Vac.

Technical Data and Specifications

Note: Gold-plated contacts are well suited for switching low voltages and currents. Lead wires on accessories containing gold-plated contacts are marked with a yellow stripe.

Series G Gold Contact Accessory Switch Electrical Ratings

| Max. Voltage (Ue) | Frequency | Max. Current (I _n) | Dielectric Withstand Voltage (UI) |
|-------------------|-----------|--------------------------------|-----------------------------------|
| 125 V | 50/60 Hz | 0.1 A | 2200 V |
| 30 V | DC | 0.25 A | 2200 V |
| 5 V | DC | 5 mA | 2200 V |

Series G Silver Contact Accessory Switch Electrical Ratings

| Max. Voltage (Ue) | Frequency | Max. Current (I _n) | Dielectric Withstand Voltage (UI) |
|-------------------|-----------|--------------------------------|-----------------------------------|
| 600 V | 50/60 Hz | 2 A | 2200 V |
| 125/250 V | 50/60 Hz | 5 A | 2200 V |
| 125 V | DC | 1 A | 2200 V |

Series GJ Frame: Terminal Extension Kits

| | Extension Orientation | | | |
|------------|-----------------------|-------------|----------|----------|
| | Edgewise | Right Angle | Spreader | Straight |
| Three-pole | FJTEE3 | FJTER3 | FJTEW3 | FJTES3 |
| Four-pole | FJTEE4 | FJTER4 | FJTEW4 | FJTES4 |

Series G Motor Operators

2



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| Motor Circuit Protectors (MCP) | V4-T2-85 |
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| 30 mA Ground Fault (Earth Leakage) Module | V4-T2-92 |
| Current Limiting Circuit Breaker Module | V4-T2-96 |
| High Instantaneous Circuit Breaker for Selective Coordination | V4-T2-101 |
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Motor Operators

Product Description

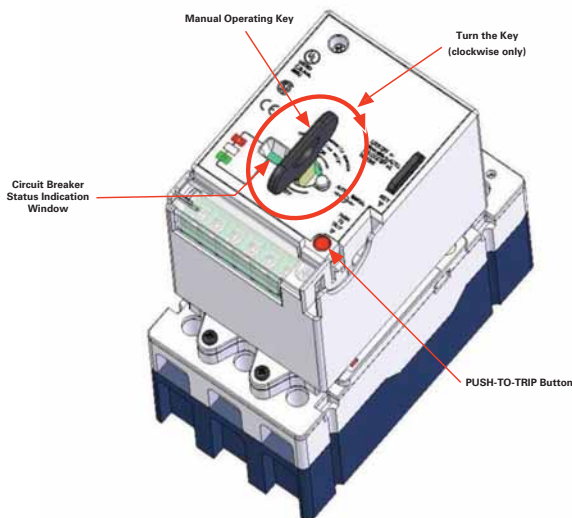
Eaton’s motor operator mechanism enables local and remote ON, OFF and reset switching of a circuit breaker. The motor operator is mounted on the circuit breaker cover within the dimensions of the circuit breaker.

The robust motor operators offer various voltages to maximize customer flexibility. Standard load transfer switching can be accomplished through the use of two circuit breakers fitted with motor operators and a mechanical interlock.

Features, Benefits and Functions

The motor operator provides special features for ease of customer use and status indication.

- The motor operator allows the circuit breaker to be opened, closed or reset remotely
- The motor operator contains a motor connected to a cam drive mechanism. The cam drives a slide mechanism to operate the circuit breaker handle
- Internal limit switches and relays are used to control motor operation to prevent overdriving the circuit breaker handle and motor overload conditions
- A key is provided to manually operate the circuit breaker
- A special pull-out locking mechanism provides a method for padlocking the circuit breaker handle in the OFF position
- The locking device will accept three padlock shackles with a maximum diameter of 1/4-inch (6.4 mm) each
- The cover provides visual status of the circuit breaker: ON, OFF or TRIPPED. A PUSH-TO-TRIP button allows the user to manually trip the breaker



Standards and Certifications

The motor operators are UL and CSA listed, and CE marked.



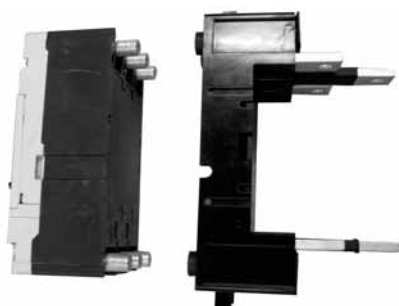
Product Selection

Motor Operators

| Frame | Voltage | Frequency | Inrush Current | Catalog Number |
|------------------|-------------|-----------|----------------|------------------|
| Series G E-Frame | 100–240 Vac | 50/60 Hz | 1A | MOPEG240C |
| | 100–220 Vdc | DC | 1A | MOPEG240C |
| | 24/48 Vdc | DC | 3A | MOPEG48D |
| Series C F-Frame | 208–240 Vac | 50/60 Hz | 1A | MOPFD240C |
| | 110–127 Vac | 50/60 Hz | 1A | MOPFD120C |
| | 220–250 Vdc | DC | 1A | MOPFD240C |
| | 110–125 Vdc | DC | 1A | MOPFD120C |
| Series G J-Frame | 24 Vdc | DC | 3A | MOPFD24D |
| | 208–240 Vac | 50/60 Hz | 1A | MOPJG240C |
| | 110–127 Vac | 50/60 Hz | 1A | MOPJG120C |
| | 220–250 Vdc | DC | 1A | MOPJG240C |
| Series G L-Frame | 110–125 Vdc | DC | 1A | MOPJG120C |
| | 24 Vdc | DC | 3A | MOPJG24D |
| | 208–240 Vac | 50/60 Hz | 2A | MOPLG240C |
| | 110–127 Vac | 50/60 Hz | 2A | MOPLG120C |
| Series G L-Frame | 220–250 Vdc | DC | 2A | MOPLG240C |
| | 110–125 Vdc | DC | 2A | MOPLG120C |
| | 24 Vdc | DC | 6A | MOPLG24D |

LG Breaker with Plug-In Block

2



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| Motor Protector Circuit Breakers (MPCB) | V4-T2-89 |
| 30 mA Ground Fault (Earth Leakage) Module | V4-T2-92 |
| Current Limiting Circuit Breaker Module | V4-T2-96 |
| High Instantaneous Circuit Breaker for Selective Coordination | V4-T2-101 |
| Special Features and Accessories | V4-T2-104 |
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| Plug-In Blocks | |
| Drawout Cassette | V4-T2-115 |

Plug-In Blocks

Product Description

Plug-in adapters simplify installation and front removal of circuit breakers. Plug-ins are available for rear connection applications on three- and four-pole circuit breakers. Trip on drawout interlock kits are included. Stabs for EG, JG and LG plug-ins rotate 90° for flexible installation. Use terminal shields for IP30 protection.

Product Selection

Plug-In Blocks

| Breaker Frame | Number of Poles | Catalog Number |
|---|-----------------|----------------|
| EG-, JG- and LG-Frame Plug-In Blocks | | |
| EG | 3 | PAD3E |
| EG | 4 | PAD4E |
| JG | 3 | PAD3J |
| JG | 4 | PAD4J |
| LG | 3 | PAD3L |
| LG | 4 | PAD4L |
| Trip-On Drawout Interlock Kit ① | | |
| EG | 3, 4 | PIILEG |
| JG | 3, 4 | PIILJG |
| LG | 3, 4 | PIILLG |
| Terminal Shields IP30 | | |
| EG | 3 | EFTS3K |
| EG | 4 | EFTS4K |
| JG | 3 | FJTS3K |
| JG | 4 | FJTS4K |
| LG | 3 | LTS3K |
| LG | 4 | LTS4K |

Note

① Included with plug-in block. Trips the breaker when breaker is removed from plug-in block.

Drawout Cassettes



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| Motor Protector Circuit Breakers (MPCB). | V4-T2-89 |
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| Plug-In Blocks | V4-T2-114 |
| Drawout Cassette | |

Drawout Cassette

Product Description

The drawout cassette is available for use with JG, LG and NG, three- and four-pole breakers. The cassettes consist of two separate components: the movable mechanism, which attaches to the breaker, and the stationary mechanism, which houses in the cassette. For the JG, LG and NG drawout cassettes, all necessary parts for installation are included in the one catalog number.

Features

Features of the drawout cassettes for the JG, LG and NG include:

- Trip on drawout—breaker will trip if it is in the ON position when withdrawn from the cassette
- Secondary terminal block—the drawout cassettes include a secondary terminal block for easier access when wiring low voltage accessories, including shunts and undervoltage releases

The drawout mechanism has three primary positions:

- Connected—the breaker is fully connected to the primary stabs and secondary contacts
- Disconnected—both the primary stabs and the secondary contacts are disconnected
- Withdraw—the breaker can be removed from the cassette

Product Selection

JG Drawout Cassette



LG Drawout Cassette



JG, LG and NG Drawout Cassettes

| Breaker Frame | Number of Poles | Catalog Number |
|---------------|-----------------|----------------|
| JG | 3 | JG3DOM |
| | 4 | JG4DOM |
| LG | 3 | LG3DOM |
| | 4 | LG4DOM |
| NG | 3 | NG3DOM |
| | 4 | NG4DOM |

Molded Case Circuit Breaker Product Family

2



Product Overview

Eaton's molded case circuit breakers are designed to provide circuit protection for low voltage distribution systems. They are described by NEMA as, "... a device for closing and interrupting a circuit between separable contacts under both normal and abnormal conditions," and furthermore as, "... a breaker assembled as an integral unit in a supporting and enclosing housing of insulating material." The National Electrical Code (NEC) describes them as, "A device designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating."

So designed, Eaton circuit breakers protect conductors against overloads and conductors and connected apparatus, such as motors and motor starters, against short circuits.

In low voltage distribution systems, there are many varied applications of molded case circuit breakers.

Eaton offers the most comprehensive family of molded case circuit breakers in the industry.

This section of circuit breakers includes:

- Thermal-magnetic trip breakers
- Electronic rms trip breakers
- Molded case switches
- Motor circuit protectors
- Current limiting breakers
- Special application breakers

Modified Breakers

Eaton breakers can be ordered with internal accessories installed. These modified breakers will be subject to an addition charge.

Special Calibration

Special non-UL-listed calibrations are available for certain ambient temperatures other than 40 °C and for frequencies other than 50/60 Hz or DC. Reduced interrupting ratings will apply for 400 Hz applications.

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| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |



Learn
Online



Drawings
Online

50 °C Calibration

Add suffix **V** to catalog Number for complete breaker, listed above, when ordering listed ampere ratings for breakers to be used in 50 °C ambients. (No UL label.)

Moisture-Fungus Treatment

All circuit breaker cases are molded from glass-polyester which does not support the growth of fungus. Any parts which are susceptible to the growth of fungus will require special treatment.

Freeze-Tested Circuit Breakers

The circuit breakers may be ordered with freeze testing. This option uses special lubrication and mechanical operation is verified at –40 °C.

Marine Applications

E- to R-Framed circuit breakers can be supplied to meet the following marine specifications:

- U.S. Coast Guard CFR 46; ABS—American Bureau of Shipping; IEEE 45; DNV; Lloyds; and ABS/NVR

These specifications generally require molded case circuit breakers to be supplied with 50 °C ambient, and plug-in adapter kits. When plug-in adapter kits are used, no terminals need be supplied (switchboard applications).

Circuit breakers can also be supplied to meet UL 489 Supplement SA (Marine use) and UL 489 Supplement SB (Naval Use).

UL 489 Supplement SA applies to vessels over 65 feet (19.8 m) in length. Requirements include 40 °C ambient calibration, special labeling, and no use of aluminum conductors or terminals. (No 50 °C.)

- Suffix H08

Or you can choose to add 50 °C ambient but then there is no "UL" mark.

- Suffix VH08

UL 489 Supplement SB requires partial 50 °C ambient calibration, vibration testing, special nameplating and no use of aluminum conductors or terminals. Eaton chooses to always fully calibrate to 50 °C ambient. ("Naval" labeled per UL, and UL now allows 50 °C label here.)

- Suffix VH09

Certified Test Reports

Eaton breakers can be ordered with certified test reports at the time of order entry. Test report documents the thermal and magnetic or electronic tripping characteristics of the individual breaker. Breaker and test report must be ordered together. Add suffix 12 to breaker catalog number and enter separate line item on order for certified test report.

Standards and Certifications

Molded case circuit breakers are designed to conform with the following standards:

- Underwriters Laboratories Inc., Standard UL 489, molded case circuit breakers and circuit breaker enclosures
- National Electrical Manufacturers Association (NEMA) Standards Publication No. AB1-1993, molded case circuit breakers
- Australian Standard AS 2184, molded case circuit breakers
- British Standards Institution Standard BS 4752: Part 1, switchgear and control gear Part 1: circuit breakers
- Canadian Standards Association (CSA) Standard C22.2 No. 5, service entrance and branch circuit breakers
- International Electrotechnical Commission Recommendations IEC 60947-2, circuit breakers
- Japanese T-Mark Standard molded case circuit breakers
- South African Bureau of Standards, Standard SABS 156, Standard Specification for molded case circuit breakers
- Swiss Electro-Technical Association Standard SEV 157-1, safety regulations for circuit breakers
- Union Technique de l'Electricite Standard NF C 63-120, low voltage switchgear and control gear circuit breaker requirements
- Verband Deutscher Elektrotechniker (Association of German Electrical Engineers) Standard VDE 0660, low voltage switchgear and control gear, circuit breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

Open breakers do not have service entrance ratings. Service entrance rating is part of the enclosure.



Quick Reference

Industrial Circuit Breakers

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G-Frame

| Circuit Breaker Type | Continuous Ampere Rating at 40 °C | No. of Poles | Volts | | Type of Trip ^① | Federal Specification W-C-375b | UL Listed Interrupting Ratings (rms Symmetrical Amperes) | | | | | | | Page Number | |
|----------------------|-----------------------------------|--------------|----------|---------|---------------------------|--------------------------------|--|---------|-----|-----|----------------------|-----|------------------|-------------|-----------|
| | | | AC | DC | | | AC (kA) | | | | DC (kA) ^② | | | | |
| | | | | | | | 120 | 120/240 | 240 | 277 | 480 | 600 | 125 ^③ | 250 | |
| GHB | 15–100 | 1 | 120 | 125 | N.I.T.U. | 11a | 65 | — | — | — | — | — | 14 | — | V4-T2-126 |
| GHB | 15–100 | 2, 3 | 240 | 125/250 | N.I.T.U. | 11a10b, 11b | — | — | 65 | — | — | — | — | 14 | V4-T2-126 |
| GHB | 15–100 | 1 | 277 | 125 | N.I.T.U. | 12b, 14b | — | — | — | 14 | — | — | 14 | — | V4-T2-126 |
| GHB | 15–100 | 2, 3 | 480Y/277 | 125/250 | N.I.T.U. | 15b | — | — | — | 14 | 14 | — | — | 14 | V4-T2-126 |
| HGHB | 15–30 | 1 | 277 | 125 | N.I.T.U. | 12c, 13a, 13b | 65 | — | — | 25 | — | — | 14 | — | V4-T2-126 |
| GHBS | 15–30 | 1, 2 | 480Y/277 | — | — | — | 65 | 65 | — | 14 | — | — | — | — | V4-T1-34 |
| GBHS | 15–20 | 1, 2 | 600Y/347 | — | N.I.T.U. | — | — | — | — | — | — | 10 | — | — | V4-T1-34 |
| GDB | 15–50 | 2 | 480 | 125/250 | N.I.T.U. | — | — | — | — | 14 | — | — | 10 | — | V4-T2-124 |
| GDB | 15–100 | 3 | 480 | 250 | N.I.T.U. | — | — | — | — | 14 | — | — | 10 | — | V4-T2-124 |
| GD | 15–50 | 2 | 480 | 125/250 | N.I.T.U. | 13b | — | — | 65 | — | 14 | — | — | 10 | V4-T2-123 |
| GD | 15–100 | 3 | 480 | 250 | N.I.T.U. | 13b | — | — | 65 | — | 22 | — | — | 10 | V4-T2-123 |
| GHC | 15–100 | 1 | 120 | 125 | N.I.T.U. | 12c, 13a | 65 | — | — | — | — | — | 14 | — | V4-T2-131 |
| GHC | 15–100 | 2, 3 | 240 | 125/250 | N.I.T.U. | 13b | — | — | 65 | — | — | — | — | 1 | V4-T2-131 |
| GHC | 15–100 | 1 | 277 | 125 | N.I.T.U. | 12c, 13a | — | — | — | 14 | — | — | 14 | — | V4-T2-131 |
| GHC | 15–100 | 2, 3 | 480Y/277 | 125/250 | N.I.T.U. | 13b | — | — | — | 14 | 14 | — | — | 14 | V4-T2-131 |
| HGHC | 15–30 | 1 | 277 | 125 | N.I.T.U. | — | 65 | — | — | 25 | — | — | 14 | — | V4-T2-131 |

Notes

- ① N.I.T.U. is non-interchangeable trip unit and I.T.U. is interchangeable trip unit.
- ② Two-pole circuit breaker, or two poles of three-pole circuit breaker at 250 Vdc.
- ③ Single-pole breakers can be applied in DC systems up to 70 A.

F-Frame

| Circuit Breaker Type | Continuous Ampere Rating at 40 °C | No. of Poles | Volts | | Type of Trip ^① | Federal Specification W-C-375b | UL Listed Interrupting Ratings (rms Symmetrical Amperes) | | | | | | | | Page Number |
|----------------------|-----------------------------------|--------------|-------|-----|---------------------------|--------------------------------|--|---------|-----|-----|----------------------|-----|-----|-----|-------------|
| | | | AC | DC | | | AC (kA) | | | | DC (kA) ^② | | | | |
| | | | | | | | 120 | 120/240 | 240 | 277 | 480 | 600 | 125 | 250 | |
| EDB | 100–225 | 2, 3 | 240 | 125 | N.I.T.U. | — | — | — | 22 | — | — | — | 10 | — | V4-T2-135 |
| EDS | 100–225 | 2, 3 | 240 | 125 | N.I.T.U. | — | — | — | 42 | — | — | — | 10 | — | V4-T2-135 |
| ED | 15–225 | 2, 3 | 240 | 125 | N.I.T.U. | 12b | — | — | 65 | — | — | — | 10 | — | V4-T2-135 |
| EDH | 100–225 | 2, 3 | 240 | 125 | N.I.T.U. | 14b | — | — | 100 | — | — | — | 10 | — | V4-T2-135 |
| EDC | 100–225 | 2, 3 | 240 | 125 | N.I.T.U. | 1 | — | — | 200 | — | — | — | 10 | — | V4-T2-135 |
| EHD | 15–100 | 1 | 277 | 125 | N.I.T.U. | 13a | — | — | — | 14 | — | — | 10 | — | V4-T2-135 |
| EHD | 15–100 | 2, 3 | 480 | 250 | N.I.T.U. | 13b | — | — | 18 | — | 14 | — | — | 10 | V4-T2-135 |
| FDB | 15–150 | 2, 3 | 600 | 250 | N.I.T.U. | 18a | — | — | 18 | — | 14 | 14 | — | 10 | V4-T2-135 |
| FDB | 15–150 | 4 | 600 | 250 | N.I.T.U. | ③ | — | — | 18 | — | 14 | 14 | — | 10 | V4-T2-135 |
| FD | 15–150 | 1 | 277 | 125 | N.I.T.U. | 13a | — | — | — | 35 | — | — | 10 | — | V4-T2-135 |
| FD | 15–225 | 2, 3 | 600 | 250 | N.I.T.U. | 22a | — | — | 65 | — | 35 | 18 | — | 10 | V4-T2-135 |
| FD | 15–225 | 4 | 600 | 250 | N.I.T.U. | ③ | — | — | 65 | — | 35 | 18 | — | 10 | V4-T2-135 |
| FDE | 15–225 | 3 | 600 | — | N.I.T.U. | — | — | — | 65 | — | 35 | 18 | — | — | V4-T2-135 |
| HFD | 15–150 | 1 | 277 | 125 | N.I.T.U. | 13a | — | — | — | 65 | — | — | 10 | — | V4-T2-135 |
| HFD | 15–225 | 2,3 | 600 | 250 | N.I.T.U. | 22a | — | — | 100 | — | 65 | 25 | — | 22 | V4-T2-135 |
| HFD | 15–225 | 4 | 600 | 250 | N.I.T.U. | ③ | — | — | 100 | — | 65 | 25 | — | 22 | V4-T2-135 |
| HFDE | 15–225 | 3 | 600 | — | N.I.T.U. | — | — | — | 100 | — | 65 | 25 | — | — | V4-T2-135 |
| FDC ^④ | 15–225 | 2, 3 | 600 | 250 | N.I.T.U. | 24a | — | — | 200 | — | 100 | 35 | — | 22 | V4-T2-135 |
| FDC ^④ | 15–225 | 4 | 600 | 250 | N.I.T.U. | ③ | — | — | 200 | — | 100 | 35 | — | 22 | V4-T2-135 |
| FDCE ^{④⑤} | 15–225 | 3 | 600 | — | N.I.T.U. | — | — | — | 200 | — | 100 | 25 | — | — | V4-T2-135 |

Notes

- ① N.I.T.U. is non-interchangeable trip unit and I.T.U. is interchangeable trip unit.
 ② Two-pole circuit breaker, or two poles of three-pole circuit breaker at 250 Vdc.
 ③ Not defined in W-C-375b.
 ④ Current limiting.
 ⑤ Check with Eaton for availability.

2.3

Molded Case Circuit Breakers

Series C

2

J-Frame

| Circuit Breaker Type | Continuous Ampere Rating at 40 °C | No. of Poles | Volts | | Type of Trip ① | Federal Specification W-C-375b | UL Listed Interrupting Ratings (rms Symmetrical Amperes) | | | | | | | | Page Number |
|----------------------|-----------------------------------|--------------|-------|-----|----------------|--------------------------------|--|---------|-----|-----|-----------|-----|-----|-----|-------------|
| | | | AC | DC | | | AC (kA) | | | | DC (kA) ② | | | | |
| | | | | | | | 120 | 120/240 | 240 | 277 | 480 | 600 | 125 | 250 | |
| JDB | 70–250 | 2, 3 | 600 | 250 | N.I.T.U. | 22a | — | — | 65 | — | 35 | 18 | — | 10 | V4-T2-156 |
| JD | 70–250 | 2, 3, 4 | 600 | 250 | I.T.U. | 22a | — | — | 65 | — | 35 | 18 | — | 10 | V4-T2-155 |
| HJD | 70–250 | 2, 3, 4 | 600 | 250 | I.T.U. | 22a | — | — | 100 | — | 65 | 25 | — | 22 | V4-T2-155 |
| JDC ③ | 70–250 | 2, 3, 4 | 600 | 250 | I.T.U. | 22a | — | — | 200 | — | 100 | 35 | — | 22 | V4-T2-155 |

K-Frame

| Circuit Breaker Type | Continuous Ampere Rating at 40 °C | No. of Poles | Volts | | Type of Trip ① | Federal Specification W-C-375b | UL Listed Interrupting Ratings (rms Symmetrical Amperes) | | | | | | | | Page Number |
|----------------------|-----------------------------------|--------------|-------|-----|----------------|--------------------------------|--|---------|-----|-----|-----------|-----|-----|-----|--|
| | | | AC | DC | | | AC (kA) | | | | DC (kA) ② | | | | |
| | | | | | | | 120 | 120/240 | 240 | 277 | 480 | 600 | 125 | 250 | |
| DK | 250–400 | 2, 3 | 240 | 250 | N.I.T.U. | 14b | — | — | 65 | — | — | — | — | 10 | V4-T2-167 |
| KDB | 100–400 | 2, 3 | 600 | 250 | N.I.T.U. | 23a | — | — | 65 | — | 35 | 25 | — | 10 | V4-T2-167 |
| KD | 100–400 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 65 | — | 35 | 25 | — | 10 | V4-T2-164, V4-T2-165, V4-T2-169, V4-T2-172 |
| CKD | 100–400 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 65 | — | 35 | 25 | — | — | V4-T2-166, V4-T2-175, V4-T2-177 |
| HKD | 100–400 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 100 | — | 65 | 35 | — | 22 | V4-T2-164, V4-T2-165, V4-T2-169, V4-T2-172 |
| CHKD | 100–400 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 100 | — | 65 | 35 | — | — | V4-T2-166, V4-T2-175, V4-T2-177 |
| KDC ③ | 100–400 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 200 | — | 100 | 65 | — | 22 | V4-T2-164, V4-T2-165, V4-T2-169, V4-T2-172 |

L-Frame

| Circuit Breaker Type | Continuous Ampere Rating at 40 °C | No. of Poles | Volts | | Type of Trip ① | Federal Specification W-C-375b | UL Listed Interrupting Ratings (rms Symmetrical Amperes) | | | | | | | | Page Number |
|----------------------|-----------------------------------|--------------|-------|-----|----------------|--------------------------------|--|---------|-----|-----|-----------|-----|-----|-----|---------------------------------|
| | | | AC | DC | | | AC (kA) | | | | DC (kA) ② | | | | |
| | | | | | | | 120 | 120/240 | 240 | 277 | 480 | 600 | 125 | 250 | |
| LDB | 300–600 | 2, 3 | 600 | 250 | N.I.T.U. | 23a | — | — | 65 | — | 35 | 25 | — | 22 | V4-T2-190 |
| LD | 300–600 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 65 | — | 35 | 25 | — | 22 | V4-T2-188, V4-T2-189, V4-T2-194 |
| CLD | 300–600 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 65 | — | 35 | 25 | — | — | V4-T2-190, V4-T2-200 |
| HLD | 300–600 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 100 | — | 65 | 35 | — | 25 | V4-T2-188, V4-T2-189, V4-T2-194 |
| CHLD | 300–600 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 100 | — | 65 | 35 | — | — | V4-T2-190, V4-T2-200 |
| LDC ③ | 300–600 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 200 | — | 100 | 50 | — | 30 | V4-T2-188, V4-T2-189, V4-T2-196 |
| CLDC ③ | 300–600 | 2, 3, 4 | 600 | 250 | I.T.U. | 23a | — | — | 200 | — | 100 | 50 | — | 30 | V4-T2-190, V4-T2-202 |

M-Frame

| Circuit Breaker Type | Continuous Ampere Rating at 40 °C | No. of Poles | Volts | | Type of Trip ① | Federal Specification W-C-375b | UL Listed Interrupting Ratings (rms Symmetrical Amperes) | | | | | | | | Page Number |
|----------------------|-----------------------------------|--------------|-------|-----|----------------|--------------------------------|--|---------|-----|-----|-----------|-----|-----|-----|----------------------|
| | | | AC | DC | | | AC (kA) | | | | DC (kA) ② | | | | |
| | | | | | | | 120 | 120/240 | 240 | 277 | 480 | 600 | 125 | 250 | |
| MDL | 300–800 | 2, 3 | 600 | 250 | I.T.U. | 23a | — | — | 65 | — | 50 | 25 | — | 22 | V4-T2-213, V4-T2-215 |
| CMDL | 300–800 | 2, 3 | 600 | 250 | I.T.U. | 23a | — | — | 65 | — | 50 | 25 | — | — | V4-T2-215 |
| HMDL | 300–800 | 2, 3 | 600 | 250 | I.T.U. | 23a | — | — | 100 | — | 65 | 35 | — | 25 | V4-T2-213, V4-T2-215 |
| CHMDL | 300–800 | 2, 3 | 600 | 250 | I.T.U. | 23a | — | — | 100 | — | 65 | 35 | — | — | V4-T2-215 |

Notes

① N.I.T.U. is non-interchangeable trip unit and I.T.U. is interchangeable trip unit.

② Two-pole circuit breaker, or two poles of three-pole circuit breaker at 250 Vdc.

③ Current limiting.

Molded Case Circuit Breaker Product Family**Contents**

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| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

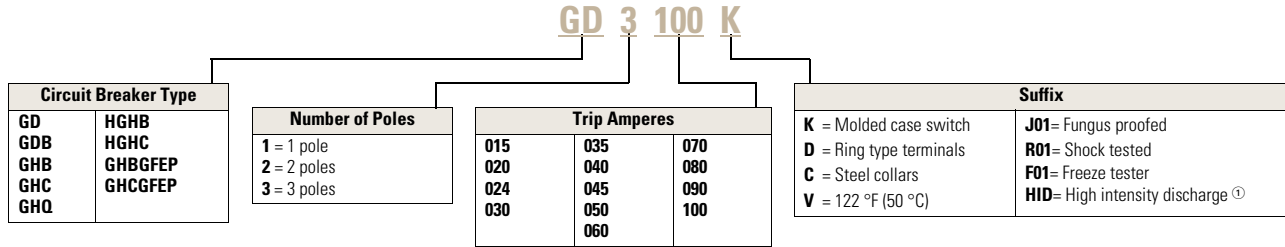
G-Frame (15–100 Amperes)**Product Description**

- All two- and three-pole circuit breakers are of the common trip type. On all three-phase delta (240 V) Grounded B phase applications, refer to Eaton
- Single-pole circuit breakers, 15 and 20 amperes. Switching duty rated (SWD) for fluorescent lighting applications
- All G-Frame circuit breakers are suitable for reverse feed use
- HACR rated

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame



Technical Data and Specifications

UL 489 Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | | | |
|----------------------|-----------------|--|-----|-----|-----|----------|----------|--------|
| | | Volts AC (50/60 Hz) | | | | | Volts DC | |
| | | 120 | 240 | 277 | 480 | 480Y/277 | 125 ② | 250 ③④ |
| GDB | 2, 3 | — | — | — | 14 | — | — | 10 |
| GD | 2 | — | 65 | — | 14 | — | — | 10 |
| GD | 3 | — | 65 | — | 22 | — | — | 10 |
| GHQ | — | 65 | — | 14 | — | — | — | — |
| GHB | 1 | 65 | — | 14 | — | — | 14 | — |
| GHB | 2, 3 | — | 65 | — | — | 14 | 14 | — |
| HGHB | 1 | 65 | — | 25 | — | — | 14 | — |
| GHC | 1 | 65 | — | 14 | — | — | 14 | — |
| GHC | 2, 3 | — | 65 | — | — | 14 | 14 | — |
| HGHC | 1 | 65 | — | 25 | — | — | 14 | — |

Terminal Types

For line and load-side. Terminals are UL listed as suitable for wire type and size given below.

Terminal Types

| Circuit Breaker Amperes | Terminal Type Material | Screw Head Type | Wire Type | AWG Wire Range | Metric Wire Range (mm ²) ⑤ |
|------------------------------|--------------------------|-----------------|-----------|----------------|--|
| Standard | | | | | |
| 15–20 | Clamp (plated steel) | Slotted | Cu/Al | 14–10 | 2.5–4 |
| 25–100 | Pressure (aluminum body) | Slotted | Cu/Al | 10–1/0 | 4–50 |
| Optional—GD, GHB, GHC | | | | | |
| 15–100 | Pressure (steel body) | Slotted | Cu | 14–3 | — |

Notes

- ① HID suffix only applies to the GHB and GHC single-pole, 15–20 A circuit breakers.
- ② Single-pole breakers can be applied in DC systems up to 70 A.
- ③ Time constant is 8 milliseconds minimum.
- ④ Two poles of three-pole circuit breaker.
- ⑤ Not UL listed sizes.

Typical G-Frame Circuit Breaker



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| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

Type GD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (15–100 Amperes)

Product Description

- Cable in, cable out
- Includes mounting hardware and BMHE

Standards and Certifications

- UL/CSA



Product Selection

Type GD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

| Maximum Continuous Ampere Rating at 40 °C | 480 Vac Maximum, 250 Vdc | | Includes Binding Head Screws and Clamps 10–32 x 0.312 |
|---|----------------------------------|---------------------------|---|
| | 14 kAIC at 480 Vac | 22 kAIC at 480 Vac | |
| | Includes Line and Load Terminals | | |
| | Two-Pole Catalog Number | Three-Pole Catalog Number | Three-Pole Catalog Number |
| 15 | GD2015 | GD3015 | GD3015D |
| 20 | GD2020 | GD3020 | GD3020D |
| 25 | GD2025 | GD3025 | GD3025D |
| 30 | GD2030 | GD3030 | GD3030D |
| 35 | GD2035 | GD3035 | GD3035D |
| 40 | GD2040 | GD3040 | GD3040D |
| 45 | GD2045 | GD3045 | GD3045D |
| 50 | GD2050 | GD3050 | GD3050D |
| 60 | — | GD3060 | GD3060D |
| 70 | — | GD3070 | GD3070D |
| 80 | — | GD3080 | GD3080D |
| 90 | — | GD3090 | GD3090D |
| 100 | — | GD3100 | GD3100D |

Type GDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

| Maximum Continuous Ampere Rating at 40 °C | 480 Vac Maximum, 250 Vdc 14 kAIC at 480 Vac Includes Line and Load Terminals | |
|---|--|---------------------------|
| | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 15 | GDB2015 | GDB3015 |
| 20 | GDB2020 | GDB3020 |
| 25 | GDB2025 | GDB3025 |
| 30 | GDB2030 | GDB3030 |
| 35 | GDB2035 | GDB3035 |
| 40 | GDB2040 | GDB3040 |
| 45 | GDB2045 | GDB3045 |
| 50 | GDB2050 | GDB3050 |
| 60 | — | GDB3060 |
| 70 | — | GDB3070 |
| 80 | — | GDB3080 |
| 90 | — | GDB3090 |
| 100 | — | GDB3100 |

Type GD Molded Case Switches

Type GD Molded Case Switches—Three-Pole

| Maximum Continuous Ampere Rating at 40 °C | 480 Vac Maximum, 250 Vdc Catalog Number (Includes Line and Load Terminals) |
|---|--|
| 60 | GD3060K |
| 60 | GD3060KC ① |
| 100 | GD3100K |
| 100 | GD3100KD ② |

Notes

① Includes line and load steel terminals.

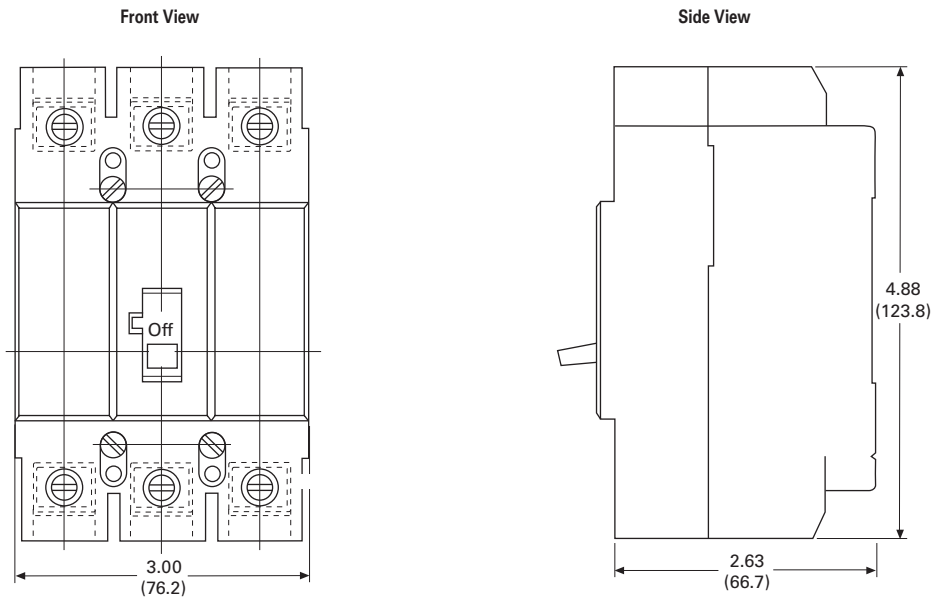
② Includes binding head screws and clamps 10–32 x 0.312.

Molded case switches may open above 1300 amperes.

Dimensions

Approximate Dimensions in Inches (mm)

GD-Frame, Three-Pole



Typical GHB

2



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| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

Types GHB and HGHB Bolt-On Panelboard Circuit Breakers (15–100 Amperes)

Standards and Certifications

These breakers meet the requirements of Federal Specification W-C-375b as follows:

- Type GHB, 120 and 240 V:
 - Single-pole: Class 11a
 - Two-, three-pole: Classes 10b, 11b, 12b, 14b, 15b
 - UL/CSA
- Type GHB, 277 and 480Y/277V:
 - Single-pole: Classes 12c, 13a
 - Two-, three-pole: Class 13b
 - Type HGHB 277V
 - Type GHQ 277V



Product Selection

Typical GHB


Type GHB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units ^①

| Continuous Ampere Rating at 40 °C | 277/480 Vac Maximum, 125 Vdc Maximum ^② | 277/480 Vac Maximum, 125/250 Vdc Maximum | 277/480 Vac Maximum, 125/250 Vdc Maximum ^③ |
|-----------------------------------|---|--|---|
| | Single-Pole Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 15 | GHB1015 ^{④⑤} | GHB2015 ^④ | GHB3015 ^④ |
| 20 | GHB1020 ^{④⑤} | GHB2020 ^④ | GHB3020 ^④ |
| 25 | GHB1025 | GHB2025 | GHB3025 |
| 30 | GHB1030 | GHB2030 | GHB3030 |
| 35 | GHB1035 | GHB2035 | GHB3035 |
| 40 | GHB1040 | GHB2040 | GHB3040 |
| 45 | GHB1045 | GHB2045 | GHB3045 |
| 50 | GHB1050 | GHB2050 | GHB3050 |
| 60 | GHB1060 | GHB2060 | GHB3060 |
| 70 | GHB1070 | GHB2070 | GHB3070 |
| 80 | GHB1080 | GHB2080 | GHB3080 |
| 90 | GHB1090 | GHB2090 | GHB3090 |
| 100 | GHB1100 | GHB2100 | GHB3100 |

Type HGHB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

| Continuous Ampere Rating at 40 °C | 277 Vac Maximum, 125 Vdc Maximum |
|-----------------------------------|----------------------------------|
| | Single-Pole Catalog Number |
| 15 | HGHB1015 ^⑥ |
| 20 | HGHB1020 ^⑥ |
| 25 | HGHB1025 |
| 30 | HGHB1030 |

Notes

- ① 480Y/277 V, circuit breakers (Type GHB) not suitable for three-phase delta (480 V).
- ② Single-pole breakers can be applied in DC systems from 15 through 70 amperes; 80 through 100 amperes devices are not suitable for DC application.
- ③ Use two outside poles.
- ④ Uses 0.190 (4.83) –32 screw type clamp terminals.
- ⑤ Add suffix HID for High Intensity Discharge (HID) applications. 15 and 20 ampere, single-pole are SWD rated.
- ⑥ 15 and 20 ampere, single-pole are SWD rated.

2.3

Molded Case Circuit Breakers

Series C

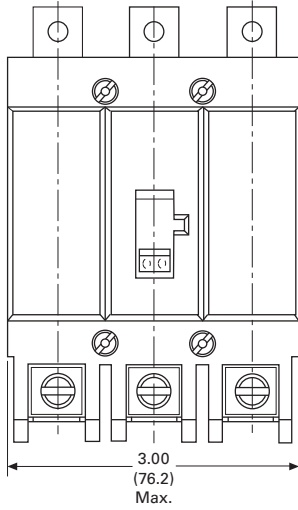
Dimensions

Approximate Dimensions in Inches (mm)

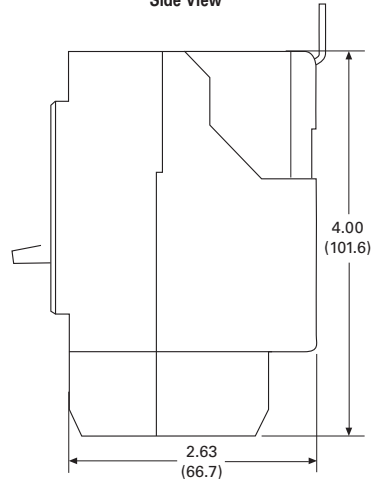
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GDB-Frame, Three-Pole

Front View



Side View



Single-Phase (requires two poles)



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| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
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| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
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| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

Type GHBGFEP Bolt-On Panelboard 30 mA Industrial Ground Fault Circuit Protectors (15–100 Amperes)

Product Description

- 15–60 amperes, 277 V, 50/60 Hz
- Operational voltage 240 V to 305 V

Standards and Certifications

These circuit breakers meet the requirements of UL 489 and UL 1053.



Product Selection

Type GHBGFEP Bolt-On Panelboard 30 mA Industrial Ground Fault Circuit Protectors with Non-Interchangeable Trip Units

| Continuous Ampere Rating at 40 °C | Single-Phase (Requires Two Poles) 277 Vac, 30 mA Catalog Number |
|-----------------------------------|---|
| 15 | GHBGFEP1015 |
| 20 | GHBGFEP1020 |
| 30 | GHBGFEP1030 |
| 40 | GHBGFEP1040 |
| 50 | GHBGFEP1050 |
| 60 | GHBGFEP1060 |

Technical Data and Specifications

Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (Symmetrical Amperes) 277 Vac (50/60 Hz) |
|----------------------|-----------------|---|
| GHBGFEP | 1 | 14,000 |

2.3

Molded Case Circuit Breakers

Series C

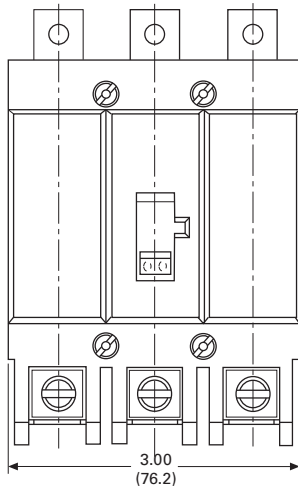
Dimensions

Approximate Dimensions in Inches (mm)

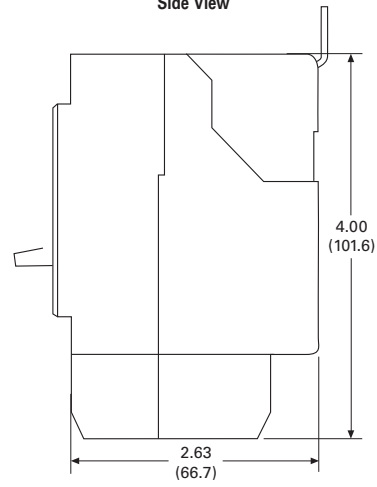
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GHB-Frame, Three-Pole

Front View



Side View



Typical GHC



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| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

Types GHC and HGHC Circuit Breakers (15–100 Amperes)

Product Description

- 15–100 amperes
- 120, 240, 277, 480Y/277V, 50/60 Hz, 125, 125/250 Vdc
- Single-, two- and three-pole
- Cable in, cable out
- Does not include mounting hardware

Standards and Certifications

These breakers meet the requirements of Federal Specification W-C-37b as follows:

- Type GHC, 277 and 480Y/277V:
 - Single-pole: Classes 12c, 13a
 - Two-, three-pole: Class 13b
 - UL/CSA



Product Selection

2

Type GHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

| Continuous Ampere Rating at 40 °C | 277 Vac Maximum, 125 Vdc Maximum ^① | 480Y/277 Vac Maximum, 125/250 Vdc Maximum | 480Y/277 Vac Maximum, 125/250 Vdc Maximum ^② |
|---|--|--|---|
| | Single-Pole Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 15 | GHC1015 ^{③④} | GHC2015 ^③ | GHC3015 ^③ |
| 20 | GHC1020 ^{③④} | GHC2020 ^③ | GHC3020 ^③ |
| 25 | GHC1025 | GHC2025 | GHC3025 |
| 30 | GHC1030 | GHC2030 | GHC3030 |
| 35 | GHC1035 | GHC2035 | GHC3035 |
| 40 | GHC1040 | GHC2040 | GHC3040 |
| 45 | GHC1045 | GHC2045 | GHC3045 |
| 50 | GHC1050 | GHC2050 | GHC3050 |
| 60 | GHC1060 | GHC2060 | GHC3060 |
| 70 | GHC1070 | GHC2070 | GHC3070 |
| 80 | GHC1080 | GHC2080 | GHC3080 |
| 90 | GHC1090 | GHC2090 | GHC3090 |
| 100 | GHC1100 | GHC2100 | GHC3100 |

Type HGHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

| Continuous Ampere Rating at 40 °C | 277 Vac Maximum, 125 Vdc Maximum |
|---|----------------------------------|
| | Single-Pole Catalog Number |
| 15 | HGHC1015 ^⑤ |
| 20 | HGHC1020 ^⑤ |
| 25 | HGHC1025 |
| 30 | HGHC1030 |

Notes

- ① 15 through 70 ampere circuit breakers only.
- ② Single-pole breakers can be applied in DC systems from 15 through 70 ampere; 80 through 100 ampere devices are not suitable for DC application.
- ③ Uses 0.190–32 screw type clamp terminals.
- ④ Add suffix HID for High Intensity Discharge (HID) applications. 15 and 20 ampere, single-pole are SWD rated.
- ⑤ 15 and 20 ampere, single-pole are SWD rated.

Single-Phase (requires two-pole spaces)



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| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

Type GHCGFEP Cable-In/Cable-Out 30 mA Industrial Ground Fault Circuit Protectors (15–100 Amperes)

Product Description

- 15–60 amperes, 277 V, 50/60 Hz
- Operational voltage 240–305 V

Standards and Certifications

These circuit breakers meet the requirements of UL 489 and UL 1053.



Product Selection

Type GHCGFEP 30 mA Industrial Ground Fault Circuit Protectors with Non-Interchangeable Trip Units

| Continuous Ampere Rating at 40 °C | Single-Phase (Requires Two Poles) 277V, 30 mA |
|-----------------------------------|---|
| | Catalog Number |
| 15 | GHCGFEP1015 |
| 20 | GHCGFEP1020 |
| 30 | GHCGFEP1030 |
| 40 | GHCGFEP1040 |
| 50 | GHCGFEP1050 |
| 60 | GHCGFEP1060 |

Technical Data and Specifications

Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (Symmetrical Amperes) |
|----------------------|-----------------|---|
| | | 277 Vac (50/60 Hz) |
| GHCGFEP | 1 | 14,000 |

Special Purpose Circuit Breakers

2



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| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

Special Purpose GHC Circuit Breakers (15–100 Amperes)

Product Description

Eaton’s Type GHC circuit breakers have binding head screw-type terminals on line and load side. These circuit breakers with screw-type terminals (0.190–32) will be marked “Special purpose breaker not for general use.” To order this special breaker, use the catalog number from the tables on this page.

Product Selection

Type GHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

| Continuous Ampere Rating at 40 °C | 277 Vac Maximum, 125 Vdc Maximum ① | 480Y/277 Vac Maximum, 125/250 Vdc Maximum | 480Y/277 Vac Maximum, 125/250 Vdc Maximum ② |
|---|---------------------------------------|--|--|
| | Single-Pole Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 25 | GHC1025D | GHC2025D | GHC3025D |
| 30 | GHC1030D | GHC2030D | GHC3030D |
| 35 | GHC1035D | GHC2035D | GHC3035D |
| 40 | GHC1040D | GHC2040D | GHC3040D |
| 45 | GHC1045D | GHC2045D | GHC3045D |
| 50 | GHC1050D | GHC2050D | GHC3050D |
| 60 | GHC1060D | GHC2060D | GHC3060D |
| 70 | GHC1070D | GHC2070D | GHC3070D |
| 80 | GHC1080D | GHC2080D | GHC3080D |
| 90 | GHC1090D | GHC2090D | GHC3090D |
| 100 | GHC1100D | GHC2100D | GHC3100D |

Type GHB and GHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units for HID Lighting Applications

| Type | Continuous Ampere Rating at 40 °C | 277 Vac Maximum Single-Pole Catalog Number |
|----------|---|---|
| Cable-in | 15 | GHC1015HID |
| | 20 | GHC1020HID |
| Bolt-on | 15 | GHB1015HID |
| | 20 | GHB1020HID |

Notes

- ① Single-pole breakers can be applied in DC systems from 15 through 70 amperes; 80 through 100 amperes devices are not suitable for DC application.
- ② Use two outside poles.

Typical F-Frame Breaker
F-Frame Breaker with Electronic Trip Unit



F-Frame (10–225 Amperes)

Product Description

- All Eaton's F-Frame circuit breakers are HACR rated
- All circuit breakers 10 through 30 amperes are suitable for HID (high intensity discharge) use
- All F-Frame circuit breakers are suitable for reverse feed use

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| F-Frame (10–225 Amperes) | |
| Catalog Number Selection | V4-T2-136 |
| Product Selection | V4-T2-138 |
| Accessories | V4-T2-149 |
| Technical Data and Specifications | V4-T2-150 |
| Dimensions and Weights | V4-T2-152 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

2.3

Molded Case Circuit Breakers

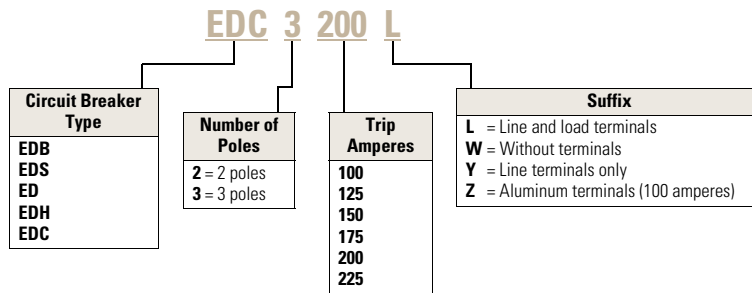
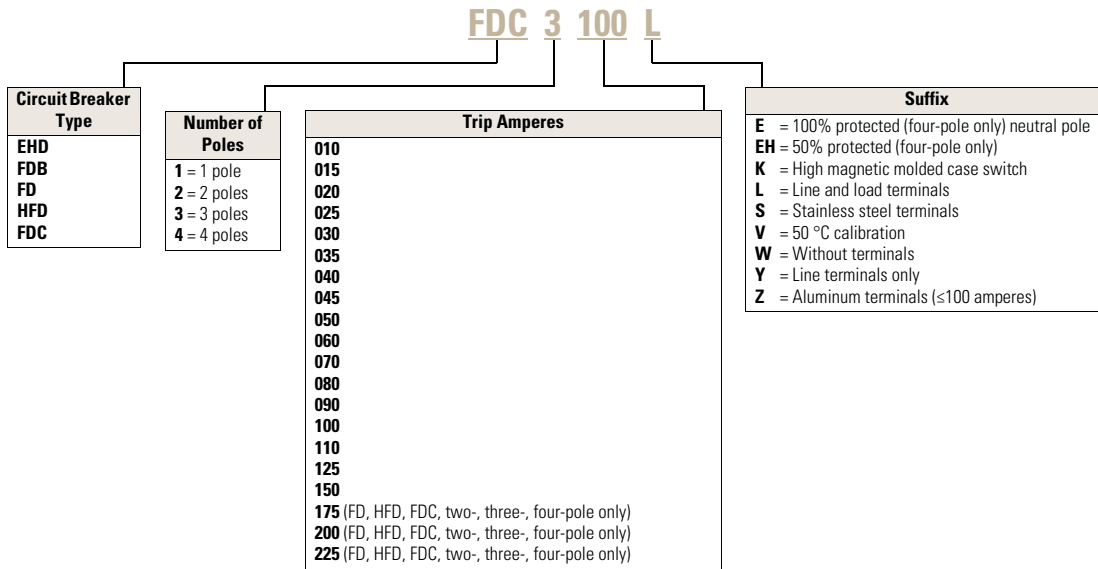
Series C

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

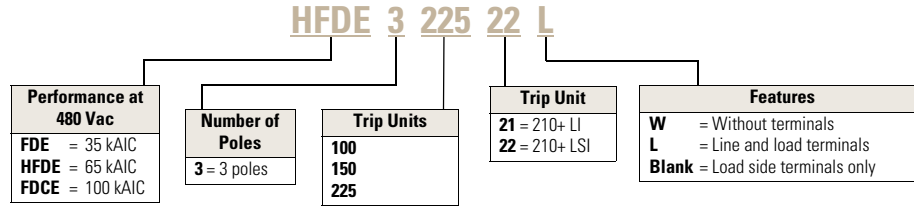
2

FD-Frame Circuit Breakers with Thermal-Magnetic Trip Unit Technology

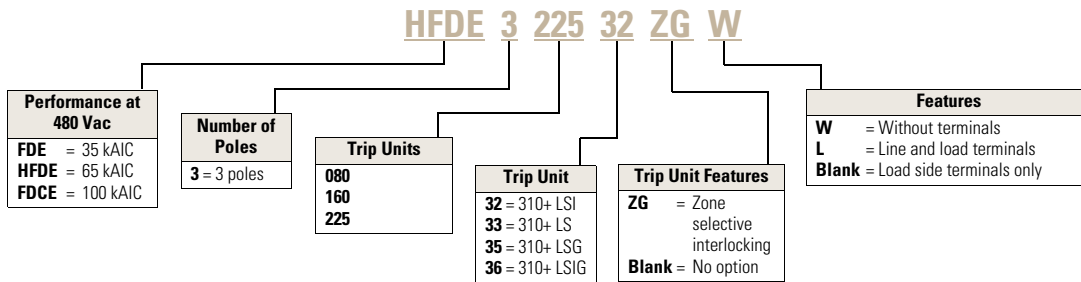


This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

FD-Frame Circuit Breakers with 210+ Electronic Trip Unit Technology



FD-Frame Circuit Breakers with 310+ Electronic Trip Unit Technology



Product Selection

2

Type ED Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

| Maximum Continuous Ampere Rating at 40 °C | 240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 65 kAIC at 240 Vac | |
|--|---|---------------------------------|
| | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 15 | ED2015 | ED3015 |
| 20 | ED2020 | ED3020 |
| 25 | ED2025 | ED3025 |
| 30 | ED2030 | ED3030 |
| 35 | ED2035 | ED3035 |
| 40 | ED2040 | ED3040 |
| 50 | ED2050 | ED3050 |
| 60 | ED2060 | ED3060 |
| 100 | ED2100 | ED3100 |
| 125 | ED2125 | ED3125 |
| 150 | ED2150 | ED3150 |
| 175 | ED2175 | ED3175 |
| 200 | ED2200 | ED3200 |
| 225 | ED2225 | ED3225 |

Type EDH Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

| Maximum Continuous Ampere Rating at 40 °C | 240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 100 kAIC at 240 Vac | |
|--|--|---------------------------------|
| | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 15 | — | — |
| 20 | — | — |
| 25 | — | — |
| 30 | — | — |
| 35 | — | — |
| 40 | — | — |
| 50 | — | — |
| 60 | — | — |
| 100 | EDH2100 | EDH3100 |
| 125 | EDH2125 | EDH3125 |
| 150 | EDH2150 | EDH3150 |
| 175 | EDH2175 | EDH3175 |
| 200 | EDH2200 | EDH3200 |
| 225 | EDH2225 | EDH3225 |

Type EDC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

| Maximum Continuous Ampere Rating at 40 °C | 240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 200 kAIC at 240 Vac | |
|--|--|---------------------------------|
| | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 15 | — | — |
| 20 | — | — |
| 25 | — | — |
| 30 | — | — |
| 35 | — | — |
| 40 | — | — |
| 50 | — | — |
| 60 | — | — |
| 100 | EDC2100 | EDC3100 |
| 125 | EDC2125 | EDC3125 |
| 150 | EDC2150 | EDC3150 |
| 175 | EDC2175 | EDC3175 |
| 200 | EDC2200 | EDC3200 |
| 225 | EDC2225 | EDC3225 |

Type EDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

| Maximum Continuous Ampere Rating at 40 °C | 240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 22 kAIC at 240 Vac | |
|--|---|---------------------------------|
| | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 100 | EDB2100 | EDB3100 |
| 110 | EDB2110 | EDB3110 |
| 125 | EDB2125 | EDB3125 |
| 150 | EDB2150 | EDB3150 |
| 175 | EDB2175 | EDB3175 |
| 200 | EDB2200 | EDB3200 |
| 225 | EDB2225 | EDB3225 |

Type EDS Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

| Maximum Continuous Ampere Rating at 40 °C | 240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 42 kAIC at 240 Vac | |
|--|---|---------------------------------|
| | Two-Pole Catalog Number | Three-Pole Catalog Number |
| 100 | EDS2100 | EDS3100 |
| 110 | EDS2110 | EDS3110 |
| 125 | EDS2125 | EDS3125 |
| 150 | EDS2150 | EDS3150 |
| 175 | EDS2175 | EDS3175 |
| 200 | EDS2200 | EDS3200 |
| 225 | EDS2225 | EDS3225 |

Type EHD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

| Maximum Continuous Ampere Rating at 40 °C | 277 Vac Maximum, 125 Vdc 14 kAIC at 277 Vac Single-Pole | 480 Vac Maximum, 250 Vdc 14 kAIC at 480 Vac Two-Pole | Three-Pole |
|--|---|--|-------------------|
| | Catalog Number | Catalog Number | Catalog Number |
| 10 ^① | EHD1010 | EHD2010 | EHD3010 |
| 15 | EHD1015 ^② | EHD2015 | EHD3015 |
| 20 | EHD1020 ^② | EHD2020 | EHD3020 |
| 25 | EHD1025 | EHD2025 | EHD3025 |
| 30 | EHD1030 | EHD2030 | EHD3030 |
| 35 | EHD1035 | EHD2035 | EHD3035 |
| 40 | EHD1040 | EHD2040 | EHD3040 |
| 45 | EHD1045 | EHD2045 | EHD3045 |
| 50 | EHD1050 | EHD2050 | EHD3050 |
| 60 | EHD1060 | EHD2060 | EHD3060 |
| 70 | EHD1070 | EHD2070 | EHD3070 |
| 80 | EHD1080 | EHD2080 | EHD3080 |
| 90 | EHD1090 | EHD2090 | EHD3090 |
| 100 | EHD1100 | EHD2100 | EHD3100 |

Notes

- ① Not UL listed. 5 kAIC interrupting rating.
- ② UL listed for SWD applications, see NEC Article 240.83(d).

**Type FDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units
(Includes Terminals on Load End Only)**

| Maximum Continuous Ampere Rating at 40 °C | 600 Vac Maximum, 250 Vdc 14 kAIC at 600 Vac | | |
|--|--|---------------------------------|--------------------------------|
| | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
| 10 ① | FDB2010 | FDB3010 | FDB4010 |
| 15 | FDB2015 | FDB3015 | FDB4015 |
| 20 | FDB2020 | FDB3020 | FDB4020 |
| 25 | FDB2025 | FDB3025 | FDB4025 |
| 30 | FDB2030 | FDB3030 | FDB4030 |
| 35 | FDB2035 | FDB3035 | FDB4035 |
| 40 | FDB2040 | FDB3040 | FDB4040 |
| 45 | FDB2045 | FDB3045 | FDB4045 |
| 50 | FDB2050 | FDB3050 | FDB4050 |
| 60 | FDB2060 | FDB3060 | FDB4060 |
| 70 | FDB2070 | FDB3070 | FDB4070 |
| 80 | FDB2080 | FDB3080 | FDB4080 |
| 90 | FDB2090 | FDB3090 | FDB4090 |
| 100 | FDB2100 | FDB3100 | FDB4100 |
| 110 | FDB2110 | FDB3110 | FDB4110 |
| 125 | FDB2125 | FDB3125 | FDB4125 |
| 150 | FDB2150 | FDB3150 | FDB4150 |

Notes

- ① Not UL listed. 5 kAIC interrupting rating.
- ② UL listed for SWD applications, see NEC Article 240.83(d).

**Type FD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units
(Includes Terminals on Load End Only)**

2

| Maximum Continuous Ampere Rating at 40 °C | 277 Vac Maximum, 125 Vdc 35 kAIC at 277 Vac | 600 Vac Maximum, 250 Vdc 35 kAIC at 480 Vac | | |
|--|--|--|---------------------------------|--------------------------------|
| | Single-Pole Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
| 10 ① | FD1010 | — | — | — |
| 15 | FD1015 ② | FD2015 | FD3015 | FD4015 |
| 20 | FD1020 ② | FD2020 | FD3020 | FD4020 |
| 25 | FD1025 | FD2025 | FD3025 | FD4025 |
| 30 | FD1030 | FD2030 | FD3030 | FD4030 |
| 35 | FD1035 | FD2035 | FD3035 | FD4035 |
| 40 | FD1040 | FD2040 | FD3040 | FD4040 |
| 45 | FD1045 | FD2045 | FD3045 | FD4045 |
| 50 | FD1050 | FD2050 | FD3050 | FD4050 |
| 60 | FD1060 | FD2060 | FD3060 | FD4060 |
| 70 | FD1070 | FD2070 | FD3070 | FD4070 |
| 80 | FD1080 | FD2080 | FD3080 | FD4080 |
| 90 | FD1090 | FD2090 | FD3090 | FD4090 |
| 100 | FD1100 | FD2100 | FD3100 | FD4100 |
| 110 | FD1110 | FD2110 | FD3110 | FD4110 |
| 125 | FD1125 | FD2125 | FD3125 | FD4125 |
| 150 | FD1150 | FD2150 | FD3150 | FD4150 |
| 175 | — | FD2175 | FD3175 | FD4175 |
| 200 | — | FD2200 | FD3200 | FD4200 |
| 225 | — | FD2225 | FD3225 | FD4225 |

Notes

① Not UL listed. 5 kAIC interrupting rating.

② UL listed for SWD applications, see NEC Article 240.83(d).

**Type HFD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units
(Includes Terminals on Load End Only)**

| Maximum Continuous Ampere Rating at 40 °C | 277 Vac Maximum, 125 Vdc 65 kAIC at 277 Vac | 600 Vac Maximum, 250 Vdc 65 kAIC at 480 Vac | | |
|--|--|--|---------------------------------|--------------------------------|
| | Single-Pole Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
| 15 | HFD1015 ① | HFD2015 | HFD3015 | HFD4015 |
| 20 | HFD1020 ① | HFD2020 | HFD3020 | HFD4020 |
| 25 | HFD1025 | HFD2025 | HFD3025 | HFD4025 |
| 30 | HFD1030 | HFD2030 | HFD3030 | HFD4030 |
| 35 | HFD1035 | HFD2035 | HFD3035 | HFD4035 |
| 40 | HFD1040 | HFD2040 | HFD3040 | HFD4040 |
| 45 | HFD1045 | HFD2045 | HFD3045 | HFD4045 |
| 50 | HFD1050 | HFD2050 | HFD3050 | HFD4050 |
| 60 | HFD1060 | HFD2060 | HFD3060 | HFD4060 |
| 70 | HFD1070 | HFD2070 | HFD3070 | HFD4070 |
| 80 | HFD1080 | HFD2080 | HFD3080 | HFD4080 |
| 90 | HFD1090 | HFD2090 | HFD3090 | HFD4090 |
| 100 | HFD1100 | HFD2100 | HFD3100 | HFD4100 |
| 110 | HFD1110 | HFD2110 | HFD3110 | HFD4110 |
| 125 | HFD1125 | HFD2125 | HFD3125 | HFD4125 |
| 150 | HFD1150 | HFD2150 | HFD3150 | HFD4150 |
| 175 | — | HFD2175 | HFD3175 | HFD4175 |
| 200 | — | HFD2200 | HFD3200 | HFD4200 |
| 225 | — | HFD2225 | HFD3225 | HFD4225 |

Note

① UL listed for SWD applications, see NEC Article 240.83(d).

**Type FDC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units
(Includes Terminals on Load End Only)**

2

| Maximum Continuous Ampere Rating at 40 °C | 600 Vac Maximum, 250 Vdc 100 kAIC at 480 Vac | | |
|--|---|---------------------------------|--------------------------------|
| | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
| 15 | FDC2015 | FDC3015 | FDC4015 |
| 20 | FDC2020 | FDC3020 | FDC4020 |
| 25 | FDC2025 | FDC3025 | FDC4025 |
| 30 | FDC2030 | FDC3030 | FDC4030 |
| 35 | FDC2035 | FDC3035 | FDC4035 |
| 40 | FDC2040 | FDC3040 | FDC4040 |
| 45 | FDC2045 | FDC3045 | FDC4045 |
| 50 | FDC2050 | FDC3050 | FDC4050 |
| 60 | FDC2060 | FDC3060 | FDC4060 |
| 70 | FDC2070 | FDC3070 | FDC4070 |
| 80 | FDC2080 | FDC3080 | FDC4080 |
| 90 | FDC2090 | FDC3090 | FDC4090 |
| 100 | FDC2100 | FDC3100 | FDC4100 |
| 110 | FDC2110 | FDC3110 | FDC4110 |
| 125 | FDC2125 | FDC3125 | FDC4125 |
| 150 | FDC215 | FDC3150 | FDC4150 |
| 175 | FDC2175 | FDC3175 | FDC4175 |
| 200 | FDC2200 | FDC3200 | FDC4200 |
| 225 | FDC2225 | FDC3225 | FDC4225 |

Types FDE, HFDE and FDCE 310+ Electronic Circuit Breakers with Non-Interchangeable Trip UnitsSee 310+ adjustability specifications on **Page V4-T2-151**.

| Maximum Ampere Rating | Digitrip RMS 310+ Trip Unit Only | | LSG Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | LSIG Independently Adjustable Short Time Pickup and Ground Fault Protection | Neutral CT for LSG and LSIG Catalog Number |
|---|---|---|---|--|---|
| | Standard LS Adjustable Short Time Pickup with I ² t Short Delay Ramp Catalog Number | Optional LSI Independently Adjustable Short Time Pickup and Delay | | | |
| 35 kAIC at 480 Vac / 18 kAIC at 600 Vac | | | | | |
| 80 | FDE308033 | FDE308032 | FDE308035 | FDE308036 | CTF080 |
| 160 | FDE316033 | FDE316032 | FDE316035 | FDE316036 | CTF160 |
| 225 | FDE322533 | FDE322532 | FDE322535 | FDE322536 | CTF225 |
| 65 kAIC at 480 Vac / 25 kAIC at 600 Vac | | | | | |
| 80 | HFDE308033 | HFDE308032 | HFDE308035 | HFDE308036 | CTF080 |
| 160 | HFDE316033 | HFDE316032 | HFDE316035 | HFDE316036 | CTF160 |
| 225 | HFDE322533 | HFDE322532 | HFDE322535 | HFDE322536 | CTF225 |
| 100 kAIC at 480 Vac / 25 kAIC at 600 Vac | | | | | |
| 80 | FDCE308033 | FDCE308032 | FDCE308035 | FDCE308036 | CTF080 |
| 160 | FDCE316033 | FDCE316032 | FDCE316035 | FDCE316036 | CTF160 |
| 225 | FDCE322533 | FDCE322532 | FDCE322535 | FDCE322536 | CTF225 |

Types FDE, HFDE, and FDCE 210+ Electronic Circuit Breakers with Non-Interchangeable Trip Units

| Maximum Ampere Rating | Digitrip RMS 210+ Trip Unit Only | |
|---|--|---|
| | Standard LI Adjustable Instantaneous Catalog Number | Optional LSI Adjustable Short Time Pickup and Delay Catalog Number |
| 35 kAIC at 480 Vac / 18 kAIC at 600 Vac | | |
| 100 | FDE310021 | FDE310022 |
| 150 | FDE315021 | ① |
| 225 | FDE322521 | FDE322522 |
| 65 kAIC at 480 Vac / 25 kAIC at 600 Vac | | |
| 100 | HFDE310021 | HFDE310022 |
| 150 | HFDE315021 | ① |
| 225 | HFDE322521 | HFDE322522 |
| 100 kAIC at 480 Vac / 25 kAIC at 600 Vac ② | | |
| 100 | FDCE310021 | FDCE310022 |
| 150 | FDCE315021 | ① |
| 225 | FDCE322521 | FDCE322522 |

210+ Trip Electronic Trip Units Amperage Settings

| Circuit Breaker Type | Frame | Ratings |
|----------------------------|-------|-----------------------------------|
| FDE, HFDE, FDCE | 225 | 100, 110, 125, 150, 175, 200, 225 |
| FDE, HFDE, FDCE | 150 | 70, 80, 90, 100, 110, 125, 150 |
| FDE, HFDE, FDCE | 100 | 40, 50, 60, 70, 80, 90, 100 |

FDE 310+ Electronic Breaker with Zone Selective Interlocking

| Ampere Rating | LSI w/ZSI Catalog Number | LSIG w/ZSI Catalog Number |
|---|-----------------------------|------------------------------|
| 35 kAIC at 480 Vac / 18 kAIC at 600 Vac | | |
| 80 | FDE308032ZG | FDE308036ZG |
| 160 | FDE316032ZG | FDE316036ZG |
| 225 | FDE322532ZG | FDE322536ZG |
| 65 kAIC at 480 Vac / 25 kAIC at 600 Vac | | |
| 80 | HFDE308032ZG | HFDE308036ZG |
| 160 | HFDE316032ZG | HFDE316036ZG |
| 225 | HFDE322532ZG | HFDE322536ZG |
| 100 kAIC at 480 Vac / 25 kAIC at 600 Vac | | |
| 80 | FDCE308032ZG | FDCE308036ZG |
| 160 | FDCE316032ZG | FDCE316036ZG |
| 225 | FDCE322532ZG | FDCE322536ZG |

Digitrip 310+ Electronic Trip Units Amperage Settings

| Circuit Breaker Type | Frame | Ratings |
|----------------------------|-------|--|
| FDE, HFDE, FDCE | 225 | 100, 110, 125, 150, 160, 175, 200, 225 |
| FDE, HFDE, FDCE | 160 | 60, 70, 80, 90, 100, 125, 150, 160 |
| FDE, HFDE, FDCE | 80 | 15, 20, 30, 40, 50, 60, 70, 80 |

Notes

① For 210+ trip unit, 150 A not available with LSI trip unit; entire range is covered by 100 A and 225 A frames.

② Contact the product line for availability.

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker

components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

| Maximum Continuous Ampere Rating at 40 °C | Complete Circuit Breaker with Load Side Terminals Only | | |
|--|---|---|----------|
| | 480 Vac Maximum, 250 Vdc Catalog Number | 600 Vac Maximum, 250 Vdc Catalog Number | |
| Two-Pole | | | |
| 100 | EHD2100K | FD2100K | HFD2100K |
| 150 | — | FD2150K | HFD2150K |
| 225 | — | FD2225K | HFD2225K |
| Three-Pole | | | |
| 100 | EHD3100K | FD3100K | HFD3100K |
| 150 | — | FD3150K | HFD3150K |
| 225 | — | FD3225K | HFD3225K |
| Four-Pole | | | |
| 100 | — | FD4100K | HFD4100K |
| 150 | — | FD4150K | HFD4150K |
| 225 | — | FD4225K | HFD4225K |

Note

Molded case switches will open above 1800 amperes.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. Except as noted, terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B. Unless otherwise specified, F-Frame circuit breakers are factory equipped with load terminals only.

Ordering Information

F-Frame circuit breakers and molded case switches have load terminals only as standard equipment. When standard line-end terminals (same as standard load-end terminals) are required, add Suffix **L** to the circuit breaker catalog number. When non-standard or optional line and/or load terminals are required, order by style number. Specify if factory installation is required.

Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire Range | Metric Wire Range mm ² | Package of Three Terminals Catalog Number |
|---|------------------------|-----------|----------------|-----------------------------------|---|
| Standard Pressure Type Terminals | | | | | |
| 20 (EHD) | Steel | Cu/Al | 14–10 | 2.5–4 | 3T20FB ② |
| 100 | Steel | Cu/Al | 14–1/0 | 2.5–50 | 3T100FB |
| 225 | Aluminum | Cu/Al | 4–4/0 | 25–95 | 3TA225FD |
| Optional Pressure Terminals | | | | | |
| 50 | Aluminum | Cu/Al | 14–4 | 2.5–25 | 3TA50FB ② |
| 100 | Aluminum | Cu/Al | 14–1/0 | 2.5–50 | 3TA100FD |
| 200 | Stainless steel | Cu | 4–4/0 | 25–95 | 3T150FB |
| 225 | Copper | Cu | 4–4/0 | 25–95 | 3T225FD |
| 225 | Aluminum | Cu/Al | 6–300 kcmil | 16–150 | 3TA225FDK3 ③ |
| 225 | Aluminum | Cu/Al | 6–300 kcmil | 16–150 | 3TA225FDK ③④ |

Notes

- ① Use on FDE, HFDE and FDCE electronic trip only.
- ② Not for use with ED, EDH, EDC breakers.
- ③ Includes terminal shield kit. Adds approximately 3 inches (76.2) to breaker height. Available for use on three-pole breaker only.
- ④ Replacement use only.

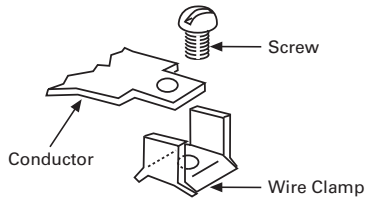
2.3

Molded Case Circuit Breakers

Series C

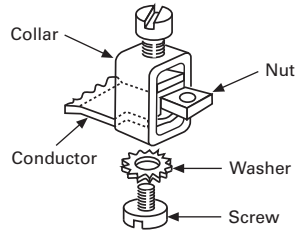
Line and Load Terminals

2



3T20FB

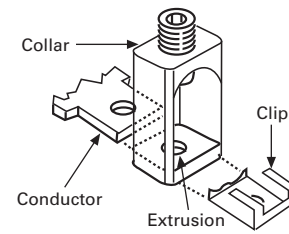
Assemble wire clamp to bottom of conductor as shown.



3T100FB, 3T150FB

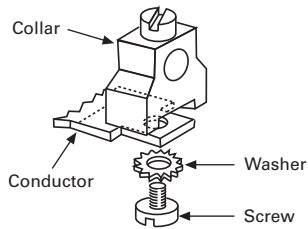
Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer.

Caution: Collar must surround conductor.



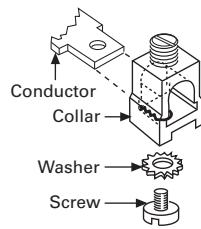
3TA225FD

Insert collar enclosing conductor and center on extrusion on collar. Install clip with legs on top of conductor and snap end around bottom of collar.



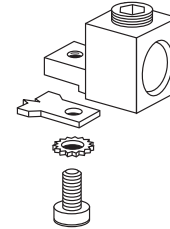
3TA50FB

Assemble collar on top of conductor as shown. Tighten securely with screw and washer.



3TA100FD

Collar slides onto conductor and is held in position by a screw and lockwasher.



3TA225FDK3 (Up to 150 mm²)

Assemble collar on top of conductor as shown. Tighten securely with screw and washer. Terminal shield must be used with this collar.

Note: For 185 mm², use 3TA225FDK1. Same illustration for 3TA225FDK

Accessories

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

Allowable Accessory Combinations

FD Frame Accessories

| Description | Reference Page | Single-Pole | | Two-Pole | | Three-Pole ^① | | | Four-Pole | | | |
|--|----------------|-------------|------|----------|------|-------------------------|-------|------|-----------|-------|---------|---|
| | | Center | Left | Right | Left | Center | Right | Left | Center | Right | Neutral | |
| Internal Accessories (Only one internal accessory per pole) | | | | | | | | | | | | |
| Alarm lockout switch (make only) | V4-T2-275 | ■ | | | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-275 | | | ■ | □ | □ | ■ | | | | | |
| Alarm lockout (2Make/2Break) | V4-T2-275 | | | ■ | □ | □ | ■ | | | | | |
| Auxiliary switch (1A, 1B) | V4-T2-277 | | | ■ | ■ | ■ | ■ | | | | | ■ |
| Auxiliary switch (2A, 2B) | V4-T2-277 | | | ■ | ■ | ■ | ■ | | | | | ■ |
| Auxiliary switch and alarm switch combination | V4-T2-279 | | | ■ | □ | □ | ■ | | | | | |
| Shunt trip—standard | V4-T2-281 | | | ■ | ■ | ■ | ■ | | | | | ■ |
| Shunt trip—low energy | V4-T2-285 | | | ■ | ■ | ■ | ■ | | | | | |
| Undervoltage release mechanism | V4-T2-287 | | | ■ | ■ | ■ | ■ | | | | | |
| External Accessories | | | | | | | | | | | | |
| End cap kit | V4-T2-310 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Keeper nut | V4-T2-310 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Control wire terminal kit | V4-T2-311 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Multewire connectors | V4-T2-312 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Rear fed terminals | V4-T2-312 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Base mounting hardware | V4-T2-312 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Terminal shields | V4-T2-314 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Terminal end covers | V4-T2-315 | | | | ● | ● | ● | | | | | |
| Interphase barriers | V4-T2-315 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Non-padlockable handle block | V4-T2-316 | ■ | ■ | | | ■ | | | ■ | | | |
| Snap-on padlockable handle lock hasp | V4-T2-316 | ■ | ■ | | | ■ | | | ■ | | | |
| Padlockable handle lock hasp | V4-T2-317 | | | ■ | | □ | | □ | □ | | □ | |
| Cylinder lock | V4-T2-317 | | | | | ■ | | | | | | |
| Key interlock kit | V4-T2-318 | | | ■ | | □ | | □ | □ | | □ | |
| Sliding bar interlock—requires two breakers | V4-T2-319 | | | | | ● | ● | ● | | | | |
| Walking beam interlock—requires two breakers | V4-T2-319 | | | | | ● | ● | ● | ● | ● | ● | ● |
| Electrical (solenoid and motor) operators | V4-T2-320 | | | | | ● | ● | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-321 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Rear connecting studs | V4-T2-323 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Panelboard connecting straps | V4-T2-324 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-431 | | | | | ● | ● | ● | | | | |
| LFD current limiter | V4-T2-326 | | | | | ● | ● | ● | | | | |
| IQ Energy Sentinel | V4-T2-326 | | ● | ● | ● | ● | ● | ● | | | | |
| Cause of trip display | V4-T2-327 | | | | | ● | | | ● | | | |
| Remote mount cause of trip display | V4-T2-327 | | | | | ● | | | ● | | | |
| Cause of trip LED | V4-T2-327 | | | | | ● | | | ● | | | |
| Modifications (Refer to Eaton) | | | | | | | | | | | | |
| Special calibration | — | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Moisture fungus treatment | V4-T2-116 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application | — | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Note

- ① Internal accessories are listed with Underwriters Laboratories (UL) for factory installation. They are not listed with UL for field installation.

Technical Data and Specifications

2

UL 489 Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | Volts DC ^① | |
|----------------------|-----------------|--|-----|-----|-----|-----------------------|-------------------|
| | | Volts AC (50/60 Hz) | | | | 125 | 250 ^{②③} |
| | | 240 | 277 | 480 | 600 | | |
| EDB | 2, 3 | 22 | — | — | — | 10 | — |
| EDS | 2, 3 | 42 | — | — | — | 10 | — |
| ED | 2, 3 | 65 | — | — | — | 10 | — |
| EDH | 2, 3 | 100 | — | — | — | 10 | — |
| EDC | 2, 3 | 200 | — | — | — | 10 | — |
| EHD | 1 | — | 4 | — | — | 10 | — |
| | 2, 3 | 18 | — | 14 | — | — | 10 |
| FDB | 2, 3, 4 | 18 | — | 14 | 14 | — | 10 |
| FD | 1 | — | 35 | — | — | 10 | — |
| | 2, 3, 4 | 65 | — | 35 | 18 | — | 10 |
| FDE ^④ | 3 | 65 | — | 35 | 18 | — | — |
| HFD | 1 | — | 65 | — | — | 10 | — |
| | 2, 3, 4 | 100 | — | 65 | 25 | — | 22 |
| HFDE ^④ | 3 | 100 | — | 65 | 25 | — | — |
| FDC ^⑤ | 2, 3, 4 | 200 | — | 100 | 35 | — | 22 |
| FDCE ^{④⑤⑥} | 3 | 200 | — | 100 | 25 | — | — |

IEC 157-1 (P1) Interrupting Capacity Ratings (P1)

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | Volts DC ^① | |
|----------------------|-----------------|--|----------|-----|-----|-----------------------|-------------------|
| | | Volts AC (50/60 Hz) | | | | 125 | 250 ^{②③} |
| | | 220, 240 | 380, 415 | 440 | 500 | | |
| EDB | 2, 3 | 22 | — | — | — | 10 | — |
| EDS | 2, 3 | 42 | — | — | — | 10 | — |
| ED | 2, 3 | 65 | — | — | — | 10 | — |
| EDH | 2, 3 | 100 | — | — | — | 10 | — |
| EDC | 2, 3 | 200 | — | — | — | 10 | — |
| EHD | 1 | — | 14 | — | — | 10 | — |
| | 2, 3 | 18 | — | 14 | — | — | 10 |
| FDB | 2, 3, 4 | 18 | 14 | 14 | 14 | — | 10 |
| FD | 1 | 35 | — | — | — | 10 | — |
| | 2, 3, 4 | 65 | 35 | 35 | 18 | — | 10 |
| HFD | 1 | 65 | — | — | — | 10 | — |
| | 2, 3, 4 | 100 | 65 | 65 | 25 | — | 22 |
| FDC | 2, 3, 4 | 200 | 100 | 100 | 35 | — | 22 |

210+ and 310+ Electronic Trip Unit Accessories

| Description | 210+ | 310+ | Catalog number |
|--|------|------|----------------|
| Electronic portable test kit | ■ | ■ | MTST230V |
| Trip unit tamper protection wire seal | ■ | ■ | 5108A03H01 |
| External neutral sensor (80 A) ^⑦ | | ■ | CTF080 |
| External neutral sensor (160 A) ^⑦ | | ■ | CTF160 |
| External neutral sensor (225 A) ^⑦ | | ■ | CTF225 |
| Compact external neutral sensor (80 A) ^⑦ | | ■ | CTFD080 |
| Compact external neutral sensor (160 A) ^⑦ | | ■ | CTFD160 |
| Compact external neutral sensor (225 A) ^⑦ | | ■ | CTFD225 |
| Breaker-mount cause-of-trip indication | | ■ | TRIP-LED |
| Breaker-mount ammeter module | | ■ | DIGIVIEW |
| Remote-mount ammeter module | | ■ | DIGIVIEWR06 |

UL 489 Current Limiting Data

| Frame | Circuit | I _p (kA) | I ² T (10 ⁶ A ² S) |
|-------|--------------|---------------------|---|
| FDC | 240 V/200 kA | 41.4 | 1.41 |
| FDC | 480 V/100 kA | 38.9 | 2.50 |
| FDC | 600 V/35 kA | 29.0 | 3.00 |

Notes

- ① DC ratings apply to substantially non-inductive circuits.
- ② Two-pole circuit breaker, or two poles of three-pole circuit breaker.
- ③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.
- ④ Electronics available on three-pole only, no DC rating for FDE, HFDE, FDCE.
- ⑤ Current limiting.
- ⑥ Check with Eaton for availability.
- ⑦ Neutral sensor required for four-wire systems if neutral protection is desired; sold separately.

FDE 210+ and 310+ Specifications

| Description | Digitrip RMS 210+ | Digitrip RMS 310+ |
|--|---------------------|--------------------|
| Breaker type | | |
| Frame designation | FD | FD |
| Frames available | 100 A, 150 A, 225 A | 80 A, 160 A, 225 A |
| Continuous current range (A) | 40–225 A | 15–225 A |
| Ground fault pickup (A) | N/A | 16–225 A |
| Interrupting capacities at 480 Vac (kAIC) | 35, 65, 100 | 35, 65, 100 |
| Protection | | |
| Ordering options | LI, LSI | LS, LSI, LSG, LSIG |
| Arcflash Reduction Maintenance System™ (or Maintenance Mode) | No | No |
| Interchangeable trip unit | No | No |
| High load alarm (suffix B20) | No | No |
| Ground fault alarm with trip (suffix B21) | No | No |
| Ground fault alarm, no trip (suffix B22) | No | No |
| Zone selective interlocking (suffix ZG) | No | LSI, LSIG |
| Cause of trip indication | No | Yes |
| Thru-cover accessories | No | No |
| Test kit available | Yes | Yes |

FDE 210+ Adjustability Specifications

| 210+ settings | | FD Frame | | |
|--|---|-------------|-------|-------------|
| | | 100 A | 150 A | 225 A |
| I_r = continuous current or long delay pickup (amperes) (all 210+) | I_r | | | |
| | A | 40 | 70 | 100 |
| | B | 50 | 80 | 110 |
| | C | 60 | 90 | 125 |
| | D | 70 | 100 | 150 |
| | E | 80 | 110 | 175 |
| | F | 90 | 125 | 200 |
| | G (= I_n) | 100 | 150 | 225 |
| | I_i (x I_n) = Instantaneous pickup (210+ LI version) | I_i | 100 | 150 |
| J–2x | | 200 | 300 | 450 |
| K–2.5x | | 250 | 375 | 565 |
| L–3x | | 300 | 450 | 675 |
| M–3.5x | | 350 | 525 | 790 |
| N–4x | | 400 | 600 | 900 |
| O–5x | | 500 | 750 | 1125 |
| P–6x | | 600 | 900 | 1350 |
| Q–8x | | 800 | 1200 | 1800 |
| R–10x | | 1000 | 1500 | 2250 |
| S–12x ① | | 1200 | 1800 | 2400 |
| Fixed instantaneous override (all 210+) | | 2400 | 2400 | 2400 |
| "Isd (x Ir) / tsd = SD profile" ② (210+ LSI version) | I_{sd} / t_{sd} | 100 | 150 | 225 |
| | J | 2x / 150 | N/A | 2x / 150 |
| | K | 2x / 300 | N/A | 2x / 300 |
| | L | 2x / I^2t | N/A | 2x / I^2t |
| | M | 4x / Inst | N/A | 4x / Inst |
| | N | 4x / 150 | N/A | 4x / 150 |
| | O | 4x / I^2t | N/A | 4x / I^2t |
| | P | 6x / Inst | N/A | 6x / Inst |
| | Q | 6x / 300 | N/A | 6x / 300 |
| | R | 10x / 150 | N/A | 10x / 150 |
| | S | 10x / 300 | N/A | 10x / 300 |

FDE 310+ Adjustability Specifications

| 310+ Settings | | FD Frame | | |
|--|--|------------|----------|----------|
| | | 80 A | 160 A | 225 A |
| I_r = continuous current or long delay pickup (amperes) (All 310+) | I_r | | | |
| | A | 15 | 60 | 100 |
| | B | 20 | 70 | 110 |
| | C | 30 | 80 | 125 |
| | D | 40 | 90 | 150 |
| | E | 50 | 100 | 160 |
| | F | 60 | 125 | 175 |
| | G | 70 | 150 | 200 |
| | H (= I_n) | 80 | 160 | 225 |
| t_r = long delay time (seconds) (All 310+) | Position 1 | 2 | 2 | 2 |
| | Position 2 | 4 | 4 | 4 |
| | Position 3 | 7 | 7 | 7 |
| | Position 4 | 10 | 10 | 10 |
| | Position 5 | 12 | 12 | 12 |
| | Position 6 | 15 | 15 | 15 |
| | Position 7 | 20 | 20 | 20 |
| | Position 8 | 24 | 24 | 24 |
| | I_{sd} (x I_r) = short delay pickup (All 310+) | Position 1 | 2x | 2x |
| Position 2 | | 3x | 3x | 3x |
| Position 3 | | 4x | 4x | 4x |
| Position 4 | | 5x | 5x | 5x |
| Position 5 | | 6x | 6x | 6x |
| Position 6 | | 7x | 7x | 7x |
| Position 7 | | 8x | 8x | 8x |
| Position 8 | | 10x | 10x | 10x |
| Position 9 | | 12x | 12x | 12x |
| t_{sd} = short delay time I^2t (milliseconds) (LS, LSG) | Fixed | 67 at10x | 67 at10x | 67 at10x |
| | Position 1 | Inst | Inst | Inst |
| | Position 2 | 120 | 120 | 120 |
| t_{sd} = short delay time flat (milliseconds) (LSI, LSIG) | Position 3 | 300 | 300 | 300 |
| | Position 1 | 16 | 32 | 45 |
| | Position 2 | 24 | 48 | 67 |
| I_g = ground fault pickup (amperes) (LSG, LSIG) | Position 3 | 32 | 64 | 90 |
| | Position 4 | 48 | 96 | 135 |
| | Position 5 | 64 | 128 | 180 |
| | Position 6 | 80 | 160 | 225 |
| | Position 1 | Inst | Inst | Inst |
| | Position 2 | 120 | 120 | 120 |
| t_g = ground fault delay time (milliseconds) (LSG, LSIG) | Position 3 | 300 | 300 | 300 |
| | Independently Adjustable Instantaneous (I_i) setting ① | | | |
| Maintenance Mode pickup ($2.5 \times I_n$) (amperes) ② | | | | |

Notes

- ① Not available for FD. Independently adjustable I_i setting available in LG, NG and RG ALSI and ALSIG trip units.
- ② Maintenance Mode not available for FD frames. It is available for KD, LD, MDL, LG, NG and RG.

2.3

Molded Case Circuit Breakers

Series C

Dimensions and Weights

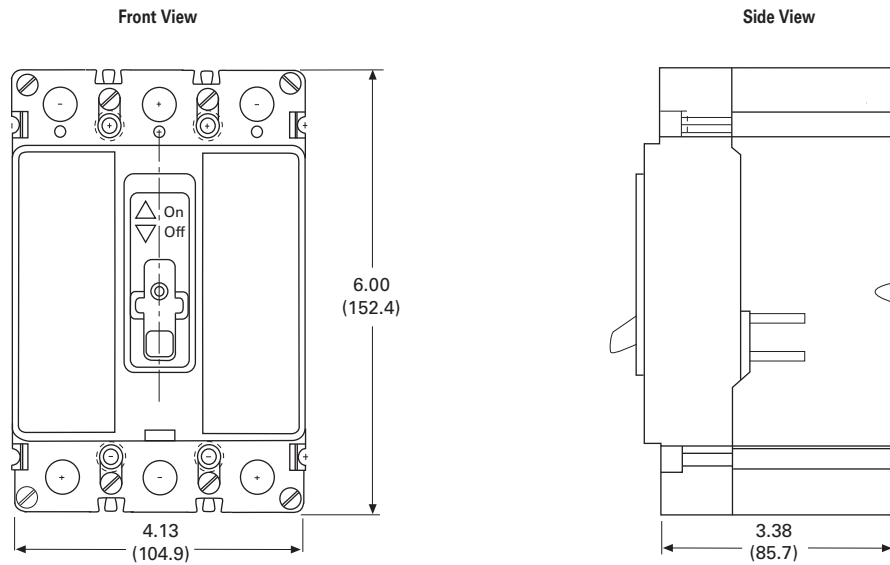
Approximate Dimensions in Inches (mm)

2

FD Frame

| Number of Poles | Width | Height | Depth |
|-----------------|--------------|--------------|-------------|
| 1 | 1.38 (35.1) | 6.00 (152.4) | 3.38 (86.0) |
| 2 | 2.75 (70.0) | 6.00 (152.4) | 3.38 (86.0) |
| 3 | 4.13 (105.0) | 6.00 (152.4) | 3.38 (86.0) |
| 4 | 5.50 (139.7) | 6.00 (152.4) | 3.38 (86.0) |

FD Frame, Three-Pole



Approximate Shipping Weight Lbs (kg)

FD Frame

| Breaker Type | Number of Poles | | | |
|------------------------|-----------------|---------|-----------|---------|
| | 1 | 2 | 3 | 4 |
| ED, EDB, EDS, EDH, EDC | — | 3 (1.4) | 4.5 (2.0) | — |
| EHD, FDB, FD, HFD, FDC | 2 (0.9) | 3 (1.4) | 4.5 (2.0) | 6 (2.7) |
| FDE, HFDE, FDCE | — | — | 4.5 (2.0) | — |

Typical J-Frame Breaker



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| Standards and Certifications | V4-T2-117 |
| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | |
| Catalog Number Selection | V4-T2-154 |
| Product Selection | V4-T2-155 |
| Accessories | V4-T2-158 |
| Technical Data and Specifications | V4-T2-159 |
| Dimensions and Weights | V4-T2-160 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

J-Frame (70–250 Amperes)

Product Description

- All Eaton's J-Frame circuit breakers are HACR rated
- J-Frame circuit breakers are available as individual components (frame, trip unit, terminals), or factory assembled complete breakers
- J-Frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use

2.3

Molded Case Circuit Breakers

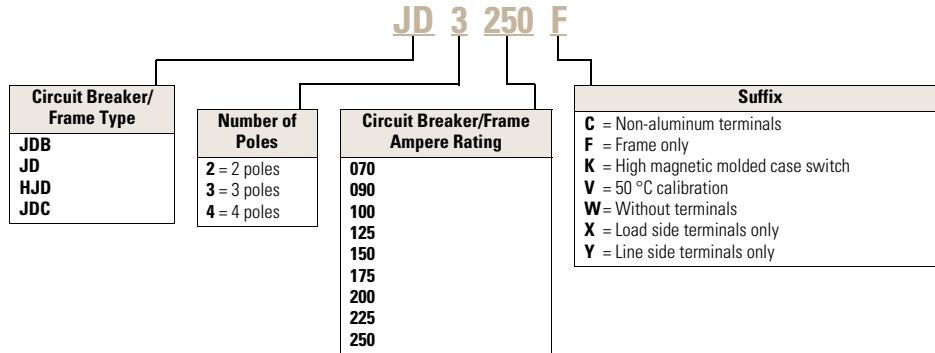
Series C

Catalog Number Selection

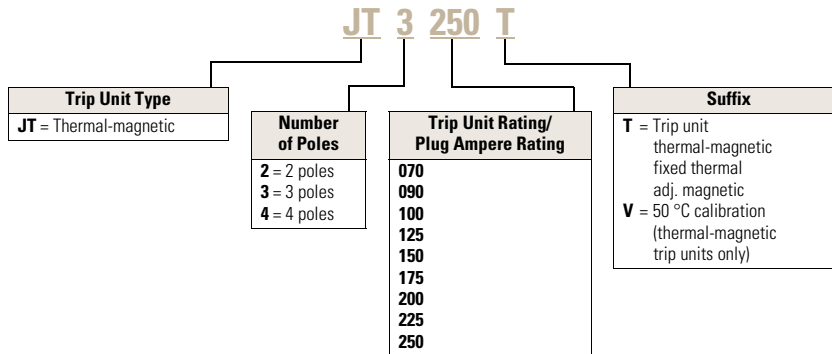
This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

2

Circuit Breaker/Frame



Trip Unit



Product Selection

Types JD, HJD and JDC Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① | Thermal-Magnetic Trip Unit Only ① | Standard Terminals Only |
|---|--|--|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number | For Use with Standard or High or Ultra High Interrupting Frames | See Page V4-T2-157 for Optional Terminals Catalog Number |
| Two-Pole | | | | | |
| 70 | JD2070 | HJD2070 | JDC2070 | JT2070T | TA250KB ② |
| 90 | JD2090 | HJD2090 | JDC2090 | JT2090T | |
| 100 | JD2100 | HJD2100 | JDC2100 | JT2100T | |
| 125 | JD2125 | HJD2125 | JDC2125 | JT2125T | |
| 150 | JD2150 | HJD2150 | JDC2150 | JT2150T | |
| 175 | JD2175 | HJD2175 | JDC2175 | JT2175T | |
| 200 | JD2200 | HJD2200 | JDC2200 | JT2200T | |
| 225 | JD2225 | HJD2225 | JDC2225 | JT2225T | |
| 250 | JD2250 | HJD2250 | JDC2250 | JT2250T | |
| Three-Pole | | | | | |
| 70 | JD3070 | HJD3070 | JDC3070 | JT3070T | TA250KB ② |
| 90 | JD3090 | HJD3090 | JDC3090 | JT3090T | |
| 100 | JD3100 | HJD3100 | JDC3100 | JT3100T | |
| 125 | JD3125 | HJD3125 | JDC3125 | JT3125T | |
| 150 | JD3150 | HJD3150 | JDC3150 | JT3150T | |
| 175 | JD3175 | HJD3175 | JDC3175 | JT3175T | |
| 200 | JD3200 | HJD3200 | JDC3200 | JT3200T | |
| 225 | JD3225 | HJD3225 | JDC3225 | JT3225T | |
| 250 | JD3250 | HJD3250 | JDC3250 | JT3250T | |
| Four-Pole ③④ | | | | | |
| 125 | JD4125 | HJD4125 | JDC4125 | JT3125T | TA250KB ② |
| 150 | JD4150 | HJD4150 | JDC4150 | JT3150T | |
| 175 | JD4175 | HJD4175 | JDC4175 | JT3175T | |
| 200 | JD4200 | HJD4200 | JDC4200 | JT3200T | |
| 225 | JD4225 | HJD4225 | JDC4225 | JT3225T | |
| 250 | JD4250 | HJD4250 | JDC4250 | JT3250T | |

Notes

- ① Magnetic trip adjustable 5–10 times continuous ampere rating.
- ② Individually packed.
- ③ Fully rated neutral pole with no protection.
- ④ Neutral is in right pole.

Types JD, HJD and JDC Thermal-Magnetic Circuit Breakers – Frame Only

| Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Catalog Number | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Catalog Number | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Catalog Number |
|---|---|--|
| Two-Pole | | |
| JD2250F | HJD2250F | JDC2250F |
| Three-Pole | | |
| JD3250F | HJD3250F | JDC3250F |
| Four-Pole | | |
| JD4250F | HJD4250F | JDC4250F |

Type JDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Thermal-Magnetic Trip Units Suitable for Reverse Feed Application

| Maximum Continuous Ampere Rating at 40 °C | 600 Vac Rated, 250 Vdc Complete Circuit Breaker | |
|---|---|--|
| | Without Line and Load Terminals Catalog Number | With Standard Line and Load Terminals Only Catalog Number |
| Two-Pole | | |
| 70 | JDB2070W | JDB2070 |
| 90 | JDB2090W | JDB2090 |
| 100 | JDB2100W | JDB2100 |
| 125 | JDB2125W | JDB2125 |
| 150 | JDB2150W | JDB2150 |
| 175 | JDB2175W | JDB2175 |
| 200 | JDB2200W | JDB2200 |
| 225 | JDB2225W | JDB2225 |
| 250 | JDB2250W | JDB2250 |
| Three-Pole | | |
| 70 | JDB3070W | JDB3070 |
| 90 | JDB3090W | JDB3090 |
| 100 | JDB3100W | JDB3100 |
| 125 | JDB3125W | JDB3125 |
| 150 | JDB3150W | JDB3150 |
| 175 | JDB3175W | JDB3175 |
| 200 | JDB3200W | JDB3200 |
| 225 | JDB3225W | JDB3225 |
| 250 | JDB3250W | JDB3250 |

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker

components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

| Maximum Continuous Ampere Rating at 40 °C | 600 Vac Maximum, 250 Vdc Complete Circuit Breaker Only Without Line and Load Terminals | | Standard Terminals Only |
|---|--|---|---|
| | Catalog Number | Suitable for Reverse Feed Use Catalog Number | See Page V4-T2-157 for Optional Terminals Catalog Number |
| Two-Pole | | | |
| 250 | JD2250KW | JDB2250KW | TA250KB ① |
| | HJD2250KW | HJDB2250KW | — |
| Three-Pole | | | |
| 250 | JD3250KW | JDB3250KW | TA250KB ① |
| | HJD3250KW | HJDB3250KW | — |
| Four-Pole | | | |
| 250 | JD4250KW | JDB4250KW | TA250KB ① |
| | HJD4250KW | HJDB4250KW | — |

Notes

① Individually packed.

Molded case switches may open above 2500 amperes.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

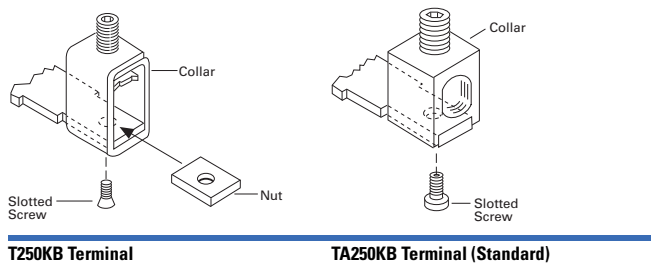
Eaton’s line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B and CSA Standard C22.2 No. 65, or Electrical Bulletin 1165.

Unless otherwise specified, J-Frame circuit breaker line and load terminals are shipped separately for field installation.

The bottom of the standard TA250KB terminal contains a recess that is positioned over the J-Frame circuit breaker terminal conductor.

Ordering Information

J-Frame circuit breakers use Cu/Al terminals as standard. When optional copper-only terminals are required, order by catalog number. Specify if factory installation is required.



Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire Range/ No. Conductors | Metric Wire Range mm ² | Catalog Number |
|--|------------------------|-----------|--------------------------------|-----------------------------------|----------------|
| Standard Cu/Al Pressure Terminals | | | | | |
| 250 | Aluminum | Cu/Al | 4–350 kcmil | 25–185 | TA250KB |
| Optional Cu Pressure Terminals | | | | | |
| 250 | Stainless Steel | Cu | 4–350 kcmil | 25–185 | T250KB |

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

JD Frame Accessories

| Description | Reference Page | Two-, Three-Pole | | | Four-Pole | | | Neutral |
|--|----------------|------------------|--------|-------|-----------|--------|-------|---------|
| | | Left | Center | Right | Left | Center | Right | |
| Internal Accessories (Only One Internal Accessory Per Pole) | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-275 | ☐ | | ☐ | ☐ | | ☐ | |
| Auxiliary switch (1A, 1B) | V4-T2-277 | ■ | | ■ | ■ | | ■ | |
| Auxiliary switch (2A, 2B) | V4-T2-277 | ■ | | ■ | ■ | | ■ | |
| Auxiliary switch and alarm switch combination | V4-T2-279 | ☐ | | ☐ | ☐ | | ☐ | |
| Shunt trip—standard | V4-T2-282 | ■ | | ■ | ■ | | ■ | |
| Shunt trip—low energy | V4-T2-285 | ■ | | ■ | ■ | | ■ | |
| Undervoltage release mechanism | V4-T2-289 | ■ | | ■ | ■ | | ■ | |
| External Accessories | | | | | | | | |
| End cap kit | V4-T2-310 | ● | ● | ● | ● | ● | ● | ● |
| Plug nut | V4-T2-311 | ● | ● | ● | ● | ● | ● | ● |
| Control wire terminal kit | V4-T2-311 | ● | ● | ● | ● | ● | ● | ● |
| Multiwire connectors | V4-T2-312 | ● | ● | ● | ● | ● | ● | ● |
| Base mounting hardware | V4-T2-313 | ● | ● | ● | ● | ● | ● | ● |
| Terminal shields | V4-T2-314 | ● | ● | ● | ● | ● | ● | ● |
| Interphase barriers | V4-T2-315 | ● | ● | ● | ● | ● | ● | ● |
| Non-padlockable handle block | V4-T2-316 | | ■ | | | ■ | | |
| Padlockable handle block | V4-T2-316 | | ■ | | | ■ | | |
| Padlockable handle lock hasp | V4-T2-317 | ☐ | | ☐ | ☐ | | ☐ | |
| Cylinder lock | V4-T2-317 | ☐ | | ☐ | | | | |
| Key interlock kit | V4-T2-318 | ☐ | | ☐ | ☐ | | ☐ | |
| Sliding bar interlock—requires two breakers | V4-T2-319 | ● | ● | ● | | | | |
| Electrical (solenoid) operator | V4-T2-321 | ● | ● | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-321 | ● | ● | ● | ● | ● | ● | ● |
| Rear connecting studs | V4-T2-323 | ● | ● | ● | ● | ● | ● | ● |
| Panelboard connecting straps | V4-T2-324 | ● | ● | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-431 | ● | ● | ● | ● | ● | ● | ● |
| Handle extension | V4-T2-446 | ● | ● | ● | ● | ● | ● | ● |
| IQ Energy Sentinel | V4-T2-326 | ● | ● | ● | | | | |
| Modifications (Refer to Eaton) | | | | | | | | |
| Special calibration | — | ● | ● | ● | ● | ● | ● | ● |
| Moisture fungus treatment | V4-T2-116 | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application | — | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- ☐ May be mounted on left or right pole—not both
- Accessory available/modification available

Technical Data and Specifications

UL 489 Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | |
|----------------------|-----------------|--|-----|-----|----------|-------------------|
| | | Volts AC (50/60 Hz) | | | Volts DC | |
| | | 240 | 480 | 600 | 125 | 250 ^{①②} |
| JDB | 2, 3 | 65 | 35 | 18 | — | 10 |
| JD | 2, 3, 4 | 65 | 35 | 18 | — | 10 |
| HJD | 2, 3, 4 | 100 | 65 | 25 | — | 22 |
| JDC ^③ | 2, 3, 4 | 200 | 100 | 35 | — | 22 |

IEC 157-1 (P1) Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | | |
|----------------------|-----------------|--|-----|-----|-----|----------|-------------------|
| | | Volts AC (50/60 Hz) | | | | Volts DC | |
| | | 240 | 380 | 415 | 600 | 125 | 250 ^{①②} |
| JD | 2, 3, 4 | 65 | 35 | 35 | — | — | 10 |
| HJD | 2, 3, 4 | 100 | 65 | 65 | — | — | 22 |
| JDC | 2, 3, 4 | 200 | 100 | 100 | — | — | 22 |

UL 489 Current Limiting Data

| Frame | Circuit | I _p (kA) | I ² T (10 ⁶ A ² S) |
|-------|--------------|---------------------|---|
| JDC | 240 V/200 kA | 42.6 | 1.36 |
| JDC | 480 V/100 kA | 40.0 | 3.00 |
| JDC | 600 V/35 kA | 31.9 | 3.10 |

Notes

- ① Two-pole circuit breaker or two outside poles of three-pole circuit breaker.
- ② Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.
- ③ Current limiting.

2.3

Molded Case Circuit Breakers

Series C

Dimensions and Weights

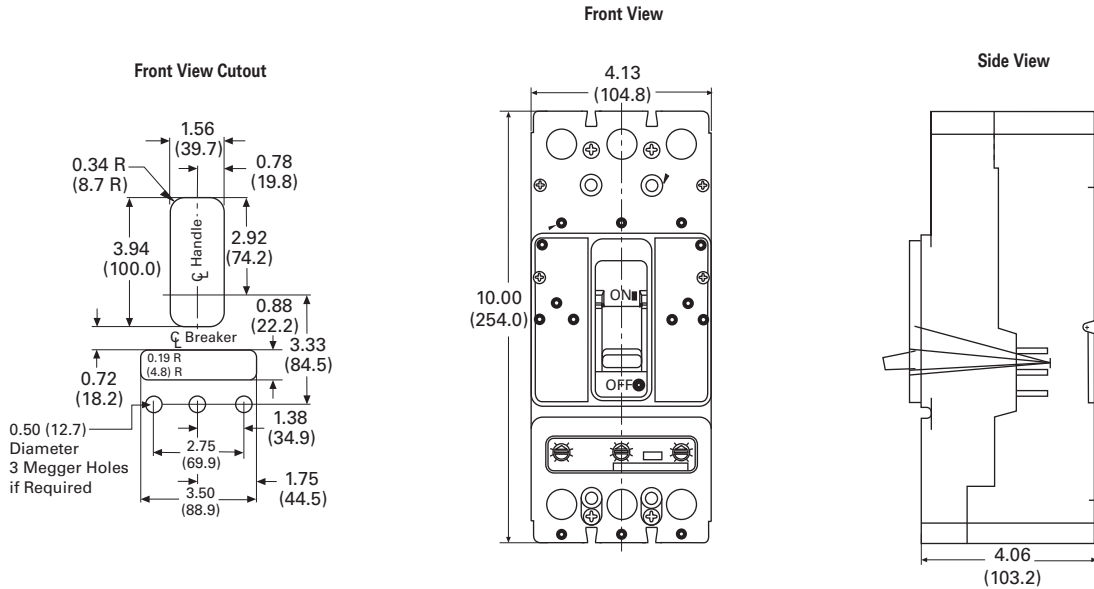
Approximate Dimensions in Inches (mm)

2

JD Frame

| Number of Poles | Width | Height | Depth |
|-----------------|--------------|---------------|--------------|
| 2, 3 | 4.13 (105.0) | 10.00 (254.0) | 4.06 (104.1) |
| 4 | 5.50 (139.7) | 10.00 (254.0) | 4.06 (104.1) |

JD-Frame, Three-Pole



Approximate Shipping Weight in Lbs (kg)

JD Frame

| Breaker Type | Complete Breaker | | | Frame Only | | | Trip Unit | | |
|--------------|------------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|
| | Two-Pole | Three-Pole | Four-Pole | Two-Pole | Three-Pole | Four-Pole | Two-Pole | Three-Pole | Four-Pole |
| JDB | 11.25 (5.1) | 12.50 (5.7) | — | — | — | — | — | — | — |
| JD | 11.25 (5.1) | 12.50 (5.7) | 13.25 (6.0) | 9.00 (4.1) | 10.00 (4.5) | 10.50 (4.8) | 2.00 (0.9) | 2.00 (0.9) | 2.25 (1.0) |
| HJD | 11.25 (5.1) | 12.50 (5.7) | 13.25 (6.0) | 9.00 (4.1) | 10.00 (4.5) | 10.50 (4.8) | 2.00 (0.9) | 2.00 (0.9) | 2.25 (1.0) |
| JDC | 12.25 (5.6) | 13.50 (6.1) | 14.25 (6.5) | 10.00 (4.5) | 11.00 (5.0) | 11.50 (5.2) | 2.00 (0.9) | 2.00 (0.9) | 2.25 (1.0) |

Typical K-Frame Circuit Breaker



Contents

| <i>Description</i> | <i>Page</i> |
|--|------------------|
| Product Overview | V4-T2-116 |
| Standards and Certifications | V4-T2-117 |
| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | |
| Catalog Number Selection | V4-T2-162 |
| Product Selection | V4-T2-164 |
| Accessories | V4-T2-180 |
| Technical Data and Specifications | V4-T2-181 |
| Dimensions and Weights | V4-T2-184 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

K-Frame (70–400 Amperes)

Product Description

- All Eaton K-Frame circuit breakers are HACR rated
- K-Frame circuit breakers are available as individual components (frame, trip unit, terminals), or factory assembled complete breakers
- K-Frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use

2.3

Molded Case Circuit Breakers

Series C

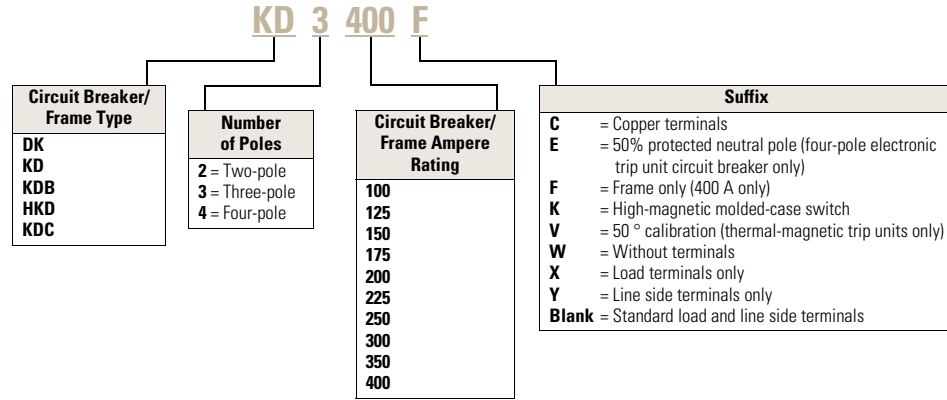
2

Catalog Number Selection

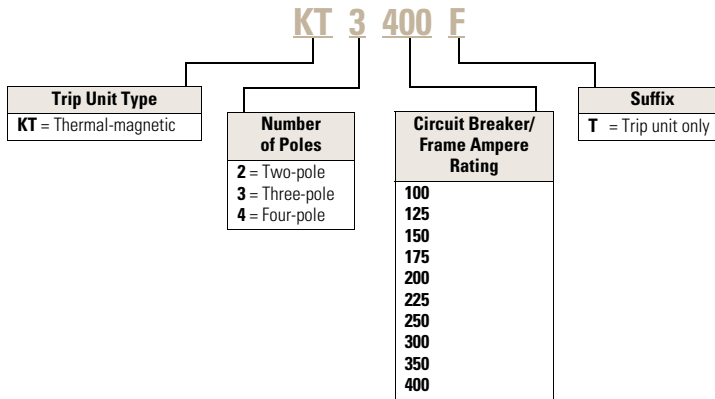
This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

K-Frame with Thermal-Magnetic Trip Unit Technology

Thermal-Magnetic Breakers and Frames ①



Thermal-Magnetic Trip Unit ①



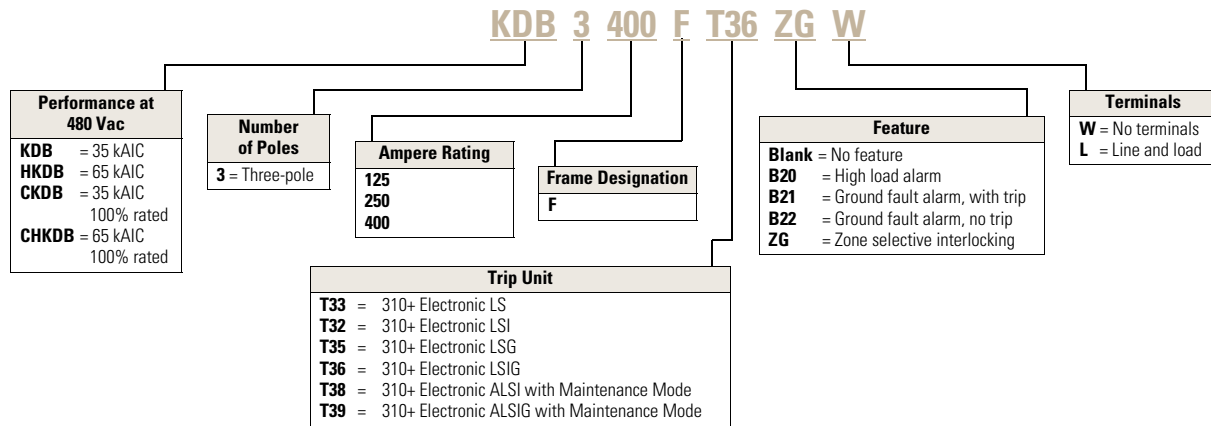
Notes

① Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **KD3400F** or **HKD3400F**.

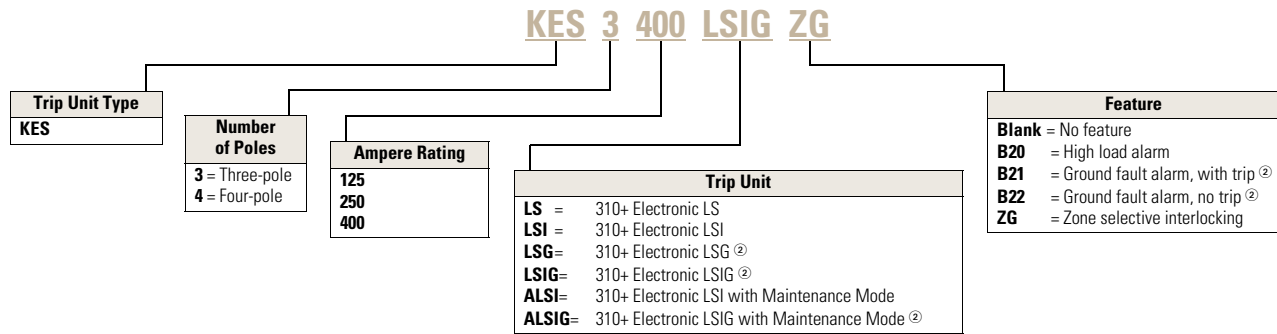
Ampere rating available with electronic trip unit only.

K-Frame with 310+ Electronic Trip Unit Technology ①

310+ Circuit Breakers ②

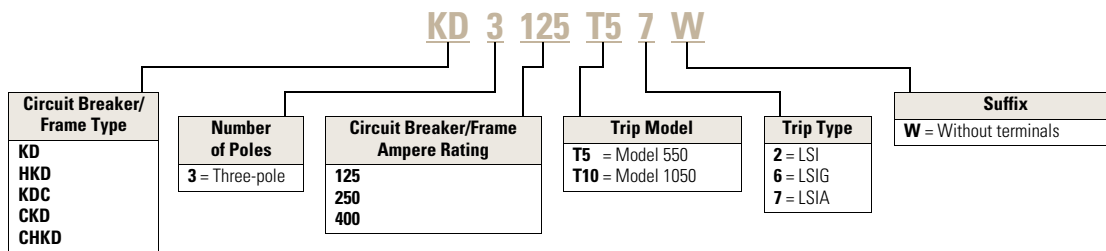


310+ Electronic Trip Units ③



K-Frame with OPTIM Trip Unit Technology

OPTIM Circuit Breakers



Notes

- ① Cannot combine 'B2X' suffixes with 'B2X' suffixes.
- ② Not available in four-pole configurations.
- ③ Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **KD3400F**, **HKD3400F**, etc.

Product Selection

2

Types KD, HKD and KDC Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① | Thermal-Magnetic Trip Unit Only ① | Standard Terminals Only |
|---|---|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number | For Use with Standard or High or Ultra High Interrupting Frames Catalog Number | See Page V4-T2-179 for Optional Terminals Catalog Number |
| Two-Pole | | | | | |
| 100 | KD2100 | HKD2100 | KDC2100 | KT2100T | TA300K ② |
| 125 | KD2125 | HKD2125 | KDC2125 | KT2125T | TA300K ② |
| 150 | KD2150 | HKD2150 | KDC2150 | KT2150T | TA300K ② |
| 175 | KD2175 | HKD2175 | KDC2175 | KT2175T | TA300K ② |
| 200 | KD2200 | HKD2200 | KDC2200 | KT2200T | TA300K ② |
| 225 | KD2225 | HKD2225 | KDC2225 | KT2225T | TA300K ② |
| 250 | KD2250 | HKD2250 | KDC2250 | KT2250T | TA350K ② |
| 300 | KD2300 | HKD2300 | KDC2300 | KT2300T | TA350K ② |
| 350 | KD2350 | HKD2350 | KDC2350 | KT2350T | TA350K ② |
| 400 | KD2400 | HKD2400 | KDC2400 | KT2400T | 2TA400K ③ |
| Three-Pole | | | | | |
| 100 | KD3100 | HKD3100 | KDC3100 | KT3100T | TA300K ② |
| 125 | KD3125 | HKD3125 | KDC3125 | KT3125T | TA300K ② |
| 150 | KD3150 | HKD3150 | KDC3150 | KT3150T | TA300K ② |
| 175 | KD3175 | HKD3175 | KDC3175 | KT3175T | TA300K ② |
| 200 | KD3200 | HKD3200 | KDC3200 | KT3200T | TA300K ② |
| 225 | KD3225 | HKD3225 | KDC3225 | KT3225T | TA300K ② |
| 250 | KD3250 | HKD3250 | KDC3250 | KT3250T | TA350K ② |
| 300 | KD3300 | HKD3300 | KDC3300 | KT3300T | TA350K ② |
| 350 | KD3350 | HKD3350 | KDC3350 | KT3350T | TA350K ② |
| 400 | KD3400 | HKD3400 | KDC3400 | KT3400T | 3TA400K ③ |
| Four-Pole | | | | | |
| 100 | KD4100 | HKD4100 | KDC4100 | KT3100T | TA300K ② |
| 125 | KD4125 | HKD4125 | KDC4125 | KT3125T | TA300K ② |
| 175 | KD4175 | HKD4175 | KDC4175 | KT3175T | TA300K ② |
| 200 | KD4200 | HKD4200 | KDC4200 | KT3200T | TA300K ② |
| 225 | KD4225 | HKD4225 | KDC4225 | KT3225T | TA300K ② |
| 250 | KD4250 | HKD4250 | KDC4250 | KT3250T | TA350K ② |
| 300 | KD4300 | HKD4300 | KDC4300 | KT3300T | TA350K ② |
| 350 | KD4350 | HKD4350 | KDC4350 | KT3350T | TA350K ② |
| 400 | KD4400 | HKD4400 | KDC4400 | KT3400T | 4TA400K ③ |

Notes

- ① Magnetic trip adjustable 5–10 times continuous ampere rating.
- ② Individually packed.
- ③ 2TA400K, 3TA400K and 4TA400K terminal kits contain one terminal for each pole and one terminal cover.

Types KD, HKD and KDC Thermal-Magnetic Circuit Breakers—Frame Only

| Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac |
|---|---|--|
| Catalog Number | Catalog Number | Catalog Number |
| Two-Pole | | |
| KD2400F | HKD2400F | KDC2400F |
| Three-Pole | | |
| KD3400F | HKD3400F | KDC3400F |
| Four-Pole | | |
| KD4400F | HKD4400F | KDC4400F |

Types KD, HKD and KDC Electronic Circuit Breakers with Interchangeable 310+ Trip Units

Order as individual components: breaker frame, trip unit and terminals. See 310+ adjustability specifications on [Page V4-T2-182](#).

Types KD, HKD and KDC Electronic Circuit Breakers with Interchangeable 310+ Trip Units—Three-Pole

| Max. Cont. Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip RMS 310+ Trip Unit Only ^① | | | | Neutral CT for LSG and LSI ^{②③} | Terminal Information |
|---|---|---|---|---|----------------|------------|-------------|---|------------------------------------|
| | Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Catalog Number | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Catalog Number | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | Standard LS | Options LSI | LSG | LSIG | | |
| 125 | KD3400F | HKD3400F | KDC3400F | KES3125LS | KES3125LSI | KES3125LSG | KES3125LSIG | LGFT125 | See Page V4-T2-179 |
| 250 | KD3400F | HKD3400F | KDC3400F | KES3250LS | KES3250LSI | KES3250LSG | KES3250LSIG | LGFT250 | |
| 400 | KD3400F | HKD3400F | KDC3400F | KES3400LS | KES3400LSI | KES3400LSG | KES3400LSIG | LGFT400 | |

Types KD, HKD and KDC Electronic Circuit Breakers with Interchangeable 310+ Trip Units—Four-Pole ^{④⑤}

| Max. Cont. Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip RMS 310+ Trip Unit Only ^① | | | | Neutral CT for LSG and LSI ^{②③} | Terminal Information |
|---|---|---|---|---|----------------|-----|------|---|------------------------------------|
| | Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Catalog Number | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Catalog Number | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | Standard LS | Options LSI | LSG | LSIG | | |
| 125 | KD4400F | HKD4400F | KDC4400F | KES4125LS | KES4125LSI | — | — | — | See Page V4-T2-179 |
| 250 | KD4400F | HKD4400F | KDC4400F | KES4250LS | KES4250LSI | — | — | — | |
| 400 | KD4400F | HKD4400F | KDC4400F | KES4400LS | KES4400LSI | — | — | — | |

Notes

- ① For AC use only.
- ② Required for four-wire systems if neutral protection is desired.
- ③ Included with LSG and LSI trip units.
- ④ Trip unit includes protected neutral pole. Use corresponding three-pole trip unit if protected neutral pole is not required.
- ⑤ Fully rated neutral pole protection is standard. For 50% rated protection on neutral pole, add Suffix E to four-pole trip unit catalog number.

2.3

Molded Case Circuit Breakers

Series C

Type KDB with Digitrip 310+ Non-Interchangeable Trip Unit Suitable for Reverse Feed

See 310+ adjustability specifications on [Page V4-T2-182](#).

2

| Factory Assembled Circuit Breaker Consisting of Frame and Trip Unit Less Terminals ^① | | | | | | | |
|---|-----------------|---|--|--|--|---|----------------------|
| Maximum Continuous Ampere Rating at 40 °C | Number of Poles | Standard LS | Optional LSI | LSG | LSIG | Neutral CT for LSG and LSIG ^{②③} | Terminal Information |
| | | Adjustable Short Time Pickup with I ² t Short Delay Ramp Catalog Number | Independently Adjustable Short Time Pickup and Delay | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Ground Fault Protection | | |
| 125 | 3 | KDB3125FT33W | KDB3125FT32W | KDB3125FT35W | KDB3125FT36W | LGFACT125 | See Page V4-T2-180 |
| 250 | 3 | KDB3250FT33W | KDB3250FT32W | KDB3250FT35W | KDB3250FT36W | LGFACT250 | |
| 400 | 3 | KDB3400FT33W | KDB3400FT32W | KDB3400FT35W | KDB3400FT36W | LGFACT400 | |

Type HKDB with Digitrip 310+ Non-Interchangeable Trip Unit Suitable for Reverse Feed

See 310+ adjustability specifications on [Page V4-T2-182](#).

| Factory Assembled Circuit Breaker Consisting of Frame and Trip Unit Less Terminals ^① | | | | | | | |
|---|-----------------|---|--|--|--|---|----------------------|
| Maximum Continuous Ampere Rating at 40 °C | Number of Poles | Standard LS | Optional LSI | LSG | LSIG | Neutral CT for LSG and LSIG ^{②③} | Terminal Information |
| | | Adjustable Short Time Pickup with I ² t Short Delay Ramp Catalog Number | Independently Adjustable Short Time Pickup and Delay | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Ground Fault Protection | | |
| 125 | 3 | HKDB3125FT33W | HKDB3125FT32W | HKDB3125FT35W | HKDB3125FT36W | LGFACT125 | See Page V4-T2-180 |
| 250 | 3 | HKDB3250FT33W | HKDB3250FT32W | HKDB3250FT35W | HKDB3250FT36W | LGFACT250 | |
| 400 | 3 | HKDB3400FT33W | HKDB3400FT32W | HKDB3400FT35W | HKDB3400FT36W | LGFACT400 | |

100% Rated Types CKD and CHKD Electronic Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at the 75 °C ampacity. All 100% rated circuit breakers have electronic trip units.

100% Rated Types CKD and CHKD Electronic Circuit Breakers—Three-Pole

See 310+ adjustability specifications on [Page V4-T2-182](#).

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip RMS 310+ Trip Unit Only | | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection | Neutral CT for LSG and LSIG ^{②③} | Terminal Information |
|---|--------------------------------------|----------------------------|---|--|--|--|---|----------------------|
| | Standard Interrupting Capacity | High Interrupting Capacity | Standard | Options | | | | |
| | 35 kAIC at 480 Vac Catalog Number | 65 kAIC at 480 Vac | Adjustable Short Time Pickup with I ² t Short Delay Ramp | Independently Adjustable Short Time Pickup and Delay | | | | |
| 125 | CKD3400F | CHKD3400F | KES3125LS | KES3125LSI | KES3125LSG | KES3125LSIG | LGFACT125 | See Page V4-T2-179 |
| 250 | CKD3400F | CHKD3400F | KES3250LS | KES3250LSI | KES3250LSG | KES3250LSIG | LGFACT250 | |
| 400 | CKD3400F | CHKD3400F | KES3400LS | KES3400LSI | KES3400LSG | KES3400LSIG | LGFACT400 | |

Notes

- ① For AC use only.
- ② Required for four-wire systems if neutral protection is desired.
- ③ Included with LSG and LSIG trip units.

Types DK and KDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Suitable for reverse feed application.

Types DK and KDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

| Maximum Continuous Ampere Rating at 40 °C | 240 Vac Rated, 250 Vdc | | | 600 Vac Rated, 250 Vdc | |
|---|--|--|--|--|---|
| | Complete Circuit Breaker Without Line and Load Terminals Catalog Number | With Line Terminals Only Catalog Number | With Standard Line and Load Terminals Only Catalog Number | Complete Circuit Breaker Without Line and Load Terminals Catalog Number | With Standard Line and Load Terminals Catalog Number |
| Two-Pole | | | | | |
| 100 | — | — | — | KDB2100W | KDB2100 |
| 125 | — | — | — | KDB2125W | KDB2125 |
| 150 | — | — | — | KDB2150W | KDB2150 |
| 175 | — | — | — | KDB2175W | KDB2175 |
| 200 | — | — | — | KDB2200W | KDB2200 |
| 225 | — | — | — | KDB2225W | KDB2225 |
| 250 | DK2250W | DK2250Y | DK2250 | KDB2250W | KDB2250 |
| 300 | DK2300W | DK2300Y | DK2300 | KDB2300W | KDB2300 |
| 350 | DK2350W | DK2350Y | DK2350 | KDB2350W | KDB2350 |
| 400 | DK2400W | DK2400Y | DK2400 | KDB2400W | KDB2400 |
| Three-Pole | | | | | |
| 100 | — | — | — | KDB3100W | KDB3100 |
| 125 | — | — | — | KDB3125W | KDB3125 |
| 150 | — | — | — | KDB3150W | KDB3150 |
| 175 | — | — | — | KDB3175W | KDB3175 |
| 200 | — | — | — | KDB3200W | KDB3200 |
| 225 | — | — | — | KDB3225W | KDB3225 |
| 250 | DK3250W | DK3250Y | DK3250 | KDB3250W | KDB3250 |
| 300 | DK3300W | DK3300Y | DK3300 | KDB3300W | KDB3300 |
| 350 | DK3350W | DK3350Y | DK3350 | KDB3350W | KDB3350 |
| 400 | DK3400W | DK3400Y | DK3400 | KDB3400W | KDB3400 |

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker

components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

| Maximum Continuous Ampere Rating at 40 °C | 240 Vac Maximum, 250 Vdc | 600 Vac Maximum, 250 Vdc | 600 Vac Maximum, 250 Vdc |
|---|--|--|---|
| | Complete Circuit Breaker with Standard Line and Load Terminals Catalog Number | Complete Circuit Breaker with Standard Line and Load Terminals Catalog Number | Complete Circuit Breaker with Standard Line and Load Terminals. Suitable for Reverse Feed Use Catalog Number |
| Two-Pole | | | |
| 400 | DK2400K | KD2400K | KDB2400K |
| | — | HKD2400K | HKDB2400K |
| Three-Pole | | | |
| 400 | DK3400K | KD3400K | KDB3400K |
| | — | HKD3400K | HKDB3400K |
| Four-Pole | | | |
| 400 | — | KD4400K | KDB4400K |
| | — | HKD4400K | HKDB4400K |

Note

Molded case switches may open above 4000 amperes.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|------------------------|------------------------|---------------------------------|-------------------------------------|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | | | | | |
| 125 | KD3125T52W | KD3125T56W | KD3125T57W | 70 | ORPK125A70 |
| | | | | 90 | ORPK125A90 |
| | | | | 100 | ORPK125A100 |
| | | | | 110 | ORPK125A110 |
| | | | | 125 | ORPK125A125 |
| 250 | KD3250T52W | KD3250T56W | KD3250T57W | 125 | ORPK025A125 |
| | | | | 150 | ORPK025A150 |
| | | | | 175 | ORPK025A175 |
| | | | | 200 | ORPK025A200 |
| | | | | 225 | ORPK025A225 |
| | | | | 250 | ORPK025A250 |
| 400 | KD3400T52W | KD3400T56W | KD3400T57W | 200 | ORPK40A200 |
| | | | | 225 | ORPK40A225 |
| | | | | 250 | ORPK40A250 |
| | | | | 300 | ORPK40A300 |
| | | | | 350 | ORPK40A350 |
| | | | | 400 | ORPK40A400 |

Notes

① Long delay I⁴t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|---|---------------------------|---------------------------|---------------------------------|--|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I _t) with Adjustable Long Delay Time (I ² t or I ⁴ t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I ² t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I ² t or Flat Response) OPTIM 550 ② | | | | |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | |
| 125 | HKD3125T52W | HKD3125T56W | HKD3125T57W | 70 | ORPK125A70 |
| | | | | 90 | ORPK125A90 |
| | | | | 100 | ORPK125A100 |
| | | | | 110 | ORPK125A110 |
| | | | | 125 | ORPK125A125 |
| 250 | HKD3250T52W | HKD3250T56W | HKD3250T57W | 125 | ORPK025A125 |
| | | | | 150 | ORPK025A150 |
| | | | | 175 | ORPK025A175 |
| | | | | 200 | ORPK025A200 |
| | | | | 225 | ORPK025A225 |
| 400 | HKD3400T52W | HKD3400T56W | HKD3400T57W | 250 | ORPK025A250 |
| | | | | 200 | ORPK40A200 |
| | | | | 225 | ORPK40A225 |
| | | | | 250 | ORPK40A250 |
| | | | | 300 | ORPK40A300 |
| | | | | 350 | ORPK40A350 |
| | | | | 400 | ORPK40A400 |

Notes

① Long delay I⁴t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|---|---------------------|---------------------|---------------------------------|----------------------------------|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I ₁) with Adjustable Long Delay Time (I ² t or I ⁴ t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I ² t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I ² t or Flat Response) OPTIM 550 ② | | | | |
| Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | | | | | |
| 125 | KDC3125T52W | KDC3125T56W | KDC3125T57W | 70 | ORPK125A70 |
| | | | | 90 | ORPK125A90 |
| | | | | 100 | ORPK125A100 |
| | | | | 110 | ORPK125A110 |
| | | | | 125 | ORPK125A125 |
| 250 | KDC3250T52W | KDC3250T56W | KDC3250T57W | 125 | ORPK025A125 |
| | | | | 150 | ORPK025A150 |
| | | | | 175 | ORPK025A175 |
| | | | | 200 | ORPK025A200 |
| | | | | 225 | ORPK025A225 |
| 400 | KDC3400T52W | KDC3400T56W | KDC3400T57W | 200 | ORPK40A200 |
| | | | | 225 | ORPK40A225 |
| | | | | 250 | ORPK40A250 |
| | | | | 300 | ORPK40A300 |
| | | | | 350 | ORPK40A350 |
| | | | | 400 | ORPK40A400 |

Notes

① Long delay I⁴t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

2.3

Molded Case Circuit Breakers

Series C

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

2

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|---------------------|---------------------------------|----------------------------------|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | | | | |
| 125 | KD3125T106W | KD3125T107W | 70 | ORPK125A70 |
| | | | 90 | ORPK125A90 |
| | | | 100 | ORPK125A100 |
| | | | 110 | ORPK125A110 |
| | | | 125 | ORPK125A125 |
| 250 | KD3250T106W | KD3250T107W | 125 | ORPK025A125 |
| | | | 150 | ORPK025A150 |
| | | | 175 | ORPK025A175 |
| | | | 200 | ORPK025A200 |
| | | | 225 | ORPK025A225 |
| 400 | KD3400T106W | KD3400T107W | 250 | ORPK025A250 |
| | | | 200 | ORPK40A200 |
| | | | 225 | ORPK40A22 |
| | | | 250 | ORPK40A250 |
| | | | 300 | ORPK40A300 |
| | | | 350 | ORPK40A350 |
| | | | 400 | ORPK40A400 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
- ② Factory sealed.

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|---------------------------|---------------------------------|--|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | |
| 125 | HKD3125T106W | HKD3125T107W | 70 | ORPK125A70 |
| | | | 90 | ORPK125A90 |
| | | | 100 | ORPK125A100 |
| | | | 110 | ORPK125A110 |
| | | | 125 | ORPK125A125 |
| 250 | HKD3250T106W | HKD3250T107W | 125 | ORPK025A125 |
| | | | 150 | ORPK025A150 |
| | | | 175 | ORPK025A175 |
| | | | 200 | ORPK025A200 |
| | | | 225 | ORPK025A225 |
| 400 | HKD3400T106W | HKD3400T107W | 250 | ORPK025A250 |
| | | | 200 | ORPK40A200 |
| | | | 225 | ORPK40A225 |
| | | | 250 | ORPK40A250 |
| | | | 300 | ORPK40A300 |
| | | | 350 | ORPK40A350 |
| | | | 400 | ORPK40A400 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
 ② Factory sealed.

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|--|---------------------|---------------------------------|----------------------------------|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I _r) with Adjustable Long Delay Time (I ² t or I ⁴ t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I ² t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I ² t or Flat Response) OPTIM 1050 ② | | | |
| Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | | | | |
| 125 | KDC3125T106W | KDC3125T107W | 70 | ORPK125A70 |
| | | | 90 | ORPK125A90 |
| | | | 100 | ORPK125A100 |
| | | | 110 | ORPK125A110 |
| | | | 125 | ORPK125A125 |
| 250 | KDC3250T106W | KDC3250T107W | 125 | ORPK025A125 |
| | | | 150 | ORPK025A150 |
| | | | 175 | ORPK025A175 |
| | | | 200 | ORPK025A200 |
| | | | 225 | ORPK025A225 |
| 400 | KDC3400T106W | KDC3400T107W | 250 | ORPK025A250 |
| | | | 200 | ORPK40A200 |
| | | | 225 | ORPK40A225 |
| | | | 250 | ORPK40A250 |
| | | | 300 | ORPK40A300 |
| | | | 350 | ORPK40A350 |
| | | | 400 | ORPK40A400 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
- ② Factory sealed.

100% Rated Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

100% Rated Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug

Circuit Breaker Frame Only

- L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
- S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
- I – Adjustable Instantaneous Pickup
- G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
- A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

OPTIM 550 ②

Digitrip OPTIM Rating Plug Only

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|---------------------|---------------------|---------------------------------|----------------------------------|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | | | | | |
| 125 | CKD3125T52W | CKD3125T56W | CKD3125T57W | 70 | ORPK125A70 |
| | | | | 90 | ORPK125A90 |
| | | | | 100 | ORPK125A100 |
| | | | | 110 | ORPK125A110 |
| | | | | 125 | ORPK125A125 |
| 250 | CKD3250T52W | CKD3250T56W | CKD3250T57W | 125 | ORPK025A125 |
| | | | | 150 | ORPK025A150 |
| | | | | 175 | ORPK025A175 |
| | | | | 200 | ORPK025A200 |
| | | | | 225 | ORPK025A225 |
| | | | | 250 | ORPK025A250 |
| 400 | CKD3400T52W | CKD3400T56W | CKD3400T57W | 200 | ORPK40A200 |
| | | | | 225 | ORPK40A225 |
| | | | | 250 | ORPK40A250 |
| | | | | 300 | ORPK40A300 |
| | | | | 350 | ORPK40A350 |
| | | | | 400 | ORPK40A400 |

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number (refer to **Page V4-T2-293**).

100% Rated Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|---|---------------------------|---------------------------|---------------------------------|--|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ^① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response) OPTIM 550 ^② | | | | |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | |
| 125 | CHKD3125T52W | CHKD3125T56W | CHKD3125T57W | 70 | ORPK125A70 |
| | | | | 90 | ORPK125A90 |
| | | | | 100 | ORPK125A100 |
| | | | | 110 | ORPK125A110 |
| | | | | 125 | ORPK125A125 |
| 250 | CHKD3250T52W | CHKD3250T56W | CHKD3250T57W | 125 | ORPK025A125 |
| | | | | 150 | ORPK025A150 |
| | | | | 175 | ORPK025A175 |
| | | | | 200 | ORPK025A200 |
| | | | | 225 | ORPK025A225 |
| 400 | CHKD3400T52W | CHKD3400T56W | CHKD3400T57W | 250 | ORPK025A250 |
| | | | | 200 | ORPK40A200 |
| | | | | 225 | ORPK40A225 |
| | | | | 250 | ORPK40A250 |
| | | | | 300 | ORPK40A300 |
| | | | | 350 | ORPK40A350 |
| | | | | 400 | ORPK40A400 |

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

100% Rated Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

100% Rated Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug

Circuit Breaker Frame Only

- L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
- S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
- I – Adjustable Instantaneous Pickup
- G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
- A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Digitrip OPTIM Rating Plug Only

Maximum
Continuous
Ampere
Rating
at 40 °C

LSIG
Catalog
Number

LSIA
Catalog
Number

Ampere
Rating

Fixed Rating Plug
Catalog
Number

OPTIM 1050 ②

Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac

| Maximum Continuous Ampere Rating at 40 °C | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
|---|---------------------------|---------------------------|------------------|--|
| 125 | CKD3125T106W | CKD3125T107W | 70 | ORPK125A70 |
| | | | 90 | ORPK125A90 |
| | | | 100 | ORPK125A100 |
| | | | 110 | ORPK125A110 |
| | | | 125 | ORPK125A125 |
| 250 | CKD3250T106W | CKD3250T107W | 125 | ORPK025A125 |
| | | | 150 | ORPK025A150 |
| | | | 175 | ORPK025A175 |
| | | | 200 | ORPK025A200 |
| | | | 225 | ORPK025A225 |
| | | | 250 | ORPK025A250 |
| 400 | CKD3400T106W | CKD3400T107W | 200 | ORPK40A200 |
| | | | 225 | ORPK40A225 |
| | | | 250 | ORPK40A250 |
| | | | 300 | ORPK40A300 |
| | | | 350 | ORPK40A350 |
| | | | 400 | ORPK40A400 |

Notes

- ① Long delay I^4t response selection limits short delay time to flat response.
- ② Factory sealed.

100% Rated Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|---|---------------------|---------------------------------|----------------------------------|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | OPTIM 1050 ② L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response) | | | |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | |
| 125 | CHKD3125T106W | CHKD3125T107W | 70 | ORPK125A70 |
| | | | 90 | ORPK125A90 |
| | | | 100 | ORPK125A100 |
| | | | 110 | ORPK125A110 |
| | | | 125 | ORPK125A125 |
| 250 | CHKD3250T106W | CHKD3250T107W | 125 | ORPK025A125 |
| | | | 150 | ORPK025A150 |
| | | | 175 | ORPK025A175 |
| | | | 200 | ORPK025A200 |
| | | | 225 | ORPK025A225 |
| | | | 250 | ORPK025A250 |
| 400 | CHKD3400T106W | CHKD3400T107W | 200 | ORPK40A200 |
| | | | 225 | ORPK40A225 |
| | | | 250 | ORPK40A250 |
| | | | 300 | ORPK40A300 |
| | | | 350 | ORPK40A350 |
| | | | 400 | ORPK40A400 |

Notes

- ① Long delay I^4t response selection limits short delay time to flat response.
- ② Factory sealed.

Accessories Selection Guide and Ordering Guide

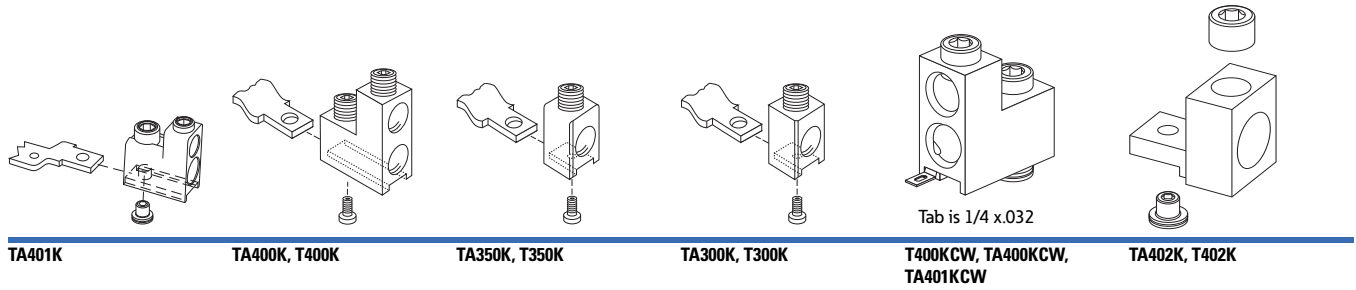
Line and Load Terminals

Eaton’s line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories Standards

UL 486A and UL 486B and CSA Standard C22.2 No. 65, or Electrical Bulletin 1165. Unless otherwise specified, K-Frame circuit breaker line and load terminals are shipped separately for field installation.

Ordering Information

K-Frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. Specify if factory installation is required.



Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire Range/No. Conductors | Metric Wire Range mm ² | Terminal Catalog Number | Terminals with Control Wire Termination Catalog Number |
|--|------------------------|-----------|----------------------------------|-----------------------------------|-------------------------|--|
| Standard Cu/Al Pressure Terminals | | | | | | |
| 225 | Aluminum | Cu/Al | 3–350 (1) | 35–185 | TA300K ① | — |
| 400 | Aluminum | Cu/Al | 250–500 (1) | 120–240 | TA350K ① | — |
| 400 | Aluminum | Cu/Al | 3/0–250 (2) | 95–120 | 2TA400K ②③ | 2TA400KCW ②③ |
| 400 | Aluminum | Cu/Al | 3/0–250 (2) | 95–120 | 3TA400K ②④ | 3TA400KCW ②④ |
| 400 | Aluminum | Cu/Al | 3/0–250 (2) | 95–120 | 4TA400K ⑤⑥ | 4TA400KCW ⑤⑥ |
| Optional Copper and Cu/Al Pressure Type Terminals | | | | | | |
| 225 | Copper | Cu | 3–350 (1) | 35–185 | T300K ① | — |
| 400 | Copper | Cu | 250–500 (1) | 120–240 | T350K ① | — |
| 400 | Copper | Cu | 3/0–250 (2) | 95–120 | 2T400K ③ | 2T400KCW ②③ |
| | | | | | 3T400K ④ | 3T400KCW ②④ |
| | | | | | 4T400K ⑤ | 4T400KCW ⑤⑥ |
| 400 | Aluminum | Cu/Al | 2/0–250 (2) or 2/0–500 (1) | 70–120 | 2TA401K ②③ | 2TA401KCW ②③ |
| | | | | 70–240 | 3TA401K ②④ | 3TA401KCW ②④ |
| | | | | 70–240 | 4TA401K ⑤⑥ | 4TA401KCW ⑤⑥ |
| 400 | Aluminum | Cu/Al | 500–750 (1) | 300–400 | 2TA402K ②③ | — |
| | | | | | 3TA402K ②④ | — |
| | | | | | 4TA402K ⑤⑥ | — |
| 400 | Copper | Cu | 500–750 (1) | — | 2T402K ②③ | — |
| | | | | | 3T402K ②④ | — |
| | | | | | 4T402K ⑤⑥ | — |

Notes

- ① Individually packed.
- ② Terminal kits contain one terminal for each pole and one terminal cover.
- ③ Two-pole kit.
- ④ Three-pole kit.
- ⑤ Four-pole kit.
- ⑥ Terminal kits contain one terminal for each pole and three interphase barriers.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

KD Frame Accessories

| Description | Reference Page | Two-Pole ^① | | Three-Pole | | | Four-Pole | | | Neutral |
|--|----------------|-----------------------|-------|------------|--------|-------|-----------|--------|-------|---------|
| | | Left | Right | Left | Center | Right | Left | Center | Right | |
| Internal Accessories (Only One Internal Accessory Per Pole) | | | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-276 | | ■ | □ | | □ | | ■ | | |
| Alarm lockout (2Make/2Break) | V4-T2-276 | | | □ | | □ | | ■ | | |
| Auxiliary switch (1A, 1B) | V4-T2-278 | | ■ | ■ | | ■ | | ■ | | ■ |
| Auxiliary switch (2A, 2B) | V4-T2-278 | | | ■ | | ■ | | ■ | | ■ |
| Auxiliary switch (3A, 3B) | V4-T2-278 | | | ■ | | ■ | | ■ | | ■ |
| Auxiliary switch and alarm switch combination | V4-T2-279 | | | □ | | □ | | □ | | □ |
| Shunt trip—standard ^② | V4-T2-282 | | ■ | ■ | | ■ | | ■ | | ■ |
| Shunt trip—low energy ^② | V4-T2-285 | | | ■ | | ■ | | ■ | | |
| Undervoltage release mechanism ^② | V4-T2-290 | | ■ | ■ | | ■ | | ■ | | |
| PowerNet or zone interlock kit (OPTIM 550) | V4-T2-293 | | | | | ■ | | | | |
| External Accessories | | | | | | | | | | |
| End cap kit | V4-T2-310 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Keeper nut | V4-T2-310 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Control wire terminal kit | V4-T2-311 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Terminal adapter | V4-T2-311 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Multiwire connectors | V4-T2-312 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Rear fed terminals | V4-T2-312 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Base mounting hardware | V4-T2-313 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Terminal shields | V4-T2-315 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Interphase barriers | V4-T2-315 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Non-padlockable handle block | V4-T2-316 | ■ | | | ■ | | | ■ | | |
| Padlockable handle block | V4-T2-316 | | | | ■ | | | | | |
| Padlockable handle lock hasp | V4-T2-317 | | ■ | □ | | □ | | □ | | □ |
| Cylinder lock | V4-T2-317 | □ | □ | □ | | □ | | | | |
| Key Interlock kit | V4-T2-318 | ■ | □ | □ | | □ | | □ | | □ |
| Sliding bar interlock—requires two breakers | V4-T2-319 | | | ● | ● | ● | | | | |
| Walking beam interlock—requires two breakers | V4-T2-319 | | | ● | ● | ● | | ● | ● | ● |
| Electrical (solenoid) operator | V4-T2-320 | | | ● | ● | ● | | ● | ● | ● |
| Plug-in adapters | V4-T2-321 | ● | ● | ● | ● | ● | | ● | ● | ● |
| Rear connecting studs | V4-T2-323 | ● | ● | ● | ● | ● | | ● | ● | ● |
| Panelboard connecting straps | V4-T2-324 | ● | ● | ● | ● | ● | | ● | ● | ● |
| Handle mechanisms | V4-T2-431 | ● | ● | ● | ● | ● | | ● | ● | ● |
| Handle extension | V4-T2-446 | ● | ● | ● | ● | ● | | ● | ● | ● |
| IQ Energy Sentinel | V4-T2-326 | | | ● | ● | ● | | ● | ● | ● |
| Solid-state (electronic) portable test kit | V4-T2-326 | ● | ● | ● | ● | ● | | ● | ● | ● |
| OPTIM System Components Three Poles | | | | | | | | | | |
| Breaker interface module (BIM) | V4-T2-327 | | | | | | | | | |
| Digitrip OPTIMizer | V4-T2-327 | | | | | | | | | |
| Auxiliary power module | V4-T2-327 | | | | | | | | | |
| Modifications (Refer to Eaton) | | | | | | | | | | |
| Special calibration | — | ● | ● | ● | ● | ● | | ● | ● | ● |
| Moisture fungus treatment | V4-T2-116 | ● | ● | ● | ● | ● | | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | | ● | ● | ● |
| Marine/naval application | — | ● | ● | ● | ● | ● | | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Notes

- ① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.
- ② Shunt trip and UVR cannot be mounted in right poles on KES or OPTIM trip units. Standard internal accessories cannot be mounted in right pole on any K-Frame OPTIM trip units. Special OPTIM ground fault and zone interlock accessories are available for field installation in the right pole of K-Frame 550 OPTIM trip units. Factory installed 2a/2b and bell/aux are available for factory installation. K-Frame breakers equipped with OPTIM 1050 trip units include aux-bell alarm in the right pole.

310+ Electronic Trip Unit Accessories

| Description | Catalog Number |
|--|--------------------------|
| Electronic portable test kit | MTST230V ^② |
| Trip unit tamper protection wire seal | 5108A03H01 |
| External neutral sensor, 400 A | LGFACT400 ^③ |
| External neutral sensor, 250 A | LGFACT250 ^③ |
| External neutral sensor, 125 A | LGFACT125 ^③ |
| Breaker-mount cause-of-trip indication | TRIP-LED |
| Breaker-mount ammeter module | DIGIVIEW |
| Remote-mount ammeter module | DIGIVIEWR06 ^④ |

Technical Data and Specifications

NEMA/UL 489/CSA Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | | Volts DC 250 ^{⑤⑥} |
|----------------------|-----------------|--|-----|-----|-----|----|----------------------------|
| | | Volts AC (50/60 Hz) | | | | | |
| | | 240 | 277 | 480 | 600 | | |
| DK | 2, 3 | 65 | — | — | — | 10 | |
| KDB | 2, 3, 4 | 65 | — | 35 | 25 | 10 | |
| KD | 2, 3, 4 | 65 | — | 35 | 25 | 10 | |
| HKD, HKDB | 2, 3, 4 | 100 | — | 65 | 35 | 22 | |
| KDC ^⑦ | 2, 3, 4 | 200 | — | 100 | 65 | 22 | |
| CKD | 3 | 65 | — | 35 | 25 | — | |
| CHKD | 3 | 100 | — | 65 | 35 | — | |

IEC 157-1 (P1) Interrupting Capacity Ratings

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | | Volts DC 250 ^{⑤⑥} |
|----------------------|-----------------|--|-----|-----|-----|-----|----------------------------|
| | | Volts AC (50/60 Hz) | | | | | |
| | | 240 | 380 | 415 | 440 | 500 | |
| DK | 2, 3 | 65 | — | — | — | 10 | |
| KDB | 2, 3, 4 | 65 | 40 | 40 | — | 10 | |
| KD | 2, 3, 4 | 65 | 40 | 40 | — | 10 | |
| HKD, HKDB | 2, 3, 4 | 100 | 65 | 65 | — | 22 | |
| KDC | 2, 3, 4 | 200 | 100 | 100 | — | 22 | |

UL 489 Current Limiting Data

| Frame | Circuit | I _p (kA) | I ² T (10 ⁶ A ² S) |
|-------|--------------|---------------------|---|
| KDC | 240 V/200 kA | 56.00 | 2.30 |
| KDC | 480 V/100 kA | 53.30 | 5.60 |
| KDC | 600 V/50 kA | 43.40 | 5.40 |

Notes

- ① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.
- ② MTST230V applies to 100–230 Vac.
- ③ Included with all LD LSG and LSIG trip units and breakers.
- ④ Includes 6 ft cable for remote mounting; NEMA 3R rated.
- ⑤ Two-pole circuit breaker or two outside poles of three-pole circuit breaker.
- ⑥ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.
- ⑦ Current limiting.

310+ Specifications

| Trip Unit Type | Digitrip RMS 310+ |
|---|---------------------------------|
| Breaker Type | |
| Frame | K |
| Frames available | 125 A, 250 A, 400 A |
| Continuous current range (A) | 55–400 A |
| Ground fault pickup (A) | 50–400 A |
| Interrupting capacities at 480 Vac (kAIC) | 35, 65, 100 |
| 100% rated | Yes |
| Protection | |
| Ordering options | LS, LSI, LSG, LSIG, ALSI, ALSIG |
| Arcflash Reduction Maintenance System | Remote enabled on ALSI, ALSIG |
| Interchangeable trip unit | Yes |
| High load alarm, trip (suffix B20) ① | Yes |
| Ground fault alarm with trip (suffix B21) ① | LSG, LSIG, ALSIG |
| Ground fault alarm, no trip (suffix B22) | LSG, LSIG, ALSIG |
| Zone selective interlock (suffix ZG) ① | LSI, LSIG, ALSI, ALSIG |
| Cause of trip indication | Yes (via TRIP-LED or DIGVIEW) |
| Thru-cover accessories | No |

310+ Adjustability Specifications

| 310+ Settings | K-Frame | | | |
|---|--------------------------------------|---------|-------|------|
| | 125A | 250 A | 400 A | |
| I_r = continuous current or long delay pickup (amperes) (All 310+) | $I_r \setminus I_n$ | | | |
| | A (=I _r) | 55 | 100 | 160 |
| | B (=I _r) | 60 | 125 | 200 |
| | C (=I _r) | 70 | 150 | 225 |
| | D (=I _r) | 80 | 160 | 250 |
| | E (=I _r) | 90 | 175 | 300 |
| | F (=I _r) | 100 | 200 | 315 |
| | G (=I _r) | 110 | 225 | 350 |
| | H (=I _r =I _n) | 125 | 250 | 400 |
| t_r = long delay time (seconds) (All 310+) | | | | |
| | 2 | 2 | 2 | 2 |
| | 4 | 4 | 4 | 4 |
| | 7 | 7 | 7 | 7 |
| | 10 | 10 | 10 | 10 |
| | 12 | 12 | 12 | 12 |
| | 15 | 15 | 15 | 15 |
| | 20 | 20 | 20 | 20 |
| | 24 | 24 | 24 | 24 |
| I_{sd} (x I _r) = short delay pickup (amperes) (All 310+) | | | | |
| | Position 1 | 2 | 2x | 2x |
| | Position 2 | 3 | 3x | 3x |
| | Position 3 | 4 | 4x | 4x |
| | Position 4 | 5 | 5x | 5x |
| | Position 5 | 6 | 6x | 6x |
| | Position 6 | 7 | 7x | 7x |
| | Position 7 | 8 | 8x | 8x |
| | Position 8 | 10 | 10x | 10x |
| | Position 9 | 12 | 12x | 12x |
| t_{sd} = short delay time I ² t (milliseconds) (LS and LSG) | Fixed | 67 @10x | | |
| t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG) | | | | |
| | Position 1 | Inst | | |
| | Position 2 | 120 | | |
| | Position 3 | 300 | | |
| I_g (x I _n) = ground fault pickup (amperes) (LSG, LSIG, ALSIG) | | | | |
| | Position 1 | 25 | 50 | 80 |
| | Position 2 | 37.5 | 75 | 120 |
| | Position 3 | 50 | 100 | 160 |
| | Position 4 | 75 | 150 | 240 |
| | Position 5 | 100 | 200 | 320 |
| | Position 6 | 125 | 250 | 400 |
| t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG) | | | | |
| | Position 1 | Inst | | |
| | Position 2 | 120 | | |
| | Position 3 | 300 | | |
| Independently adjustable Instantaneous (Ii) setting ② | | | | |
| Maintenance Mode pickup (2.5 x I _n) (amperes) (310+ with Maintenance Mode—ALSI and ALSIG) | Fixed | 312 | 625 | 1000 |

Notes

① B2x suffixes cannot be combined with B2x suffixes.

② Not available for KD. Independently adjustable I_i setting available in LG, NG and RG ALSI and ALSIG trip units.

Specifications

| Trip Unit Type | Digitrip OPTIM 550 | Digitrip OPTIM 1050 |
|--|--------------------------|--------------------------|
| rms sensing | Yes | Yes |
| Breaker Type | | |
| Frame | K | K |
| Ampere range | 125–400 A | 125–400 A |
| Interrupting rating at 480 volts | 35, 65, 100 (kA) | 35, 65, 100 (kA) |
| Protection | | |
| Ordering options | LSI, LSI(A), LSIG | LSI(A), LSIG |
| Fixed rated plug (I_n) | Yes | Yes |
| Overtemperature trip | Yes | Yes |
| Long Delay Protection (L) | | |
| Adjustable rating plug (I_n) | No | No |
| Long delay pickup | 0.4–1.0 x (I_n) | 0.4–1.0 x (I_n) |
| Long delay time I^2t | 2–24 seconds | 2–24 seconds |
| Long delay time I^4t | 1–5 seconds | 1–5 seconds |
| Long delay thermal memory | Yes | Yes |
| High load alarm | 0.5–1.0 x I_r | 0.5–1.0 x I_r |
| Short Delay Protection (S) | | |
| Short delay pickup | 150–800% x (I_r) | 150–800% x (I_r) |
| Short delay time I^2t | 100–500 ms | 100–500 ms |
| Short delay time flat | 100–500 ms | 100–500 ms |
| Short delay time zone selective interlocking | Yes ^① | Yes |
| Instantaneous Protection (I) | | |
| Instantaneous pickup | 200–800% x (I_n) | 200–800% x (I_n) |
| Discriminator | Yes | Yes |
| Instantaneous override | Yes | Yes |
| Ground Fault Protection (G) | | |
| Ground fault alarm | 20–100% x (I_g) | 20–100% x (I_g) |
| Ground fault pickup | 20–100% x (I_g) | 20–100% x (I_g) |
| Ground fault delay I^2t | 100–500 ms | 100–500 ms |
| Ground fault delay flat | 100–500 ms | 100–500 ms |
| Ground fault zone selective interlocking | Yes ^① | Yes |
| Ground fault thermal memory | Yes | Yes |
| System Diagnostics | | |
| Status LEDs | Yes | Yes |
| Cause of trip LEDs | Yes | Yes |
| Magnitude of trip information | Yes | Yes |
| Remote signal contact—ground alarm | Yes ^① | Yes |
| Local auxiliary and bell alarm contact | Optional | Included |
| System Monitoring | | |
| Digital display | Yes ^② | Yes ^② |
| Current | Yes | Yes |
| Power and energy | No | Yes |
| Power quality—harmonics | No | Yes |
| Power factor | No | Yes |
| Communications | | |
| PowerNet | Yes ^③ | Yes |
| Testing | | |
| Testing method | OPTIMizer, BIM, PowerNet | OPTIMizer, BIM, PowerNet |

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
 I_g = Sensor Rating
 I_n = Rating Plug
 I_r = Long Delay Pickup Setting

Notes

- ① Zone interlock kit.
② By OPTIMizer/BIM.
③ Eaton's PowerNet kit.

2.3

Molded Case Circuit Breakers

Series C

Dimensions and Weights

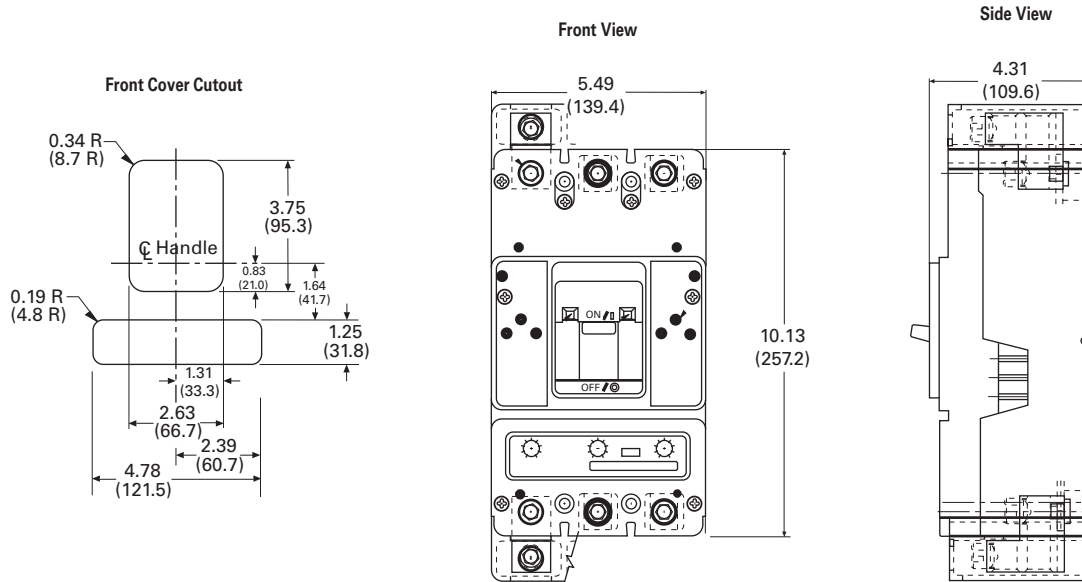
Approximate Dimensions in Inches (mm)

2

KD Frame

| Number of Poles | Width | Height | Depth |
|-----------------|--------------|---------------|--------------|
| 2, 3 | 5.50 (149.7) | 10.13 (257.3) | 4.10 (104.1) |
| 4 | 7.22 (183.4) | 10.13 (257.3) | 4.10 (104.1) |

KD-Frame, Two- and Three-Pole



Approximate Shipping Weight, Lbs (kg)

KD Frame

| Breaker Type | Complete Breaker | | Frame Only | | Trip Unit ① | |
|--------------|------------------|------------|------------|------------|-------------|------------|
| | Two-Pole | Three-Pole | Two-Pole | Three-Pole | Two-Pole | Three-Pole |
| DK | 10.0 (4.5) | 11.5 (5.2) | — | — | — | — |
| KDB | 10.0 (4.5) | 11.5 (5.2) | — | — | — | — |
| KD | 10.0 (4.5) | 11.5 (5.2) | 7.5 (3.4) | 8.5 (3.9) | 1.5 (0.7) | 1.5 (0.7) |
| HKD, HKDB | 10.0 (4.5) | 11.5 (5.2) | 7.5 (3.4) | 8.5 (3.9) | 1.5 (0.7) | 1.5 (0.7) |
| KDC | 10.0 (4.5) | 11.5 (5.2) | 7.5 (3.4) | 8.5 (3.9) | 1.5 (0.7) | 1.5 (0.7) |

Note

① Weights shown are for thermal-magnetic trip units. Three-pole electronic trip units weigh 2.5 lbs (1.1 kg).

Typical L-Frame Circuit Breaker



Contents

Description

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|--|-------------|
| Product Overview | V4-T2-116 |
| Standards and Certifications | V4-T2-117 |
| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | |
| Catalog Number Selection | V4-T2-186 |
| Product Selection | V4-T2-188 |
| Accessories | V4-T2-204 |
| Technical Data and Specifications | V4-T2-206 |
| Dimensions and Weights | V4-T2-210 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

L-Frame (125–600 Amperes)

Product Description

- All Eaton L-Frame circuit breakers are HACR rated
- L-Frame circuit breakers are available as individual components (frame, trip unit, terminals), or factory assembled complete breakers
- L-Frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use

Standards and Certifications

- CE marked



2.3

Molded Case Circuit Breakers

Series C

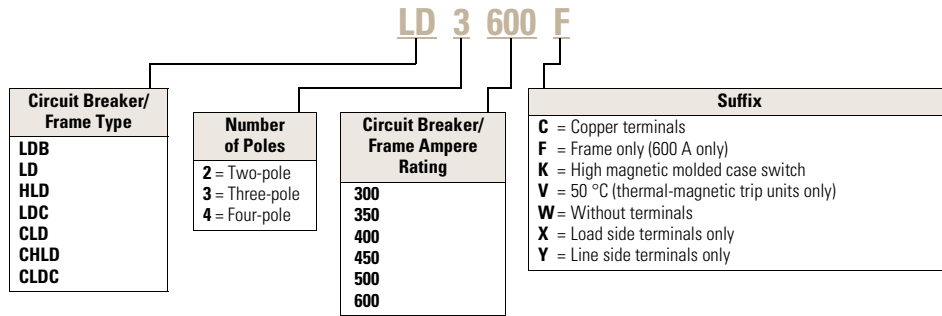
2

Catalog Number Selection

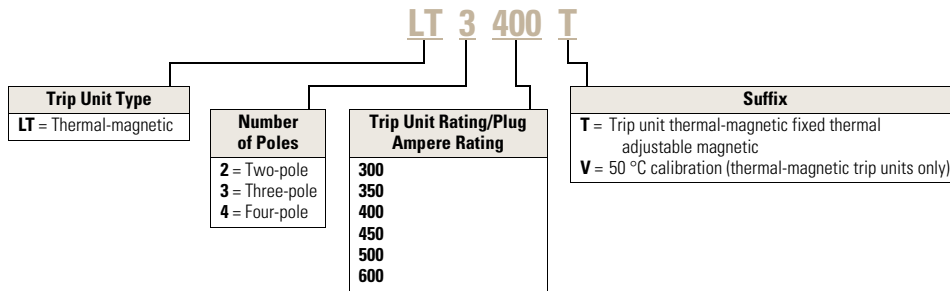
This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

LD-Frame with Thermal-Magnetic Trip Unit Technology

Thermal-Magnetic Breakers and Frame ①



Thermal-Magnetic Trip Unit ①

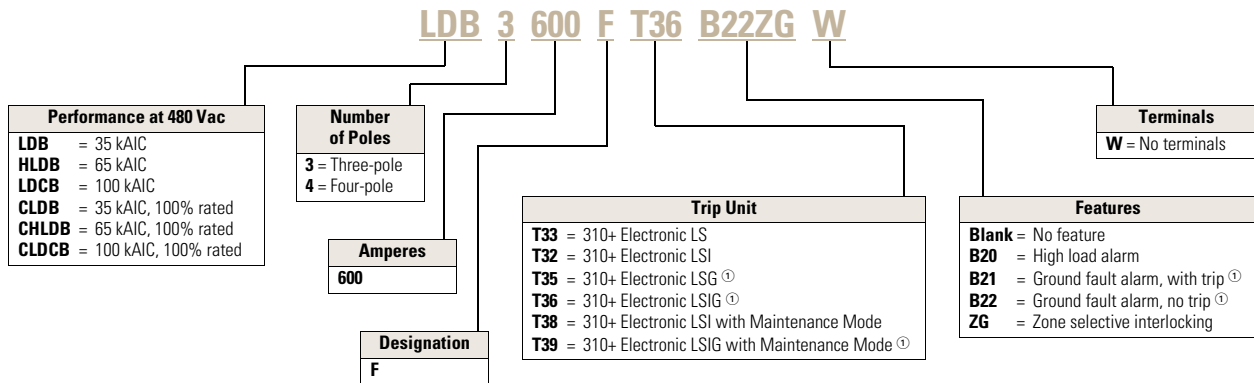


Note

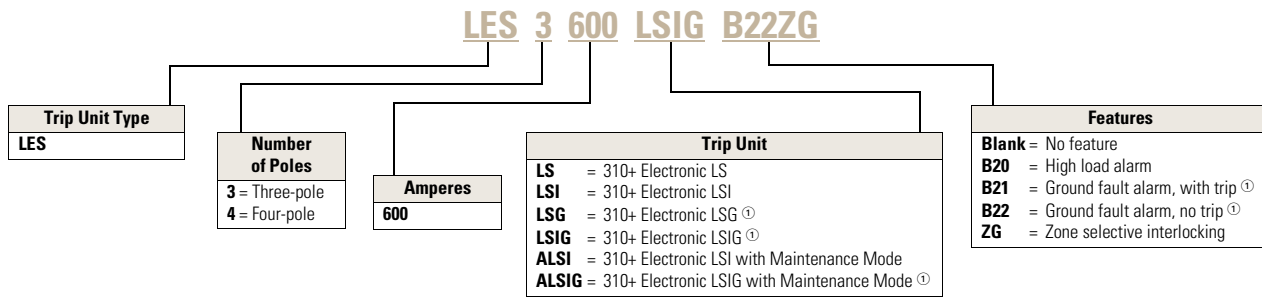
① Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **LD3600F**, **HLD3600F**, etc.

LD-Frame with 310+ Electronic Trip Unit Technology

310+ Circuit Breakers

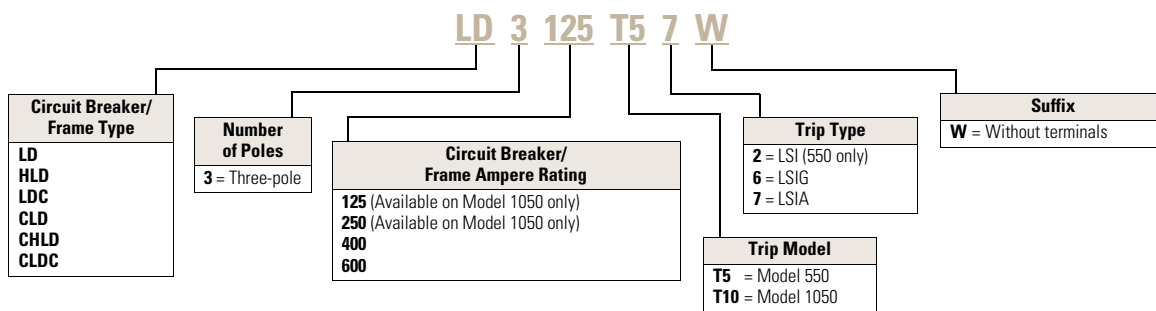


310+ Electronic Trip Units ②



LD-Frame with OPTIM Electronic Trip Unit Technology

OPTIM Circuit Breakers



Notes

- ① Not available in four-pole configurations.
- ② Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **LD3600F**, **HLD3600F**, etc.

Product Selection

2

Types LD, HLD and LDC Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units

| Maximum Continuous Ampere Rating at 40 °C ① | Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | Thermal-Magnetic Trip Unit Only | Standard Terminals Only |
|---|--|--|--|---|---|
| | Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number | Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number | Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number | For Use with Standard or High or Ultra High Interrupting Frames Catalog Number | See Page V4-T2-203 for Optional Terminals Catalog Number |
| Two-Pole | | | | | |
| 300 | LD2300 | HLD2300 | LDC2300 | LT2300T | TA602LD ② |
| 350 | LD2350 | HLD2350 | LDC2350 | LT2350T | TA602LD ② |
| 400 | LD2400 | HLD2400 | LDC2400 | LT2400T | TA602LD ② |
| 450 | LD2450 | HLD2450 | LDC2450 | LT2450T | TA602LD ② |
| 500 | LD2500 | HLD2500 | LDC2500 | LT2500T | TA602LD ② |
| 600 | LD2600 | HLD2600 | LDC2600 | LT2600T | 2TA603LDK ③ |
| Three-Pole | | | | | |
| 300 | LD3300 | HLD3300 | LDC3300 | LT3300T | TA602LD ② |
| 350 | LD3350 | HLD3350 | LDC3350 | LT3350T | TA602LD ② |
| 400 | LD3400 | HLD3400 | LDC3400 | LT3400T | TA602LD ② |
| 450 | LD3450 | HLD3450 | LDC3450 | LT3450T | TA602LD ② |
| 500 | LD3500 | HLD3500 | LDC3500 | LT3500T | TA602LD ② |
| 600 | LD3600 | HLD3600 | LDC3600 | LT3600T | 3TA603LDK ③ |
| Four-Pole ④ | | | | | |
| 300 | LD4300 | HLD4300 | LDC4300 | LT4300T | TA602LD ② |
| 350 | LD4350 | HLD4350 | LDC4350 | LT4350T | TA602LD ② |
| 400 | LD4400 | HLD4400 | LDC4400 | LT4400T | TA602LD ② |
| 450 | LD4450 | HLD4450 | LDC4450 | LT4450T | TA602LD ② |
| 500 | LD4500 | HLD4500 | LDC4500 | LT4500T | TA602LD ② |
| 600 | LD4600 | HLD4600 | LDC4600 | LT4600T | 4TA603LDK ③ |

Types LD, HLD and LDC Thermal-Magnetic Circuit Breakers—Frame Only

| Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Catalog Number | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Catalog Number | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Catalog Number |
|---|---|--|
| Two-Pole | | |
| LD2600F | HLD2600F | LDC2600F |
| Three-Pole | | |
| LD3600F | HLD3600F | LDC3600F |
| Four-Pole | | |
| LD4600F | HLD4600F | LDC4600F |

Notes

- ① Magnetic trip range 5–10 times continuous ampere rating.
- ② Individually packed.
- ③ Terminal kits contain one terminal for each pole and one terminal cover.
- ④ Neutral is in right pole.

Types LD, HLD and LDC Electronic Circuit Breakers with Interchangeable Trip Units

Order as individual components: breaker frame, trip unit and terminals. See 310+ adjustability specifications on **Page V4-T2-182**.

Types LD, HLD and LDC Electronic Circuit Breakers with Interchangeable 310+ Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip RMS 310+ Trip Unit Only ① | | | | Neutral CT for LSG and LSI ②③ | Terminal Information |
|---|---|---|---|---|--|--|--|-------------------------------|----------------------|
| | Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | Standard LS | Optional LSI | LSG | LSIG | | |
| | Catalog Number | | | Adjustable Short Time Pickup with I ² t Short Delay Ramp | Independently Adjustable Short Time Pickup and Delay | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Ground Fault Protection | | |
| Three-Pole | | | | | | | | | |
| 600 | LD3600F | HLD3600F | LDC3600F | LES3600LS | LES3600LSI | LES3600LSG | LES3600LSIG | LGFACT600 | See Page V4-T2-180 |
| Four-Pole ④ | | | | | | | | | |
| 600 | LD4600F | HLD4600F | LDC4600F | LES4600LS | LES4600LSI | — | — | — | See Page V4-T2-180 |

Types LDB, HLDB and LDCB Electronic Circuit Breakers with Non-Interchangeable 310+ Electronic Trip Units Suitable for Reverse Feed

See 310+ adjustability specifications on **Page V4-T2-182**.

Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit Less Terminals
Types LDB, HLDB and LDCB with Digitrip 310+ Non-Interchangeable Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Number of Poles | Factory Assembled Circuit Breaker Consisting of Frame and Trip Unit Less Terminals ① | | | | Neutral CT for LSG and LSI ②③ | Terminal Information |
|---|-----------------|--|--|--|--|-------------------------------|----------------------|
| | | Standard LS | Optional LSI | LSG | LSIG | | |
| | | Adjustable Short Time Pickup with I ² t Short Delay Ramp | Independently Adjustable Short Time Pickup and Delay | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Ground Fault Protection | | |
| | | Catalog Number | | | | | |
| 600 | 3 | LDB3600FT33W | LDB3600FT32W | LDB3600FT35W | LDB3600FT36W | LGFACT600 | See Page V4-T2-180 |
| 600 | 3 | HLDB3600FT33W | HLDB3600FT32W | HLDB3600FT35W | HLDB3600FT36W | | |
| 600 | 3 | LDCB3600FT33W | LDCB3600FT32W | LDCB3600FT35W | LDCB3600FT36W | | |

100% Rated Types CLD, CHLD and CLDC Electronic Circuit Breakers with Interchangeable Trip Units

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at the 75 °C ampacity. All 100% rated circuit breakers have electronic trip units. Order as individual components: breaker frame, trip unit and terminals. See 310+ adjustability specifications on **Page V4-T2-182**.

100% Rated Types CLD, CHLD and CLDC Electronic Circuit Breakers with 310+ Interchangeable Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip RMS 310+ Trip Unit Only | | | | Neutral CT for LSG and LSI ②③ | Terminal Information |
|---|---|---|---|---|--|--|--|-------------------------------|----------------------|
| | Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | Standard LS | Optional LSI | LSG | LSIG | | |
| | Catalog Number | | | Adjustable Short Time Pickup with I ² t Short Delay Ramp | Independently Adjustable Short Time Pickup and Delay | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Ground Fault Protection | | |
| Three-Pole | | | | | | | | | |
| 600 | CLD3600F | CHLD3600F | CLDC3600F | LES3600LS | LES3600LSI | LES3600LSG | LES3600LSIG | LGFACT600 | See Page V4-T2-180 |

Notes

- ① For AC use only.
- ② Required for four-wire systems if neutral protection is desired.
- ③ Included with LSG and LSI trip units.
- ④ Neutral is in right pole.

Type LDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units ^①

| Maximum Continuous Ampere Rating | 600 Vac Rated, 250 Vdc Complete Circuit Breaker | |
|----------------------------------|---|--|
| | Without Line and Load Terminals Catalog Number | With Standard Line and Load Terminals Only Catalog Number |
| Two-Pole | | |
| 300 | LDB2300W | LDB2300 |
| 350 | LDB2350W | LDB2350 |
| 400 | LDB2400W | LDB2400 |
| 450 | LDB2450W | LDB2450 |
| 500 | LDB2500W | LDB2500 |
| 600 | LDB2600W | LDB2600 |
| Three-Pole | | |
| 300 | LDB3300W | LDB3300 |
| 350 | LDB3350W | LDB3350 |
| 400 | LDB3400W | LDB3400 |
| 450 | LDB3450W | LDB3450 |
| 500 | LDB3500W | LDB3500 |
| 600 | LDB3600W | LDB3600 |

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker

components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

| Maximum Continuous Ampere Rating at 40 °C | 600 Vac Maximum, 250 Vdc Circuit Breaker Only without Line and Load Terminals | |
|---|---|--|
| | Catalog Number | Standard Terminals Only See Page V4-T2-203 for Optional Terminals Catalog Number |
| Two-Pole | | |
| 600 | LD2600WK | 2TA603LDK |
| 600 | LDB2600WK ^① | 2TA603LDK |
| 600 | HLD2600WK | 2TA603LDK |
| Three-Pole | | |
| 600 | LD3600WK | 3TA603LDK |
| 600 | LDB3600WK ^① | 3TA603LDK |
| 600 | HLD3600WK | 3TA603LDK |
| Four-Pole | | |
| 600 | LD4600WK | 4TA603LDK |
| 600 | LDB4600WK ^① | 4TA603LDK |
| 600 | HLD4600WK | 4TA603LDK |

Notes

^① Factory sealed—suitable for reverse feed application.

Molded case switch will trip above 6000 amperes.

Digitrip OPTIM Electronic Circuit Breaker with Interchangeable Rating Plug

Order as individual components: Breaker Frame (which includes Trip Unit), Rating Plug, Terminals.

Digitrip OPTIM 550 Electronic Circuit Breaker with Interchangeable Rating Plug

Circuit Breaker Frame Only

- L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I²t or I⁴t Response) ①
- S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I²t or Flat Response)
- I – Adjustable Instantaneous Pickup
- G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I²t or Flat Response)
- A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I²t or Flat Response)

OPTIM 550 ②

Digitrip OPTIM Rating Plug Only

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|---------------------|---------------------|---------------------------------|----------------------------------|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | | | | | |
| 125 | LD3125T52W | LD3125T56W | LD3125T57W | — | ORPL125A070 |
| | | | | — | ORPL125A090 |
| | | | | — | ORPL125A100 |
| | | | | — | ORPL125A110 |
| | | | | — | ORPL125A125 |
| 250 | LD3250T52W | LD3250T56W | LD3250T57W | — | ORPL025A125 |
| | | | | — | ORPL025A150 |
| | | | | — | ORPL025A175 |
| | | | | — | ORPL025A200 |
| | | | | — | ORPL025A225 |
| 400 | LD3400T52W | LD3400T56W | LD3400T57W | 200 | ORPL40A200 |
| | | | | 225 | ORPL40A225 |
| | | | | 250 | ORPL40A250 |
| | | | | 300 | ORPL40A300 |
| | | | | 350 | ORPL40A350 |
| | | | | 400 | ORPL40A400 |
| 600 | LD3600T52W | LD3600T56W | LD3600T57W | 300 | ORPL60A300 |
| | | | | 350 | ORPL60A350 |
| | | | | 400 | ORPL60A400 |
| | | | | 500 | ORPL60A500 |
| | | | | 600 | ORPL60A600 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
- ② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Digitrip OPTIM 550 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|---|---------------------------|---------------------------|---------------------------------|--|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ^① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response) OPTIM 550 ^② | | | | |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | |
| 125 | HLD3125T52W | HLD3125T56W | HLD3125T57W | 70 | ORPL125A070 |
| | | | | 90 | ORPL125A090 |
| | | | | 100 | ORPL125A100 |
| | | | | 110 | ORPL125A110 |
| | | | | 125 | ORPL125A125 |
| 250 | HLD3250T52W | HLD3250T56W | HLD3250T57W | 125 | ORPL025A125 |
| | | | | 150 | ORPL025A150 |
| | | | | 175 | ORPL025A175 |
| | | | | 200 | ORPL025A200 |
| | | | | 225 | ORPL025A225 |
| 400 | HLD3400T52W | HLD3400T56W | HLD3400T57W | 250 | ORPL025A250 |
| | | | | 200 | ORPL40A200 |
| | | | | 225 | ORPL40A225 |
| | | | | 250 | ORPL40A250 |
| | | | | 300 | ORPL40A300 |
| 600 | HLD3600T52W | HLD3600T56W | HLD3600T57W | 350 | ORPL40A350 |
| | | | | 400 | ORPL40A400 |
| | | | | 300 | ORPL60A300 |
| | | | | 350 | ORPL60A350 |
| | | | | 400 | ORPL60A400 |
| | | | | 500 | ORPL60A500 |
| | | | | 600 | ORPL60A600 |

Notes

^① Long delay I^4t response selection limits short delay time to flat response.

^② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Digitrip OPTIM 550 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|---|---------------------------|---------------------------|---------------------------------|--|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I_t) with Adjustable Long Delay Time (I^2t or I^4t Response) ^① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response) | | | | |
| | OPTIM 550 ^② | | | | |
| Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | | | | | |
| 125 | LDC3125T52W | LDC3125T56W | LDC3125T57W | — | ORPL125A070 |
| | | | | — | ORPL125A090 |
| | | | | — | ORPL125A100 |
| | | | | — | ORPL125A110 |
| | | | | — | ORPL125A125 |
| 250 | LDC3250T52W | LDC3250T56W | LDC3250T57W | — | ORPL025A125 |
| | | | | — | ORPL025A150 |
| | | | | — | ORPL025A175 |
| | | | | — | ORPL025A200 |
| | | | | — | ORPL025A225 |
| 400 | LDC3400T52W | LDC3400T56W | LDC3400T57W | 200 | ORPL40A200 |
| | | | | 225 | ORPL40A225 |
| | | | | 250 | ORPL40A250 |
| | | | | 300 | ORPL40A300 |
| | | | | 350 | ORPL40A350 |
| 600 | LDC3600T52W | LDC3600T56W | LDC3600T57W | 400 | ORPL40A400 |
| | | | | 300 | ORPL60A300 |
| | | | | 350 | ORPL60A350 |
| | | | | 400 | ORPL60A400 |
| | | | | 500 | ORPL60A500 |
| | | | | 600 | ORPL60A600 |

Notes

^① Long delay I^4t response selection limits short delay time to flat response.

^② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Digitrip OPTIM Electronic Circuit Breaker with Interchangeable Rating Plug

Order as individual components: Breaker Frame (which includes Trip Unit), Rating Plug, Terminals.

2

Digitrip OPTIM 1050 Electronic Circuit Breaker with Interchangeable Rating Plug

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ①

S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)

I – Adjustable Instantaneous Pickup

G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)

A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

OPTIM 1050 ②③

Digitrip OPTIM Rating Plug Only

Maximum
Continuous
Ampere
Rating
at 40 °C

LSIG

Catalog
Number

LSIA

Catalog
Number

Ampere
Rating

Fixed Rating Plug

Catalog
Number

Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac

| Maximum Continuous Ampere Rating at 40 °C | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
|---|---------------------------|---------------------------|------------------|--|
| 125 | LD3125T106W | LD3125T107W | 70 | ORPL125A070 |
| | | | 90 | ORPL125A090 |
| | | | 100 | ORPL125A100 |
| | | | 110 | ORPL125A110 |
| | | | 125 | ORPL125A125 |
| 250 | LD3250T106W | LD3250T107W | 125 | ORPL025A125 |
| | | | 150 | ORPL025A150 |
| | | | 175 | ORPL025A175 |
| | | | 200 | ORPL025A200 |
| | | | 225 | ORPL025A225 |
| | | | 250 | ORPL025A250 |
| 400 | LD3400T106W | LD3400T107W | 200 | ORPL40A200 |
| | | | 225 | ORPL40A225 |
| | | | 250 | ORPL40A250 |
| | | | 300 | ORPL40A300 |
| | | | 350 | ORPL40A350 |
| | | | 400 | ORPL40A400 |
| | | | 600 | ORPL60A600 |
| 600 | LD3600T106W | LD3600T107W | 300 | ORPL60A300 |
| | | | 350 | ORPL60A350 |
| | | | 400 | ORPL60A400 |
| | | | 500 | ORPL60A500 |
| | | | 600 | ORPL60A600 |

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.

③ Factory sealed.

Digitrip OPTIM 1050 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|---------------------|---------------------------------|----------------------------------|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | |
| 125 | HLD3125T106W | HLD3125T107W | 70 | ORPL125A070 |
| | | | 90 | ORPL125A090 |
| | | | 100 | ORPL125A100 |
| | | | 110 | ORPL125A110 |
| | | | 125 | ORPL125A125 |
| 250 | HLD3250T106W | HLD3250T107W | 125 | ORPL025A125 |
| | | | 150 | ORPL025A150 |
| | | | 175 | ORPL025A175 |
| | | | 200 | ORPL025A200 |
| | | | 225 | ORPL025A225 |
| 400 | HLD3400T106W | HLD3400T107W | 250 | ORPL025A250 |
| | | | 200 | ORPL40A200 |
| | | | 225 | ORPL40A225 |
| | | | 250 | ORPL40A250 |
| | | | 300 | ORPL40A300 |
| 600 | HLD3600T106W | HLD3600T107W | 350 | ORPL40A350 |
| | | | 400 | ORPL40A400 |
| | | | 300 | ORPL60A300 |
| | | | 350 | ORPL60A350 |
| | | | 400 | ORPL60A400 |
| | | | 500 | ORPL60A500 |
| | | | 600 | ORPL60A600 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
- ② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
- ③ Factory sealed.

Digitrip OPTIM 1050 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|---|---------------------------|---------------------------------|--|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response) OPTIM 1050 ②③ | | | |
| Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | | | | |
| 125 | LDC3125T106W | LDC3125T107W | 70 | ORPL125A070 |
| | | | 90 | ORPL125A090 |
| | | | 100 | ORPL125A100 |
| | | | 110 | ORPL125A110 |
| | | | 125 | ORPL125A125 |
| 250 | LDC3250T106W | LDC3250T107W | 125 | ORPL025A125 |
| | | | 150 | ORPL025A150 |
| | | | 175 | ORPL025A175 |
| | | | 200 | ORPL025A200 |
| | | | 225 | ORPL025A225 |
| 400 | LDC3400T106W | LDC3400T107W | 250 | ORPL025A250 |
| | | | 200 | ORPL40A200 |
| | | | 225 | ORPL40A225 |
| | | | 250 | ORPL40A250 |
| | | | 300 | ORPL40A300 |
| 600 | LDC3600T106W | LDC3600T107W | 350 | ORPL40A350 |
| | | | 400 | ORPL40A400 |
| | | | 300 | ORPL60A300 |
| | | | 350 | ORPL60A350 |
| | | | 400 | ORPL60A400 |
| | | | 500 | ORPL60A500 |
| | | | 600 | ORPL60A600 |

Notes

- ① Long delay I^4t response selection limits short delay time to flat response.
 ② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
 ③ Factory sealed.

100% Rated Digitrip OPTIM Circuit Breakers with Interchangeable Rating Plug

Order as individual components: Breaker Frame (which includes Trip Unit), Rating Plug, Terminals.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plug**Circuit Breaker Frame Only****L** – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ①**S** – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)**I** – Adjustable Instantaneous Pickup**G** – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)**A** – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

OPTIM 550 ②

Digitrip OPTIM Rating Plug Only

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|---------------------|---------------------|---------------------------------|----------------------------------|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | | | | | |
| 125 | CLD3125T52W | CLD3125T56W | CLD3125T57W | 70 | ORPL125A070 |
| | | | | 90 | ORPL125A090 |
| | | | | 100 | ORPL125A100 |
| | | | | 110 | ORPL125A110 |
| | | | | 125 | ORPL125A125 |
| 250 | CLD3250T52W | CLD3250T56W | CLD3250T57W | 125 | ORPL025A125 |
| | | | | 150 | ORPL025A150 |
| | | | | 175 | ORPL025A175 |
| | | | | 200 | ORPL025A200 |
| | | | | 225 | ORPL025A225 |
| | | | | 250 | ORPL025A250 |
| 400 | CLD3400T52W | CLD3400T56W | CLD3400T57W | 200 | ORPL40A200 |
| | | | | 225 | ORPL40A225 |
| | | | | 250 | ORPL40A250 |
| | | | | 300 | ORPL40A300 |
| | | | | 350 | ORPL40A350 |
| | | | | 400 | ORPL40A400 |
| 600 | CLD3600T52W | CLD3600T56W | CLD3600T57W | 300 | ORPL60A300 |
| | | | | 350 | ORPL60A350 |
| | | | | 400 | ORPL60A400 |
| | | | | 500 | ORPL60A500 |
| | | | | 600 | ORPL60A600 |

Notes① Long delay I^4t response selection limits short delay time to flat response.② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|--|---------------------|---------------------|---------------------------------|----------------------------------|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | OPTIM 550 ^② L – Adjustable Long Delay Pickup (I ₁) with Adjustable Long Delay Time (I ² t or I ⁴ t Response) ^① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I ² t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I ² t or Flat Response) | | | | |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | |
| 125 | CHLD3125T52W | CHLD3125T56W | CHLD3125T57W | 70 | ORPL125A070 |
| | | | | 90 | ORPL125A090 |
| | | | | 100 | ORPL125A100 |
| | | | | 110 | ORPL125A125 |
| | | | | 125 | ORPL125A125 |
| 250 | CHLD3250T52W | CHLD3250T56W | CHLD3250T57W | 125 | ORPL025A125 |
| | | | | 150 | ORPL025A150 |
| | | | | 175 | ORPL025A175 |
| | | | | 200 | ORPL025A200 |
| | | | | 225 | ORPL025A225 |
| | | | | 250 | ORPL025A250 |
| 400 | CHLD3400T52W | CHLD3400T56W | CHLD3400T57W | 200 | ORPL40A200 |
| | | | | 225 | ORPL40A225 |
| | | | | 250 | ORPL40A250 |
| | | | | 350 | ORPL40A350 |
| | | | | 400 | ORPL40A400 |
| 600 | CHLD3600T52W | CHLD3600T56W | CHLD3600T57W | 300 | ORPL60A300 |
| | | | | 350 | ORPL60A350 |
| | | | | 400 | ORPL60A400 |
| | | | | 500 | ORPL60A500 |
| | | | | 500 | ORPL60A500 |
| | | | | 600 | ORPL60A600 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
- ② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|--|---------------------------|---------------------------|---------------------------------|--|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I ₁) with Adjustable Long Delay Time (I ² t or I ⁴ t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I ² t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I ² t or Flat Response) | | | | |
| | OPTIM 550 ② | | | | |
| Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | | | | | |
| 125 | CLDC3125T52W | CLDC3125T56W | CLDC3125T57W | 70 | ORPL125A070 |
| | | | | 90 | ORPL125A090 |
| | | | | 100 | ORPL125A100 |
| | | | | 110 | ORPL125A110 |
| | | | | 125 | ORPL125A125 |
| 250 | CLDC3250T52W | CLDC3250T56W | CLDC3250T57W | 125 | ORPL025A125 |
| | | | | 150 | ORPL025A150 |
| | | | | 175 | ORPL025A175 |
| | | | | 200 | ORPL025A200 |
| | | | | 225 | ORPL025A225 |
| 400 | CLDC3400T52W | CLDC3400T56W | CLDC3400T57W | 250 | ORPL025A250 |
| | | | | 200 | ORPL40A200 |
| | | | | 225 | ORPL40A225 |
| | | | | 250 | ORPL40A250 |
| | | | | 300 | ORPL40A300 |
| 600 | CLDC3600T52W | CLDC3600T56W | CLDC3600T57W | 350 | ORPL40A350 |
| | | | | 400 | ORPL40A400 |
| | | | | 300 | ORPL60A300 |
| | | | | 350 | ORPL60A350 |
| | | | | 400 | ORPL60A400 |
| | | | | 500 | ORPL60A500 |
| | | | | 600 | ORPL60A600 |

Notes

① Long delay I⁴t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

100% Rated Digitrip OPTIM 1050 Circuit Breakers with Interchangeable Rating Plug

Circuit Breaker Frame Only

- L – Adjustable Long Delay Pickup (I_l) with Adjustable Long Delay Time (I²t or I⁴t Response) ①
- S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I²t or Flat Response)
- I – Adjustable Instantaneous Pickup
- G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I²t or Flat Response)
- A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I²t or Flat Response)

OPTIM 1050 ②③

Digitrip OPTIM Rating Plug Only

| Maximum Continuous Ampere Rating at 40 °C | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
|---|---------------------|---------------------|---------------|----------------------------------|
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac | | | | |
| 125 | CLD3125T106W | CLD3125T107W | 70 | ORPL125A070 |
| | | | 90 | ORPL125A090 |
| | | | 100 | ORPL125A100 |
| | | | 110 | ORPL125A110 |
| | | | 125 | ORPL125A125 |
| 250 | CLD3250T106W | CLD3250T107W | 125 | ORPL025A125 |
| | | | 150 | ORPL025A150 |
| | | | 175 | ORPL025A175 |
| | | | 200 | ORPL025A200 |
| | | | 225 | ORPL025A225 |
| | | | 250 | ORPL025A250 |
| 400 | CLD3400T106W | CLD3400T107W | 200 | ORPL40A200 |
| | | | 225 | ORPL40A225 |
| | | | 250 | ORPL40A250 |
| | | | 300 | ORPL40A300 |
| | | | 350 | ORPL40A350 |
| | | | 400 | ORPL40A400 |
| | | | 600 | ORPL60A600 |
| 600 | CLD3600T106W | CLD3600T107W | 300 | ORPL60A300 |
| | | | 350 | ORPL60A350 |
| | | | 400 | ORPL60A400 |
| | | | 500 | ORPL60A500 |
| | | | 600 | ORPL60A600 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
- ② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
- ③ Factory sealed.

100% Rated Digitrip OPTIM 1050 Circuit Breakers with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|--|---------------------------|---------------------------------|--|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | OPTIM 1050 ^{②③} | | | |
| | L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ^① | | | |
| | S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) | | | |
| | I – Adjustable Instantaneous Pickup | | | |
| | G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) | | | |
| | A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response) | | | |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | |
| 125 | CHLD3125T106W | CHLD3125T107W | 70 | ORPL125A070 |
| | | | 90 | ORPL125A090 |
| | | | 100 | ORPL125A100 |
| | | | 110 | ORPL125A110 |
| | | | 125 | ORPL125A125 |
| 250 | CHLD3250T106W | CHLD3250T107W | 125 | ORPL025A125 |
| | | | 150 | ORPL025A150 |
| | | | 175 | ORPL025A175 |
| | | | 200 | ORPL025A200 |
| | | | 225 | ORPL025A225 |
| | | | 250 | ORPL025A250 |
| 400 | CHLD3400T106W | CHLD3400T107W | 200 | ORPL40A200 |
| | | | 225 | ORPL40A225 |
| | | | 250 | ORPL40A250 |
| | | | 300 | ORPL40A300 |
| | | | 350 | ORPL40A350 |
| | | | 400 | ORPL40A400 |
| | | | 600 | ORPL60A600 |
| 600 | CHLD3600T106W | CHLD3600T107W | 300 | ORPL60A300 |
| | | | 350 | ORPL60A350 |
| | | | 400 | ORPL60A400 |
| | | | 500 | ORPL60A500 |
| | | | 600 | ORPL60A600 |

Notes

- ① Long delay I^4t response selection limits short delay time to flat response.
 ② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
 ③ Factory sealed.

100% Rated Digitrip OPTIM 1050 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|---------------------------|---------------------------------|--|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| OPTIM 1050 ^{②③} | | | | |
| Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac | | | | |
| 125 | CLDC3125T106W | CLDC3125T107W | 70 | ORPL125A070 |
| | | | 90 | ORPL125A090 |
| | | | 100 | ORPL125A100 |
| | | | 110 | ORPL125A110 |
| | | | 125 | ORPL125A125 |
| 250 | CLDC3250T106W | CLDC3250T107W | 125 | ORPL025A125 |
| | | | 150 | ORPL025A150 |
| | | | 175 | ORPL025A175 |
| | | | 200 | ORPL025A200 |
| | | | 225 | ORPL025A225 |
| | | | 250 | ORPL025A250 |
| 400 | CLDC3400T106W | CLDC3400T107W | 200 | ORPL40A200 |
| | | | 225 | ORPL40A225 |
| | | | 250 | ORPL40A250 |
| | | | 300 | ORPL40A300 |
| | | | 350 | ORPL40A350 |
| | | | 400 | ORPL40A400 |
| 600 | CLDC3600T106W | CLDC3600T107W | 300 | ORPL60A300 |
| | | | 350 | ORPL60A350 |
| | | | 400 | ORPL60A400 |
| | | | 500 | ORPL60A500 |
| | | | 600 | ORPL60A600 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
 ② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
 ③ Factory sealed.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

Eaton’s line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B and CSA Standard C22.2 No. 65M. Unless otherwise specified,

L-Frame circuit breaker line and load terminals are shipped separately for field installation.

The wire connecting terminal is secured with two pan-head, slotted screws and lockwashers that can be checked for the correct torque loading or retightened from the front of the circuit

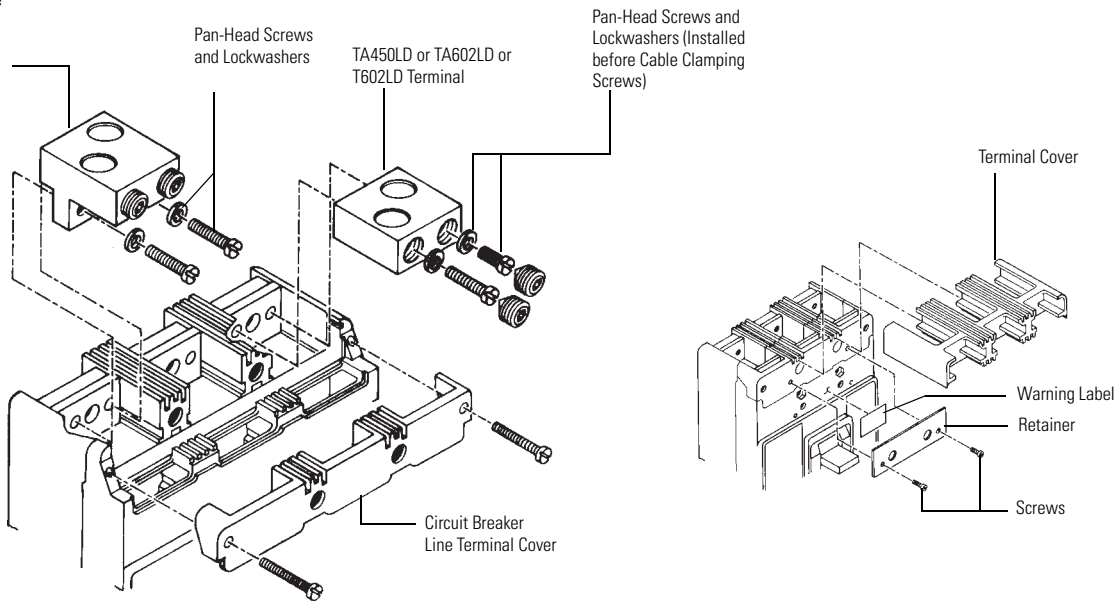
breaker before installation of the conductors. (Applies to all styles.) The circuit breaker line/load terminal conductors are positioned in the conducting holes in the wire connecting terminal and are secured with recessed socket screws that are tightened to the correct torque loading from the front of the circuit breaker.

Ordering Information

L-Frame circuit breakers use Cu/Al terminals as standard. When optional copper terminals are required, order by catalog Number. Specify if factory installation is required.

Terminals

TA401LD or TA603LD Terminal (Step-Type Terminal Requires Terminal Cover and Warning Label. See Inset.)



Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire Range/Number of Conductors | Metric Wire Range mm ² | Terminal Poles | Catalog Number | Terminals with Control Wire Termination Catalog Number |
|--|------------------------|-----------|-------------------------------------|-----------------------------------|------------------|------------------|--|
| Standard Cu/Al Pressure Terminals | | | | | | | |
| 400 | Aluminum | Cu/Al | 4/0–600 (1) | 120–300 | Two-pole kit ① | 2TA401LDK | — |
| 400 | Aluminum | Cu/Al | 4/0–600 (1) | 120–300 | Three-pole kit ① | 3TA401LDK | — |
| 400 | Aluminum | Cu/Al | 4/0–600 (1) | 120–300 | Four-pole kit ① | 4TA401LDK | — |
| 450 | Aluminum | Cu/Al | 4–4/0 (2) | 25–95 | ② | TA450LD | — |
| 500 | Aluminum | Cu/Al | 3/0–350 (2) | 95–150 | ② | TA602LD | TA602LDCW |
| 600 | Aluminum | Cu/Al | 400–500 (2) | 185–240 | Two-pole kit ① | 2TA603LDK | 2TA603LDKCW |
| 600 | Aluminum | Cu/Al | 400–500 (2) | 185–240 | Three-pole kit ① | 3TA603LDK | 3TA603LDKCW |
| 600 | Aluminum | Cu/Al | 400–500 (2) | 185–240 | Four-pole kit ① | 4TA603LDK | 4TA603LDKCW |
| Optional Copper and Cu/Al Pressure Type Terminals | | | | | | | |
| 600 | Copper | Cu | 250–350 (2) | 120–250 | ② | T602LD | T602LDCW |

Notes

- ① Terminal kits contain one terminal for each pole and one terminal cover.
- ② Individually packed.

Accessories

2

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

LD Frame Accessories

| Description | Reference Page | Two-Pole ^① , Three-Pole | | | Four-Pole | | | Neutral ^② |
|---|----------------|------------------------------------|--------|-------|-----------|--------|-------|----------------------|
| | | Left | Center | Right | Left | Center | Right | |
| Internal Accessories (Only One Internal Accessory Per Pole) ^③ | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-276 | ■ | | ■ | ■ | | | ■ |
| Alarm lockout (2Make/2Break) | V4-T2-276 | ■ | | ■ | ■ | | | ■ |
| Auxiliary switch (1A, 1B) | V4-T2-278 | ■ | | ■ | ■ | | | ■ |
| Auxiliary switch (2A, 2B) | V4-T2-278 | ■ | | ■ | ■ | | | ■ |
| Auxiliary switch (3A, 3B) | V4-T2-278 | ■ | | ■ | ■ | | | ■ |
| Auxiliary switch (1A, 1B) and alarm switch combination | V4-T2-280 | ■ | | ■ | ■ | | | ■ |
| Auxiliary switch (2A, 2B) and alarm switch combination | V4-T2-280 | ■ | | ■ | ■ | | | ■ |
| Shunt trip—standard ^④ | V4-T2-282 | ■ | | ■ | ■ | | | ■ |
| Shunt trip—low energy ^④ | V4-T2-285 | ■ | | ■ | ■ | | | ■ |
| Undervoltage release mechanism ^④ | V4-T2-291 | ■ | | ■ | ■ | | | ■ |
| Eaton PowerNet communications kit (OPTIM 550) | V4-T2-293 | | | ■ | | | | |
| External Accessories | | | | | | | | |
| End cap kit | V4-T2-310 | ● | ● | ● | ● | ● | ● | ● |
| Control wire terminal kit | V4-T2-311 | ● | ● | ● | ● | ● | ● | ● |
| Base mounting hardware | V4-T2-313 | ● | ● | ● | ● | ● | ● | ● |
| Terminal shields | V4-T2-315 | ● | ● | ● | ● | ● | ● | ● |
| Interphase barriers | V4-T2-315 | ● | ● | ● | ● | ● | ● | ● |
| Non-padlockable handle block | V4-T2-316 | | ■ | | | ■ | | |
| Padlockable handle lock hasp | V4-T2-317 | □ | | □ | □ | | | □ |
| Key interlock kit | V4-T2-318 | □ | | □ | □ | | | □ |
| Sliding bar interlock—requires two breakers | V4-T2-319 | ● | ● | ● | | | | |
| Walking beam interlock—requires two breakers | V4-T2-319 | ● | ● | ● | ● | ● | ● | ● |
| Electrical (motor) operator | V4-T2-320 | ● | ● | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-322 | ● | ● | ● | ● | ● | ● | ● |
| Rear connecting studs | V4-T2-323 | ● | ● | ● | ● | ● | ● | ● |
| Panelboard connecting straps | V4-T2-324 | ● | ● | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-431 | ● | ● | ● | ● | ● | ● | ● |
| Handle extension | V4-T2-446 | ● | ● | ● | ● | ● | ● | ● |
| Solid-state (electronic) portable test kit | V4-T2-326 | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Notes

- ① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.
- ② Refer to Eaton for appropriate neutral pole accessory combinations.
- ③ OPTIM model 1050 is factory sealed and does not have the right pole space available for accessories.
- ④ Shunt trip and UVR cannot be mounted in right poles on LES or OPTIM trip units. Standard non-tripping internal accessories can be mounted in the left or right poles of LES and 550 OPTIM trip units.

LD Frame Accessories, continued

| Description | Reference Page | Two-Pole ^① , Three-Pole | | | Four-Pole | | | Neutral ^② |
|--|----------------|------------------------------------|--------|-------|-----------|--------|-------|----------------------|
| | | Left | Center | Right | Left | Center | Right | |
| OPTIM System Components Three Poles | | | | | | | | |
| Ground fault alarm unit | V4-T2-326 | | | | | | | |
| Potential transformer module | V4-T2-326 | | | | | | | |
| Breaker interface module (BIM) | V4-T2-327 | | | | | | | |
| Digitrip OPTIMizer | V4-T2-327 | | | | | | | |
| Auxiliary power module | V4-T2-327 | | | | | | | |
| Modifications (Refer to Eaton) | | | | | | | | |
| Special calibration | — | ● | ● | ● | ● | ● | ● | ● |
| Moisture fungus treatment | V4-T2-116 | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application | — | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

310+ Electronic Trip Unit Accessories

| Description | Catalog Number |
|--|--------------------------|
| Electronic portable test kit | MTST230V ^③ |
| Trip unit tamper protection wire seal | 5108A03H01 |
| External neutral sensor | LGFACT600 ^④ |
| Breaker-mount cause-of-trip indication | TRIP-LED |
| Breaker-mount ammeter module | DIGIVIEW |
| Remote-mount ammeter module | DIGIVIEWR06 ^⑤ |

Notes

- ① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.
- ② Refer to Eaton for appropriate neutral pole accessory combinations.
- ③ MTST230V applies to 100–230 Vac.
- ④ Included with all LD LSG and LSG trip units and breakers.
- ⑤ Includes 6 ft cable for remote mounting; NEMA 3R rated.

Technical Data and Specifications

2

UL 489 Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA rms Symmetrical Amperes) | | | | | |
|------------------------|-----------------|--|-----|-----|-----|----------|-------------------|
| | | Volts AC (50/60 Hz) | | | | Volts DC | |
| | | 240 | 277 | 480 | 600 | 125 | 250 ^{②③} |
| LDB | 2, 3 | 65 | — | 35 | 25 | — | 22 |
| LD | 2, 3, 4 | 65 | — | 35 | 25 | — | 22 |
| CLD ^④ | 2, 3, 4 | 65 | — | 35 | 25 | — | — |
| HLD, HLDB | 2, 3, 4 | 100 | — | 65 | 35 | — | 25 |
| CHLD ^④ | 2, 3, 4 | 100 | — | 65 | 35 | — | — |
| LDC, LDCB ^⑤ | 2, 3, 4 | 200 | — | 100 | 50 | — | 30 |
| CLDC ^{④⑤} | 2, 3, 4 | 200 | — | 100 | 50 | — | — |

IEC 947-2 Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | | | | | |
|----------------------|-----------------|--|----------|----------|----------|----------|----------|-------------------|----------|
| | | Volts AC (50/60 Hz) | | | | Volts DC | | | |
| | | 240 | | 415 | | 690 | | 250 ^{②③} | |
| | | I_{cu} | I_{cs} | I_{cu} | I_{cs} | I_{cu} | I_{cs} | I_{cu} | I_{cs} |
| LDB | 2, 3 | 85 | 85 | 45 | 45 | 20 | 10 | 20 | 10 |
| LD | 2, 3, 4 | 85 | 85 | 45 | 45 | 20 | 10 | 20 | 10 |
| CLD ^④ | 2, 3, 4 | 85 | 85 | 45 | 45 | 20 | 10 | — | — |
| HLD, HLDB | 2, 3, 4 | 100 | 100 | 70 | 70 | 25 | 13 | 20 | 10 |
| CHLD ^④ | 2, 3, 4 | 100 | 100 | 70 | 70 | 25 | 13 | — | — |
| LDC, LDCB | 2, 3, 4 | 200 | 100 | 100 | 75 | 35 | 18 | 20 | 10 |
| CLDC ^④ | 2, 3, 4 | 200 | 100 | 100 | 75 | 35 | 18 | — | — |

UL 489 Current Limiting Data

| Frame | Circuit | I_p (kA) | I^2T ($10^6 A^2S$) |
|-------|--------------|------------|------------------------|
| LDC | 240 V/200 kA | 64.80 | 6.80 |
| LDC | 480 V/100 kA | 66.90 | 9.33 |
| LDC | 600 V/50 kA | 54.30 | 8.92 |

Notes

- ① Utilization Category A circuit breakers.
- ② L/R = 8 milliseconds minimum.
- ③ Two-pole circuit breaker or two poles of three-pole circuit breaker. Incorporating thermal-magnetic trip unit only.
- ④ 100% rated breakers.
- ⑤ Current limiting.

310+ Specifications

| Description | Specification |
|---|---------------------------------|
| Trip Unit Type | Digitrip RMS 310+ |
| Breaker Type | |
| Frame designation | LD |
| Frames available | 600 A |
| Continuous current range (A) | 250–600 A |
| Ground fault pickup (A) | 120–600 A |
| Interrupting capacities at 480 Vac (kAIC) | 35, 65, 100 |
| 100% rated | Yes |
| Protection | |
| Ordering options | LS, LSI, LSG, LSIG, ALSI, ALSIG |
| Arcflash Reduction Maintenance System (or Maintenance Mode) | Remote enabled on ALSI, ALSIG |
| Interchangeable trip unit | Yes |
| High load alarm (suffix B20) ① | Yes |
| Ground fault alarm with trip (suffix B21) ① | LSG, LSIG, ALSIG |
| Ground fault alarm, no trip (suffix B22) ① | LSG, LSIG, ALSIG |
| Zone selective interlocking (suffix ZG) | LSI, LSIG, ALSI, ALSIG |
| Cause of trip indication | Yes (via TRIP-LED or DIGIVIEW) |
| Thru-cover accessories | No |

310+ Adjustability Specifications

| Description | LD Frame Specification | |
|--|------------------------|---------|
| 310+ settings | 600 A | |
| I_r = continuous current or long delay pickup (amperes) (All 310+) | I_r | |
| | A | 250 |
| | B | 300 |
| | C | 315 |
| | D | 350 |
| | E | 400 |
| | F | 450 |
| | G | 500 |
| | H (= I_n) | 600 |
| t_r = long delay time (seconds) (All 310+) | 2 | 2 |
| | 4 | 4 |
| | 7 | 7 |
| | 10 | 10 |
| | 12 | 12 |
| | 15 | 15 |
| | 20 | 20 |
| | 24 | 24 |
| I_{sd} (x I_r) = short delay pickup (All 310+) | Position 1 | 2x |
| | Position 2 | 3x |
| | Position 3 | 4x |
| | Position 4 | 5x |
| | Position 5 | 6x |
| | Position 6 | 7x |
| | Position 7 | 8x |
| | Position 8 | 8x |
| | Position 9 | 8x |
| t_{sd} = short delay time I^2t (milliseconds) (LS and LSG) | Fixed | 67 @10x |
| t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG) | Position 1 | Inst |
| | Position 2 | 120 |
| | Position 3 | 300 |
| I_g (x I_n) = ground fault pickup (amperes) (LSG, LSIG, ALSIG) | Position 1 | 120 |
| | Position 2 | 180 |
| | Position 3 | 240 |
| | Position 4 | 360 |
| | Position 5 | 480 |
| | Position 6 | 600 |
| t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG) | Position 1 | Inst |
| | Position 2 | 120 |
| | Position 3 | 300 |
| Independently adjustable Instantaneous (Ii) setting | ② | |
| Maintenance Mode pickup ($2.5 \times I_n$) (amperes) (310+ with Maintenance Mode—ALSI and ALSIG) | Fixed | 1500 |

Notes

- ① B2x suffixes cannot be combined with B2x suffixes.
- ② Not available for LD. Independently adjustable Ii setting available in LG, NG, and RG ALSI and ALSIG trip units.

Digitrip OPTIM Specifications

| Trip Unit Type | Digitrip OPTIM 550 | Digitrip OPTIM 1050 |
|--|----------------------|----------------------|
| rms sensing | Yes | Yes |
| Breaker Type | | |
| Frame | L | L |
| Ampere range | 200–600 A | 200–600 A |
| Interrupting rating at 480 volts | 35, 65, 100 (kA) | 35, 65, 100 (kA) |
| Protection | | |
| Ordering options | LSI, LSI(A), LSIG | LSI(A), LSIG |
| Fixed rated plug (I_n) | Yes | Yes |
| Overtemperature trip | Yes | Yes |
| Long Delay Protection (L) | | |
| Adjustable rating plug (I_n) | No | No |
| Long delay pickup | 0.4–1.0 x (I_n) | 0.4–1.0 x (I_n) |
| Long delay time I^2t | 2–24 seconds | 2–24 seconds |
| Long delay time I^4t | 1–5 seconds | 1–5 seconds |
| Long delay thermal memory | Yes | Yes |
| High load alarm | 0.5–1.0 x I_r | 0.5–1.0 x I_r |
| Short Delay Protection (S) | | |
| Short delay pickup | 150–800% x (I_r) | 150–800% x (I_r) |
| Short delay time I^2t | 100–500 ms | 100–500 ms |
| Short delay time flat | 100–500 ms | 100–500 ms |
| Short delay time zone selective interlocking | Yes ① | Yes |
| Instantaneous Protection (I) | | |
| Instantaneous pickup | 200–800% x (I_n) | 200–800% x (I_n) |
| Discriminator | Yes | Yes |
| Instantaneous override | Yes | Yes |
| Ground Fault Protection (G) | | |
| Ground fault alarm | 20–100% x (I_s) | 20–100% x (I_s) |
| Ground fault pickup | 20–100% x (I_s) | 20–100% x (I_s) |
| Ground fault delay I^2t | 100–500 ms | 100–500 ms |
| Ground fault delay flat | 100–500 ms | 100–500 ms |
| Ground fault zone selective interlocking | Yes ① | Yes |
| Ground fault thermal memory | Yes | Yes |

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
 I_s = Sensor Rating
 I_n = Rating Plug
 I_r = Long Delay Pickup Setting

Note

① Zone interlock kit.

Digitrip OPTIM Specifications, continued

| Trip Unit Type | Digitrip OPTIM 550 | Digitrip OPTIM 1050 |
|--|---------------------------|----------------------------|
| System Diagnostics | | |
| Status LEDs | Yes | Yes |
| Cause of trip LEDs | Yes | Yes |
| Magnitude of trip information | Yes | Yes |
| Remote signal contact—ground alarm | Yes ^① | Yes |
| Local auxiliary and bell alarm contact | Optional | Included |
| System Monitoring | | |
| Digital display | Yes ^② | Yes ^② |
| Current | Yes | Yes |
| Power and energy | No | Yes |
| Power quality—harmonics | No | Yes |
| Power factor | No | Yes |
| Communications | | |
| PowerNet | Yes ^③ | Yes |
| Testing | | |
| Testing method | OPTIMizer, BIM, PowerNet | OPTIMizer, BIM, PowerNet |

Legend

BIM = Breaker Interface Module
 (A) = GF Alarm
 I_s = Sensor Rating
 I_n = Rating Plug
 I_r = Long Delay Pickup Setting

Notes

- ① Zone interlock kit.
 ② By OPTIMizer/BIM.
 ③ Eaton's PowerNet kit.

2.3

Molded Case Circuit Breakers

Series C

Dimensions and Weights

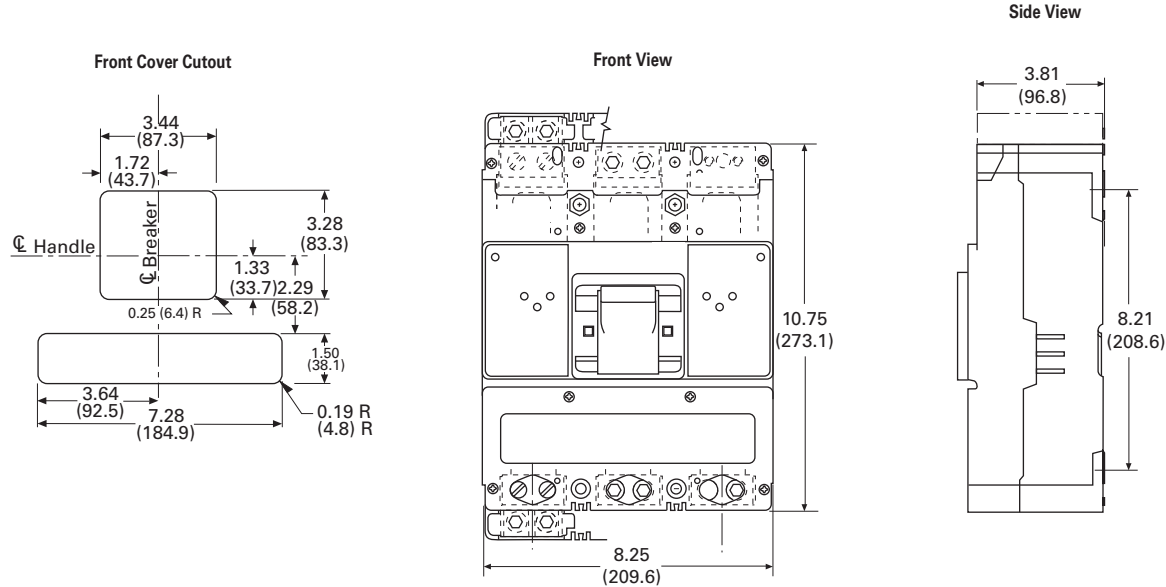
Dimensions in Inches (mm)

2

LD Frame

| Number of Poles | Width | Height | Depth |
|-----------------|---------------|---------------|--------------|
| 2, 3 | 8.25 (209.6) | 10.75 (273.1) | 4.06 (103.1) |
| 4 | 11.00 (279.4) | 10.75 (273.1) | 4.06 (103.1) |

LD-Frame, Two- and Three-Pole



Approximate Shipping Weight, Lbs (kg)

LD Frame

| Breaker Type | Complete Breaker | | | Frame Only | | | Trip Unit | | |
|--------------|------------------|------------|-----------|------------|------------|-----------|-----------|------------|-----------|
| | Two-Pole | Three-Pole | Four-Pole | Two-Pole | Three-Pole | Four-Pole | Two-Pole | Three-Pole | Four-Pole |
| LD, HLD, LDC | 18 (8.2) | 20 (9.1) | 25 (11.3) | 14 (6.4) | 15 (6.8) | 20 (9.1) | 3 (1.4) | 4 (1.8) | 5 (2.3) |
| LDB | 18 (8.2) | 20 (9.1) | 25 (11.3) | — | — | — | — | — | — |

Typical M-Frame Circuit Breaker



Contents

Description

| | <i>Page</i> |
|--|-------------|
| Product Overview | V4-T2-116 |
| Standards and Certifications | V4-T2-117 |
| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | |
| Catalog Number Selection | V4-T2-212 |
| Product Selection | V4-T2-213 |
| Accessories | V4-T2-218 |
| Technical Data and Specifications | V4-T2-219 |
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| Motor Circuit Protectors (MCP) | V4-T2-256 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

M-Frame (300–800 Amperes)

Product Description

- All Eaton M-Frame circuit breakers are HACR rated
- MDL-Frame circuit breakers are available as individual components (frame, trip unit, terminals), or factory assembled complete breakers
- MDLB, HMDLB-Frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use

Standards and Certifications

- CE marked



2.3

Molded Case Circuit Breakers

Series C

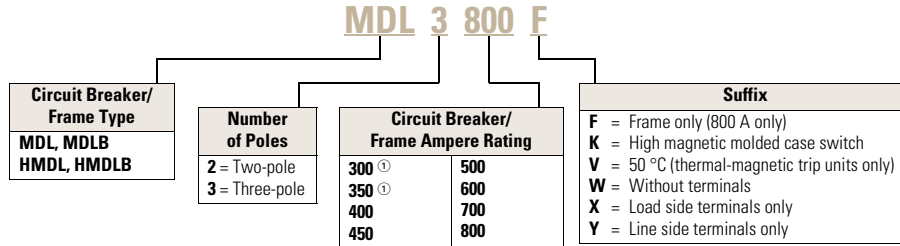
2

Catalog Number Selection

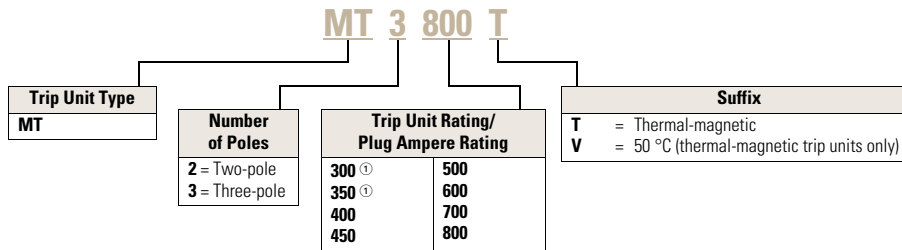
This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

MDL Frame with Thermal-Magnetic Trip Unit Technology

Thermal-Magnetic Breakers and Frame ①

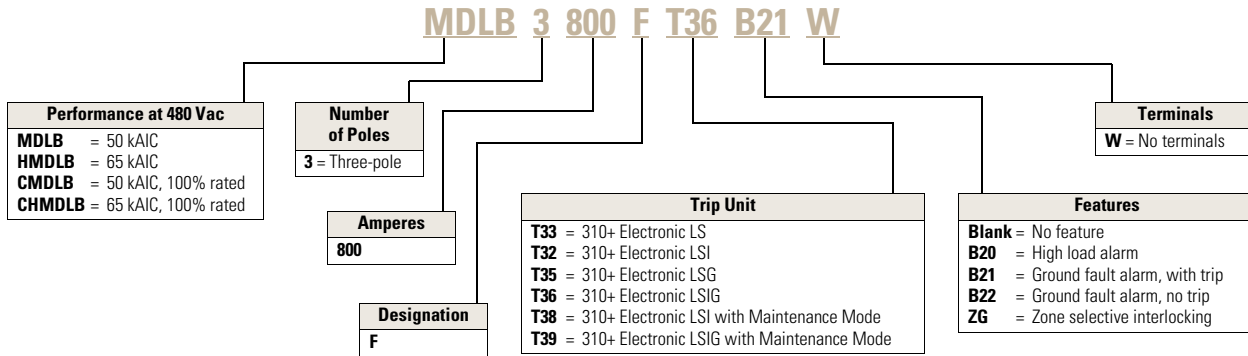


Thermal-Magnetic Trip Unit ①

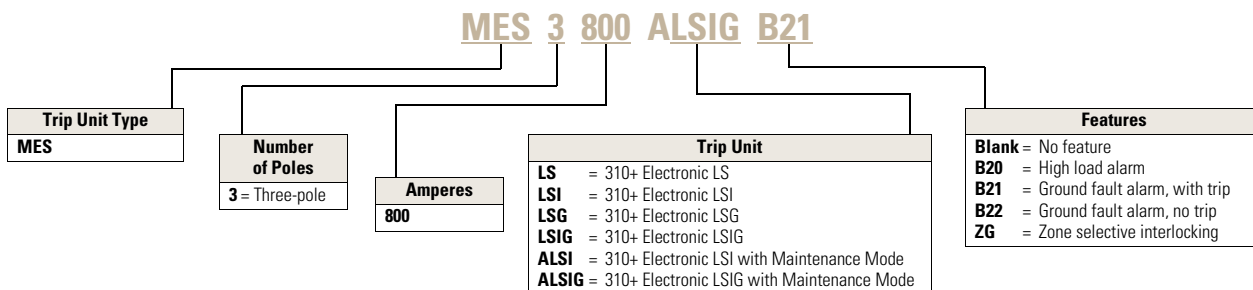


MDL Frame with 310+ Electronic Trip Unit Technology

310+ Circuit Breaker



310+ Electronic Trip Unit ①



Note

① Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., MDL3800F, HMDL3800F, etc.

Product Selection

Types MDL and HMDL Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units—Two-Pole

| Maximum Continuous Ampere Rating at 40 °C | Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | Thermal-Magnetic Trip Unit Only | Standard Terminals Only ^① See Page V4-T2-217 for Optional Terminals Catalog Number |
|---|--|---------------------------|--|---------------------------|--|---|
| | Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals | | Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals | | For Use with Standard or High or Ultra High Interrupting Frames Magnetic Trip Range is 5–10 Up Through 600 A; 4–8 on 700 and 800 A x Continuous Ampere Rating Catalog Number | |
| | Catalog Number | Frame Only Catalog Number | Catalog Number | Frame Only Catalog Number | | |
| 300 | MDL2300 | MDL2800F | HMDL2300 | HMDL2800F | MT2300T | TA700MA1 |
| 350 | MDL2350 | | HMDL2350 | | MT2350T | TA700MA1 |
| 400 | MDL2400 | | HMDL2400 | | MT2400T | TA700MA1 |
| 450 | MDL2450 | | HMDL2450 | | MT2450T | TA700MA1 |
| 500 | MDL2500 | | HMDL2500 | | MT2500T | TA700MA1 |
| 600 | MDL2600 | | HMDL2600 | | MT2600T | TA700MA1 |
| 700 | MDL2700 | | HMDL2700 | | MT2700T | TA700MA1 |
| 800 | MDL2800 | | HMDL2800 | | MT2800T | TA800MA2 |

Types MDL and HMDL Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units—Three-Pole

| Maximum Continuous Ampere Rating at 40 °C | Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | Thermal-Magnetic Trip Unit Only | Standard Terminals Only ^① See Page V4-T2-217 for Optional Terminals Catalog Number |
|---|--|---------------------------|--|---------------------------|--|---|
| | Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals | | Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals | | For Use with Standard or High or Ultra High Interrupting Frames Magnetic Trip Range is 5–10 Up Through 600 A; 4–8 on 700 and 800 A x Continuous Ampere Rating Catalog Number | |
| | Catalog Number | Frame Only Catalog Number | Catalog Number | Frame Only Catalog Number | | |
| 300 | MDL3300 | MDL3800F | HMDL3300 | HMDL3800F | MT3300T | TA700MA1 |
| 350 | MDL3350 | | HMDL3350 | | MT3400T | TA700MA1 |
| 400 | MDL3400 | | HMDL3400 | | MT3400T | TA700MA1 |
| 450 | MDL3450 | | HMDL3450 | | MT3450T | TA700MA1 |
| 500 | MDL3500 | | HMDL3500 | | MT3500T | TA700MA1 |
| 600 | MDL3600 | | HMDL3600 | | MT3600T | TA700MA1 |
| 700 | MDL3700 | | HMDL3700 | | MT3700T | TA700MA1 |
| 800 | MDL3800 | | HMDL3800 | | MT3800T | TA800MA2 |

Note

^① Two terminals are required per pole.

Types MDLB and HMDLB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units—Two-Pole ^①

| Maximum Continuous Ampere Rating at 40 °C | Standard Interrupting Capacity | High Interrupting Capacity | Standard Terminals Only ^② |
|---|--|--|---|
| | 600 Vac Rated 50 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number | 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number | See Page V4-T2-217 for Optional Terminals Catalog Number |
| 300 | MDLB2300 | HMDLB2300 | TA700MA1 |
| 350 | MDLB2350 | HMDLB2350 | TA700MA1 |
| 400 | MDLB2400 | HMDLB2400 | TA700MA1 |
| 450 | MDLB2450 | HMDLB2450 | TA700MA1 |
| 500 | MDLB2500 | HMDLB2500 | TA700MA1 |
| 600 | MDLB2600 | HMDLB2600 | TA700MA1 |
| 700 | MDLB2700 | HMDLB2700 | TA700MA1 |
| 800 | MDLB2800 | HMDLB2800 | TA800MA2 |

Types MDLB and HMDLB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units—Three-Pole ^①

| Maximum Continuous Ampere Rating at 40 °C | Standard Interrupting Capacity | High Interrupting Capacity | Standard Terminals Only ^② |
|---|--|--|---|
| | 600 Vac Rated 50 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number | 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number | See Page V4-T2-217 for Optional Terminals Catalog Number |
| 300 | MDLB3300 | HMDLB3300 | TA700MA1 |
| 350 | MDLB3350 | HMDLB3350 | TA700MA1 |
| 400 | MDLB3400 | HMDLB3400 | TA700MA1 |
| 450 | MDLB3450 | HMDLB3450 | TA700MA1 |
| 500 | MDLB3500 | HMDLB3500 | TA700MA1 |
| 600 | MDLB3600 | HMDLB3600 | TA700MA1 |
| 700 | MDLB3700 | HMDLB3700 | TA700MA1 |
| 800 | MDLB3800 | HMDLB3800 | TA800MA2 |

Notes

① Factory sealed for reverse feed application.

② Two terminals are required per pole.

Types MDL and HMDL Electronic Circuit Breakers with Interchangeable Trip Units

Order as Individual Components: breaker frame, trip unit and terminals.
See 310+ adjustability specifications on **Page V4-T2-220**.

Types MDL and HMDL Electronic Circuit Breakers with Interchangeable 310+ Trip Units—Three-Pole

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip RMS 310+ Trip Unit Only ^① | | | | Neutral CT for LSG and LSIG ^{②③} | Terminal Information |
|---|---|---|---|--|--|--|---|----------------------|
| | Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | Standard LS | Optional LSI | LSG | LSIG | | |
| | | | Adjustable Short Time Pickup with I ² t Short Delay Ramp | Independently Adjustable Short Time Pickup and Delay | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Ground Fault Protection | | |
| Catalog Number | Catalog Number | Catalog Number | Catalog Number | | | Catalog Number | | |
| 800 | MDL3800F | HMDL3800F | MES3800LS | MES3800LSI | MES3800LSG | MES3800LSIG | LGFACT600 | See Page V4-T2-218 |

Types MDLB and HMDLB Electronic Circuit Breakers with Non-Interchangeable 310+ Trip Units ^④

| Maximum Continuous Ampere Rating at 40 °C | Factory-Assembled Circuit Breaker Consisting of Frame and Trip Unit Less Terminals | | | | | Neutral CT for LSG and LSIG ^{②③} |
|---|--|--|--|--|----------------|---|
| | LS | LSI | LSG | LSIG | | |
| | Adjustable Short Time Pickup with I ² t Short Delay Ramp | Independently Adjustable Short Time Pickup and Delay | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Ground Fault Protection | Catalog Number | |
| Catalog Number | | | | | Catalog Number | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | | | | | | |
| 800 | MDLB3800FT33W | MDLB3800FT32W | MDLB3800FT35W | MDLB3800FT36W | | LGFACT600 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | |
| 800 | HMDLB3800FT33W | HMDLB3800FT32W | HMDLB3800FT35W | HMDLB3800FT36W | | LGFACT600 |

100% Rated Types CMDL and CHMDL Electronic Circuit Breakers with Interchangeable Trip Units

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at the 75 °C ampacity. All 100% rated circuit breakers have electronic trip units. Order as individual components: breaker frame, trip unit and terminals. See 310+ adjustability specifications on **Page V4-T2-220**.

100% Rated Types CMDL and CHMDL Electronic Circuit Breakers with Interchangeable 310+ Trip Units—Three-Pole

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip RMS 310+ Trip Unit Only ^① | | | | Neutral CT for LSG and LSIG ^{②③} | Terminal Information |
|---|---|---|---|--|--|--|---|----------------------|
| | Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | Standard LS | Options LSI | LSG | LSIG | | |
| | | | Adjustable Short Time Pickup with I ² t Short Delay Ramp | Independently Adjustable Short Time Pickup and Delay | Adjustable Short Time Pickup with I ² t Short Delay and Ground Fault Protection | Independently Adjustable Short Time Pickup and Ground Fault Protection | | |
| Catalog Number | Catalog Number | Catalog Number | Catalog Number | | | Catalog Number | | |
| 800 | CMDL3800F | CHMDL3800F | MES3800LS | MES3800LSI | MES3800LSG | MES3800LSIG | LGFACT600 | See Page V4-T2-218 |

Notes

- ① For AC use only.
- ② Required for four-wire systems if neutral protection is desired.
- ③ Included with LSG and LSIG trip units or breakers.
- ④ Factory sealed, suitable for reverse feed application. CMDLB and CHMDLB are also available.

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker

components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

| Maximum Continuous Ampere Rating at 40 °C | 600 Vac Maximum, 250 Vdc Circuit Breaker Only without Line and Load Terminals Catalog Number |
|---|--|
| Two-Pole | |
| 800 | MDL2800WK |
| | MDLB2800WK ^① |
| | HMDL2800WK |
| Three-Pole | |
| 800 | MDL3800WK |
| | MDLB3800WK ^① |
| | HMDL3800WK |

Notes

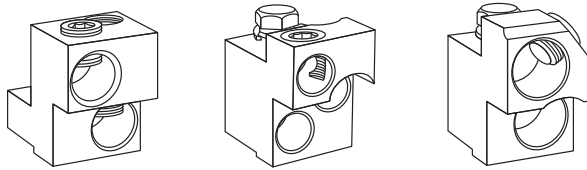
^① MDLB and HMDLB are suitable for reverse feed applications.

Molded case switch may trip above 6000 amperes.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

M-Frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. Specify if factory installation is required.



TA700MA1

TA800MA2

TA801MA

Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire Range/No. Conductors | Terminal Catalog Number | Terminals with Control Wire Termination Catalog Number |
|--|------------------------|-----------|-------------------------------|-------------------------|--|
| Standard Cu/Al Pressure Terminals | | | | | |
| 700 | Aluminum | Cu/Al | 1–500 kcmil (2) | TA700MA1 | TA700MA1CWT |
| 800 std. | Aluminum | Cu/Al | 3/0–400 kcmil (3) | TA800MA2 | TA800MA2CWT |
| 800 | Aluminum | Cu/Al | 500–750 kcmil (2) | TA801MA | TA801MACWT |
| Optional Copper and Cu/Al Pressure Type Terminals | | | | | |
| 600 | Copper | Cu | 2/0–500 kcmil (2) | T600MA1 | — |
| 800 | Copper | Cu | 3/0–300 kcmil (3) | T800MA1 | — |

Accessories

2

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

MD Frame Accessories

| Description | Reference Page | Two-Pole ^① | | Three-Pole | | |
|--|----------------|-----------------------|-------|------------|--------|-------|
| | | Left | Right | Left | Center | Right |
| Internal Accessories (Only One Internal Accessory Per Pole) | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-276 | ■ | ■ | ■ | | ■ |
| Alarm lockout (2Make/2Break) | V4-T2-276 | ■ | ■ | ■ | | ■ |
| Auxiliary switch (1A, 1B) | V4-T2-278 | ■ | ■ | ■ | | ■ |
| Auxiliary switch (2A, 2B) | V4-T2-278 | ■ | ■ | ■ | | ■ |
| Auxiliary switch (3A, 3B) | V4-T2-278 | ■ | ■ | ■ | | ■ |
| Auxiliary switch (1A, 1B) and alarm switch combination | V4-T2-280 | ■ | ■ | ■ | | ■ |
| Auxiliary switch (2A, 2B) and alarm switch combination | V4-T2-280 | ■ | ■ | ■ | | ■ |
| Shunt trip—standard ^② | V4-T2-283 | ■ | ■ | ■ | | ■ |
| Shunt trip—low energy ^② | V4-T2-285 | ■ | ■ | ■ | | ■ |
| Undervoltage release mechanism ^② | V4-T2-291 | ■ | ■ | ■ | | ■ |
| External Accessories | | | | | | |
| Rear fed terminals | V4-T2-312 | ● | ● | ● | ● | ● |
| Base mounting hardware | V4-T2-313 | | | | ● | |
| Terminal shields | V4-T2-315 | | | | ● | |
| Interphase barriers | V4-T2-315 | | | | ● | |
| Non-padlockable handle block | V4-T2-316 | | | | ■ | |
| Padlockable handle lock hasp | V4-T2-317 | □ | | □ | | □ |
| Key interlock kit | V4-T2-318 | □ | | □ | | □ |
| Sliding bar interlock—requires two breakers | V4-T2-319 | ● | ● | ● | ● | ● |
| Walking beam interlock—requires two breakers | V4-T2-319 | ● | ● | ● | ● | ● |
| Electrical (motor) operator | V4-T2-320 | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-322 | ● | ● | ● | ● | ● |
| Rear connecting studs | V4-T2-323 | ● | ● | ● | ● | ● |
| Panelboard connecting straps | V4-T2-324 | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-431 | ● | ● | ● | ● | ● |
| Handle extension | V4-T2-446 | ● | ● | ● | ● | ● |
| Solid-state (electronic) portable test kit | V4-T2-326 | ● | ● | ● | ● | ● |
| Modifications (Refer to Eaton) | | | | | | |
| Special calibration | — | ● | ● | ● | ● | ● |
| Moisture fungus treatment | V4-T2-116 | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● |
| Marine/naval application | — | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Notes

- ① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.
- ② Shunt trip and UVR cannot be mounted in right poles on MES trip units.

310+ Electronic Trip Unit Accessories

| Description | Catalog Number |
|--|----------------|
| Electronic portable test kit | MTST230V ① |
| Trip unit tamper protection wire seal | 5108A03H01 |
| External neutral sensor | LGFACT600 ② |
| Breaker-mount cause-of-trip indication | TRIP-LED |
| Breaker-mount ammeter module | DIGIVIEW |
| Remote-mount ammeter module | DIGIVIEWR06 ③ |

Technical Data and Specifications

UL 489/CSA Interrupting Capacity Ratings ④

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | Volts DC ⑤⑥ |
|----------------------|-----------------|--|-----|-----|-------------|
| | | Volts AC (50/60 Hz) | | | |
| | | 240 | 480 | 600 | 250 |
| MDL, MDLB | 2, 3 | 65 | 50 | 25 | 22 |
| CMDL | 2, 3 | 65 | 50 | 25 | — |
| HMDL, HMDLB | 2, 3 | 100 | 65 | 35 | 25 |
| CHMDL | 2, 3 | 100 | 65 | 35 | — |

IEC 947-2 Interrupting Capacity Ratings ④

| Circuit Breaker Type | Number of Poles | Interrupting Capacity rms (kA Symmetrical Amperes) $I_{cu} \neq I_{cs}$ | | | Volts DC ⑤⑥ |
|----------------------|-----------------|---|-------|-------|-------------|
| | | Volts AC (50/60 Hz) | | | |
| | | 240 | 415 | 690 | 250 |
| MDL, MDLB | 2, 3 | 65/65 | 50/50 | 20/10 | 20/10 |
| CMDL | 2, 3 | 65/65 | 50/50 | 20/10 | — |
| HMDL, HMDLB | 2, 3 | 100/100 | 70/50 | 25/13 | 20/10 |
| CHMDL | 2, 3 | 100/100 | 70/50 | 25/13 | — |

Notes

- ① MTST230V applies to 100–230 Vac.
- ② Included with all LD LSG and LSG trip units and breakers.
- ③ Includes 6 ft cable for remote mounting; NEMA 3R rated.
- ④ Utilization Category A circuit breakers.
- ⑤ Two-pole or two poles of three-pole circuit breaker. Thermal-magnetic trip units only, MDL, HMDL breakers with electronic trip unit are not DC rated.
- ⑥ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds at 22 kA.

310+ Specifications

| Description | Specification |
|---|---------------------------------|
| Trip Unit Type | Digitrip RMS 310+ |
| Breaker Type | |
| Frame designation | MDL |
| Frames available | 800 A |
| Continuous current range (A) | 320–800 A |
| Ground fault pickup (A) | 160–800 A |
| Interrupting capacities at 480 Vac (kAIC) | 50, 65 |
| 100% rated | Yes |
| Protection | |
| Ordering options | LS, LSI, LSG, LSIG, ALSI, ALSIG |
| Arcflash Reduction Maintenance System (or Maintenance Mode) | Remote enabled on ALSI, ALSIG |
| Interchangeable trip unit | Yes |
| High load alarm (suffix B20) ① | Yes |
| Ground fault alarm with trip (suffix B21) ① | LSG, LSIG, ALSIG |
| Ground fault alarm, no trip (suffix B22) ① | LSG, LSIG, ALSIG |
| Zone selective interlocking (suffix ZG) | LSI, LSIG, ALSI, ALSIG |
| Cause of trip indication | Yes (via TRIP-LED or DIGIVIEW) |
| Thru-cover accessories | No |

310+ Adjustability Specifications

| Description | MDL Frame Specification | |
|--|-------------------------|---------|
| 310+ settings | 800 A | |
| I_r = continuous current or long delay pickup (amperes) (All 310+) | I_r | |
| | A | 320 |
| | B | 400 |
| | C | 450 |
| | D | 500 |
| | E | 600 |
| | F | 630 |
| | G | 700 |
| | H (= I_n) | 800 |
| t_r = long delay time (seconds) (All 310+) | 2 | 2 |
| | 4 | 4 |
| | 7 | 7 |
| | 10 | 10 |
| | 12 | 12 |
| | 15 | 15 |
| | 20 | 20 |
| | 24 | 24 |
| I_{sd} (x I_r) = short delay pickup (All 310+) | Position 1 | 2x |
| | Position 2 | 3x |
| | Position 3 | 4x |
| | Position 4 | 5x |
| | Position 5 | 6x |
| | Position 6 | 7x |
| | Position 7 | 8x |
| | Position 8 | 8x |
| | Position 9 | 8x |
| t_{sd} = short delay time I^2t (milliseconds) (LS and LSG) | Fixed | 67 @10x |
| t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG) | Position 1 | Inst |
| | Position 2 | 120 |
| | Position 3 | 300 |
| I_g (x I_n) = ground fault pickup (amperes) (310+ w/ ground fault) | Position 1 | 160 |
| | Position 2 | 240 |
| | Position 3 | 320 |
| | Position 4 | 480 |
| | Position 5 | 640 |
| | Position 6 | 800 |
| t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG) | Position 1 | Inst |
| | Position 2 | 120 |
| | Position 3 | 300 |
| Independently adjustable Instantaneous (Ii) setting | ② | |
| Maintenance Mode pickup (2.5 x I_n) (amperes) (310+ with Maintenance Mode—ALSI and ALSIG) | Fixed | 2000 |

Notes

- ① B2x suffixes cannot be combined with B2x suffixes.
 ② Not available for MDL. Independently adjustable Ii setting available in LG, NG, and RG ALSI and ALSIG trip units.

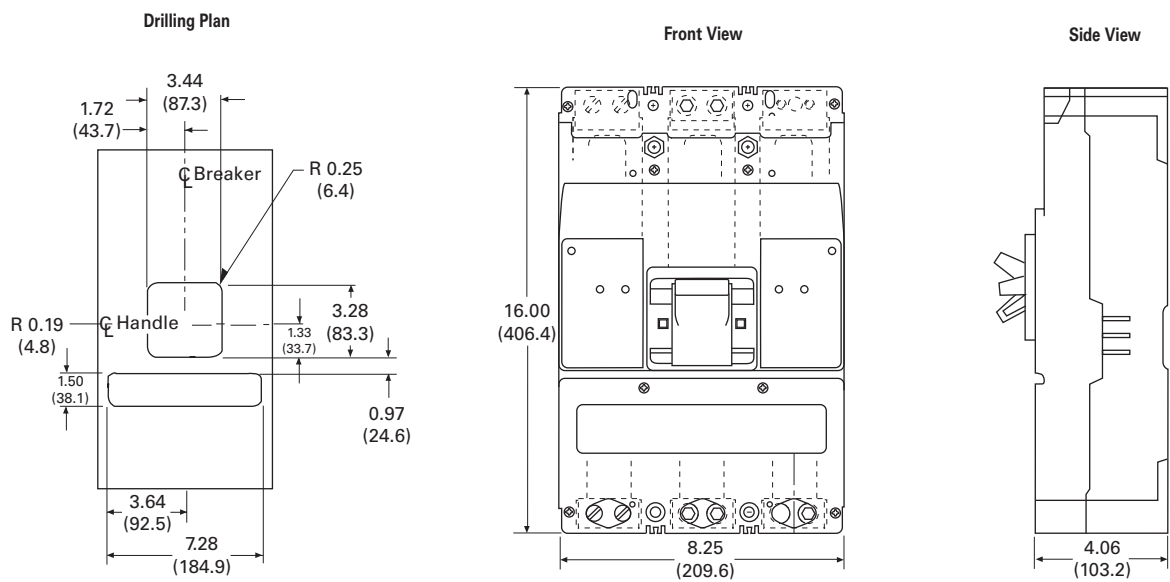
Dimensions and Weights

Dimensions in Inches (mm)

MD Frame

| Number of Poles | Width | Height | Depth |
|-----------------|--------------|---------------|--------------|
| 2, 3 | 8.25 (209.6) | 16.00 (406.4) | 4.06 (103.1) |

MDL-Frame, Two- and Three-Pole



Approximate Shipping Weight, Lbs (kg)

MD Frame

| Breaker Type | Complete Breaker | | Frame Only | | Trip Unit ① | |
|------------------------|------------------|-------------|-------------|-------------|-------------|------------|
| | Two-Pole | Three-Pole | Two-Pole | Three-Pole | Two-Pole | Three-Pole |
| MDL, HMDL (T/M T.U.) | 26.5 (12.0) | 29.0 (13.2) | 24.5 (11.1) | 26.0 (11.8) | 2.5 (1.1) | 3.0 (1.4) |
| MDL, HMDL (Elec. T.U.) | — | 30.0 (13.6) | — | 26.0 (11.8) | — | 4.0 (1.8) |

Note

① Thermal-magnetic only.

Typical N-Frame Breaker

2



Contents

| <i>Description</i> | <i>Page</i> |
|--|------------------|
| Product Overview | V4-T2-116 |
| Standards and Certifications | V4-T2-117 |
| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | |
| Catalog Number Selection | V4-T2-223 |
| Product Selection | V4-T2-224 |
| Accessories | V4-T2-232 |
| Technical Data and Specifications | V4-T2-233 |
| Dimensions and Weights | V4-T2-236 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

N-Frame (400–1200 Amperes)

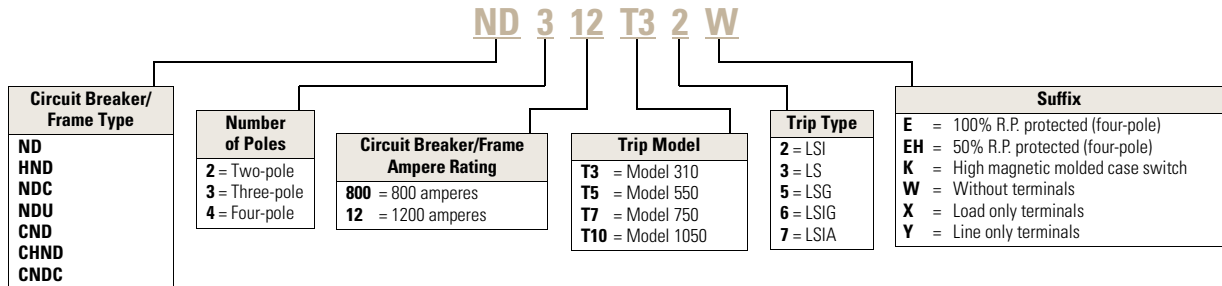
Product Description

- All Eaton N-Frame circuit breakers are suitable for reverse feed use
- All N-Frame circuit breakers are HACR rated

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame



Product Selection

2

Digitrip OPTIM Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|---------------------------|---------------------------|---------------------------------|---|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| L – Adjustable Long Delay Pickup (I_t) with Adjustable Long Delay Time (I^2t or I^4t Response) ^① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response) OPTIM 550 ^② | | | | | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | | | | | |
| 800 | ND3800T52W | ND3800T56W | ND3800T57W | 400 | ORPN80A400 |
| | | | | 450 | ORPN80A450 |
| | | | | 500 | ORPN80A500 |
| | | | | 550 | ORPN80A550 |
| | | | | 600 | ORPN80A600 |
| | | | | 700 | ORPN80A700 |
| 1200 | ND312T52W | ND312T56W | ND312T57W | 800 | ORPN80A800 |
| | | | | 600 | ORPN12A600 |
| | | | | 700 | ORPN12A700 |
| | | | | 800 | ORPN12A800 |
| | | | | 1000 | ORPN12A100 |
| | | | | 1200 | ORPN12A120 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | |
| 800 | HND3800T52W | HND3800T56W | HND3800T57W | 400 | ORPN80A400 |
| | | | | 450 | ORPN80A450 |
| | | | | 500 | ORPN80A500 |
| | | | | 550 | ORPN80A550 |
| | | | | 600 | ORPN80A600 |
| | | | | 700 | ORPN80A700 |
| 1200 | HND312T52W | HND312T56W | HND312T57W | 800 | ORPN80A800 |
| | | | | 600 | ORPN12A600 |
| | | | | 700 | ORPN12A700 |
| | | | | 800 | ORPN12A800 |
| | | | | 1000 | ORPN12A100 |
| | | | | 1200 | ORPN12A120 |

Notes

^① Long delay I^4t response selection limits short delay time to flat response.

^② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plugs, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|--|---|---------------------------|---------------------------|---------------------------------|---|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I ₁) with Adjustable Long Delay Time (I ² t or I ⁴ t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I ² t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I ² t or Flat Response) OPTIM 550 ② | | | | |
| Three-Pole Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | |
| 800 | NDC3800T52W | NDC3800T56W | NDC3800T57W | 400 | ORPN80A400 |
| | | | | 450 | ORPN80A450 |
| | | | | 500 | ORPN80A500 |
| | | | | 550 | ORPN80A550 |
| | | | | 600 | ORPN80A600 |
| | | | | 700 | ORPN80A700 |
| | | | | 800 | ORPN80A800 |
| 1200 | NDC312T52W | NDC312T56W | NDC312T57W | 600 | ORPN12A600 |
| | | | | 700 | ORPN12A700 |
| | | | | 800 | ORPN12A800 |
| | | | | 1000 | ORPN12A100 |
| | | | | 1200 | ORPN12A120 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
 ② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|--|--|---------------------------|---------------------------------|---|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L– Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ^① S– Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I– Adjustable Instantaneous Pickup G– Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A– Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response) OPTIM 1050 ^{②③} | | | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | | | | |
| 800 | ND3800T106W | ND3800T107W | 400 | ORPN80A400 |
| | | | 450 | ORPN80A450 |
| | | | 500 | ORPN80A500 |
| | | | 550 | ORPN80A550 |
| | | | 600 | ORPN80A600 |
| | | | 700 | ORPN80A700 |
| | | | 800 | ORPN80A800 |
| 1200 | ND312T106W | ND312T107W | 600 | ORPN12A600 |
| | | | 700 | ORPN12A700 |
| | | | 800 | ORPN12A800 |
| | | | 1000 | ORPN12A100 |
| | | | 1200 | ORPN12A120 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | |
| 800 | HND3800T106W | HND3800T107W | 400 | ORPN80A400 |
| | | | 450 | ORPN80A450 |
| | | | 500 | ORPN80A500 |
| | | | 550 | ORPN80A550 |
| | | | 600 | ORPN80A600 |
| | | | 700 | ORPN80A700 |
| | | | 800 | ORPN80A800 |
| 1200 | HND312T106W | HND312T107W | 600 | ORPN12A600 |
| | | | 700 | ORPN12A700 |
| | | | 800 | ORPN12A800 |
| | | | 1000 | ORPN12A100 |
| | | | 1200 | ORPN12A120 |
| Three-Pole Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | |
| 800 | NDC3800T106W | NDC3800T107W | 400 | ORPN80A400 |
| | | | 450 | ORPN80A450 |
| | | | 500 | ORPN80A500 |
| | | | 550 | ORPN80A550 |
| | | | 600 | ORPN80A600 |
| | | | 700 | ORPN80A700 |
| | | | 800 | ORPN80A800 |
| 1200 | NDC312T106W | NDC312T107W | 600 | ORPN12A600 |
| | | | 700 | ORPN12A700 |
| | | | 800 | ORPN12A800 |
| | | | 1000 | ORPN12A100 |
| | | | 1200 | ORPN12A120 |

Notes

- ① Long delay I^4t response selection limits short delay time to flat response.
 ② One Form C auxiliary switch and one Form C bell (trip) alarm switch supplied with breaker as standard.
 ③ Factory sealed.

100% Rated Digitrip OPTIM Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|---|---|---------------------|---------------------|---------------------------------|----------------------------------|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ^① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response) OPTIM 550 ^② | | | | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | | | | | |
| 800 | CND3800T52W | CND3800T56W | CND3800T57W | 400 | ORPN80A400 |
| | | | | 450 | ORPN80A450 |
| | | | | 500 | ORPN80A500 |
| | | | | 550 | ORPN80A550 |
| | | | | 600 | ORPN80A600 |
| | | | | 700 | ORPN80A700 |
| | | | | 800 | ORPN80A800 |
| 1200 ^③ | CND312T52W | CND312T56W | CND312T57W | 600 | ORPN12A600 |
| | | | | 700 | ORPN12A700 |
| | | | | 800 | ORPN12A800 |
| | | | | 1000 | ORPN12A100 |
| | | | | 1200 | ORPN12A120 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | |
| 800 | CHND3800T52W | CHND3800T56W | CHND3800T57W | 400 | ORPN80A400 |
| | | | | 450 | ORPN80A450 |
| | | | | 500 | ORPN80A500 |
| | | | | 550 | ORPN80A550 |
| | | | | 600 | ORPN80A600 |
| | | | | 700 | ORPN80A700 |
| | | | | 800 | ORPN80A800 |
| 1200 ^③ | CHND312T52W | CHND312T56W | CHND312T57W | 600 | ORPN12A600 |
| | | | | 700 | ORPN12A700 |
| | | | | 800 | ORPN12A800 |
| | | | | 1000 | ORPN12A100 |
| | | | | 1200 | ORPN12A120 |

Notes

- ① Long delay I^4t response selection limits short delay time to flat response.
- ② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.
- ③ Includes conductor extension kit, which increases breaker length 3.75 on each end. Terminal ordered separate.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plugs, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | Digitrip OPTIM Rating Plug Only | |
|--|--|---------------------|---------------------|---------------------------------|----------------------------------|
| | LSI Catalog Number | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | OPTIM 550 ^② L – Adjustable Long Delay Pickup (I _l) with Adjustable Long Delay Time (I ² t or I ⁴ t Response) ^① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I ² t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I ² t or Flat Response) | | | | |
| Three-Pole Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | |
| 800 | CNDC3800T52W | CNDC3800T56W | CNDC3800T57W | 400 | ORPN80A400 |
| | | | | 450 | ORPN80A450 |
| | | | | 500 | ORPN80A500 |
| | | | | 550 | ORPN80A550 |
| | | | | 600 | ORPN80A600 |
| | | | | 700 | ORPN80A700 |
| | | | | 800 | ORPN80A800 |
| 1200 ^③ | CNDC312T52W | CNDC312T56W | CNDC312T57W | 600 | ORPN12A600 |
| | | | | 700 | ORPN12A700 |
| | | | | 800 | ORPN12A800 |
| | | | | 1000 | ORPN12A100 |
| | | | | 1200 | ORPN12A120 |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
- ② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.
- ③ Includes conductor extension kit, which increases breaker length 3.75 on each end. Terminal ordered separate.

100% Rated Digitrip OPTIM 1050 Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|--|----------------------------|---------------------------|---------------------------------|---|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| OPTIM 1050 ②③ | | | | |
| L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time (I^2t or I^4t Response) ① | | | | |
| S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) | | | | |
| I – Adjustable Instantaneous Pickup | | | | |
| G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) | | | | |
| A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response) | | | | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac | | | | |
| 800 | CND3800T106W | CND3800T107W | 400 | ORPN80A400 |
| | | | 450 | ORPN80A450 |
| | | | 500 | ORPN80A500 |
| | | | 550 | ORPN80A550 |
| | | | 600 | ORPN80A600 |
| | | | 700 | ORPN80A700 |
| | | | 800 | ORPN80A800 |
| 1200 | CND312T106W | CND312T107W | 600 | ORPN12A600 |
| | | | 700 | ORPN12A700 |
| | | | 800 | ORPN12A800 |
| | | | 1000 | ORPN12A100 |
| | | | 1200 | ORPN12A120 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | |
| 800 | CHND3800T106W | CHND3800T107W | 400 | ORPN80A400 |
| | | | 450 | ORPN80A450 |
| | | | 550 | ORPN80A550 |
| | | | 600 | ORPN80A600 |
| | | | 700 | ORPN80A700 |
| | | | 800 | ORPN80A800 |
| 1200 | CHND312T106W | CHND312T107W | 600 | ORPN12A600 |
| | | | 700 | ORPN12A700 |
| | | | 800 | ORPN12A800 |
| | | | 1000 | ORPN12A100 |
| | | | 1200 | ORPN12A120 |

Notes

- ① Long delay I^4t response selection limits short delay time to flat response.
 ② One Form C auxiliary switch one Form C bell (trip) alarm switch supplied with breaker as standard.
 ③ Factory sealed.

100% Rated Digitrip OPTIM 1050 Circuit Breakers with Interchangeable Rating Plugs, continued

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|--|--|---------------------|---------------------------------|----------------------------------|
| | LSIG Catalog Number | LSIA Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| | OPTIM 1050 ②③ L – Adjustable Long Delay Pickup (I _L) with Adjustable Long Delay Time (I ² t or I ⁴ t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I ² t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I ² t or Flat Response) | | | |
| Three-Pole Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | |
| 800 | CND3800T106W | CND3800T107W | 400 | ORPN80A400 |
| | | | 450 | ORPN80A450 |
| | | | 500 | ORPN80A500 |
| | | | 550 | ORPN80A550 |
| | | | 600 | ORPN80A600 |
| | | | 700 | ORPN80A700 |
| | | | 800 | ORPN80A800 |
| 1200 | CND312T106W ④ | CND312T107W | 600 | ORPN12A600 |
| | | | 700 | ORPN12A700 |
| | | | 800 | ORPN12A800 |
| | | | 1000 | ORPN12A100 |
| | | | 1200 | ORPN12A120 |

Type ND Molded Case Switches

Type ND High Instantaneous (K)

| Continuous Ampere Rating at 40 °C | Three-Pole Catalog Number | Four-Pole ⑤ Catalog Number |
|-----------------------------------|---------------------------|----------------------------|
| 800 | ND3800WK | ND4800WK |
| | HND3800WK | HND4800WK |
| 1200 | ND312WK | ND412WK |
| | HND312WK | HND412WK |

Notes

- ① Long delay I⁴t response selection limits short delay time to flat response.
- ② One Form C auxiliary switch one Form C bell (trip) alarm switch supplied with breaker as standard.
- ③ Factory sealed.
- ④ Includes conductor extension kit, which increases breaker length 3.75 on each end. Terminal ordered separate.
- ⑤ Neutral is in right pole.

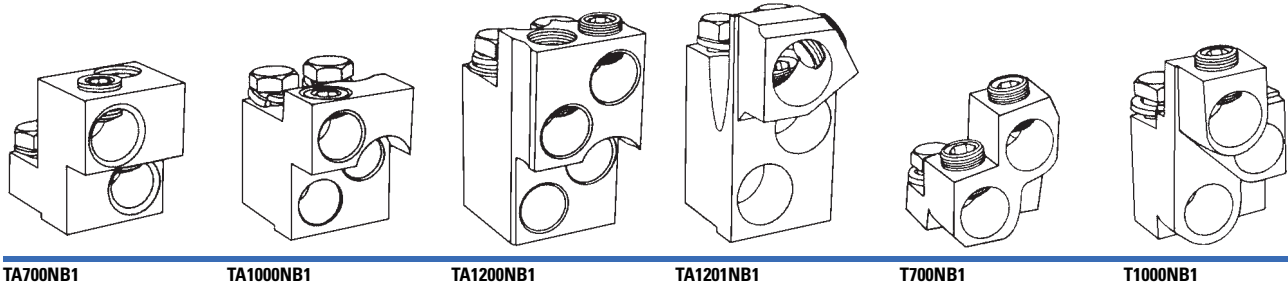
Molded case switch will trip above 14,000 amperes.

For UL listed, series tested molded case switch application data, refer to Eaton.

Accessories Selection Guide and Ordering Information

Line and Load Terminals—Ordering Information

N-Frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. Specify if factory installation is required.



Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire Range/ No. Conductors | Metric Wire Range mm ² | Catalog Number |
|--|------------------------|-----------|-----------------------------------|-----------------------------------|--------------------|
| Standard Cu/Al Pressure Terminals | | | | | |
| 700 | Aluminum | Cu/Al | 1–500 kcmil (2) | 50–240 | TA700NB1 |
| 1000 | Aluminum | Cu/Al | 3/0–400 kcmil (3) | 95–185 | TA1000NB1 ① |
| 1200 | Aluminum | Cu/Al | 4/0–500 kcmil (4) | 120–240 | TA1200NB1 ① |
| 1200 | Aluminum | Cu/Al | 500–750 kcmil (3) | 300–400 | TA1201NB1 ② |
| Optional Copper and Cu/Al Pressure Type Terminals | | | | | |
| 700 | Copper | Cu | 2/0–500 kcmil (2) | 70–240 | T700NB1 |
| 1000 | Copper | Cu | 3/0–500 kcmil (3) | 95–240 | T1000NB1 |
| 1200 | Copper | Cu | 3/0–400 kcmil (4) | 95–185 | T1200NB3 |

Notes

① Terminal rating is AL9CU.

② Terminal rating is AL7CU.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

ND Frame Accessories

| Description | Reference Page | Three-Pole | | | Four-Pole | | | |
|--|----------------|------------|--------|-------|-----------|--------|-------|---------|
| | | Left | Center | Right | Left | Center | Right | Neutral |
| Internal Accessories (Only One Internal Accessory Per Pole) ① | | | | | | | | |
| Alarm lockout (1Make/Break) | V4-T2-276 | ■ | | ■ | ■ | | ■ | |
| Alarm lockout (2Make/2Break) | V4-T2-276 | ■ | | ■ | ■ | | ■ | |
| Auxiliary switch (1A, 1B) | V4-T2-278 | ■ | | ■ | ■ | | ■ | |
| Auxiliary switch (2A, 2B) | V4-T2-278 | ■ | | ■ | ■ | | ■ | |
| Auxiliary switch (3A, 3B) | V4-T2-278 | ■ | | ■ | ■ | | ■ | |
| Auxiliary switch (1A, 1B) and alarm switch combination | V4-T2-280 | ■ | | ■ | ■ | | ■ | |
| Auxiliary switch (2A, 2B) and alarm switch combination | V4-T2-280 | ■ | | ■ | ■ | | ■ | |
| Shunt trip—standard | V4-T2-284 | ■ | | | ■ | | | |
| Shunt trip—low energy | V4-T2-285 | ■ | | | ■ | | | |
| Undervoltage release mechanism | V4-T2-292 | ■ | | | ■ | | | |
| Eaton PowerNet communications kit (OPTIM 550) | V4-T2-293 | | | ■ | | | | |
| External Accessories | | | | | | | | |
| Base mounting hardware | V4-T2-313 | ● | ● | ● | ● | ● | ● | ● |
| Interphase barriers | V4-T2-315 | ● | ● | ● | ● | ● | ● | ● |
| Terminal shield | V4-T2-315 | ■ | ■ | ■ | | | | |
| Non-padlockable handle block | V4-T2-316 | | ■ | | | ■ | | |
| Padlockable handle lock hasp | V4-T2-317 | □ | | □ | □ | | □ | |
| Key interlock kit | V4-T2-318 | □ | | □ | □ | | □ | |
| Sliding bar interlock—requires two breakers | V4-T2-319 | ● | ● | ● | | | | |
| Walking beam interlock—requires two breakers | V4-T2-319 | ● | ● | ● | ● | ● | ● | ● |
| Electrical (motor) operator | V4-T2-321 | ● | ● | ● | ● | ● | ● | ● |
| Plug-in adapters | V4-T2-322 | ● | ● | ● | ● | ● | ● | ● |
| Rear connecting studs | V4-T2-323 | ● | ● | ● | ● | ● | ● | ● |
| Panelboard connecting straps | V4-T2-324 | ● | ● | ● | ● | ● | ● | ● |
| Handle mechanisms | V4-T2-431 | ● | ● | ● | ● | ● | ● | ● |
| Handle extension | V4-T2-446 | ● | ● | ● | ● | ● | ● | ● |
| Solid-state (electronic) portable test kit | V4-T2-327 | ● | ● | ● | ● | ● | ● | ● |
| OPTIM System Components Three Poles | | | | | | | | |
| Ground fault alarm unit | V4-T2-326 | | | | | | | |
| Potential transformer module | V4-T2-326 | | | | | | | |
| Breaker interface module (BIM) | V4-T2-327 | | | | | | | |
| Digitrip OPTIMizer | V4-T2-327 | | | | | | | |
| Auxiliary power module | V4-T2-327 | | | | | | | |
| Modifications (Refer to Eaton) | | | | | | | | |
| Special calibration | — | ● | ● | ● | ● | ● | ● | ● |
| Moisture fungus treatment | V4-T2-116 | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application | — | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- May be mounted on left or right pole—not both
- Accessory available/modification available

Note

① OPTIM 550 and 1050 are factory sealed and do not have the right pole available for accessories.

Technical Data and Specifications

UL 489 Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | |
|----------------------|-----------------|--|-----|-----|-----------------|
| | | Volts AC (50/60 Hz) | | | |
| | | 240 | 277 | 480 | 600 |
| ND | 2, 3, 4 | 65 | — | 50 | 25 |
| CND ^② | 2, 3, 4 | 65 | — | 50 | 25 |
| HND | 2, 3, 4 | 100 | — | 65 | 35 |
| CHND ^② | 2, 3, 4 | 100 | — | 65 | 35 |
| NDC | 2, 3, 4 | 200 | — | 100 | 65 |
| CNDC ^② | 2, 3, 4 | 200 | — | 100 | 65 |
| NDU ^③ | 3 | 300 ^④ | — | 150 | 75 ^⑤ |

IEC 947-2 Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | |
|--------------------------|-----------------|--|-----|-----|
| | | Volts AC (50/60 Hz) | | |
| | | 240 | 415 | 690 |
| ND | | | | |
| I_{CU} | 2, 3, 4 | 85 | 50 | 20 |
| I_{CS} | 2, 3, 4 | 85 | 50 | 10 |
| CND ^② | | | | |
| I_{CU} | 2, 3, 4 | 85 | 50 | 20 |
| I_{CS} | 2, 3, 4 | 85 | 50 | 10 |
| HND | | | | |
| I_{CU} | 2, 3, 4 | 100 | 70 | 25 |
| I_{CS} | 2, 3, 4 | 100 | 50 | 13 |
| CHND ^② | | | | |
| I_{CU} | 2, 3, 4 | 100 | 70 | 25 |
| I_{CS} | 2, 3, 4 | 100 | 50 | 13 |
| NDC | | | | |
| I_{CU} | 2, 3, 4 | 200 | 100 | 35 |
| I_{CS} | 2, 3, 4 | 100 | 50 | 18 |
| CNDC ^② | | | | |
| I_{CU} | 2, 3, 4 | 200 | 100 | 35 |
| I_{CS} | 2, 3, 4 | 100 | 50 | 18 |

Notes

- ① Utilization Category A circuit breakers.
- ② 100% rated breakers.
- ③ 800 amperes maximum rating.
- ④ Successfully tested at 300 kAIC, although UL recognizes maximum of 200 kAIC at 240 Vac.
- ⑤ Successfully tested at 75 kAIC, although UL recognizes maximum of 65 kAIC at 600 Vac.

N-Frame Digitrip

| Trip Unit Type | Digitrip OPTIM 550 | Digitrip OPTIM 1050 |
|--|--------------------------|--------------------------|
| rms sensing | Yes | Yes |
| Breaker Type | | |
| Frame | N | N |
| Ampere range | 400–1200 A | 400–1200 A |
| Interrupting rating at 480 volts | 50, 65, 100 (kA) | 50, 65, 100 (kA) |
| Protection | | |
| Ordering options | LSI, LSIG, LSI(A) | LSI(A), LISG |
| Fixed rated plug (I_n) | Yes | Yes |
| Overtemperature trip | Yes | Yes |
| Long Delay Protection (L) | | |
| Adjustable rating plug (I_n) | No | No |
| Long delay pickup | $0.4-1.0 \times (I_n)$ | $0.4-1.0 \times (I_n)$ |
| Long delay time I^2t | 2–24 seconds | 2–24 seconds |
| Long delay time I^4t | 1–5 seconds | 1–5 seconds |
| Long delay thermal memory | Yes | Yes |
| High load alarm | No | $0.5-1.0 \times I_r$ |
| Short Delay Protection (S) | | |
| Short delay pickup | $150-800\% \times (I_r)$ | $150-800\% \times (I_r)$ |
| Short delay time I^2t | 100–500 ms | 100–500 ms |
| Short delay time flat | 100–500 ms | 100–500 ms |
| Short delay time zone selective interlocking | Yes | Yes |
| Instantaneous Protection (I) | | |
| Instantaneous pickup | $200-800\% \times (I_n)$ | $200-800\% \times (I_n)$ |
| Discriminator | Yes | Yes |
| Instantaneous override | Yes | Yes |
| Ground Fault Protection (G) | | |
| Ground fault alarm | $20-100\% \times (I_s)$ | $20-100\% \times (I_s)$ |
| Ground fault pickup | $20-100\% \times (I_s)$ | $20-100\% \times (I_s)$ |
| Ground fault delay I^2t | 100–500 ms | 100–500 ms |
| Ground fault delay flat | 100–500 ms | 100–500 ms |
| Ground fault zone selective interlocking | Yes ① | Yes |
| Ground fault thermal memory | Yes | Yes |
| System Diagnostics | | |
| Status LEDs | Yes | Yes |
| Cause of trip LEDs | Yes | Yes |
| Magnitude of trip information | Yes | Yes |
| Remote signal contact—ground alarm | Yes ① | Yes |
| Local auxiliary and bell alarm contact | Optional | Included |

Legend

BIM = Breaker Interface Module

(A) = GF Alarm

 I_s = Sensor Rating I_n = Rating Plug I_r = Long Delay Pickup Setting**Note**

① Zone interlock kit.

N-Frame Digitrip, continued

| Trip Unit Type | Digitrip OPTIM 550 | Digitrip OPTIM 1050 |
|--------------------------|-----------------------------|-----------------------------|
| System Monitoring | | |
| Digital display | Yes ^① | Yes ^① |
| Current | Yes | Yes |
| Power and energy | No | Yes |
| Power quality—harmonics | No | Yes |
| Power factor | No | Yes |
| Communications | | |
| Eaton PowerNet | No ^② | Yes |
| Testing | | |
| Testing method | OPTIMizer, BIM, PowerNet | OPTIMizer, BIM, PowerNet |

Legend

BIM = Breaker Interface Module
 (A) = GF Alarm
 I_s = Sensor Rating
 I_n = Rating Plug
 I_r = Long Delay Pickup Setting

Notes

- ^① By OPTIMizer/BIM.
^② Eaton's PowerNet kit.

2.3

Molded Case Circuit Breakers

Series C

2

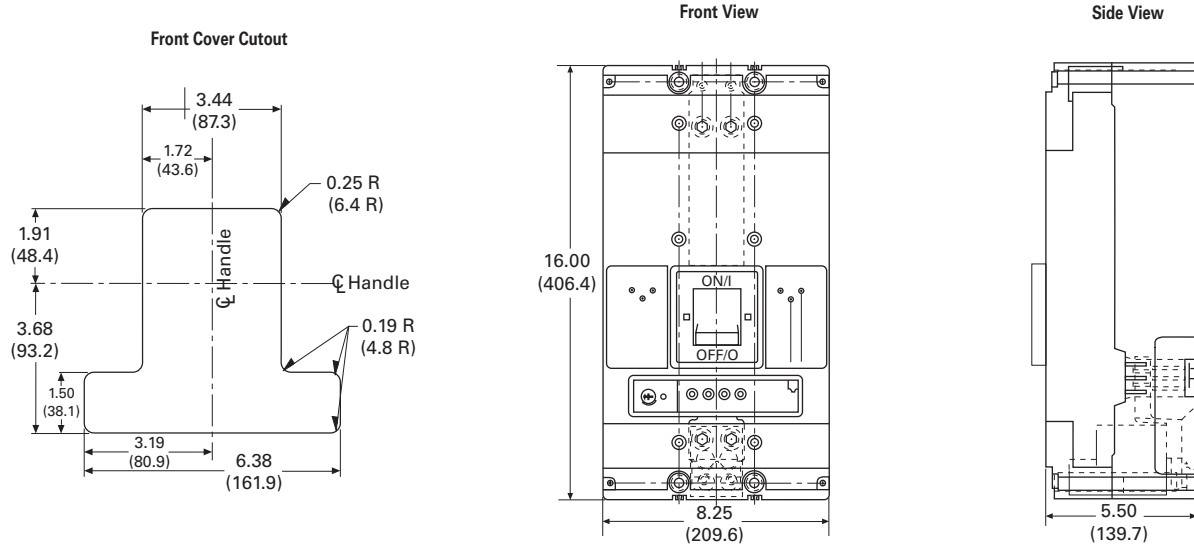
Dimensions and Weights

Approximate Dimensions in Inches (mm)

ND Frame

| Number of Poles | Width | Height | Depth |
|-----------------|---------------|---------------|--------------|
| 2, 3 | 8.25 (209.6) | 16.00 (406.4) | 5.50 (139.7) |
| 4 | 11.13 (282.6) | 16.00 (406.4) | 5.50 (139.7) |

ND-Frame, Two- and Three-Pole



Approximate Shipping Weight in Lbs (kg)

ND Frame

| Breaker Type | Complete Breaker | | |
|-------------------|------------------|------------|-----------|
| | Two-Pole | Three-Pole | Four-Pole |
| ND, HND, NDC, NDU | 37 (16.8) | 45 (20.4) | 58 (26.3) |

Typical R-Frame Breaker



Contents

| <i>Description</i> | <i>Page</i> |
|--|-------------|
| Product Overview | V4-T2-116 |
| Standards and Certifications | V4-T2-117 |
| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | |
| Catalog Number Selection | V4-T2-238 |
| Product Selection | V4-T2-239 |
| Accessories | V4-T2-251 |
| Technical Data and Specifications | V4-T2-252 |
| Dimensions and Weights | V4-T2-255 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | V4-T2-273 |
| External Accessories | V4-T2-306 |

R-Frame (800–2500 Amperes)

Product Description

- Eaton R-Frame circuit breakers are available as frame (which includes trip unit), rating plug and terminals
- All R-Frame circuit breakers are suitable for reverse feed use

2.3

Molded Case Circuit Breakers

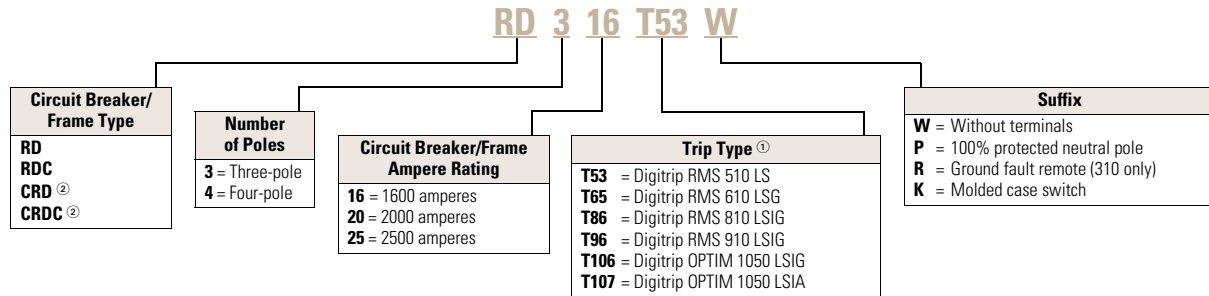
Series C

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

2

Circuit Breaker/Frame



Notes

- ① For complete list of available trip types, refer to **Pages V4-T2-239 to V4-T2-248**.
- ② No four-pole for CRD and CRDC.

Product Selection

Digitrip RMS 510 Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip RMS 510 Electronic Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | | | | Digitrip Rating Plug Only | |
|---|---|------------|------------|------------|------------|------------|-------------------------------|--|
| | L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time | | | | | | Rated Current (I_n) | Fixed Rating Plug Catalog Number |
| | S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) | | | | | | | |
| | I – Adjustable Instantaneous Pickup | | | | | | | |
| G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) | | | | | | LSIG | LSIG | |
| LI | LS | LSI | LIG | LSG | LSIG | | | |
| | Catalog Number | | | | | | | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | | | |
| 1600 | RD316T51W | RD316T53W | RD316T52W | RD316T54W | RD316T55W | RD316T56W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 | RD320T51W | RD320T53W | RD320T52W | RD320T54W | RD320T55W | RD320T56W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| 2500 | RD325T51W | RD325T53W | RD325T52W | RD325T54W | RD325T55W | RD325T56W | 1600 | RP6R25A160 |
| | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | 2500 | RP6R25A250 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | | | | |
| 1600 | RDC316T51W | RDC316T53W | RDC316T52W | RDC316T54W | RDC316T55W | RDC316T56W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 | RDC320T51W | RDC320T53W | RDC320T52W | RDC320T54W | RDC320T55W | RDC320T56W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| 2500 | RDC325T51W | RDC325T53W | RDC325T52W | RDC325T54W | RDC325T55W | RDC325T56W | 1600 | RP6R25A160 |
| | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | 2500 | RP6R25A250 |

2.3

Molded Case Circuit Breakers

Series C

100% Rated Digitrip RMS 510 Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at 75 °C ampacity. Order as individual components: breaker frame (which includes trip unit) and rating plug.

2

100% Rated Digitrip RMS 510 Circuit Breakers

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | | | | Digitrip Rating Plug Only | |
|---|----------------------------|-------------|-------------|-------------|-------------|-------------|---------------------------------|----------------------------------|
| | L LI | S LS | I LSI | G LIG | LSG | LSIG | Rated Current (I _n) | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | | | |
| 1600 | CRD316T51W | CRD316T53W | CRD316T52W | CRD316T54W | CRD316T55W | CRD316T56W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 ^① | CRD320T51W | CRD320T53W | CRD320T52W | CRD320T54W | CRD320T55W | CRD320T56W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | | | | |
| 1600 | — | CRDC316T53W | CRDC316T52W | CRDC316T54W | CRDC316T55W | CRDC316T56W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 ^① | CRDC320T51W | CRDC320T53W | CRDC320T52W | CRDC320T54W | CRDC320T55W | CRDC320T56W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |

Note

① Includes B2016RDL rear connectors.

Digitrip RMS 610 Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip RMS 610 Electronic Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | | | | Digitrip Rating Plug Only | | | | | |
|---|---|------------|------------|------------|------------|------------|-------------------------------|--|-----|-----|------|----------------|
| | L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time | | | | | | Rated Current (I_n) | Fixed Rating Plug Catalog Number | | | | |
| | S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) | | | | | | | | | | | |
| I – Adjustable Instantaneous Pickup | | | | | | LI | LS | LSI | LIG | LSG | LSIG | |
| G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) | | | | | | | | | | | | Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | | | | | | | |
| 1600 | RD316T61W | RD316T63W | RD316T62W | RD316T64W | RD316T65W | RD316T66W | 800 | RP6R16A080 | | | | |
| | | | | | | | 1000 | RP6R16A100 | | | | |
| | | | | | | | 1200 | RP6R16A120 | | | | |
| | | | | | | | 1600 | RP6R16A160 | | | | |
| 2000 | RD320T61W | RD320T63W | RD320T62W | RD320T64W | RD320T65W | RD320T66W | 1000 | RP6R20A100 | | | | |
| | | | | | | | 1200 | RP6R20A120 | | | | |
| | | | | | | | 1600 | RP6R20A160 | | | | |
| | | | | | | | 2000 | RP6R20A200 | | | | |
| 2500 | RD325T61W | RD325T63W | RD325T62W | RD325T64W | RD325T65W | RD325T66W | 1600 | RP6R25A160 | | | | |
| | | | | | | | 2000 | RP6R25A200 | | | | |
| | | | | | | | 2500 | RP6R25A250 | | | | |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | | | | | | | | |
| 1600 | RDC316T61W | RDC316T63W | RDC316T62W | RDC316T64W | RDC316T65W | RDC316T66W | 800 | RP6R16A080 | | | | |
| | | | | | | | 1000 | RP6R16A100 | | | | |
| | | | | | | | 1200 | RP6R16A120 | | | | |
| | | | | | | | 1600 | RP6R16A160 | | | | |
| 2000 | RDC320T61W | RDC320T63W | RDC320T62W | RDC320T64W | RDC320T65W | RDC320T66W | 1000 | RP6R20A100 | | | | |
| | | | | | | | 1200 | RP6R20A120 | | | | |
| | | | | | | | 1600 | RP6R20A160 | | | | |
| | | | | | | | 2000 | RP6R20A200 | | | | |
| 2500 | RDC325T61W | RDC325T63W | RDC325T62W | RDC325T64W | RDC325T65W | RDC325T66W | 1600 | RP6R25A160 | | | | |
| | | | | | | | 2000 | RP6R25A200 | | | | |
| | | | | | | | 2500 | RP6R25A250 | | | | |

2.3

Molded Case Circuit Breakers

Series C

100% Rated Digitrip RMS 610 Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at 75 °C ampacity. Order as individual components: breaker frame (which includes trip unit) and rating plug.

2

100% Rated Digitrip RMS 610 Circuit Breakers

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | | | | Digitrip Rating Plug Only | |
|---|---|-------------|-------------|-------------|-------------|-------------|---------------------------------|----------------------------------|
| | LI | LS | LSI | LIG | LSG | LSIG | Rated Current (I _n) | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I_l) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I²t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I²t or Flat Response) | | | | | | | |
| | LI LS LSI LIG LSG LSIG | | | | | | | |
| | Catalog Number | | | | | | | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | | | |
| 1600 | CRD316T61W | CRD316T63W | CRD316T62W | CRD316T64W | CRD316T65W | CRD316T66W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 ^① | CRD320T61W | CRD320T63W | CRD320T62W | CRD320T64W | CRD320T65W | CRD320T66W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | | | | |
| 1600 | CRDC316T61W | CRDC316T63W | CRDC316T62W | CRDC316T64W | CRDC316T65W | CRDC316T66W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 ^① | CRDC320T61W | CRDC320T63W | CRDC320T62W | CRDC320T64W | CRDC320T65W | CRDC320T66W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |

Note

① Includes B2016RDL rear connectors.

Digitrip RMS 810 Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip RMS 810 Electronic Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | | | | Digitrip Rating Plug Only | |
|---|--|------------|------------|------------|------------|------------|---------------------------------------|--|
| | LI | LS | LSI | LIG | LSG | LSIG | Rated Current (I _n) | Fixed Rating Plug Catalog Number |
| | L – Adjustable Long Delay Pickup (I _p) with Adjustable Long Delay Time | | | | | | | |
| | S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) | | | | | | | |
| | I – Adjustable Instantaneous Pickup | | | | | | | |
| | G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I ² t or Flat Response) | | | | | | | |
| | Catalog Number | | | | | | | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | | | |
| 1600 | RD316T81W | RD316T83W | RD316T82W | RD316T84W | RD316T85W | RD316T86W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 | RD320T81W | RD320T83W | RD320T82W | RD320T84W | RD320T85W | RD320T86W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| 2500 | RD325T81W | RD325T83W | RD325T82W | RD325T84W | RD325T85W | RD325T86W | 1600 | RP6R25A160 |
| | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | 2500 | RP6R25A250 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | | | | |
| 1600 | RDC316T81W | RDC316T83W | RDC316T82W | RDC316T84W | RDC316T85W | RDC316T86W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 | RDC320T81W | RDC320T83W | RDC320T82W | RDC320T84W | RDC320T85W | RDC320T86W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| 2500 | RDC325T81W | RDC325T83W | RDC325T82W | RDC325T84W | RDC325T85W | RDC325T86W | 1600 | RP6R25A160 |
| | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | 2500 | RP6R25A250 |

2.3

Molded Case Circuit Breakers

Series C

100% Rated Digitrip RMS 810 Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at 75 °C ampacity. Order as individual components: breaker frame (which includes trip unit) and rating plug.

2

100% Rated Digitrip RMS 810 Circuit Breakers

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | | | | Digitrip Rating Plug Only | |
|---|----------------------------|---------------------------|----------------------------|----------------------------|-----------------------|------------------------|---------------------------------|----------------------------------|
| | L LI Catalog Number | S LS Catalog Number | I LSI Catalog Number | G LIG Catalog Number | LSG Catalog Number | LSIG Catalog Number | Rated Current (I _n) | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | | | |
| 1600 | CRD316T81W | CRD316T83W | CRD316T82W | CRD316T84W | CRD316T85W | CRD316T86W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 [Ⓢ] | CRD320T81W | CRD320T83W | CRD320T82W | CRD320T84W | CRD320T85W | CRD320T86W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | | | | |
| 1600 | CRDC316T81W | CRDC316T83W | CRDC316T82W | CRDC316T84W | CRDC316T85W | CRDC316T86W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 [Ⓢ] | CRDC320T81W | CRDC320T83W | CRDC320T82W | CRDC320T84W | CRDC320T85W | CRDC320T86W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |

Note

[Ⓢ] Includes B2016RDL rear connectors.

Digitrip RMS 910 Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip RMS 910 Electronic Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | | | | Digitrip Rating Plug Only | |
|---|---|------------|------------|------------|------------|------------|-------------------------------|--|
| | L – Adjustable Long Delay Pickup (I_L) with Adjustable Long Delay Time | | | | | | Rated Current (I_n) | Fixed Rating Plug Catalog Number |
| | S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) | | | | | | | |
| I – Adjustable Instantaneous Pickup | | | | | | LSIG | | |
| G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) | | | | | | | | |
| | LI | LS | LSI | LIG | LSG | | | |
| | Catalog Number | | | | | | | |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | | | |
| 1600 | RD316T91W | RD316T93W | RD316T92W | RD316T94W | RD316T95W | RD316T96W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 | RD320T91W | RD320T93W | RD320T92W | RD320T94W | RD320T95W | RD320T96W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| 2500 | RD325T91W | RD325T93W | RD325T92W | RD325T94W | RD325T95W | RD325T96W | 1600 | RP6R25A160 |
| | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | 2500 | RP6R25A250 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | | | | |
| 1600 | RDC316T91W | RDC316T93W | RDC316T92W | RDC316T94W | RDC316T95W | RDC316T96W | 800 | RP6R16A080 |
| | | | | | | | 1000 | RP6R16A100 |
| | | | | | | | 1200 | RP6R16A120 |
| | | | | | | | 1600 | RP6R16A160 |
| 2000 | RDC320T91W | RDC320T93W | RDC320T92W | RDC320T94W | RDC320T95W | RDC320T96W | 1000 | RP6R20A100 |
| | | | | | | | 1200 | RP6R20A120 |
| | | | | | | | 1600 | RP6R20A160 |
| | | | | | | | 2000 | RP6R20A200 |
| 2500 | RDC325T91W | RDC325T93W | RDC325T92W | RDC325T94W | RDC325T95W | RDC325T96W | 1600 | RP6R25A160 |
| | | | | | | | 2000 | RP6R25A200 |
| | | | | | | | 2500 | RP6R25A250 |

2.3

Molded Case Circuit Breakers

Series C

100% Rated Digitrip RMS 910 Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at 75 °C ampacity. Order as individual components: breaker frame (which includes trip unit) and rating plug.

2

100% Rated Digitrip RMS 910 Circuit Breakers

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | | | | | Digitrip Rating Plug Only | | | | | |
|---|---|---|--------------------------------------|---|-------------|-------------|---------------------------|------------|-----|------|---------------------------------|----------------------------------|
| | L Adjustable Long Delay Pickup (I ₁) with Adjustable Long Delay Time | S Adjustable Short Delay Pickup with Adjustable Short Delay Time (I ² t or Flat Response) | I Adjustable Instantaneous Pickup | G Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I ² t or Flat Response) | LI | LS | LSI | LIG | LSG | LSIG | Rated Current (I _n) | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | | | | | | | | | |
| 1600 | CRD316T91W | CRD316T93W | CRD316T92W | CRD316T94W | CRD316T95W | CRD316T96W | 800 | RP6R16A080 | | | | |
| | | | | | | | 1000 | RP6R16A100 | | | | |
| | | | | | | | 1200 | RP6R16A120 | | | | |
| | | | | | | | 1600 | RP6R16A160 | | | | |
| 2000 ^① | CRD320T91W | CRD320T93W | CRD320T92W | CRD320T94W | CRD320T95W | CRD320T96W | 1000 | RP6R20A100 | | | | |
| | | | | | | | 1200 | RP6R20A120 | | | | |
| | | | | | | | 1600 | RP6R20A160 | | | | |
| | | | | | | | 2000 | RP6R20A200 | | | | |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | | | | | | | | | |
| 1600 | CRDC316T91W | CRDC316T93W | CRDC316T92W | CRDC316T94W | CRDC316T95W | CRDC316T96W | 800 | RP6R16A080 | | | | |
| | | | | | | | 1000 | RP6R16A100 | | | | |
| | | | | | | | 1000 | RP6R16A100 | | | | |
| | | | | | | | 1200 | RP6R16A120 | | | | |
| 2000 ^① | CRDC320T91W | CRDC320T93W | CRDC320T92W | CRDC320T94W | CRDC320T95W | CRDC320T96W | 1000 | RP6R20A100 | | | | |
| | | | | | | | 1200 | RP6R20A120 | | | | |
| | | | | | | | 1600 | RP6R20A160 | | | | |
| | | | | | | | 2000 | RP6R20A200 | | | | |

Note

① Includes B2016RDL rear connectors.

Digitrip OPTIM Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip OPTIM Electronic Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|--------------------------------|--------------------------------|---------------------------------|---|
| | LSIA 1050 Catalog Number | LSIG 1050 Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | |
| 1600 | RD316T107W | RD316T106W | 800 | ORPR16A080 |
| | | | 1000 | ORPR16A100 |
| | | | 1200 | ORPR16A120 |
| | | | 1600 | ORPR16A160 |
| 2000 | RD320T107W | RD320T106W | 1000 | ORPR20A100 |
| | | | 1200 | ORPR20A120 |
| | | | 1600 | ORPR20A160 |
| | | | 2000 | ORPR20A200 |
| 2500 | RD325T107W | RD325T106W | 1600 | ORPR25A160 |
| | | | 2000 | ORPR25A200 |
| | | | 2500 | ORPR25A250 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | |
| 1600 | RDC316T107W | RDC316T106W | 800 | ORPR16A080 |
| | | | 1000 | ORPR16A100 |
| | | | 1200 | ORPR16A120 |
| | | | 1600 | ORPR16A160 |
| 2000 | RDC320T107W | RDC320T106W | 1000 | ORPR20A100 |
| | | | 1200 | ORPR20A120 |
| | | | 1600 | ORPR20A160 |
| | | | 2000 | ORPR20A200 |
| 2500 | RDC325T107W | RDC325T106W | 1600 | ORPR25A160 |
| | | | 2000 | ORPR25A200 |
| | | | 2500 | ORPR25A250 |

2.3

Molded Case Circuit Breakers

Series C

100% Rated 600 Volts AC Digitrip OPTIM Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

2

100% Rated 600 Volts AC Digitrip OPTIM Circuit Breakers with Interchangeable Rating Plugs

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only | | Digitrip OPTIM Rating Plug Only | |
|---|----------------------------|--------------------------|---------------------------------|----------------------------------|
| | LSIA 1050 Catalog Number | LSIG 1050 Catalog Number | Ampere Rating | Fixed Rating Plug Catalog Number |
| Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac | | | | |
| 1600 | CRD316T107W | CRD316T106W | 800 | ORPR16A080 |
| | | | 1000 | ORPR16A100 |
| | | | 1200 | ORPR16A120 |
| | | | 1600 | ORPR16A160 |
| 2000 ^① | CRD320T107W | CRD320T106W | 1000 | ORPR20A100 |
| | | | 1200 | ORPR20A120 |
| | | | 1600 | ORPR20A160 |
| | | | 2000 | ORPR20A200 |
| Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac | | | | |
| 1600 | CRDC316T107W | CRDC316T106W | 800 | ORPR16A080 |
| | | | 1000 | ORPR16A100 |
| | | | 1200 | ORPR16A120 |
| | | | 1600 | ORPR16A160 |
| 2000 ^① | CRDC320T107W | CRDC320T106W | 1000 | ORPR20A100 |
| | | | 1200 | ORPR20A120 |
| | | | 1600 | ORPR20A160 |
| | | | 2000 | ORPR20A200 |

Molded Case Switches

Refer to Eaton for UL listed, series tested Molded Case Switch application data.

Type RD—High Instantaneous (K)

| Continuous Ampere Rating at 40 °C | Complete without Terminals | |
|-----------------------------------|----------------------------|--------------------------|
| | Three-Pole Catalog Number | Four-Pole Catalog Number |
| 1600 | RD316WK | RD416WK |
| 2000 | RD320WK | RD420WK |

Notes

^① Includes B2016RDL rear connectors.

Molded case switch may trip above 17,500 amperes.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B and CSA C22.2 No. 65M. Unless otherwise specified, R-Frame circuit breaker line load terminals are shipped separately for field installation.

Ordering Information

R-Frame circuit breakers have Cu/Al terminals as standard and Cu only terminals as an option. Specify if factory installation is required.

Line and Load Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | Hardware | AWG/kcmil Wire Range/ No. Conductors | Metric Wire Range mm ² | Catalog Number |
|-------------------------|------------------------|-----------|----------|--------------------------------------|-----------------------------------|------------------------------|
| Wire Terminals | | | | | | |
| 1600 | Aluminum | Cu/Al | English | 500–1000 (4) | 300–500 | TA1600RD |
| 1600 | Copper | Cu | English | 1–600 (4) | 50–300 | T1600RD |
| 2000 | Aluminum | Cu/Al | English | 2–600 (6) | 35–300 | TA2000RD ^① |
| Rear Connectors | | | | | | |
| 2000 | Copper | — | English | — | — | B2016RD |
| 2000 | Copper | — | English | — | — | B2016RDL ^② |
| 2500 | Copper | — | English | — | — | B2500RD ^③ |

Notes

- ① Catalog Number includes bus connection, terminals and hardware for either line side or load side of three-pole breaker.
- ② For use with 100% rated 1600 A and 2000 A frame. Do not order separately unless for replacement purposes. Included in breaker carton when 100% rated device is ordered.
- ③ For use with 2500 A frame. Do not order separately unless for replacement purposes. Included in breaker carton when 2500 A breaker is ordered.

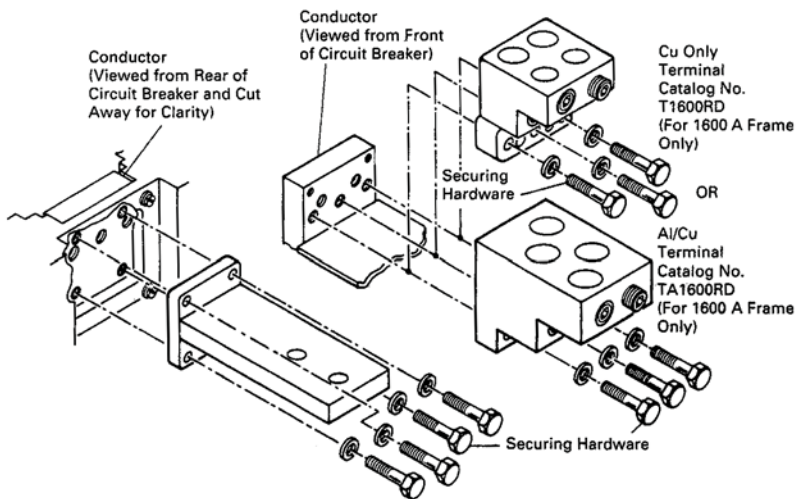
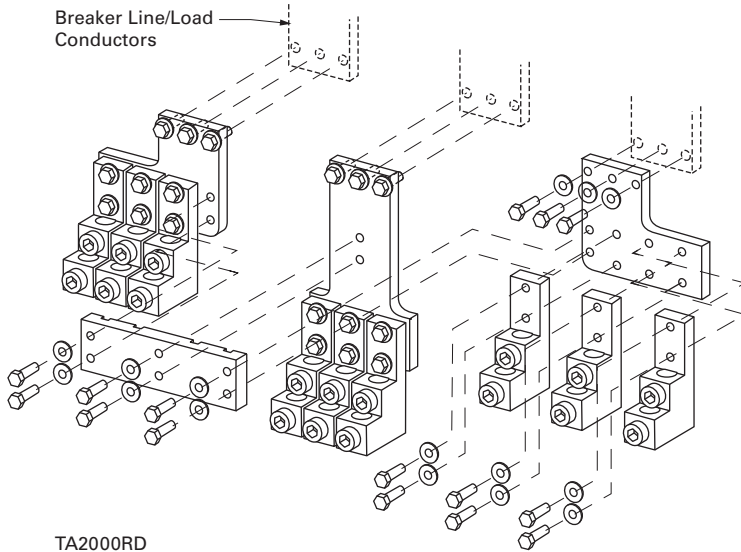
2.3

Molded Case Circuit Breakers

Series C

Mounting Hardware

2



Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

RD Frame Accessories

| Description | Reference Page | Three-Pole Left | Center | Right | Four-Pole Left | Center | Right | Neu. |
|--|----------------|--------------------|--------|-------|-------------------|--------|-------|------|
| Internal Accessories ^① | | | | | | | | |
| Alarm lockout (Make/Break) | V4-T2-276 | | | ■ | | | ■ | |
| Alarm lockout (2Make/2Break) | V4-T2-276 | | | ■ | | | ■ | |
| Auxiliary switch (2A, 2B) | V4-T2-276 | | | ■ | | | ■ | |
| Auxiliary switch (4A, 4B) | V4-T2-276 | | | ■ | | | ■ | |
| Shunt trip—standard | V4-T2-284 | | | ■ | | | ■ | |
| Shunt trip—low energy | V4-T2-285 | | | ■ | | | ■ | |
| Undervoltage release mechanism | V4-T2-292 | | | ■ | | | ■ | |
| Accessory terminal block ^② | V4-T2-293 | | | ■ | | | | ■ |
| External Accessories | | | | | | | | |
| Base mounting hardware | V4-T2-313 | | | | | | | |
| Padlockable handle lock hasp | V4-T2-316 | | ● | | | ● | | |
| Key interlock kit | V4-T2-318 | ■ | ■ | ■ | | ■ | | |
| Walking beam interlock | V4-T2-319 | | | | | | | |
| Electrical (motor) operator | V4-T2-321 | ■ | ■ | ■ | | ■ | | |
| Handle mechanisms | V4-T2-431 | ■ | ■ | ■ | | ■ | | |
| Handle extension ^③ | V4-T2-446 | | ■ | | | ■ | | |
| OPTIM System Components | | | | | | | | |
| Breaker interface module (BIM) | V4-T2-327 | ● | ● | ● | | | | |
| Digitrip OPTIMizer | V4-T2-327 | ● | ● | ● | | | | |
| Auxiliary power module | V4-T2-327 | ● | ● | ● | | | | |
| Modifications (Refer to Eaton) | | | | | | | | |
| Special calibration | — | ● | ● | ● | ● | ● | ● | ● |
| Moisture fungus treatment | V4-T2-116 | ● | ● | ● | ● | ● | ● | ● |
| Freeze-tested circuit breakers | — | ● | ● | ● | ● | ● | ● | ● |
| Marine/naval application | — | ● | ● | ● | ● | ● | ● | ● |

Legend

- Applicable in indicated pole position
- Accessory available/modification available

Notes

- ① All accessories mount in the RH cavity which will accept one each shunt trip, UVR, auxiliary switch and alarm switch.
- ② Mounts outside breaker.
- ③ Included with breaker.

Technical Data and Specifications

2

UL 489/CSA Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | | |
|----------------------|-----------------|--|-----|-----|-----|
| | | Volts AC (50/60 Hz) | | | |
| | | 240 | 277 | 480 | 600 |
| RD | 3, 4 | 125 | — | 65 | 50 |
| CRD ^② | 3 | 125 | — | 65 | 50 |
| RDC | 3, 4 | 200 | — | 100 | 65 |
| CRDC ^② | 3 | 200 | — | 100 | 65 |

IEC 947-2 Interrupting Capacity Ratings ^①

| Circuit Breaker Type | Number of Poles | Interrupting Capacity (kA Symmetrical Amperes) | | |
|----------------------|-----------------|--|-----|-----|
| | | Volts AC (50/60 Hz) | | |
| | | 240 | 415 | 690 |
| RD | | | | |
| I_{CU} | 3, 4 | 135 | 70 | 25 |
| I_{CS} | 3, 4 | 100 | 50 | 13 |
| RDC | | | | |
| I_{CU} | 3, 4 | 200 | 100 | 35 |
| I_{CS} | 3, 4 | 100 | 50 | 18 |

Notes

^① Utilization Category A circuit breakers.

^② 100% rated breakers.

See **Page V4-T2-253** for Trip Unit Specifications.

Specifications**R-Frame Digitrip**

| Trip Unit Type | Digitrip RMS 510 | Digitrip RMS 610 | Digitrip RMS 810 | Digitrip RMS 910 | Digitrip OPTIM 1050 |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|
| rms sensing | Yes | Yes | Yes | Yes | Yes |
| Breaker Type | | | | | |
| Frame | R | R | R | R | R |
| Ampere range | 800–2500 A | 800–2500 A | 800–2500 A | 800–2500 A | 800–2500 A |
| Interrupting rating at 480 volts | 65, 100 (kA) | 65, 100 (kA) | 65, 100 (kA) | 65, 100 (kA) | 65, 100 (kA) |
| Protection | | | | | |
| Ordering options | LI, LS, LSI, LIG, LSG, LSIG | LI, LS, LSI, LIG, LSG, LSIG | LI, LS, LSI, LIG, LSG, LSIG | LI, LS, LSI, LIG, LSG, LSIG | LSI(A), LISG |
| Fixed rated plug (I_n) | Yes | Yes | Yes | Yes | Yes |
| Overtemperature trip | Yes | Yes | Yes | Yes | Yes |
| Long Delay Protection (L) | | | | | |
| Adjustable rating plug (I_n) | No | No | No | No | No |
| Long delay pickup | 0.5–1.0 x (I_n) | 0.5–1.0 x (I_n) | 0.5–1.0 x (I_n) | 0.5–1.0 x (I_n) | 0.4–1.0 x (I_n) |
| Long delay time I^2t | 2–24 seconds | 2–24 seconds | 2–24 seconds | 2–24 seconds | 2–24 seconds |
| Long delay time I^4t | No | No | No | No | 1–5 Seconds |
| Long delay thermal memory | Yes | Yes | Yes | Yes | Yes |
| High load alarm | No | 0.85 x I_r | 0.85 x I_r | 0.85 x I_r | 0.5–1.0 x I_r |
| Short Delay Protection (S) | | | | | |
| Short delay pickup | 200–600% S1 and S2 x (I_r) | 200–600% S1 and S2 x (I_r) | 200–600% S1 and S2 x (I_r) | 200–600% S1 and S2 x (I_r) | 150–800% x (I_r) ^{①②} |
| Short delay time I^2t | 100–500 ms | 100–500 ms | 100–500 ms | 100–500 ms | 100–500 ms |
| Short delay time flat | 100–500 ms | 100–500 ms | 100–500 ms | 100–500 ms | 100–500 ms |
| Short delay time zone selective interlocking | Yes | Yes | Yes | Yes | Yes |
| Instantaneous Protection (I) | | | | | |
| Instantaneous pickup | 200–600% M1 and M2 x (I_n) | 200–600% M1 and M2 x (I_n) | 200–600% M1 and M2 x (I_n) | 200–600% M1 and M2 x (I_n) | 200–800% x (I_n) ^② |
| Discriminator | Yes ^③ | Yes ^③ | Yes ^③ | Yes ^③ | Yes |
| Instantaneous override | Yes | Yes | Yes | Yes | Yes |
| Ground Fault Protection (G) | | | | | |
| Ground fault alarm ^④ | No | No | No | No | 25–100% x (I_n) |
| Ground fault pickup ^④ | 25–100% x (I_g) | 25–100% x (I_g) | 25–100% x (I_g) | 25–100% x (I_g) | 25–100% x (I_n) |
| Ground fault delay I^2t | 100–500 ms | 100–500 ms | 100–500 ms | 100–500 ms | 100–500 ms |
| Ground fault delay flat | 100–500 ms | 100–500 ms | 100–500 ms | 100–500 ms | 100–500 ms |
| Ground fault zone selective interlocking | Yes | Yes | Yes | Yes | Yes |
| Ground fault thermal memory | Yes | Yes | Yes | Yes | Yes |

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
 I_s = Sensor Rating
 I_n = Rating Plug
 I_r = Long Delay Pickup Setting x I_n

Notes

- ① Except 2500 ampere frame is 200–600%.
② Varies by frame.
③ LS/LSG only.
④ Not to exceed 1200 amperes.

R-Frame Digitrip, continued

2

| Trip Unit Type | Digitrip RMS 510 | Digitrip RMS 610 | Digitrip RMS 810 | Digitrip RMS 910 | Digitrip OPTIM 1050 |
|-------------------------------|---------------------|---------------------|-----------------------------------|---------------------|-----------------------------|
| System Diagnostics | | | | | |
| Status LEDs | Yes | Yes | Yes | Yes | Yes |
| Cause of trip LEDs | Yes | Yes | Yes | Yes | Yes |
| Magnitude of trip information | No | Yes | Yes | Yes | Yes |
| Remote signal contacts | No | Yes | Yes | Yes | Yes |
| System Monitoring | | | | | |
| Digital display | No | Yes | Yes | Yes | Yes ^① |
| Current | No | Yes | Yes | Yes | Yes |
| Voltage | No | No | No | Yes | No |
| Power and energy | No | No | Yes | Yes | Yes |
| Power quality—harmonics | No | No | No | Yes | Yes |
| Power factor | No | No | Yes (over Eaton PowerNet only) | Yes | Yes |
| Communications | | | | | |
| Eaton PowerNet | No | No | Yes | Yes | Yes |
| Testing | | | | | |
| Testing method | Integral | Integral | Integral | Integral | OPTIMizer, BIM, PowerNet |

Legend

BIM = Breaker Interface Module
 (A) = GF Alarm
 I_s = Sensor Rating
 I_n = Rating Plug
 I_r = Long Delay Pickup Setting x I_n

Note

^① By OPTIMizer/BIM.

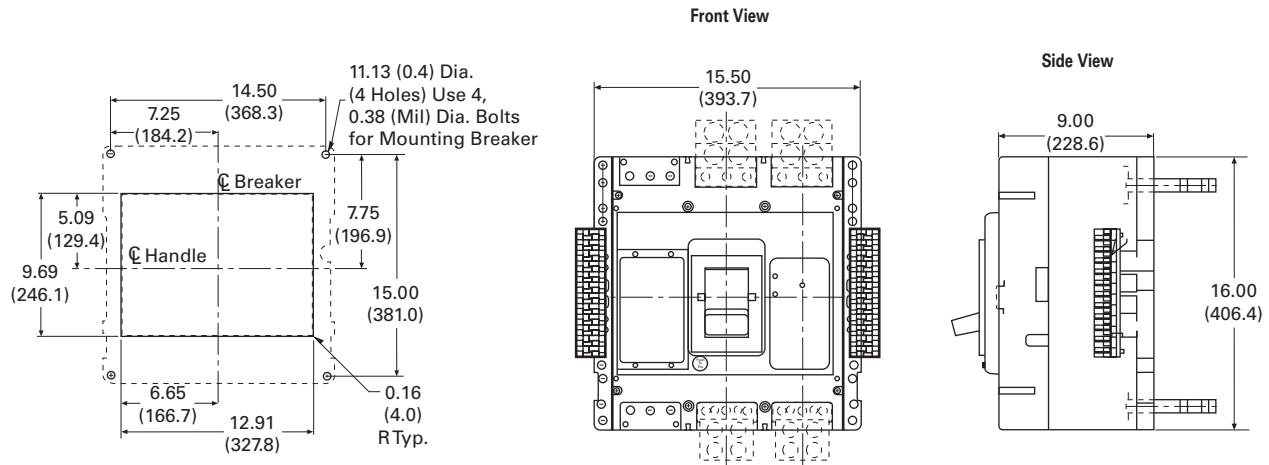
Dimensions and Weights

Dimensions in Inches (mm)

RD Frame

| Number of Poles | Width | Height | Depth |
|-----------------|---------------|---------------|--------------|
| 3 | 15.50 (393.7) | 16.00 (406.4) | 9.75 (247.7) |
| 4 | 20.00 (508.0) | 16.00 (406.4) | 9.75 (247.7) |

RD-Frame, Three-Pole, 1600 and 2000 Amperes



Approximate Shipping Weight in Lbs (kg)

RD Frame

| Breaker Type | Complete Breaker | |
|---|------------------|------------|
| | Three-Pole | Four-Pole |
| 1600 Amperes | | |
| RD, CRD [Ⓢ] , RDC, CRDC [Ⓢ] | 102 (46.3) | 135 (61.2) |
| 2000 Amperes | | |
| RD, RDC | 102 (46.3) | 135 (61.2) |
| CRD, CRDC | 130 (59.0) | 175 (79.4) |
| 2500 Amperes | | |
| RD, RDC | 135 (61.2) | 182 (82.6) |

Note

[Ⓢ] No four-pole for CRD and CRDC.

Motor Circuit Protectors

2



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| <i>Description</i> | <i>Page</i> |
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| Standards and Certifications | V4-T2-117 |
| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | |
| Catalog Number Selection | V4-T2-257 |
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| Current Limiting Circuit Breaker Module | V4-T2-270 |
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Motor Circuit Protectors (MCP)

Product Description

Designated as Eaton's Types GMCP and HMCP, the instantaneous-only motor circuit protector (MCP) is available in ratings from 3 A to 1200 A for motor starter sizes 0 through 8.

An innovative design of internal components allows higher MCP-starter combination interrupting ratings. The MCP is marked to permit proper electrical application within the assigned equipment ratings.

Standards and Certifications

The MCP is designed to comply with the applicable requirements of Underwriters Laboratories Standard UL 489, Canadian Standards Association Standard C22.2 No. 5.1, and International Electrotechnical Commission Recommendations IEC 157-1.

The MCP is a recognized component (UL File E7819) and complies with the applicable requirements of Underwriters Laboratories Standard UL 489. It is also designed to comply with the applicable requirements of Canadian Standards Association Standard C22.2 No. 5.1, International Electrotechnical Commission Recommendations IEC 157-1, and nameplates bear the CE marking.

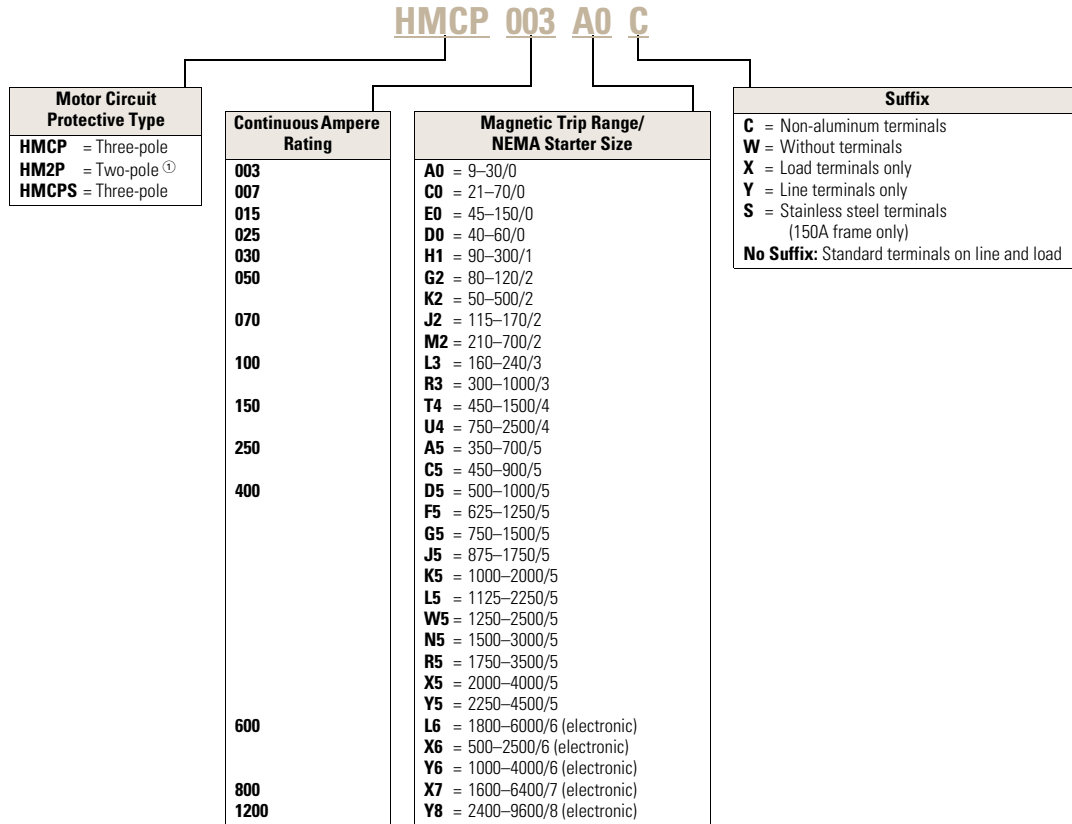


Note: Interrupting ratings are dependent on starter it is used with.

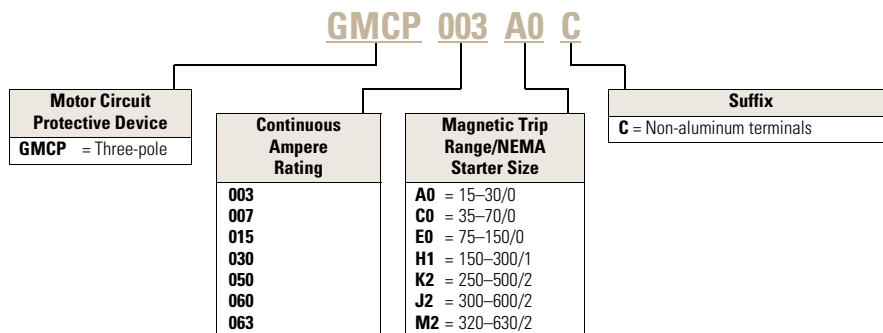
Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

Motor Circuit Protector



Motor Circuit Protector



Note

① On J- and K-Frame HMCPs only.

Product Selection

G-Frame

480 Vac Maximum, 600Y/347 Vac

| NEMA Starter Size | Continuous Amperes | Cam Setting | Motor Full Load Current Amperes (FLA) ^① | MCP Trip Setting | MCP Catalog Number |
|-------------------|--------------------|-------------|--|------------------|--------------------|
| 0 | 3 | A | 1.1–1.2 | 15 | GMCP003A0C |
| | | B | 1.3–1.5 | 18 | |
| | | C | 1.6–1.7 | 21 | |
| | | D | 1.8–1.9 | 24 | |
| | | E | 2.0–2.2 | 27 | |
| | | F | 2.3–2.5 | 30 | |
| 0 | 7 | A | 2.6–3.1 | 35 | GMCP007C0C |
| | | B | 3.2–3.6 | 42 | |
| | | C | 3.7–3.9 | 49 | |
| | | D | 4.3–4.7 | 56 | |
| | | E | 4.8–5.2 | 63 | |
| | | F | 5.3–5.7 | 70 | |
| 0 | 15 | A | 5.7–6.8 | 75 | GMCP015E0C |
| | | B | 6.9–7.9 | 90 | |
| | | C | 8.0–9.1 | 105 | |
| | | D | 9.2–10.3 | 120 | |
| | | E | 10.4–11.4 | 135 | |
| | | F | 11.5–12.6 | 150 | |
| 1 | 30 | A | 11.5–13.7 | 150 | GMCP030H1C |
| | | B | 13.8–16.0 | 180 | |
| | | C | 16.1–18.3 | 210 | |
| | | D | 18.4–20.6 | 240 | |
| | | E | 20.7–22.9 | 270 | |
| | | F | 23.0–25.2 | 300 | |
| 2 | 50 | A | 19.3–22.9 | 250 | GMCP050K2C |
| | | B | 23.0–26.8 | 300 | |
| | | C | 26.9–30.6 | 350 | |
| | | D | 30.7–34.5 | 400 | |
| | | E | 34.6–38.3 | 450 | |
| | | F | 38.4–42.1 | 500 | |
| 3 | 60 | A | 23.1–27.5 | 300 | GMCP060J2C |
| | | B | 27.7–32.2 | 360 | |
| | | C | 32.3–36.7 | 420 | |
| | | D | 36.9–41.4 | 480 | |
| | | E | 41.5–46.0 | 540 | |
| | | F | 46.2–50.5 | 600 | |
| 3 | 63 | A | 24.2–32.1 | 320 | GMCP063M2C |
| | | B | 29.1–34.8 | 380 | |
| | | D | 38.8–46.4 | 500 | |
| | | E | 43.6–48.9 | 570 | |
| | | F | 48.5–53.7 | 630 | |

Notes

^① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate Cam settings and/or MCP ratings should be used.

All GMCP 3–63A come with line and load steel body terminals for Cu only wire. Refer to **Page V4-T2-122** under Optional Terminal Types.

UL recognized and CSA approved.

Accessories

Modifications for GMCP

Internal accessories must be factory installed.

Internal Accessories ^①

| Type Accessory | Electrical Ratings | | | Contact Arrangement | Factory Suffix | Style Number |
|--|--------------------|-----------|---------|---------------------|----------------|--------------|
| | Volts | Frequency | Amperes | | | |
| Shunt trip ^② | 120 | 50/60 Hz | 1.1 | — | S5 | 1373D62G18 |
| Shunt trip ^② | 240 | 50/60 Hz | 2.1 | — | S6 | 1373D62G19 |
| Auxiliary switch ^③ | 240 | 50/60 Hz | 6.0 | 1A/1B | A3 | 1288C74G03 |
| Auxiliary switch ^③ | 240 | 50/60 Hz | 6.0 | 2A/2B | A6 | 1288C73G03 |
| Alarm switch ^③ | 240 | 50/60 Hz | 6.0 | Make/Break | B3 | 1288C75G03 |
| Auxiliary switch/alarm switch combination ^③ | 240 | 50/60 Hz | 6.0 | 1A/1B Make/Break | B13 | 1288C76G09 |

External Mounted Accessories



| Description | Number Units in Package | Style Number |
|-------------------------------|-------------------------|--------------|
| Lock dog (non-padlockable) | 1 | 1294C01H01 |
| Mounting hardware | 1 | 624B375G23 |
| DIN rail adapter ^④ | 10 | 1225C79G02 |

Modifications for HMCP

See Internal Accessories starting on **Page V4-T2-273**.

Handle Mechanisms for Series C Frames

Kits Only (Kit Includes Shaft, Mechanism and Handle)—GMCP-Frame

| Description | Rating Type | | GMCP-Frame Catalog Number |
|---|-------------|----|---------------------------|
| | NEMA | IP | |
|  S01 Blue Handle S01 blue handle, 12-inch shaft | 1/3R/12 | 54 | GMHMVD12B / 68C6039G05 |
| | 4/4X | 65 | GMHMVD12BX / 68C6039G07 |
|  S01 Red Handle S01 red handle, 12-inch shaft | 1/3R/12 | 54 | GMHMVD12R / 68C6039G06 |
| | 4/4X | 65 | GMHMVD12RX / 68C6039G08 |

Direct (Close-Coupled) Handle Mechanisms

G Direct ^⑤

| Frame | Black Handle | | Yellow Handle | |
|-------|-------------------------------|----------------------------------|-------------------------------|----------------------------------|
| | With Shroud Catalog Number | Without Shroud Catalog Number | With Shroud Catalog Number | Without Shroud Catalog Number |
| GMCP | HRGMC1S | HRGMC10 | HRGMC3S | HRGMC30 |

Notes

- ① Only one accessory may be installed in GMCP.
- ② LH only.
- ③ RH only.
- ④ For use with standard 35 mm DIN rail such as, 35 x 7.5 or 15 mm per DIN EN50022.
- ⑤ Suitable for use on two- or three-pole G-Frame.

No UVR available on GMCP.

2.3

Molded Case Circuit Breakers

Series C

F-Frame

2

600 Vac Maximum, 250 Vdc Maximum

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ^① | MCP Trip Setting ^② | MCP Catalog Number |
|-------------------|------------|-------------|--|-------------------------------|--------------------|
| 0 | 3 | A | 0.69–0.91 | 9 | HMCP003A0C |
| | | B | 0.92–1.0 | 12 | |
| | | C | 1.1–1.2 | 15 | |
| | | D | 1.3–1.5 | 18 | |
| | | E | 1.6–1.7 | 21 | |
| | | F | 1.8–1.9 | 24 | |
| | | G | 2.0–2.2 | 27 | |
| | | H | 2.3–2.5 | 30 | |
| 0 | 7 | A | 1.5–2.0 | 21 | HMCP007C0C |
| | | B | 2.1–2.5 | 28 | |
| | | C | 2.6–3.1 | 35 | |
| | | D | 3.2–3.6 | 42 | |
| | | E | 3.7–3.9 | 49 | |
| | | F | 4.3–4.7 | 56 | |
| | | G | 4.8–5.2 | 63 | |
| | | H | 5.3–5.7 | 70 | |
| 0 | 15 | A | 3.4–4.5 | 45 | HMCP015E0C |
| | | B | 4.6–5.6 | 60 | |
| | | C | 5.7–6.8 | 75 | |
| | | D | 6.9–7.9 | 90 | |
| | | E | 8.0–9.1 | 105 | |
| | | F | 9.2–10.3 | 120 | |
| | | G | 10.4–11.4 | 135 | |
| | | H | 11.5–12.6 | 150 | |
| 1 | 30 | A | 6.9–9.1 | 90 | HMCP030H1C |
| | | B | 9.2–11.4 | 120 | |
| | | C | 11.5–13.7 | 150 | |
| | | D | 13.8–16.0 | 180 | |
| | | E | 16.1–18.3 | 210 | |
| | | F | 18.4–20.6 | 240 | |
| | | G | 20.7–22.9 | 270 | |
| | | H | 23.0–25.2 | 300 | |
| 2 | 50 | A | 11.5–15.2 | 150 | HMCP050K2C |
| | | B | 15.3–19.1 | 200 | |
| | | C | 19.2–22.9 | 250 | |
| | | D | 23.0–26.8 | 300 | |
| | | E | 26.9–30.6 | 350 | |
| | | F | 30.7–4.5 | 400 | |
| | | G | 34.6–38.3 | 450 | |
| | | H | 38.4–42.1 | 500 | |

600 Vac Maximum, 250 Vdc Maximum, continued

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ^① | MCP Trip Setting ^② | MCP Catalog Number |
|-------------------|------------|-------------|--|-------------------------------|--------------------|
| 2 | 70 | A | 16.1–21.4 | 210 | HMCP070M2C |
| | | B | 21.5–26.8 | 280 | |
| | | C | 26.9–32.2 | 350 | |
| | | D | 32.3–37.5 | 420 | |
| | | E | 37.6–42.9 | 490 | |
| | | F | 43.0–48.3 | 560 | |
| | | G | 48.4–53.7 | 630 | |
| | | H | 53.8–59.1 | 700 | |
| 3 | 100 | A | 23.0–30.6 | 300 | HMCP100R3C |
| | | B | 30.7–38.3 | 400 | |
| | | C | 38.4–46.0 | 500 | |
| | | D | 46.1–53.7 | 600 | |
| | | E | 53.8–61.4 | 700 | |
| | | F | 61.5–69.1 | 800 | |
| | | G | 69.2–76.8 | 900 | |
| | | H | 76.9–84.5 | 1000 | |
| 4 | 150 | A | 34.6–46.0 | 450 | HMCP150T4C |
| | | B | 46.1–57.5 | 600 | |
| | | C | 57.6–69.1 | 750 | |
| | | D | 69.2–80.6 | 900 | |
| | | D | 69.2–80.6 | 900 | |
| | | E | 80.7–92.2 | 1050 | |
| | | F | 92.3–103.7 | 1200 | |
| | | G | 103.8–115.2 | 1350 | |
| 4 | 150 | A | 57.0–75.0 | 750 | HMCP150U4C |
| | | B | 76.0–95.0 | 1000 | |
| | | C | 96.0–114.0 | 1250 | |
| | | D | 115.0–130.7 | 1500 | |
| | | E | ③ | 1750 | |
| | | F | ③ | 2000 | |
| | | G | ③ | 2250 | |
| | | H | ③ | 2500 | |

Notes

- ① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate Cam settings and/or MCP ratings should be used.
- ② For DC applications, actual trip levels are approximately 40% higher than values shown.
- ③ Settings above 130 amperes are for special applications. NEC Article 430.110(a) requires the ampere rating of the disconnecting means to be not less than 115% of the motor full load ampere rating.

HMCP 3–100 A come with line and load steel body terminals, 3T100FB. HMCP 150A come with line and load steel body terminals, 3T150FB.

Special Low Magnetic Protection Application MCP**600 Vac Maximum, 250 Vdc Maximum**

| Cont. Amps | Cam Setting | MCP Trip Setting ^① | MCP Catalog Number |
|------------|-------------|-------------------------------|--------------------|
| 25 | A | 40 | HMCP025D0C |
| | B | 43 | |
| | D | 49 | |
| | E | 52 | |
| | F | 55 | |
| | G | 58 | |
| | H | 60 | |
| | 50 | A | |
| B | | 87 | |
| C | | 93 | |
| D | | 98 | |
| E | | 103 | |
| F | | 109 | |
| G | | 115 | |
| H | | 120 | |
| 70 | A | 115 | HMCP070J2C |
| | B | 122 | |
| | C | 130 | |
| | D | 139 | |
| | E | 145 | |
| | F | 153 | |
| | G | 160 | |
| | H | 170 | |
| 100 | A | 160 | HMCP100L3C |
| | B | 174 | |
| | C | 185 | |
| | D | 196 | |
| | E | 207 | |
| | F | 218 | |
| | G | 229 | |
| | H | 240 | |

Notes

^① For DC applications, actual trip levels are approximately 40% higher than values shown.

HMCP 25–100 A come with line and load steel body terminals, 3T100FB.

MCPs for Application with Motor Starters Equipped with Electronic Overload Relays

2

600 Vac Maximum, 250 Vdc Maximum

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ① | MCP Trip Setting ② | MCP Catalog Number |
|-------------------|------------|-------------|---|--------------------|--------------------|
| 0 | 3 | A | 0.69–0.91 | 9 | HMCP5003A0C |
| | | B | 0.92–1.0 | 12 | |
| | | C | 1.1–1.2 | 15 | |
| | | D | 1.3–1.5 | 18 | |
| | | E | 1.6–1.7 | 21 | |
| | | F | 1.8–1.9 | 24 | |
| | | G | 2.0–2.2 | 27 | |
| | | H | 2.3–2.5 | 30 | |
| 0 | 7 | A | 1.5–2.0 | 21 | HMCP5007C0C |
| | | B | 2.1–2.5 | 28 | |
| | | C | 2.6–3.1 | 35 | |
| | | D | 3.2–3.6 | 42 | |
| | | E | 3.7–3.9 | 49 | |
| | | F | 4.3–4.7 | 56 | |
| | | G | 4.8–5.2 | 63 | |
| | | H | 5.3–5.7 | 70 | |
| 0 | 15 | A | 3.4–4.5 | 45 | HMCP5015E0C |
| | | B | 4.6–5.6 | 60 | |
| | | C | 5.7–6.8 | 75 | |
| | | D | 6.9–7.9 | 90 | |
| | | E | 8.0–9.1 | 105 | |
| | | F | 9.2–10.3 | 120 | |
| | | G | 10.4–11.4 | 135 | |
| | | H | 11.5–12.6 | 150 | |
| 1 | 30 | A | 6.9–9.1 | 90 | HMCP5030H1C |
| | | B | 9.2–11.4 | 120 | |
| | | C | 11.5–13.7 | 150 | |
| | | D | 13.8–16.0 | 180 | |
| | | E | 16.1–18.3 | 210 | |
| | | F | 18.4–20.6 | 240 | |
| | | G | 20.7–22.9 | 270 | |
| | | H | 23.0–25.2 | 300 | |
| 2 | 50 | A | 11.5–15.2 | 150 | HMCP5050K2C |
| | | B | 15.3–19.1 | 200 | |
| | | C | 19.2–22.9 | 250 | |
| | | D | 23.0–26.8 | 300 | |
| | | E | 26.9–30.6 | 350 | |
| | | F | 30.7–34.5 | 400 | |
| | | G | 34.6–38.3 | 450 | |
| | | H | 38.4–42.1 | 500 | |

600 Vac Maximum, 250 Vdc Maximum, continued

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ① | MCP Trip Setting ② | MCP Catalog Number |
|-------------------|------------|-------------|---|--------------------|--------------------|
| 3 | 100 | A | 23.0–30.6 | 300 | HMCP5100R3C |
| | | B | 30.7–38.3 | 400 | |
| | | C | 38.4–46.0 | 500 | |
| | | D | 46.1–53.7 | 600 | |
| | | E | 53.8–61.4 | 700 | |
| | | F | 61.5–69.1 | 800 | |
| | | G | 69.2–76.8 | 900 | |
| | | H | 76.9–84.5 | 1000 | |
| 4 | 150 | A | 34.6–46.0 | 450 | HMCP5150T4C |
| | | B | 46.1–57.5 | 600 | |
| | | C | 57.6–69.1 | 750 | |
| | | D | 69.2–80.6 | 900 | |
| | | E | 80.7–92.2 | 1050 | |
| | | F | 92.3–103.7 | 1200 | |
| | | G | 103.8–115.2 | 1350 | |
| | | H | 115.3–126.7 | 1500 | |
| 4 | 150 | A | 57.0–75.0 | 750 | HMCP5150U4C |
| | | B | 76.0–95.0 | 1000 | |
| | | C | 96.0–114.0 | 1250 | |
| | | D | 115.0–130.7 | 1500 | |
| | | E | ③ | 1750 | |
| | | F | ③ | 2000 | |
| | | G | ③ | 2250 | |
| | | H | ③ | 2500 | |

Notes

- ① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- ② For DC applications, actual trip levels are approximately 40% higher than values shown.
- ③ Settings above 130A are for special applications. NEC Article 430.110(a) requires the ampere rating of the disconnecting means to be not less than 115% of the motor full load ampere rating.

HMCP 25–100 A come with line and load steel body terminals, 3T100FB.

HMCP 3–100 A come with line and load steel body terminals, 3T100FB. HMCP 150A come with line and load steel body terminals, 3T150FB.

J-Frame**600 Vac Maximum, 250 Vdc Maximum**

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ^① | MCP Trip Setting ^② | MCP Catalog Number ^③ |
|-------------------|------------|-------------|--|-------------------------------|---------------------------------|
| 4 | 250 | A | 27.0–30.7 | 350 | HMCP250A5C |
| | | B | 30.8–33.8 | 400 | |
| | | C | 33.9–36.9 | 440 | |
| 5 | 250 | D | 37.0–40.3 | 480 | HMCP250D5C |
| | | E | 40.4–43.8 | 525 | |
| | | F | 43.9–46.9 | 570 | |
| | | G | 47.0–50.7 | 610 | |
| | | H | 47.0–50.7 | 660 | |
| | | I | 47.0–50.7 | 700 | |
| | | 5 | 250 | A | |
| B | 38.9–43.4 | | | 505 | |
| C | 43.5–47.6 | | | 565 | |
| D | 47.7–52.2 | | | 620 | |
| E | 52.3–56.5 | | | 680 | |
| F | 56.6–60.7 | | | 735 | |
| G | 60.8–64.9 | | | 790 | |
| H | 65.0–69.2 | | | 845 | |
| I | 69.3–73.5 | | | 900 | |
| 5 | 250 | A | 38.5–43.4 | 500 | HMCP250D5C |
| | | B | 43.5–48.0 | 565 | |
| | | C | 48.1–53.0 | 625 | |
| | | D | 53.1–57.6 | 690 | |
| | | E | 57.7–62.3 | 750 | |
| | | F | 62.4–67.3 | 810 | |
| | | G | 67.4–71.9 | 875 | |
| | | H | 72.0–76.9 | 935 | |
| | | I | 77.0–81.6 | 1000 | |
| 5 | 250 | A | 48.1–53.8 | 625 | HMCP250F5C |
| | | B | 53.9–59.9 | 700 | |
| | | C | 60.0–66.1 | 780 | |
| | | D | 66.2–72.3 | 860 | |
| | | E | 72.4–78.4 | 940 | |
| | | F | 78.5–83.8 | 1020 | |
| | | G | 83.9–89.9 | 1090 | |
| | | H | 90.0–96.1 | 1170 | |
| | | I | 96.2–102.0 | 1250 | |
| 5 | 250 | A | 57.7–64.6 | 750 | HMCP250G5C |
| | | B | 64.7–71.9 | 840 | |
| | | C | 72.0–79.2 | 935 | |
| | | D | 79.3–86.5 | 1030 | |
| | | E | 86.6–93.8 | 1125 | |
| | | F | 93.9–101.1 | 1220 | |
| | | G | 101.2–108.4 | 1315 | |
| | | H | 108.5–115.3 | 1410 | |
| | | I | 115.4–122.4 | 1500 | |

600 Vac Maximum, 250 Vdc Maximum, continued

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ^① | MCP Trip Setting ^② | MCP Catalog Number ^③ |
|-------------------|------------|-------------|--|-------------------------------|---------------------------------|
| 5 | 250 | A | 67.4–75.3 | 875 | HMCP250J5C |
| | | B | 75.4–83.8 | 980 | |
| | | C | 83.9–92.3 | 1090 | |
| | | D | 92.4–100.7 | 1200 | |
| | | E | 100.8–109.2 | 1310 | |
| | | F | 109.3–117.6 | 1420 | |
| | | G | 117.7–126.1 | 1530 | |
| | | H | 126.2–134.6 | 1640 | |
| | | I | 134.7–142.8 | 1750 | |
| 5 | 250 | A | 77.0–86.6 | 1000 | HMCP250K5C |
| | | B | 86.6–96.1 | 1125 | |
| | | C | 96.2–105.7 | 1250 | |
| | | D | 105.8–115.3 | 1375 | |
| | | E | 115.4–124.9 | 1500 | |
| | | F | 125.0–134.6 | 1625 | |
| | | G | 134.7–144.2 | 1750 | |
| | | H | 144.3–153.8 | 1875 | |
| | | I | 153.9–163.3 | 2000 | |
| 5 | 250 | A | 86.6–97.3 | 1125 | HMCP250L5C |
| | | B | 97.4–108.4 | 1265 | |
| | | C | 108.5–118.8 | 1410 | |
| | | D | 118.9–129.9 | 1545 | |
| | | E | 130.0–140.7 | 1690 | |
| | | F | 140.8–151.5 | 1830 | |
| | | G | 151.6–162.3 | 1970 | |
| | | H | 162.4–173.0 | 2110 | |
| | | I | 173.1–183.6 | 2250 | |
| 5 | 250 | A | 96.2–108.0 | 1250 | HMCP250W5C |
| | | B | 108.1–119.9 | 1405 | |
| | | C | 120.0–132.3 | 1560 | |
| | | D | 132.4–144.2 | 1720 | |
| | | E | 144.3–156.1 | 1875 | |
| | | F | 156.2–168.0 | 2030 | |
| | | G | 168.1–179.9 | 2185 | |
| | | H | 180.0–192.3 | 2340 | |
| | | I | 192.4–204.0 | 2500 | |

Notes

- ① Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- ② For DC applications, actual trip levels are approximately 40% higher than values shown.
- ③ Three-pole catalog numbers shown. Two-pole catalog numbers begin with **HM2P** in place of **HMCP**.

All HMCP and HM2P 250A come with line and load steel body terminals, T250KB. (With suffix "C," without "C" comes with TA250KB.)

K-Frame

2

600 Vac Maximum, 250 Vdc Maximum

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ^① | MCP Trip Setting ^② | MCP Catalog Number ^③ |
|-------------------|------------|-------------|--|-------------------------------|---------------------------------|
| 4 | 400 | A | 27.0–30.7 | 350 | HMCP400A5C |
| | | B | 30.8–33.8 | 400 | |
| | | C | 33.9–36.9 | 440 | |
| 5 | 400 | D | 37.0–40.3 | 480 | HMCP400A5C |
| | | E | 40.4–43.8 | 525 | |
| | | F | 43.9–46.9 | 570 | |
| | | G | 47.0–50.7 | 610 | |
| | | H | 50.8–53.8 | 660 | |
| | | I | 53.9–57.2 | 700 | |
| 5 | 400 | A | 38.5–43.4 | 500 | HMCP400D5C |
| | | B | 43.5–48.0 | 565 | |
| | | C | 48.1–53.0 | 626 | |
| | | D | 53.1–57.6 | 690 | |
| | | E | 57.7–62.3 | 750 | |
| | | F | 62.4–67.3 | 810 | |
| | | G | 67.4–71.9 | 875 | |
| | | H | 72.0–76.9 | 935 | |
| | | I | 77.0–81.6 | 1000 | |
| 5 | 400 | A | 48.1–53.8 | 625 | HMCP400F5C |
| | | B | 53.9–59.9 | 700 | |
| | | C | 60.0–66.1 | 780 | |
| | | D | 66.2–72.3 | 860 | |
| | | E | 72.4–78.4 | 940 | |
| | | F | 78.5–83.8 | 1020 | |
| | | G | 83.9–89.9 | 1090 | |
| | | H | 90.0–96.1 | 1170 | |
| | | I | 96.2–102.0 | 1250 | |
| 5 | 400 | A | 57.7–64.6 | 750 | HMCP400G5C |
| | | B | 64.7–71.9 | 840 | |
| | | C | 72.0–79.2 | 935 | |
| | | D | 79.3–86.5 | 1030 | |
| | | E | 86.6–93.8 | 1125 | |
| | | F | 93.9–101.1 | 1220 | |
| | | G | 101.2–108.4 | 1315 | |
| | | H | 108.5–115.3 | 1410 | |
| | | I | 115.4–122.4 | 1500 | |
| 5 | 400 | A | 67.4–75.3 | 875 | HMCP400J5C |
| | | B | 75.4–83.8 | 980 | |
| | | C | 83.9–92.3 | 1090 | |
| | | D | 92.4–100.7 | 1200 | |
| | | E | 100.8–109.2 | 1310 | |
| | | F | 109.3–117.6 | 1420 | |
| | | G | 117.7–126.1 | 1530 | |
| | | H | 126.2–134.6 | 1640 | |
| | | I | 134.7–142.8 | 1750 | |

600 Vac Maximum, 250 Vdc Maximum, continued

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ^① | MCP Trip Setting ^② | MCP Catalog Number ^③ |
|-------------------|------------|-------------|--|-------------------------------|---------------------------------|
| 5 | 400 | A | 77.0–86.5 | 1000 | HMCP400K5C |
| | | B | 86.6–96.1 | 1125 | |
| | | C | 96.2–105.7 | 1250 | |
| | | D | 105.8–115.3 | 1375 | |
| | | E | 115.4–124.9 | 1500 | |
| | | F | 125.0–134.6 | 1625 | |
| 5 | 400 | A | 86.6–97.3 | 1125 | HMCP400L5C |
| | | B | 97.4–108.4 | 1265 | |
| | | C | 108.5–118.8 | 1410 | |
| | | D | 118.9–129.9 | 1545 | |
| | | E | 130.0–140.7 | 1690 | |
| | | F | 140.8–151.5 | 1830 | |
| | | G | 151.6–162.3 | 1970 | |
| | | H | 162.4–173.0 | 2110 | |
| | | I | 173.1–183.6 | 2250 | |
| 5 | 400 | A | 96.2–108.0 | 1250 | HMCP400W5C |
| | | B | 108.1–119.9 | 1405 | |
| | | C | 120.0–132.3 | 1560 | |
| | | D | 132.4–144.2 | 1720 | |
| | | E | 144.3–156.1 | 1875 | |
| | | F | 156.2–168.0 | 2030 | |
| | | G | 168.1–179.9 | 2185 | |
| | | H | 180.0–192.3 | 2340 | |
| | | I | 192.4–204.0 | 2500 | |
| 5 | 400 | A | 115.4–129.9 | 1500 | HMCP400N5C |
| | | B | 130.0–144.2 | 1690 | |
| | | C | 144.3–158.4 | 1875 | |
| | | D | 158.5–173.0 | 2060 | |
| | | E | 173.1–187.6 | 2250 | |
| | | F | 187.7–201.9 | 2440 | |
| | | G | 202.0–216.1 | 2625 | |
| | | H | 216.2–230.7 | 2810 | |
| | | I | 230.8–244.9 | 3000 | |

Notes

- ① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- ② For DC applications, actual trip levels are approximately 40% higher than values shown.
- ③ Three-pole catalog numbers shown. Two-pole catalog numbers begin with **HM2P** in place of **HMCP**.

All HMCP and HM2P 400 A come with aluminum body terminals, 3TA400K. Catalog numbers with suffix "C" as shown above come with copper body terminals 3T400K.

600 Vac Maximum, 250 Vdc Maximum, continued

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ① | MCP Trip Setting ② | MCP Catalog Number ③ |
|-------------------|------------|-------------|---|--------------------|----------------------|
| 5 | 400 | A | 134.7–151.5 | 1750 | HMCP400R5C |
| | | B | 151.6–168.4 | 1970 | |
| | | C | 168.5–185.3 | 2190 | |
| | | D | 185.4–201.9 | 2410 | |
| | | E | 202.0–218.8 | 2625 | |
| | | F | 218.9–235.7 | 2845 | |
| | | G | 235.8–252.6 | 3065 | |
| | | H | 252.7–269.2 | 3285 | |
| | | I | 269.3–285.7 | 3500 | |
| 5 | 400 | A | 153.9–173.0 | 2000 | HMCP400X5C |
| | | B | 173.1–192.3 | 2250 | |
| | | C | 192.4–211.5 | 2500 | |
| | | D | 211.6–230.7 | 2750 | |
| | | E | 230.8–249.9 | 3000 | |
| | | F | 250.0–269.2 | 3250 | |
| | | G | 269.3–288.4 | 3500 | |
| | | H | 288.5–307.6 | 3750 | |
| | | I | 307.7–326.9 | 4000 | |
| 5 | 400 | A | 173.1–194.5 | 2250 | HMCP400Y5C |
| | | B | 194.6–216.1 | 2530 | |
| | | C | 216.2–237.6 | 2810 | |
| | | D | 237.7–259.5 | 3090 | |
| | | E | 259.6–281.1 | 3375 | |
| | | F | 281.2–302.6 | 3655 | |
| | | G | 302.7–324.1 | 3935 | |
| | | H | 324.2–346.1 | 4215 | |
| | | I | 346.2–368.1 | 4500 | |

L-Frame

600 Vac Maximum ④

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ① | MCP Trip Setting | MCP Catalog Number |
|-------------------|------------|-------------|---|------------------|--------------------|
| 6 | 600 | A | 138.5–184.5 | 1800 | HMCP600L6W |
| | | B | 184.6–230.7 | 2400 | |
| | | C | 230.8–276.8 | 3000 | |
| | | D | 276.9–323.0 | 3600 | |
| | | E | 323.1–369.1 | 4200 | |
| | | F | 369.2–415.3 | 4800 | |
| | | G | 415.4–461.4 | 5400 | |
| | | H | 461.5–507.7 | 6000 | |
| 6 | 600 | A | 38.5–46.1 | 500 | HMCP600X6W |
| | | B | 46.2–61.4 | 600 | |
| | | C | 61.5–76.8 | 800 | |
| | | D | 76.9–96.1 | 1000 | |
| | | E | 96.2–115.3 | 1250 | |
| | | F | 115.4–153.7 | 1500 | |
| | | G | 153.8–192.2 | 2000 | |
| | | H | 192.3–230.7 | 2500 | |
| 6 | 600 | A | 76.9–96.1 | 1000 | HMCP600Y6W |
| | | B | 96.2–115.3 | 1250 | |
| | | C | 115.4–153.7 | 1500 | |
| | | D | 153.8–192.2 | 2000 | |
| | | E | 192.3–230.7 | 2500 | |
| | | F | 230.8–269.1 | 3000 | |
| | | G | 269.2–307.6 | 3500 | |
| | | H | 307.7–346.1 | 4000 | |

Notes

① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

② For DC applications, actual trip levels are approximately 40% higher than values shown.

③ Three-pole catalog numbers shown. Two-pole catalog numbers begin with **HM2P** in place of **HMCP**.

④ Equipped with electronic trip device.

All HMCP and HM2P 400 A come with aluminum body terminals, 3TA400K. Catalog numbers with suffix "C" as shown above come with copper body terminals 3T400K.

All HMCP 600 A come without terminals. For terminals, see **Page V4-T2-217**.

N-Frame

2

600 Vac Maximum ^①

| NEMA Starter Size | Cont. Amps | Cam Setting | Motor Full Load Current Amperes (FLA) ^② | MCP Trip Setting | MCP Catalog Number |
|--------------------------|-------------------|--------------------|---|-------------------------|---------------------------|
| 7 | 800 | A | 123.1–184.5 | 1600 | HMCP800X7W |
| | | B | 184.6–246.1 | 2400 | |
| | | C | 246.2–307.6 | 3200 | |
| | | D | 307.7–369.1 | 4000 | |
| | | E | 369.2–430.7 | 4800 | |
| | | F | 430.8–492.2 | 5600 | |
| | | G | 492.3–553.7 | 6400 | |
| 8 | 1200 | A | 184.6–276.8 | 2400 | HMCP12Y8W |
| | | B | 276.9–369.1 | 3600 | |
| | | C | 369.2–461.4 | 4800 | |
| | | D | 461.5–553.7 | 6000 | |
| | | E | 553.8–646.1 | 7200 | |
| | | F | 646.2–738.4 | 8400 | |
| | | G | 738.5–830.7 | 9600 | |

Notes

- ^① Equipped with electronic trip device.
- ^② Motor FLA ranges are typical. The corresponding trip setting is at 13X the minimum FLA value shown. Where a 13X setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

Motor Protection Circuit Breakers



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Motor Protection Circuit Breakers (MPCB)

Product Description

Motor protection circuit breakers (MPCBs) provide UL 489 branch circuit protection, UL 508 and CSA C22.2 No. 14 motor protection, and meet IEC 60947-2 and 50947-4 requirements. Typical branch motor loads are protected by three-component starters, consisting of breaker, contactor and overload relay, or fuse, contactor and overload relay. The MPCB application-specific protection eliminates the need for motor overload relay found in the traditional three-component starter assembly. The branch motor load protection is simplified to an MPCB and contactor, reducing both space requirements and heat generation in customer panels. Protection is provided by application-specific electronic trip units.

The electronic trip unit provides typical motor overload relay functionality and short-circuit protection against potential phase-to-phase or phase-to-ground faults.

- Disconnecting means
- Branch circuit short-circuit protection
- Overload protection
 - Class 5, 10, 15 and 20
- Phase unbalance protection
 - FDMP breaker trips when there is a 40% difference between any phase compared to the calculated three-phase average

- Phase loss protection
 - Active when the maximum phase current is greater than 50% of FLA setting
 - Breaker will trip when minimum phase current is 25% or less than the maximum phase current
 - Time delay of 1 or 2 seconds before breaker trips
- Thermal memory to prevent immediate restart after overload trip to allow motor to cool down

The MPCB is based on the Series C F-Frame. Accessories for standard Series C breakers apply to the MPCB. Unlike Motor Circuit Protectors (MCPs), MPCBs are UL 489 listed with 35 kA and 65 kA interruption ratings.

Product Selection

2

FDMP and HFDMP

| Continuous Amperes | 35 kA Without Phase Unbalance, Class 10 Motor Protection Only | 35 kA With Phase Unbalance and Adjustable Motor Class Protection | 65 kA Without Phase Unbalance, Class 10 Motor Protection Only | 65 kA With Phase Unbalance and Adjustable Motor Class Protection |
|--------------------|---|--|---|--|
| 80 | FDMP3080L | FDMP3080JL | HFDMP3080L | HFDMP3080JL |
| 100 | FDMP3100L | FDMP3100JL | HFDMP3100L | HFDMP3100JL |
| 160 | FDMP3160L | FDMP3160JL | HFDMP3160L | HFDMP3160JL |
| 205 | FDMP3205L | FDMP3205JL | HFDMP3205L | HFDMP3205JL |

FLA Ie Dial Setting

| Continuous Amperes | A | B | C | D | E | F | G | H |
|--------------------|-----|-----|-----|-----|-----|---|---|---|
| 80 | 40 | 50 | 60 | 70 | 80 | — | — | — |
| 100 | 80 | — | 90 | — | 100 | — | — | — |
| 160 | 100 | 115 | 130 | 145 | 160 | — | — | — |
| 205 | 160 | 170 | 180 | 195 | 205 | — | — | — |

Technical Data and Specifications

Specifications

| Feature | FDMP | HFDMP |
|--|---|---|
| Interruption rating at 240 V | 65 kA | 100 kA |
| Interruption rating at 480 V | 35 kA | 65 kA |
| Interruption rating at 600 V | 18 kA | 25 kA |
| Icu/lcs at 240 V | 65 kA/33 kA ① | 100 kA/50 kA ① |
| Icu/lcs at 415 V | 35 kA/18 kA ① | 65 kA/33 kA ① |
| 100% rated | No | No |
| FLA range (A) | 40–205 | 40–205 |
| Motor class protection | 5, 10, 15, 20 | 5, 10, 15, 20 |
| Phase unbalance protection (current)—active for phase current >0.5 FLA setting | □40% delta (single-phase); (three-phase avg.) for 5 seconds | □40% delta (single-phase); (three-phase avg.) for 5 seconds |
| Phase loss protection (current)—active for phase current >0.5 FLA setting | Min. phase □0.25 max. phase for 1 second | Min. phase □0.25 max. phase for 1 second |
| Thermal memory protection | Yes | Yes |
| High load indicator | — | — |
| Pre-detection relays | — | — |
| Internal accessories | Factory installed Aux. alarm, shunt trip, UVR | Factory installed Aux. alarm, shunt trip, UVR |

Notes

① IEC ratings available only on FWMP and HFWMP.

For additional breaker solutions, see [Page V4-T2-89](#).

Type ELC Current Limiter Attachment



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Type ELC Current Limiter Attachment (Size 0–4)

Product Description

Eaton’s Type ELC current limiter attachment for the MCP is designed to provide increased interrupting capacity. The combination may be used for the application up to 200,000 A symmetrical at 600 Vac, making the MCP suitable for use in network distribution systems or other applications where unusually high fault currents are available. The current limiter connects to the load end of the MCP and is provided with terminals suitable for copper or aluminum conductors. (See table at right.)

Limiters are coordinated with the MCP so that normal fault currents are interrupted automatically by the MCP without any damage to the limiter. Only the rare very high fault is opened by the limiter. Faults that are interrupted by the limiter also magnetically trip the MCP, opening all three poles, preventing single-phase operation.

Each of the three poles of the Type ELC limiter is equipped with an indicator that extends when a fault is interrupted by the limiter.

Product Selection

Type ELC Current Limiter Attachment



ELC Current Limiter Attachment

| MCP Rating (Amperes) | Catalog Number |
|----------------------|----------------|
| 3 | ELC3003R |
| 7 | ELC3007R |
| 15 | ELC3015R |
| 30 | ELC3030R |
| 50 | ELC3050R |
| 100 | ELC3100R |
| 150 | ELC3150R |

Technical Data and Specifications

Type ELC Current Limiter Terminal Wire Sizes ①

| Type ELC Current Limiter Maximum Amperes | Wire Range AWG | Metric (mm ²) |
|--|----------------|---------------------------|
| Standard Aluminum Terminals | | |
| 50 | 14–2 | 2.5–35 |
| 100 | 1–4/0 | 50–95 |
| 150 | 1–4/0 | 50–95 |
| Non-Standard Terminals (Steel) | | |
| 50 | 14–2 ② | 2.5–35 |
| 100 | — | — |
| 150 | — | — |

Notes

- ① Terminal wire connectors are UL listed for standard stranded wire sizes as defined in UL 486A or UL 486B.
 - ② Optional on special order for copper cable only.
- All HMCP 800 A and 1200 A come without terminals. For terminals, see **Page V4-T2-217**.

Current Limiting Circuit Breaker Module

2



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Current Limiting Circuit Breaker Module

Product Overview

Power demand continues to grow in new and existing facilities. To meet increased demand, larger utility supplies, spot networks and large facility transformers are installed. The increased capacity of the electrical source results in increased fault currents in excess of 100 kA short-circuit protection. Eaton manufactures non-fused current limiting modules with interrupting capacities up to 200 kA at 600 Vac. Unlike fused current limiters with a one-time use, a current limiter module provides an automatic reset of the module after a short-circuit event. Resetting the molded-case circuit breaker is the only action required to restore critical power to the system; there is no time wasted with sourcing the correct replacement fuses or module to bring the system back online.

Product Description

The current limiting breaker modules use a unique contact design to enhance the system protection similar to that of the circuit breaker. When high short-circuit current is flowing through the contacts of these modules, the design results in very high interrupting capacities and improved current limiting characteristics.

Application Description

High-performance breakers are most commonly applied when very high fault levels are available and with applications where the current limiting capability is used upstream of the final load to limit current. Typical loads include lighting, power distribution, and motor control applications.

Features and Benefits

Superior system protection:

- Auto reset improves system uptime and eliminates the need for finding replacement parts
- No fuses to replace, reducing the overall cost of ownership and the waste created by fuses
- Overloads, by using inverse time current tripping characteristics of the molded-case circuit breaker
- Low-level short circuits, by using instantaneous and/or short-time delay tripping characteristics of the molded-case circuit breaker
- High-level short circuits, by using ultra-high-speed, blow-apart contacts of the current limiting module in series with the circuit breaker contacts
- Let-through currents, by improved opening speed of the contacts, the resultant rapid rise of arc voltage introduces impedance into the system

Standards and Certifications

- UL 489
- CSA C22.2



Product Selection

Series C High Performance Ratings

| Type | Product | Amperes | 480 Vac (UL) | 600 Vac (UL) |
|-------------------------|--------------|---------|--------------|--------------|
| FDC 3P thermal-magnetic | Breaker only | 15–225 | 100 | 35 |
| | With limiter | 40–200 | 200 | 200 |

FD Frame

FD IC Rating—200 kAIC at 600 Vac ^①

| Ampere Rating | Breaker with Line Side Mounted Current Limiter ^② | Breaker with Load Side Mounted Current Limiter ^③ |
|-------------------------|---|---|
| Thermal-Magnetic | | |
| 40 | FDC3040Q01 | FDC3040YQ02 |
| 45 | FDC3045Q01 | FDC3045YQ02 |
| 50 | FDC3050Q01 | FDC3050YQ02 |
| 60 | FDC3060Q01 | FDC3060YQ02 |
| 70 | FDC3070Q01 | FDC3070YQ02 |
| 80 | FDC3080Q01 | FDC3080YQ02 |
| 90 | FDC3090Q01 | FDC3090YQ02 |
| 100 | FDC3100Q01 | FDC3100YQ02 |
| 110 | FDC3110Q01 | FDC3110YQ02 |
| 125 | FDC3125Q01 | FDC3125YQ02 |
| 150 | FDC3150Q01 | FDC3150YQ02 |
| 175 | FDC3175Q01 | FDC3175YQ02 |
| 200 | FDC3200Q01 | FDC3200YQ02 |

Limiter Terminals

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | Metric Wire Range mm ² | AWG Wire Range/ Number of Conductors | Catalog Number |
|---|------------------------|-----------|-----------------------------------|--------------------------------------|----------------------|
| Standard Pressure Type Terminals | | | | | |
| 250 | Aluminum | Cu/Al | 10–185 | #8–350 (1) | TA250FJ ^④ |

Breaker Load Terminals (For Line Mounted Limiters Only)

| Maximum Breaker Amperes | Terminal Body Material | Wire Type | AWG Wire Range | Metric Wire Range mm ² | Package of Three Terminals Catalog Number |
|---|------------------------|-----------|----------------|-----------------------------------|---|
| Standard Pressure Type Terminals | | | | | |
| 100 | Steel | Cu/Al | 14–1/0 | 2.5–50 | 3T100FB |
| 225 | Aluminum | Cu/Al | 4–4/0 | 25–95 | 3TA225FD |

Notes

- ^① Line and load terminal included.
^② Two interphase barriers provided, mounted on line end of limiter, catalog number **FJ1PBK**.
^③ Four interphase barriers provided, (2) line end of breaker, (2) load end of limiter.
^④ Load side breaker terminations included for units configured with line mounted limiters.

Technical Data and Specifications

2

UL 489 Current Limiting Data

| Frame | Circuit | I _p (kA) | I ² T (10 ⁶ A ² S) |
|-------|--------------|---------------------|---|
| LDC | 240 V/200 kA | 64.80 | 6.80 |
| LDC | 480 V/100 kA | 66.90 | 9.33 |
| LDC | 600 V/50 kA | 54.30 | 8.92 |

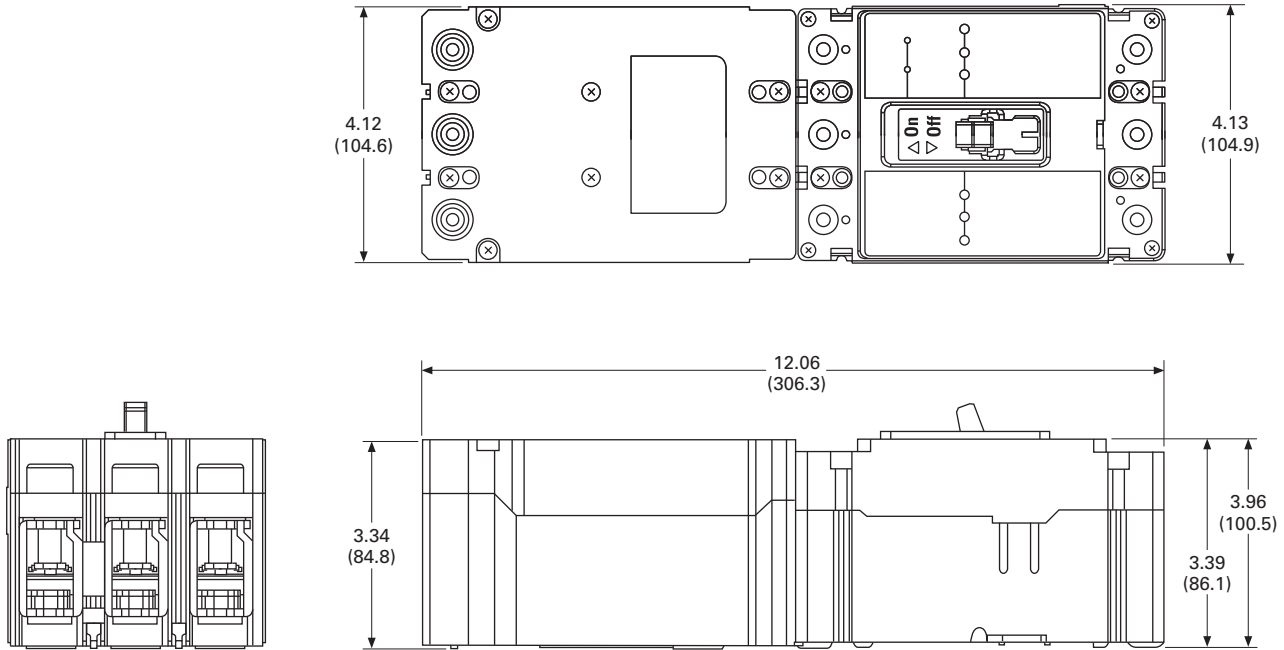
Dimensions and Weights

Approximate Dimensions in Inches (mm)

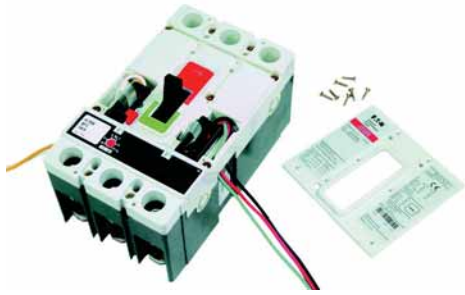
Assembled Breaker and Current Limiting Module

| Frame | Height | Width | Depth | Weight in lbs (kg) |
|--------------|---------------|--------------|-------------|--------------------|
| FD + limiter | 12.06 (306.3) | 4.13 (104.9) | 3.39 (86.1) | 8.50 (3.86) |

FD-Frame With Current Limiter Module



Series C Internal Accessories



Contents

| <i>Description</i> | <i>Page</i> |
|--|-------------|
| Product Overview | V4-T2-116 |
| Standards and Certifications | V4-T2-117 |
| Quick Reference | V4-T2-118 |
| G-Frame (15–100 Amperes) | V4-T2-121 |
| F-Frame (10–225 Amperes) | V4-T2-135 |
| J-Frame (70–250 Amperes) | V4-T2-153 |
| K-Frame (70–400 Amperes) | V4-T2-161 |
| L-Frame (125–600 Amperes) | V4-T2-185 |
| M-Frame (300–800 Amperes) | V4-T2-211 |
| N-Frame (400–1200 Amperes) | V4-T2-222 |
| R-Frame (800–2500 Amperes) | V4-T2-237 |
| Motor Circuit Protectors (MCP) | V4-T2-256 |
| Motor Protection Circuit Breakers (MPCB) | V4-T2-267 |
| Type ELC Current Limiter Attachment (Size 0–4) | V4-T2-269 |
| Current Limiting Circuit Breaker Module | V4-T2-270 |
| Internal Accessories | |
| Product Selection | V4-T2-275 |
| Technical Data and Specifications | V4-T2-294 |
| External Accessories | V4-T2-306 |

Internal Accessories

Product Overview

Alarm Switch

For remote indication of automatic trip operation. Does not function with manual switching; however, it will operate when either a shunt trip or undervoltage release is operated. A “make” contact closes and a “break” contact opens when the alarm/lockout switch operates. The switch automatically resets when the circuit breaker is reset.

Auxiliary Switch

The auxiliary switch provides circuit breaker contact status information by monitoring the position of the molded cross bar that contains the moving contact arms. The auxiliary switch is used for remote indication and interlock system verification, and consists of one or two SPDT switches housed in a plug-in module. Each SPDT switch has one “a” and one “b” contact. When the circuit breaker contacts are open, the “a” contact is open and the “b” contact is closed.

Auxiliary Switch and Alarm Switch Combination

Each catalog number listed in tables on **Pages V4-T2-278** and **V4-T2-279** includes one auxiliary switch and one alarm switch. In an auxiliary switch ASL switch combination, the auxiliary switch is always mounted on the side of the plug-in module next to the center pole of the circuit breaker.

Shunt Trip

The shunt trip provides remote controlled tripping of the circuit breaker. The shunt trip consists of an intermittent rated solenoid with a tripping plunger and a cutoff switch assembled to a plug-in module. When required for ground fault protection applications, certain AC rated shunt trips, as noted in the electrical rating table, are suitable for operation at 55 percent of rated voltage.

Select shunt trip catalog number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific AC or DC voltages within the voltage range shown. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low Energy Shunt Trip

Low energy shunt trip devices are designed to operate from low energy output signals from dedicated current sensors typically applied in ground fault protection schemes. However, with a proper control voltage source, they may be applied in place of conventional trip devices for special applications. Flux paths surrounding permanent magnets used in the shunt trip assembly hold a charged spring poised in readiness to operate the circuit breaker trip mechanism.

When a 100 microfarad capacitor charged to 28 Vdc is discharged through the shunt trip coil, the resultant flux opposes the permanent magnet flux field, which releases the stored energy in the spring to trip the circuit breaker. As the circuit breaker resets, the shunt trip reset arm is actuated by the circuit breaker handle, resetting the shunt trip. The plug-in module is mounted in retaining slots in the top of the trip unit. Coil is intermittent-rated only. Cutoff provisions required in control circuit.

Undervoltage Release Mechanism

The undervoltage release mechanism monitors a voltage (typically a line voltage) and trips the circuit breaker when the voltage falls to between 70 and 35 percent of the solenoid coil rating.

The undervoltage release mechanism consists of a continuous rated solenoid with a plunger and tripping lever mounted in a plug-in module. The tab on the tripping lever resets the undervoltage release mechanism when normal voltage has been restored and the circuit breaker handle is moved to the reset (or OFF) position. With less than pickup voltage applied to the undervoltage release mechanism, the circuit breaker contacts will not touch when a closing operation is attempted.

Note: Undervoltage release mechanism accessories are not designed for, and should not be used as, circuit interlocks.

Accessory Terminal Block (R-Frame)

(For fixed-mounted configuration.)

Internal accessory wiring leads are normally supplied with pigtail leads (18 AWG) that exit from the right side of the circuit breaker. Where specified, fixed-mounted accessory terminal blocks are available. A maximum of one 24-point terminal block can be installed on the right side of the circuit breaker for the internal accessories.

For convenience in determining the appropriate number of terminal block points required, refer to **Page V4-T2-274**.

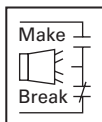
PowerNet and Zone Interlock Kits (OPTIM 550 only) K-, L- and N-Frames

Eaton's PowerNet Communications Kit can be ordered to add PowerNet communications to an existing OPTIM 550 breaker in the field. An 18-inch (457.2 mm) wiring pigtail is routed to the rear of the breaker: two wires for PowerNet and two wires for 24 Vdc (45 mA load). It is recommended that the power supply be an "isolated high quality" unit.

Product Selection

Alarm Switch

Alarm Switch



G-Frame Alarm Switch (RH Only) ①

| Electrical Ratings | | | Contact Arrangement | Factory Suffix | Catalog Number ②③④ |
|--|-----------|---------|--------------------------|----------------|--------------------|
| Volts | Frequency | Amperes | | | |
| Alarm Switch | | | | | |
| 240 | 50/60 Hz | 6 | 1 Make/1 Break | B3 | 1288C75G03 |
| Alarm Switch Auxiliary Switches Combination | | | | | |
| 240 | 50/60 Hz | 6 | 1 Make/1 Break and 1A/1B | B13 | 1288C76G09 |

F-Frame Alarm Switch ①

| Number of Contacts (Make and Break) | Mounting Location (Pole) | Factory Mounted Connection Type and Location | | | Factory Installation Kit ⑤ | | |
|-------------------------------------|--------------------------|--|----------------------|-----------------------------|----------------------------|----------------|----------------|
| | | 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block Same Side | Pigtail Leads | Terminal Block |
| | | Same Side Suffix Number | Rear ⑥ Suffix Number | Opposite Side Suffix Number | | | |
| 1 | Left ⑦ | B01 | B02 | B03 | B04 | A1L1LPK | A1L1LTK |
| | Right | B05 | B06 | B07 | B08 | A1L1RPK | A1L1RTK |
| 2 | Left ⑦ | B09 | B10 | — | B11 | A2L1LPK | A2L1LTK |
| | Right | B12 | B13 | — | B14 | A2L1RPK | A2L1RTK |
| 1 | Single-pole | B15 ⑧ | — | — | — | — | — |

F-Frame HMCP Alarm Switch ①

| Number of Contacts (Make and Break) | Mounting Location (Pole) | Factory Mounted Connection Type and Location | | | Factory Installation Kit ⑤ | | |
|-------------------------------------|--------------------------|--|----------------------|-----------------------------|----------------------------|-----------------|-----------------|
| | | 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block Same Side | Pigtail Leads | Terminal Block |
| | | Same Side Suffix Number | Rear ⑥ Suffix Number | Opposite Side Suffix Number | | | |
| 1 | Left ⑦ | B01 | B02 | B03 | B04 | MA1L1LPK | MA1L1LTK |
| | Right | B05 | B06 | B07 | B08 | MA1L1RPK | MA1L1RTK |
| 2 | Left ⑦ | B09 | B10 | — | B11 | MA2L1LPK | MA2L1LTK |
| | Right | B12 | B13 | — | B14 | MA2L1RPK | MA2L1RTK |

J-Frame and HMCP (J) Alarm Switch

| Number of Contacts (Make and Break) | Mounting Location (Pole) | Factory Mounted Connection Type and Location | | | Field Mounted Field Installation Kits ⑨ | | |
|-------------------------------------|--------------------------|--|----------------------|-----------------------------|---|----------------|------------------|
| | | 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block Same Side | Pigtail Leads | Terminal Block |
| | | Same Side Suffix Number | Rear ⑦ Suffix Number | Opposite Side Suffix Number | | | |
| 1 | Left ⑧ | B01 | B02 | B03 | B04 | A1L2LPK | A1L2LTK |
| | Right | B05 | B06 | B07 | B08 | A1L2RPK | A1L2RTK ⑨ |

Notes

- ① F-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory. Internal accessories are UL listed for factory installation under E7819. Where local codes and standards permit and UL listing is not required, internal accessories can be field installed; however, this is not recommended for FDE breakers. Accessory installation should be done before the circuit breaker is mounted and connected.
- ② Includes 24-inch (609.6 mm) external pigtail leads, 18 AWG (16–0.010).
- ③ A maximum of two internal accessories may be mounted in a three-pole circuit breaker.
- ④ Suitable for mounting in right pole only of two- or three-pole breaker.
- ⑤ Not listed with Underwriters Laboratories; for field installation.
- ⑥ Standard pigtail lead exit location.
- ⑦ Standard mounting location.
- ⑧ Factory installation only. Leads exit load end of circuit breaker.
- ⑨ Listed with Underwriters Laboratories; for field installation on interchangeable trip unit breakers under E64983.
- ⑩ Standard mounting location—leads exit rear of breaker.

K-Frame and HMCP (K) Alarm Switch

| Number of Sets of Contacts (1M and 1B) | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block Same Side Suffix Number | Field Mounted Field Installation Kits ^① | |
|--|--------------------------|---|---------------------------------|-----------------------------|--|--|-------------------------------|
| | | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1 | Left ^③ | B01 | | B02 | B03 |
| | Right ^④ | B05 | B06 | B07 | B08 | A1L3RPK | A1L3RTK |
| 2 | Left ^③ | B09 | B10 | — | B11 | A2L3LPK | A2L3LTK |
| | Right ^④ | B12 | B13 | — | B14 | A2L3RPK | A2L3RTK |

L-, HMCP (L) and (M) Frames and Alarm Switch

| Number of Sets of Contacts (1M and 1B) | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block Same Side Suffix Number | Field Mounted Field Installation Kits ^① | |
|--|--------------------------|---|---------------------------------|-----------------------------|--|--|-------------------------------|
| | | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1 | Left ^③ | B01 | | B02 | B03 |
| | Right | B05 | B06 | B07 | B08 | A1L4RPK | A1L4RTK |
| 2 | Left ^③ | B09 | B10 | — | B11 | A2L4LPK | A2L4LTK |
| | Right | B12 | B13 | — | B14 | A2L4RPK | A2L4RTK |

N-Frame and HMCP (N) Alarm Switch

| Number of Sets of Contacts (1M and 1B) | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block Same Side Suffix Number | Field Mounted Field Installation Kits ^⑤ | |
|--|--------------------------|---|---------------------------------|-----------------------------|--|--|-------------------------------|
| | | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1 | Left | B01 | | B02 | B03 |
| | Right ^③ | B05 | B06 | B07 | B08 | A1L5RPK | A1L5RTK |
| 2 | Left | B09 | B10 | — | B11 | A2L5LPK | A2L5LTK |
| | Right ^③ | B12 | B13 | — | B14 | A2L5RPK | A2L5RTK |

R-Frame Alarm Switch (RH Only)

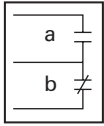
| Number of Contacts (Make and Break) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Suffix Number ^⑥ | Field Mounted Field Installation Kits ^⑤ Pigtail Leads Catalog Number ^⑥ |
|-------------------------------------|--|--|
| | 1 | B05 |
| 2 | B12 | A2L6RPK |

Notes

- ① Listed with Underwriters Laboratories; for field installation on interchangeable trip unit breakers under E64983.
- ② Standard mounting location.
- ③ Standard mounting location—leads exit rear of breaker.
- ④ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
- ⑤ Listed with Underwriters Laboratories for field installation under E64983.
- ⑥ A maximum of three ASL plug-in modules may be installed in a circuit breaker.

Auxiliary Switch

Auxiliary Switch



G-Frame Auxiliary Switch (RH Only)

| Electrical Ratings | | | Contact Arrangement | Factory Suffix | Catalog Number ^{①②} |
|--------------------|-----------|---------|---------------------|----------------|------------------------------|
| Volts | Frequency | Amperes | | | |
| 240 | 50/60 Hz | 6 | 1a/1b | A3 | 1288C74G03 |
| 240 | 50/60 Hz | 6 | 2a/2b | A6 | 1288C73G03 |

F-Frame and HMCP (F) Auxiliary Switch

| Number of Contacts A and B | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | | Factory Installation Kit ^④ | |
|----------------------------|-------------------------------|---|---------------------------------|-----------------------------|--|---------------------------------------|-------------------------------|
| | | Same Side Suffix Number | Rear ^③ Suffix Number | Opposite Side Suffix Number | Terminal Block Same Side Suffix Number | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1 | Left ^⑤ | A01 | A02 | A03 | A04 |
| | Left ^⑤ | A15 ^⑦ | A16 ^⑦ | A17 ^⑦ | — | E1X1PK | — |
| | Right or Neutral ^⑥ | A05 | A06 | A07 | A08 | A1X1PK | A1X1RTK ^⑧ |
| | Right or Neutral ^⑥ | A18 ^⑦ | A19 ^⑦ | A20 ^⑦ | — | — | — |
| 2 | Left ^⑤ | A09 | A10 | — | A11 | A2X1LPK | A2X1LTK |
| | Left ^⑤ | A21 ^⑦ | A22 ^⑦ | — | — | E2X1LPK | — |
| | Right or Neutral ^⑥ | A12 | A13 | — | A14 | A2X1RPK | A2X1RTK ^⑧ |
| | Right or Neutral ^⑥ | A23 ^⑦ | A24 ^⑦ | — | — | E2X1RPK | — |

F-Frame with Electronic Trip Unit Auxiliary Switch ^⑨

| Number of Contacts A and B | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | | Factory Installation Kit ^④ | |
|----------------------------|--------------------------|---|---------------------------------|-----------------------------|--|---------------------------------------|-------------------------------|
| | | Same Side Suffix Number | Rear ^③ Suffix Number | Opposite Side Suffix Number | Terminal Block Same Side Suffix Number | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | Trip Unit Type 310+ | | | | | |
| 1 | Right | A30 | A31 | A32 | — | — | — |
| Trip Unit Type 210+ | | | | | | | |
| 1 | Right | A33 | A34 | A35 | — | — | — |

J-Frame and HMCP (J) Auxiliary Switch

| Number of Contacts A and B | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | | Field Mounted Factory Installation Kit ^⑩ | |
|----------------------------|--------------------------|---|---------------------------------|-----------------------------|--|---|-------------------------------|
| | | Same Side Suffix Number | Rear ^③ Suffix Number | Opposite Side Suffix Number | Terminal Block Same Side Suffix Number | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1 | Left | A01 | A02 | A03 | A04 |
| | Right ^⑩ | A05 | A06 | A07 | A08 | A1X2PK | A1X2RTK ^⑩ |
| 2 | Left | A09 | A10 | — | A11 | A2X2PK | A2X2LTK |
| | Right ^⑩ | A12 | A13 | — | A14 | A2X2PK | A2X2RTK ^⑩ |

Notes

- ① Includes 24-inch external pigtail leads, 18 AWG (16–0.010).
- ② A maximum of two internal accessories may be mounted in a three-pole circuit breaker. Suitable for mounting in right pole only of two- or three-pole breaker.
- ③ Standard pigtail lead exit location.
- ④ Not listed with Underwriters Laboratories; for field installation.
- ⑤ Pigtail wire size: 18 AWG (0.82 mm²).
- ⑥ Not for use on F-Frame with electronic trip unit.
- ⑦ 125 volts (max.), 50/60 Hz switch for use in electronic circuit of 100 micro amperes and 15 Vdc minimum.
- ⑧ Not for use on four-pole circuit breakers.
- ⑨ Only for use on three-pole F-Frame breakers with electronic trip unit. Installation auxiliary switch for FD electronic breakers on right pole must be performed at breaker factory.
- ⑩ Listed with Underwriters Laboratories for field installation or interchangeable trip unit breakers under E64983.
- ⑪ Standard mounting location—leads exit rear of breaker.

K-Frame and HMCP (K) Auxiliary Switch

| Number of Contacts A and B | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Field Mounted Factory Installation Kit ① | | |
|----------------------------|--------------------------|---|----------------------|-----------------------------|--|------------------------------|-------------------------------|
| | | Same Side Suffix Number | Rear ② Suffix Number | Opposite Side Suffix Number | Terminal Block Same Side Suffix Number | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1 | Left | A01 | A02 | A03 | A04 |
| | Right ②③ | A05 | A06 | A07 | A08 | A1X3PK | A1X3RTK ④ |
| 2 | Left | A09 | A10 | — | A11 | A2X3PK | A2X3LTK |
| | Right ②③ | A12 | A13 | — | A14 | A2X3PK | A2X3RTK ④ |
| | Right | A21 | A22 | — | — | 1482D28G10 ⑥⑦ | — |
| 3 | Left | A18 | — | — | A15 | A3X3LPK | A3X3LTK |
| | Right ③ | A17 | — | — | A16 | A3X3RPK | A3X3RTK ④ |

L-, HMCP (L) and (M) Frames and Auxiliary Switch

| Number of Contacts A and B | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Field Mounted Factory Installation Kit ① | | |
|----------------------------|--------------------------|---|----------------------|-----------------------------|--|------------------------------|-------------------------------|
| | | Same Side Suffix Number | Rear ② Suffix Number | Opposite Side Suffix Number | Terminal Block Same Side Suffix Number | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1 | Left | A01 | A02 | A03 | A04 |
| | Right ② | A05 | A06 | A07 | A08 | A1X4PK | A1X4RTK ④ |
| 2 | Left | A09 | A10 | — | A11 | A2X4PK | A2X4LTK |
| | Right ② | A12 | A13 | — | A14 | A2X4PK | A2X4RTK ④ |
| 3 | Left | A18 | — | — | A15 | A3X4PK | A3X4LTK |
| | Right ② | A17 | — | — | A16 | A3X4PK | A3X4RTK ④ |

N-Frame and HMCP (N) Auxiliary Switch

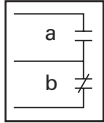
| Number of Contacts A and B | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Field Mounted Factory Installation Kit ① | | |
|----------------------------|--------------------------|---|----------------------|-----------------------------|--|------------------------------|-------------------------------|
| | | Same Side Suffix Number | Rear ② Suffix Number | Opposite Side Suffix Number | Terminal Block Same Side Suffix Number | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1 | Left | A01 | A02 | A03 | A04 |
| | Right ② | A05 | A06 | A07 | A08 | A1X5PK | A1X5RTK ④ |
| 2 | Left | A09 | A10 | — | A11 | A2X5PK | A2X5LTK |
| | Right ② | A12 | A13 | — | A14 | A2X5PK | A2X5RTK ④ |
| 3 | Left | A18 | — | — | A15 | A3X5LPK | A3X5LTK |
| | Right ② | A17 | — | — | A16 | A3X5RPK | A3X5RTK ④ |

R-Frame Auxiliary Switch (RH Only)

| Number of Contacts A and B | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Suffix Number ⑤ | Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number ⑤ |
|----------------------------|---|--|
| | 2 | A12 |
| 4 | A19 | A4X6RPK |

Notes

- ① Listed with Underwriters Laboratories for field installation under E64983.
- ② Standard mounting location—leads exit rear of breaker.
- ③ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
- ④ Not for use on four-pole circuit breakers.
- ⑤ A maximum of two auxiliary switches (any combination of 2a/2b or 4a/4b plug-in modules may be installed in a circuit breaker).
- ⑥ This option is not field installable.
- ⑦ Available on the OPTIM 550 only. Communications are not available with this option.

Auxiliary Switch and Alarm Switch Combination**Auxiliary Switch and Alarm Switch Combination****F-Frame Auxiliary Switch and Alarm Switch Combination** ^①

| Mounting Location (Pole) | Factory Mounted Connection Type and Location | | | Factory Installation Kit ^② | |
|--------------------------|--|-------------------|----------------|---------------------------------------|----------------------|
| | 18-Inch (457 mm) Pigtail Leads | | | Terminal Block | Pigtail Leads |
| | Same Side | Rear ^③ | Terminal Block | Same Side | Terminal Block |
| | Suffix Number | Suffix Number | Suffix Number | Catalog Number | Catalog Number |
| Left ^③ | C01 | C02 | C03 | AAL1LPK | AAL1LTK |
| Right | C04 | C05 | C06 | AAL1RPK | AAL1RTK ^④ |

F-Frame HMCP Auxiliary Switch and Alarm Switch Combination

| Mounting Location (Pole) | Factory Mounted Connection Type and Location | | | Factory Installation Kit ^② | |
|--------------------------|--|-------------------|----------------|---------------------------------------|----------------|
| | 18-Inch (457 mm) Pigtail Leads | | | Terminal Block | Pigtail Leads |
| | Same Side | Rear ^③ | Terminal Block | Same Side | Terminal Block |
| | Suffix Number | Suffix Number | Suffix Number | Catalog Number | Catalog Number |
| Left ^④ | C01 | C02 | C03 | MAAL1LPK | MAAL1LTK |
| Right | C04 | C05 | C06 | MAAL1RPK | MAAL1RPK |

J-Frame and HMCP (J) Auxiliary Switch and Alarm Switch Combination

| Number of Sets of Contacts (1A and 1B) (1M–1B) | Mounting Location (Pole) | Factory Mounted Connection Type and Location | | | Field Mounted Field Installation Kits ^⑤ | | |
|--|--------------------------|--|-------------------|---------------|--|----------------|----------------------|
| | | 18-Inch (457 mm) Pigtail Leads | | | Terminal Block | Pigtail Leads | Terminal Block |
| | | Same Side | Rear ^⑥ | Opposite Side | Same Side | Terminal Block | Pigtail Leads |
| | | Suffix Number | Suffix Number | Suffix Number | Suffix Number | Catalog Number | Catalog Number |
| 1 | Left | C01 | C02 | — | C03 | AAL2LPK | AAL2LTK |
| | Right ^④ | C04 | C05 | — | C06 | AAL2RPK | AAL2RTK ^④ |

K-Frame and HMCP (K) Auxiliary Switch and Alarm Switch Combination

| Number of Sets of Contacts (1A and 1B) (1M–1B) | Mounting Location (Pole) | Factory Mounted Connection Type and Location | | | Field Mounted Field Installation Kits ^⑤ | | |
|--|--------------------------|--|-------------------|---------------|--|--------------------------|----------------|
| | | 18-Inch (457 mm) Pigtail Leads | | | Terminal Block | Pigtail Leads | Terminal Block |
| | | Same Side | Rear ^⑥ | Opposite Side | Same Side | Terminal Block | Pigtail Leads |
| | | Suffix Number | Suffix Number | Suffix Number | Suffix Number | Catalog Number | Catalog Number |
| 1 | Left | C01 | C02 | — | C03 | AAL3LPK | AAL3LTK |
| | Right ^{⑥⑦} | C04 | C05 | — | C06 | AAL3RPK ^⑧ | AAL3RTK |
| | Right | C07 | C08 | — | — | 1482D28G09 ^{⑧⑨} | — |

Notes

- ① Auxiliary switch and alarm switch combination options (Cxx) are not available on FDE 310+ with LSG or LSIG trip units due to exit wire limitations. To obtain both features, order a left mounting alarm switch (B01-B04 or B09-B11), and right mounting auxiliary switch (A30-A32).
- ② Not listed with Underwriters Laboratories for field installation.
- ③ Standard mounting location.
- ④ Not for use on four-pole circuit breakers.
- ⑤ Listed with Underwriters Laboratories for field installation of interchangeable trip unit breakers under E64983.
- ⑥ Standard mounting location—leads exit rear of breaker.
- ⑦ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
- ⑧ Will not install on OPTIM Trip (RH).
- ⑨ Available on the OPTIM 550 only. Communications are not available with this option.
- ⑩ This option is not field installable.

L-, HMCP (L) and (M) Frames and Auxiliary Switch and Alarm Switch Combination

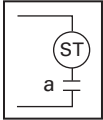
| Number of Sets of Contacts | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads | | | Terminal Block Same Side Suffix Number | Field Mounted Field Installation Kits ^① | |
|----------------------------|--------------------------|---|---------------------------------|-----------------------------|--|--|-------------------------------|
| | | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1A, 1B and 1 Make/1 Break | Left | C01 | | C02 | — |
| | Right ^② | C04 | C05 | — | C06 | AA114RPK | AA114RTK ^③ |
| 2A, 2B and 1 Make/1 Break | Left | C07 | C08 | — | C12 | AA214LPK | AA214LTK |
| | Right ^② | C10 | C11 | — | C13 | AA214RPK | AA214RTK ^③ |
| 3A, 3B and 1 Make/1 Break | Left | C14 | — | — | — | AA314LPK | — |
| | Right ^② | C15 | — | — | — | AA314RPK | — |

N-Frame and HMCP (N) Auxiliary Switch and Alarm Switch Combination

| Number of Sets of Contacts | Mounting Location (Pole) | Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads | | | Terminal Block Same Side Suffix Number | Field Mounted Field Installation Kits ^① | |
|----------------------------|--------------------------|---|---------------------------------|-----------------------------|--|--|-------------------------------|
| | | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | | 1A, 1B and 1 Make/1 Break | Left | C01 | | C02 | — |
| | Right ^② | C04 | C05 | — | C06 | AA115RPK | AA115RTK ^③ |
| 2A, 2B and 1 Make/1 Break | Left | C07 | C08 | — | C12 | AA215LPK | AA215LTK |
| | Right ^② | C10 | C11 | — | C13 | AA215RPK | AA215RTK ^③ |

Notes

- ① Listed with Underwriters Laboratories for field installation under E64983.
 ② Standard mounting location—leads exit rear of breaker.
 ③ Not for use on four-pole circuit breaker.

Shunt Trip**Shunt Trip****G-Frame Shunt Trip (LH Three-Pole Only)**

| Electrical Ratings | | | | |
|--------------------|-----------|---------|---------------|-------------------|
| Volts | Frequency | Amperes | Suffix Number | Catalog Number |
| 120 | 50/60 Hz | 1.1 | S1 | 1373D62G01 |
| 240 | 50/60 Hz | 2.1 | S2 | 1373D62G02 |
| 12 | DC | 2.8 | S3 | 1373D62G15 |
| 24 | DC | 5.7 | S4 | 1373D62G16 |
| 24 | 60 Hz | — | S7 | 1373D62G20 |

F-Frame and HMCP (F) Shunt Trip

| Voltage Rating (AC Frequency = 50/60 Hz) | Factory Mounted Connection Type and Location | | | Factory Installation Kit ① | | |
|--|---|---------------|---------------|----------------------------|------------------|--------------------|
| | 18-Inch (457.2 mm) Pigtail Leads ② | | | Terminal Block | Pigtail Leads | Terminal Block |
| | Same Side | Rear ③ | Opposite Side | Same Side | | |
| | Suffix Number | Suffix Number | Suffix Number | Suffix Number | Catalog Number | Catalog Number |
| Left-Pole Mounting AC/DC Ratings | | | | | | |
| 12–24 Vac or Vdc | S01 | S02 | S03 | S04 | SNT1LP03K | SNT1LT03K |
| 48–127 Vac or 48–60 Vdc ④ | S05 | S06 | S07 | S08 | SNT1LP08K | SNT1LT08K |
| 208–380 Vac or 110–127 Vdc | S09 | S10 | S11 | S12 | SNT1LP12K | SNT1LT12K |
| 415–600 Vac or 220–250 Vdc | S13 | S14 | S15 | S16 | SNT1LP18K | SNT1LT18K |
| Right- or Neutral-Pole Mounting AC/DC Ratings ⑤ | | | | | | |
| 12–24 Vac or Vdc | S17 | S18 | S19 | S20 | SNT1RP03K | SNT1RT03K ⑥ |
| 48–127 Vac or 48–60 Vdc ④ | S21 | S22 | S23 | S24 | SNT1RP08K | SNT1RT08K ⑥ |
| 208–380 Vac or 110–127 Vdc | S25 | S26 | S27 | S28 | SNT1RP12K | SNT1RT12K ⑥ |
| 415–600 Vac or 220–250 Vdc | S29 | S30 | S31 | S32 | SNT1RP18K | SNT1RT18K ⑥ |

Notes

- ① Not listed with Underwriters Laboratories, for field installation.
- ② Pigtail wire size: 18 AWG (0.82 mm²).
- ③ Standard pigtail lead exit location.
- ④ 120 Vac marked suitable for ground fault protection devices.
- ⑤ Standard mounting location.
- ⑥ Not for use on four-pole circuit breakers.

G-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory. Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

2.3

Molded Case Circuit Breakers

Series C

2

J-Frame and HMCP (J) Shunt Trip

| Voltage Rating (AC Frequency = 50/60 Hz) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block Same Side Suffix Number | Field Mounted Field Installation Kits ^① | |
|--|---|---------------------------------------|-----------------------------------|---|---|-------------------------------------|
| | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | Left-Pole Mounting AC/DC Ratings ^② | | | | | |
| 12–24 Vac or Vdc | S41 | S42 | S43 | S44 | SNT2P04K | SNT2T04K |
| 48–60 Vac or Vdc | S49 | S50 | S51 | S52 | SNT2P06K | SNT2T06K |
| 110–240 Vac or 110–125 Vdc ^③ | S09 | S10 | S11 | S12 | SNT2P11K | SNT2T11K |
| 380–440 Vac or 220–250 Vdc | S13 | S14 | S15 | S16 | SNT2P14K | SNT2T14K |
| 480–600 Vac | S17 | S18 | S19 | S20 | SNT2P18K | SNT2T18K |
| Right- or Neutral-Pole Mounting AC/DC Ratings | | | | | | |
| 12–24 Vac or Vdc | S45 | S46 | S47 | S48 | SNT2P04K | SNT2T04K ^④ |
| 48–60 Vac or Vdc | S53 | S54 | S55 | S56 | SNT2P06K | SNT2T06K ^④ |
| 110–240 Vac or 110–125 Vdc ^③ | S29 | S30 | S31 | S32 | SNT2P11K | SNT2T11K ^④ |
| 380–440 Vac or 220–250 Vdc | S33 | S34 | S35 | S36 | SNT2P14K | SNT2T14K ^④ |
| 480–600 Vac | S37 | S38 | S39 | S40 | SNT2P18K | SNT2T18K ^④ |

K-Frame and HMCP (K) Shunt Trip

| Voltage Rating (AC Frequency = 50/60 Hz) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block Same Side Suffix Number | Field Mounted Field Installation Kits ^① | |
|--|---|---------------------------------------|-----------------------------------|---|---|-------------------------------------|
| | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | Left-Pole Mounting AC/DC Ratings ^② | | | | | |
| 12–24 Vac or Vdc | S41 | S42 | S43 | S44 | SNT3P04K | SNT3T04K |
| 48–60 Vac or Vdc | S49 | S50 | S51 | S52 | SNT3P06K | SNT3T06K |
| 110–240 Vac or 110–125 Vdc ^③ | S09 | S10 | S11 | S12 | SNT3P11K | SNT3T11K |
| 380–440 Vac or 220–250 Vdc | S13 | S14 | S15 | S16 | SNT3P14K | SNT3T14K |
| 480–600 Vac | S17 | S18 | S19 | S20 | SNT3P18K | SNT3T18K |
| Right- or Neutral-Pole Mounting AC/DC Ratings ^{⑤⑥} | | | | | | |
| 12–24 Vac or Vdc | S45 | S46 | S47 | S48 | SNT3P04K | SNT3T04K ^④ |
| 48–60 Vac or Vdc | S53 | S54 | S55 | S56 | SNT3P06K | SNT3T06K ^④ |
| 110–240 Vac or 110–125 Vdc ^③ | S29 | S30 | S31 | S32 | SNT3P11K | SNT3T11K ^④ |
| 380–440 Vac or 220–250 Vdc | S33 | S34 | S35 | S36 | SNT3P14K | SNT3T14K ^④ |
| 480–600 Vac | S37 | S38 | S39 | S40 | SNT3P18K | SNT3T18K ^④ |

Notes

- ① Listed with Underwriters Laboratories for field installation under E64983.
- ② Standard mounting location—leads exit rear of breaker.
- ③ Suitable for use with Class 1 ground fault sensing element.
- ④ Not for use on four-pole circuit breakers.
- ⑤ For use with KT (thermal-magnetic) trip units only.
- ⑥ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

L-, HMCP (L) and (M) Frames and Shunt Trip

| Voltage Rating (AC Frequency = 50/60 Hz) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | | Field Mounted Field Installation Kits ^① | |
|---|---|-------------------|------------------|-----------------------------|---|-------------------|
| | Same Side | Rear ^② | Opposite Side | Terminal Block Same Side | Pigtail Leads | Terminal Block |
| | Suffix Number | Suffix Number | Suffix Number | Suffix Number | Catalog Number | Catalog Number |
| Left-Pole Mounting AC/DC Ratings ^② | | | | | | |
| 12–24 Vac or Vdc | S01 | S02 | S03 | S04 | SNT4LP03K | SNT4LT03K |
| 48–60 Vac | S05 | S06 | S07 | S08 | SNT4LP05K | SNT4LT05K |
| 48–60 Vdc | S85 | S86 | S87 | — | SNT4LP23K | SNT4LT23K |
| 110–240 Vac | S09 | S10 | S11 | S12 | SNT4LP11K | SNT4LT11K |
| 110–125 Vdc | S41 | S42 | S43 | S44 | SNT4LP26K | SNT4LT26K |
| 380–440 Vac or 220–250 Vdc | S13 | S14 | S15 | S16 | SNT4LP14K | SNT4LT14K |
| 480–600 Vac | S17 | S18 | S19 | S20 | SNT4LP18K | SNT4LT18K |
| Right-Pole Mounting AC/DC Ratings ^③ | | | | | | |
| 12–24 Vac or Vdc | S21 | S22 | S23 | S24 | SNT4RP03K | SNT4RT03K |
| 48–60 Vac | S25 | S26 | S27 | S28 | SNT4RP05K | SNT4RT05K |
| 48–60 Vdc | S88 | S89 | S90 | — | SNT4RP23K | SNT4RT23K |
| 110–240 Vac | S29 | S30 | S31 | S32 | SNT4RP11K | SNT4RT11K |
| 110–125 Vdc | S45 | S46 | S47 | S48 | SNT4RP26K | SNT4RT26K |
| 380–440 Vac or 220–250 Vdc | S33 | S34 | S35 | S36 | SNT4RP14K | SNT4RT14K |
| 480–600 Vac | S37 | S38 | S39 | S40 | SNT4RP18K | SNT4RT18K |

Notes

^① Listed with Underwriters Laboratories, for field installation under E64983.

^② Standard mounting location—leads exit rear of breaker.

^③ For use with LT (thermal-magnetic) three-pole trip units only.

N-Frame and HMCP (N) Shunt Trip

| Voltage Rating (AC Frequency = 50/60 Hz) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Field Mounted Field Installation Kits ^① | | |
|--|---|-------------------|------------------|---|-------------------|-------------------|
| | Same Side | Rear ^② | Opposite Side | Terminal Block Same Side | Pigtail Leads | Terminal Block |
| | Suffix Number | Suffix Number | Suffix Number | Suffix Number | Catalog Number | Catalog Number |
| Left-Pole Mounting AC/DC Ratings ^② | | | | | | |
| 9–24 Vac or Vdc | S01 | S02 | S03 | S04 | SNT5LP03K | SNT5LT03K |
| 48–60 Vac | S05 | S06 | S07 | S08 | SNT5LP05K | SNT5LT05K |
| 110–240 Vac ^③ | S09 | S10 | S11 | S12 | SNT5LP11K | SNT5LT11K |
| 110–125 Vdc | S41 | S42 | S43 | S44 | SNT5LP26K | SNT5LT26K |
| 380–440 Vac or 220–250 Vdc | S13 | S14 | S15 | S16 | SNT5LP14K | SNT5LT14K |
| 480–600 Vac | S17 | S18 | S19 | S20 | SNT5LP18K | SNT5LT18K |
| 48–60 Vdc | S21 | S22 | S23 | S24 | SNT5LP23K | SNT5LT23K |

R-Frame Shunt Trip (RH Only)

| Voltage Rating (AC Frequency = 50/60 Hz) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | Field Mounted Field Installation Kits ^① |
|---|---|---|
| | Suffix Number ^④ | Pigtail Leads Catalog Number ^④ |
| 24 Vac or Vdc | S21 | SNT6P03K |
| 48–60 Vac | S25 | SNT6P05K |
| 110–240 Vac | S29 | SNT6P11K |
| 380–440 Vac or 220–250 Vdc | S33 | SNT6P14K |
| 480–600 Vac | S37 | SNT6P18K |
| 48–60 Vdc | S88 | SNT6P23K |
| 110–125 Vdc | S45 | SNT6P26K |

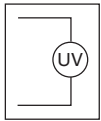
Notes

- ^① Listed with Underwriters Laboratories for field installation under E64983.
- ^② Standard mounting location—leads exit rear of breaker.
- ^③ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
- ^④ A maximum of two shunt trip plug-in modules may be installed in a circuit breaker.

Low Energy Shunt Trip Ordering Information

Select shunt trip catalog number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific AC or DC voltages within the voltage range shown. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low Energy Shunt Trip



F-, J-, K-, L-, M-, N- and R-Frames and HMCPs Low Energy Shunt Trip ^①

| Mounting Positions (Pole) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | Field Mounted Field Installation Kits ^② Terminal Block | | |
|---------------------------|---|-------------------|---------------|---|----------------------|----------------------|
| | Same Side | Rear ^③ | Opposite Side | Same Side | Pigtail Leads | Terminal Block |
| | Suffix Number | Suffix Number | Suffix Number | Suffix Number | Catalog Number | Catalog Number |
| F-Frame | | | | | | |
| Left | N01 | N02 | N03 | N04 | LST1LPK ^④ | LST1LTK ^④ |
| Right ^③ | N05 | N06 | N07 | N08 | LST1RPK ^④ | LST1RTK ^④ |
| J-Frame | | | | | | |
| Left | N01 | N02 | N03 | — | LST2LPK | — |
| Right ^③ | N05 | N06 | N07 | — | LST2RPK | — |
| K-Frame | | | | | | |
| Left ^③ | N01 | N02 | N03 | — | LST3LPK | — |
| Right ^{⑤⑥} | N05 | N06 | N07 | — | LST3RPK | — |
| L- and M-Frames | | | | | | |
| Left | N01 | N02 | N03 | — | LST4LPK | — |
| Right | N05 | N06 | N07 | — | LST4RPK | — |
| N-Frame | | | | | | |
| Left ^③ | N01 | N02 | N03 | — | LST5LPK | — |
| R-Frame | | | | | | |
| Right | N01 | — | — | — | LST6RPK | — |

Notes

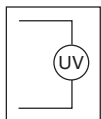
- ① Cutoff provisions required in control circuit.
- ② Listed with Underwriters Laboratories for field installation under E64983.
- ③ Standard mounting location—leads exit rear of breaker.
- ④ For F-Frame HMCP, add an "M" to beginning of catalog number. Field Installation Kit referenced for factory use only, not UL listed for field installation.
- ⑤ For use with thermal-magnetic trip units only.
- ⑥ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

Undervoltage Release Mechanism Ordering Information

2

Select handle reset undervoltage release mechanism catalog number for the voltage within the indicated voltage range. Undervoltage release mechanism coils are designed to be applied at specific AC or DC voltages within the voltage range shown on applicable circuit breaker accessory nameplates.

Undervoltage Release Mechanism



G-Frame Undervoltage Release Mechanism (LH Three-Pole Only)

| Electrical Ratings | | | | Style Numbers ^{①②③} | Factory Suffix |
|--------------------|----------------|---------|-------------------|------------------------------|----------------|
| Volts (AC Only) | Frequency (Hz) | Amperes | | | |
| 120 | 50/60 | 0.05 | 1373D62G03 | T1 | |
| 24 | 50/60 | 0.22 | 1373D62G04 | T2 | |
| 48 | 50/60 | 0.11 | 1373D62G05 | T3 | |
| 60 | 50/60 | 0.10 | 1373D62G06 | T4 | |
| 110 | 50 | 0.049 | 1373D62G07 | T5 | |
| 208 | 60 | 0.026 | 1373D62G08 | T6 | |
| 220 | 50 | 0.025 | 1373D62G09 | T7 | |
| 240 | 50/60 | 0.024 | 1373D62G10 | T8 | |
| 380 | 50 | 0.015 | 1373D62G11 | T9 | |
| 415 | 50 | 0.013 | 1373D62G12 | T10 | |
| 440 | 50 | 0.012 | 1373D62G13 | T11 | |
| 480 | 60 | 0.01 | 1373D62G14 | T12 | |

Notes

- ① Includes 24-inch (609.6 mm) external pigtail leads, 18 AWG (16–0.010).
- ② A maximum of two internal accessories may be mounted in a three-pole circuit breaker.
- ③ Suitable for mounting in left pole only of three-pole breaker.

G-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory.

Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

F-Frame Factory Mounted (For F-Frame Breaker and F-Frame HMCP) Undervoltage Release Mechanism

| Voltage Rating (AC Freq. = 50/60 Hz) | Connection Type and Location 18-Inch Pigtail Leads | | | Terminal Block Same Side Suffix Number |
|---|---|---------------------------------------|-----------------------------------|---|
| | Same Side Suffix Number | Rear ^① Suffix Number | Opposite Side Suffix Number | |
| | | | | |
| Left-Pole Mounting AC Ratings | | | | |
| 12 Vac | U01 | U02 | U03 | U04 |
| 24 Vac | U05 | U06 | U07 | U08 |
| 48 Vac | U37 | U38 | U39 | U40 |
| 60 Vac | U97 | U98 | U99 | U100 |
| 110–127 Vac | U13 | U14 | U15 | U16 |
| 208–240 Vac | U17 | U18 | U19 | U20 |
| 380–480 Vac | U21 | U22 | U23 | U24 |
| 525–600 Vac | U25 | U26 | U27 | U28 |
| Right-Pole Mounting AC Ratings ^{②③} | | | | |
| 12 Vac | U49 | U50 | U51 | U52 |
| 24 Vac | U53 | U54 | U55 | U56 |
| 48 Vac | U85 | U86 | U87 | U88 |
| 60 Vac | U101 | U102 | U103 | U104 |
| 110–127 Vac | U61 | U62 | U63 | U64 |
| 208–240 Vac | U65 | U66 | U67 | U68 |
| 380–480 Vac | U69 | U70 | U71 | U72 |
| 525–600 Vac | U73 | U74 | U75 | U76 |
| Left-Pole Mounting DC Ratings | | | | |
| 12 Vdc | U29 | U30 | U31 | U32 |
| 24 Vdc | U33 | U34 | U35 | U36 |
| 48 Vdc | U37 | U38 | U39 | U40 |
| 60 Vdc | U97 | U98 | U99 | U100 |
| 110–127 Vdc | U41 | U42 | U43 | U44 |
| 220–250 Vdc | U45 | U46 | U47 | U48 |
| Right-Pole Mounting DC Ratings ^{②③} | | | | |
| 12 Vdc | U77 | U78 | U79 | U80 |
| 24 Vdc | U81 | U82 | U83 | U84 |
| 48 Vdc | U85 | U86 | U87 | U88 |
| 60 Vdc | U101 | U102 | U103 | U104 |
| 110–127 Vdc | U89 | U90 | U91 | U92 |
| 220–250 Vdc | U93 | U94 | U95 | U96 |

Notes

- ① Standard pigtail lead exit location.
- ② Standard mounting location.
- ③ Not for use on right pole of four-pole circuit breaker.

F-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory.

Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

F-Frame Field Mounted Undervoltage Release Mechanism

| Voltage Rating (AC Freq. = 50/60 Hz) | F-Frame Breaker Factory Installation Kits ^① | | F-Frame Breaker HMCP | |
|---|---|-------------------|----------------------|-------------------|
| | Pigtail Leads | Terminal Block | Pigtail Leads | Terminal Block |
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| Left-Pole Mounting AC Ratings | | | | |
| 12 Vac | UVH1LP02K | UVH1LT02K | MUVH1LP02K | MUVH1LT02K |
| 24 Vac | UVH1LP03K | UVH1LT03K | MUVH1LP03K | MUVH1LT03K |
| 48 Vac | UVH1LP22K | UVH1LT22K | MUVH1LP22K | MUVH1LT22K |
| 60 Vac | UVH1LP24K | UVH1LT24K | MUVH1LP24K | MUVH1LT24K |
| 110–127 Vac | UVH1LP08K | UVH1LT08K | MUVH1LP08K | MUVH1LT08K |
| 208–240 Vac | UVH1LP11K | UVH1LT11K | MUVH1LP11K | MUVH1LT11K |
| 380–480 Vac | UVH1LP15K | UVH1LT15K | MUVH1LP15K | MUVH1LT15K |
| 525–600 Vac | UVH1LP18K | UVH1LT18K | MUVH1LP18K | MUVH1LT18K |
| Right-Pole Mounting AC Ratings ^{②③} | | | | |
| 12 Vac | UVH1RP02K | UVH1RT02K | MUVH1RP02K | MUVH1RT02K |
| 24 Vac | UVH1RP03K | UVH1RT03K | MUVH1RP03K | MUVH1RT03K |
| 48 Vac | UVH1RP22K | UVH1RT22K | MUVH1RP22K | MUVH1RT22K |
| 60 Vac | UVH1RP24K | UVH1RT24K | MUVH1RP24K | MUVH1RT24K |
| 110–127 Vac | UVH1RP08K | UVH1RT08K | MUVH1RP08K | MUVH1RT08K |
| 208–240 Vac | UVH1RP11K | UVH1RT11K | MUVH1RP11K | MUVH1RT11K |
| 380–480 Vac | UVH1RP15K | UVH1RT15K | MUVH1RP15K | MUVH1RT15K |
| 525–600 Vac | UVH1RP18K | UVH1RT18K | MUVH1RP18K | MUVH1RT18K |
| Left-Pole Mounting DC Ratings | | | | |
| 12 Vdc | UVH1LP20K | UVH1LT20K | MUVH1LP20K | MUVH1LT20K |
| 24 Vdc | UVH1LP21K | UVH1LT21K | MUVH1LP21K | MUVH1LT21K |
| 48 Vdc | UVH1LP22K | UVH1LT22K | MUVH1LP22K | MUVH1LT22K |
| 60 Vdc | UVH1LP24K | UVH1LT24K | MUVH1LP24K | MUVH1LT24K |
| 110–127 Vdc | UVH1LP26K | UVH1LT26K | MUVH1LP26K | MUVH1LT26K |
| 220–250 Vdc | UVH1LP28K | UVH1LT28K | MUVH1LP28K | MUVH1LT28K |
| Right-Pole Mounting DC Ratings ^{②③} | | | | |
| 12 Vdc | UVH1RP20K | UVH1RT20K | MUVH1RP20K | MUVH1RT20K |
| 24 Vdc | UVH1RP21K | UVH1RT21K | MUVH1RP21K | MUVH1RT21K |
| 48 Vdc | UVH1RP22K | UVH1RT22K | MUVH1RP22K | MUVH1RT22K |
| 60 Vdc | UVH1RP22K | UVH1RT22K | MUVH1RP22K | MUVH1RT22K |
| 110–127 Vdc | UVH1RP26K | UVH1RT26K | MUVH1RP26K | MUVH1RT26K |
| 220–250 Vdc | UVH1RP28K | UVH1RT28K | MUVH1RP28K | MUVH1RT28K |

Notes

- ① Not listed with Underwriters Laboratories, for field installation.
- ② Standard mounting location.
- ③ Not for use on right pole of four-pole circuit breaker.

J-Frame and HMCP (J) Undervoltage Release Mechanism

| Voltage Rating (AC Freq. = 50/60 Hz) | Factory Mounted Connection Type and Location | | | Field Mounted Field Installation Kits ^② | | |
|--|---|---------------------------------------|-----------------------------------|---|------------------------------------|--|
| | 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block ^① | Pigtail Leads Catalog Number | Terminal Block ^③ Catalog Number |
| | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | Same Side Suffix Number | | |
| Left-Pole Mounting AC Ratings ^④ | | | | | | |
| 12 Vac | U05 | U06 | U07 | U08 | UVH2LP02K | UVH2LT02K |
| 24 Vac | U09 | U10 | U11 | U12 | UVH2LP03K | UVH2LT03K |
| 48–60 Vac | U13 | U14 | U15 | U16 | UVH2LP05K | UVH2LT05K |
| 110–127 Vac | U17 | U18 | U19 | U20 | UVH2LP08K | UVH2LT08K |
| 208–240 Vac | U21 | U22 | U23 | U24 | UVH2LP11K | UVH2LT11K |
| 380–480 Vac | U25 | U26 | U27 | U28 | UVH2LP15K | UVH2LT15K |
| Right-Pole Mounting AC Ratings ^③ | | | | | | |
| 12 Vac | U37 | U38 | U39 | U40 | UVH2RP02K | UVH2RT02K |
| 24 Vac | U41 | U42 | U43 | U44 | UVH2RP03K | UVH2RT03K |
| 48–60 Vac | U45 | U46 | U47 | U48 | UVH2RP05K | UVH2RT05K |
| 110–127 Vac | U49 | U50 | U51 | U52 | UVH2RP08K | UVH2RT08K |
| 208–240 Vac | U53 | U54 | U55 | U56 | UVH2RP11K | UVH2RT11K |
| 380–480 Vac | U57 | U58 | U59 | U60 | UVH2RP15K | UVH2RT15K |
| Left-Pole Mounting DC Ratings ^④ | | | | | | |
| 12 Vdc | T01 | T02 | T03 | T04 | UVH2LP20K | UVH2LT20K |
| 24 Vdc | T05 | T06 | T07 | T08 | UVH2LP21K | UVH2LT21K |
| 48–60 Vdc | T09 | T10 | T11 | T12 | UVH2LP23K | UVH2LT23K |
| 110–127 Vdc | T13 | T14 | T15 | T16 | UVH2LP26K | UVH2LT26K |
| 220–250 Vdc | T17 | T18 | T19 | T20 | UVH2LP28K | UVH2LT28K |
| Right-Pole Mounting DC Ratings ^③ | | | | | | |
| 12 Vdc | T21 | T22 | T23 | T24 | UVH2RP20K | UVH2RT20K |
| 24 Vdc | T25 | T26 | T27 | T28 | UVH2RP21K | UVH2RT21K |
| 48–60 Vdc | T29 | T30 | T31 | T32 | UVH2RP23K | UVH2RT23K |
| 110–127 Vdc | T33 | T34 | T35 | T36 | UVH2RP26K | UVH2RT26K |
| 220–250 Vdc | T37 | T38 | T39 | T40 | UVH2RP28K | UVH2RT28K |

Notes

- ^① For electrical rating data for manual, automatic and electrical reset undervoltage release mechanisms, refer to Eaton.
^② Listed with Underwriters Laboratories for field installation under E64983.
^③ Not for use on right pole of four-pole circuit breakers.
^④ Standard mounting location—leads exit rear of breaker.

K-Frame and HMCP (K) Undervoltage Release Mechanism

| Voltage Rating (AC Freq. = 50/60 Hz) | Factory Mounted Connection Type and Location | | | | Field Mounted Field Installation Kits ① | |
|---|---|----------------------------|-----------------------------------|-------------------------------|--|-------------------------------------|
| | 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | Same Side Suffix Number | Rear ② Suffix Number | Opposite Side Suffix Number | Same Side Suffix Number | | |
| Left-Pole Mounting AC Ratings ② | | | | | | |
| 12 Vac | U05 | U06 | U07 | U08 | UVH3LP02K | UVH3LT02K |
| 24 Vac | U09 | U10 | U11 | U12 | UVH3LP03K | UVH3LT03K |
| 48–60 Vac | U13 | U14 | U15 | U16 | UVH3LP05K | UVH3LT05K |
| 110–127 Vac | U17 | U18 | U19 | U20 | UVH3LP08K | UVH3LT08K |
| 208–240 Vac | U21 | U22 | U23 | U24 | UVH3LP11K | UVH3LT11K |
| 380–480 Vac | U25 | U26 | U27 | U28 | UVH3LP15K | UVH3LT15K |
| Right-Pole Mounting AC Ratings ③④⑤ | | | | | | |
| 12 Vac | U37 | U38 | U39 | U40 | UVH3RP02K | UVH3RT02K |
| 24 Vac | U41 | U42 | U43 | U44 | UVH3RP03K | UVH3RT03K |
| 48–60 Vac | U45 | U46 | U47 | U48 | UVH3RP05K | UVH3RT05K |
| 110–127 Vac | U49 | U50 | U51 | U52 | UVH3RP08K | UVH3RT08K |
| 208–240 Vac | U53 | U54 | U55 | U56 | UVH3RP11K | UVH3RT11K |
| 380–480 Vac | U57 | U58 | U59 | U60 | UVH3RP15K | UVH3RT15K |
| Left-Pole Mounting DC Ratings ② | | | | | | |
| 12 Vdc | T01 | T02 | T03 | T04 | UVH3LP20K | UVH3LT20K |
| 24 Vdc | T05 | T06 | T07 | T08 | UVH3LP21K | UVH3LT21K |
| 48–60 Vdc | T09 | T10 | T11 | T12 | UVH3LP23K | UVH3LT23K |
| 110–127 Vdc | T13 | T14 | T15 | T16 | UVH3LP26K | UVH3LT26K |
| 220–250 Vdc | T17 | T18 | T19 | T20 | UVH3LP28K | UVH3LT28K |
| Right-Pole Mounting DC Ratings ③④⑤ | | | | | | |
| 12 Vdc | T21 | T22 | T23 | T24 | UVH3RP20K | UVH3RT20K |
| 24 Vdc | T25 | T26 | T27 | T28 | UVH3RP21K | UVH3RT21K |
| 48–60 Vdc | T29 | T30 | T31 | T32 | UVH3RP23K | UVH3RT23K |
| 110–127 Vdc | T33 | T34 | T35 | T36 | UVH3RP26K | UVH3RT26K |
| 220–250 Vdc | T37 | T38 | T39 | T40 | UVH3RP28K | UVH3RT28K |

Notes

- ① Listed with Underwriters Laboratories, for field installation under E64983.
- ② Standard mounting location—leads exit rear of breaker.
- ③ For use with KT (thermal-magnetic) trip units only.
- ④ Not for use on right pole of four-pole circuit breaker.
- ⑤ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

L-, HMCP (L) and (M)-Frames and Undervoltage Release Mechanism

| Voltage Rating (AC Freq. = 50/60 Hz) | Factory Mounted Connection Type and Location | | | | Field Mounted Field Installation Kits ^① | |
|---|---|---------------------------------------|-----------------------------------|-------------------------------|---|-------------------------------------|
| | 18-Inch (457.2 mm) Pigtail Leads | | | Terminal Block | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | Same Side Suffix Number | Rear ^② Suffix Number | Opposite Side Suffix Number | Same Side Suffix Number | | |
| Left-Pole Mounting AC Ratings ^② | | | | | | |
| 12 Vac | U05 | U06 | U07 | U08 | UVH4LP02K | UVH4LT02K |
| 24 Vac | U09 | U10 | U11 | U12 | UVH4LP03K | UVH4LT03K |
| 48–60 Vac | U13 | U14 | U15 | U16 | UVH4LP05K | UVH4LT05K |
| 110–127 Vac | U17 | U18 | U19 | U20 | UVH4LP08K | UVH4LT08K |
| 208–240 Vac | U21 | U22 | U23 | U24 | UVH4LP11K | UVH4LT11K |
| 380–480 Vac | U25 | U26 | U27 | U28 | UVH4LP15K | UVH4LT15K |
| Right-Pole Mounting AC Ratings ^{③④} | | | | | | |
| 12 Vac | U37 | U38 | U39 | U40 | UVH4RP02K | UVH4RT02K |
| 24 Vac | U41 | U42 | U43 | U44 | UVH4RP03K | UVH4RT03K |
| 48–60 Vac | U45 | U46 | U47 | U48 | UVH4RP05K | UVH4RT05K |
| 110–127 Vac | U49 | U50 | U51 | U52 | UVH4RP08K | UVH4RT08K |
| 208–240 Vac | U53 | U54 | U55 | U56 | UVH4RP11K | UVH4RT11K |
| 380–480 Vac | U57 | U58 | U59 | U60 | UVH4RP15K | UVH4RT15K |
| Left-Pole Mounting DC Ratings ^② | | | | | | |
| 12 Vdc | T01 | T02 | T03 | T04 | UVH4LP20K | UVH4LT20K |
| 24 Vdc | T05 | T06 | T07 | T08 | UVH4LP21K | UVH4LT21K |
| 48–60 Vdc | T09 | T10 | T11 | T12 | UVH4LP23K | UVH4LT23K |
| 110–127 Vdc | T13 | T14 | T15 | T16 | UVH4LP26K | UVH4LT26K |
| 220–250 Vdc | T17 | T18 | T19 | T20 | UVH4LP28K | UVH4LT28K |
| Right-Pole Mounting DC Ratings ^{③④} | | | | | | |
| 12 Vdc | T21 | T22 | T23 | T24 | UVH4RP20K | UVH4RT20K |
| 24 Vdc | T25 | T26 | T27 | T28 | UVH4RP21K | UVH4RT21K |
| 48–60 Vdc | T29 | T30 | T31 | T32 | UVH4RP23K | UVH4RT23K |
| 110–127 Vdc | T33 | T34 | T35 | T36 | UVH4RP26K | UVH4RT26K |
| 220–250 Vdc | T37 | T38 | T39 | T40 | UVH4RP28K | UVH4RT28K |

Notes

- ① Listed with Underwriters Laboratories for field installation under E64983.
 ② Standard mounting location—leads exit rear of breaker.
 ③ For use with LT (thermal-magnetic) trip units only.
 ④ Not for use on right pole of four-pole circuit breaker.

N-Frame and HMCP (N) Undervoltage Release Mechanism

| Voltage Rating (AC Freq. = 50/60 Hz) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | | | | Field Mounted Field Installation Kits ① | |
|---|---|------------------|------------------|-------------------------------|--|-------------------------------------|
| | Terminal Block | | | Same Side Suffix Number | Pigtail Leads Catalog Number | Terminal Block Catalog Number |
| | Same Side | Rear ② | Opposite Side | | | |
| | Suffix Number | Suffix Number | Suffix Number | | | |
| Left-Pole Mounting AC Ratings ② | | | | | | |
| 12 Vac | U05 | U06 | U07 | U08 | UVH5LP02K | UVH5LT02K |
| 24 Vac | U09 | U10 | U11 | U12 | UVH5LP03K | UVH5LT03K |
| 48–60 Vac | U13 | U14 | U15 | U16 | UVH5LP05K | UVH5LT05K |
| 110–127 Vac | U17 | U18 | U19 | U20 | UVH5LP08K | UVH5LT08K |
| 208–240 Vac | U21 | U22 | U23 | U24 | UVH5LP11K | UVH5LT11K |
| 380–480 Vac | U25 | U26 | U27 | U28 | UVH5LP29K | UVH5LT29K |
| Left-Pole Mounting DC Ratings ② | | | | | | |
| 12 Vdc | T01 | T02 | T03 | T04 | UVH5LP20K | UVH5LT20K |
| 24 Vdc | T05 | T06 | T07 | T08 | UVH5LP21K | UVH5LT21K |
| 48–60 Vdc | T09 | T10 | T11 | T12 | UVH5LP23K | UVH5LT23K |
| 110–127 Vdc | T13 | T14 | T15 | T16 | UVH5LP26K | UVH5LT26K |
| 220–250 Vdc | T17 | T18 | T19 | T20 | UVH5LP28K | UVH5LT28K |

R-Frame Undervoltage Release Mechanism (RH only)

| Voltage Rating (AC Frequency = 50/60 Hz) | Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads | Field Mounted Field Installation Kits ③ |
|---|---|--|
| | Suffix Number ④ | Pigtail Leads Catalog Number ④ |
| | 12 Vac | U37 |
| 24 Vac | U41 | UVH6RP03K |
| 48–60 Vac | U45 | UVH6RP05K |
| 110–127 Vac | U49 | UVH6RP08K |
| 208–240 Vac | U53 | UVH6RP11K |
| 380–500 Vac | U57 | UVH6RP29K |
| 12 Vdc | T21 | UVH6RP20K |
| 24 Vdc | T25 | UVH6RP21K |
| 48–60 Vdc | T29 | UVH6RP23K |
| 110–125 Vdc | T33 | UVH6RP26K |
| 220–250 Vdc | T37 | UVH6RP28K |

Notes

- ① Listed with Underwriters Laboratories for field installation under E64983.
 ② Standard mounting location—leads exit rear of breaker.
 ③ Endurance: 500 electrical operations plus 2500 mechanical operations.
 ④ Pigtail wire size: 18 AWG (0.82 mm²). Leads are orange and brown.

Accessory Terminal Block (R-Frame)**Accessory Terminal Block (R-Frame)****R-Frame Accessory Terminal Block** ^①

| Factory Installed Suffix Number | Field Mounted Catalog Number |
|---------------------------------------|------------------------------------|
|---------------------------------------|------------------------------------|

| | |
|-----|-------|
| Q01 | TBRDK |
|-----|-------|

Number of Control Wires for Each Internally Mounted Accessory

| Type of Accessory | Number of Contacts per Single Accessory | Required Number of Wires |
|-----------------------------------|--|-----------------------------|
| Auxiliary switch | 2a/2b 4a/4b | 6 12 |
| Alarm (Signal)/ Lockout switch | 1m/1b 2m/2b | 6 12 |
| Shunt trip | N/A | 2 |
| Low energy shunt | N/A | 2 |
| Undervoltage release mechanism | N/A | 2 |

**PowerNet and Zone Interlock Kits (OPTIM 550 Only)
K-, L- and N-Frames****PowerNet and Zone
Interlock Kits****PowerNet Interlock Kit** ^②

| Circuit Breaker | Factory Install Suffix | Catalog Number |
|--------------------|---------------------------|-------------------|
| K-Frame | PN | ICK550K |
| L-Frame | PN | ICK550L |
| N-Frame | PN | ICK550N |

Zone Interlock/Ground Kit ^{②③}

| Circuit Breaker | Factory Install Suffix | Catalog Number |
|--------------------|---------------------------|-------------------|
| K-Frame | ZG | ZGK550K |
| L-Frame | ZG | ZGK550L |
| N-Frame | ZG | ZGK550N |

PowerNet and Zone Interlock/Ground Kit ^{②③}

| Circuit Breaker | Factory Install Suffix | Catalog Number |
|--------------------|---------------------------|-------------------|
| K-Frame | ZGP | ZGPK550K |
| L-Frame | ZGP | ZGPK550L |
| N-Frame | ZGP | ZGPK550N |

Notes

- ① One 24-point accessory terminal block provided with circuit breaker when ordered factory installed or shipped from warehouse as separate item when ordered for field installation. See Digitrip RMS master connection diagram (IL 29C714).
- ② Installation of these kits restrict any other attachments from being installed in the RH pole.
- ③ Includes a ground fault alarm signal that can drive the ground fault alarm unit (catalog number GFAU).

Technical Data and Specifications

2

Alarm Switch

F-Frame Electrical Rating Data ^{①②}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-------------------------------------|-----------|-------------------------|------------------------------|
| Multi-Pole Circuit Breakers | | | |
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |
| Single-Pole Circuit Breakers | | | |
| 125/250 | 50/60 Hz | 6 ^③ | 2000 |
| 28 | DC | 3 ^③ | 2000 |
| 28 | DC | 5 ^④ | 2000 |

J-Frame Electrical Rating Data ^{⑤⑥}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

K-Frame Electrical Rating Data ^{⑥⑦}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

L- and M-Frames Electrical Rating Data ^{⑥⑦}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

N-Frame Electrical Rating Data ^⑧

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

R-Frame Electrical Rating Data ^{⑨⑩}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

Auxiliary Switch

F-Frame Electrical Rating Data ^{①②}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|------------------|-----------|-------------------------|------------------------------|
| 125 ^③ | 50/60 Hz | 1 | 2500 |
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^④ | 2500 |
| 250 | DC | 0.25 ^④ | 2500 |

J-Frame Electrical Rating Data ^{①②}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^④ | 2500 |
| 250 | DC | 0.25 ^④ | 2500 |

K-Frame Electrical Rating Data ^{②⑤}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^④ | 2500 |
| 250 | DC | 0.25 ^④ | 2500 |

L- and M-Frames Electrical Rating Data ^②

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^④ | 2500 |
| 250 | DC | 0.25 ^④ | 2500 |

N-Frame Electrical Rating Data ^{②⑥}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^④ | 2500 |
| 250 | DC | 0.25 ^④ | 2500 |

R-Frame Electrical Rating Data ^{⑦⑧}

| Maximum Voltage | Frequency | Maximum Current Amperes |
|-----------------|-----------|-------------------------|
| 600 | 50/60 Hz | 6 |
| 125 | DC | 0.50 ^④ |
| 250 | DC | 0.25 ^④ |

Notes

- ① Endurance: 6000 electrical operations plus 4000 mechanical operations.
- ② Endurance: 6000 electrical operations plus 2000 mechanical operations.
- ③ Non-inductive load.
- ④ Inductive (L/R = 0.026).
- ⑤ Endurance: 6000 electrical operations plus 2000 mechanical operations.
- ⑥ Pigtail wire size: 18 AWG (0.82 mm²).
- ⑦ Endurance: 5000 electrical operations plus 1000 mechanical operations.
- ⑧ Endurance: 3000 electrical operations plus 1000 mechanical operations.
- ⑨ Endurance: 500 electrical operations plus 2500 mechanical operations.
- ⑩ Pigtail wire size: 18 AWG (0.82 mm²). Leads are red, black and blue.

Auxiliary Switch and Alarm Switch Combination**F-Frame Electrical Rating Data** ^{①②}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2200 |
| 250 | DC | 0.25 ^③ | 2200 |

J-Frame Electrical Rating Data ^{②⑤}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

K-Frame Electrical Rating Data ^{②⑦}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

L- and M-Frames Electrical Rating Data ^{②⑦}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

N-Frame Electrical Rating Data ^{②⑧}

| Maximum Voltage | Frequency | Maximum Current Amperes | Dielectric Withstand Voltage |
|-----------------|-----------|-------------------------|------------------------------|
| 600 | 50/60 Hz | 6 | 2500 |
| 125 | DC | 0.50 ^③ | 2500 |
| 250 | DC | 0.25 ^③ | 2500 |

Notes

- ① Endurance: 6000 electrical operations plus 4000 mechanical operations.
- ② Pigtail wire size: 18 AWG (0.82 mm²).
- ③ Non-inductive load.
- ④ Endurance: 6000 electrical operations plus 2000 mechanical operations.
- ⑤ Endurance: 5000 electrical operations plus 1000 mechanical operations.
- ⑥ Endurance: 3000 electrical operations plus 1000 mechanical operations.

Shunt Trip**F-Frame and HMCP Shunt Trip Electrical Rating Data** ①②③

2

| Catalog Number | Application Ratings | | Electrical Operating Ratings | | | | | One Minute Dielectric Withstand Voltage (V) | | |
|------------------------|---------------------|----------------|------------------------------|-------------------------------|--------------------|------------------------------|-------------------------------|---|------|-----|
| | Voltage (V) | Frequency (Hz) | Supply Voltage (V) | Minimum Operating Voltage (V) | I _p (A) | I _{rms} at 0.25 (A) | I _{rms} at 0.33s (A) | | VA | |
| SNT1LP03K or SNT1LT03K | 12–24 | 50/60 | 9 | 6.3 | 6.1 | 4.3 | 6 | 40 | 1048 | |
| | | | 12 | | 8.5 | | | 75 | | |
| | | | 24 | | 17 | | | 12 | | 300 |
| | 12–24 | DC | 12 | 9 | | 8 | | 100 | | |
| | | | 24 | | | | | 16 | | 400 |
| | | | | | | | | | | |
| SNT1LP08K or SNT1LT08K | 48–127 | 50/60 | 48 | 33.6 | 2.7 | 1.9 | 2.4 | 92 | 1254 | |
| | | | 60 | | 3.4 | | | 140 | | |
| | | | 110 | | 6.2 | | | 480 | | |
| | | | 120 | | 6.8 | | | 4.8 | | 570 |
| | | | 127 | | 7.2 | | | 5.1 | | 640 |
| | 48–60 | DC | 48 | 33.6 | | 2.1 | | 100 | | |
| | | | 60 | | | | | 2.6 | | 160 |
| | | | | | | | | | | |
| SNT1LP12K or SNT1LT12K | 208–380 | 50/60 | 208 | 146 | 1.2 | 0.25 | 0.27 | 180 | 1760 | |
| | | | 220 | | 1.3 | | | 200 | | |
| | | | 240 | | 1.4 | | | 240 | | |
| | | | 380 | | 2.3 | | | 0.31 | | 610 |
| | 110–125 | DC | 110 | 77 | | 0.5 | | 55 | | |
| | | | 120 | | | | | 0.55 | | 66 |
| | | | 125 | | | | | 0.57 | | 71 |
| | | | | | | | | | | |
| SNT1LP18K or SNT1LT18K | 415–600 | 50/60 | 400 | 280 | 1.1 | 0.77 | 0.85 | 310 | 2200 | |
| | | | 415 | | 1.1 | | | 330 | | |
| | | | 440 | | 1.2 | | | 380 | | |
| | | | 480 | | 1.3 | | | 0.93 | | 450 |
| | | | 525 | | 1.4 | | | 1.02 | | 530 |
| | | | 550 | | 1.5 | | | 1.06 | | 590 |
| | | | 600 | | 1.6 | | | 1.16 | | 700 |
| | 220–250 | DC | 220 | 154 | | 0.48 | | 110 | | |
| | | | 250 | | | | | 0.55 | | 140 |
| | | | | | | | | | | |

Notes

- ① Average unlatching time: 6 milliseconds.
- ② Average circuit breaker contact total opening time: 18 milliseconds.
- ③ Endurance: 6000 electrical operations plus 4000 mechanical operations.

J-Frame and HMCP (J) Shunt Trip Electrical Rating Data ^{①②③}

| Catalog Number | Application Ratings | | Electrical Operating Ratings | | | | | | One Minute Dielectric Withstand Voltage (V) | |
|----------------------|---------------------|----------------|------------------------------|-------------------------------|--------------------|------------------------------|-------------------------------|------|---|------|
| | Voltage (V) | Frequency (Hz) | Supply Voltage (V) | Minimum Operating Voltage (V) | I _p (A) | I _{rms} at 0.25 (A) | I _{rms} at 0.33s (A) | VA | | |
| SNT2P04K or SNT2T04K | 12–24 | 50/60 | 12 | 9 | 17.7 | 12.6 | 164 | 1048 | | |
| | | | 24 | | 38.3 | | | | 27.4 | 631 |
| | 12–24 | DC | 12 | 9 | 7.3 | 87 | 405 | | | |
| | | | 24 | | 16.9 | | | | | |
| SNT2P06K or SNT2T06K | 48–60 | 50/60 | 48 | 36 | 24.4 | 17.3 | 830 | 1120 | | |
| | | | 60 | | 30.1 | | | | 21.3 | 1280 |
| | 48–60 | DC | 48 | 36 | 14.8 | 710 | 1105 | | | |
| | | | 60 | | 18.4 | | | | | |
| SNT2P11K or SNT2T11K | 110–240 | 50/60 | 110 | 60 | 0.9 | 0.6 | 66 | 1480 | | |
| | | | 120 | | 1 | | | | 0.7 | 84 |
| | | | 127 | | 1.1 | | | | 0.8 | 102 |
| | | | 208 | | 2.4 | | | | 1.7 | 354 |
| | | | 220 | | 2.6 | | | | 1.8 | 396 |
| | | | 240 | | 2.6 | | | | 1.8 | 432 |
| | 110–125 | DC | 110 | 60 | 1 | 112 | 138 | 150 | | |
| | | | 120 | | 1.1 | | | | | |
| | | | 125 | | 1.2 | | | | | |
| | | | | | | | | | | |
| SNT2P14K or SNT2T14K | 380–440 | 50/60 | 380 | 285 | 0.34 | 0.25 | 127 | 1880 | | |
| | | | 400 | | 0.38 | | | | 0.27 | 150 |
| | | | 415 | | 0.4 | | | | 0.29 | 163 |
| | | | 440 | | 0.44 | | | | 0.31 | 188 |
| | 220–250 | DC | 220 | 165 | 0.19 | 40 | 58 | | | |
| | | | 250 | | 0.22 | | | | | |
| SNT2P18K or SNT2T18K | 480–600 | 50/60 | 480 | 360 | 0.13 | 0.07 | 34 | 2200 | | |
| | | | 525 | | 0.13 | | | | 0.08 | 42 |
| | | | 550 | | 0.13 | | | | 0.09 | 50 |
| | | | 600 | | 0.14 | | | | 0.1 | 60 |

Notes

- ① Average unlatching time: 6 milliseconds.
 ② Average circuit breaker contact total opening time: 18 milliseconds.
 ③ Endurance: 6000 electrical operations plus 2000 mechanical operations.

K-Frame and HMCP (K) Shunt Trip Electrical Rating Data ^{①②③}

| Catalog Number | Application Ratings | | Electrical Operating Ratings | | | | | One Minute Dielectric Withstand Voltage (V) | | | |
|----------------------|---------------------|----------------|------------------------------|-------------------------------|--------------------|------------------------------|-------------------------------|---|------|------|------|
| | Voltage (V) | Frequency (Hz) | Supply Voltage (V) | Minimum Operating Voltage (V) | I _p (A) | I _{rms} at 0.25 (A) | I _{rms} at 0.33s (A) | | VA | | |
| SNT3P04K or SNT3T04K | 12–24 | 50/60 | 12 | 9 | 17.7 | 12.6 | 164 | 1048 | | | |
| | | | 24 | | 38.3 | | | | 27.4 | 631 | |
| | 12–24 | DC | 12 | 9 | | | 7.3 | | 87 | | |
| | | | 24 | | | | | | | 16.9 | 405 |
| SNT3P06K or SNT3T06K | 48–60 | 50/60 | 48 | 36 | 24.4 | 17.3 | 830 | 1120 | | | |
| | | | 60 | | 30.1 | | | | 21.3 | 1280 | |
| | 48–60 | DC | 48 | 36 | | | 14.8 | | 710 | | |
| | | | 60 | | | | | | | 18.4 | 1105 |
| SNT3P11K or SNT3T11K | 110–240 | 50/60 | 110 | 60 | 1.3 | 0.9 | 100 | 1480 | | | |
| | | | 120 | | 1.4 | | | | 1 | 120 | |
| | | | 127 | | 1.5 | | | | 1.1 | 140 | |
| | | | 208 | | 2.8 | | | | 2 | 420 | |
| | | | 220 | | 3 | | | | 2.1 | 470 | |
| | | | 240 | | 3.2 | | | | 2.3 | 550 | |
| | 110–125 | DC | 110 | 82 | | | 1 | | 110 | | |
| | | | 120 | | | | | | | 1.1 | 130 |
| | | | 125 | | | | | | | 1.2 | 140 |
| | | | | | | | | | | | |
| SNT3P14K or SNT3T14K | 380–440 | 50/60 | 380 | 285 | 0.37 | 0.25 | 95 | 1880 | | | |
| | | | 400 | | 0.39 | | | | 0.27 | 108 | |
| | | | 415 | | 0.42 | | | | 0.29 | 120 | |
| | | | 440 | | 0.44 | | | | 0.31 | 136 | |
| | 220–250 | DC | 220 | 165 | | | 0.19 | | 41 | | |
| | | | 250 | | | | | | | 0.22 | 54 |
| SNT3P18K or SNT3T18K | 480–600 | 50/60 | 480 | 360 | 0.11 | 0.08 | 40 | 2200 | | | |
| | | | 525 | | 0.13 | | | | 0.09 | 50 | |
| | | | 550 | | 0.13 | | | | 0.09 | 50 | |
| | | | 600 | | 0.16 | | | | 0.12 | 70 | |

Notes

- ① Approximate unlatching time: 6 milliseconds.
 ② Approximate total circuit breaker contact opening time: 8 milliseconds.
 ③ Endurance: 5000 electrical operations plus 1000 mechanical operations.

L-Frame and HMCP (L) and M-Frame Shunt Trip Electrical Rating Data ^{①②③}

| Catalog Number | Application Ratings | | Electrical Operating Ratings | | | | | | One Minute Dielectric Withstand Voltage (V) | |
|----------------------|---------------------|----------------|------------------------------|-------------------------------|--------------------|------------------------------|-------------------------------|------|---|-----|
| | Voltage (V) | Frequency (Hz) | Supply Voltage (V) | Minimum Operating Voltage (V) | I _p (A) | I _{rms} at 0.25 (A) | I _{rms} at 0.33s (A) | VA | | |
| SNT4P03K or SNT4T03K | 12–24 | 50/60 | 9 | 6.3 | 7.2 | 5.1 | 46 | 1048 | | |
| | | | 12 | | 11.6 | | | | 8.2 | 98 |
| | | | 24 | | 28.6 | | | | 20.2 | 485 |
| | 12–24 | DC | 9 | 6.3 | 8.5 | 75 | 103 | 418 | | |
| | | | 12 | | 8.6 | | | | 103 | |
| | | | 24 | | 17.4 | | | | 418 | |
| SNT4P05K SNT4T05K | 48–60 | 50/60 | 48 | 34 | 0.72 | 0.51 | 82 | 1120 | | |
| | | | 60 | | 1.2 | | | | 0.84 | 126 |
| SNT4P11K or SNT4T11K | 110–240 | 50/60 | 110 | 77 | 0.89 | 0.63 | 69 | 1480 | | |
| | | | 120 | | 1.03 | | | | 0.73 | 88 |
| | | | 127 | | 1.1 | | | | 0.8 | 102 |
| | | | 208 | | 2.3 | | | | 1.6 | 333 |
| | | | 220 | | 2.4 | | | | 1.7 | 374 |
| | | | 240 | | 2.6 | | | | 1.8 | 432 |
| SNT4P14K or SNT4T14K | 380–440 | 50/60 | 380 | 266 | 0.3 | 0.21 | 80 | 1880 | | |
| | | | 400 | | 0.34 | | | | 0.24 | 96 |
| | | | 415 | | 0.35 | | | | 0.25 | 104 |
| | | | 440 | | 0.38 | | | | 0.27 | 119 |
| | 220–250 | DC | 220 | 154 | 0.34 | 75 | 85 | | | |
| | | | 250 | | 0.34 | | | | 85 | |
| SNT4P18K or SNT4T18K | 480–600 | 50/60 | 480 | 336 | 0.07 | 0.05 | 24 | 2200 | | |
| | | | 525 | | 0.08 | | | | 0.06 | 32 |
| | | | 550 | | 0.09 | | | | 0.07 | 39 |
| | | | 600 | | 0.11 | | | | 0.08 | 48 |
| SNT4P23K SNT4T23K | 48–60 | DC | 48 | 34 | 0.76 | 36 | 1120 | | | |
| | | | 60 | | 0.95 | | | 57 | | |
| SNT4P26K or SNT4T26K | 110–125 | DC | 110 | 77 | 0.42 | 46 | 1250 | | | |
| | | | 120 | | 0.43 | | | 52 | | |
| | | | 125 | | 0.44 | | | 55 | | |

Notes

- ① Approximate unlatching time: 6 milliseconds.
 ② Approximate total circuit breaker contact opening time: 18 milliseconds.
 ③ Endurance: 5000 electrical operations plus 1000 mechanical operations.

N-Frame and HMCP (N) Shunt Trip Electrical Rating Data ^{①②③}

| Catalog Number | Application Ratings | | Electrical Operating Ratings | | | | | One Minute Dielectric Withstand Voltage (V) | | |
|------------------------|---------------------|----------------|------------------------------|-------------------------------|--------------------|------------------------------|-------------------------------|---|------|-----|
| | Voltage (V) | Frequency (Hz) | Supply Voltage (V) | Minimum Operating Voltage (V) | I _p (A) | I _{rms} at 0.25 (A) | I _{rms} at 0.33s (A) | | VA | |
| SNT5LP03K or SNT5LT03K | 9–24 | 50/60 | 9 | 6.3 | 7.2 | 5.1 | 46 | 1048 | | |
| | | | 12 | | 11.6 | | | | 8.2 | 98 |
| | | | 24 | | 28 | | | | 19.8 | 475 |
| | 9–24 | DC | 9 | 7.2 | 8.8 | 79 | | | | |
| | | | 12 | | | | 12.1 | | 145 | |
| | | | 24 | | | | 25.4 | | 610 | |
| SNT5LP05K SNT5LT05K | 48–60 | 50/60 | 48 | 34 | 2.4 | 1.7 | 82 | 1120 | | |
| | | | 60 | | 3 | | 2.1 | | 126 | |
| SNT5LP11K or SNT5LT11K | 110–240 | 50/60 | 110 | 77 | 0.86 | 0.61 | 67 | 1480 | | |
| | | | 120 | | 0.98 | | 0.69 | | 83 | |
| | | | 127 | | 1.1 | | 0.75 | | 95 | |
| | | | 208 | | 2.3 | | 1.6 | | 333 | |
| | | | 220 | | 2.4 | | 1.7 | | 374 | |
| | | | 240 | | 2.6 | | 1.8 | | 432 | |
| SNT5LP14K or SNT5LT14K | 380–440 | 50/60 | 380 | 266 | 0.28 | 0.2 | 76 | 1880 | | |
| | | | 400 | | 0.31 | | 0.22 | | 88 | |
| | | | 415 | | 0.33 | | 0.23 | | 95 | |
| | | | 440 | | 0.35 | | 0.25 | | 110 | |
| | 220–250 | DC | 220 | 154 | 0.21 | 46 | | | | |
| | | | 250 | | | | 0.22 | | 55 | |
| SNT5LP18K or SNT5LT18K | 480–600 | 50/60 | 480 | 336 | 0.06 | 0.04 | 19 | 2200 | | |
| | | | 525 | | 0.08 | | 0.06 | | 32 | |
| | | | 550 | | 0.08 | | 0.06 | | 33 | |
| | | | 600 | | 0.1 | | 0.07 | | 42 | |
| SNT5LP23K SNT5LT23K | 48–60 | DC | 48 | 34 | 1.4 | 67 | 1120 | | | |
| | | | 60 | | 1.7 | | 102 | | | |
| SNT5LP26K or SNT5LT26K | 110–125 | DC | 110 | 77 | 1.1 | 121 | 1250 | | | |
| | | | 120 | | 1.2 | | 144 | | | |
| | | | 125 | | 1.2 | | 150 | | | |

Notes

- ① Approximate unlatching time: 6 milliseconds.
 ② Approximate total circuit breaker contact opening time: 18 milliseconds.
 ③ Endurance: 3000 electrical operations plus 1000 mechanical operations.

R-Frame Shunt Trip Electrical Rating Data ^{①②③④⑤⑥}

| Catalog Number | Application Ratings | | Electrical Operating Ratings | | | | | | |
|----------------|---------------------|----------------|------------------------------|-------------------------------|--------------------|------------------------------|-------------------------------|------|---|
| | Voltage (V) | Frequency (Hz) | Supply Voltage (V) | Minimum Operating Voltage (V) | I _p (A) | I _{rms} at 0.25 (A) | I _{rms} at 0.33s (A) | VA | One Minute Dielectric Withstand Voltage (V) |
| SNT6P03K | 24 | 50/60 | 24 | 16.8 | 36.1 | | 25.5 | 612 | 1050 |
| | 24 | DC | 24 | 16.8 | | 16.5 | | 396 | |
| SNT6P05K | 48–60 | 50/60 | 48 | 34 | 11.9 | | 8.4 | 403 | 1120 |
| | | | 60 | | 15.7 | | 11.1 | 666 | |
| SNT6P11K | 110–240 | 50/60 | 110 | 60 | 5.09 | | 3.6 | 396 | 1480 |
| | | | 120 | | 5.66 | | 4 | 480 | |
| | | | 127 | | 5.94 | | 4.2 | 533 | |
| | | | 208 | | 10.2 | | 7.2 | 1498 | |
| | | | 220 | | 10.5 | | 7.4 | 1628 | |
| | | | 240 | | 11.2 | | 7.9 | 1896 | |
| SNT6P14K | 380–440 | 50/60 | 380 | 266 | 5.94 | | 4.2 | 1596 | 2200 |
| | | | 400 | | 6.23 | | 4.4 | 1760 | |
| | | | 415 | | 6.51 | | 4.6 | 1909 | |
| | | | 440 | | 6.93 | | 4.9 | 2156 | |
| | 220–250 | DC | 220 | 154 | | 1.7 | | 374 | 1500 |
| | | | 250 | | | 1.9 | | 475 | |
| SNT6P18K | 480–600 | 50/60 | 480 | 336 | 0.68 | | 0.48 | 230 | 2200 |
| | | | 525 | | 0.78 | | 0.55 | 289 | |
| | | | 550 | | 0.79 | | 0.56 | 308 | |
| | | | 600 | | 0.91 | | 0.64 | 384 | |
| SNT6P23K | 48–60 | DC | 48 | 34 | | 7.1 | | 341 | 1120 |
| | | | 60 | | | 8.8 | | 258 | |
| SNT6P26K | 110–125 | DC | 110 | 77 | | 2.4 | | 264 | 1250 |
| | | | 120 | | | 2.6 | | 312 | |
| | | | 125 | | | 2.8 | | 350 | |

Notes

- ① Approximate unlatching time of 6 milliseconds.
- ② Average circuit breaker contact total opening time approximately 62 milliseconds, at rated voltage.
- ③ Endurance: 500 electrical operations and 2500 mechanical operations.
- ④ Shunt trip can be operated up to a maximum of six times per minute.
- ⑤ Maximum operating voltage—110% of maximum voltage range rating.
- ⑥ Pigtail wire size: 18 AWG (0.82 mm²). Leads are yellow and white.

Undervoltage Release Mechanism

2

F-Frame Electrical Rating Data ^①

| 50/60 Hz | | | | | DC | | | | |
|----------------|-----------------|---------|----------------|-----|----------------|-----------------|---------|----------------|-----|
| Supply Voltage | Dropout Voltage | | Pickup Voltage | VA | Supply Voltage | Dropout Voltage | | Pickup Voltage | VA |
| | Minimum | Maximum | Maximum | | | Minimum | Maximum | Maximum | |
| 12 | 4.2 | 6.3 | 7.6 | 1.3 | 12 | 4.2 | 8.4 | 10.2 | 2.8 |
| 12 | 4.2 | 6.3 | 7.6 | 2.5 | 12 | 4.2 | 8.4 | 10.2 | 2.8 |
| 24 | 8.4 | 16.8 | 20.4 | 1.4 | 24 | 8.4 | 16.8 | 20.4 | 1.6 |
| 48 | 21.0 | 33.6 | 40.8 | 1.2 | 48 | 21.0 | 33.6 | 40.8 | 1.3 |
| 60 | 21.0 | 33.6 | 40.8 | 1.9 | 60 | 21.0 | 33.6 | 40.8 | 2.0 |
| 110 | 44.5 | 77.0 | 93.5 | 1.3 | 110 | 44.5 | 77.0 | 93.5 | 1.5 |
| 120 | 44.5 | 77.0 | 93.5 | 1.5 | 120 | 44.5 | 77.0 | 93.5 | 1.7 |
| 127 | 44.5 | 77.0 | 93.5 | 1.7 | 125 | 44.5 | 77.0 | 93.5 | 1.9 |
| 208 | 84.0 | 145.6 | 176.8 | 2.2 | 220 | 87.5 | 154.0 | 187.0 | 2.6 |
| 220 | 84.0 | 145.6 | 176.8 | 2.4 | 250 | 87.5 | 154.0 | 187.0 | 3.4 |
| 240 | 84.0 | 145.6 | 176.8 | 2.9 | — | — | — | — | — |
| 380 | 168.0 | 266.0 | 323.0 | 2.9 | — | — | — | — | — |
| 415 | 168.0 | 266.0 | 323.0 | 3.5 | — | — | — | — | — |
| 440 | 168.0 | 266.0 | 323.0 | 3.9 | — | — | — | — | — |
| 480 | 168.0 | 266.0 | 323.0 | 4.6 | — | — | — | — | — |
| 525 | 210.0 | 367.0 | 446.0 | 4.3 | — | — | — | — | — |
| 550 | 210.0 | 367.0 | 446.0 | 4.8 | — | — | — | — | — |
| 600 | 210.0 | 367.0 | 446.0 | 5.8 | — | — | — | — | — |

J-Frame Electrical Rating Data ^{②③}

| 50/60 Hz | | | | | DC | | | | |
|----------------|-----------------|---------|----------------|-----|----------------|-----------------|---------|----------------|-----|
| Supply Voltage | Dropout Voltage | | Pickup Voltage | VA | Supply Voltage | Dropout Voltage | | Pickup Voltage | VA |
| | Minimum | Maximum | Maximum | | | Minimum | Maximum | Maximum | |
| 12 | 4.2 | 8.4 | 10.2 | 1.9 | 12 | 4.2 | 8.4 | 10.2 | 1.6 |
| 24 | 8.4 | 16.8 | 20.4 | 3.9 | 24 | 8.4 | 16.8 | 20.4 | 3.1 |
| 48 | 21.0 | 33.6 | 40.8 | 2.5 | 48 | 21.0 | 33.6 | 40.8 | 2.0 |
| 60 | 21.0 | 33.6 | 40.8 | 3.8 | 60 | 21.0 | 33.6 | 40.8 | 3.1 |
| 110 | 44.5 | 77.0 | 93.5 | 1.8 | 110 | 44.5 | 77.0 | 93.5 | 1.6 |
| 120 | 44.5 | 77.0 | 93.5 | 2.1 | 120 | 44.5 | 77.0 | 93.5 | 1.9 |
| 127 | 44.5 | 77.0 | 93.5 | 2.4 | 125 | 44.5 | 77.0 | 93.5 | 2.2 |
| 208 | 84.0 | 145.6 | 176.8 | 2.7 | 220 | 87.5 | 154.0 | 187.0 | 3.1 |
| 220 | 84.0 | 145.6 | 176.8 | 3.1 | 250 | 87.5 | 154.0 | 187.0 | 4.0 |
| 240 | 84.0 | 145.6 | 176.8 | 3.8 | — | — | — | — | — |
| 380 | 168.0 | 266.0 | 323.0 | 3.4 | — | — | — | — | — |
| 415 | 168.0 | 266.0 | 323.0 | 4.0 | — | — | — | — | — |
| 440 | 168.0 | 266.0 | 323.0 | 4.6 | — | — | — | — | — |
| 480 | 168.0 | 266.0 | 323.0 | 5.4 | — | — | — | — | — |

Notes

- ① Endurance: 6000 electrical operations plus 4000 mechanical operations.
 ② Endurance: 6000 electrical operations plus 2000 mechanical operations.
 ③ For electrical rating data for manual, automatic and electrical reset undervoltage release mechanisms, refer to Eaton.

K-Frame Electrical Rating Data ①

| 50/60 Hz | | | | | DC | | | | |
|----------------|-----------------|---------|----------------|-----|----------------|-----------------|---------|----------------|-----|
| Supply Voltage | Dropout Voltage | | Pickup Voltage | VA | Supply Voltage | Dropout Voltage | | Pickup Voltage | VA |
| | Minimum | Maximum | Maximum | | | Minimum | Maximum | Maximum | |
| 12 | 4.2 | 8.4 | 10.2 | 1.9 | 12 | 4.2 | 8.4 | 10.2 | 1.6 |
| 24 | 8.4 | 16.8 | 20.4 | 3.9 | 24 | 8.4 | 16.8 | 20.4 | 3.1 |
| 48 | 21.0 | 33.6 | 40.8 | 2.5 | 48 | 21.0 | 33.6 | 40.8 | 2.0 |
| 60 | 21.0 | 33.6 | 40.8 | 3.8 | 60 | 21.0 | 33.6 | 40.8 | 3.1 |
| 110 | 44.5 | 77.0 | 93.5 | 1.8 | 110 | 44.5 | 77.0 | 93.5 | 1.6 |
| 120 | 44.5 | 77.0 | 93.5 | 2.1 | 120 | 44.5 | 77.0 | 93.5 | 1.9 |
| 127 | 44.5 | 77.0 | 93.5 | 2.4 | 125 | 44.5 | 77.0 | 93.5 | 2.2 |
| 208 | 84.0 | 145.6 | 176.8 | 2.7 | 220 | 87.5 | 154.0 | 187.0 | 3.1 |
| 220 | 84.0 | 145.6 | 176.8 | 3.1 | 250 | 87.5 | 154.0 | 187.0 | 4.0 |
| 240 | 84.0 | 145.6 | 176.8 | 3.8 | — | — | — | — | — |
| 380 | 168.0 | 266.0 | 323.0 | 3.4 | — | — | — | — | — |
| 415 | 168.0 | 266.0 | 323.0 | 4.0 | — | — | — | — | — |
| 440 | 168.0 | 266.0 | 323.0 | 4.6 | — | — | — | — | — |
| 480 | 168.0 | 266.0 | 323.0 | 5.4 | — | — | — | — | — |

L- and M-Frames Electrical Rating Data ①

| 50/60 Hz | | | | | DC | | | | |
|----------------|-----------------|---------|----------------|-----|----------------|-----------------|---------|----------------|-----|
| Supply Voltage | Dropout Voltage | | Pickup Voltage | VA | Supply Voltage | Dropout Voltage | | Pickup Voltage | VA |
| | Minimum | Maximum | Maximum | | | Minimum | Maximum | Maximum | |
| 12 | 4.2 | 8.4 | 10.2 | 1.9 | 12 | 4.2 | 8.4 | 10.2 | 1.6 |
| 24 | 8.4 | 16.8 | 20.4 | 3.9 | 24 | 8.4 | 16.8 | 20.4 | 3.1 |
| 48 | 21.0 | 33.6 | 40.8 | 2.5 | 48 | 21.0 | 33.6 | 40.8 | 2.0 |
| 60 | 21.0 | 33.6 | 40.8 | 3.8 | 60 | 21.0 | 33.6 | 40.8 | 3.1 |
| 110 | 44.5 | 77.0 | 93.5 | 1.8 | 110 | 44.5 | 77.0 | 93.5 | 1.6 |
| 120 | 44.5 | 77.0 | 93.5 | 2.1 | 120 | 44.5 | 77.0 | 93.5 | 1.9 |
| 127 | 44.5 | 77.0 | 93.5 | 2.4 | 125 | 44.5 | 77.0 | 93.5 | 2.2 |
| 208 | 84.0 | 145.6 | 176.8 | 2.7 | 220 | 87.5 | 154.0 | 187.0 | 3.1 |
| 220 | 84.0 | 145.6 | 176.8 | 3.1 | 250 | 87.5 | 154.0 | 187.0 | 4.0 |
| 240 | 84.0 | 145.6 | 176.8 | 3.8 | — | — | — | — | — |
| 380 | 168.0 | 266.0 | 323.0 | 3.4 | — | — | — | — | — |
| 415 | 168.0 | 266.0 | 323.0 | 4.0 | — | — | — | — | — |
| 440 | 168.0 | 266.0 | 323.0 | 4.6 | — | — | — | — | — |
| 480 | 168.0 | 266.0 | 323.0 | 5.4 | — | — | — | — | — |

Note

① Endurance: 5000 electrical operations plus 1000 mechanical operations.

N-Frame Electrical Rating Data ^①

| 50/60 Hz | | | | | DC | | | | |
|----------------|-----------------|---------|----------------|-----|----------------|-----------------|---------|----------------|-----|
| Supply Voltage | Dropout Voltage | | Pickup Voltage | VA | Supply Voltage | Dropout Voltage | | Pickup Voltage | VA |
| | Minimum | Maximum | Maximum | | | Minimum | Maximum | Maximum | |
| 12 | 4.2 | 8.4 | 10.2 | 1.9 | 12 | 4.2 | 8.4 | 10.2 | 1.6 |
| 24 | 8.4 | 16.8 | 20.4 | 3.9 | 24 | 8.4 | 16.8 | 20.4 | 3.1 |
| 48 | 21.0 | 33.6 | 40.8 | 2.5 | 48 | 21.0 | 33.6 | 40.8 | 2.0 |
| 60 | 21.0 | 33.6 | 40.8 | 3.8 | 60 | 21.0 | 33.6 | 40.8 | 3.1 |
| 110 | 44.5 | 77.0 | 93.5 | 1.8 | 110 | 44.5 | 77.0 | 93.5 | 1.6 |
| 120 | 44.5 | 77.0 | 93.5 | 2.1 | 120 | 44.5 | 77.0 | 93.5 | 1.9 |
| 127 | 44.5 | 77.0 | 93.5 | 2.4 | 125 | 44.5 | 77.0 | 93.5 | 2.2 |
| 208 | 84.0 | 145.6 | 176.8 | 2.7 | 220 | 87.5 | 154.0 | 187.0 | 3.1 |
| 220 | 84.0 | 145.6 | 176.8 | 3.1 | 220 | 87.5 | 154.0 | 187.0 | — |
| 240 | 84.0 | 145.6 | 176.8 | 3.8 | 250 | — | — | — | 4.0 |
| 380 | 175.0 | 266.0 | 323.0 | 3.4 | — | — | — | — | — |
| 415 | 175.0 | 266.0 | 323.0 | 4.0 | — | — | — | — | — |
| 480 | 175.0 | 266.0 | 323.0 | 4.6 | — | — | — | — | — |
| 500 | 175.0 | 266.0 | 323.0 | 5.4 | — | — | — | — | — |

Note

^① Endurance: 3000 electrical operations plus 1000 mechanical operations.

R-Frame AC Undervoltage Release Mechanism (Handle Reset) Ratings ^{①②}

| Catalog Suffix | Application Ratings Voltage (V) | Electrical Operating Ratings | | | Approximate Operating Time (ms) | | | | Maximum Circuit Breaker Contact Opening | Dielectric Withstand Voltage (V) ^⑤ |
|----------------|------------------------------------|------------------------------|---------------------|-------|---------------------------------|------|-----------------------------------|--|---|---|
| | | Supply Voltage (V) | Dropout Voltage (V) | | Pickup Voltage (V) Max. | VA | Minimum UVR Response ^③ | Initiation Circuit Breaker Contact Separation ^④ | | |
| 02/02K | 12 | 12 | 4.2 | 8.4 | 10.2 | 2.3 | 5 | 46 | 77 | 1024 |
| 03/03K | 24 | 24 | 8.4 | 16.8 | 20.4 | 3.1 | 5 | 46 | 77 | 1048 |
| 05/05K | 48–60 | 48 | 21.0 | 33.5 | 40.8 | 3.4 | 5 | 46 | 77 | 1120 |
| | | 60 | 21.0 | 33.5 | 40.8 | 6.0 | 5 | 46 | 77 | 1120 |
| 08/08K | 110–127 | 110 | 44.5 | 77.0 | 93.5 | 3.3 | 5 | 46 | 77 | 1254 |
| | | 120 | 44.5 | 77.0 | 93.5 | 3.6 | 5 | 46 | 77 | 1254 |
| | | 127 | 44.5 | 77.0 | 93.5 | 3.8 | 5 | 46 | 77 | 1254 |
| 11/11K | 208–240 | 208 | 84.0 | 145.6 | 176.8 | 4.2 | 5 | 46 | 77 | 1480 |
| | | 220 | 84.0 | 145.6 | 176.8 | 6.6 | 5 | 46 | 77 | 1480 |
| | | 240 | 84.0 | 145.6 | 176.8 | 7.2 | 5 | 46 | 77 | 1480 |
| 29/29K | 380–500 | 380 | 168.0 | 266.0 | 323.0 | 3.8 | 5 | 46 | 77 | 2000 |
| | | 415 | 168.0 | 266.0 | 323.0 | 8.3 | 5 | 46 | 77 | 2000 |
| | | 440 | 168.0 | 266.0 | 323.0 | 8.8 | 5 | 46 | 77 | 2000 |
| | | 480 | 168.0 | 266.0 | 323.0 | 9.6 | 5 | 46 | 77 | 2000 |
| | | 500 | 168.0 | 266.0 | 323.0 | 10.0 | 5 | 46 | 77 | 2000 |

R-Frame DC Undervoltage Release Mechanism (Handle Reset) Ratings ^{①②}

| Catalog Suffix | Application Ratings Voltage (V) | Electrical Operating Ratings | | | Approximate Operating Time (ms) | | | | Maximum Circuit Breaker Contact Opening | Dielectric Withstand Voltage (V) ^⑤ |
|----------------|------------------------------------|------------------------------|---------------------|-------|---------------------------------|-----|-----------------------------------|--|---|---|
| | | Supply Voltage (V) | Dropout Voltage (V) | | Pickup Voltage (V) Max. | VA | Minimum UVR Response ^③ | Initiation Circuit Breaker Contact Separation ^④ | | |
| 20/20K | 12 | 12 | 4.2 | 8.4 | 10.2 | 3.4 | 5 | 46 | 77 | 1024 |
| 21/21K | 24 | 24 | 8.4 | 16.8 | 20.4 | 4.3 | 5 | 46 | 77 | 1048 |
| 23/23K | 48–60 | 48 | 21.0 | 33.5 | 40.8 | 4.8 | 5 | 46 | 77 | 1120 |
| | | 60 | 21.0 | 33.5 | 40.8 | 7.2 | 5 | 46 | 77 | 1120 |
| 26/26K | 110–127 | 110 | 43.8 | 77.0 | 93.5 | 3.3 | 5 | 46 | 77 | 1250 |
| | | 120 | 43.8 | 77.0 | 93.5 | 3.6 | 5 | 46 | 77 | 1250 |
| | | 125 | 43.8 | 77.0 | 93.5 | 3.8 | 5 | 46 | 77 | 1250 |
| 28/28K | 220–250 | 220 | 87.5 | 154.0 | 187.0 | 6.6 | 5 | 46 | 77 | 1500 |
| | | 250 | 87.5 | 154.0 | 187.0 | 7.5 | 5 | 46 | 77 | 1500 |

Notes

- ① Endurance: 500 electrical operations plus 2500 mechanical operations.
 ② Pigtail wire size: 18 AWG (0.82 mm²). Leads are orange and brown.
 ③ UVR will override a momentary voltage dip up to the response time shown.
 ④ Unlatching occurs 1 millisecond before circuit breaker contacts begin to separate.
 ⑤ For 1 minute.

Series C External Accessories

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External Accessories

Product Overview

End Cap Kit

The end cap kit slides onto the line or load conductor of the circuit breaker and acts as a threaded adapter for the conductor to accept a ring terminal or other bolt-on connector. The end cap kit is available with English and metric thread sizes. (Field installation only.) Listed per UL File E7819.

Keeper Nut

The keeper nut slides onto the line or load conductor of the circuit breaker and acts as a threaded adapter for the conductor to accept a ring terminal or other bolt-on connector. The keeper nut is available with English and metric thread sizes. Screws and washers are supplied by customer. (Field installation only.) Listed per UL File E7819.

L-, M-, N-Frames

Not required. Terminals are threaded.

J-Frame Plug Nut

The plug nut is used in applications where screw-connected ring-type terminals are preferred to connect cables to circuit breaker conductors. The plug nut is press-fit into the opening in the circuit breaker terminal conductor. Screws and washers are supplied by customer.

Terminal Adapter**Control Wire Terminal Kit**

The control wire terminal kit provides a means to tap off control power from a main disconnect, using the provided male end of a quick disconnect.

For use with steel or stainless steel terminals only.

Note: Terminal Kits contain one terminal for each pole and one terminal cover.

Multiwire Connectors

Eaton's field-installed multiwire connectors for the load side (OFF) end terminals are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

Terminal Shields

Terminal shields provide protection against accidental contact with live line side terminations. Terminal shields are fabricated from high dielectric insulating material and fasten over the front terminal access openings. Small openings in the shields provide limited access to the terminals for tightening connectors. (Field installation only.)

Rear Fed Terminals.

Rear fed terminals allow the cable to connect to the breaker from the back instead of the top. Terminal shields or interphase barriers are included with each rear fed terminal kit (depending on frame size). When catalog number starts with a 3, it indicates a kit with three terminals in each kit. Catalog number beginning with a TA indicates one terminal.

Terminal End Covers

The terminal end covers are designed for use in motor control center applications where, because of confined spaces, line side conductors are normally custom fitted. The molded end covers are made of high dielectric glass-polyester and slide over the line ends of the circuit breaker. Close fitting conductor openings are molded into the end covers. The end cover and circuit breaker case fit together to form terminal compartments that isolate discharged ionizing gases during circuit breaker tripping. Terminal end covers are available with two conductor opening diameters, 0.25-inch (6.4 mm) and 0.41-inch (10.4 mm), and are listed per UL File E7819. (Field installation only.)

Interphase Barriers

The interphase barriers provide additional electrical clearance between circuit breaker poles for special termination applications. The barriers are high dielectric insulating plates that are installed in the molded slots between the terminals. (Field installation only.) Two per package.

Base Mounting Plate

Suitable for mounting six single-pole circuit breakers.

DIN Rail Adapter

For use with standard 35 mm DIN rail such as, 35 x 7.5 or 35 x 15 mm per DIN EN50022.

Adapter mounting screws included are for use with two- and three-pole circuit breakers. Adapters for single-pole circuit breakers clip into the base molding.

Key Operated Attachment**Lock Dog (Non-Padlockable)****Non-Padlockable Handle Block**

The non-padlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the

handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by a setscrew to deter accidental operation of the circuit breaker handle. Listed per UL File E7819. (Field installation only.)

Padlockable Handle**Padlockable Handle Lock**

The device is positioned in the cover opening to prevent handle movement. Will accommodate one 5/16-inch (8 mm) padlock.

Snap-on Padlockable Handle Lock Hasp

The snap-on padlockable handle lock allows the handle to be locked in the OFF or ON position. (Trip-free operation allows the circuit breaker to trip when the handle lock holds the circuit breaker handle in the ON position.) This device was designed for use on the single-pole circuit breaker, but may be used on one-, two-, three- and four-pole styles. The handle lock snaps onto the escutcheon area of the handle with an optional retaining screw for added secureness. The handle lock will accommodate one padlock with a 1/4-inch (6.4 mm) shackle. Listed per UL File E7819. (Field installation only.)

Padlockable Handle Lock Hasp

The padlockable handle lock hasp allows the handle to be locked in the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle lock holds the circuit breaker handle in the ON position.) The hasp mounts on the circuit breaker cover within the trimline. The cover is predrilled on both sides of the operating handle so that the hasp can be mounted on either side of the handle. The hasp will accommodate up to three padlocks with 1/4-inch (6.4 mm) shackles, one per circuit breaker. Listed per UL File E7819. (Field installation only.)

Cylinder Lock

The cylinder lock internally blocks the trip bar in the tripped position to prevent the circuit breaker from being switched to ON. The cylinder lock is factory installed in the left pole only of the circuit breaker cover. Other internally mounted accessories cannot be installed in the same pole as the cylinder lock. (Factory installation only.)

Key Interlock Kit (Lock Not Included)

The key interlock is used to externally lock the circuit breaker handle in the OFF position. When the key interlock is locked, an extended deadbolt blocks movement of the circuit breaker handle. Uniquely coded keys are removable only with the deadbolt extended. Each coded key controls a group of circuit breakers for a given specific customer installation.

The key interlock assembly is Underwriters Laboratories listed for field installation under UL File E7819 and consists of a mounting kit and a purchaser supplied deadbolt lock. The mounting kit comprises a mounting plate, which is secured to the circuit breaker cover in either the left- or right-pole position, key interlock mounting screws, and a wire seal. Specific mounting kits are required for individual key interlock types.

Sliding Bar Interlock

The sliding bar interlock provides mechanical interlocking between two adjacent three-pole circuit breakers. It is installed on the enclosure cover between the circuit breakers. When the sliding bar interlock handle is moved from one side to the other, a bar extends to alternately block movement of the circuit breaker handles and prevents both circuit breakers from being switched to ON at the same time. Sliding bar interlocks are not UL listed. (Field installation only.)

Walking Beam Interlock

The walking beam Interlock provides mechanical interlocking between two adjacent circuit breakers of the same pole configuration. The walking beam interlock mounts on a bracket behind and between the circuit breakers. A plunger on each end of the beam is inserted through an access hole in the back plate and base of each circuit breaker. The walking beam interlock prevents both circuit breakers from being switched ON at the same time. If a walking beam interlock is installed, the wiring troughs in the back of the circuit breaker case are blocked by the plungers and cannot be used for cross wiring. Factory modified circuit breakers are required for this application. UL File E38116.

Electrical Operator

The electrical (solenoid) operator is a single solenoid mechanism that enables local and remote circuit breaker ON, OFF, and reset switching. The electrical operator is mounted on the circuit breaker cover within the trimline of the circuit breaker. The electrical operator uses a unique bi-stable latch that allows the device to operate using one solenoid. The accessory provides high-speed switching with a maximum operating time of 5 cycles (80 mS), making it suitable for generator synchronizing applications.

Means are provided for remote electrical operation and for local manual operation. A special slide includes provisions for padlocking the circuit breaker handle in the OFF position. The slide will accept three padlock shackles with a maximum diameter of 1/4-inch (6.4 mm) each. An interlock electrically disconnects the solenoid when the electrical operator cover is removed. The rating data tables provide electrical rating data for the electrical (solenoid) operator.

The electrical (motor) operator allows the circuit's breaker to be opened, closed or reset remotely. It also has a lock-off capability and provisions for manual operation.

The electrical (motor) operator contains a reversible motor connected to a ball screw. The ball screw drives the circuit breaker handle. Limit switches and relays are used to control the motor.

Plug-In Adapters

Plug-in adapters simplify installation and front removal of circuit breakers. Individual line and load plug-in adapters are available for rear connection applications on two-, three-, and four-pole circuit breakers. Common mounting plates for line- and load-end adapters are available.

One plug-in adapter kit is required for line-end and one for load-end.

Plug-in adapters are UL approved unless otherwise noted.

Rear Connecting Studs

Rear connecting studs are available in several sizes to accommodate specific fixed-mounted circuit breaker applications.

Each rear connecting stud assembly consists of one stud and one tube. To maintain proper clearances between poles, select alternate long and short stud assemblies for circuit breakers with more than one pole. One assembly is required for line-end and one for load-end of each pole. Tubes must be ordered separately. Connecting studs are available only with English thread sizes.

Note: Not UL listed.

Panelboard Connecting Straps

Panelboard connecting straps are used to connect the circuit breaker terminals to the panelboard bus. The panelboard connecting straps are available with various ratings for outside and center poles. (Field installation only.)

Panelboard connecting straps are available to meet the needs of most standard panelboard applications. Style numbers for mounting brackets for CDP panelboard installations are also included.

Note: Not UL listed. Refer to panelboard manufacturer for compatibility.

Type LFD Current Limiter

The LFD current limiter is an accessory that bolts to the load end of a standard FDB or FD thermal-magnetic circuit breaker, providing 200,000 A interrupting capacity at up to 600 Vac. LFD current limiters for thermal-magnetic and electronic circuit breakers are listed with Underwriters Laboratories under File E47239.

Ground Fault Alarm Unit

The ground fault alarm unit is a remotely mounted device with a combination indicating light/test button that will light when the breaker trips or alarms on ground fault. The ground fault alarm unit requires a separate 120 Vac power source to power the light and the internal relay, which has 1NO and 1NC contacts for remote indication. The ground fault alarm unit can be panel mounted for ordering with an optional face mounting bracket. For use on Digitrip 310 only, K- through N-Frame.

IQ Energy Sentinel

The IQ Energy Sentinel is a highly accurate, microprocessor-based, breaker-mounted device designed to monitor power and energy readings. It represents an alternative to watt meters, watt-hour meters, and watt demand meters. Key advantages include savings in space, lower installation costs, and remote monitoring capability.

The IQ Energy Sentinel mounts on the load side of a Series C F-Frame (150 ampere) circuit breaker. It can be applied on three-phase, four-wire systems, or single-phase, three-wire systems with voltage connected through Phases A and C.

For more information, see Descriptive Bulletin 8178.

Potential Transformer Module

The potential transformer module is required for the Digitrip OPTIM 1050 to provide a voltage input to allow the trip unit to monitor power and energy as well as power factor. The potential transformer module is a 6 VA transformer with a primary voltage input of up to 600 volt line to line. Three 0.1 ampere fuses are provided on the primary of the transformer and can be used for isolation purposes during dielectric testing. The device is normally panel mounted and can feed up to 16 OPTIM trip units.

Solid-State (Electronic) Portable Test Kit

The solid-state (electronic) portable test kit provides verification of performance of all ratings of Digitrip 310 electronic trip units installed in circuit breakers while in service under varying load and/or phase imbalance. The test kit operates on 120-volt, 50/60 Hz power; it includes complete instructions and test times for testing long time, short time/instantaneous operation and optional ground fault operation of the circuit breaker.

Breaker Interface Module (BIM)

The Breaker Interface Module (BIM) is a panel mounted user interface device that is mounted on the front of an electrical assembly or at a remote location. The BIM is used to access, configure, test and display information for OPTIM trip units and other devices. The BIM consists of four display windows, eight function buttons, 18 LEDs, and a graphical time/current curve to provide breaker status, operational information, protection status and energy monitoring. A 24 Vdc power supply is required to provide power to the BIM. This is supplied by the switchboard builder to Eaton's specifications. The BIM is a member of Eaton's PowerNet family of communicating devices that connects OPTIM trip units, Digitrip RMS 810/910 trip units and energy sentinels as a subnetwork system. The BIM can also be connected to a main network via a PONI module to PowerNet software.

Digitrip OPTIMizer

The Digitrip OPTIMizer is a hand-held programmer that is used to access, configure, test and display information from OPTIM trip units. The OPTIMizer plugs into the front of an OPTIM trip unit via an eight-pin telephone jack and is powered by a nine-volt battery or the auxiliary power module. One highlighted feature is the "Copy" and "Download" commands.

Setting up multiple OPTIM trips can be finished in minutes and with no errors. An Auxiliary Power Module connection provides a trip test when control power is not present at the breaker. The OPTIMizer is supplied as a standard package to include the programmer, the eight-pin connection cord, battery and carrying case. The auxiliary power module is optional.

Auxiliary Power Module

The auxiliary power module is a power supply requiring 120 Vac input at 50 or 60 Hz that provides a 32 Vdc output. The auxiliary power module provides control power for testing an OPTIM trip unit when other means of control power is not available or for continuous OPTIMizer operation versus temporary with a battery. The auxiliary power module connects into the top of the Digitrip OPTIMizer via a keyed receptacle. The main application for the auxiliary power module would be for the testing of a standalone non-communicating OPTIM breaker that ordinarily would not have control power.

Cause of Trip Display/Remote Mount Cause of Trip Display

The Cause of Trip Display can be field-installed on any Digitrip RMS 310+ trip unit. The device provides breaker information through an LCD screen, such as cause of trip, phrase current, ground current and low loads. The display is ideal for troubleshooting common trips such as ground fault, long delay, and instantaneous/short delay. The DIGIVIEW version will provide a local display at the breaker without additional wiring by connecting directly onto the trip unit. The DIGIVIEWR06 version has a 6 foot cable that allows users to mount the display on the outside of an enclosure door and connect to the trip unit that is contained inside the enclosure.

Cause of Trip LED Module

The Cause of Trip LED Module can be field-installed on any Digitrip RMS 310+ trip unit. The device provides a cause of trip indication via LED. The Cause of Trip LED Module connects directly onto the trip unit. When the breaker trips, the module indicates the cause of trip (long delay, short delay, instantaneous and ground) via LED indication. The module is reset after the breaker is reset.

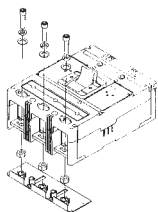
Note: The OPTIMizer can work off of 32 Vdc control power, although 24 Vdc is the standard on OPTIM breakers.

Product Selection

2

Termination Hardware—End Cap Kit

End Cap Kit

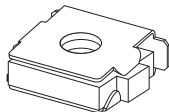


End Cap Kit

| Thread Type | Thread Size | Catalog Number |
|----------------------------------|-------------|----------------|
| Two-Pole F-Frame (225A) | | |
| Imperial | 10–32 | KPEK12 |
| Metric | M–5 | KPEKM12 |
| Three-Pole F-Frame (225A) | | |
| Imperial | 10–32 | KPEK1 |
| Metric | M–5 | KPEKM1 |
| Four-Pole F-Frame (225A) | | |
| Imperial | 10–32 | KPEK14 |
| Metric | M–5 | KPEKM14 |
| Three-Pole J-Frame | | |
| Imperial | 0.312–18 | KPEK2 |
| Metric | M–8 | KPEKM2 |
| Four-Pole J-Frame | | |
| Imperial | 0.312–18 | KPEK24 |
| Metric | M–8 | KPEKM24 |
| Three-Pole K-Frame | | |
| Imperial | 0.312–18 | KPEK3 |
| Metric | M–8 | KPEKM3 |
| Four-Pole K-Frame | | |
| Imperial | 0.312–18 | KPEK34 |
| Metric | M–8 | KPEKM34 |
| Three-Pole L-Frame | | |
| Imperial | 0.312–18 | KPEK4 |
| Metric | M–8 | KPEKM4 |
| Four-Pole L-Frame | | |
| Imperial | 0.312–18 | KPEK44 |
| Metric | M–8 | KPEKM44 |

Termination Hardware—Keeper Nut

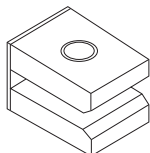
F-Frame Keeper Nut



F-Frame Keeper Nut

| Thread Type | Thread Size | Catalog Number Package of 12 (Priced Individually) |
|-------------|-------------|--|
| Imperial | 10–32 | KPR1A |
| Metric | M–5 | KPR1AM |

K-Frame Keeper Nut

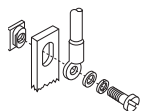


K-Frame Keeper Nut

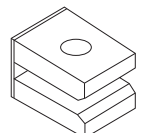
| Thread Type | Thread Size | Line/Load End | Catalog Number Package of 3 |
|-------------|-------------|---------------|--------------------------------|
| Imperial | 0.375–16 | Line | KPR3A |
| | | Load | KPR3B |
| Metric | M–8 | Line | KPR3AM |
| | | Load | KPR3BM |

Note

L-, M-, N-Frames not required. Terminals are threaded.

Termination Hardware**J-Frame Plug Nut****J-Frame Plug Nut**

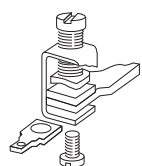
| Thread Type | Thread Size | Catalog Number Package of 6 |
|-------------|-------------|--------------------------------|
| Imperial | 0.250–20 | PLN2 |
| Metric | M–6 | PLN2M |

K-Frame Terminal Adapter**K-Frame Terminal Adapter** ^①

| Line/Load End | Catalog Number |
|---------------|----------------|
| Line and load | TAD3 |

F-Frame Ordering Information

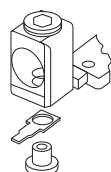
Terminals must be ordered separately. Priced individually.

F-Frame Kit**F-Frame Control Wire Terminal Kit** ^②

| Description | Maximum Amperes | Catalog Number |
|--|-----------------|----------------|
| Package of 12 control wire terminal tangs. | 150 | FCWTK |
| | 225 | FCWTK225 |

J- and K-Frame Ordering Information

Terminals must be ordered separately. Priced individually.

J- and K-Frame Kit**J- and K-Frame Control Wire Terminal Kit**

| Description | Catalog Number |
|--|----------------|
| Package of 12 control wire terminal tangs. | KCWTK |

L-Frame Control Wire Terminal Kit

| AWG Wire Range/Number Conductors | Metric Wire Range mm ² | Catalog Number |
|----------------------------------|-----------------------------------|---------------------------|
| Al/Cu 3/0–350 kcmil (2) | 95–150 | TA602LDCW ^③ |
| Cu 250–350 kcmil (2) | 120–250 | T602LDCW ^③ |
| Al/Cu 400–500 kcmil (2) | 185–240 | 2TA603LDKCW ^{④⑤} |
| Al/Cu 400–500 kcmil (2) | 185–240 | 3TA603LDKCW ^{④⑥} |
| Al/Cu 400–500 kcmil (2) | 185–240 | 4TA603LDKCW ^{④⑦} |

Notes

- ① K-Frame terminal adapter for use in replacing LB/DA breakers.
- ② Not for use with T250KB terminals.
- ③ Individually packed.
- ④ Terminal kits contain one terminal for each pole and one terminal cover.
- ⑤ Two-pole kit.
- ⑥ Three-pole kit.
- ⑦ Four-pole kit.

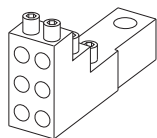
Termination Hardware

2

G-Frame Control Wire Terminal

| Description | Catalog Number | Catalog Number |
|-----------------------------------|----------------|----------------|
| Control wire terminal (kit of 12) | 5652B38G01 | GCWTK |

Multiwire Connectors



Multiwire Connectors Ordering Information (Package of 3)

| Maximum Amperes | Wires per Terminal | Wire Size Range AWG Cu | Kit Catalog Number ^① |
|-----------------------------|--------------------|------------------------|---------------------------------|
| G-Frame ^② | | | |
| 100 | 3 | 14–2 | 3TA100G3K |
| | 6 | 14–6 | 3TA100G6K |
| F-Frame | | | |
| 225 | 3 | 14–2 | 3TA150F3K |
| | 6 | 14–6 | 3TA150F6K |
| J-Frame | | | |
| 250 | 3 | 14–2 | 3TA250J3K |
| | 6 | 14–6 | 3TA250J6K |
| K-Frame | | | |
| 400 | 3 | 14–2/0 | 3TA400K3K |
| | 6 | 14–3 | 3TA400K6K |

Rear Fed Terminals

| Frame | Maximum Amperes | Wire Size Range AWG Cu | Catalog Number ^① |
|-------|-----------------|------------------------|-----------------------------|
| FD | 150 | 14–4/0 | TA150FDRF |
| | 150 | 14–4/0 | 3TA150FDRF |
| | 225 | 6–300 kcmil | TA225FDRF |
| | 225 | 6–300 kcmil | 3TA225FDRF |
| KD | 400 | 250–500 kcmil | TA350KRF |
| | 400 | 250–500 kcmil | 3TA350KRF |
| MDL | 800 | 3/0 MAX (3) | TA800MDLRF |
| | 800 | 3/0 MAX (3) | 3TA800MDLRF |

Base Mounting Hardware

Ordering Information

Hardware for surface mounting of circuit breakers is supplied only on request. Hardware consists of mounting screws and lockwashers. Order hardware for circuit breaker pole configurations as required.

Mounting Hardware

| Screw Length in Inches (mm) | Catalog Number |
|--------------------------------------|----------------|
| G-Frame | |
| 0.138–32 x 2.63 (3.5 x 66.7 mm) Std. | 624B375G23 |
| 0.138–32 x 3.00 (3.5 x 76.2 mm) | 8703C80G05 |

Notes

- ① When catalog number starts with a 3, it indicates a kit with three terminals in each kit. Catalog number beginning with a TA indicates one terminal.
- ② GD breakers require special tapping for multiwire lugs, as described in the IL or use with standard aluminum collars.

Imperial Thread Mounting Hardware

| Number of Poles | Description | Type of Mounting | Catalog Number |
|----------------------|---|------------------|-------------------|
| F-Frame | | | |
| 1 | 0.164-32 x 3.188-inch pan-head steel screws, lockwashers and clamps | Individual | 624B375G01 |
| | | Group ① | 624B375G02 |
| 2 | 0.164-32 x 1.5-inch pan-head steel screws and lockwashers | Individual | 4218B80G01 |
| 3, 4 | 0.164-32 x 1.5-inch pan-head steel screws and lockwashers | Individual | BMH1 |
| J-Frame | | | |
| 2, 3, 4 | 0.250-20 x 2.75 inch pan-head steel screws and lockwashers | Individual | BMH2 |
| K-Frame | | | |
| 2, 3, 4 | 0.250-20 x 1.5 inch pan-head steel screws and lockwashers | Individual | BMH3 |
| L-Frame | | | |
| 2, 3, 4 | 0.250-20 x 1.5 inch filister-head steel screws and lockwashers and flat washers | Individual | BMH4 |
| M-Frame | | | |
| 2, 3 | 0.3125-18 x 1.25 inch filister-head steel screws and lockwashers and flat washers | Individual | BMH5 |
| N-Frame | | | |
| 2, 3, 4 | 0.3125-18 x 1.25 inch pan-head steel screws and lockwashers | Individual | BMH5 |
| R-Frame | | | |
| Supplied by customer | | | |

Metric Thread Mounting Hardware

| Number of Poles | Description | Type of Mounting | Catalog Number |
|----------------------|---|------------------|-------------------|
| F-Frame | | | |
| 1 | M4-0.7 x 80 mm pan-head steel screws, lockwashers, and clamps | Individual | 4218B80G09 |
| | | Group ① | 4218B80G10 |
| 2 | M4-0.7 x 38 mm pan-head steel screws and lockwashers | Individual | 4218B80G11 |
| 3, 4 | M4-0.7 x 38 mm pan-head steel screws and lockwashers | Individual | BMH1M |
| J-Frame | | | |
| 2, 3, 4 | M6-0.7 x 70 mm pan-head steel screws and lockwashers | Individual | BMH2M |
| K-Frame | | | |
| 2, 3, 4 | M6-0.7 x 38 mm pan-head steel screws and lockwashers | Individual | BMH3M |
| L-Frame | | | |
| 2, 3 | — | Individual | BMH4M |
| M-Frame | | | |
| 2, 3 | — | Individual | BMH4M |
| N-Frame | | | |
| 2, 3 | — | Individual | BMH5M |
| R-Frame | | | |
| Supplied by customer | | | |

Note

① One set of hardware for two circuit breakers.

Terminal Shields

2

G-Frame Terminal Shield

| Number Units in Package | Catalog Number |
|-------------------------|----------------|
| 10 | GTSK3 |

F-Frame



F-Frame Terminal Shield

| Number of Poles | Location | Standard (Package of 10) (Priced Individually) | Special—For Use When Electrical Operator is Mounted on Circuit Breaker |
|-----------------|----------|---|---|
| | | Catalog Number | Catalog Number |
| 1 | Line | 625B229G06 | — |
| 2 | Line | 625B229G07 | — |
| 3 | Line | 625B229G08 | 4210B95G01 |
| 4 | Line | 625B229G09 | 4210B95G02 |

J-Frame



J-Frame Terminal Shield

| Number of Poles | Location | Catalog Number (Package of 10) |
|-----------------|----------|-----------------------------------|
| 2, 3 | Line End | 1266C07G01 |
| 4 | Line End | 6631C01G01 |
| 2, 3 | Load End | 6641C16G01 |
| 4 | Load End | 6641C16G02 |

K-Frame



K-Frame Terminal Shield

| Number of Poles | Location | Catalog Number (Package of 10) |
|-----------------|----------|--------------------------------|
| 2, 3 | Line | TS33LN |
| 4 | Line | TS34LN |
| 3 | Load | TS33LD |

L-Frame Terminal Shield

| Catalog Number (Package of 1) |
|-------------------------------|
| 314C420G05 |

M-Frame Terminal Shield

| Catalog Number (Package of 1) |
|-------------------------------|
| 208B966G01 |

N-Frame Terminal Shield

| Catalog Number (Package of 1) |
|-------------------------------|
| NTS3K |

Terminal End Covers

Ordering Information

The terminal end cover is available for three-pole circuit breakers only. Two conductor opening sizes are available. Specify quantity (one per circuit breaker) when ordering.

F-Frame



F-Frame Terminal End Covers

| Conductor Opening Diameter in Inches (mm) | Catalog Number |
|---|----------------|
| 0.25 (6.35 mm) | TEC1 |
| 0.41 (10.41 mm) | TEC2 |

Interphase Barriers

Ordering Information

Two per package.

Interphase Barrier



Interphase Barriers

| Frame | Catalog Number |
|-------|----------------|
| F | IPB1 |
| J, K | IPB3 |
| L | IPB4 |
| M | IPB4 |
| N | IPB5 |

Base Mounting Plate

Base Mounting Plate



Base Mounting Plate G-Frame GD/GHC

| Number of Units in Package | Catalog Number |
|----------------------------|----------------|
| 1 | 207B513G01 |

DIN Rail Adapter

DIN Rail Adapter



DIN Rail Adapter G-Frame GD/GHC

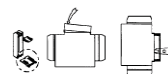
| Number of Poles | Number of Units in Package | Catalog Number |
|-----------------|----------------------------|----------------|
| 1, 2 | 10 | 1225C79G01 |
| 3 | 10 | 1225C79G02 ① |

All Metal DIN Rail Adapter G-Frame GD/GHC

| Number of Poles | Number of Units in Package | Catalog Number |
|-----------------|----------------------------|----------------|
| 3 | 1 | EGGDIN |

Key Operated Attachment

Key Operated Attachment



Key Operated Attachment G-Frame GD/GHC

| Number of Units in Package | Catalog Number |
|----------------------------|----------------|
| 10 | GKOA |

Note

① For use on three-pole breakers only.

2.3

Molded Case Circuit Breakers

Series C

2

Lock Dog (Non-Padlockable)

Lock Dog (Non-Padlockable)



Lock Dog (Non-Padlockable) G-Frame GD/GHC/GHB/GMCP

| Number of Units in Package | Catalog Number |
|----------------------------|----------------|
| 1 | 1294C01H01 |

Handle Ties

Handle Tie—Series C, F-Frame

| Number of Poles | Number of Units in Package | Catalog Number |
|-----------------|----------------------------|----------------|
| 2 | 10 | HTBFD2P |
| 3 | 10 | HTBFD3P |

Handle Tie—Series C, G-Frame

| Number of Poles | Number of Units in Package | Catalog Number |
|-----------------|----------------------------|----------------|
| 2 | 10 | HTBGD2P |
| 3 | 10 | HTBGD3P |

Non-Padlockable Handle Block

Non-Padlockable Handle Block



Non-Padlockable Handle Block

| Frame | Catalog Number |
|---------|----------------|
| F | LKD1 |
| J, K | LKD3 |
| L, M, N | LKD4 |

Padlockable Handle

Padlockable Handle



Padlockable G-Frame GD/GHC/GHB

| Number of Units in Package | Catalog Number ^① |
|----------------------------|-----------------------------|
| 10 | 1223C77G03 |
| 10 | 1223C77G05 ^② |
| 10 | 1223C77G06 ^② |

Padlockable Handle Lock

Padlockable Handle Lock



Padlockable Handle Lock

| Frame | Catalog Number |
|-------|----------------|
| G | GPHBOFF |
| J, K | PHB3 |

Snap-On Padlockable Handle Lock Hasp

Snap-On Padlockable Handle Lock Hasp



Snap-On Padlockable Handle Lock Hasp

| Frame | Catalog Number |
|-------|----------------|
| F | PHL1 |

Notes

- ① Accepts 0.285 Lock Shank.
- ② Padlockable in the OFF position only.

Padlockable Handle Lock Hasp**Padlockable Handle Lock Hasp****Padlockable Handle Lock Hasp**

| Description | Catalog Number |
|-------------------------------------|----------------|
| F-Frame | |
| Single-pole breakers | PHL1 |
| Two-, three- and four-pole breakers | PLK1 |
| For left side mounting | PLK1LOFF |
| For right side mounting | PLK1ROFF |
| J, K-Frames | |
| Two-, three- and four-pole breakers | PLK3 |
| For left side mounting | PLK3LOFF ① |
| For right side mounting | PLK3ROFF ① |
| L-Frame (Side Mounted) | |
| Lock ON or OFF | HLK4 |
| Lock OFF only (left-hand mount) | HLK4LOFF ① |
| L-Frame (Top Mounted) | |
| Lock ON or OFF | HLK4S |
| Lock OFF only | HLK4SOFF ① |
| M-Frame | |
| Lock ON or OFF | HLK4 |
| Lock OFF only (left-hand mount) | HLK4LOFF ① |
| M-Frame (Vertical Mounting) | |
| Lock ON/OFF | HLK4S |
| Lock OFF only | HLK4SOFF |
| N-Frame | |
| Side mounted | PLK5 |
| Top mounted (ON/OFF) | PLK5S |
| Top mounted (OFF only) | PLK5SOFF ① |
| R-Frame | |
| Lock ON/OFF | HLK6 |
| Lock OFF only | HLK6OFF ① |

Cylinder Lock**Cylinder Lock****Cylinder Lock**

| Frame | Catalog Number |
|---------|----------------------|
| F, J, K | Order by description |

Note

- ① For padlockable handle lock hasp to padlock handle in OFF position only, order either catalog number.

Key Interlock Kit**Ordering Information**

Key interlock kits contain the necessary interface and hardware to install a trapped key interlock from one of the listed manufacturers. Key interlocks are not installed or supplied as part of the breaker, and must be obtained separately from the lock manufacturer or through the manufacturer of the equipment on which the breaker will be installed. Select the mounting kit catalog number to match the type of lock used.

Key Interlock Kit**Key Interlock Kit (Trapped Key Interlock)**

| Lock Manufacturer | Lock Type | Bolt Projection in Withdrawn Position in Inches (mm) | Kit Catalog Number |
|-------------------------|-----------|--|--------------------|
| F-Frame | | | |
| Superior | B-4003-1 | 0.38 (9.5) | KYK1 |
| Kirk® | F | 0.38 (9.5) | KYK1 |
| Castell ① | K or QK | 0.38 (9.5) | CTK1 |
| J, K-Frames | | | |
| Superior | B-4003-1 | 0.38 (9.5) | KYK3 |
| Kirk | F | 0.38 (9.5) | KYK3 |
| Castell ① | K or QK | 0.38 (9.5) | CTK3 |
| L-, M-, N-Frames | | | |
| Superior | B-4003-1 | 0.38 (9.5) | KYK4 |
| Kirk | F | 0.38 (9.5) | KYK4 |
| Castell ① | K or QK | 0.38 (9.5) | CTK4 |
| R-Frame | | | |
| Superior | B-4003-1 | 1.0 (25.4) | KYK6 |
| Kirk | F | 1.0 (25.4) | KYK6 |
| Castell ① | K or QK | 1.0 (25.4) | CTK6 |
| JG-Frame | | | |
| Superior | B-4003-1 | 0.38 (9.5) | KYKJG |
| Kirk | F | 0.38 (9.5) | KYKJG |
| Castell ① | K or QK | 0.38 (9.5) | CTKJG |
| LG-Frame | | | |
| Superior | B-4003-1 | 0.38 (9.5) | KYKLG |
| Kirk | F | 0.38 (9.5) | KYKLG |
| Castell ① | K or QK | 0.38 (9.5) | CTKLG |

Note

① When ordering Castell Interlock, it is necessary for customer to specify that the mounting bolt holes must be 10 mm in diameter

Sliding Bar Interlock**Ordering Information**

The sliding bar interlock is available for mounting between two adjacent three-pole circuit breakers with circuit breakers centerline

spacing as indicated in table and enclosure front panel thickness of 1/8 or 3/16 inch (3.2 or 4.8 mm). (For field installation only.)

Sliding Bar Interlock**Sliding Bar Interlock**

| Frame | Centerline Spacing in Inches (mm) | Catalog Number |
|-------|-----------------------------------|----------------|
| F | 4.19 (106.4) | SBK1 |
| J | 4.38 (111.3) | SBK2 |
| K | 5.75 (146.0) | SBK3 |
| L, M | 8.50 (215.9) | SBK4 |
| N | 8.50 (215.9) | SBK5 |

Walking Beam Interlock**Ordering Information**

The walking beam interlock is available for mounting between two adjacent circuit breakers spaced 1/4-inch (6.4 mm) apart and having the same pole configuration. The two circuit breakers must be factory modified to accept the walking beam interlock assembly (suitable for use with either two-, three- or four-pole circuit breakers).

With properly modified circuit breakers, the walking beam interlock is suitable for field installation. Order circuit breakers specifying modification for walking beam (20% price adder) and select walking beam interlock from table below. Circuit breakers and walking beam interlock are boxed and shipped separately.

Walking Beam Interlock**Walking Beam Interlock**

| Frame | Catalog Number |
|-------|----------------|
| F | WBL1 |
| K | WBL3 |
| L, M | WBL4A |
| N | WBL5 |
| R ① | WBL6 |

Note

① Three-pole only.

Electrical Operator

2

F-Frame Electrical (Solenoid) Operator

| Voltage | Frequency | Terminal Block | 18-Inch (457.2 mm) Pigtail Lead |
|---------|-----------|----------------|---------------------------------|
| | | Catalog Number | Catalog Number |
| 120 | AC | EOP1T07 | EOP1P07 |
| 240 | AC | EOP1T11 | EOP1P11 |

F-Frame Electrical (Motor) Operator ^①

| Voltage | Frequency | 18-Inch (457.2 mm) Pigtail Lead |
|---------|-------------|---------------------------------|
| | | Catalog Number |
| 120 | 50/60 Hz AC | MOPFD120C |
| 24 | DC | MOPFD24D |
| 125 | DC | MOPFD120C |
| 208–240 | 50/60 Hz | MOPFD240C |
| 220–250 | DC | MOPFD240C |

J-Frame Electrical (Solenoid) Operator

| Operating Voltage | Frequency | Terminal Block |
|-------------------|-------------|----------------|
| | | Catalog Number |
| 120 | 50/60 Hz AC | EOP2T07 |
| 240 | 50/60 Hz AC | EOP2T11 |

K-Frame Electrical (Solenoid) Operator

| Operating Voltage | Frequency | Terminal Block |
|-------------------|-------------|----------------|
| | | Catalog Number |
| 120 | 50/60 Hz AC | EOP3MT07 |
| 240 | 50/60 Hz AC | EOP3MT11 |

K-Frame Electrical (Solenoid) Operator Base Mounting Kit

| Frame | Catalog Number |
|-------|----------------|
| K | BBMK3 |

L- and M-Frame Electrical (Motor) Operator (310 and OPTIM)

| Operating Voltage | Frequency | Terminal Block |
|-------------------|-----------|----------------|
| | | Catalog Number |
| 120 | 50/60 Hz | EOP4MT07 |
| 208 | 50/60 Hz | EOP4MT11 |
| 240 | 50/60 Hz | EOP4MT11A |
| 480 | 50/60 Hz | EOP4MT15 |
| 125 | DC | EOP4MT26 |
| 24 | DC | EOP4MT21 |

Note

^① Motor operators MOP1P07, MOP1P03DC, MOP1P05DC and MOP1P07DC are replaced by MOPFD motor operators listed in table.

N-Frame Electrical (Motor) Operator

| Operating Voltage | Frequency | Pigtail Leads |
|-------------------|-----------|----------------|
| | | Catalog Number |
| 120 | 50/60 Hz | EOP5T07 |
| 208 | 50/60 Hz | EOP5T09 |
| 240 | 50/60 Hz | EOP5T11 |
| 480 | 50/60 Hz | EOP5T15 |
| 24 | DC | EOP5T21 |
| 48 | DC | EOP5T22 |
| 125 | DC | EOP5T26 |

R-Frame Electrical (Motor) Operator

| Operating Voltage | Frequency | Factory-Installed Terminal Block |
|-------------------|-----------|----------------------------------|
| | | Catalog Number |
| 120 | 50/60 Hz | EOP6T08K |
| 240 | 50/60 Hz | EOP6T11K |
| 48 | DC | EOP6T21K |

Plug-In Adapters**F-Frame Ordering Information (Flat Bar Type)**

| Continuous Current Rating (Amperes) | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
|-------------------------------------|-------------------------|---------------------------|--------------------------------|
| 100–225 | 1480D13G01 | 1480D13G02 | 1480D13G07 ^① |
| Mounting plate | 176C511H01 | 507C047H01 | — |

J-Frame Ordering Information (Flat Bar Type)

| Continuous Current Rating (Amperes) | Terminal End | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
|-------------------------------------|-----------------------|-------------------------|---------------------------|--------------------------|
| 250 | Line | 1260C86G05 | 1260C86G06 | 1231C67G01 |
| | Load | 1260C86G07 | 1260C86G08 | 1231C67G02 |
| | One line and one load | 506C144G27 | 506C144G28 | — |
| Mounting plate | — | ^② | PMP23 | — |

K-Frame Ordering Information (Flat Bar Type)—600 Vac Maximum

| Continuous Current Rating (Amperes) | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
|-------------------------------------|-------------------------|---------------------------|--------------------------|
| 400 | PAD32 | PAD33 | — |
| Mounting plate | ^② | PMP33 | — |

Notes

^① 100 ampere maximum.

^② Use three-pole mounting plate for two-pole circuit breaker.

L-Frame (Threaded Stud Type)

| Continuous Current Rating (Amperes) | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
|-------------------------------------|-------------------------|---------------------------|--------------------------|
| 600 (threaded stud type) | 506C059G03 | 506C059G04 | PAD44 |
| 600 (flat bar type) | 1288C19G01 | 1288C19G02 | 6636C55H01 |
| Mounting plate | 504C824H01 | 504C824H01 | — |

M-Frame (Flat Bar Type)—600 Vac Maximum

| Continuous Current Rating (Amperes) | Two-Pole Catalog Number | Three-Pole Catalog Number |
|-------------------------------------|-------------------------|---------------------------|
| 800 | 2614D53G05 | 2614D53G06 |
| Mounting plate | 1290C73H01 | 1290C73H01 |

N-Frame (Flat Bar Type)

| Continuous Current Rating (Amperes) | Two-Pole Catalog Number | Three-Pole Catalog Number |
|-------------------------------------|-------------------------|---------------------------|
| 1200 | 2614D53G03 | 2614D53G04 |
| Mounting plate | 1290C73H01 | 1290C73H01 |

Plug-In Adapters

| Frame | Number of Poles | Standard Certification | Catalog Number |
|-------|-----------------|------------------------|----------------|
| FD | 3 | IEC | PAD3F |
| FD | 4 | IEC | PAD4F |
| JD | 3 | IEC | PAD3JD |
| KD | 3 | IEC | PAD3K |
| LD | 3 | IEC | PAD3LD |
| LD | 4 | IEC | PAD4LD |

Rear Connecting Studs**F-Frame** ^①

| Stud Ampere Rating | Stud Catalog Number | Tube Catalog Number |
|---|---------------------|---------------------|
| For 15 to 100 Ampere Circuit Breakers | | |
| 100 A short | 451D874G01 | 32B9446H20 |
| 100 A short | 451D874G01 | 32B9446H21 |
| 100 A short | 451D874G01 | 32B9446H22 |
| 100 A short | 451D874G01 | 32B9446H23 |
| 100 A long | 451D874G02 | 32B9446H24 |
| 100 A long | 451D874G02 | 32B9446H25 |
| 100 A long | 451D874G02 | 32B9446H26 |
| 100 A long | 451D874G02 | 32B9446H27 |
| For 110 to 225 Ampere Circuit Breakers | | |
| 225A short | 374D883G01 | 374D883H06 |
| 225A short | 374D883G01 | 374D883H07 |
| 225A short | 374D883G01 | 374D883H08 |
| 225A short | 374D883G01 | 374D883H09 |
| 225A long | 374D883G02 | 374D883H10 |
| 225A long | 374D883G02 | 374D883H11 |
| 225A long | 374D883G02 | 374D883H12 |
| 225A long | 374D883G02 | 374D883H13 |

J-Frame ^①

| Stud Ampere Rating | Stud Catalog Number | Tube Catalog Number |
|--------------------|---------------------|---------------------|
| 250A short | 5010D23G01 | 456D983H05 |
| 250A short | 5010D23G01 | 456D983H06 |
| 250A short | 5010D23G01 | 456D983H07 |
| 250A long | 5010D23G02 | 5010D23H05 |
| 250A long | 5010D23G02 | 5010D23H06 |
| 250A long | 5010D23G02 | 5010D23H07 |

K-Frame ^①

| Stud Ampere Rating | Stud Catalog Number | Standard Tube Catalog Number |
|--------------------|---------------------|------------------------------|
| 400 A short | 6642C14G02 | 313C909H17 |
| 400 A short | 6642C14G04 | 313C909H18 |
| 400 A short | 6642C14G06 | 313C909H19 |
| 400 A long | 6642C14G03 | 313C909H20 |
| 400 A long | 6642C14G05 | 313C909H21 |
| 400 A long | 6642C14G07 | 313C909H22 |

L-Frame Ordering Information

| Stud Catalog Number |
|---------------------|
| 314C960G07 |
| 314C960G08 |
| 314C960G09 |

M-Frame Ordering Information ^①

| Stud Ampere Rating | Stud Catalog Number |
|--------------------|---------------------|
| 225 | 314C960G01 |
| 400 | 314C960G04 |
| 400 | 314C960G05 |
| 400 | 314C960G06 |
| 600 | 314C960G07 |
| 600 | 314C960G08 |
| 600 | 314C960G09 |
| 800 | 314C960G10 |
| 800 | 314C960G11 |
| 800 | 314C960G12 |

N-Frame Ordering Information ^①

| Stud Ampere Rating | Stud Catalog Number |
|--------------------|---------------------|
| 800 | 623B222G01 |
| 800 | 623B222G02 |
| 800 | 623B222G03 |
| 1200 | 373B375G04 |
| 1200 | 373B375G03 |

Note

^① Not UL listed.

Panelboard Connecting Straps

2

F-Frame Panelboard Connecting Straps

| Bus Spacing in Inches (mm) | Continuous Current Rating (Amperes) | Pole Connector Type | |
|----------------------------|-------------------------------------|-----------------------|------------------------|
| | | Center Catalog Number | Outside Catalog Number |
| 2.75 (69.9) | 50 | 673B142G02 | 673B142G09 |
| 2.75 (69.9) | 100 | 673B142G02 | 673B142G10 |
| 2.75 (69.9) | 150 | 673B142G04 | 673B142G03 |
| 3.50 (88.9) | 50 | 1253C72G01 | 1253C72G03 |
| 3.50 (88.9) | 100 | 1253C73G03 | 1253C73G06 |
| 3.50 (88.9) | 150 | 1253C73G01 | 1253C73G05 |

F-Frame Mounting Bracket

| Number of Poles | Catalog Number |
|-----------------|----------------|
| 2 | 624B600H02 |
| 3 | 624B600H01 |

J-Frame Panelboard Connecting Straps

| Bus Spacing in Inches (mm) | Continuous Current Rating (Amperes) | Pole Connector Type | |
|----------------------------|-------------------------------------|-----------------------|------------------------|
| | | Center Catalog Number | Outside Catalog Number |
| 3.50 (88.9) | 250 | 2600D26G01 | 2600D26G02 |

K-Frame Panelboard Connecting Straps

| Bus Spacing in Inches (mm) | Continuous Current Rating (Amperes) | Pole Connector Type | |
|----------------------------|-------------------------------------|-----------------------|------------------------|
| | | Center Catalog Number | Outside Catalog Number |
| 3.50 (88.9) | 400 | 4212B78G02 | 4212B77G01 |

K-Frame Mounting Bracket

| Number of Poles | Catalog Number |
|-----------------|----------------|
| 2, 3 | 208B264H01 |

L-Frame Panelboard Connecting Straps

| Continuous Current Rating (Amperes) | Pole Connector Type | |
|--|-----------------------------|------------------------------|
| | Center Catalog Number | Outside Catalog Number |
| 600 | 624B609G01 | 506C052G01 |

L-Frame Mounting Bracket

| Number of Poles | Catalog Number |
|-----------------|-------------------|
| 2,3 | 208B297H01 |

M-Frame Panelboard Connecting Straps

| Bus Spacing in Inches (mm) | Continuous Current Rating (Amperes) | Pole Connector Type | |
|-------------------------------------|--|---------------------|-------------------|
| | | Connector Type | Catalog Number |
| 3.50 (88.9) | 800 | Short | 314C996G01 |
| | | Medium | 314C996G02 |
| | | Long | 314C996G03 |

M-Frame Mounting Bracket

| Catalog Number |
|-------------------|
| 315C270H01 |

N-Frame Panelboard Connecting Straps

| Bus Spacing in Inches (mm) | Continuous Current Rating (Amperes) | Pole Connector Type | |
|-------------------------------------|--|---------------------|-------------------|
| | | Connector Type | Catalog Number |
| 3.50 (88.9) | 1200 | Short | 505C606G04 |
| | | Medium | 505C606G05 |
| | | Long | 505C606G06 |

N-Frame Mounting Bracket (Four Required)

| Catalog Number |
|-------------------|
| 315C270H01 |

Type LFD Current Limiter

The LFD current limiter is an accessory that bolts to the load end of a standard FDB or FD thermal-magnetic and electronic circuit breaker, providing 200,000 A

interrupting capacity at up to 600 Vac. LFD current limiters for thermal-magnetic circuit breakers are listed with Underwriters Laboratories under File E47239.

Type LFD Current Limiter



Type LFD Current Limiter

| Circuit Breaker Rating Amperes | Catalog Number |
|--------------------------------|----------------|
| 15–70 | LFD3070R |
| 80–160 | LFD3150R |

Ground Fault Alarm Unit

The ground fault alarm unit is a remotely mounted device with a combination indicating light/test button that will light when the breaker trips or alarms on ground fault. The ground fault alarm unit requires a separate 120 Vac power source to power the

light and the internal relay, which has 1NO and 1NC contacts for remote indication. The ground fault alarm unit can be panel mounted for ordering with an optional face mounting bracket. For use on Digitrip 310 only, K- through N-Frame.

Ground Fault Alarm Unit



GF Alarm Unit

| Description | Catalog Number |
|-------------------------|----------------|
| Ground fault alarm unit | GFAU |
| Face mounting bracket | 1264C67G01 |

IQ Energy Sentinel

The IQ Energy Sentinel is a highly accurate, microprocessor-based, breaker-mounted device designed to monitor power and energy readings. It represents an alternative to watt meters, watt-hour meters, and watt demand meters. Key advantages include savings in space, lower installation costs, and remote monitoring capability.

The IQ Energy Sentinel mounts on the load side of a Series C F-Frame (150 ampere) circuit breaker. It can be applied on three-phase, four-wire systems, or single-phase, three-wire systems with voltage connected through Phases A and C.

For more information, see Descriptive Bulletin 8178.

Potential Transformer Module

The potential transformer module is required for the Digitrip OPTIM 1050 to provide a voltage input to allow the trip unit to monitor power and energy as well as power factor. The potential transformer module is a 6 VA transformer with a primary voltage input of up to 600 volt

line to line. Three 0.1 ampere fuses are provided on the primary of the transformer and can be used for isolation purposes during dielectric testing. The device is normally panel mounted and can feed up to 16 OPTIM trip units.

Potential Transformer Module



Potential Transformer Module

| Description | Catalog Number |
|------------------------------|----------------|
| Potential transformer module | DOPTMLN |

Solid-State (Electronic) Portable Test Kit

The solid-state (electronic) portable test kit provides verification of performance of all ratings of Digitrip 310 electronic trip units installed in circuit breakers while in service under varying load and/or phase imbalance. The test kit operates on 120-volt,

50/60 Hz power; it includes complete instructions and test times for testing long time, short time/ instantaneous operation and optional ground fault operation of the circuit breaker.

Portable Test Kit

| Description | Catalog Number |
|--|----------------|
| Solid-state (electronic) portable test kit | STK2 |

Breaker Interface Module (BIM)

The Breaker Interface Module (BIM) is a panel mounted user interface device that is mounted on the front of an electrical assembly or at a remote location. The BIM is used to access, configure, test and display information for OPTIM trip units and other devices. The BIM consists of four display windows, eight function buttons, 18 LEDs, and a graphical time/current curve to provide breaker status, operational information, protection status and energy monitoring. A 24

Vdc power supply is required to provide power to the BIM. This is supplied by the switchboard builder to Eaton's specifications. The BIM is a member of Eaton's PowerNet family of communicating devices that connects OPTIM trip units, Digitrip RMS 810/910 trip units and energy sentinels as a subnetwork system. The BIM can also be connected to a main network via a PONI module to PowerNet software.

Breaker Interface Module (BIM)**Breaker Interface Module (BIM)****Catalog Number****BIMII****Digitrip OPTIMizer**

The Digitrip OPTIMizer is a hand-held programmer that is used to access, configure, test and display information from OPTIM trip units. The OPTIMizer plugs into the front of an OPTIM trip unit via an eight-pin telephone jack and is powered by a nine-volt battery or the auxiliary power module. One highlighted feature is the "Copy" and "Download" commands.

Setting up multiple OPTIM trips can be finished in minutes and with no errors. An Auxiliary Power Module connection provides a trip test when control power is not present at the breaker. The OPTIMizer is supplied as a standard package to include

the programmer, the eight-pin connection cord, battery and carrying case. The auxiliary power module is optional.

Note: 24 Vdc Power Supply

A 24 Vdc power supply is required for all Digitrip OPTIM trip units that are required to communicate either on the main Eaton PowerNet network or as a subnetwork to a BIM. The breaker's load is 45 mA of current. Typically one power supply is required per switchboard and can provide control power to a BIM and the OPTIM trip units. The 24 Vdc power supply should be an "isolated high quality" power supply with a "CE" label, and is normally provided by the switchboard manufacturer to Eaton's recommendations.

Digitrip OPTIMizer**Digitrip OPTIMizer****Catalog Number****OPTIMizer—standard package****Auxiliary Power Module**

The auxiliary power module is a power supply requiring 120 Vac input at 50 or 60 Hz that provides a 32 Vdc output. The auxiliary power module provides control power for testing an OPTIM trip unit when other means of control power is not available or for continuous OPTIMizer operation versus temporary with a battery. The auxiliary

power module connects into the top of the Digitrip OPTIMizer via a keyed receptacle. The main application for the auxiliary power module would be for the testing of a standalone non-communicating OPTIM breaker that ordinarily would not have control power.

Auxiliary Power Module**Auxiliary Power Module****Catalog Number****PRTBAPMDV****Cause of Trip Display/Remote Mount Cause of Trip Display**

The Cause of Trip Display can be field-installed on any Digitrip RMS 310+ trip unit. The device provides breaker information through an LCD screen, such as cause of trip, phrase current, ground current and low loads. The display is ideal for troubleshooting common trips such as ground fault, long delay, and instantaneous/short delay.

The DIGIVIEW version will provide a local display at the breaker without additional wiring by connecting directly onto the trip unit. The DIGIVIEWR06 version has a 6 foot cable that allows users to mount the display on the outside of an enclosure door and connect to the trip unit that is contained inside the enclosure.

Cause of Trip Display/Remote Mount Cause of Trip Display**Catalog Number****DIGIVIEW****DIGIVIEWR06****Cause of Trip LED Module**

The Cause of Trip LED Module can be field-installed on any Digitrip RMS 310+ trip unit. The device provides a cause of trip indication via LED. The Cause of Trip LED Module connects directly onto the trip unit. When the

breaker trips, the module indicates the cause of trip (long delay, short delay, instantaneous and ground) via LED indication. The module is reset after the breaker is reset.

Cause of Trip LED Module**Catalog Number****TRIP-LED**

Accessories

2

Flex Shaft Accessories (F- through R-Frame)**NEMA 12 Safety Door Hardware for Flex Shaft and C371** ^①

| Handle Length in Inches (mm) | Catalog Number ^② |
|---------------------------------|--------------------------------|
| 4 (101.6) | C361KJ4 |
| 6 (152.4) | C361KJ6 |
| Roller Latch ^③ | C361KR |

Series C Rotary Accessories

As an option, an auxiliary switch is offered so that the control panel builder may electrically indicate the status of the breaker.

This accessory would be mounted on the mechanism and comes with 24-inch (609.6 mm) pigtail leads.

Series C Auxiliary Switch

| Catalog Number |
|-------------------|
| 5108A61G01 |

Wire Seal

The wire seal can be used to secure the cover on the trip unit to prevent adjustments after settings are confirmed.

Wire Seal

| Description | Catalog Number |
|-------------|-------------------|
| Wire seal | 5108A03H01 |

Notes

- ① Customer: Consult with box manufacturer for correct door hardware and any adapters required for assembly.
- ② The 1/4-inch x 1/2-inch (6.35 x 12.7 mm) standard mill rectangular locking bar is not supplied with these kits.
- ③ Third roller latch for use with 4- or 6-inch (101.6 or 152.4 mm) handle when 3 point latching is required.

Technical Data and Specifications

Electrical Operator

F-Frame Electrical (Solenoid) Operator Rating Data ^{①②}

| Voltage ^③ | Frequency | Inrush Current Amperes | Maximum Operating Time | Fuse Amperes ^④ |
|----------------------|-------------|------------------------|------------------------|---------------------------|
| 120 | 50/60 Hz AC | 10 | 5 cycles (80 ms) | 3 |
| 240 | 50/60 Hz AC | 5 | 5 cycles (80 ms) | 2 |

F-Frame Electrical (Motor) Operator Rating Data ^{②③⑥⑦}

| Voltage ^③ | Frequency | Inrush Current Amperes |
|----------------------|-----------|------------------------|
| 120 | AC | 2 |
| 24 | DC | 5 |
| 48 | DC | 3 |
| 125 | DC | 2 |

J-Frame Electrical (Solenoid) Operator Rating Data ^{①⑥⑧⑨}

| Voltage ^③ | Inrush Current Amperes | Fuse Amperes |
|----------------------|------------------------|--------------|
| 120 | 30 | 6 |
| 240 | 16 | 4 |

K-Frame Electrical (Solenoid) Operator Rating Data ^{①⑥⑧⑨}

| Operating Voltage ^③ | Inrush Current Amperes | Fuse Amperes |
|--------------------------------|------------------------|--------------|
| 120 | 30 | 6 |
| 240 | 16 | 4 |

L- and M-Frame Electrical (Motor) Operator Rating Data

^{①⑥⑧⑩}

| Operating Voltage ^③ | Inrush Current Amperes |
|--------------------------------|------------------------|
| 120 AC | 31 |
| 208 AC | 13 |
| 240 AC | 12 |
| 125 DC | 21 |
| 24 DC | 50 |

N-Frame Electrical (Motor) Operator Rating Data ^{①⑥⑩⑫}

| Operating Voltage ^③ | Frequency | Inrush Current Amperes | Fuse Amperes |
|--------------------------------|-----------|------------------------|--------------|
| 120 | 50/60 Hz | 31 | 6 |
| 208 | 50/60 Hz | 21 | — |
| 240 | 50/60 Hz | 19 | 4 |
| 480 | 50/60 Hz | — | — |
| 24 | DC | 50 | — |
| 48 | DC | 80 | — |
| 125 | DC | 21 | — |

R-Frame Electrical (Motor) Operator Rating Data ^{③⑩⑬⑭}

| Operating Voltage ^⑦ | Frequency | Motor Inrush Current Amperes |
|--------------------------------|-----------|------------------------------|
| 120 | 50/60 Hz | 40 |
| 240 | 50/60 Hz | 27 |
| 48 | DC | 53 |
| 24 | DC | 58 |

Notes

- ① UL listed under UL File E64983.
 - ② The electrical operator design is endurance tested for 8000 electrical operations.
 - ③ Tolerance: +10%, -15% of nominal voltage.
 - ④ Use current-limiting type fuse where required.
 - ⑤ UL listed under UL File E64124.
 - ⑥ Frequency: 50/60 Hz.
 - ⑦ Maximum operating time: 3 seconds max. Operator is an intermittent duty device. The safe duty cycle (OFF to ON to OFF) should not exceed one per minute.
 - ⑧ The electrical operator design has been endurance tested for 6000 electrical operations.
 - ⑨ Maximum operating time: 5 cycles (80 ms).
 - ⑩ Maximum operating time: 12 cycles.
 - ⑪ The electrical operator design has been endurance tested for 2,500 electrical operations.
 - ⑫ Maximum operating time: 12 cycles max. Operator is an intermittent duty device. The safe duty cycle (OFF to ON to OFF) should not exceed one per minute.
 - ⑬ Operator is an intermittent duty service. The safe duty cycle (OFF to ON to OFF) should not exceed one per minute.
 - ⑭ Electric Operating time at rated voltage; (a) To turn breaker ON—1/2 second max. (b) To turn breaker OFF—1/2 second max.
 - ⑮ Motor operating temperature; Class "A" temperature limits apply.
 - ⑯ A minimum 1 kVA power source is recommended for motor operation.
 - ⑰ Applied voltage should be no less than 85% or no more than 110% of rated voltage.
- For OPTIM trip, OPEOPCK kit required.

Dimensions

Approximate Dimensions in Inches (mm)

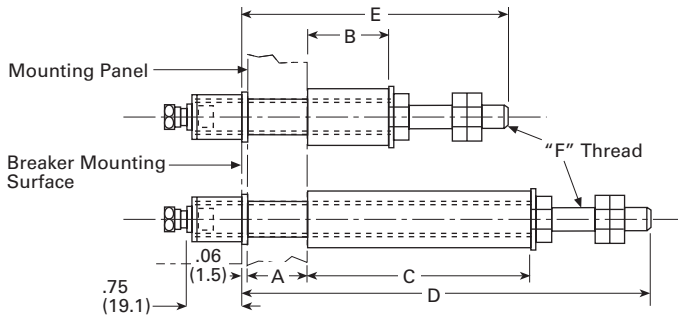
2

Rear Connecting Studs

F-Frame ^①

| Stud Ampere Rating | Stud Catalog Number | Panel Thickness | | Tube Length | | Tube Catalog Number | Dimensions | | |
|---|---------------------------|--------------------------|--|-------------|--------------|---------------------------|--------------|--------------|----------------|
| | | A | | B | C | | D | E | F |
| For 15 to 100 Ampere Circuit Breakers | | | | | | | | | |
| 100 A short | 451D874G01 | 1.00 (25.4) | | 1.06 (26.9) | — | 32B9446H20 | — | 3.63 (92.1) | 0.31 (7.9)–18 |
| 100 A short | 451D874G01 | 0.69–0.94 (17.5 to 23.8) | | 1.38 (34.9) | — | 32B9446H21 | — | 3.63 (92.1) | 0.31 (7.9)–18 |
| 100 A short | 451D874G01 | 0.38–0.63 (9.5 to 15.9) | | 1.69 (42.9) | — | 32B9446H22 | — | 3.63 (92.1) | 0.31 (7.9)–18 |
| 100 A short | 451D874G01 | 0.25–0.31 (6.4 to 7.9) | | 2.00 (50.8) | — | 32B9446H23 | — | 3.63 (92.1) | 0.31 (7.9)–18 |
| 100 A long | 451D874G02 | 1.00 (25.4) | | — | 3.44 (87.3) | 32B9446H24 | 6.13 (155.6) | — | 0.31 (7.9)–18 |
| 100 A long | 451D874G02 | 0.69–0.94 (17.5 to 23.8) | | — | 3.75 (95.2) | 32B9446H25 | 6.13 (155.6) | — | 0.31 (7.9)–18 |
| 100 A long | 451D874G02 | 0.38–0.63 (9.5 to 15.9) | | — | 4.06 (103.1) | 32B9446H26 | 6.13 (155.6) | — | 0.31 (7.9)–18 |
| 100 A long | 451D874G02 | 0.25–0.31 (6.4 to 7.9) | | — | 4.38 (111.3) | 32B9446H27 | 6.13 (155.6) | — | 0.31 (7.9)–18 |
| For 110 to 225 Ampere Circuit Breakers | | | | | | | | | |
| 225A short | 374D883G01 | 1.00 (25.4) | | 1.06 (26.9) | — | 374D883H06 | — | 4.25 (108.0) | 0.44 (11.1)–14 |
| 225A short | 374D883G01 | 0.69–0.94 (17.5 to 23.8) | | 1.38 (34.9) | — | 374D883H07 | — | 4.25 (108.0) | 0.44 (11.1)–14 |
| 225A short | 374D883G01 | 0.38–0.63 (9.5 to 15.9) | | 1.69 (42.9) | — | 374D883H08 | — | 4.25 (108.0) | 0.44 (11.1)–14 |
| 225A short | 374D883G01 | 0.25–0.31 (6.4 to 7.9) | | 2.00 (50.8) | — | 374D883H09 | — | 4.25 (108.0) | 0.44 (11.1)–14 |
| 225A long | 374D883G02 | 1.00 (25.4) | | — | 3.44 (87.3) | 374D883H10 | 7.50 (190.5) | — | 0.44 (11.1)–14 |
| 225A long | 374D883G02 | 0.69–0.94 (17.5 to 23.8) | | — | 3.75 (95.2) | 374D883H11 | 7.50 (190.5) | — | 0.44 (11.1)–14 |
| 225A long | 374D883G02 | 0.38–0.63 (9.5 to 15.9) | | — | 4.06 (103.1) | 374D883H12 | 7.50 (190.5) | — | 0.44 (11.1)–14 |
| 225A long | 374D883G02 | 0.25–0.31 (6.4 to 7.9) | | — | 4.38 (111.3) | 374D883H13 | 7.50 (190.5) | — | 0.44 (11.1)–14 |

F-Frame



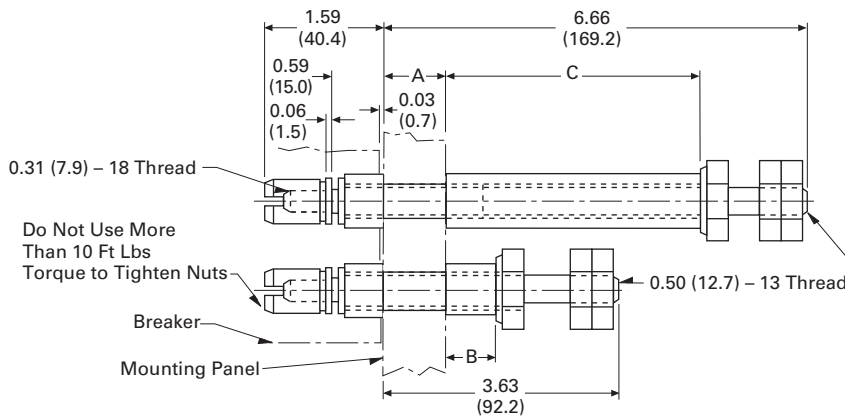
Note

^① Not UL listed.

Approximate Dimensions in Inches (mm)

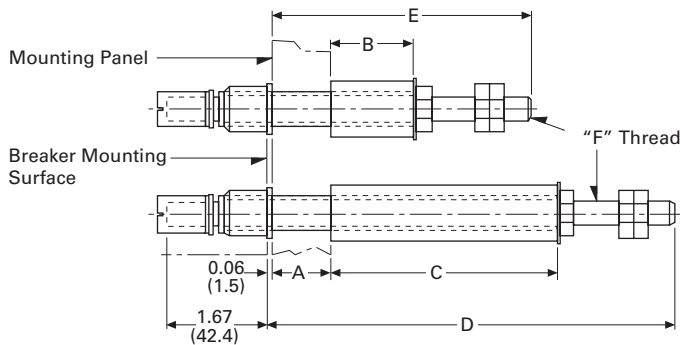
J-Frame

| Stud Ampere Rating | Stud Catalog Number | Panel Thickness | | Tube Length | | Tube Catalog Number |
|--------------------|---------------------|-----------------------|--|-------------|--------------|---------------------|
| | | A | | B | C | |
| 250A short | 5010D23G01 | 0.75–1.00 (19.1–25.4) | | 0.84 (21.4) | — | 456D983H05 |
| 250A short | 5010D23G01 | 0.50–0.75 (12.7–19.1) | | 1.09 (27.7) | — | 456D983H06 |
| 250A short | 5010D23G01 | 0.25–0.50 (6.4–12.7) | | 1.03 (26.2) | — | 456D983H07 |
| 250A long | 5010D23G02 | 0.75–1.00 (19.1–25.4) | | — | 3.88 (98.6) | 5010D23H05 |
| 250A long | 5010D23G02 | 0.50–0.75 (12.7–19.1) | | — | 4.13 (104.9) | 5010D23H06 |
| 250A long | 5010D23G02 | 0.25–0.50 (6.4–12.7) | | — | 4.38 (111.3) | 5010D23H07 |



K-Frame [Ⓢ]

| Stud Ampere Rating | Stud Catalog Number | Panel Thickness | | Tube Length | | Standard Tube Catalog Number | Dimensions | | |
|--------------------|---------------------|-----------------------|--|--------------|--------------|------------------------------|--------------|-------------|----------------------|
| | | A | | B | C | | D | E | F |
| 400 A short | 6642C14G02 | 0.75–1 (19.1–25.4) | | 0.84 (21.3) | — | 313C909H17 | — | 3.66 (93.0) | 0.75–16 (19.1–406.4) |
| 400 A short | 6642C14G04 | 0.50–0.75 (12.7–18.4) | | 1.09 (27.69) | — | 313C909H18 | — | — | — |
| 400 A short | 6642C14G06 | 0.25–0.5 (6.35–12.7) | | 1.03 (26.16) | — | 313C909H19 | — | — | — |
| 400 A long | 6642C14G03 | 0.75–1 (19.1–25.4) | | — | 3.78 (96.0) | 313C909H20 | — | — | — |
| 400 A long | 6642C14G05 | 0.50–0.75 (12.7–18.4) | | — | 4.03 (102.4) | 313C909H21 | 6.58 (167.1) | — | — |
| 400 A long | 6642C14G07 | 0.25–0.5 (6.35–12.7) | | — | 4.28 (108.7) | 313C909H22 | — | — | — |



Note

[Ⓢ] Not UL listed.

2.3

Molded Case Circuit Breakers

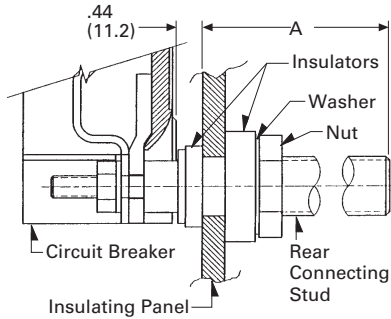
Series C

Approximate Dimensions in Inches (mm)

2

L-Frame

| Stud Length (A) | Stud Catalog Number |
|-----------------|---------------------|
| 5.47 (138.9) | 314C960G07 |
| 7.97 (202.4) | 314C960G08 |
| 10.47 (265.9) | 314C960G09 |



M-Frame

| Stud Ampere Rating | Diameter and Thread | Extension Back of Breaker | Stud Catalog Number |
|--------------------|---------------------|---------------------------|---------------------|
| 225 | 0.50 (12.7)–13 | 3.66 (93.0) | 314C960G01 |
| 400 | 0.75 (19.1)–16 | 5.91 (150.1) | 314C960G04 |
| 400 | 0.75 (19.1)–16 | 8.41 (213.6) | 314C960G05 |
| 400 | 0.75 (19.1)–16 | 10.91 (277.0) | 314C960G06 |
| 600 | 1.00 (25.4)–12 | 5.91 (150.1) | 314C960G07 |
| 600 | 1.00 (25.4)–12 | 8.41 (213.6) | 314C960G08 |
| 600 | 1.00 (25.4)–12 | 10.91 (277.0) | 314C960G09 |
| 800 | 1.13 (28.7)–12 | 5.91 (150.1) | 314C960G10 |
| 800 | 1.13 (28.7)–12 | 8.41 (213.6) | 314C960G11 |
| 800 | 1.13 (28.7)–12 | 10.91 (277.0) | 314C960G12 |

N-Frame

| Stud Ampere Rating | Diameter and Thread | Extension Back of Breaker | Stud Catalog Number |
|--------------------|---------------------|---------------------------|---------------------|
| 800 | 1.13 (28.7)–12 | 5.5 (139.7) | 623B222G01 |
| 800 | 1.13 (28.7)–12 | 8.0 (203.2) | 623B222G02 |
| 800 | 1.13 (28.7)–12 | 10.5 (266.7) | 623B222G03 |
| 1200 | 1.25 (31.8)–12 | 5.5 (139.7) | 373B375G04 |
| 1200 | 1.25 (31.8)–12 | 10.5 (266.7) | 373B375G03 |

GP, FP, KP, LP and MP Frames



Definite Purpose Molded Case Circuit Breaker Family

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| Line and Load Termination | V4-T2-336 |
| Optional Line and Load Terminals | V4-T2-336 |
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| Accessories | V4-T2-336 |
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OnlineDrawings
Online

Definite Purpose Molded Case Circuit Breakers

Optimized solution for HVAC/R and Pumping Applications.

Product Overview

GP, FP, KP, LP and MP Frames 15–800 Amperes NEMA 480 Vac

Eaton's Definite Purpose molded case circuit breakers are available in three-pole configurations, and are designed to meet the specific requirements of HVAC/R and pumping applications.

As with other members of Eaton's family of molded case circuit breakers, Definite Purpose breakers provide high quality, reliability, unmatched performance and outstanding value.

Eaton's Definite Purpose breakers are rated from 15–800 A and are available in five frame sizes. Each frame size has the same compact outside dimensions as Series C breakers.

Additionally, Definite Purpose breakers have been rigorously tested to the UL 489 standard. They are assembled in an ISO certified facility.

Trip Units and Terminals

Definite Purpose breakers contain factory-sealed thermal-magnetic trip units.

The GP-Frame breaker (15–100 A) includes line and load terminals and breaker mounting hardware.

FP (15–225A), KP (200–400 A), LP (450–600 A) and MP (700–800 A) Frames ship standard without mounting hardware. For line and load terminals, add "L" to the end of the catalog number or "W" for no terminals.

External Accessories

Definite Purpose breakers use the same external accessories as Series C breakers: handle mechanisms, motor operators, lock-off devices, busbar extensions and multiple terminal arrangements.

2.4

Molded Case Circuit Breakers

Definite Purpose

Product Selection Guide

2

Electrical Characteristics



| Breaker Type | GPS | FPS | FPH | KPS | KPH |
|---------------------------|----------|----------|----------|-----------|-----------|
| Amperage range | 15–100 A | 15–225A | 15–225A | 200–400 A | 200–400 A |
| Performance level | S | S | H | S | H |
| Breaker capacity (kA rms) | 240 Vac | 65 | 65 | 100 | 65 |
| NEMA, UL, CSA | 480 Vac | 22 | 35 | 65 | 65 |
| | 600 Vac | — | 18 | 25 | 35 |
| Number of poles | 3 | 3 | 3 | 3 | 3 |
| Maximum voltage (Vac) | 480 | 600 | 600 | 600 | 600 |
| Thermal-magnetic | ■ | ■ | ■ | ■ | ■ |

Electrical Characteristics, continued



| Breaker Type | LPS | | LPH | MPS | MPH |
|---------------------------|-----------|----|-----------|-----------|-----------|
| Amperage range | 450–600 A | | 450–600 A | 700–800 A | 700–800 A |
| Performance level | S | | H | S | H |
| Breaker capacity (kA rms) | 240 Vac | 65 | 100 | 65 | 100 |
| NEMA, UL, CSA | 480 Vac | 35 | 65 | 50 | 65 |
| | 600 Vac | 25 | 35 | 25 | 35 |
| Number of poles | 3 | | 3 | 3 | 3 |
| Maximum voltage (Vac) | 600 | | 600 | 600 | 600 |
| Thermal-magnetic | ■ | | ■ | ■ | ■ |

Features

2

Base Mounting Hardware

English base mounting hardware is included with GP frame only. For all other frames, order base mounting hardware separately as per the table to the right.

Base Mounting Hardware

| Frame | Catalog Number | |
|-------|----------------|--------------|
| | English | Metric |
| GP | Included | — |
| FP | BMH1 | BMH1M |
| KP | BMH3 | BMH3M |
| LP | BMH4 | BMH4M |
| MP | BMH5 | BMH5M |

Note: Base mounting hardware, is included with GP-Frame breakers. A separate catalog number is not required.

Line and Load Terminals

Both line and load terminals are included with GP-Frame Definite Purpose breakers. For all other frames, add “L” for line and load terminals to be included or “W” for no terminals.

Line and Load Termination

| Breaker | Termination Type | Awg Wire Range | Metric Wire Range (mm) | Wire Type | Bolt Size English | Bolt Size Metric | Torque Lb-In | Torque Nm | Catalog Number |
|---------|------------------|----------------|------------------------|-----------|-------------------|------------------|--------------|-----------|----------------|
| GP | Wire | #14–1/0 | 2.5–50 | Cu only | — | — | 45 | 5.1 | Included |

Optional Line and Load Terminals

| Breaker | Maximum Amperes | Awg Wire Range | Wire Type | Catalog Number | Catalog Number with Control Wire Termination |
|---------|-----------------|----------------|-----------|---------------------|--|
| FP | 100 | #14–#10 | Cu/Al | 3T100FB ① | — |
| | 100 | #8 | Cu/Al | 3T100FB ① | — |
| | 100 | #6–#4 | Cu/Al | 3T100FB ① | — |
| | 100 | #3–4/0 | Cu/Al | 3T100FB ① | — |
| | 200 | #3–4/0 | Cu only | 3T150FB ① | — |
| | 225 | #4–4/0 | Cu/Al | 3TA225FB ① | — |
| | 225 | #6–300 | Cu/Al | 3TA225FDK3 ① | — |
| | 225 | #6–300 | Cu/Al | 3TA225FDK ①② | — |
| KP | 400 | 250–500 (1) | Cu/Al | TA350K | — |
| | 400 | 3/0–250 (2) | Cu/Al | 3TA400K ① | 3TA400KCW |
| LP | 500 | 250–350 (2) | Cu/Al | TA602LD | TA602LDCW |
| | 600 | 400–500 (2) | Cu/Al | 3TA603LDK ① | 3TA603LDCW |
| MP | 800 | 3/0–400 (3) | Cu/Al | TA800MA2 | TA800MA2CWT |
| | 800 | 500–750 (2) | Cu/Al | TA801MA | TA801MACWT |

Accessories

End Cap Accessory Kit

End caps for line and load conductor termination are optional with each breaker. End caps secure the conductor with a ring-type connector. The kit includes one end cap, three cap screws, three nuts and three lock washers.

Series C Accessories

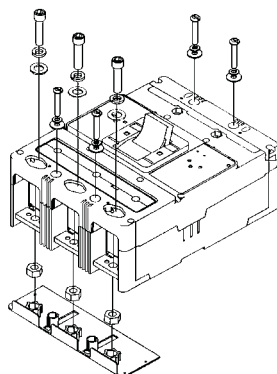
For internal accessories, see **Page V4-T2-273**.

For external accessories, see **Page V4-T2-306**.

Notes

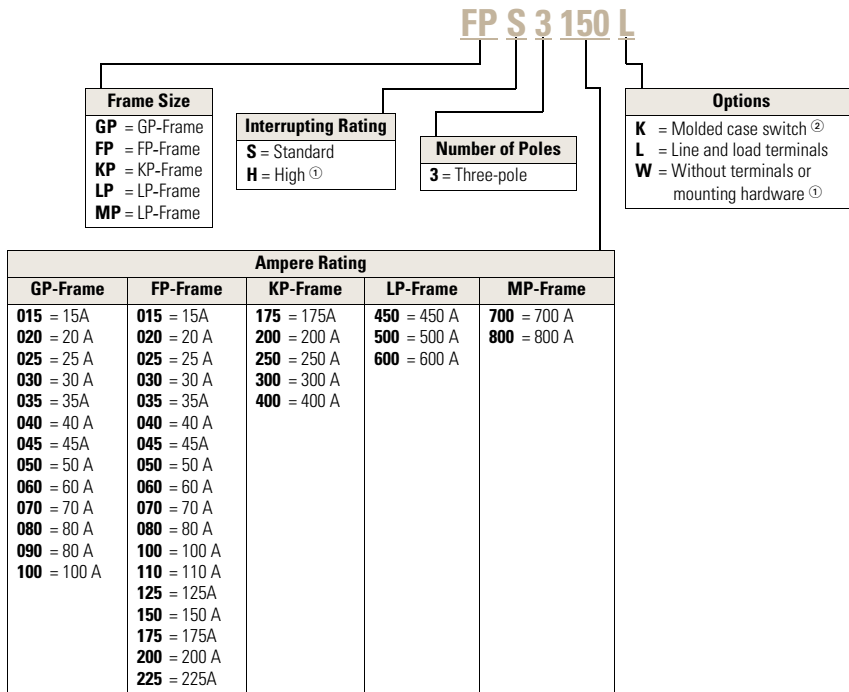
- ① Package of three terminals.
- ② Replacement use only.

End Cap Accessory Kit



Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.



Notes

- ① Not available on GP-Frame.
- ② When choosing a molded case switch, select the highest amperage rating for the frame and the standard interrupting rating.

2.4

Molded Case Circuit Breakers

Definite Purpose

Product Selection

2

Catalog Numbers

When ordering Definite Purpose breakers, use the appropriate catalog numbers given below.

GP 100



GP-Frame/15–100 A

Frame/ Ampere Rating

GP/15–100 A circuit breakers

Three-Pole Catalog Number

GPS3015
GPS3020
GPS3025
GPS3030
GPS3035
GPS3040
GPS3045
GPS3050
GPS3060
GPS3070
GPS3080
GPS3090
GPS3100

GP/100 A molded case switch

GPS3100K

Note: All GP frames come standard with line and load terminals and base mounting hardware. Not available without terminals.

FP 225



FP-Frame/15–225 A

Frame/ Ampere Rating

FP/15–225A circuit breakers

Three-Pole Catalog Number

FPS3015
FPS3020
FPS3025
FPS3030
FPS3035
FPS3040
FPS3045
FPS3050
FPS3060
FPS3070
FPS3080
FPS3090
FPS3100
FPS3110
FPS3125
FPS3150
FPS3175
FPS3200
FPS3225
FPH3015
FPH3020
FPH3025
FPH3030
FPH3035
FPH3040
FPH3045
FPH3050
FPH3060
FPH3070
FPH3080
FPH3090
FPH3100
FPH3110
FPH3125
FPH3150
FPH3175
FPH3200
FPH3225

FP/225A molded case switch

FPS3225K

Note: At the end of catalog number, add “L” for terminals or “W” for no terminals.

KP 250

KP-Frame/200–400 A


**Frame/
Ampere Rating**

KP/175–400 A circuit breakers

**Three-Pole
Catalog
Number**

KPS3175

KPS3200

KPS3250

KPS3300

KPS3400

KPH3175

KPH3200

KPH3250

KPH3300

KPH3400

KP/400 A molded case switch

KPS3400K

Dimensions

Approximate Dimensions in Inches (mm)

All dimensions are provided for guidance and should not be used for construction purposes unless approved.

Contact Eaton for detailed outline drawings.

GP, FP, KP, LP and MP Definite Purpose Frames

| | Breaker Type | | | | |
|--------|--------------|--------------|---------------|---------------|---------------|
| | GP | FP | KP | LP | MP |
| Width | 3.00 (76.2) | 4.13 (104.9) | 5.49 (139.4) | 8.25 (209.6) | 8.25 (209.6) |
| Height | 4.88 (124.0) | 6.00 (152.4) | 10.12 (257.0) | 10.75 (273.1) | 16.00 (406.4) |
| Depth | 2.63 (66.7) | 3.38 (85.9) | 4.31 (109.6) | 3.81 (96.8) | 4.06 (103.1) |

LP 400

LP-Frame/450–600 A


**Frame/
Ampere Rating**

LP/450–600 A circuit breakers

**Three-Pole
Catalog
Number**

LPS3450

LPS3500

LPS3600

LPH3450

LPH3500

LPH3600

LP/600 A molded case switch

LPS3600K

MP 800

MP-Frame/700–800 A


**Frame/
Ampere Rating**

MP/700–800 A circuit breakers

**Three-Pole
Catalog
Number**

MPS3700

MPS3800

MPH3700

MPH3800

MP/800 A molded case switch

MPS3800K

Note: For KP, LP, MP frames above, add "L" for terminals or "W" for no terminals to end of catalog number.

PM3 Modules

2



Power Monitoring and Metering with Modbus RTU

Contents

Description

| | <i>Page</i> |
|---|------------------|
| PM3 Monitoring and Metering Module | |
| Product Selection | V4-T2-341 |
| Technical Data and Specifications | V4-T2-341 |
| Dimensions and Weights | V4-T2-342 |



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Drawings Online

PM3 Monitoring and Metering Module

Product Description

The PM3 is the perfect solution for main, branch circuit and standalone monitoring/metering applications. With information at your fingertips, you can meter, monitor and communicate phase current and voltage with calculated power and energy.

The PM3 is versatile, as it connects to the load side of a molded-case circuit breaker (MCCB) and communicates easily to a local network or the Internet through Eaton Power Xpert® Gateways (PXGs). Cost of ownership is reduced through ease of installation. The PM3 is your ideal MCCB metering solution.

Application Description

- Communications via Modbus® and Eaton's INCOM™ protocol; compatible with Eaton's PXG for Web page and Ethernet capabilities
- Works in 240 Vac PM3, 480 Vac and 600 Vac applications
 - 480 Vac PM3 has internal power supply to power electronics
 - 600 Vac PM3 requires 24 Vdc auxiliary power
- Seamlessly integrates with thermal-magnetic or electronic trip units

Features and Benefits

- Communicates electrical system data and circuit breaker status
- Calculates power and energy to an accuracy of 1.0% of reading
- Configurable with thermal-magnetic or electronic trip units
- Suitable for reverse-feed applications
- Easy to install

PM3 Benefits When Combined with 310+ Electronic Trip Unit

- Alarming: high load and ground fault
- Zone selective interlocking
- Arcflash Reduction Maintenance System™
- Cause-of-trip localized information through Digiview and TRIP-LED
- Modbus/INCOM communications
- HMI connectivity through PXG
- Current and voltage metering to 0.5% of reading
- Power and energy monitoring to 1.0% of reading
- Reduces cost of ownership

Standards and Certifications

- Meets ANSI C12.1 revenue grade standard with a current and voltage accuracy of 0.5% of reading
- UL 489, Annex J
- IEC 61000-4-2—ESD
- IEC 61000-4-4—EFT
- IEC 61000-4-5—SURGE
- IEC 61000-4-6—EMC
- ANSI C12.1 (1% accuracy)
- UL/cUL/CE



Product Selection

PM3 Modules

| Frame | Catalog Number | |
|---------------|-----------------|-----------------|
| | 480 V | 600 V |
| Modbus | | |
| FD | — | PM3FM |
| JG | — | PM3JM |
| KD and LG | — | PM3LM |
| INCOM | | |
| FD | PM3FI480 | PM3FI600 |
| JG | PM3JI480 | PM3JI600 |
| KD and LG | PM3LI480 | PM3LI600 |

End Cap Kits (Sold Separately)

| Frame | Description | Catalog Number |
|-------|----------------------------------|----------------|
| FD | Metric end cap kit for F-Frame | KPEKM1 |
| | English end cap kit for F-Frame | KPEK1 |
| JG | Metric end cap kit for JG-Frame | FJ3RTWK |
| | English end cap kit for JG-Frame | FJ3RTDK |
| KD | Metric end cap kit for K-Frame | KPEKM3 |
| | English end cap kit for K-Frame | KPEK3 |
| LG | Metric end cap kit for LG-Frame | L3RTWK |

Technical Data and Specifications

Metered parameters

- I_A , I_B , I_C
- V_{AB} , V_{BC} , V_{CA} , V_{an} , V_{bn} , V_{cn}
- Apparent Energy, Forward Real Energy, Reverse Real Energy, Net Real Energy, Lagging Reactive Energy, Leading Reactive Energy, Net Reactive Energy
- Apparent Power A, B, C; Apparent Power Total; Reactive Power A, B, C; Reactive Power Total; Real Power A, B, C; Real Power Total
- Frequency, Apparent Power Factor, Apparent PFA, Apparent PFB, Apparent PFC

PM3 Power Monitoring and Communications Module Technical Specifications for Modbus RTU

| Description | Specification |
|---|--|
| Current Inputs | |
| Pickup current | 0.3A rms |
| Maximum reported current | FD/JG 250 A rms KD/LD 630 A rms |
| Accuracy | 0.5% of reading |
| Voltage Inputs | |
| Range | Line-to-neutral 30–366 Vac Line-to-line 52–635 Vac |
| Supported systems | Three-element wye, three-element wye + neutral Two-element delta, four-wire delta systems |
| Input impedance | 996 kilohm/phase |
| Burden per phase | 0.36 VA/phase max. at 600 V; 0.014 VA at 120V |
| Phase voltage connections | Internal via screw terminal to busbar For wye system, a neutral is required to be connected to the PM3 on the right Phoenix connector. |
| Neutral connection | If neutral is not available, the meter will calculate a virtual neutral based on the phase-to-phase rms voltage. The system voltage must be balanced for this to be accurate. |
| Frequency | |
| Frequency | 50/60 Hz |
| Accuracy | ± 0.1 Hz |
| Resolution | 0.1 Hz |
| Power and Energy | |
| Accuracy | 1% of reading (ANSI C12.1) |
| Isolation | |
| All inputs and outputs are galvanically isolated to 2500 V. | |
| Environmental Ratings | |
| Operating temperature | –20 °C to +50 °C |
| Storage temperature | –20 °C to +50 °C |
| Operating humidity | 5 to 95% RH noncondensing |
| Sensing Method | |
| Voltage, current | True rms |
| Sampling rate | 13.02K samples per second |
| Update Rate | |
| Watts, VAR and VA | 1.03 sec at 60 Hz |
| All other parameters | 1.07 sec at 60 Hz |
| Power Supply (External) | |
| DC voltage | 18–30 Vdc |
| Maximum current | 30.0 mA at 24 Vdc |
| Burden | 0.72W |
| Standard Communication Format | |
| Connection type | Three-wire RS-485 (A, B, Common) |
| Com port baud rate | 9600 or 19,200 bauds Default: 19,200 bauds |
| Modbus address range | 01–247 |
| Data format | Selectable (8, N, 1 8, N, 2 8, Even, 1 8, Odd, 1) Default: 8, N, 2 |
| Protocols | Modbus RTU |
| Internal termination resistor selectable ON or OFF | Via DIP switch Default: Enabled |

2.5

Molded Case Circuit Breakers

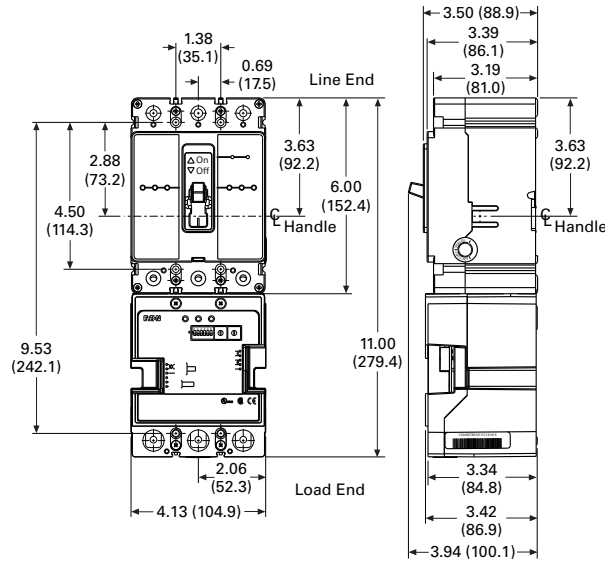
Metering and Communications

Dimensions and Weights

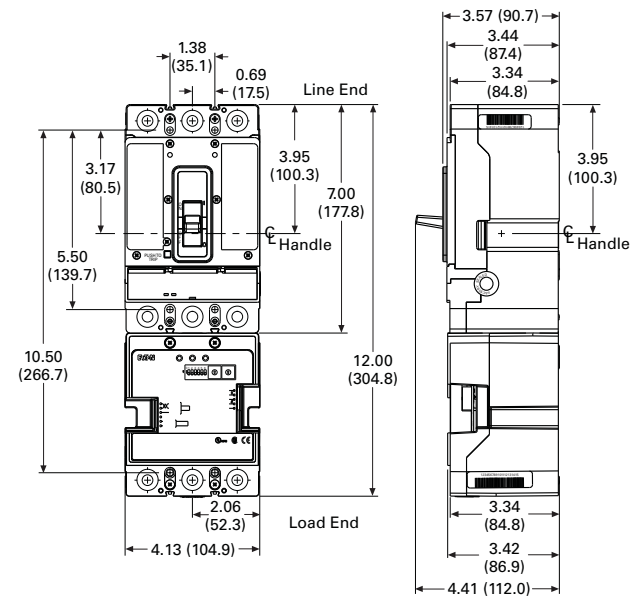
Approximate Dimensions in Inches (mm)

2

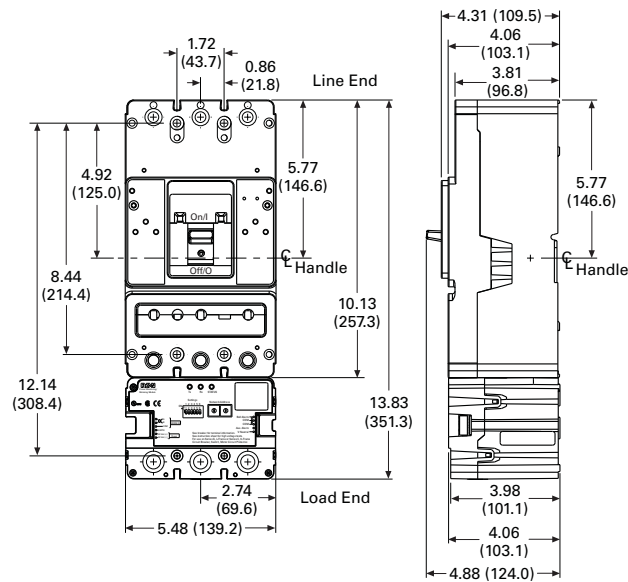
FD Three-Pole with PM3 Modbus



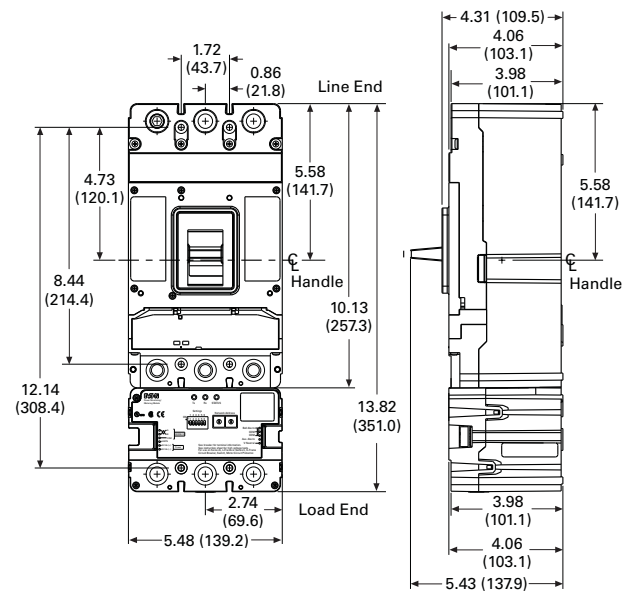
JG Three-Pole with PM3 Modbus



KD Three-Pole with PM3 Modbus



LG Three-Pole with PM3 Modbus



PM3 Dimensions and Shipping Weights

| Description | Frame | Dimensions and Weights |
|--|-------|---|
| Weight in lbs (kg) | FD | 1.26 (0.57) |
| | JG | 1.60 (0.73) |
| | KD/LG | 2.25 (1.02) |
| Basic unit in inches (mm) | FD | 4.13 W x 5.00 L x 3.39 H (104.9 x 127.0 x 86.1) |
| | JG | 4.13 W x 5.00 L x 3.39 H (104.9 x 127.0 x 86.1) |
| | KD/LG | 5.48 W x 3.70 L x 4.06 H (139.2 x 94.0 x 103.2) |
| Shipping container dimensions in inches (mm) | FD/JG | 8.00 x 5.13 x 5.50 (203.2 x 130.3 x 139.7) |
| | KD/LG | 6.25 x 8.25 x 7.00 (158.7 x 209.5 x 177.8) |

Engine Generator Circuit Breakers



Contents

| Description | Page |
|--|------------------|
| Engine Generator Circuit Breakers | |
| Catalog Number Selection | V4-T2-344 |
| Product Selection | V4-T2-345 |
| Accessories Selection Guide and Ordering Information | V4-T2-347 |
| Options and Accessories | V4-T2-347 |
| Technical Data and Specifications | V4-T2-348 |
| Dimensions and Weights | V4-T2-348 |
| Direct Current Circuit Breakers | V4-T2-349 |
| PVGard Solar Circuit Breakers—600 Vdc Per-Pole and 1000 Vdc Poles-in-Series | V4-T2-363 |
| E ² Mining Service Circuit Breakers | V4-T2-376 |
| Classic Mining Breakers | V4-T2-402 |
| Add-On Ground Fault Protection—Type GFR | V4-T2-416 |

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Engine Generator Circuit Breakers

Product Description

Eaton's engine generator molded case circuit breakers are designed specifically for application on diesel engine powered standby generators where high interrupting circuit breakers are not required. The JG through NG breakers are equipped with a special trip unit, that includes standard thermal (overload) protection and special low magnetic pickup range (FG includes a fixed thermal-magnetic pickup). The standard thermal trip unit provides overload protection for conductors per the National Electrical Code®. The low magnetic pickup range is approximately two to five times the continuous rating and provides closer low-level short-circuit protection when applied on generators that have very low short-circuit capacity. This combination allows the user to customize the breaker to the generator output.

Application Description

Engine generator circuit breakers are suitable for reverse feed application.

Standards and Certifications

Engine generator molded case circuit breakers are designed to conform with the following standards:

- Underwriters Laboratories Standard UL 489, Molded Case Circuit Breakers and Circuit Breaker Enclosures File E7819
- Canadian Standards Association Standard C22.2 No. 5, Service Entrance and Branch Circuit Breakers
- International Electrotechnical Commission Recommendations IEC 947-2, Circuit Breakers



Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

2.6

Molded Case Circuit Breakers

Specialty Breakers

2

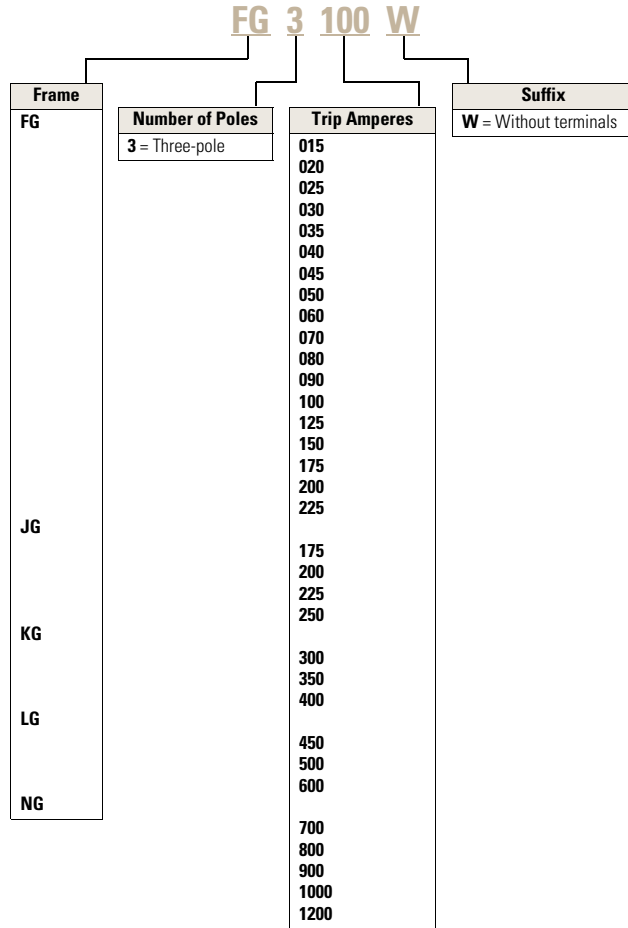
Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers.

- FG breakers include both line and load side terminals

- JG, KG, LG and NG breakers with **W** catalog number suffix do not include any terminals
- JG, KG, LG and NG breakers without **W** catalog number suffix include both line and load terminals
- Contact Eaton for additional ratings and internal/external accessories
- Reverse feed

Circuit Breakers FG, JG, KG, LG and NG



Product Selection

The following table lists FG through NG engine generator breakers with the maximum generator kVA and kW rating. Engine generator breakers are applied at 115% of the

generator full load current rating (FLA). The maximum kW rating is based on three-phase generators at 80% power factor.

Thermal-Magnetic

| Magnetic Pickup Range | Maximum Generator Rating 60 Hz | | | | 600 Vac | | Engine Generator Breaker ^③ |
|-----------------------|--------------------------------|-----------------|--------------------------|-----------------|------------------|-----------------|---------------------------------------|
| | 240 Vac kVA ^① | kW ^② | 480 Vac kVA ^① | kW ^② | kVA ^① | kW ^② | Catalog Number |
| Fixed | 5 | 4 | 11 | 9 | 14 | 11 | FG3015 ^④ |
| Fixed | 7 | 6 | 14 | 12 | 18 | 14 | FG3020 ^④ |
| Fixed | 9 | 7 | 18 | 14 | 23 | 18 | FG3025 ^④ |
| Fixed | 11 | 9 | 22 | 17 | 27 | 22 | FG3030 ^④ |
| Fixed | 13 | 10 | 25 | 20 | 32 | 25 | FG3035 ^④ |
| Fixed | 14 | 12 | 29 | 23 | 36 | 29 | FG3040 ^④ |
| Fixed | 16 | 13 | 32 | 26 | 41 | 32 | FG3045 ^④ |
| Fixed | 18 | 14 | 36 | 29 | 45 | 36 | FG3050 ^④ |
| Fixed | 22 | 17 | 43 | 35 | 54 | 43 | FG3060 ^④ |
| Fixed | 25 | 20 | 51 | 40 | 63 | 51 | FG3070 ^④ |
| Fixed | 29 | 23 | 58 | 46 | 72 | 58 | FG3080 ^④ |
| Fixed | 32 | 26 | 65 | 52 | 81 | 65 | FG3090 ^④ |
| Fixed | 36 | 29 | 72 | 58 | 90 | 72 | FG3100 ^④ |
| Fixed | 40 | 32 | 79 | 64 | 99 | 79 | FG3110 ^④ |
| Fixed | 45 | 36 | 90 | 72 | 113 | 90 | FG3125 ^④ |
| Fixed | 54 | 43 | 108 | 87 | 135 | 108 | FG3150 ^④ |
| Fixed | 63 | 51 | 126 | 101 | 158 | 126 | FG3175 ^④ |
| Fixed | 72 | 58 | 144 | 116 | 181 | 144 | FG3200 ^④ |
| Fixed | 81 | 65 | 162 | 130 | 203 | 162 | FG3225 ^④ |
| 350–700 | 63 | 51 | 126 | 101 | 158 | 126 | JG3175W ^⑤ |
| 350–700 | 63 | 51 | 126 | 101 | 158 | 126 | JG3175 ^④ |
| 350–700 | 72 | 58 | 144 | 116 | 181 | 144 | JG3200W ^⑤ |
| 350–700 | 72 | 58 | 144 | 116 | 181 | 144 | JG3200 ^④ |
| 350–700 | 81 | 65 | 162 | 130 | 203 | 162 | JG3225W ^⑤ |
| 350–700 | 81 | 65 | 162 | 130 | 203 | 162 | JG3225 ^④ |
| 350–700 | 90 | 72 | 181 | 144 | 226 | 181 | JG3250W ^⑤ |
| 350–700 | 90 | 72 | 181 | 144 | 226 | 181 | JG3250 ^④ |
| 500–1000 | 108 | 87 | 217 | 173 | 271 | 217 | KG3300W ^⑤ |
| 500–1000 | 108 | 87 | 217 | 173 | 271 | 217 | KG3300 ^④ |
| 500–1000 | 126 | 101 | 253 | 202 | 316 | 253 | KG3350W ^⑤ |
| 500–1000 | 126 | 101 | 253 | 202 | 316 | 253 | KG3350 ^④ |
| 1000–2000 | 144 | 116 | 289 | 231 | 361 | 289 | KG3400 ^④ |

Notes

- ① Breaker continuous current is based on 115% of the generator full load ampere rating.
- ② Based on three-phase generators at 80% power factor.
- ③ FG, JG, KG include thermal-magnetic trip units, LG and NG include electronic trip units.
- ④ Breaker includes line and load terminals.
- ⑤ Without terminals.

The following catalog numbers have center tap studs for dual voltage applications: JG3070CT, JG3100CT, JG3125CT, KG3175CT, LG3300CTW.

2.6

Molded Case Circuit Breakers

Specialty Breakers

Electronic

2

| Magnetic Pickup Range | Maximum Generator Rating 60 Hz | | 480 Vac | | 600 Vac | | Engine Generator Breaker ^③ |
|-----------------------|--------------------------------|-----------------|------------------|-----------------|------------------|-----------------|---------------------------------------|
| | 240 Vac kVA ^① | kW ^② | kVA ^① | kW ^② | kVA ^① | kW ^② | Catalog Number |
| 500–2500 | 162 | 130 | 325 | 260 | 406 | 325 | LG3450 ^④ |
| 500–2500 | 181 | 144 | 361 | 289 | 451 | 361 | LG3500 ^④ |
| 500–2500 | 217 | 173 | 433 | 347 | 542 | 433 | LG3600 ^④ |
| 500–2500 | 253 | 202 | 505 | 404 | 632 | 505 | NG3700 ^④ |
| 500–2500 | 289 | 231 | 578 | 462 | 722 | 578 | NG3800 ^④ |
| 1250–5000 | 325 | 260 | 650 | 520 | 812 | 650 | NG3900 ^④ |
| 1250–5000 | 361 | 289 | 722 | 578 | 903 | 722 | NG31000 ^④ |
| 1250–5000 | 433 | 347 | 867 | 693 | 1083 | 867 | NG31200 ^④ |

Notes

- ① Breaker continuous current is based on 115% of the generator full load ampere rating.
- ② Based on three-phase generators at 80% power factor.
- ③ FG, JG, KG include thermal-magnetic trip units, LG and NG include electronic trip units.
- ④ Breaker includes line and load terminals.

The following catalog numbers have center tap studs for dual voltage applications: JG3070CT, JG3100CT, JG3125CT, KG3175CT, LG3300CTW.

Accessories Selection Guide and Ordering Information

Enclosures

Type 1 General Purpose

- Surface or flush mounting
- 15–1200 ampere range
- 600 Vac, 500 Vdc

Type 1 enclosed breakers are designed for use in commercial buildings, apartment buildings and other areas where a general purpose enclosure is applicable. The breaker is front operable and is capable of being padlocked in either the ON or OFF position. Ratings through 1200 amperes are listed with Underwriters Laboratories as approved for service entrance application. Both surface and flush mounted enclosures are available.

Type 3R Rainproof Surface Mounting

- Interchangeable hubs (through 400 amperes)
- 15–1200 ampere range
- 600 Vac, 500 Vdc

This general purpose outdoor service center employs a circuit breaker inside a weatherproof sheet steel breaker enclosure to serve

as a main disconnect and protective device for feeder circuits. Ratings through 1200 amperes are listed by Underwriters Laboratories as suitable for service entrance application.

Type 12 Dustproof Surface Mounting

- No knockouts or other openings
- 15–1200 ampere range
- 600 Vac, 500 Vdc

The Type 12 enclosure is designed in line with specifications for special industry applications where unusually severe conditions involving oil, coolant, dust and other foreign materials exist in the operating atmosphere. The handle padlocks in the OFF position and the cover is interlocked with the handle mechanism to prevent opening the cover with the circuit breaker in the ON position. Ratings through 1200 amperes are listed by Underwriters Laboratories as suitable for service entrance application.

Enclosure Selection Data

| Breaker Frame Amperes | Enclosure Type Class | Catalog Number |
|-----------------------|----------------------|----------------|
| FG 15–225 | Type 1 | SFDN225 |
| | Type 3R | RFDN225 |
| | Type 12 | JFDN225 |
| JG 175–250 | Type 1 | SJDN250 |
| | Type 3R | RJDN250 |
| | Type 12 | JJDN250 |
| KG 300–400 | Type 1 | SKDN400 |
| | Type 3R | RKDN400 |
| | Type 12 | JKDN400 |
| LG 450–600 | Type 1 | SLDN600 |
| | Type 3R | RLDN600 |
| | Type 12 | JLDN600 |
| NG 700–1200 | Type 1 | SNDN1200 |
| | Type 3R | RNDN1200 |
| | Type 12 | JNDN1200 |

Options and Accessories

Standard Terminals

| Breaker Frame | Max. Amp Rating | AWG Wire Range | Metric Wire Range mm ² | Catalog Number |
|---------------|-----------------|-------------------|-----------------------------------|----------------|
| FG | 100 | 14–1/0 | 2.5–50 | 3T100FB ① |
| FG | 150 | 4–4/0 | 25–95 | 3TA225FD ① |
| JG | 250 | 4–350 kcmil | 25–185 | TA250KB |
| KG | 350 | 250–500 kcmil | 120–240 | TA350K |
| KG | 400 | 3/0–250 kcmil (2) | 95–120 | 3TA400K ① |
| LG | 600 | 250–500 kcmil (2) | 120–240 | 3TA603LDK |
| NG | 700 | 1–500 kcmil (2) | 50–300 | TA700NB1 |
| NG | 1000 | 3/0–400 kcmil (3) | 95–185 | TA1000NB1 |
| NG | 1200 | 4/0–500 kcmil (4) | 120–300 | TA1200NB1 |

Neutral Kits, Insulated and Groundable

| Max. Enclosure Rating (Amperes) | Main Lug Number Size Cu/Al | Ground Lug Size Cu/Al | Catalog Number |
|---------------------------------|--|-----------------------|----------------|
| 100 | (1) 14–1/0 | (1) 14–1/0 | INK100 |
| 250 | (1) 6–350 kcmil | (1) 4–300 kcmil | INK250 |
| 400 | (1) 4–750 kcmil or (2) 1/0–250 kcmil | (1) 4–300 kcmil | INK400 |
| 600 | (2) 250–500 kcmil | (1) 4–300 kcmil | INK600 |
| 1200 | (3) 1/0 to 750 kcmil or (4) 1/0 to 750 kcmil | (1) 6–250 kcmil | INK1200 |

Internal Accessories

Auxiliary Switch ②

| Breaker Frame | Factory Mounted | 1A-1B | | 2A-2B | |
|---------------|-----------------|--------------------------|-----------------|--------------------------|-----------------|
| | | Field Kit Catalog Number | Factory Mounted | Field Kit Catalog Number | Factory Mounted |
| FG ③ | A06 | A1X1PK | A13 | A2X1RPK | A13 |
| JG | A06 | A1X2PK | A13 | A2X2PK | A13 |
| KG | A06 | A1X3PK | A13 | A2X3PK | A13 |
| LG | A06 | A1X4PK | A13 | A2X4PK | A13 |
| NG | A06 | A1X5PK | A13 | A2X5PK | A13 |

Shunt Trip ②

| Breaker Frame | Rating | Factory Mounted | Field Kit Catalog Number |
|---------------|-----------|-----------------|--------------------------|
| FG ③ | 12–24 Vdc | S02 | SNT1LP03K |
| JG | 12–24 Vdc | S42 | SNT2P04K |
| KG | 12–24 Vdc | S42 | SNT3P04K |
| LG | 12–24 Vdc | S02 | SNT4LP03K |
| NG | 12–24 Vdc | S02 | SNT5LP03K |

Notes

- ① Package of three terminals.
- ② Other accessories are available. Same as standard frame breakers.
- ③ Field installation on the FG Frame is not UL listed.

2.6

Molded Case Circuit Breakers

Specialty Breakers

Technical Data and Specifications

2

UL 489 Interrupting Capacity Ratings

| Volts AC (50/60 Hz) | Interrupting Capacity (Symmetrical Amperes) |
|---------------------|---|
| 240 | 18,000 |
| 480 | 14,000 |
| 600 | 10,000 |

IEC 947-2 Interrupting Capacity Ratings

| Volts AC (50/60 Hz) | Interrupting Capacity (Symmetrical Amperes) |
|---------------------|--|
| 220, 240 | 18,000/9,000 |
| 380, 415 | 14,000/7,000 |
| 660, 690 | 18,000/9,000 14,000/7,000 10,000/5,000 |

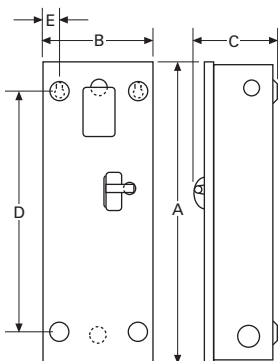
Dimensions and Weights

Approximate Dimensions in Inches (mm)

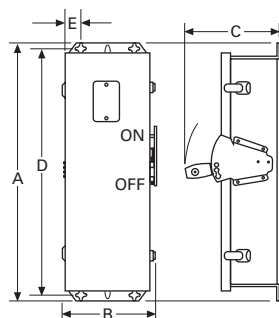
Enclosure Selection Data

| Breaker Frame Amperes | Enclosure Type Class | A | B | C | D | E | Approx. Weight Lbs (kg) | Conduit Sizes, Inches | Catalog Number |
|-----------------------|----------------------|----------------|---------------|---------------|----------------|-------------|-------------------------|--|----------------|
| FG 15–225 | Type 1 | 23.25 (590.6) | 8.41 (213.6) | 6.28 (159.5) | 18.75 (476.3) | 1.20 (30.5) | 15 (7) | 0.25, 0.50, 0.75, 1, 1.25, 1.50, 2, 2.50 | SFDN225 |
| | Type 3R | 25.66 (651.8) | 8.84 (224.7) | 9.31 (236.5) | 24.28 (616.7) | 1.70 (43.2) | 19 (9) | 0.25, 0.50, 0.75, 1, 1.25, 1.50, 2, 2.50 | RFDN225 |
| | Type 12 | 25.66 (651.8) | 8.84 (224.7) | 9.31 (236.5) | 24.28 (616.7) | 1.70 (43.2) | 18 (8) | — | JFDN225 |
| JG 175–250 | Type 1 | 34.70 (881.4) | 10.92 (277.4) | 7.20 (182.9) | 30.00 (762.0) | 1.88 (47.8) | 31 (14) | 0.25, 0.50, 2, 2.50, 3 | SJDN250 |
| | Type 3R | 37.50 (952.5) | 11.56 (293.6) | 10.22 (259.6) | 35.77 (908.6) | 1.94 (49.3) | 40 (18) | 0.25, 0.50, 2, 2.50, 3 | RJDN250 |
| | Type 12 | 37.53 (953.3) | 11.56 (293.6) | 10.22 (259.6) | 35.77 (908.6) | 1.94 (49.3) | 37 (17) | — | JJDN250 |
| KG 300–400 | Type 1 | 38.81 (985.8) | 11.06 (280.9) | 10.94 (277.9) | 34.00 (863.6) | 2.28 (57.9) | 53 (24) | 0.25, 0.50, 0.75, 1.50, 2, 2.50, 3, 3.50 | SKDN400 |
| | Type 3R | 41.69 (1058.9) | 11.75 (298.5) | 14.06 (357.1) | 39.90 (1013.5) | 1.97 (50.0) | 60 (27) | 0.25, 0.50, 0.75, 2.50, 3, 3.50 | RKDN400 |
| | Type 12 | 41.69 (1058.9) | 11.75 (298.5) | 14.06 (357.1) | 39.90 (1013.5) | 1.97 (50.0) | 53 (24) | — | JKDN400 |
| LG 450–600 | Type 1 | 45.88 (1165.4) | 14.31 (363.5) | 12.38 (314.5) | 46.56 (1182.6) | 1.91 (48.5) | 81 (37) | 0.25, 0.50, 0.75, 3, 3.50, 4 | SLDN600 |
| | Type 3R | 48.31 (1227.1) | 14.91 (378.7) | 15.50 (393.7) | 46.56 (1182.6) | 1.92 (48.8) | 84 (38) | 0.25, 0.50, 0.75, 3, 3.50, 4 | RLDN600 |
| | Type 12 | 48.31 (1227.1) | 14.91 (378.7) | 15.50 (393.7) | 46.56 (1182.6) | 1.92 (48.8) | 81 (37) | — | JLDN600 |
| NG 700–1200 | Type 1 | 61.22 (1555.0) | 21.44 (544.6) | 15.41 (391.4) | 61.84 (1570.7) | 1.97 (50.0) | 178 (81) | — | SNDN1200 |
| | Type 3R | 63.59 (1615.2) | 22.00 (558.8) | 17.63 (447.8) | 61.84 (1570.7) | 1.97 (50.0) | 175 (79) | — | RNDN1200 |
| | Type 12 | 63.59 (1615.2) | 22.00 (558.8) | 17.63 (447.8) | 61.84 (1570.7) | 1.97 (50.0) | 170 (77) | — | JNDN1200 |

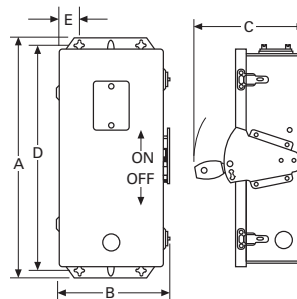
Type 1 Surface Mounted



Type 3R Rainproof



Type 12, 12K Dustproof



Direct Current Circuit Breakers



Direct Current Circuit Breakers

Product Description

DC (direct current) systems and applications are becoming commonplace as alternative energy sources have expanded and the number of DC devices and data centers using DC power has swelled.

Eaton offers molded case circuit breakers and switches to meet circuit protection and switching requirements for a host of different DC end user requirements. Applications include UPS battery supply circuits, solar systems and electric vehicle charging, as well as commercial and industrial distribution.

Current ratings are available from 15 to 3000 A, with a full scale of voltage and interrupting ratings to address needs ranging from standard to the highest performance. Optional internal accessories provide remote tripping and indication of breaker status.

The DC breaker family is UL 489 listed and exceeds the requirements in UL 489 Supplement SC for UPS applications. Eaton breakers may be applied in both ungrounded and select grounded applications, with poles connected in series to operate at the maximum voltages shown on **Page V4-T2-350**. To use DC circuit breakers on 600 V grounded systems, three poles in series must be connected on the ungrounded leg.

Contents

Description

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| Direct Current Circuit Breakers | |
| Catalog Number Selection | V4-T2-351 |
| Product Selection | V4-T2-352 |
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| Wiring Diagrams | V4-T2-361 |
| Dimensions | V4-T2-362 |
| PVGard Solar Circuit Breakers—600 Vdc Per-Pole and 1000 Vdc Poles-in-Series | V4-T2-363 |
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| Classic Mining Breakers | V4-T2-402 |
| Add-On Ground Fault Protection—Type GFR | V4-T2-416 |

All DC breakers use the same internal and external accessories as their corresponding Series C and Series G AC frame equivalents, except for the NBDC breaker, which uses the same internal and external accessories as the standard NB frame.

The HFDDC through HMDLDC and EG to RG DC breakers use the same internal and external accessories as their corresponding Series C and Series G AC Frame equivalents. NBDC uses the same internal and external accessories as standard NB breakers.

Many of the Eaton AC molded case circuit breakers carry 250 Vdc ratings for ungrounded systems. Refer to **Pages V4-T2-9** and **V4-T2-118** for these interrupting tables.

2.6

Molded Case Circuit Breakers

Specialty Breakers

Quick Reference Direct Current Circuit Breakers

UL 489 Interrupting Capacity Ratings

2

| Circuit Breaker Type | Maximum Amperes | Interrupting Capacity (kA) Volts DC ^① | | | | | | | | |
|----------------------|-----------------|---|-----------------|------------------|-----------------|-----|-----|-----------------|------------------|-----------------|
| | | 125 | Poles in Series | 250 ^② | Poles in Series | 500 | 600 | Poles in Series | 750 ^② | Poles in Series |
| EGEDC | 100 | 10 | 1 | 35 | 2 | 35 | — | 3 | — | — |
| EGSDC | 100 | 35 | 1 | 42 | 2 | 50 | — | 3 | — | — |
| EGHDC | 100 | 42 | 1 | 50 | 2 | 65 | — | 3 | — | — |
| HFDDC | 225 | 42 | 1 | 50 | 2 | — | 42 | 3 | 42 | 4 |
| JGEDC | 250 | 35 | 1 | 35 | 2 | — | 35 | 3 | — | — |
| JGSDC | 250 | 42 | 1 | 42 | 2 | — | 50 | 3 | — | — |
| JGHDC | 250 | 50 | 1 | 50 | 2 | — | 65 | 3 | — | — |
| HJDDC | 250 | 42 | 1 | 50 | 2 | — | 42 | 3 | — | — |
| HKDDC | 400 | 42 | 1 | 50 | 2 | — | 42 | 3 | — | — |
| LGEDC | 600 | 22 | 1 | 22 | 2 | — | 35 | 3 | — | — |
| LGSDC | 600 | 22 | 1 | 22 | 2 | — | 50 | 3 | — | — |
| LGHDC | 600 | 50 | 1 | 50 | 2 | — | 65 | 3 | — | — |
| HLDDC | 600 | 42 | 1 | 50 | 2 | — | 35 | 3 | — | — |
| HLDDC ^③ | 1200 | 42 | 1 | 50 | 2 | — | — | — | — | — |
| HMDLDC | 800 | 42 | 1 | 50 | 2 | — | 35 | 3 | — | — |
| NBDC | 1200 | 42 | 1 | 50 | 2 | — | 50 | 3 | — | — |
| RGHDC | 3000 | 42 | 1 | 50 | 2 | — | 65 | 3 | — | — |

IEC 60947-2 Interrupting Capacity Ratings

| Circuit Breaker Type | Maximum Amperes | 125 Volts DC | | Poles in Series | 250 Volts DC | | Poles in Series | 600 Volts DC | | Poles in Series |
|----------------------|-----------------|--------------|-----|-----------------|--------------|-----|-----------------|--------------|-----|-----------------|
| | | Icu | Ics | | Icu | Ics | | Icu | Ics | |
| EGEDC | 100 | 10 | 10 | 1 | 10 | 10 | 2 | — | — | — |
| EGSDC | 100 | 35 | 35 | 1 | 35 | 35 | 2 | — | — | — |
| EGHDC | 100 | 42 | 42 | 1 | 42 | 42 | 2 | — | — | — |
| JGEDC | 250 | 22 | 22 | 1 | 22 | 22 | 2 | — | — | — |
| JGSDC | 250 | 22 | 22 | 1 | 22 | 22 | 2 | — | — | — |
| JGHDC | 250 | 42 | 42 | 1 | 42 | 42 | 2 | — | — | — |
| HJDDC | 250 | — | — | — | — | — | — | 20 | 10 | 3 |
| LGEDC | 600 | 22 | 22 | 1 | 22 | 22 | 2 | — | — | — |
| LGSDC | 600 | 22 | 22 | 1 | 22 | 22 | 2 | — | — | — |
| LGHDC | 600 | 42 | 42 | 1 | 42 | 42 | 2 | — | — | — |
| HLDDC | 600 | — | — | — | — | — | — | 20 | 10 | 3 |
| HMDLDC | 800 | — | — | — | — | — | — | 20 | 10 | 3 |

Notes

^① DC ratings apply to substantially non-inductive circuits. Time constants per UL 489.

^② EGEDC through HMDLDC have been tested up to 300 Vdc to allow for battery charging voltages. 750 Vdc is common in transportation applications. HFDDC, four-pole 750 Vdc is available up to 150 A maximum. 300 Vdc and 750 Vdc are not UL 489 listed voltage ratings.

^③ Four-pole frame with two-poles connected in parallel.

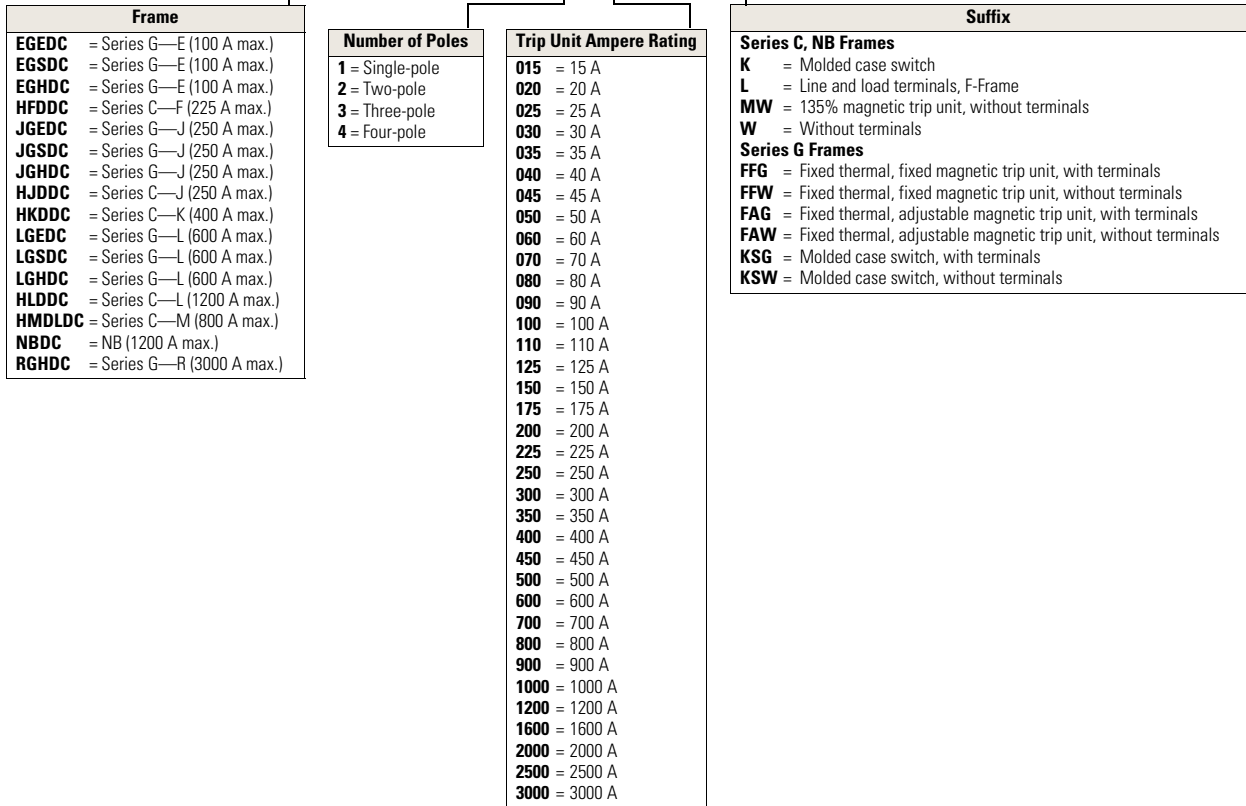
See **Page V4-T2-361** for series connection diagrams. Use NEC rated cable to connect/short poles in series as shown.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

DC Circuit Breaker

HFDDC 3 150 W



Product Selection

2

**Type EGEDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 35 kAIC at 500 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Circuit Breaker with Terminals Catalog Number | Complete Circuit Breaker without Terminals Catalog Number |
|---|---|--|
| 25 | EGEDC3025FFG | EGEDC3025FFW |
| 30 | EGEDC3030FFG | EGEDC3030FFW |
| 35 | EGEDC3035FFG | EGEDC3035FFW |
| 40 | EGEDC3040FFG | EGEDC3040FFW |
| 45 | EGEDC3045FFG | EGEDC3045FFW |
| 50 | EGEDC3050FFG | EGEDC3050FFW |
| 60 | EGEDC3060FFG | EGEDC3060FFW |
| 70 | EGEDC3070FFG | EGEDC3070FFW |
| 80 | EGEDC3080FFG | EGEDC3080FFW |
| 90 | EGEDC3090FFG | EGEDC3090FFW |
| 100 | EGEDC3100FFG | EGEDC3100FFW |

**Type EGSDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 50 kAIC at 500 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Circuit Breaker with Terminals Catalog Number | Complete Circuit Breaker without Terminals Catalog Number |
|---|---|--|
| 25 | EGSDC3025FFG | EGSDC3025FFW |
| 30 | EGSDC3030FFG | EGSDC3030FFW |
| 35 | EGSDC3035FFG | EGSDC3035FFW |
| 40 | EGSDC3040FFG | EGSDC3040FFW |
| 45 | EGSDC3045FFG | EGSDC3045FFW |
| 50 | EGSDC3050FFG | EGSDC3050FFW |
| 60 | EGSDC3060FFG | EGSDC3060FFW |
| 70 | EGSDC3070FFG | EGSDC3070FFW |
| 80 | EGSDC3080FFG | EGSDC3080FFW |
| 90 | EGSDC3090FFG | EGSDC3090FFW |
| 100 | EGSDC3100FFG | EGSDC3100FFW |

**Type EGHDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 65 kAIC at 500 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Circuit Breaker with Terminals Catalog Number | Complete Circuit Breaker without Terminals Catalog Number |
|---|---|--|
| 25 | EGHDC3025FFG | EGHDC3025FFW |
| 30 | EGHDC3030FFG | EGHDC3030FFW |
| 35 | EGHDC3035FFG | EGHDC3035FFW |
| 40 | EGHDC3040FFG | EGHDC3040FFW |
| 45 | EGHDC3045FFG | EGHDC3045FFW |
| 50 | EGHDC3050FFG | EGHDC3050FFW |
| 60 | EGHDC3060FFG | EGHDC3060FFW |
| 70 | EGHDC3070FFG | EGHDC3070FFW |
| 80 | EGHDC3080FFG | EGHDC3080FFW |
| 90 | EGHDC3090FFG | EGHDC3090FFW |
| 100 | EGHDC3100FFG | EGHDC3100FFW |

HFDDC


**Type HFDDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 42 kAIC at 600 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Circuit Breaker with Line and Load Terminals ^① | | | |
|---|--|-------------------------|---------------------------|--------------------------|
| | Single-Pole Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number | Four-Pole Catalog Number |
| 15 | HFDDC1015L | HFDDC2015L | HFDDC3015L | HFDDC4015L |
| 20 | HFDDC1020L | HFDDC2020L | HFDDC3020L | HFDDC4020L |
| 25 | HFDDC1025L | HFDDC2025L | HFDDC3025L | HFDDC4025L |
| 30 | HFDDC1030L | HFDDC2030L | HFDDC3030L | HFDDC4030L |
| 35 | HFDDC1035L | HFDDC2035L | HFDDC3035L | HFDDC4035L |
| 40 | HFDDC1040L | HFDDC2040L | HFDDC3040L | HFDDC4040L |
| 45 | HFDDC1045L | HFDDC2045L | HFDDC3045L | HFDDC4045L |
| 50 | HFDDC1050L | HFDDC2050L | HFDDC3050L | HFDDC4050L |
| 60 | HFDDC1060L | HFDDC2060L | HFDDC3060L | HFDDC4060L |
| 70 | HFDDC1070L | HFDDC2070L | HFDDC3070L | HFDDC4070L |
| 80 | HFDDC1080L | HFDDC2080L | HFDDC3080L | HFDDC4080L |
| 90 | HFDDC1090L | HFDDC2090L | HFDDC3090L | HFDDC4090L |
| 100 | HFDDC1100L | HFDDC2100L | HFDDC3100L | HFDDC4100L |
| 110 | HFDDC1110L | HFDDC2110L | HFDDC3110L | HFDDC4110L |
| 125 | HFDDC1125L | HFDDC2125L | HFDDC3125L | HFDDC4125L |
| 150 | HFDDC1150L | HFDDC2150L | HFDDC3150L | HFDDC4150L |
| 175 | — | HFDDC2175L | HFDDC3175L | — |
| 200 | — | HFDDC2200L | HFDDC3200L | — |
| 225 | — | HFDDC2225L | HFDDC3225L | — |

**Type JGEDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 35 kAIC at 600 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Breaker Catalog Number | Circuit Breaker Frame Only ^② Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|---------------------------------|--|---|-----------------------------------|
| 70 | JGEDC3070FAG | JGEDC3250NN | JT3070FA | T250FJ |
| 90 | JGEDC3090FAG | JGEDC3250NN | JT3090FA | T250FJ |
| 100 | JGEDC3100FAG | JGEDC3250NN | JT3100FA | T250FJ |
| 125 | JGEDC3125FAG | JGEDC3250NN | JT3125FA | T250FJ |
| 150 | JGEDC3150FAG | JGEDC3250NN | JT3150FA | T250FJ |
| 175 | JGEDC3175FAG | JGEDC3250NN | JT3175FA | T250FJ |
| 200 | JGEDC3200FAG | JGEDC3250NN | JT3200FA | T250FJ |
| 225 | JGEDC3225FAG | JGEDC3250NN | JT3225FA | T250FJ |
| 250 | JGEDC3250FAG | JGEDC3250NN | JT3250FA | T250FJ |

Notes

① For breaker without terminals, replace "L" with "W" at end of catalog number.

② For complete breaker, order individual frame, trip unit and terminals for field installation.

Type JGSDC DC Circuit Breakers— Three-Pole High Interrupting Capacity 50 kAIC at 600 Vdc

| Maximum Continuous Ampere Rating at 40 °C | Complete Breaker Catalog Number | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|---------------------------------|--|---|-----------------------------------|
| 70 | JGSDC3070FAG | JGSDC3250NN | JT3070FA | T250FJ |
| 90 | JGSDC3090FAG | JGSDC3250NN | JT3090FA | T250FJ |
| 100 | JGSDC3100FAG | JGSDC3250NN | JT3100FA | T250FJ |
| 125 | JGSDC3125FAG | JGSDC3250NN | JT3125FA | T250FJ |
| 150 | JGSDC3150FAG | JGSDC3250NN | JT3150FA | T250FJ |
| 175 | JGSDC3175FAG | JGSDC3250NN | JT3175FA | T250FJ |
| 200 | JGSDC3200FAG | JGSDC3250NN | JT3200FA | T250FJ |
| 225 | JGSDC3225FAG | JGSDC3250NN | JT3225FA | T250FJ |
| 250 | JGSDC3250FAG | JGSDC3250NN | JT3250FA | T250FJ |

JGHDC3250NN



Type JGHDC DC Circuit Breakers— Three-Pole High Interrupting Capacity 65 kAIC at 600 Vdc

| Maximum Continuous Ampere Rating at 40 °C | Complete Breaker Catalog Number | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|---------------------------------|--|---|-----------------------------------|
| 70 | JGHDC3070FAG | JGHDC3250NN | JT3070FA | T250FJ |
| 90 | JGHDC3090FAG | JGHDC3250NN | JT3090FA | T250FJ |
| 100 | JGHDC3100FAG | JGHDC3250NN | JT3100FA | T250FJ |
| 125 | JGHDC3125FAG | JGHDC3250NN | JT3125FA | T250FJ |
| 150 | JGHDC3150FAG | JGHDC3250NN | JT3150FA | T250FJ |
| 175 | JGHDC3175FAG | JGHDC3250NN | JT3175FA | T250FJ |
| 200 | JGHDC3200FAG | JGHDC3250NN | JT3200FA | T250FJ |
| 225 | JGHDC3225FAG | JGHDC3250NN | JT3225FA | T250FJ |
| 250 | JGHDC3250FAG | JGHDC3250NN | JT3250FA | T250FJ |

HJDDC3250



Type HJDDC DC Circuit Breakers— Three-Pole High Interrupting Capacity 42 kAIC at 600 Vdc

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|--|---|-----------------------------------|
| 70 | HJDDC3250F | JT3070T | TA250KB |
| 90 | HJDDC3250F | JT3090T | TA250KB |
| 100 | HJDDC3250F | JT3100T | TA250KB |
| 125 | HJDDC3250F | JT3125T | TA250KB |
| 150 | HJDDC3250F | JT3150T | TA250KB |
| 175 | HJDDC3250F | JT3175T | TA250KB |
| 200 | HJDDC3250F | JT3200T | TA250KB |
| 225 | HJDDC3250F | JT3225T | TA250KB |
| 250 | HJDDC3250F | JT3250T | TA250KB |

Note

^① For complete breaker, order individual frame, trip unit and terminals for field installation.

HKDDC3400


**Type HKDDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 42 kAIC at 600 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|---|--|--------------------------------------|
| 100 | HKDDC3400F | KT3100T | TA300K |
| 125 | HKDDC3400F | KT3125T | TA300K |
| 150 | HKDDC3400F | KT3150T | TA300K |
| 175 | HKDDC3400F | KT3175T | TA300K |
| 200 | HKDDC3400F | KT3200T | TA300K |
| 225 | HKDDC3400F | KT3225T | TA300K |
| 250 | HKDDC3400F | KT3250T | TA350K |
| 300 | HKDDC3400F | KT3300T | TA350K |
| 350 | HKDDC3400F | KT3350T | TA350K |
| 400 | HKDDC3400F | KT3400T | 3TA400K ^② |

LGEDC3630NN


**Type LGEDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 35 kAIC at 600 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Breaker Catalog Number | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|------------------------------------|---|--|--------------------------------------|
| 250 | LGEDC3250FAG | LGEDC3630NN | LT3250FA | TA350LK |
| 300 | LGEDC3300FAG | LGEDC3630NN | LT3300FA | TA350LK |
| 350 | LGEDC3350FAG | LGEDC3630NN | LT3350FA | TA350LK |
| 400 | LGEDC3400FAG | LGEDC3630NN | LT3400FA | TA350LK |
| 500 | LGEDC3500FAG | LGEDC3630NN | LT4500FA | 3TA632LK ^② |
| 600 | LGEDC3600FAG | LGEDC3630NN | LT3600FA | 3TA632LK ^② |

**Type LGSDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 50 kAIC at 600 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Breaker Catalog Number | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|------------------------------------|---|--|--------------------------------------|
| 250 | LGSDC3250FAG | LGSDC3630NN | LT3250FA | TA350LK |
| 300 | LGSDC3300FAG | LGSDC3630NN | LT3300FA | TA350LK |
| 350 | LGSDC3350FAG | LGSDC3630NN | LT3350FA | TA350LK |
| 400 | LGSDC3400FAG | LGSDC3630NN | LT3400FA | TA350LK |
| 500 | LGSDC3500FAG | LGSDC3630NN | LT4500FA | 3TA632LK ^② |
| 600 | LGSDC3600FAG | LGSDC3630NN | LT3600FA | 3TA632LK ^② |

Notes

- ① For complete breaker, order individual frame, trip unit and terminals for field installation.
 ② Three-pole kit.

Type LGHDC DC Circuit Breakers— Three-Pole High Interrupting Capacity 65 kAIC at 600 Vdc

| Maximum Continuous Ampere Rating at 40 °C | Complete Breaker Catalog Number | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|---------------------------------|--|---|-----------------------------------|
| 250 | LGHDC3250FAG | LGHDC3630NN | LT3250FA | TA350LK |
| 300 | LGHDC3300FAG | LGHDC3630NN | LT3300FA | TA350LK |
| 350 | LGHDC3350FAG | LGHDC3630NN | LT3350FA | TA350LK |
| 400 | LGHDC3400FAG | LGHDC3630NN | LT3400FA | TA350LK |
| 500 | LGHDC3500FAG | LGHDC3630NN | LT4500FA | 3TA632LK ^② |
| 600 | LGHDC3600FAG | LGHDC3630NN | LT3600FA | 3TA632LK ^② |

HLDDC



Type HLDDC DC Circuit Breakers— Three-Pole High Interrupting Capacity 35 kAIC at 600 Vdc

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|--|---|-----------------------------------|
| 300 | HLDDC3600F | LT3300T | TA602LD |
| 350 | HLDDC3600F | LT3350T | TA602LD |
| 400 | HLDDC3600F | LT3400T | TA602LD |
| 450 | HLDDC3600F | LT3450T | TA602LD |
| 500 | HLDDC3600F | LT3500T | TA602LD |
| 600 | HLDDC3600F | LT3600T | 3TA603LDK ^② |

Type HLDDC DC Circuit Breakers— Two-Pole High Interrupting Capacity 50 kAIC at 250 Vdc ^{③④}

| Maximum Continuous Ampere Rating at 40 °C | Complete Breaker Catalog Number |
|---|---------------------------------|
| 600 | HLDDC20600 |
| 700 | HLDDC20700 |
| 800 | HLDDC20800 |
| 900 | HLDDC20900 |
| 1000 | HLDDC21000 |
| 1200 | HLDDC21200 |

Notes

- ① For complete breaker, order individual frame, trip unit and terminals for field installation.
- ② Three-pole kit.
- ③ Includes breaker frame, trip unit and terminals.
- ④ Four-pole breaker with two poles wired in parallel.

HMDLDC3800F


**Type HMDLDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 35 kAIC at 600 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Circuit Breaker Frame Only ^① Catalog Number | Thermal-Magnetic Trip Unit Catalog Number | Standard Terminals Catalog Number |
|---|---|--|--------------------------------------|
| 300 | HMDLDC3800F | MT3300T | TA700MA1 |
| 350 | HMDLDC3800F | MT3350T | TA700MA1 |
| 400 | HMDLDC3800F | MT3400T | TA700MA1 |
| 450 | HMDLDC3800F | MT3450T | TA700MA1 |
| 500 | HMDLDC3800F | MT3500T | TA700MA1 |
| 600 | HMDLDC3800F | MT3600T | TA700MA1 |
| 700 | HMDLDC3800F | MT3700T | TA700MA1 |
| 800 | HMDLDC3800F | MT3800T | TA800MA2 |

**Type NBDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 50 kAIC at 600 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Circuit Breaker Factory Assembled without Terminals ^② Catalog Number | Includes Magnetic Trip Unit Calibrated at 135% | Standard Terminals Catalog Number |
|---|---|--|--------------------------------------|
| 700 | NBDC3700MW | Included | TA1000NB1 |
| 800 | NBDC3800MW | Included | TA1000NB1 |
| 900 | NBDC3900MW | Included | TA1000NB1 |
| 1000 | NBDC31000MW | Included | TA1000NB1 |
| 1200 | NBDC31200MW | Included | TA1200NB1 |

RGHDC3300FFWM


**Type RGHDC DC Circuit Breakers—
Three-Pole High Interrupting Capacity 65 kAIC at 600 Vdc**

| Maximum Continuous Ampere Rating at 40 °C | Complete Circuit Breaker Factory Assembled ^② | | Includes Magnetic Trip Unit Calibrated at 135% | Standard Rear Connectors Catalog Number |
|---|---|--|--|--|
| | Imperial Mounting Hardware Catalog Number | Metric Mounting Hardware Catalog Number | | |
| 1600 | RGHDC3160FFWE | RGHDC3160FFWM | Included | B2016RDM |
| 2000 | RGHDC3200FFWE | RGHDC3200FFWM | Included | B2016RDM |
| 2500 | RGHDC3250FFWE | RGHDC3250FFWM | Included | B2500RDM |
| 3000 | RGHDC3300FFWE | RGHDC3300FFWM | Included | B3000RDM |

Notes

^① Includes frame and trip unit. Order terminals or connectors separately.

^② Six rear connectors included as standard complete circuit breaker.

2.6

Molded Case Circuit Breakers

Specialty Breakers

2

DC Breaker Terminal Wire Ranges

| Breaker Frame | Maximum Breaker Ampacity | Terminal Body Material | Wire Type | AWG Wire Range/ Number of Conductors | Metric Wire Range mm ² | Number of Terminals Included | Standard Terminal Catalog Number |
|---------------------|--------------------------|------------------------|-----------|---|-----------------------------------|------------------------------|----------------------------------|
| EGEDC, EGSDC, EGHDC | 100 | Aluminum | Cu/Al | 14–1/0 | 2.5–50 | 3 | 3TA125EF |
| HFDDC | 20 | Steel | Cu/Al | 14–10 (1) | 2.5–4 (1) | 3 | 3T20FB |
| | 100 | Steel | Cu/Al | 14–1/0 (1) | 2.5–50 (1) | 3 | 3T100FB |
| | 225 | Aluminum | Cu/Al | 4–4/0 (1) | 25–95 (1) | 3 | 3TA225FD |
| | 250 | Stainless steel | Cu | 4–350 (1) | 25–185 (1) | 1 | T250FJ |
| HJDDC | 250 | Aluminum | Cu/Al | 4–350 kcmil (1) | 25–185 (1) | 1 | TA250KB |
| HKDDC | 225 | Aluminum | Cu/Al | 3–350 kcmil (1) | 35–185 (1) | 1 | TA300K |
| | 350 | Aluminum | Cu/Al | 250–500 kcmil (1) | 120–240 (1) | 1 | TA350K |
| | 400 | Aluminum | Cu/Al | 3/0–250 kcmil (2) | 95–120 (1) | 3 | 3TA400K |
| LGEDC, LGSDC, LGHDC | 400 | Aluminum | Cu/Al | 2–500 (1) | 35–240 (1) | 1 | TA350LK |
| | 630 | Aluminum | Cu/Al | 2–500 kcmil (2) | 35–240 (2) | 1 | TA632L |
| | 630 | Aluminum | Cu/Al | 2–500 kcmil (2) | 35–240 (2) | 3 | 3TA632LK |
| HLDDC | 500 | Aluminum | Cu/Al | 3/0–350 kcmil (2) | 95–150 (2) | 1 | TA602LD |
| | 600 | Aluminum | Cu/Al | 400–500 kcmil (2) | 185–240 (2) | 3 | 3TA603LDK |
| HMDLDC | 600 | Aluminum | Cu/Al | 1–500 kcmil (2) | — | 1 | TA700MA1 |
| | 800 | Aluminum | Cu/Al | 3/0–400 kcmil (3) | — | 1 | TA800MA2 |
| NBDC | 700 | Aluminum | Cu/Al | 3/0–400 kcmil (3) | 95–185 (3) | 1 | TA1000NB1 |
| | 800 | Aluminum | Cu/Al | 3/0–400 kcmil (3) | 95–185 (3) | 1 | TA1000NB1 |
| | 900 | Aluminum | Cu/Al | 3/0–400 kcmil (3) | 95–185 (3) | 1 | TA1000NB1 |
| | 1000 | Aluminum | Cu/Al | 3/0–400 kcmil (3) | 95–185 (3) | 1 | TA1000NB1 |
| | 1200 | Aluminum | Cu/Al | 4/0–500 kcmil (4) | 120–240 (4) | 1 | TA1200NB1 |

Note: RGHDC breakers include six rear connectors as standard.

Molded Case Switches

Eaton's DC molded case switches are used in applications requiring a compact, high-capacity disconnect. They are UL 489 listed and have automatic high instantaneous current protection. These devices do not provide overload protection.

Molded Case Switches

| Maximum Continuous Ampere Rating at 40 °C | Interrupting Capacity (Volts DC) | Poles in Series | With Line and Load Terminals | Without Line and Load Terminals |
|---|----------------------------------|-----------------|------------------------------|---------------------------------|
| | | | Catalog Number | Catalog Number |
| 600 Vdc Maximum | | | | |
| 100 | 42 | 3 | HFDDC3100KL | HFDDC3100KW |
| 150 | 42 | 3 | HFDDC3150KL | HFDDC3150KW |
| 225 | 42 | 3 | HFDDC3225KL | HFDDC3225KW |
| 250 | 65 | 3 | JGKDC3250KSG | JGKDC3250KSW |
| 250 | 42 | 3 | HJDDC3250K | HJDDC3250KW |
| | 35 | 3 | HKDDC3400K | HKDDC3400KW |
| 400 | 65 | 3 | LGKDC3400KSG | LGKDC3400KSW |
| | 65 | 3 | LGKDC3630KSG | LGKDC3630KSW |
| 600 | 35 | 3 | HLDDC3600K | HLDDC3600WK |
| | 35 | 3 | HMDLDC3800K | HMDLDC3800WK |
| 500 Vdc Maximum | | | | |
| 100 | 65 | 3 | EGK3100KSG | EGK3100KSW |
| 250 Vdc Maximum | | | | |
| 100 | 50 | 2 | HFDDC2100KL | HFDDC2100KW |
| 150 | 50 | 2 | HFDDC2150KL | HFDDC2150KW |
| 225 | 50 | 2 | HFDDC2225KL | HFDDC2225KW |
| 1200 | 50 | ① | HLDDC21200K ① | HLDDC21200WK ① |

Note

① Four-pole frame with two-pole connected in parallel.

Accessories

Internal Accessories

| Description | Factory Installation (HFDDC) | Field Installation Kits | | | | | | | | |
|----------------------------|------------------------------|-------------------------|---------------------|---------------------|---------------------|-----------|-----------|-----------|------------|-------------|
| | | HFDDC ① | EGEDC, EGSDC, EGHDC | JGEDC, JGSDC, JGHDC | LGEDC, LGSDC, LGHDC | HJDDC | HKDDC | HLDDC | HMDLDC | NBDC |
| Right-Pole Mounting | | | | | | | | | | |
| Auxiliary switch | | | | | | | | | | |
| 1A-1B | A06 | A1X1PK | AUX1A1BPK | AUX1A1BPK | A1X2PK | A1X3PK | A1X4PK | A1X4PK | 4980D16G05 | — |
| 2A-2B | A13 | A2X1RPK | AUX2A2BPK | AUX2A2BPK | A2X2PK | A2X3PK | A2X4PK | A2X4PK | 4980D16G06 | A2X6RPK |
| Alarm switch | | | | | | | | | | |
| 1 make/1 break | B06 | A1L1RPK | ALM1M1BEPK | ALM1M1BJPK | A1L2RPK | A1L3RPK | A1L4RPK | A1L4RPK | — | A1L6RPK |
| Auxiliary and alarm combo | | | | | | | | | | |
| 1A-1B, 1 make/1 break | C05 | AAL1RPK | AUXALRMEPK | AUXALRMJPK | AAL2RPK | AAL3RPK | AA114RPK | AA114RPK | — | — |
| Left-Pole Mounting | | | | | | | | | | |
| Shunt trip | | | | | | | | | | |
| 12 Vdc | S02 | SNT1LP03K | SNT012CPK | SNT012CPK | SNT2P04K | SNT3P04K | SNT4LP03K | SNT4LP03K | 2606D58G14 | — |
| 24 Vdc | S02 | SNT1LP03K | SNT024CPK | SNT024CPK | SNT2P04K | SNT3P04K | SNT4LP03K | SNT4LP03K | 2606D58G13 | SNT6P03K ② |
| 48 Vdc | S06 | SNT1LP08K | SNT4860CPK | SNT4860CPK | SNT2P06K | SNT3P06K | SNT4LP23K | SNT4LP23K | 2606D58G12 | SNT6P23K ② |
| 60 Vdc | S06 | SNT1LP08K | SNT4860CPK | SNT4860CPK | SNT2P06K | SNT3P06K | SNT4LP23K | SNT4LP23K | 2606D58G11 | SNT6P23K ② |
| 125 Vdc | S10 | SNT1LP12K | SNT120CPK | SNT120CPK | SNT2P11K | SNT3P11K | SNT4LP26K | SNT4LP26K | 2606D58G10 | SNT6P23K ② |
| 250 Vdc | S14 | SNT1LP18K | — | — | SNT2P14K | SNT3P14K | SNT4LP14K | SNT4LP14K | 2606D58G09 | SNT6P14K |
| 120 Vac | S06 | SNT1LP12K | SNT120CPK | SNT120CPK | SNT2P11K | SNT3P11K | SNT4LP11K | SNT4LP11K | 2060D58G05 | SNT6P11K ② |
| Undervoltage release | | | | | | | | | | |
| 12 Vdc | U30 | UVH1LP20K | UVR012DPK | UVR012DPK | UVH2LP20K | UVH3LP20K | UVH4LP20K | UVH4LP20K | 372D032G06 | UVH6RP20K ② |
| 24 Vdc | U34 | UVH1LP21K | UVR024DPK | UVR024DPK | UVH2LP21K | UVH3LP21K | UVH4LP21K | UVH4LP21K | 372D032G07 | UVH6RP21K ② |
| 48 Vdc | U38 | UVH1LP22K | UVR048DPK | UVR048DPK | UVH2LP22K | UVH3LP22K | UVH4LP22K | UVH4LP22K | 372D032G08 | UVH6RP23K ② |
| 125 Vdc | U42 | UVH1LP26K | UVR125DPK | UVR125DPK | UVH2LP26K | UVH3LP26K | UVH4LP26K | UVH4LP26K | 372D032G09 | UVH6RP26K ② |
| 250 Vdc | U46 | UVH1LP28K | UVR250DPK | UVR250DPK | UVH2LP28K | UVH3LP28K | UVH4LP28K | UVH4LP28K | 372D032G10 | UVH6RP28K ② |
| 120 Vac | U14 | UVH1LP08K | UVR120APK | UVR120APK | UVH2LP08K | UVH3LP08K | UVH4LP08K | UVH4LP08K | 373D632G05 | UVH6RP08K ② |

Notes

① F-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory. Internal accessories are UL listed for factory installation under E7819. Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

② Right-pole mounted.

One accessory can be mounted per pole, per breaker. Factory installation of accessories is available. Contact Eaton for assistance with part number configuration.

Jumpers

Jumpers must be ordered separately. Priced individually.

2

HFDDC Frame

| Description | Maximum Amperes | Catalog Number |
|-------------------------------|-----------------|----------------------|
| Single copper jumper | 60 | DC1F060 ^① |
| | 100 | DC1F100 ^① |
| | 125 | DC1F125 ^① |
| | 225 | DC1F225 ^① |
| Package of 2 aluminum jumpers | 100 | DC2FD100A |
| Package of 3 aluminum jumpers | 100 | DC3FD100A |

JGEDC, JGSDC, JGHDC Frames

| Description | Maximum Amperes | Catalog Number |
|--------------------------------|-----------------|-------------------------|
| Single aluminum jumper | 250 | DC1JG250A ^① |
| Package of 2 aluminum jumpers | 250 | DC2JG250A ^① |
| Package of 20 aluminum jumpers | 250 | DC20JG250A ^① |

HKDDC Frame

| Description | Maximum Amperes | Catalog Number |
|-------------------------------|-----------------|------------------------|
| Single copper jumper | 400 | DC1K400 ^① |
| Package of 2 aluminum jumpers | 400 | DC2KD400A ^① |
| Package of 3 aluminum jumpers | 400 | DC3KD400A ^① |

LGEDC, LGSDC, LGHDC Frames

| Description | Maximum Amperes | Catalog Number |
|--------------------------------|-----------------|----------------|
| Package of 2 aluminum jumpers | 400 | DC2LG400A |
| Package of 3 aluminum jumpers | 400 | DC3LG400A |
| Package of 30 aluminum jumpers | 400 | DC30LG400A |

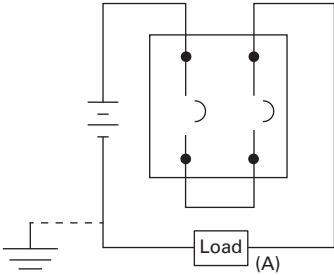
Note

^① Not UL Listed; Non UL listed jumpers used in a UL application may need to be qualified by the OEM in their assembly. This may take place with UL or another certified testing agency.

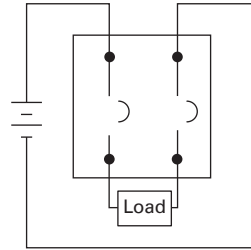
Wiring Diagrams

Series Connection Diagrams for DC Application ①②

250 Vdc Maximum—Two Poles in Series

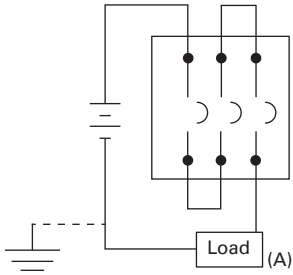


Suitable for use on ungrounded systems, or grounded systems that have one end of load (A) connected to grounded terminal, opposite poles in series connection.

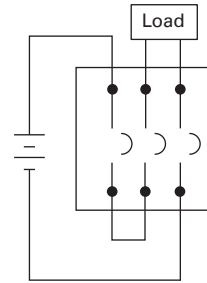


Suitable for use on ungrounded systems only.

500 Vdc or 600 Vdc Maximum—Three Poles in Series

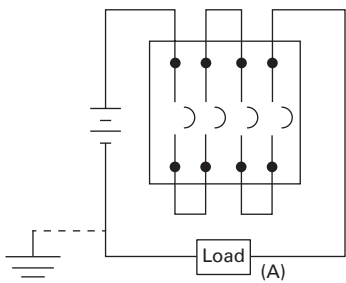


Suitable for use on ungrounded systems, or grounded systems that have one end of load (A) connected to grounded terminal, opposite poles in series connection.

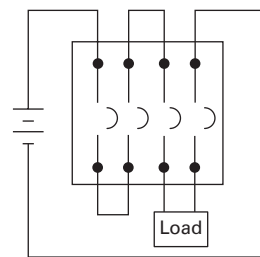


Suitable for use on ungrounded systems only.

750 Vdc Maximum—Four Poles in Series



Suitable for use on ungrounded systems, or grounded systems that have one end of load (A) connected to grounded terminal, opposite poles in series connection.



Suitable for use on ungrounded systems only.

Notes

- ① Poles in series connection is customer supplied. Use rated cable per NEC.
- ② For grounded systems, all poles in series must be connected on non-grounded terminal, with load connected to grounded terminal.

2.6

Molded Case Circuit Breakers

Specialty Breakers

Dimensions

Approximate Dimensions in Inches (mm)

2

DC Breaker Dimensions

| Frame | Number of Poles | Width | Height | Depth |
|---------------------|-----------------|---------------|---------------|--------------|
| EGEDC, EGSDC, EGHDC | 3 | 3.00 (76.2) | 5.50 (139.7) | 2.99 (75.9) |
| HFDDC | 1 | 1.38 (35.1) | 6.00 (152.4) | 3.38 (86.0) |
| | 2 | 2.75 (70.0) | 6.00 (152.4) | 3.38 (86.0) |
| | 3 | 4.13 (105.0) | 6.00 (152.4) | 3.38 (86.0) |
| | 4 | 5.50 (139.7) | 6.00 (152.4) | 3.38 (86.0) |
| JGEDC, JGSDC, JGHDC | 3 | 4.13 (104.9) | 7.00 (177.8) | 3.57 (90.7) |
| HJDDC | 2, 3 | 4.13 (105.0) | 10.00 (254.0) | 4.06 (103.1) |
| HKDDC | 2, 3 | 5.50 (139.7) | 10.13 (257.3) | 4.10 (104.1) |
| LGEDC, LGSDC, LGHDC | 3 | 5.48 (139.2) | 10.13 (257.3) | 4.09 (103.9) |
| 600 A Max. HLDDC | 2, 3 | 8.25 (209.6) | 10.75 (273.1) | 4.06 (103.1) |
| 1200 A Max. HLDDC | 4 | 11.00 (279.4) | 10.75 (273.1) | 4.06 (103.1) |
| HMDLDC | 2, 3 | 8.25 (209.6) | 16.00 (406.4) | 4.06 (103.1) |
| NBDC | 3 | 8.25 (209.6) | 16.00 (406.4) | 5.50 (139.7) |
| RGHDC | 3 | 15.50 (393.7) | 16.00 (406.4) | 9.75 (247.7) |

PVGard Solar Photovoltaic Circuit Breakers



600 Vdc Per-Pole

1000 Vdc Poles-in-Series

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| PVGard Solar Circuit Breakers—600 Vdc Per-Pole and 1000 Vdc Poles-in-Series | |
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| Add-On Ground Fault Protection—Type GFR | V4-T2-416 |

PVGard Solar Circuit Breakers—600 Vdc Per-Pole and 1000 Vdc Poles-in-Series

Product Overview

- Two PVGard lineups
 - 600 Vdc per-pole breaker and switch. Each pole rated 600 Vdc
 - 1000 Vdc poles-in-series breaker and switch. Requires poles in series connection
- Both options UL 489B listed for solar photovoltaic circuit protection
- 50 °C calibration
- Offers both 100% and 80% rated breakers
- Handle bi-directional current flow

Product Description

Photovoltaic (PV) systems convert the energy of the sun into electrical power that is fed directly into the electric grid. Within the balance of system (BOS), direct current (DC) circuit breakers protect the wiring connected from the PV modules to the combiner or the inverter, while also behaving as a disconnect.

Eaton is a global leader in circuit protection and brings this expertise to bear in the photovoltaic market. PVGard solar circuit breakers are part of a product family that combines a disconnect with circuit protection in a single, compact, resettable device to protect and isolate DC circuits as needed in photovoltaic systems. PVGard breakers can replace fuses, fuse holders and disconnects in combiner box and inverter applications—saving space, streamlining design, purchasing and receiving, and reducing spare parts requirements.

There are two PVGard lineups to choose from: the industry-exclusive, 600 Vdc per-pole breakers and switches designed for residential and light commercial applications and 1000 Vdc poles-in-series breakers and switches for commercial and utility scale applications.

PVGard 600 Vdc Per-Pole Lineup

Only Eaton can offer this breakthrough breaker that will save significant space, time and cost. As a single-circuit-per-pole device, it allows space savings of up to 66% when compared to traditional poles-in-series disconnects, switches and breakers. In addition, it eliminates the need for jumpers for poles-in-series connection—saving on installation time, labor and even inventory.

PVGard 1000 Vdc Poles-in-Series Lineup

This 1000 Vdc poles-in-series lineup provides reliable and safe disconnect means and overcurrent protection in a single, compact device for commercial and utility scale PV systems. This solution does not require jumpers with the breaker/switch to be a UL 489B listed device, providing reliability and flexibility in design without limitation on implementation of the breaker/switch. If needed, cost-effective Eaton jumpers can be included.

Application Description

Photovoltaic (PV) systems convert the energy of the sun into electrical power that is fed directly into the electric grid. PVGuard circuit breakers are used to protect the wiring from the modules to the combiner box or inverter from overcurrents, and to provide an isolation mechanism.

Eaton offers a complete line of UL 489 Listed multi-purpose 600 Vdc poles-in-series breakers and switches, as well as protection for the AC side of the inverter. Refer to **Page V4-T2-349** for 600 Vdc breakers and **Page V4-T2-6** for AC breaker selection.

Features

PVGuard breakers are uniquely designed with these features:

- Meets the higher voltage and lower fault current levels of solar systems
- Tested to extreme ambient conditions from -40°C to $+90^{\circ}\text{C}$
- Full complement of accessories for status, signalling, and on/off operation remotely
- Can handle bi-directional flow of current
- Can be applied in grounded, ungrounded or bi-polar systems
- Meets and exceeds the standards of UL 489B for photovoltaic molded case circuit breakers and molded case switches
- Available both standard (80%-rated) and 100%-rated breakers
- 50°C calibration
- Ability to open on signal from DC arc or ground fault detector
- Wide range of current ratings increases options for matching incoming strings
- Eliminates fuse stocking costs and matching issues

Designed specifically for high- and low-temperature demands of PV installations, PVGuard circuit breakers undergo extreme ambient cycling tests, and carry a robust operating temperature range. Trip units calibrate at 100% and 80% of nameplate current in a 50°C ambient, ensuring continuous operation in higher temperature environments typical to solar.

Rigorous third-party testing includes limited and standard fault current tests, electrical and mechanical endurance, dielectric voltage withstand and temperature tests. Eaton's PVGuard products are stand-alone devices without requiring jumpers to be UL 489B listed devices.

PVGuard breakers are available with a full complement of accessories to provide string status, enable remote trip, on/off operation, and can be customized to site requirements.

Standards and Certifications

- Designed to meet UL 489B for solar photovoltaic circuit protection
- UL File E350638, Category Control Number DIUR



Product Selection

Catalog number includes breaker frame and trip unit. Order terminals separately. See **Page V4-T2-369**.
For complete internal and external accessories, see accessory section of each frame.

JG PVS Frame**JG PVS Frame, 250 A Maximum, 600 Vdc Per Pole, 1.2 kA** ^①

| Current Rating Amperes | Number Poles/ 600 Vdc Circuits | Trip Unit | 80% Rated Catalog Number | 100% Rated Catalog Number |
|------------------------|-----------------------------------|-------------------------------|-----------------------------|------------------------------|
| 90 | 3 | Fixed thermal, fixed magnetic | JGPVS3090W | CJGPVS3090W |
| 100 | 3 | Fixed thermal, fixed magnetic | JGPVS3100W | CJGPVS3100W |
| 125 | 3 | Fixed thermal, fixed magnetic | JGPVS3125W | CJGPVS3125W |
| 150 | 3 | Fixed thermal, fixed magnetic | JGPVS3150W | CJGPVS3150W |
| 175 | 3 | Fixed thermal, fixed magnetic | JGPVS3175W | CJGPVS3175W |
| 200 | 3 | Fixed thermal, fixed magnetic | JGPVS3200W | CJGPVS3200W |
| 225 | 3 | Fixed thermal, fixed magnetic | JGPVS3225W | CJGPVS3225W |
| 250 | 3 | Fixed thermal, fixed magnetic | JGPVS3250W | CJGPVS3250W |

KD PVS Frame**KD PVS Frame, 400 A Maximum, 600 Vdc Per Pole, 3 kA** ^①

| Current Rating Amperes | Number Poles/ 600 Vdc Circuits | Trip Unit | 80% Rated Catalog Number | 100% Rated Catalog Number |
|------------------------|-----------------------------------|-------------------------------|-----------------------------|------------------------------|
| 100 | 3 | Fixed thermal, fixed magnetic | KDPVS3100W | CKDPVS3100W |
| 125 | 3 | Fixed thermal, fixed magnetic | KDPVS3125W | CKDPVS3125W |
| 150 | 3 | Fixed thermal, fixed magnetic | KDPVS3150W | CKDPVS3150W |
| 175 | 3 | Fixed thermal, fixed magnetic | KDPVS3175W | CKDPVS3175W |
| 200 | 3 | Fixed thermal, fixed magnetic | KDPVS3200W | CKDPVS3200W |
| 225 | 3 | Fixed thermal, fixed magnetic | KDPVS3225W | CKDPVS3225W |
| 250 | 3 | Fixed thermal, fixed magnetic | KDPVS3250W | CKDPVS3250W |
| 300 | 3 | Fixed thermal, fixed magnetic | KDPVS3300W | CKDPVS3300W |
| 350 | 3 | Fixed thermal, fixed magnetic | KDPVS3350W | CKDPVS3350W |
| 400 | 3 | Fixed thermal, fixed magnetic | KDPVS3400W | CKDPVS3400W |

Note

^① Terminals not included with frames.

2.6

Molded Case Circuit Breakers

Specialty Breakers

2

Catalog number includes breaker frame and trip unit. Order terminals separately. See **Page V4-T2-369**.

FD PV Frame



FD PV Frame, 100 A Maximum, 1000 Vdc, 3 kA ①

| Current Rating Amperes | Poles in Series | Trip Unit | 80% Rated | 100% Rated |
|------------------------|-----------------|-------------------------------|----------------|----------------|
| | | | Catalog Number | Catalog Number |
| 30 | 4 | Fixed thermal, fixed magnetic | FDPV4030W | CFDPV4030W |
| 40 | 4 | Fixed thermal, fixed magnetic | FDPV4040W | CFDPV4040W |
| 50 | 4 | Fixed thermal, fixed magnetic | FDPV4050W | CFDPV4050W |
| 60 | 4 | Fixed thermal, fixed magnetic | FDPV4060W | CFDPV4060W |
| 70 | 4 | Fixed thermal, fixed magnetic | FDPV4070W | CFDPV4070W |
| 80 | 4 | Fixed thermal, fixed magnetic | FDPV4080W | CFDPV4080W |
| 90 | 4 | Fixed thermal, fixed magnetic | FDPV4090W | CFDPV4090W |
| 100 | 4 | Fixed thermal, fixed magnetic | FDPV4100W | CFDPV4100W |

KD PV Frame



KD PV Frame, 350 A Maximum, 1000 Vdc, 5 kA ①

| Current Rating Amperes | Poles in Series | Trip Unit | 80% Rated | 100% Rated |
|------------------------|-----------------|-------------------------------|----------------|----------------|
| | | | Catalog Number | Catalog Number |
| 125 | 4 | Fixed thermal, fixed magnetic | KDPV4125W | CKDPV4125W |
| 150 | 4 | Fixed thermal, fixed magnetic | KDPV4150W | CKDPV4150W |
| 175 | 4 | Fixed thermal, fixed magnetic | KDPV4175W | CKDPV4175W |
| 200 | 4 | Fixed thermal, fixed magnetic | KDPV4200W | CKDPV4200W |
| 225 | 4 | Fixed thermal, fixed magnetic | KDPV4225W | CKDPV4225W |
| 250 | 4 | Fixed thermal, fixed magnetic | KDPV4250W | CKDPV4250W |
| 300 | 4 | Fixed thermal, fixed magnetic | KDPV4300W | CKDPV4300W |
| 350 | 4 | Fixed thermal, fixed magnetic | KDPV4350W | CKDPV4350W |

LG PV Frame



LG PV Frame, 400 A Maximum, 1000 Vdc, 5 kA ①

| Current Rating Amperes | Poles in Series | Trip Unit | 80% Rated | 100% Rated |
|------------------------|-----------------|-------------------------------|----------------|----------------|
| | | | Catalog Number | Catalog Number |
| 250 | 4 | Fixed thermal, fixed magnetic | LGPV4250W | CLGPV4250W |
| 300 | 4 | Fixed thermal, fixed magnetic | LGPV4300W | CLGPV4300W |
| 350 | 4 | Fixed thermal, fixed magnetic | LGPV4350W | CLGPV4350W |
| 400 | 4 | Fixed thermal, fixed magnetic | LGPV4400W | CLGPV4400W |

MDL PV Frame



MDL PV Frame, 600 A Maximum, 1000 Vdc, 7.5 kA ①

| Current Rating Amperes | Poles in Series | Trip Unit | 80% Rated | 100% Rated |
|------------------------|-----------------|-------------------------------|----------------|----------------|
| | | | Catalog Number | Catalog Number |
| 300 | 3 | Fixed thermal, fixed magnetic | MDLPV3300W | CMDLPV3300W |
| 350 | 3 | Fixed thermal, fixed magnetic | MDLPV3350W | CMDLPV3350W |
| 400 | 3 | Fixed thermal, fixed magnetic | MDLPV3400W | CMDLPV3400W |
| 450 | 3 | Fixed thermal, fixed magnetic | MDLPV3450W | CMDLPV3450W |
| 500 | 3 | Fixed thermal, fixed magnetic | MDLPV3500W | CMDLPV3500W |
| 600 | 3 | Fixed thermal, fixed magnetic | MDLPV3600W | CMDLPV3600W |

Note

① Terminals not included with frames.

Accessories

Available Accessories

- Auxiliary switch
- Shunt trip
- Electrical operator
- Alarm lockout
- Undervoltage release
- Terminals
- Lock-off devices
- End cap kits
- Rotary handle mechanisms
- Flexible shaft handle mechanisms

Optional modifications

- Freeze testing

For complete internal and external accessories, see the accessory section of each frame.

External Accessories

| Description | Frame | Catalog Number |
|---|-----------------|----------------------------|
| Imperial Base Mounting Hardware | | |
| 0.164-32 x 1.5-inch pan-head steel screws and lockwashers | FD PV | BMH1 |
| 0.250-20 x 1.5 inch pan-head steel screws and lockwashers | KD PV KD PVS | BMH3 |
| — | JG PVS | N/A |
| — | LG PV | N/A |
| 0.3125-18 x 1.25 inch filister-head steel screws and lockwashers and flat washers | MDL PV | BMH5 |
| Metric Base Mounting Hardware | | |
| M4-0.7 x 38 mm pan-head steel screws and lockwashers | FD PV | BMH1M |
| M6-0.7 x 38 mm pan-head steel screws and lockwashers | KD PV KD PVS | BMH3M |
| — | JG PVS | Included ^① |
| — | LG PV | Included ^① |
| M8-1.25 x 35 mm pan-head steel screws and lockwashers | MDL PV | BMH5M |
| Interphase Barriers | | |
| | FD PV | IPB1 |
| | KD PV KD PVS | IPB3 |
| | JG PVS | FJIPBK ^② |
| | LG PV | IPB3 |
| | MDL PV | IPB4 |
| Non-Padlockable Handle Block | | |
| | FD PV | LKD1 |
| | KD PV KD PVS | LKD3 |
| | JG PVS | N/A |
| | LG PV | N/A |
| | MDL PV | LKD4 |
| Padlockable Handle Lock Hasp ^③ | | |
| | FD PV | PLK1 |
| | KD PV KD PVS | PLK3 |
| | JG PVS | FJPHL |
| | LG PV | LPHL |
| | MDL PV | HLK4 |

Factory Modifications—Freeze Testing to –40°C ^④

| Frame | Modification Code |
|--|-------------------|
| FD PV | F01 |
| JG PVS | F01 |
| KD PV and KD PVS | F01 |
| LG PV | F01 |
| MDL PV | F01 |
| Special calibration—contact Eaton for availability | |

Molded Case Switches

Eaton's DC molded case switches (MCS) are used in applications requiring a compact, high capacity disconnect. PVGuard 1000 Vdc

MCS are UL 489B listed and have automatic instantaneous current protection. These devices do not provide overload protection.

Molded Case Switches

| Maximum Continuous Ampere Rating at 50 °C | Interrupting Capacity Vdc | Poles in Series | Catalog Number |
|---|---------------------------|-----------------|---------------------|
| 1000 Vdc Maximum | | | |
| 100 | 3000 | 4 | FDPV4100KW |
| 200 | 5000 | 4 | KDPV4200KW |
| 250 | 5000 | 4 | KDPV4250KW |
| 350 | 5000 | 4 | KDPV4350KW |
| 400 | 5000 | 4 | LGPV4400KSW |
| 600 | 7500 | 3 | MDLPV3600KSW |

Notes

- ① Base mounting hardware is included with a circuit breaker or a molded case switch (included with breaker). If required separately, order 66A2546G02.
- ② Individually priced.
- ③ Locks in ON and OFF position.
- ④ Add 20% to list price.

Internal Accessories—Right Pole Mounting

| | FD PV ① | | JG PVS | | KD PV KD PVS | | LG PV | | MDL PV | |
|----------------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|
| | Factory Modification Code | Field Kit Catalog Number | Factory Modification Code | Field Kit Catalog Number | Factory Modification Code | Field Kit Catalog Number | Factory Modification Code | Field Kit Catalog Number | Factory Modification Code | Field Kit Catalog Number |
| Auxiliary Switch | | | | | | | | | | |
| 1A-1B | A06 | A1X1PK | A1 | AUX1A1BPK | A06 | A1X3PK | A1 | AUX1A1BPK | A06 | A1X4PK |
| 2A-2B | A13 | A2X1RPK | A2 | AUX2A2BPK | A13 | A2X3PK | A2 | AUX2A2BPK | A13 | A2X4PK |
| Alarm Switch | | | | | | | | | | |
| 1 make/1 break | B06 | A1L1RPK | B1 | ALM1M1BJPKL | B06 | A1L3RPK | B1 | ALM1M1BJPK | B06 | A1L4RPK |
| Auxiliary and Alarm Combo | | | | | | | | | | |
| 1A-1B, 1 make/1 break | C05 | AAL1RPK | B2w | AUXALRMJPK | C05 | AAL3RPK | B2 | AUXALRMJPK | C05 | AA114RPK |

Internal Accessories—Left Pole Mounting

| | FD PV ① | | JG PVS | | KD PV KD PVS | | LG PV | | MDL PV | |
|-----------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|
| | Factory Modification Code | Field Kit Catalog Number | Factory Modification Code | Field Kit Catalog Number | Factory Modification Code | Field Kit Catalog Number | Factory Modification Code | Field Kit Catalog Number | Factory Modification Code | Field Kit Catalog Number |
| Shunt Trip | | | | | | | | | | |
| 12 Vdc | S02 | SNT1LP03K | S4 | SNT012CPK | S42 | SNT3P04K | S4 | SNT012CPK | S02 | SNT4LP03K |
| 24 Vdc | S02 | SNT1LP03K | S6 | SNT024CPK | S42 | SNT3P04K | S6 | SNT024CPK | S02 | SNT4LP03K |
| 48 Vdc | S06 | SNT1LP08K | S7 | SNT4860CPK | S50 | SNT3P06K | S7 | SNT4860CPK | S86 | SNT4LP23K |
| 60 Vdc | S06 | SNT1LP08K | S7 | SNT4860CPK | S50 | SNT3P06K | S7 | SNT4860CPK | S86 | SNT4LP23K |
| 125 Vdc | S10 | SNT1LP12K | S5 | SNT125DPK | S10 | SNT3P11K | S2 | SNT120CPK | S42 | SNT4LP26K |
| 250 Vdc | S14 | SNT1LP18K | — | — | S14 | SNT3P14K | — | — | S14 | SNT4LP14K |
| 120 Vac | S10 | SNT1LP12K | S2 | SNT120CPK | S10 | SNT3P11K | S2 | SNT120CPK | S10 | SNT4LP11K |
| Undervoltage Release | | | | | | | | | | |
| 12 Vdc | U30 | UVH1LP20K | — | — | T02 | UVH3LP20K | U1 | UVR012DPK | T02 | UVH4LP20K |
| 24 Vdc | U34 | UVH1LP21K | U2 | UVR024CPK | T02 | UVH3LP21K | U2 | UVR024DPK | T06 | UVH4LP21K |
| 48 Vdc | U38 | UVH1LP22K | U4 | UVR048DPK | T10 | UVH3LP22K | U4 | UVR048DPK | T10 | UVH4LP22K |
| 60 Vdc | — | — | U4 | UVR048DPK | — | — | — | — | — | — |
| 125 Vdc | U42 | UVH1LP26K | U6 | UVR125DPK | T14 | UVH3LP26K | U6 | UVR125DPK | T14 | UVH4LP26K |
| 250 Vdc | U46 | UVH1LP28K | U8 | UVR250DPK | T18 | UVH3LP28K | U8 | UVR250DPK | T18 | UVH4LP28K |
| 120 Vac | U14 | UVH1LP08K | U5 | UVR120APK | U18 | UVH3LP08K | U5 | UVR120APK | U18 | UVH4LP08K |

Notes

① Underwriters Laboratories requires that internal accessories for the FD PV be installed at the factory. Internal accessories are UL listed for factory installation under E7819. Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

One accessory can be mounted per pole, per breaker.

PVGuard Solar Circuit Breaker Terminal Offering

| Breaker Frame | Maximum Breaker Ampacity | Terminal Body Material | Wire Type | AWG Wire Range/ Number of Conductors | Metric Wire Range mm ² | Number of Terminals Included | Standard Terminal Catalog Number | Comments |
|-----------------|--------------------------|------------------------|-----------|---|-----------------------------------|------------------------------|----------------------------------|--|
| FD PV | 50 | Steel | Cu/Al | 14–4 (1) | 2.5–25 (1) | 3 | 3TA50FB | |
| | 100 | Aluminum | Cu/Al | 6–300 kcmil (1) | 16–150 (1) | 3 | 3TA225FDK3 | Includes 3P terminal cover |
| | 100 | Aluminum | Cu/Al | 6–300 kcmil (1) | 16–150 (1) | 3 | 3TA225FDK | Includes 3P terminal cover Replacement use only |
| | 100 | Copper | Cu | 4–4/0 (1) | 25–95 (1) | 3 | 3T225FD | |
| JG PVS | 250 | Aluminum | Cu/Al | #8–350 kcmil (1) | — | — | TA250FJ | |
| | 250 | Aluminum | Cu/Al | (2) 2/0–(2) 4/0 | — | ① | 3TA251FJK1 | |
| | 250 | Aluminum | Cu/Al | (2) 2/0–(2) 4/0 | — | ② | 3TA251FJK2 | |
| | 250 | Copper | Cu | #4–350 kcmil (1) | — | — | T250FJ | |
| KD PV KD PVS | 225 | Aluminum | Cu/Al | 3–350 kcmil (1) | 35–185 (1) | 1 | TA300K | |
| | 250 | Aluminum | Cu/Al | 250–500 kcmil (1) | 120–240 (1) | 1 | TA350K | |
| | 250 | Aluminum | Cu/Al | 3/0–250 kcmil (2) | 95–120 (1) | 4 | 4TA400K | Contains interphase barriers |
| | 250 | Aluminum | Cu/Al | 2/0–250 kcmil (2) or 2/0–500 kcmil (1) | 70–240 (2) | 4 | 4TA401K | |
| | 300 | Aluminum | Cu/Al | 3/0–250 kcmil (2) | 95–120 (2) | 4 | 4TA401K | Contains interphase barriers |
| | 350 | Aluminum | Cu/Al | 3/0–250 kcmil (2) | 95–120 (2) | 4 | 4TA401K | Contains interphase barriers |
| | 225 | Copper | Cu | 3–350 kcmil (1) | 35–185 (1) | 1 | T300K | |
| | 250 | Copper | Cu | 250–500 kcmil (1) | 120–240 (1) | 1 | T350K | |
| | 250 | Copper | Cu | 3/0–250 kcmil (2) | 95–120 (1) | 4 | 4T400K | Contains interphase barriers |
| | 300 | Copper | Cu | 3/0–250 kcmil (2) | 95–120 (2) | 4 | 4TA401K | Contains interphase barriers |
| LG PV | 400 | Aluminum | Cu/Al | 2–500 kcmil (2) | 35–240 (2) | 4 | 4TA632LK | Includes 4P terminal cover |
| | 250 | Copper | Cu | 2–500 kcmil (1) | 35–240 (1) | 1 | T350LK | |
| | 400 | Copper | Cu | 2–500 kcmil (2) | 35–240 (2) | 4 | 4T632LK | Includes 4P terminal cover |
| MDL PV | 300 | Aluminum | Cu/Al | 1–500 kcmil (2) | — | 1 | TA700MA1 | |
| | 600 | Aluminum | Cu/Al | 3/0–400 kcmil (3) | — | 1 | TA800MA2 | |

Endcap Kits

| Breaker Frame | Number of Poles | Thread Type | Thread Size | Catalog Number |
|---------------|-----------------|-------------|-------------|----------------|
| FD PV | 4 | Imperial | 10–32 | KPEK14 |
| | 4 | Metric | M–5 | KPEKM14 |
| JG PVS | 3 | Imperial | — | FJ3RTDK |
| | 3 | Metric | — | FJ3RTWK |
| KD PV | 4 | Imperial | 0.312–18 | KPEK34 |
| | 4 | Metric | M–8 | KPEKM34 |
| KD PVS | 3 | Imperial | — | KPEK3 |
| | 3 | Metric | — | KPEKM3 |
| LG PV | 4 | Imperial | — | N/A |
| | 4 | Metric | M-10 | L4RTWK |
| MDL PV | 3 | Imperial | — | — |
| | 3 | Metric | — | — |

Notes

① Three terminals with terminal shield as a kit.

② Three terminals with two interphase barriers as a kit.

Jumpers

Jumpers must be ordered separately. Priced individually.

2

FD PV Frame

| Description | Maximum Amperes | Catalog Number |
|-------------------------------|-----------------|----------------------|
| Single copper jumper | 60 | DC1F060 ^① |
| | 100 | DC1F100 ^① |
| | 125 | DC1F125 ^① |
| | 225 | DC1F225 ^① |
| Package of 2 aluminum jumpers | 100 | DC2FD100A |
| Package of 3 aluminum jumpers | 100 | DC3FD100A |

JG PVM, JG PVMD Frames

| Description | Maximum Amperes | Catalog Number |
|--------------------------------|-----------------|-------------------------|
| Single aluminum jumper | 250 | DC1JG250A ^① |
| Package of 2 aluminum jumpers | 250 | DC2JG250A ^① |
| Package of 20 aluminum jumpers | 250 | DC20JG250A ^① |

KD PV, KD PVM, KD PVMD Frames

| Description | Maximum Amperes | Catalog Number |
|-------------------------------|-----------------|------------------------|
| Single copper jumper | 400 | DC1K400 ^① |
| Package of 2 aluminum jumpers | 400 | DC2KD400A ^① |
| Package of 3 aluminum jumpers | 400 | DC3KD400A ^① |

LG PV Frame

| Description | Maximum Amperes | Catalog Number |
|--------------------------------|-----------------|----------------|
| Package of 2 aluminum jumpers | 400 | DC2LG400A |
| Package of 3 aluminum jumpers | 400 | DC3LG400A |
| Package of 30 aluminum jumpers | 400 | DC30LG400A |

Note

- ^① Not UL Listed; Non UL listed jumpers used in a UL application may need to be qualified by the OEM in their assembly. This may take place with UL or another certified testing agency.

Technical Data and Specifications

- Thermal-magnetic circuit breakers
- Designed to meet UL 489B for solar photovoltaic circuit protection
- 100% rated of the continuous current rating
- 50 °C calibrated
- Can be applied in grounded, ungrounded or bi-polar systems
- Ability to open on signal from DC arc or ground fault detector
- Two PVGard lineups
 - UL File EE350638, Category Control Number DIUR
 - 600 Vdc per-pole breaker and switch
 - Each pole rated 600 Vdc
 - 1000 Vdc poles-in-series breaker and switch
 - Requires poles in series connection

**Quick Reference PVGard Solar Circuit Breakers
600 Vdc Per-Pole****PVGard 600 Vdc Current Ratings by Frame
UL 489B Interrupting Capacity (kA) 600 Vdc Per-Pole**

| Circuit Breaker Type | Minimum Amperes | Maximum Amperes | kA Rating |
|----------------------|-----------------|-----------------|-----------|
| JG PVS | 90 | 250 | 1.2 |
| KD PVS | 100 | 400 | 3 |

**Quick Reference PVGard Solar Circuit Breakers
1000 Vdc Poles-in-Series****PVGard 1000 Vdc Current Ratings by Frame
UL 489B Interrupting Capacity (kA) 1000 Vdc**

| Circuit Breaker Type | Minimum Amperes | Maximum Amperes | kA Rating | Poles in Series |
|----------------------|-----------------|-----------------|-----------|-----------------|
| FD PV | 30 | 100 | 3 | 4 |
| KD PV | 125 | 350 | 5 | 4 |
| LG PV | 250 | 400 | 5 | 4 |
| MDL PV | 300 | 600 | 7.5 | 3 |

2.6

Molded Case Circuit Breakers

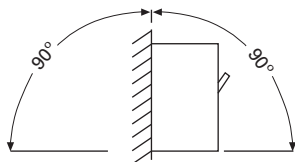
Specialty Breakers

2

PVGard 600 Vdc Per-Pole Solar PV Circuit Breakers (100% and 80% Rated Frames)

| | JG PVS | KD PVS |
|---|------------------------|------------------------|
| Number of 600 Vdc circuits | 3 | 3 |
| Maximum voltage rating | 600 Vdc | 600 Vdc |
| Ampere range | 90–250 A | 100–400 A |
| Interrupting capacity at 600 Vdc | 1.2 kA | 3 kA |
| Time constant | 1 ms | 1 ms |
| Trip unit type | Thermal-magnetic | Thermal-magnetic |
| Rated impulse withstand voltage | | |
| Main conducting paths | 8 kV | 8 kV |
| Auxiliary circuits | 4 kV | 4 kV |
| Endurance | | |
| Mechanical operations | 10,000 | 6000 |
| Electrical operations | 400 | 400 |
| Maximum switching frequency | 240 per hour | 240 per hour |
| Third-party certification | UL 489B | UL 489B |
| Environment | | |
| Design ambient temperature | 50 °C | 50 °C |
| Maximum current at 60 °C, as % of rated current | 93% | 93% |
| Maximum current at 70 °C, as % of rated current | 85% | 85% |
| Operating temperature range | –20 °C to +50 °C | –20 °C to +50 °C |
| Storage temperature range | –20 °C to +70 °C | –20 °C to +70 °C |
| Suitable for freeze temperatures to –40 °C | Option | Option |
| Relative humidity | 0 to 95% noncondensing | 0 to 95% noncondensing |
| Suitable for reverse-feed applications | Yes | Yes |

Mounting—permissible mounting position



Connection diagrams

Terminations

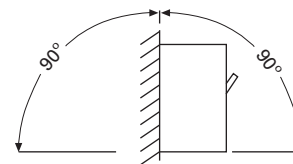
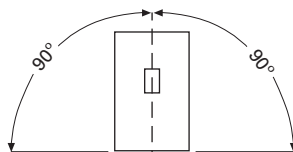
| | | |
|---------------------------|--|---|
| Al/Cu wire | TA250FJ: (1) #8–350 kcmil | TA300K: (1) #3–350 kcmil |
| | 3TA251FJK1: (2) 2/0–(2) 4/0 ^② | TA350K: (1) 250–500 kcmil |
| | 3TA251FJK2: (2) 2/0–(2) 4/0 ^③ | TA403K: (2) 1/0–400 kcmil |
| Cu wire | T250FJ: (1) #4–350 kcmil | 3TA402K: (1) 500–750 kcmil ^④ |
| | T300K: (1) #3–350 kcmil | |
| Dimensions in inches (mm) | | |
| Height | 7.00 (177.8) | 10.13 (257.3) |
| Width | 4.13 (104.9) | 5.50 (139.7) |
| Depth | 3.57 (90.7) | 4.10 (104.1) |
| Weight in lbs | 6.6 | 11.42 |

Notes

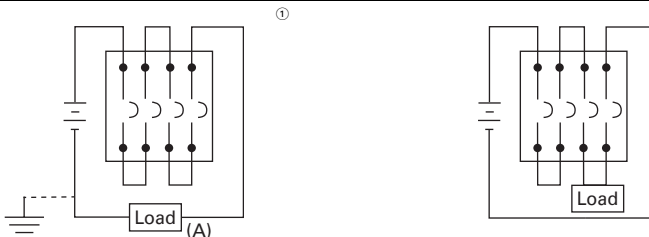
- ① Three terminals with terminal shield as a kit.
- ② Three terminals with two interphase barriers as a kit.
- ③ Not UL 489B recognized size for maximum of 400 A breaker.

PVGard 1000 Vdc Solar PV Circuit Breakers (100% and 80% Rated Frames)

| | FD PV | KD PV | LG PV | MDL PV |
|---|------------------------|------------------------|------------------------|------------------------|
| Number of poles | 4 | 4 | 4 | 3 |
| Maximum voltage rating | 1000 Vdc | 1000 Vdc | 1000 Vdc | 1000 Vdc |
| Maximum current rating | 100 A | 350 A | 400 A | 600 A |
| Interrupting capacity at 1000 Vdc | 3 kA | 5 kA | 5 kA | 7.5 kA |
| Time constant | 1 ms | 1 ms | 1 ms | 1 ms |
| Ampere range | 15–100 A | 125–350 A | 250–400 A | 300–600 A |
| Trip unit type | Thermal-magnetic | Thermal-magnetic | Thermal-magnetic | Thermal-magnetic |
| Rated impulse withstand voltage | | | | |
| Main conducting paths | 8 kV | 8 kV | 8 kV | 8 kV |
| Auxiliary circuits | 4 kV | 4 kV | 4 kV | 4 kV |
| Endurance | | | | |
| Mechanical operations | 10,000 | 10,000 | 8000 | 8000 |
| Electrical operations | 1000 | 400 | 400 | 400 |
| Maximum switching frequency | 300 per hour | 240 per hour | 240 per hour | 240 per hour |
| Third-party certification | UL 489B | UL 489B | UL 489B | UL 489B |
| Environment | | | | |
| Design ambient temperature | 50 °C | 50 °C | 50 °C | 50 °C |
| Maximum current at 60 °C, as % of rated current | 91% | 91% | 93% | 93% |
| Maximum current at 70 °C, as % of rated current | 88% | 88% | 88% | 88% |
| Operating temperature range | –20 °C to +50 °C | –20 °C to +50 °C | –20 °C to +50 °C | –20 °C to +50 °C |
| Storage temperature range | –20 °C to +70 °C | –20 °C to +70 °C | –20 °C to +70 °C | –20 °C to +70 °C |
| Suitable for freeze temperatures to –40 °C | Option | Option | Option | Option |
| Relative humidity | 0 to 95% noncondensing | 0 to 95% noncondensing | 0 to 95% noncondensing | 0 to 95% noncondensing |
| Suitable for reverse-feed applications | Yes | Yes | Yes | Yes |
| Mounting—permissible mounting position | | | | |



Connection diagrams



Terminations

| | | | | |
|---------------------------|--------------|-------------------|------------------|-------------------|
| Al/Cu wire | #6–300 kcmil | (2) 3/0–250 kcmil | (2) #2–500 kcmil | (3) 3/0–400 kcmil |
| Cu wire | #4–4/0 | (2) 3/0–250 kcmil | (2) #2–500 kcmil | (3) 3/0–300 kcmil |
| Dimensions in inches (mm) | | | | |
| Height | 6.00 (152.4) | 10.13 (257.3) | 10.13 (257.3) | 16.00 (406.4) |
| Width | 5.50 (139.7) | 7.22 (183.4) | 7.22 (183.4) | 8.25 (209.5) |
| Depth | 3.38 (85.9) | 4.09 (103.9) | 4.09 (103.9) | 4.06 (103.1) |
| Weight in lbs | 6 | 20 | 20 | 29 |

Notes

- ① Suitable for use on ungrounded systems, or grounded systems that have one end of load (A) connected to grounded terminal, opposite poles in series connection.
- ② Suitable for use on ungrounded systems only.

Dimensions

Approximate Dimensions in Inches (mm)

2

PVGard Solar Circuit Breakers—600 Vdc Per-Pole

| Frame | Number of Circuits in a Frame | Width | Height | Depth |
|--------|-------------------------------|--------------|---------------|--------------|
| JG PVS | 3 | 4.13 (104.9) | 7.00 (177.8) | 3.44 (87.4) |
| KD PVS | 3 | 5.49 (139.4) | 10.13 (257.2) | 4.31 (109.6) |

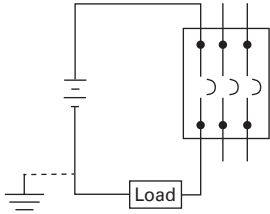
PVGard Solar Circuit Breakers—1000 Vdc Poles-in-Series

| Frame | Number of Poles | Width | Height | Depth |
|--------|-----------------|--------------|---------------|--------------|
| FD PV | 4 | 5.50 (139.7) | 6.00 (152.4) | 3.38 (86.0) |
| KD PV | 4 | 7.22 (183.4) | 10.13 (257.3) | 4.09 (103.9) |
| LG PV | 4 | 7.22 (183.4) | 10.13 (257.3) | 4.09 (103.9) |
| MDL PV | 3 | 8.25 (209.6) | 16.00 (406.4) | 4.06 (103.1) |

Wiring Diagrams

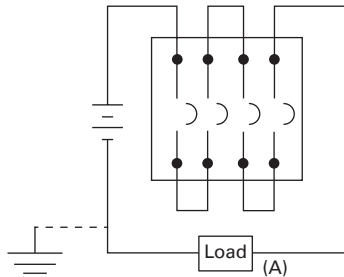
Series Connection Diagrams for DC Application ①②

JF PVS, KD PVS—600 Vdc Per-Pole

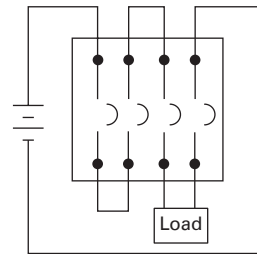


Suitable for grounded or ungrounded systems.
Suitable for quantity (3) 600 Vdc circuits.

FD PV, KD PV, LG PV—1000 Vdc Maximum—Four Poles-in-Series

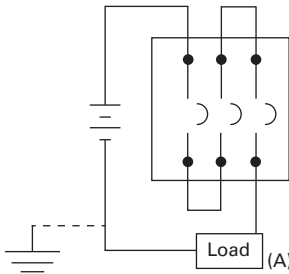


Suitable for use on ungrounded systems, or grounded systems that have one end of load (A) connected to grounded terminal, opposite poles in series connection.

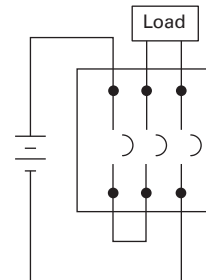


Suitable for use on ungrounded systems only.

MDL PV—1000 Vdc Maximum—Three Poles in Series



Suitable for use on ungrounded systems, or grounded systems that have one end of load (A) connected to grounded terminal, opposite poles in series connection.



Suitable for use on ungrounded systems only.

Notes

- ① Poles in series connection is customer supplied. Use rated cable per NEC.
- ② For grounded systems, all poles in series must be connected on non-grounded terminal, with load connected to grounded terminal.

E² Mining Service Breakers

2



E² Mining Service Breakers

Product Overview

State-of-the-art E² mining service breakers incorporate the rigid specifications and testing procedures developed by a focus group led by engineers from several large coal companies and Eaton design engineers. Additionally, the performance of these breakers was proven and verified during hundreds of hours of field testing in harsh mine environments.

E² mining breakers are available in 600 Vac, I000Y/577 Vac and 1200 Vac. Interchangeable trip units can be used on either 600 or 1000 Vac frames.

The E² mining breaker family is designed especially for trailing cable application per MSHA 30 CFR 75. Field interchangeable electronic rms sensing trip units are available from 150 to 2000 amperes with instantaneous pickup settings conforming to the code of Federal Regulations 30 CFR 75.601-2. Electromechanical trip units are also available with a wide range of magnetic pickup ranges.

E² electronic trip units are the first to provide the mining industry with true rms sensing, made possible by the custom ASIC microprocessor in each electronic trip unit.

E² breakers are designed to be physically and electrically interchangeable with Classic Mining Service Breakers and supersede Series C[®] Mining Service Breakers. The table to the right outlines direct replacements.

Contents

Description

| | <i>Page</i> |
|---|------------------|
| Engine Generator Circuit Breakers | V4-T2-343 |
| Direct Current Circuit Breakers | V4-T2-349 |
| PVGard Solar Circuit Breakers—600 Vdc Per-Pole and 1000 Vdc Poles-in-Series | V4-T2-363 |
| E ² Mining Service Breakers | |
| Catalog Number Selection | V4-T2-378 |
| Product Selection | V4-T2-382 |
| Accessories | V4-T2-393 |
| Dimensions | V4-T2-396 |
| Classic Mining Breakers | V4-T2-402 |
| Add-On Ground Fault Protection—Type GFR | V4-T2-416 |

600 Vac Mining Breaker Replacement Chart

| Classic | Series C | E ² |
|---------|------------------|------------------|
| FBM | FDBM | E ² F |
| HFBM | FDM | E ² F |
| | HFDM (mag. only) | E ² F |
| — | JDM | E ² J |
| KAM | KDM | E ² K |
| KAMH | KDM | E ² K |
| LAM | LDM | E ² L |
| LAMH | LDM | E ² L |
| LCM | LDM | E ² L |
| LCMH | LDM | E ² L |
| MAM | — | E ² M |
| MAMH | — | E ² M |
| MCM | — | E ² M |
| MCMH | — | E ² M |
| NBM | — | E ² N |
| NBMH | — | E ² N |
| NCM | — | E ² N |
| NCMH | — | E ² N |

1000 Vac Mining Breaker Replacement Chart

| Classic | Series C | E ² M |
|---------|----------|---------------------|
| HFM | — | E ² FM |
| — | JDCM | E ² JM |
| HKAM | KDCM | E ² KM |
| HLAM | LDCM | E ² LM |
| HLCM | LDCM | E ² LM |
| HMAM | — | E ² MM |
| HMCM | — | E ² MM |
| HNBM | — | E ² NM |
| HNBMH | — | E ² NM |
| HNCM | — | E ² NM |
| HLCLM | — | E ² NM |
| HPBM | — | E ² RM ① |

Additional Information on Mining Breakers

| Source | Description |
|----------------------|---|
| TD01217001E | E ² Mining Circuit Breaker Dimensional Data |
| BR01217001E | E ² Mining Circuit Breaker Brochure |
| TC01217001E | E ² Mining Circuit Breaker Time Current Curves |
| www.eaton.com/mining | Mining and Metals |

Note

① E²R/E²RM is a new frame physically different than the HPBM. See DS29-170MS.

Eaton's mining service circuit breakers provide short-circuit protection as specified in the code of Federal Regulations 30 CFR 75.601-2.

E² 225/400 A K frame and 400/600 A L frame electronic trip units feature specifically designed instantaneous pickup settings to conform exactly with the code of Federal Regulations 30 CFR 75.601-2. Electromechanical trip units are also available with a wide range of magnetic pickup ranges.

The tables below list the conductor size maximum allowable circuit breaker instantaneous setting and the E² breaker that meets that setting.

Interrupting Capacity Rating

| Circuit Breaker Type | Interrupting Capacity (Symmetrical kA) | | | | | Vdc ^① |
|--------------------------------|--|-----|-----|-----------|------|------------------|
| | Vac (50/60 Hz) 240 | 480 | 600 | 1000Y/577 | 1200 | |
| E ² F | 65 | 35 | 18 | — | — | 10 |
| E ² J | 65 | 35 | 18 | — | — | 10 |
| E ² K | 65 | 35 | 25 | — | — | 10 |
| E ² LME | 100 | 65 | 35 | — | — | 42 |
| E ² L | 65 | 35 | 25 | — | — | 22 |
| E ² M | 65 | 35 | 25 | — | — | 22 |
| E ² N | 65 | 50 | 25 | — | — | — |
| E ² R | 125 | 65 | 50 | — | — | — |
| E ² FM | 65 | 25 | 18 | 10 | — | 10 |
| E ² JM | 65 | 35 | 18 | 10 | — | 22 |
| E ² KM | 65 | 35 | 25 | 14 | — | 10 |
| E ² LMZ | 100 | 65 | 35 | 10 | — | 42 |
| E ² LM | — | 35 | 25 | 18 | — | 22 |
| E ² MM | — | 35 | 25 | 18 | — | 22 |
| E ² NM ^② | — | 50 | 25 | 25 | — | — |
| E ² RM | — | 65 | 50 | 25 | — | — |
| E ² KW | — | — | — | 10 | 10 | — |
| E ² LW | — | — | — | 10 | 10 | — |
| E ² MW | — | — | — | 12 | 12 | — |

Trailing Cable Setting Per 30 CFR 75

| Conductor Size | Maximum Breaker Instantaneous Setting | Maximum Ampere 75 °C Insulated Conductor | E ² /E ² M/E ² W Instantaneous Only | Setting |
|----------------|---------------------------------------|--|--|---------|
| 14 | 50 | 15 | E ² K 150 A | A |
| 12 | 75 | 20 | E ² K 150 A | B |
| 10 | 150 | 30 | E ² K 150 A | C |
| 8 | 200 | 50 | E ² K 225 A | A |
| 6 | 300 | 65 | E ² K 225 A | B |
| 4 | 500 | 85 | E ² K 225 A / E2L 400 A | C/A |
| 3 | 600 | 100 | E ² K 225 A / E2L 400 A | D/B |
| 2 | 800 | 115 | E ² K 225 A / E2L 400 A | E/C |
| 1 | 1000 | 130 | E ² K 225 A / E2L 400 A | F/D |
| 1/0 | 1250 | 150 | E ² K 225 A / E2L 400 A | G/E |
| 2/0 | 1500 | 175 | E ² K 225 A / E2L 400 A | H/F |
| 3/0 | 2000 | 200 | E ² L 400 A | G |
| 4/0 | 2500 | 230 | E ² L 400 A | H |
| 250 | 2500 | 255 | E ² L 400 A | H |
| 300 | 2500 | 285 | E ² L 400 A | H |
| 350 | 2500 | 310 | E ² L 400 A | H |
| 400 | 2500 | 335 | E ² L 400 A | H |
| 500 | 2500 | 380 | E ² L 400 A | H |

Auxiliary Switch Electrical Rating Data

| Maximum Voltage | Frequency | Maximum Current Amperes |
|-----------------|-----------|---------------------------|
| 600 | 50/60 Hz | 6.0 |
| 125 | DC | 0.5 (non-inductive load) |
| 250 | DC | 0.25 (non-inductive load) |

Alarm (Signal/Lockout Switch) Electrical Rating Data

| Maximum Voltage | Frequency | Maximum Current Amperes |
|-----------------|-----------|---------------------------|
| 600 | 50/60 Hz | 6.0 |
| 125 | DC | 0.5 (non-inductive load) |
| 250 | DC | 0.25 (non-inductive load) |

Notes

- ① Two poles in series. DC rating applies to breakers with thermal-magnetic trip unit. Breakers with electronic trip units are not DC rated.
- ② Series rated for application with Eaton's E²KM and E²LM breakers.

2.6

Molded Case Circuit Breakers

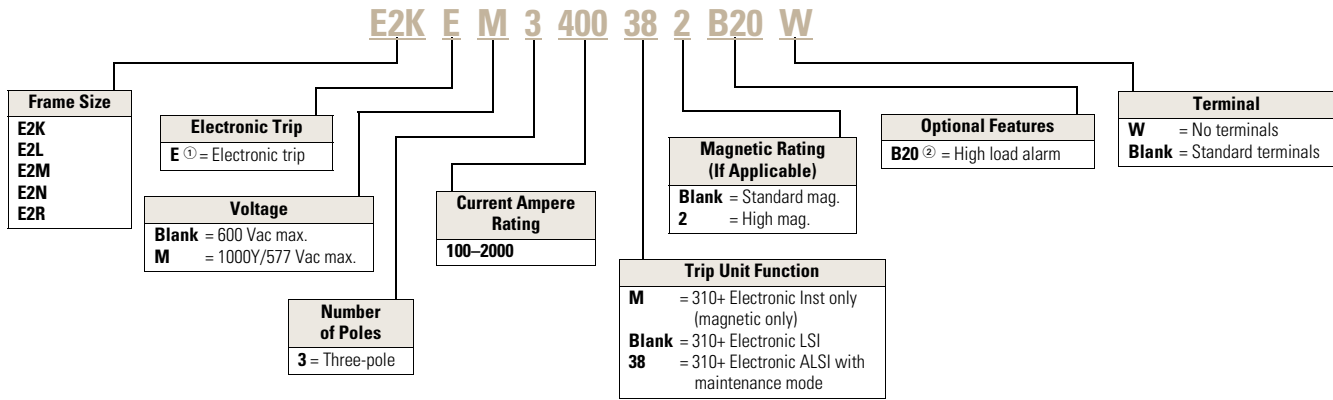
Specialty Breakers

Catalog Number Selection

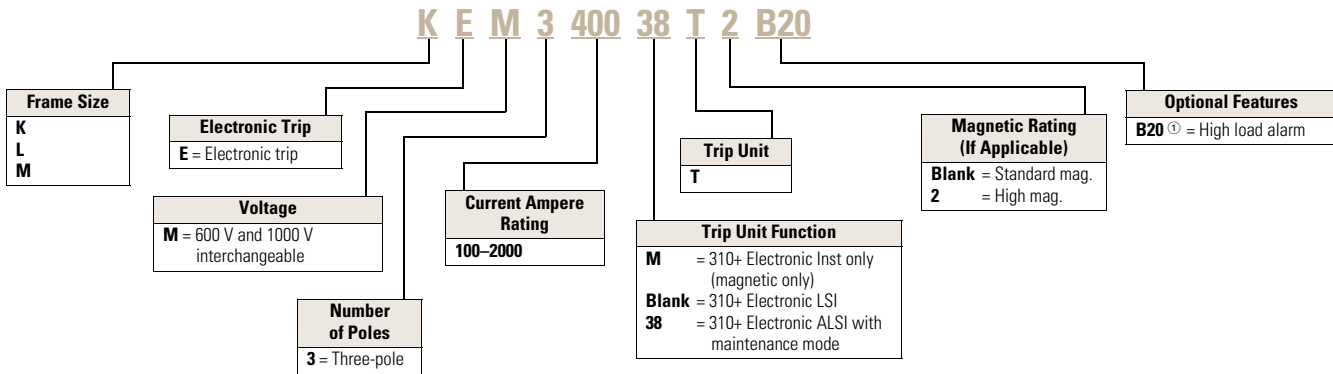
This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

2

E² Mining Service Breaker with 310+ Electronic Trip Unit Technology



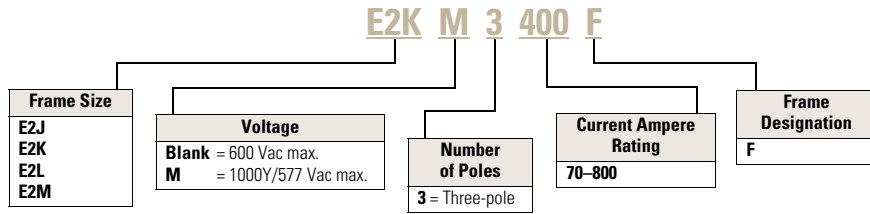
E² Mining Service 310+ Electronic Trip Unit



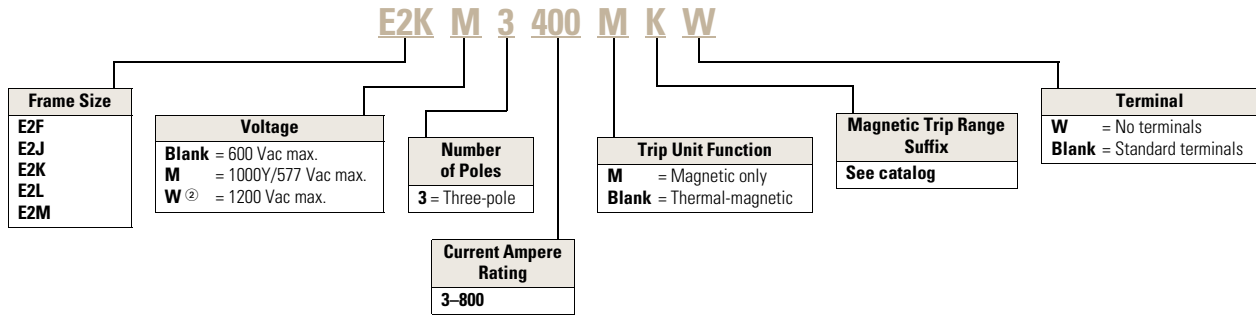
Notes

- ① All N- and R-Frame breakers equipped with 310+ Electronic Trip Unit. No "E" suffix required.
- ② Not available with instantaneous only.

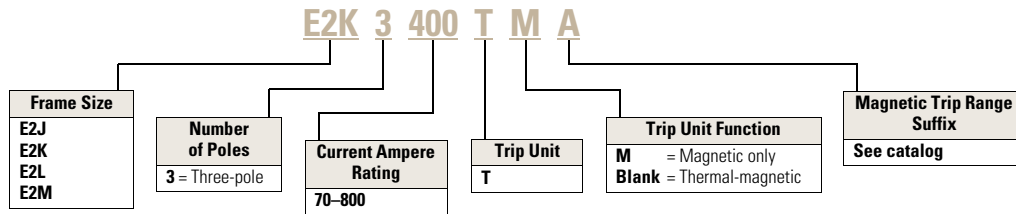
E² Mining Service Breaker Frame Only ①



E² Mining Service Breaker with Thermal-Magnetic Trip Unit ①



E² Mining Service Thermal-Magnetic Trip Unit ①



Notes

- ① Does not apply to E2LME/LMZ.
- ② Only available in K-, L- and M-Frames.

Undervoltage Release Mechanism Electrical Rating Data

2

| Breaker Type | Supply Voltage | Dropout Voltage | | Pickup Voltage Maximum | VA |
|---|----------------|-----------------|---------|---------------------------|------|
| | | Minimum | Maximum | | |
| E ² F/E ² FM | 110 Vac | 44.5 | 77 | 93.5 | 1.3 |
| | 120 Vac | | | | 1.5 |
| | 127 Vac | | | | 1.7 |
| | 110 Vdc | | | | 1.5 |
| | 120 Vdc | | | | 1.7 |
| | 125 Vdc | | | | 1.9 |
| E ² J/E ² JM | 110 Vac | 44.5 | 77 | 93.5 | 1.8 |
| | 120 Vac | | | | 2.1 |
| | 127 Vac | | | | 2.4 |
| | 110 Vdc | | | | 1.6 |
| | 120 Vdc | | | | 1.9 |
| | 125 Vdc | | | | 2.2 |
| E ² K/E ² KM/E ² KW | 110 Vac | 44.5 | 77 | 93.5 | 1.8 |
| | 120 Vac | | | | 2.1 |
| | 127 Vac | | | | 2.4 |
| | 110 Vdc | | | | 1.6 |
| | 120 Vdc | | | | 1.9 |
| | 125 Vdc | | | | 2.2 |
| E ² LME/E ² LMZ | 110 Vac | 44.5 | 77 | 93.5 | 0.96 |
| | 120 Vac | | | | 1.13 |
| | 127 Vac | | | | 1.25 |
| | 110 Vdc | 43.8 | 77 | 93.5 | 0.94 |
| | 120 Vdc | | | | 1.12 |
| | 125 Vdc | | | | 1.21 |
| E ² L/E ² LM/E ² LW/E ² M/ E ² MM/E ² MW | 110 Vac | 44.5 | 77 | 93.5 | 1.8 |
| | 120 Vac | | | | 2.1 |
| | 127 Vac | | | | 2.4 |
| | 110 Vdc | | | | 1.6 |
| | 120 Vdc | | | | 1.9 |
| | 125 Vdc | | | | 2.2 |
| E ² N/E ² NM | 110 Vac | 44.5 | 77 | 93.5 | 1.8 |
| | 120 Vac | | | | 2.1 |
| | 127 Vac | | | | 2.4 |
| | 110 Vdc | | | | 1.6 |
| | 120 Vdc | | | | 1.9 |
| | 125 Vdc | | | | 2.2 |
| E ² R/E ² RM | 110 Vac | 44.5 | 77 | 93.5 | 3.3 |
| | 120 Vac | | | | 3.6 |
| | 127 Vac | | | | 3.8 |
| | 110 Vdc | 43.8 | 77 | 93.5 | 3.3 |
| | 120 Vdc | | | | 3.6 |
| | 125 Vdc | | | | 3.8 |

Shunt Trip Electrical Rating Data

| Breaker Type | Supply Voltage | Operating Voltage | | |
|--|----------------|-------------------|------|-----|
| | | Minimum | VA | |
| E ² F/E ² FM | 48 Vac | 33.6 | 92 | |
| | 60 Vac | | 140 | |
| | 110 Vac | | 480 | |
| | 120 Vac | | 570 | |
| | 127 Vac | | 640 | |
| | 208 Vac | 146 | 180 | |
| | 220 Vac | | 200 | |
| | 230 Vac | | 240 | |
| | 48 Vdc | | 33.6 | 100 |
| | 60 Vdc | | | 160 |
| | 110 Vdc | 77 | | 55 |
| | 120 Vdc | | | 66 |
| | 125 Vdc | | | 71 |
| | 110 Vac | | 60.5 | 66 |
| | 120 Vac | 84 | | |
| 127 Vac | 102 | | | |
| E ² J/E ² JM | 110 Vdc | 77 | 112 | |
| | 120 Vdc | | 138 | |
| | 125 Vdc | | 150 | |
| | 110 Vac | | 60 | 100 |
| | 120 Vac | | | 120 |
| 127 Vac | 140 | | | |
| 110 Vdc | 77 | 110 | | |
| 120 Vdc | | 130 | | |
| 125 Vdc | | 140 | | |
| 24 Vac | | | 41 | |
| 48 Vac | 18 | 139 | | |
| 60 Vac | | 210 | | |
| E ² K/E ² KM/E ² KW | 110 Vac | 60 | 83 | |
| | 120 Vac | | 92 | |
| | 127 Vac | | 117 | |
| | 24 Vdc | | 120 | |
| | 48 Vdc | | 18 | 475 |
| | 60 Vdc | | | 720 |
| | 110 Vdc | | | 82 |
| | 120 Vdc | | 120 | |
| | 125 Vdc | | 121 | |
| E ² LME/E ² LMZ | 110 Vac | 60 | 83 | |
| | 120 Vac | | 92 | |
| | 127 Vac | | 117 | |
| | 24 Vdc | | 120 | |
| | 48 Vdc | | 18 | 475 |
| | 60 Vdc | | | 720 |
| | 110 Vdc | | | 82 |
| | 120 Vdc | | 120 | |
| | 125 Vdc | | 121 | |

| Breaker Type | Supply Voltage | Operating Voltage | | |
|---|------------------------------------|-------------------|---------|------|
| | | Minimum | VA | |
| E ² L/E ² LM/E ² LW/E ² M/ E ² MM/E ² MW | 48 Vac | 34 | 830 | |
| | 60 Vac | | 1280 | |
| | 110 Vac | | 100 | |
| | 120 Vac | | 120 | |
| | 127 Vac | | 140 | |
| | 48 Vdc | | 77 | 710 |
| | 60 Vdc | | | 1105 |
| | 110 Vdc | | | 110 |
| | 120 Vdc | | | 130 |
| | 125 Vdc | | | 140 |
| | E ² N/E ² NM | | 110 Vac | 60 |
| 120 Vac | | 120 | | |
| 127 Vac | | 140 | | |
| 110 Vdc | | 77 | 110 | |
| 120 Vdc | | | 130 | |
| E ² R/E ² RM | 125 Vdc | 60.5 | 140 | |
| | 110 Vac | | 77 | 330 |
| | 120 Vac | | | 390 |
| | 127 Vac | | | 430 |
| | 110 Vdc | | | 77 |
| 120 Vdc | 440 | | | |
| 125 Vdc | 480 | | | |

2.6

Molded Case Circuit Breakers

Specialty Breakers

Product Selection

3 A–150 A

E²F/E²FM

2

E²F/E²FM



Sealed Breakers with Non-Interchangeable Trip Unit—Include Line/Load Terminals, Non-Electronic Trip Units ^①

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole | 1000Y/ 577 Vac Maximum 250 Vdc 10 kA at 1000 Vac Three-Pole |
|--|------------------------|----------------------------------|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| Thermal-Magnetic | | | | |
| 15 | — | — | E2F3015 | — |
| 20 | — | — | E2F3020 | E2FM3020 |
| 25 | — | — | E2F3025 | E2FM3025 |
| 30 | — | — | E2F3030 | — |
| 35 | — | — | E2F3035 | — |
| 40 | — | — | E2F3040 | E2FM3040 |
| 45 | — | — | E2F3045 | — |
| 50 | — | — | E2F3050 | E2FM3050 |
| 60 | — | — | E2F3060 | E2FM3060 |
| 70 | — | — | E2F3070 | E2FM3070 |
| 80 | — | — | E2F3080 | E2FM3080 |
| 90 | — | — | E2F3090 | E2FM3090 |
| 100 | — | — | E2F3100 | E2FM3100 |
| 125 | — | — | E2F3125 | E2FM3125 |
| 150 | — | — | E2F3150 | E2FM3150 |
| Magnetic Only | | | | |
| 3 | 9–30 | — | E2F003AM | — |
| 7 | 21–70 | — | E2F007CM | — |
| 15 | 45–150 | — | E2F015EM | — |
| 30 | 90–300 | — | E2F030HM | — |
| | 50–150 | — | E2F030EM | — |
| 50 | 150–500 | — | E2F050KM | E2FM050KM |
| | 66–190 | — | E2F050YM | E2FM050YM |
| 70 | 210–700 | — | E2F070MM | E2FM070MM |
| 100 | 150–500 | — | E2F100KM | E2FM100KM |
| | 300–1000 | — | E2F100RM | E2FM100RM |
| 150 | 450–1500 | — | E2F150TM | E2FM150TM |
| | 750–2500 | — | E2F150UM | E2FM150UM |

Note

^① For two-pole application, use outer poles.

70 A–250 A

E²J/E²JME²J/E²JM

Circuit Breakers with Interchangeable Non-Electronic Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole ① | 1000Y/ 577 Vac Maximum 250 Vdc 10 kA at 1000 Vac Three-Pole ② |
|---|---------------------|-------------------------------|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| Thermal-Magnetic | | | | |
| 70 | 300–650 | E2J3070T | E2J3070W | E2JM3070W |
| 90 | 450–900 | E2J3090T | E2J3090W | E2JM3090W |
| 100 | 500–1000 | E2J3100T | E2J3100W | E2JM3100W |
| 125 | 625–1250 | E2J3125T | E2J3125W | E2JM3125W |
| 150 | 750–1500 | E2J3150T | E2J3150W | E2JM3150W |
| 175 | 875–1750 | E2J3175T | E2J3175W | E2JM3175W |
| 200 | 1000–2000 | E2J3200T | E2J3200W | E2JM3200W |
| 225 | 300–650 | E2J3225TA | E2J3225AW | E2JM3225AW |
| | 500–1000 | E2J3225TD | E2J3225DW | E2JM3225DW |
| | 1125–2250 | E2J3225T | E2J3225W | E2JM3225W |
| 250 | 1250–2500 | E2J3250T | E2J3250W | E2JM3250W |
| Magnetic Only | | | | |
| 250 | 300–650 | E2J3250TMA | E2J3250MAW | E2JM3250MAW |
| | 450–900 | E2J3250TMC | E2J3250MCW | E2JM250MCW |
| | 500–1000 | E2J3250TMD | E2J3250MDW | E2JM3250MDW |
| | 625–1250 | E2J3250TMF | E2J3250MFW | E2JM3250MFW |
| | 750–1500 | E2J3250TMG | E2J3250MGW | E2JM3250MGW |
| | 875–1750 | E2J3250TMJ | E2J3250MJW | E2JM3250MJW |
| | 1000–2000 | E2J3250TMK | E2J3250MKW | E2JM3250MKW |
| | 1125–2250 | E2J3250TML | E2J3250MLW | E2JM3250MLW |
| | 1250–2500 | E2J3250TM | E2J3250MW | E2JM3250MW |

Notes

- ① Frame only: **E2J3250F**.
 ② Frame only: **E2JM3250F**.

2.6

Molded Case Circuit Breakers

Specialty Breakers

100 A–400 A

E²K/E²KM/E²KW

2

E²K/E²KM



Circuit Breakers with Interchangeable Non-Electronic Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole ① | 1000V/ 577 Vac Maximum 250 Vdc 14 kA at 1000 Vac Three-Pole ② | 1200 Vac Maximum 10 kA at 1200 Vac Three-Pole ③④ |
|---|---------------------|-------------------------------|--|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| Thermal-Magnetic | | | | | |
| 100 | 500–1000 | E2K3100T | E2K3100W | E2KM3100W | E2KW3100W |
| 125 | 625–1250 | E2K3125T | E2K3125W | E2KM3125W | E2KW3125W |
| 150 | 750–1500 | E2K3150T | E2K3150W | E2KM3150W | E2KW3150W |
| 175 | 875–1750 | E2K3175T | E2K3175W | E2KM3175W | E2KW3175W |
| 200 | 1000–2000 | E2K3200T | E2K3200W | E2KM3200W | E2KW3200W |
| 225 | 300–650 | E2K3225TA | E2K3225AW | E2KM3225AW | E2KW3225AW |
| | 500–1000 | E2K3225TD | E2K3225DW | E2KM3225DW | E2KW3225DW |
| | 1125–2250 | E2K3225T | E2K3225W | E2KM3225W | E2KW3225W |
| 250 | 1250–2500 | E2K3250T | E2K3250W | E2KM3250W | E2KW3250W |
| 300 | 1500–3000 | E2K3300T | E2K3300W | E2KM3300W | E2KW3300W |
| 320 | 1600–3200 | — | — | — | E2KW3320W |
| 350 | 1750–3500 | E2K3350T | E2K3350W | E2KM3350W | E2KW3350W |
| 400 | 2000–4000 | E2K3400T | E2K3400W | E2KM3400W | — |
| Magnetic Only | | | | | |
| 400 | 300–650 | E2K3400TMA | E2K3400MAW | E2KM3250MAW | E2KW3250MAW |
| | 500–1000 | E2K3400TMD | E2K3400MDW | E2KM3400MDW | E2KW3350MDW |
| | 625–1250 | E2K3400TMF | E2K3400MFW | E2KM3400MFW | E2KW3350MFW |
| | 750–1500 | E2K3400TMG | E2K3400MGW | E2KM3400MGW | E2KW3350MGW |
| | 875–1750 | E2K3400TMJ | E2K3400MJW | E2KM3400MJW | E2KW3350MJW |
| | 1000–2000 | E2K3400TMK | E2K3400MKW | E2KM3400MKW | E2KW3350MKW |
| | 1125–2250 | E2K3400TML | E2K3400MLW | E2KM3400MLW | E2KW3350MLW |
| | 1250–2500 | E2K3400TMW | E2K3400MWW | E2KM3400MWW | E2KW3350MWW |
| | 1500–3000 | E2K3400TMN | E2K3400MNW | E2KM3400MNW | E2KW3350MNW |
| | 1600–3200 | — | — | — | E2KW3350MVW |
| | 1750–3500 | E2K3400TMR | E2K3400MRW | E2KM3400MRW | E2KW3350MRW |
| | 2000–4000 | E2K3400TM | E2K3400MW | E2KM3400MW | — |

Notes

- ① Frame only: **E2K3400F**.
- ② Frame only: **E2KM3400F**.
- ③ 1200 V breakers are sold as “complete breakers” only.
- ④ Maximum continuous ampere rating at 50 °C.

Please see TD01217001E for detailed dimensions.

100 A–400 A

E²KE/E²KEME²KM

Circuit Breakers with Interchangeable Electronic Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole ① | 1000Y/ 577 Vac Maximum 250 Vdc 14 kA at 1000 Vac Three-Pole ② |
|---|------------------------|----------------------------------|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| 310+ Electronic Instantaneous Only | | | | |
| 150 | 50–800 | KEM3150TM | E2KE3150MW | E2KEM3150MW |
| 225 | 200–1500 | KEM3225TM | E2KE3225MW | E2KEM3225MW |
| | 500–2500 | KEM3225TM2 | E2KE3225M2W | E2KEM3225M2W |
| 400 | 200–1500 | KEM3400TM | E2KE3400MW | E2KEM3400MW |
| | 500–2500 | KEM3400TM2 | E2KE3400M2W | E2KEM3400M2W |
| 310+ Electronic LSI ③ | | | | |
| 100 | 50–800 | KEM3100T | E2KE3100W | E2KEM3100W |
| 125 | 50–800 | KEM3125T | E2KE3125W | E2KEM3125W |
| 150 | 50–800 | KEM3150T | E2KE3150W | E2KEM3150W |
| 200 | 200–1500 | KEM3200T | E2KE3200W | E2KEM3200W |
| 225 | 200–1500 | KEM3225T | E2KE3225W | E2KEM3225 |
| | 500–2500 | KEM3225T2 | E2KE32252W | E2KEM32252W |
| 400 | 200–1500 | KEM3400T | E2KE3400W | E2KEM3400W |
| | 500–2500 | KEM3400T2 | E2KE34002W | E2KEM34002W |
| 310+ Electronic ALSI with Maintenance Mode ③ | | | | |
| 100 | 50–800 | KEM310038T | E2KE310038W | E2KEM310038W |
| 125 | 50–800 | KEM312538T | E2KE312538W | E2KEM312538W |
| 150 | 50–800 | KEM315038T | E2KE315038W | E2KEM315038W |
| 200 | 200–1500 | KEM320038T | E2KE320038W | E2KEM320038W |
| 225 | 200–1500 | KEM322538T | E2KE322538W | E2KEM322538 |
| | 500–2500 | KEM322538T2 | E2KE3225238W | E2KEM3225238W |
| 400 | 200–1500 | KEM340038T | E2KE340038W | E2KEM340038W |
| | 500–2500 | KEM340038T2 | E2KE3400238W | E2KEM3400238W |

Notes① Frame only: **E2K3400F**.② Frame only: **E2KM3400F**.③ For High Load Alarm option (B20): **E2KE340038B20W, KEM3400TB20**.

Please see TD01217001E for detailed dimensions.

2.6

Molded Case Circuit Breakers

Specialty Breakers

160 A–400 A

E²LME/E²LMZ (Series G)

2

Circuit Breakers

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole ① | 1000V/ 577 Vac Maximum 250 Vdc 14 kA at 1000 Vac Three-Pole ② |
|--|------------------------|----------------------------------|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| Magnetic Only | | | | |
| 400 | 3600–4400 | LT3400KM | E2LME3400KMW | E2LMZ3400KMW |
| Interchangeable Electronic Trip Unit | | | | |
| 160 | 320–1920 | LT340031M | E2LME340031W | E2LMZ340031W |
| 200 | 400–2400 | LT340031M | E2LME340031W | E2LMZ340031W |
| 225 | 450–2700 | LT340031M | E2LME340031W | E2LMZ340031W |
| 250 | 500–3000 | LT340031M | E2LME340031W | E2LMZ340031W |
| 300 | 600–3600 | LT340031M | E2LME340031W | E2LMZ340031W |
| 315 | 630–3780 | LT340031M | E2LME340031W | E2LMZ340031W |
| 350 | 700–4200 | LT340031M | E2LME340031W | E2LMZ340031W |
| 400 | 800–4800 | LT340031M | E2LME340031W | E2LMZ340031W |

Notes

① Frame only: **E2LME3400NN**.

② Frame only: **E2LMZ3400NN**.

Please see TD01217001E for detailed dimensions.

300 A–600 A

E²L/E²LM/E²LW

Circuit Breakers with Interchangeable Non-Electronic Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole ^① Complete Breaker Catalog Number | 1000Y/ 577 Vac Maximum 250 Vdc 18 kA at 1000 Vac Three-Pole ^② Complete Breaker Catalog Number | 1200 Vac Maximum 10 kA at 1200 Vac Three-Pole ^③ Complete Breaker Catalog Number |
|---|---------------------|-------------------------------|---|---|--|
| Thermal-Magnetic | | | | | |
| 300 | 1500–3000 | E2L3300T | E2L3300W | E2LM3300W | E2LW3300W |
| 320 | 2250–4500 | E2L3450T | E2L3450W | E2LM3450W | E2LW3320W |
| 350 | 1600–3200 | — | — | — | E2LW3350W |
| 400 | 1750–3500 | E2L3350T | E2L3350W | E2LM3350W | E2LW3400W |
| 450 | 2000–4000 | E2L3400T | E2L3400W | E2LM3400W | E2LW3450W |
| 500 | 2500–5000 | E2L3500T | E2L3500W | E2LM3500W | — |
| 600 | 3000–6000 | E2L3600T | E2L3600W | E2LM3600W | — |
| | 1125–2250 | E2L3600TL ^④ | — | — | — |
| Magnetic Only | | | | | |
| 450 | 1600–3200 | — | — | — | E2LW3450MVW |
| | 1125–2250 | — | — | — | E2LW3450MLW |
| | 1500–3000 | — | — | — | E2LW3450MNW |
| | 1750–3500 | — | — | — | E2LW3450MRW |
| | 2000–4000 | — | — | — | E2LW3450MXW |
| | 2250–4500 | — | — | — | E2LW3450MYW |
| 600 | 1125–2250 | E2L3600TML | E2L3600MLW | E2LM3600MLW | — |
| | 1500–3000 | E2L3600TMN | E2L3600MNW | E2LM3600MNW | — |
| | 1750–3500 | E2L3600TMR | E2L3600MRW | E2LM3600MRW | — |
| | 2000–4000 | E2L3600TMX | E2L3600MXW | E2LM3600MXW | — |
| | 2250–4500 | E2L3600TMY | E2L3600MYW | E2LM3600MYW | — |
| | 2500–5000 | E2L3600TMP | E2L3600MPW | E2LM3600MPW | — |
| | 3000–6000 | E2L3600TM | E2L3600MW | E2LM3600MW | — |

Notes

^① Frame only: **E2L3600F**.

^② Frame only: **E2LM3600F**.

^③ Maximum continuous ampere rating at 50 °C.

^④ 600 A thermal 1125–2250 T.A.

Please see TD01217001E for detailed dimensions.

2.6

Molded Case Circuit Breakers

Specialty Breakers

300 A–600 A

E²LE/E²LEM

2

E²LM



Circuit Breakers with Interchangeable Electronic Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole ① | 1000Y/ 577 Vac Maximum 250 Vdc 18 kA at 1000 Vac Three-Pole ② |
|---|---------------------|-------------------------------|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| 310+ Electronic Instantaneous Only | | | | |
| 400 | 500–2500 | LEM3400TM | E2LE3400MW | E2LEM3400MW |
| | 1000–4000 | LEM3400TM2 | E2LE3400M2W | E2LEM3400M2W |
| 600 | 500–2500 | LEM3600TM | E2LE3600MW | E2LEM3600MW |
| | 2500–5000 | LEM3600TM2 | E2LE3600M2W | E2LEM3600M2W |
| 310+ Electronic LSI ③ | | | | |
| 300 | 500–2500 | LEM3300T | E2LE3300W | E2LEM3300W |
| 350 | 500–2500 | LEM3350T | E2LE3350W | E2LEM3350W |
| 400 | 500–2500 | LEM3400T | E2LE3400W | E2LEM3400W |
| | 1000–4000 | LEM3400T2 | E2LE34002W | E2LEM34002W |
| 600 | 500–2500 | LEM3600T | E2LE3600W | E2LEM3600W |
| | 2500–5000 | LEM3600T2 | E2LE36002W | E2LEM36002W |
| 310+ Electronic ALSI with Maintenance Mode ③ | | | | |
| 300 | 500–2500 | LEM330038T | E2LE330038W | E2LEM330038W |
| 350 | 500–2500 | LEM335038T | E2LE335038W | E2LEM335038W |
| 400 | 500–2500 | LEM340038T | E2LE340038W | E2LEM340038W |
| | 1000–4000 | LEM340038T2 | E2LE3400238W | E2LEM3400238W |
| 600 | 500–2500 | LEM360038T | E2LE360038W | E2LEM360038W |
| | 2500–5000 | LEM360038T2 | E2LE3600238W | E2LEM3600238W |

Notes

- ① Frame only: **E2L3600F**.
- ② Frame only: **E2LM3600F**.
- ③ For High Load Alarm option (B20): **E2LE360038B20W, LEM3600TB20**.

Please see TD01217001E for detailed dimensions.

300 A— 800 A

E²M/E²MM/E²MW**E²M/E²MM/E²MW****Circuit Breakers with Interchangeable Non-Electronic Trip Units**

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole ^① Complete Breaker Catalog Number | 1000Y/ 577 Vac Maximum 250 Vdc 18 kA at 1000 Vac Three-Pole ^② Complete Breaker Catalog Number | 1200 Vac Maximum 12 kA at 1200 Vac Three-Pole ^{③④} Complete Breaker Catalog Number |
|---|---------------------|-------------------------------|---|---|---|
| Thermal-Magnetic | | | | | |
| 400 | 1000–2000 | — | — | — | E2MW3400W |
| 500 | 1250–2500 | — | — | — | E2MW3500W |
| 600 | 1500–3000 | E2M3600TN | E2M3600W | E2MM3600W | E2MW3600W |
| 630 | 1600–3200 | — | — | — | E2MW3630W |
| 800 | 2000–4000 | E2M3800TX | E2M3800W | E2MM3800W | E2MW3800W |
| Magnetic Only | | | | | |
| 800 | 1500–3000 | E2M3800TMN | E2M3800MNW | E2MM3800MNW | E2MW3800MNW |
| | 1600–3200 | — | — | — | E2MW3800MVW |
| | 2000–4000 | E2M3800TMX | E2M3800MXW | E2MM3800MXW | E2MW3800MXW |
| | 2500–5000 | E2M3800TMP | E2M3800MPW | E2MM3800MPW | — |
| | 3000–6000 | E2M3800TMW | E2M3800MWW | E2MM3800MWW | — |

Notes

- ① Frame only: **E2M3800F**.
- ② Frame only: **E2MM3800F**.
- ③ 1200 V breakers are sold as “complete breakers” only.
- ④ Maximum continuous ampere rating at 50 °C.

Please see TD01217001E for detailed dimensions.

2.6

Molded Case Circuit Breakers

Specialty Breakers

800 A

E²ME/E²MEM

2

E²MN



Circuit Breakers with Interchangeable Electronic Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole ① | 1000Y/ 577 Vac Maximum 250 Vdc 18 kA at 1000 Vac Three-Pole ② |
|---|------------------------|----------------------------------|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| 310+ Electronic Instantaneous Only | | | | |
| 800 | 500–2500 | MEM3800TM | E2ME3800MW | E2MEM3800MW |
| | 1000–4000 | MEM3800TM2 | E2ME3800M2W | E2MEM3800M2W |
| 310+ Electronic LSI ③ | | | | |
| 800 | 500–2500 | MEM3800T | E2ME3800W | E2MEM3800W |
| | 1000–4000 | MEM3800T2 | E2ME38002W | E2MEM38002W |
| 310+ Electronic ALSI with Maintenance Mode ③ | | | | |
| 800 | 500–2500 | MEM380038T | E2ME380038W | E2MEM380038W |
| | 1000–4000 | MEM380038T2 | E2ME3800382W | E2MEM3800382W |

Notes

- ① Frame only: **E2M3800F**.
- ② Frame only: **E2MM3800F**.
- ③ For High Load Alarm option (B20): **E2ME380038B20W, MEM3800TB20**.

Please see TD01217001E for detailed dimensions.

400 A–1200 A

*E²N/E²NM**E²NM*

Circuit Breakers with Interchangeable Electronic Trip Units

| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole | 1000Y/ 577 Vac Maximum 250 Vdc 18 kA at 1000 Vac Three-Pole |
|--|------------------------|----------------------------------|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| 310+ Electronic Instantaneous Only | | | | |
| 800 | 500–2500 | — | E2N3800MW | E2NM3800MW |
| 1200 | 1250–5000 | — | E2N312MW | E2NM312MW |
| 310+ Electronic LSI ^① | | | | |
| 400 | 500–2500 | — | E2N3400W | E2NM3400W |
| 500 | 500–2500 | — | E2N3500W | E2NM3500W |
| 600 | 500–2500 | — | E2N3600W | E2NM3600W |
| 700 | 500–2500 | — | E2N3700W | E2NM3700W |
| 800 | 500–2500 | — | E2N3800W | E2NM3800W |
| 900 | 1250–5000 | — | E2N3900W | E2NM3900W |
| 1000 | 1250–5000 | — | E2N310W | E2NM310W |
| 1200 | 1250–5000 | — | E2N312W | E2NM312W |
| 310+ Electronic ALSI with Maintenance Mode ^① | | | | |
| 400 | 500–2500 | — | E2N340038W | E2NM340038W |
| 500 | 500–2500 | — | E2N350038W | E2NM350038W |
| 600 | 500–2500 | — | E2N360038W | E2NM360038W |
| 700 | 500–2500 | — | E2N370038W | E2NM370038W |
| 800 | 500–2500 | — | E2N380038W | E2NM380038W |
| 900 | 1250–5000 | — | E2N390038W | E2NM390038W |
| 1000 | 1250–5000 | — | E2N31038W | E2NM31038W |
| 1200 | 1250–5000 | — | E2N31238W | E2NM31238W |

Notes

^① For High Load Alarm option (B20): **E2N380038B20W**.

Please see TD01217001E for detailed dimensions.

2.6

Molded Case Circuit Breakers

Specialty Breakers

1600 A–2000 A

E²R/E²RM

2

E²RM

Circuit Breakers with Electronic Trip Units



| Maximum Continuous Ampere Rating at 40 °C | Magnetic Trip Range | Trip Unit Only Catalog Number | 600 Vac Maximum 250 Vdc 35 kA at 480 Vac Three-Pole | 1000Y/ 577 Vac Maximum 250 Vdc 18 kA at 1000 Vac Three-Pole |
|--|----------------------|-------------------------------|--|--|
| | | | Complete Breaker Catalog Number | Complete Breaker Catalog Number |
| 310+ Electronic LSI ^① | | | | |
| 1600 | 2–8 x I _n | — | E2R316W | E2RM316W |
| 2000 | 2–8 x I _n | — | E2R320W | E2RM320W |
| 310+ Electronic ALSI with Maintenance Mode ^① | | | | |
| 1600 | 2–8 x I _n | — | E2R31638W | E2RM31638W |
| 2000 | 2–8 x I _n | — | E2R32038W | E2RM32038W |

Notes

^① For High Load Alarm option (B20): **E2R1638B20W**.

Please see TD01217001E for detailed dimensions.

Accessories

Line and Load Terminals

| Breaker Type | Maximum Breaker Amperes | Wire Type | AWG Wire Range (No. Conductors) | Catalog Number |
|--|-------------------------|-----------|---------------------------------|-----------------------------------|
| E ² F/E ² FM | 100 | Cu/Al | #14–1/0 (1) | 3T100FB (package of three) |
| | 150 | Cu | #4–4/0 (1) | 3T150FB (package of three) |
| E ² J/E ² JM | 250 | Cu | #4–350 (1) | T250KB |
| E ² K/E ² KM/E ² KW | 225 | Cu | #3–350 (1) | T300K |
| | 350 | Cu | 250–500 (1) | T350K |
| | 400 | Cu | 2/0–250 (2) | 3T400K (three-pole kit) |
| E ² LME/E ² LMZ | 400 | Cu/Al | 500–750 (1) | 3TA631LK |
| E ² L/E ² LM/E ² LW | 400 | Cu/Al | 4/0–600 (1) | 3TA401LDK (three-pole kit) |
| | 600 | Cu | 250–350 (2) | T602LD |
| E ² M/E ² MM/E ² MW | 600 | Cu | (2) 2/0–500 kcmil | T600MA1 |
| | 600 | Cu/Al | (2) 1–500 kcmil | TA700MA1 |
| | 800 std. | Cu/Al | (3) 3/0–400 kcmil | TA800MA2 |
| | 800 | Cu/Al | (2) 500–750 kcmil | TA801MA |
| | 800 | Cu | (3) 3/0–300 kcmil | T800MA1 |
| E ² N/E ² NM | 700 | Cu | 2/0–500 (2) | T700NB1 |
| | 1000 | Cu | 3/0–500 (3) | T1000NB1 |
| | 1200 | Cu | 3/0–400 (4) | T1200NB3 |
| | 1600 | Cu/Al | 500–1000 (4) | TA1600RD |
| | 2000 | Cu/Al | 2–600 (6) | TA2000RD |

End Cap Terminals—For Use with Ring Type Terminals

| Breaker Type | Maximum Breaker Amperes | Catalog Number | Metric Catalog Number | Imperial |
|--|-------------------------|----------------|-----------------------|----------|
| E ² F/E ² FM | 150 | KPEK1 | KPEMK1 | — |
| E ² J/E ² JM | 250 | KPEK2 | KPEMK2 | — |
| E ² K/E ² KM/E ² KW | 400 | KPEK3 | KPEMK3 | — |
| E ² LME/E ² LMZ | 400 | — | L3RTWK | — |
| E ² L/E ² LM/E ² LW | 600 | KPEK4 | KPEMK4 | — |

External Accessories

Padlockable Handle Lock Hasp

| Breaker Type | Catalog Number |
|--|----------------|
| E ² F/E ² FM | PLK1 |
| E ² J/E ² JM | PLK3 |
| E ² K/E ² KM/E ² KW | PLK3 |
| E ² LME/E ² LMZ | LPHL |
| E ² L/E ² LM/E ² LW | HLK4 |
| E ² M/E ² MM/E ² MW | HLK4 |
| E ² N/E ² NM | PLK5 |
| E ² R/E ² RM | HLK6 |

Internal Accessories

2

Undervoltage Release ①

| Breaker Type | UVR Type | Voltage Rating | Mounting Location | Catalog Number | Factory Modification Code |
|---|--------------------------------|----------------|-------------------|-------------------------------------|---------------------------|
| E ² F/E ² FM | Handle reset | 208–240 Vac | Left pole | UVH1LP11K (thermal/magnetic only) ② | U18 |
| | Handle reset | 110–127 Vdc | Left pole | UVH1LP26K (thermal/magnetic only) ② | U42 |
| E ² J/E ² JM | Handle reset | 110–127 Vac | Left pole | UVH2LP08K ② | U18 |
| | Handle reset | 208–240 Vac | Left pole | UVH2LP11K ② | U22 |
| | Handle reset | 110–125 Vdc | Left pole | UVH2LP26K ② | T14 |
| E ² K/E ² KM/E ² KW | 120 volt handle reset with LED | 120 Vac | Left pole | UVM3LP08K ②③ | U66 |
| | 120 volt handle reset with LED | 120 Vac | Left pole | UVM3LP08KT ②④ | U68 |
| | Handle reset | 110–127 Vac | Left pole | UVH3LP08K ② | U18 |
| | Handle reset | 208–240 Vac | Left pole | UVH3LP11K ② | U22 |
| | Handle reset | 110–125 Vdc | Left pole | UVH3LP26K ② | T14 |
| E ² LME/E ² LMZ | Handle reset | 110–127 Vac | Left pole | UVR120APK | U5 |
| | Handle reset | 110–125 Vdc | Left pole | UVR125DPK | U6 |
| E ² L/E ² LM/E ² LW/E ² M/E ² MM/ E ² MW | 120 volt handle reset with LED | 120 Vac | Left pole | UVM4LP08K ②③ | U66 |
| | 120 volt handle reset with LED | 120 Vac | Left pole | UVM4LP08KT ②④ | U68 |
| | Handle reset | 110–127 Vac | Left pole | UVH4LP08K ② | U18 |
| | Handle reset | 208–240 Vac | Left pole | UVH4LP11K ② | U22 |
| | Handle reset | 110–125 Vdc | Left pole | UVH4LP26K ② | T14 |
| E ² N/E ² NM | 120 volt handle reset with LED | 120 Vac | Left pole | UVM5LP08K ③ | U66 |
| | 120 volt handle reset with LED | 120 Vac | Left pole | UVM5LT08K ④ | U68 |
| | Handle reset | 110–127 Vac | Left pole | UVH5LP08K ② | U18 |
| | Handle reset | 208–240 Vac | Left pole | UVH5LP11K ② | U22 |
| | Handle reset | 110–125 Vdc | Left pole | UVH5LP26K ② | T14 |
| E ² R/E ² RM | 120 volt handle reset with LED | 120 Vac | Right pole | UVM6RP08K ③⑤ | U58 |
| | Handle reset | 110–127 Vac | Right pole | UVH6RP08K ⑤ | U49 |
| | Handle reset | 208–240 Vac | Right pole | UVH6RP11K ⑤ | U53 |
| | Handle reset | 110–125 Vdc | Right pole | UVH6RP26K ⑤ | T33 |

Notes

- ① Contact Eaton for internal accessory voltage ratings not listed.
- ② LH (RH also available).
- ③ Pigtail leads.
- ④ Terminal blocks.
- ⑤ RH only.

Shunt Trip ①

| Breaker Type | Voltage Rating | Mounting Location | Catalog Number | Factory Modification Code |
|---|----------------------------|-------------------|--------------------|---------------------------|
| E ² F/E ² FM | 48–127 Vac or 48–60 Vdc | Left pole | SNT1LP08K ② | S06 |
| | 208–230 Vac or 110–127 Vdc | Left pole | SNT1LP12K ② | S10 |
| E ² J/E ² JM | 110–240 Vac or 110–125 Vdc | Left pole | SNT2P11K ③ | S10 |
| E ² K/E ² KM/E ² KW | 110–240 Vac or 110–125 Vdc | Left pole | SNT3P11K ③ | S10 |
| E2LME/E2LMZ | 24 Vac/Vdc | Left pole | SNT024CPK | S6 |
| | 48–60 Vac/Vdc | Left pole | SNT4860CPK | S7 |
| | 110–240 Vac/Vdc | Left pole | SNT120CPK | S2 |
| E ² L/E ² LM/E ² LW/E ² M/ E ² MM/E ² MW | 48–60 Vac | Left pole | SNT4LP05K ② | S06 |
| | 48–60 Vdc | Left pole | SNT4LP23K ② | S86 |
| | 110–240 Vac | Left pole | SNT4LP11K ② | S10 |
| | 110–125 Vdc | Left pole | SNT4LP26K ② | S42 |
| E ² N/E ² NM | 110–240 Vac | Left pole | SNT5LP11K ② | S10 |
| | 110–125 Vdc | Left pole | SNT5LP26K ② | S42 |
| E ² R/E ² RM | 110–240 Vac | Right pole | SNT6P11K ④ | S29 |
| | 110–125 Vdc | Right pole | SNT6P26K ④ | S45 |

Auxiliary Switch

| Breaker Type | Number of Sets of Contacts (1A and 1B) | Mounting Location | Catalog Number | Factory Modification Code |
|---|--|-------------------|------------------|---------------------------|
| E ² F/E ² FM | 1 | Right | A1X1PK | A06 |
| | 2 | Right | A2X1RPK | A13 |
| E ² J/E ² JM | 1 | Right | A1X2PK | A06 |
| | 2 | Right | A2X2PK | A13 |
| E ² K/E ² KM/E ² KW | 1 | Right | A1X3PK | A06 |
| | 2 | Right | A2X3PK | A13 |
| E ² LME/E ² LMZ | 1 | Right | AUX1A1BPK | A1 |
| | 2 | Right | AUX2A2BPK | A2 |
| E ² L/E ² LM/E ² LW/E ² M/ E ² MM/E ² MW | 1 | Right | A1X4PK | A06 |
| | 2 | Right | A2X4PK | A13 |
| E ² N/E ² NM | 1 | Right | A1X5PK | A06 |
| | 2 | Right | A2X5PK | A13 |
| E ² R/E ² RM | 2 | Right | A2X6RPK | A12 |
| | 4 | Right | A4X6RPK | A19 |

Alarm (Signal/Lockout Switch)

| Breaker Type | Number of Sets of Contacts (Make and Break) | Mounting Location | Catalog Number | Factory Modification Code |
|---|---|-------------------|------------------------|---------------------------|
| E ² F/E ² FM | 1 | Right | A1L1LPK/A1L1RPK | B06 |
| | 2 | Right | A2L1LPK/A2L1RPK | B13 |
| E ² J/E ² JM | 1 | Right | A1L2LPK/A1L2RPK | B06 |
| E ² K/E ² KM/E ² KW | 1 | Right | A1L3LPK/A1L3RPK | B06 |
| | 2 | Right | A2L3LPK/A2L3RPK | B13 |
| E ² LME/E ² LMZ | 1 | Right | ALM1M1BJPK | B1 |
| | 2 | Right | ALM2M2BJPK | B3 |
| E ² L/E ² LM/E ² LW/E ² M/ E ² MM/E ² MW | 1 | Right | A1L4LPK/A1L4RPK | B06 |
| | 2 | Right | A2L4LPK/A2L4RPK | B13 |
| E ² N/E ² NM | 1 | Right | A1L5LPK/A1L5RPK | B06 |
| | 2 | Right | A2L5LPK/A2L5RPK | B13 |
| E ² R/E ² RM | 1 | Right | A1L6RPK | B05 |
| | 2 | Right | A2L6RPK | B12 |

Notes

- ① Contact Eaton for internal accessory voltage ratings not listed.
- ② LH (RH also available).
- ③ LH or RH.
- ④ RH only.

2.6

Molded Case Circuit Breakers

Specialty Breakers

Dimensions

Approximate Dimensions in Inches (mm)

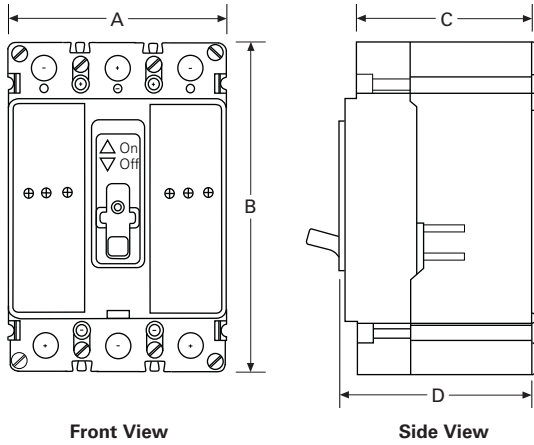
2

Please see TD01217001E for detailed dimensions.

3 A–150 A

E²F/E²FM

Sealed Breakers with Non-Interchangeable Trip Unit—
Include Line/Load Terminals Non-Electronic Trip Units

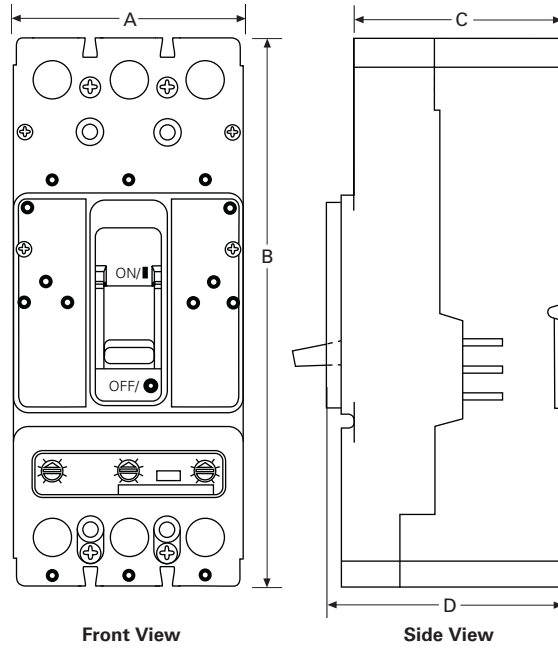


| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 4.13 (104.9) |
| B | 6.00 (152.4) |
| C | 3.38 (85.9) |
| D | 3.50 (88.9) |

70 A–250 A

E²J/E²JM

Circuit Breakers with Interchangeable Non-Electronic
Trip Units



| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 4.13 (104.9) |
| B | 10.00 (254.0) |
| C | 4.06 (103.1) |
| D | 4.31 (109.5) |

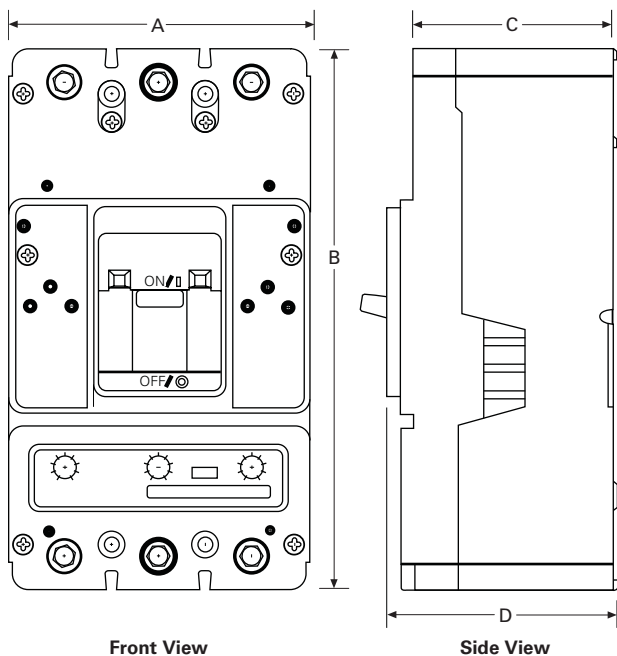
Approximate Dimensions in Inches (mm)

Please see TD01217001E for detailed dimensions.

100 A–400 A

E²K/E²KM/E²KW

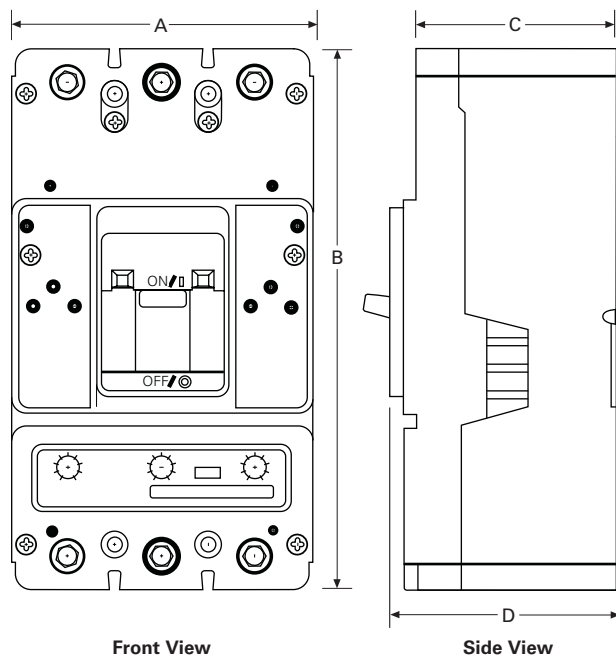
Circuit Breakers with Interchangeable Non-Electronic Trip Units



100 A–400 A

E²KE/E²KEM

Circuit Breakers with Interchangeable Electronic Trip Units



| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 5.49 (139.4) |
| B | 10.13 (257.3) |
| C | 4.06 (103.1) |
| D | 4.31 (109.5) |

| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 5.49 (139.4) |
| B | 10.13 (257.3) |
| C | 4.06 (103.1) |
| D | 4.31 (109.5) |

2.6

Molded Case Circuit Breakers

Specialty Breakers

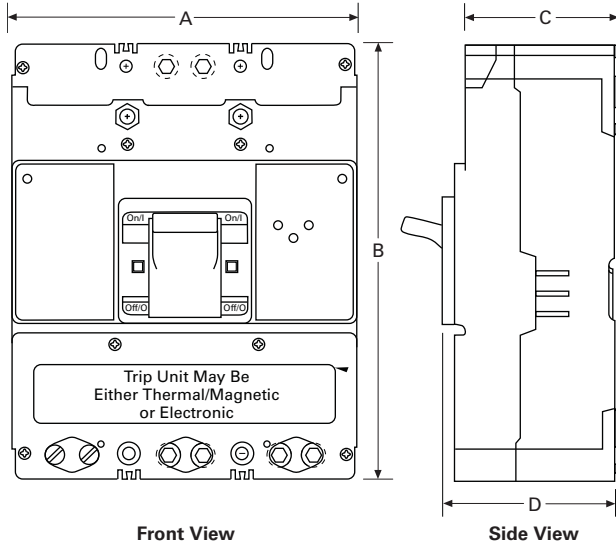
Approximate Dimensions in Inches (mm)

Please see TD01217001E for detailed dimensions.

2

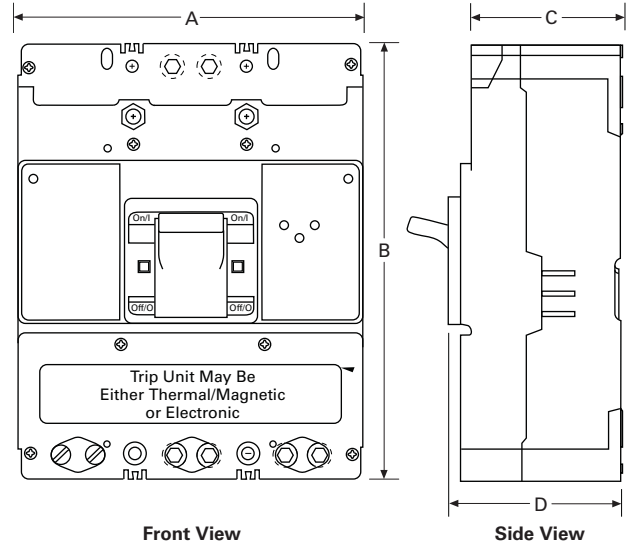
160 A–400 A

E²LME/E²LMZ Circuit Breakers



300 A–600 A

E²L/E²LM/E²LW Circuit Breakers with Interchangeable Electronic Trip Units



| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 5.48 (139.2) |
| B | 10.13 (257.3) |
| C | 4.00 (101.6) |
| D | 4.22 (107.1) |

| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 8.25 (209.6) |
| B | 10.75 (273.1) |
| C | 4.06 (103.1) |
| D | 4.38 (111.3) |

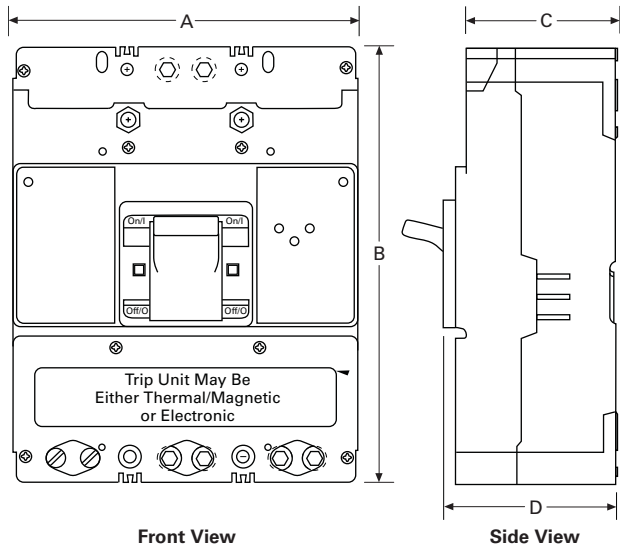
Approximate Dimensions in Inches (mm)

Please see TD01217001E for detailed dimensions.

300 A–600 A

E²LE/E²LEM

Circuit Breakers with Interchangeable Electronic Trip Units

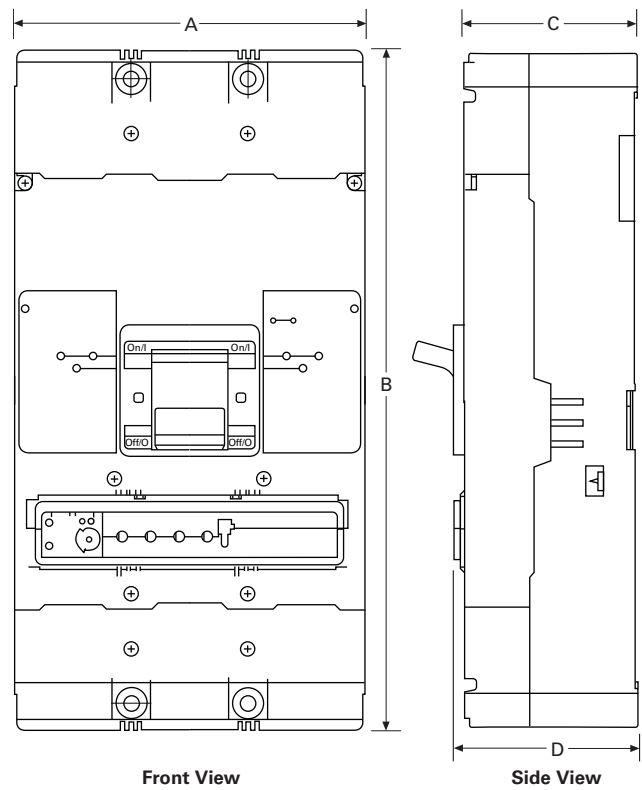


| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 8.25 (209.6) |
| B | 10.75 (273.1) |
| C | 4.06 (103.1) |
| D | 4.38 (111.3) |

300 A–800 A

E²M/E²MM/E²MW

Circuit Breakers with Interchangeable Non-Electronic Trip Units



| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 8.25 (209.6) |
| B | 16.00 (406.4) |
| C | 4.06 (103.1) |
| D | 4.38 (111.3) |

2.6

Molded Case Circuit Breakers

Specialty Breakers

Approximate Dimensions in Inches (mm)

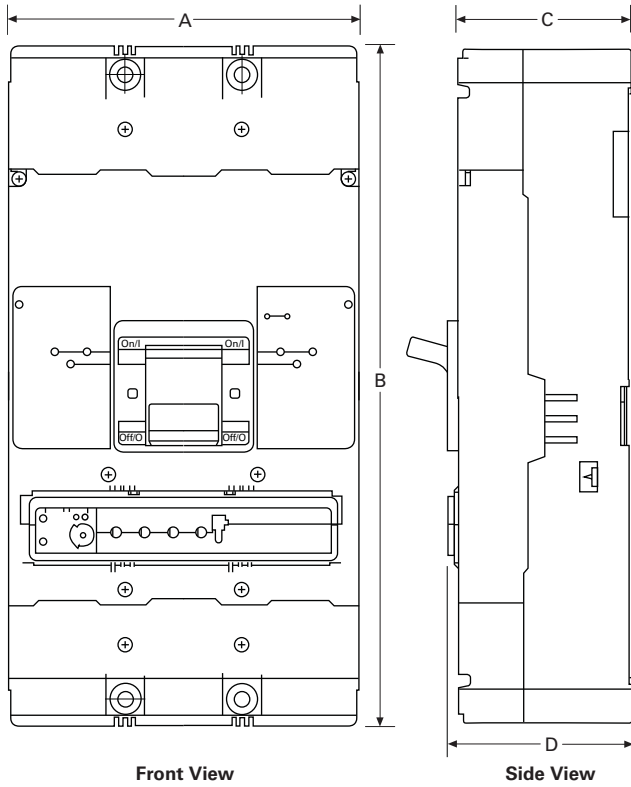
Please see TD01217001E for detailed dimensions.

2

800 A

E²ME/E²MEM

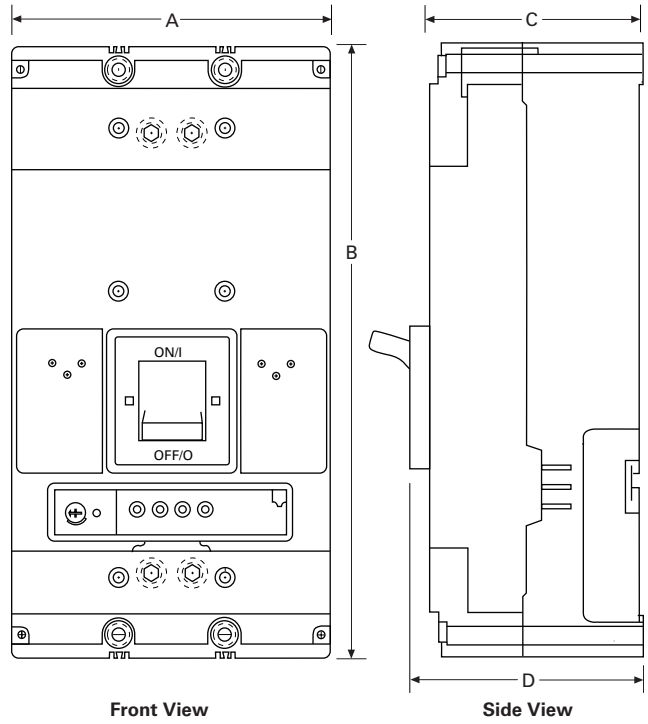
Circuit Breakers with Interchangeable Electronic Trip Units



400 A–1200 A

E²N/E²NM

Circuit Breakers with Interchangeable Electronic Trip Units



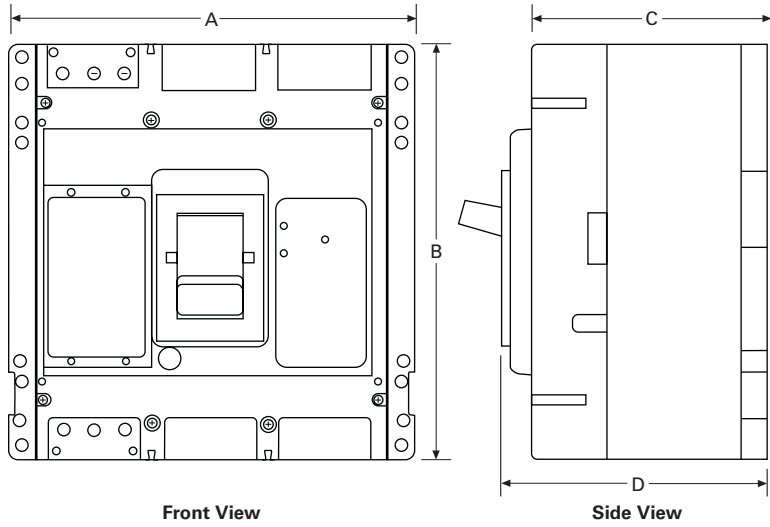
| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 8.25 (209.6) |
| B | 16.00 (406.4) |
| C | 4.06 (103.1) |
| D | 4.38 (111.3) |

| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 8.25 (209.6) |
| B | 16.00 (406.4) |
| C | 5.50 (139.7) |
| D | 6.00 (152.4) |

Approximate Dimensions in Inches (mm)
 Please see TD01217001E for detailed dimensions.

1600 A–2000 A

E²R/ E²RM
Circuit Breakers with Electronic Trip Units



| Description | Dimensions in Inches (mm) |
|-------------|---------------------------|
| A | 15.50 (393.7) |
| B | 16.00 (406.4) |
| C | 9.00 (228.6) |
| D | 10.00 (254.0) |

Contents

| <i>Description</i> | <i>Page</i> |
|--|------------------|
| Engine Generator Circuit Breakers | V4-T2-343 |
| Direct Current Circuit Breakers | V4-T2-349 |
| PVGard Solar Circuit Breakers—600 Vdc Per-Pole and 1000 Vdc Poles-in-Series | V4-T2-363 |
| E ² Mining Service Breakers | V4-T2-376 |
| Classic Mining Breakers | |
| Product Selection | V4-T2-404 |
| Accessories | V4-T2-409 |
| Reference Information | V4-T2-411 |
| Add-On Ground Fault Protection—Type GFR | V4-T2-416 |

Classic Mining Breakers

Product Overview

Classic mining service circuit breakers continue to be manufactured and are primarily applied to achieve an exact physical and electronic replacement of previously Cutler-Hammer

installed Westinghouse equipment. To upgrade to the current offering of E² mining circuit breakers, consult the cross reference information on **Page V4-T2-411**.

AC Interrupting Capacity, Symmetrical Amperes

| 60 Hz AC Volts | Breaker Type | | | | All Other 1000 Volt Breakers ^② |
|-------------------|--------------|---------------|--------|-------------------|--|
| | KAM | LAM, MAM, NBM | HKAM | HLAM ^② | |
| 240 | 25,000 | 42,000 | — | — | — |
| 480 | 22,000 | 30,000 | — | — | — |
| 600 | 22,000 | 22,000 | — | — | — |
| 1000 ^① | — | — | 10,000 | 12,000 | 14,000 |

Special DC Interrupting Capacity

| Breaker Type | Maximum Ampere Rating | Interrupting Capacity (Amperes) at 300–330 Vdc Single-Pole | | Two Poles in Series ^④ | |
|-----------------|--------------------------|---|------------------------|----------------------------------|-------------------|
| | | 0.0–0.15 mH Inductance ^③ | 0.15–0.5 mH Inductance | 0.5–0.9 mH Inductance | 2.4 mH Inductance |
| KAM | 225 | 15,000 | 10,000 | 15,000 | 5000 |
| LAM | 400/600 | 15,000 | 10,000 | 15,000 | 5000 |
| MAM | 800 | 15,000 | 10,000 | 15,000 | 5000 |
| NBM | 1200 | 15,000 | 10,000 | 15,000 | 5000 |

Notes

- ^① Based on circuit power factor of 50% or greater.
- ^② HLAM must be rear stud connected. If front connected, interrupting capacity rating is 10,000 amperes.
- ^③ Resistive circuit.
- ^④ Two poles in electrical series in ungrounded leg of circuit.

Classic Circuit Breakers For Mining Service**Undervoltage Release Data**

Undervoltage releases are calibrated to pick up at 72 to 85% of rated voltage dropout between 35 to 70% of rated voltage.

| Breaker Type | Volts | Line Amperes | Series Resistors ^① | Total VA |
|--|---------------------|--------------|-------------------------------|----------|
| KAM, HKAM ^① | 480/60 | 0.021 | 10,000 | 10.1 |
| | 240/60 | 0.019 | — | 4.6 |
| | 120/60 | 0.021 | — | 2.5 |
| | 120/60 ^② | 0.13 | — | 15.6 |
| LAM, HLAM, MAM, HMAM, NBM, HNBM ^① | 480/60 | 0.033 | 12,000 ^③ | 15.9 |
| | 240/60 | 0.028 | 6,000 | 6.7 |
| | 120/60 | 0.029 | — | 3.5 |
| | 120/60 ^② | 0.13 | — | 15.6 |

Shunt Trip Coil Data

| Breaker Type | Volts | Amperes | VA |
|--|--------|---------|-------|
| KAM, HKAM, LAM, HLAM, MAM, HMAM, NBM, HNBM | 480/60 | 0.085 | 40.8 |
| | 240/60 | 1.7 | 408 |
| | 120/60 | 0.88 | 105.6 |
| | 48 DC | 8.0 | 384 |

Notes

- ① Supplied for external customer mounting.
- ② New design electrical reset UVR.
- ③ 16,000 for Type MAM and HMAM.

Product Selection

For reference only. Replace these frames with E2 Series. See Cross-Reference information beginning on **Page V4-T2-411**.

2

Classic Mining Service Circuit Breakers

| Breaker Type | Frame Style Numbers ^{①②} | Poles | Amperes | Trip Type | Accessories (Included in Frame) | Magnetic Trip Range, Amperes ^③ |
|--------------|-----------------------------------|-------|---------|------------------|----------------------------------|---|
| KAM | 2609D60G64 | 2 | 180 | M | None | 200–400 |
| | 1291C26G07 | 2 | 180 | M | UVR ^④ | 200–400 |
| | 2609D60G66 | 2 | 180 | M | Standard shunt trip ^③ | 200–400 |
| | 1291C26G01 | 2 | 225 | TM | UVR ^④ | 300–700 |
| | 1291C26G02 | 2 | 225 | TM | UVR ^④ | 500–1000 |
| | 2609D60G67 | 3 | 180 | M | None | 200–400 |
| | 1291C26G08 | 3 | 180 | M | UVR ^④ | 200–400 |
| | 2609D60G69 | 3 | 180 | M | Standard shunt trip ^③ | 200–400 |
| | 5685D48G75 | 3 | 225 | TM | None | 300–700 |
| | 5685D48G74 | 3 | 225 | TM | None | 500–1000 |
| | 1291C26G03 | 3 | 225 | TM | UVR ^④ | 300–700 |
| | 1291C26G04 | 3 | 225 | TM | UVR ^④ | 500–1000 |
| | 2609D60G01 | 3 | 225 | TM | Standard shunt trip ^③ | 300–700 |
| | 2609D60G02 | 3 | 225 | TM | Standard shunt trip ^③ | 500–1000 |
| | 2609D60G40 | 3 | 225 | M | None | 300–700 |
| | 2609D60G41 | 3 | 225 | M | None | 500–700 |
| | 1291C26G05 | 3 | 225 | M | UVR ^④ | 300–700 |
| 1291C26G06 | 3 | 225 | M | UVR ^④ | 500–1000 | |
| LAM | 1291C32G01 | 2 | 400 | TM | UVR ^④ | 500–1000 |
| | 2609D60G61 | 2 | 400 | M | Shunt trip (48 Vdc) | 750–1500 |
| | 1291C32G03 | 3 | 400 | TM | UVR ^④ | 500–1000 |
| | 5685D48G73 | 3 | 400 | TM | None | 800–1600 |
| | 1291C32G02 | 3 | 400 | TM | UVR ^④ | 800–1600 |
| | 2609D60G03 | 3 | 400 | TM | Standard shunt trip ^③ | 800–1600 |
| | 2609D60G44 | 3 | 400 | M | None | 800–1600 |
| | 1291C32G04 | 3 | 400 | M | UVR ^④ | 800–1600 |

Notes

- ① Terminals not included in style number.
- ② All breakers listed are complete with accessories indicated.
- ③ Rated 120 volts/60 Hz: undervoltage release is handle reset type.
- ④ UVR is auto-reset type, 120 Vac.

M = magnetic only; TM = thermal-magnetic.

For reference only. Replace these frames with E2 Series. See Cross-Reference information beginning on **Page V4-T2-411**.

Classic Mining Service Circuit Breakers, continued

| Breaker Type | Frame Style Numbers ^{①②} | Poles | Amperes | Trip Type | Accessories (Included in Frame) | Magnetic Trip Range, Amperes ^③ |
|--------------|-----------------------------------|-------|---------|-----------|----------------------------------|---|
| MAM | 2609D60G17 | 2 | 600 | TM | UVR ^④ | 750–1500 |
| | 2609D60G18 | 2 | 800 | TM | UVR ^④ | 1000–2000 |
| | 2609D60G63 | 3 | 400 | TM | UVR ^④ | 2000–4000 |
| | 5685D48G72 | 3 | 600 | TM | None | 1500–3000 |
| | 2609D60G19 | 3 | 600 | TM | UVR ^④ | 1500–3000 |
| | 2609D60G04 | 3 | 600 | TM | Standard shunt trip ^③ | 1500–3000 |
| | 2609D60G05 | 3 | 800 | TM | Standard shunt trip ^③ | 2000–4000 |
| | 5685D48G71 | 3 | 800 | TM | None | 2000–4000 |
| | 2609D60G20 | 3 | 800 | TM | UVR ^④ | 2000–4000 |
| | 2609D60G46 | 3 | 800 | M | None | 1500–3000 |
| | 2609D60G47 | 3 | 800 | M | UVR ^④ | 1500–3000 |
| | 2609D60G48 | 3 | 800 | M | None | 2000–4000 |
| | 2609D60G49 | 3 | 800 | M | UVR ^④ | 2000–4000 |
| NBM | 1229C37G13 | 2 | 1000 | TM | UVR ^④ | 1500–3000 |
| | 1229C37G14 | 2 | 1200 | TM | UVR ^④ | 2000–4000 |
| | 1227C36G10 | 3 | 1000 | TM | None | 2500–5000 |
| | 1229C37G15 | 3 | 1000 | TM | UVR ^④ | 2500–5000 |
| | 1227C36G13 | 3 | 1000 | TM | Standard shunt trip ^③ | 2500–5000 |
| | 1227C36G14 | 3 | 1200 | TM | Standard shunt trip ^③ | 2500–5000 |
| | 1227C36G09 | 3 | 1200 | TM | None | 2500–5000 |
| | 1229C37G16 | 3 | 1200 | TM | UVR ^④ | 2500–5000 |
| | 1227C36G19 | 3 | 1200 | M | None | 2500–5000 |
| | 1229C37G17 | 3 | 1200 | M | UVR ^④ | 2500–5000 |

Notes

- ① Terminals not included in style number.
- ② All breakers listed are complete with accessories indicated.
- ③ Rated 120 volts/60 Hz; undervoltage release is handle reset type.
- ④ UVR is auto-reset type, 120 Vac.

M = magnetic only; TM = thermal-magnetic.





2.6

Molded Case Circuit Breakers

Specialty Breakers

2

1000 Volt Classic Mining Service Circuit Breakers

| Breaker Type | Frame Style Numbers | Poles | Amperes | Trip Type | Accessories (Included in Frame) | Magnetic Trip Range, Amperes ^① | |
|--|---------------------|-------------------|---------|-----------|---------------------------------|---|-----------|
| HKAM  | HKAM | 2609D60G70 | 3 | 180 | M | None | 200–400 |
| | | 1291C26G16 | 3 | 180 | M | UVR ^② | 200–400 |
| | | 5685D48G87 | 3 | 225 | TM | None | 300–700 |
| | | 1291C26G12 | 3 | 225 | TM | UVR ^② | 300–700 |
| | | 5685D48G86 | 3 | 225 | TM | None | 500–1000 |
| | | 1291C26G13 | 3 | 225 | TM | UVR ^② | 500–1000 |
| | | 1291C26G14 | 3 | 225 | M | UVR ^② | 300–700 |
| | | 1291C26G15 | 3 | 225 | M | UVR ^② | 500–1000 |
| HLAM  | HLAM | 5685D48G85 | 3 | 400 | TM | None | 800–1600 |
| | | 1291C32G07 | 3 | 400 | TM | UVR ^② | 800–1600 |
| | | 1291C32G09 | 3 | 400 | M | UVR ^② | 800–1600 |
| HMAM  | HMAM | 5685D48G84 | 3 | 600 | TM | None | 1500–3000 |
| | | 2609D60G28 | 3 | 600 | TM | UVR ^③ | 1500–3000 |
| | | 5685D48G83 | 3 | 800 | TM | None | 2000–4000 |
| | | 2609D60G29 | 3 | 800 | TM | UVR ^③ | 2000–4000 |
| | | 2609D60G57 | 3 | 800 | M | UVR ^③ | 1500–3000 |
| | | 2609D60G58 | 3 | 800 | M | UVR ^③ | 2000–4000 |
| HNAM  | HNBM | 1227C36G12 | 3 | 1000 | TM | None | 2500–5000 |
| | | 1229C37G19 | 3 | 1000 | TM | UVR ^② | 2500–5000 |
| | | 1227C36G11 | 3 | 1200 | TM | None | 2500–5000 |
| | | 1229C37G20 | 3 | 1200 | TM | UVR ^② | 2500–5000 |
| | | 1229C37G18 | 3 | 1200 | M | UVR ^② | 2500–5000 |

Notes

① The magnetic trip range does not change when rating plug is changed.

② 120 volt, 60 Hz electrical reset type.

③ Rated 120 volts, 60 Hz; undervoltage release is handle reset type.

M = magnetic only; TM = thermal-magnetic.

Classic Mining Service Breaker Frames Only

| Breaker Type | Frame Size, Amperes | Number of Poles | Style Numbers |
|--------------|---------------------|-----------------|---------------|
| KAM ① | 225 | 2 | 2602D86G11 |
| | 225 | 3 | 2602D86G12 |
| KAMH ① | 225 | 2 | 2602D86G13 |
| | 225 | 3 | 2602D86G14 |
| HKAM ① | 225 | 3 | 1264C99G05 |
| LAM ② | 400 | 2 | 2602D99G05 |
| | 400 | 3 | 2602D99G06 |
| LAMH ② | 400 | 2 | 2602D99G07 |
| | 400 | 3 | 2602D99G08 |
| HLAM ② | 400 | 3 | 1264C99G02 |
| LAM3600F | 600 | 3 | 2603D48G07 |
| LAMH3600F | 600 | 3 | 2603D48G08 |
| HLAM3600F | 600 | 3 | 2603D48G09 |

| Breaker Type | Frame Size, Amperes | Number of Poles | Style Numbers |
|--------------|---------------------|-----------------|---------------|
| MAM ② | 800 | 2 | 2600D43G11 |
| | 800 | 3 | 2600D43G12 |
| MAMH ② | 800 | 2 | 2600D43G13 |
| | 800 | 3 | 2600D43G14 |
| HMAM ② | 800 | 3 | 1264C99G03 |
| NBM ② | 1200 | 2 | 2610D64G07 |
| | 1200 | 3 | 2610D64G08 |
| NBMH ② | 1200 | 2 | 2610D64G09 |
| | 1200 | 3 | 2610D64G10 |
| HNBM ② | 1200 | 3 | 2610D64G13 |

Trip Units for Classic Mining Circuit Breakers

| Breaker Type | Conductor Size | Magnetic Trip Range, Amperes | Maximum Continuous Amperes | Thermal-Magnetic Three-Pole ③ Style Numbers | Magnetic Only Three-Pole Style Numbers |
|--------------|----------------|------------------------------|----------------------------|---|--|
| HKAM | #6 | 150–400 | 180 | — | 2609D99G22 |
| | #4–#3 | 300–700 | 225 | 5685D48G40 | 2611D75G01 |
| | #4–#1 | 500–1000 | 225 | 5685D48G34 | 2611D75G02 |
| HLAM | #4–#1 | 750–1500 | 400 | 5685D48G97 | 2609D99G21 |
| | #2–#2/0 | 800–1600 | 400 | 5685D48G28 | 2611D75G03 |
| HLAM600 | #2–2/0 | 750–1500 | 600 | 2609D99G20 | — |
| | 2/0–500 kcmil | 1500–3000 | 600 | 2609D99G19 | — |
| HMAM | #2–#2/0 | 750–1500 | 600 | — | — |
| | 2/0–500 kcmil | 1500–3000 | 600 | 5685D48G22 | 2611D75G04 ④ |
| | #1–3/0 | 1000–2000 | 800 | — | — |
| HNBM | 3/0–500 kcmil | 2000–4000 | 800 | 5685D48G16 | 2611D75G05 |
| | 2/0–500 kcmil | 1500–3000 | 1000 | — | — |
| | 4/0–500 kcmil | 2500–5000 | 1000 | 5685D48G10 | — |
| HNBM | 3/0–500 kcmil | 2000–4000 | 1200 | — | — |
| | 4/0–500 kcmil | 2500–5000 | 1200 | 5685D48G04 | 2611D75G07 |

Notes

- ① Frame modified for left-hand mounting of UVR attachment.
 ② Frame modified for right-hand mounting of UVR attachment.
 ③ Three-pole trip units only are suitable for replacement in 1000 volt mining service circuit breakers.
 ④ 800 amperes.

Terminals For Classic Mining Service Breakers

Terminals are UL listed for wire type and range listed below.
When used with aluminum conductors, use joint compound.

| Breaker Type | Terminal Type | Maximum Amperes | Package of 3 Line Terminals Style Number | Wire Range, Type |
|--------------|-----------------------------------|-----------------|--|------------------|
| FBM, HFBM | Style pressure type terminals | 100 | 624B100G02 | #14–1/0 Al/Cu |
| | Optional Al/Cu pressure terminals | 50 | 624B100G10 | #14–#4 Al/Cu |
| | | 100 | 624B100G17 | #4–4/0 Al/Cu |

Terminals For Mining Service Breakers

| Breaker Type | Terminal Type | Maximum Amperes | Terminal Catalog Number | Wire Range, Type Number of Cables |
|-----------------------------|---|-----------------|-------------------------|--|
| KAM, HKAM | Standard pressure terminals (copper only) | 225 | T225LA | (1) #6–350 kcmil |
| | Optional Al/Cu pressure terminals | 225 | TA225LA1 | (1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al |
| LAM | Standard copper pressure terminals | 225 | T225LA | (1) #6–350 kcmil Cu |
| | | 400 | T401LA | (1) #4–250 kcmil Cu plus (1) 3/0–600 kcmil Cu |
| | Optional Al/Cu pressure terminals | 225 | TA225LA1 | (1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al |
| | | 400 | TA400LA1 | (1) #4–250 kcmil Al/Cu, plus (1) 3/0–600 kcmil Al/Cu |
| | | 400 | TA401LA | (1) 600–750 kcmil Al |
| LAM-600, LAMH-600, HLAM-600 | Standard copper pressure terminals | 600 | T600LA | (2) 250–500 kcmil Cu |
| | Optional Al/Cu pressure terminals | 600 | TA600LA | (2) 250–500 kcmil Al/Cu |
| MAM, HMAM, MAMH | Standard copper pressure terminals | 350 | T350MA | (1) #1–600 kcmil Cu |
| | | 600 | T600MA1 | (2) 2/0–500 kcmil Cu |
| | | 800 | T800MA1 | (3) 3/0–300 kcmil Cu |
| | Optional Al/Cu pressure terminals | 600 | TA700MA1 | (2) #1–500 kcmil Al/Cu |
| | | 800 | TA800MA2 | (3) 3/0–400 kcmil Al/Cu |
| | | 800 | TA801MA | (2) 500–750 kcmil Al/Cu |
| NBM, HNBH, NBMH | Standard copper pressure terminals | 1000 | T1000NB1 | (3) 3/0–500 kcmil Cu |
| | | 1200 | T1200NB1 | (4) 3/0–400 kcmil Cu |
| | Optional Al/Cu pressure terminals | 1000 | TA1000NB1 | (3) 3/0–400 kcmil Al/Cu |
| | | 1200 | TA1200NB1 | (4) 4/0–500 kcmil Al/Cu |
| | | 1200 | TA1201NB1 | (3) 500–750 kcmil Al/Cu |

Accessories

Classic Mining Circuit Breakers

Rear Connected Studs ^①

For complete stud assembly, order a stud and tube based on thickness of customer's mounting panel. A short stud must be assembled adjacent to a long stud to maintain

clearances required by Underwriters Laboratories.^② Two studs required per pole. For List Prices, see Eaton's Price and Availability Digest.

| Mounting Panel Thickness In Inches (mm) | Stud | | Tube Length In Inches (mm) | Style Numbers |
|---|--------|-------------------|----------------------------|-------------------|
| | Length | Style Numbers | | |
| KAM, HKAM Breakers | | | | |
| 0.75 (19.1)–1.00 (25.4) | Short | 656D565G01 | 0.84 (21.3) | 456D983H05 |
| | Long | 656D565G02 | 3.78 (96.0) | 456D983H08 |
| 0.50 (12.7)–0.75 (19.1) | Short | 656D565G01 | 1.09 (27.7) | 456D983H06 |
| | Long | 656D565G02 | 4.03 (102.4) | 456D983H09 |
| 0.25 (6.4)–0.50 (12.7) | Short | 656D565G01 | 1.34 (34.0) | 456D983H07 |
| | Long | 656D565G02 | 4.28 (108.7) | 456D983H10 |

Rear Connected Studs For Insulated Panels Only: Two Per Pole

| Stud Ampere Number | Diameter, In Inches (mm) and Thread | Extension Back of Breaker In Inches (mm) | Stud Style Numbers |
|---------------------------------|-------------------------------------|--|--------------------|
| LAM, HLAM Breakers | | | |
| 225 ^③ | 0.50 (12.7)–13 | 3.22 (81.8) | 1241 345 |
| | 0.50 (12.7)–13 | 6.28 (159.5) | 1241 346 |
| 225 ^{③④} | 0.50 (12.7)–13 | 4.97 (126.2) | 1241 392 |
| 400 ^③ | 0.75 (19.1)–16 | 5.47 (138.9) | 05B7383G22 |
| | 0.75 (19.1)–16 | 7.97 (202.4) | 05B7383G23 |
| | 0.75 (19.1)–16 | 10.47 (265.9) | 05B7383G24 |
| 600 | 1.00 (25.4)–12 | 5.91 (150.1) | 314C960G16 |
| | 1.00 (25.4)–12 | 8.41 (213.6) | 314C960G17 |
| | 1.00 (25.4)–12 | 10.91 (277.1) | 314C960G18 |
| | 1.00 (25.4)–12 | 10.91 (277.1) | 314C960G18 |
| MAM, HMAM, MAMH Breakers | | | |
| 225 | 0.50 (12.7)–13 | 3.66 (93.0) | 314C960G01 |
| 400 | 0.75 (19.1)–16 | 5.91 (150.1) | 314C960G04 |
| | 0.75 (19.1)–16 | 8.41 (213.6) | 314C960G05 |
| | 0.75 (19.1)–16 | 10.91 (277.1) | 314C960G06 |
| 600 | 1.00 (25.4)–12 | 5.91 (150.1) | 314C960G07 |
| | 1.00 (25.4)–12 | 8.41 (213.6) | 314C960G08 |
| | 1.00 (25.4)–12 | 10.91 (277.1) | 314C960G09 |
| 800 | 1.13 (28.7)–12 | 4.91 (124.7) | 314C960G10 |
| | 1.13 (28.7)–12 | 8.41 (213.6) | 314C960G11 |
| | 1.13 (28.7)–12 | 10.91 (277.1) | 314C960G12 |
| NBM, HNBM, NBMH Breakers | | | |
| 800 | 1.13 (28.7)–12 | 5.50 (139.7) | 623B222G01 |
| | 1.13 (28.7)–12 | 8.00 (203.2) | 623B222G02 |
| | 1.13 (28.7)–12 | 10.50 (266.7) | 623B222G03 |
| 1200 | 1.25 (31.8)–12 | 5.50 (139.7) | 373B375G04 |
| | 1.25 (31.8)–12 | 10.50 (266.7) | 373B375G03 |

Line and Load Terminal Shields ^⑤

| Breaker Type | Description | Style Numbers |
|--------------|----------------|-------------------|
| KAM | Line terminals | 1261C93G01 |
| | Load terminals | 1262C46G01 |
| LAM-400 | Line terminals | 1261C95G01 |
| | Load terminals | 1262C48G01 |
| MAM | Line terminals | 1261C97G01 |
| | Load terminals | 1261C97G02 |

Notes

- ① Not UL listed.
- ② 400 ampere LA studs of the same length have sufficient clearance; however, customer connections may make it necessary to use a short stud adjacent to a long stud.
- ③ 150, 300 and 400 ampere frames only.
- ④ This is a special stud that includes six contact nuts for use where bus contact nuts must be used.
- ⑤ For breakers used with terminals and cable connections. Sold in packages of 10.

Standard Handle Reset Undervoltage Release

For Classic breakers field mountable on special frames listed on **Page V4-T2-411**, or replacement on breakers originally equipped with this type UVR.

For undervoltage protection. A solenoid device mounts within breaker case. Coil must be energized before closing breaker. Trips breaker

when voltage drops below 35 to 70% of coil rating. Picks up and seals in at 72 to 85% of coil rating. For line voltages up to 250 Vdc or 600 Vac. Externally mounted resistors are supplied for certain ratings. Standard leads extend 18.00 inches (457.2 mm) outside of breaker. Longer leads may be specified.

| Breaker Type | Volts | Style Numbers |
|----------------------------|---------------------------|-------------------|
| Right-Hand Mounting | | |
| LAM, HLAM | 120 Vac | 4995D12G11 |
| | 120 Vac ^① | 1228C76G03 |
| | 240 Vac | 4995D12G13 |
| | 480 Vac | 4995D12G14 |
| | 125 Vdc | 4995D12G09 |
| MAM, HMAM, MAMH | 120 Vac | 5672D69G11 |
| | 120 Vac ^① | — |
| | 240 Vac | 5672D69G13 |
| NBM, HNBM, NBMH | 480 Vac | 5672D69G14 |
| | 120 Vac | 4995D11G11 |
| | 120 Vac ^① | 1229C35G03 |
| | 240 Vac | 4995D11G13 |
| | 480 Vac | 4995D11G14 |
| | Left-Hand Mounting | |
| KAM, HKAM | 120 Vac | 4995D10G01 |
| | 120 Vac ^① | 1228C76G03 |
| | 240 Vac | 4995D10G03 |
| | 480 Vac | 4995D10G04 |

Shunt Trips

For tripping breaker from a remote point. A solenoid device mounts within breaker case. Breaker trips when coil is energized. A cutoff switch breaks the circuit to the momentary rated coil when breaker opens. Available for

control voltages up to 250 Vdc or 600 Vac. Voltage and frequency must be specified. Standard leads extend 18.00 inches (457.2 mm) outside of breaker. Longer leads may be specified.

| Breaker Type | Volts (50–60 Hz) | Style Numbers |
|----------------------------|---------------------------|-------------------|
| Right-Hand Mounting | | |
| KAM, HKAM | 480 Vac | 2605D15G16 |
| | 240 Vac | 2605D15G17 |
| | 120 Vac | 2605D15G19 |
| LAM, HLAM | 480 Vac | 2606D56G16 |
| | 240 Vac | 2606D56G17 |
| | 120 Vac | 2606D56G19 |
| | 48 Vdc | 2606D56G07 |
| | 480 Vac | 2606D57G16 |
| MAM, HMAM, MAMH | 240 Vac | 2606D57G17 |
| | 120 Vac | 2606D57G19 |
| | 480 Vac | 2606D58G16 |
| NBM, HNBM, NBMH | 240 Vac | 2606D58G17 |
| | 120 Vac | 2606D58G19 |
| | Left-Hand Mounting | |
| KAM, HKAM | 480 Vac | 2605D15G02 |
| | 240 Vac | 2605D15G03 |
| | 120 Vac | 2605D15G05 |
| LAM, HLAM | 480 Vac | 2606D56G02 |
| | 240 Vac | 2606D56G03 |
| | 120 Vac | 2606D56G05 |
| MAM, HMAM, MAMH | 480 Vac | 2606D57G02 |
| | 240 Vac | 2606D57G03 |
| | 120 Vac | 2606D57G05 |
| NBM, HNBM, NBMH | 480 Vac | 2606D58G02 |
| | 240 Vac | 2606D58G03 |
| | 120 Vac | 2606D58G05 |

Notes

- ① Electrical reset UVR.
- ② Auto reset type.

Reference Information

E² Cross-Reference

| Series C Mining | Superseded by E ² Mining |
|-----------------|-------------------------------------|
| 1491D72G31 | E2J3070T |
| 1491D72G32 | E2J3090T |
| 1491D72G33 | E2J3100T |
| 1491D72G37 | E2J3200T |
| 6622C87G27 | E2K3225AWU66 |
| 6622C87G28 | E2K3225DWU66 |
| 6622C87G32 | E2K3400GWU66 |
| E2KM3100 | E2KEM3100W |
| E2KM3100U66 | E2KEM3100WU66 |
| E2KM3125 | E2KEM3125W |
| E2KM3125U66 | E2KEM3125WU66 |
| E2KM3150 | E2KEM3150W |
| E2KM3150MU66 | E2KEM3150WU66 |
| E2KM3150TM | E2KEM3150MW |
| E2KM3150U66 | E2KEM3150MWU66 |
| E2KM3200 | E2KEM3200W |
| E2KM3200U66 | E2KEM3200WU66 |
| E2KM3225 | E2KEM3225W |
| E2KM3225F | E2KM3400F |
| E2KM3225FUV | E2KM3400F |
| E2KM3225MU66 | E2KEM3225MWU66 |
| E2KM3225TM | E2KEM3225TM |
| E2KM3225U66 | E2KEM3225WU66 |
| E2LM3300U66 | E2LEM3300WU66 |
| E2LM3350U66 | E2LEM3350WU66 |
| E2LM3400U66 | E2LEM3400WU66 |
| E2LM3400F | E2LM3600F |
| E2LM3400FUV | E2LM3600F |
| E2LM3400M2U66 | E2LEM3400M2WU66 |
| E2LM3400MU66 | E2LEM3400MWU66 |
| E2LM3400U66 | E2LEM3400WU66 |
| FDBM3015 | E2F3015 |
| FDBM3015WU62 | E2F3015WU62 |
| FDBM3020 | E2F3020 |
| FDBM3025 | E2F3025 |
| FDBM3025U62 | E2F3025U62 |
| FDBM3030 | E2F3030 |
| FDBM3030U62 | E2F3030WU62 |
| FDBM3030WU62 | E2F3030WU62 |
| FDBM3035 | E2F3035 |

| Series C Mining | Superseded by E ² Mining |
|-----------------|-------------------------------------|
| FDBM3040 | E2F3040 |
| FDBM3045 | E2F3045 |
| FDBM3050 | E2F3050 |
| FDBM3050U62 | E2F3050U62 |
| FDBM3050WU62 | E2F3050WU62 |
| FDBM3060 | E2F3060 |
| FDBM3070 | E2F3070 |
| FDBM3070WU62 | E2F3070WU62 |
| FDBM3080 | E2F3080 |
| FDBM3090 | E2F3090 |
| FDBM3100 | E2F3100 |
| FDBM3100LM04U62 | E2F3100M04U62 |
| FDBM3125 | E2F3125 |
| FDBM3150 | E2F3150 |
| FDBM3150L | E2F3150L |
| FDM3015 | E2F3015 |
| FDM3015L | E2F3015L |
| FDM3015LU62 | E2F3015LU62 |
| FDM3020 | E2F3020 |
| FDM3020LU62 | E2F3020LU62 |
| FDM3025 | E2F3025 |
| FDM3025L | E2F3025L |
| FDM3025LS22 | E2F3025LS22 |
| FDM3025LU62 | E2F3025LU62 |
| FDM3030 | E2F3030 |
| FDM3030LS22 | E2F3030LS22 |
| FDM3040 | E2F3040 |
| FDM3040L | E2F3040L |
| FDM3040LU62 | E2F3040LU62 |
| FDM3050 | E2F3050 |
| FDM3050LU62 | E2F3050LU62 |
| FDM3050U62 | E2F3050U62 |
| FDM3060 | E2F3060 |
| FDM3060LU62 | E2F3060LU62 |
| FDM3070 | E2F3070 |
| FDM3070A02U62 | E2F3070A02U62 |
| FDM3080 | E2F3080 |
| FDM3090 | E2F3090 |
| FDM3100 | E2F3100 |
| FDM3100LS22 | E2F3100LS22 |

E² Cross-Reference, continued

| Series C Mining | Superseded by E ² Mining |
|-----------------|-------------------------------------|
| FDM3100LU62 | E2FLU62 |
| FDM3125 | E2F3125 |
| FDM3125LU62 | E2F3125LU62 |
| FDM3150 | E2F3150 |
| HFDM003AM | E2F003AM |
| HFDM003AMLU62 | E2F003AMLU62 |
| HFDM007CM | E2F007CM |
| HFDM007CMU62 | E2F007CMU62 |
| HFDM015EM | E2F015EM |
| HFDM015EMA02 | E2F015EMA02 |
| HFDM015EMLU62 | E2F015EMLU62 |
| HFDM015EMU62 | E2F015EMU62 |
| HFDM030HM | E2F030HM |
| HFDM030HMLU62 | E2F030HMLU62 |
| HFDM030HMU62 | E2F030HMU62 |
| HFDM050KM | E2F050KM |
| HFDM050KML | E2F050KML |
| HFDM050KMLU62 | E2F050KMLU62 |
| HFDM050KMU62 | E2F050KMU62 |
| HFDM070MM | E2F070MM |
| HFDM070MMU62 | E2F070MMU62 |
| HFDM1001M | E2F1001M |
| HFDM1001MS22 | E2F1001MS22 |
| HFDM100LM | E2F100LM |
| HFDM100LMA02 | E2F100LMA02 |
| HFDM100LMU62 | E2F100LMU62 |
| HFDM100RM | E2F100RM |
| HFDM100RML | E2F100RML |
| HFDM100RMS22 | E2F100RMS22 |
| HFDM100RMU62 | E2F100RMU62 |
| HFDM150TM | E2F150TM |
| HFDM150TML | E2F150TML |
| HFDM150TMU62 | E2F150TMU62 |
| HFDM150UM | E2F150UM |
| JCDA2D1S30 | E2JM250MDA2D1S30 |
| JCMA2D1S30 | E2JM250MFA2D1S30 |
| JDCM3070W | E2JM3070W |
| JDCM3090W | E2JM3090W |
| JDCM3100W | E2JM3100W |
| JDCM3125W | E2JM3125W |

| Series C Mining | Superseded by E ² Mining |
|-------------------|-------------------------------------|
| JDCM3150W | E2JM3150W |
| JDCM3175W | E2JM3175W |
| JDCM3200W | E2JM3200W |
| JDCM3225A5W | E2JM3225AW |
| JDCM3225D5W | E2JM3225DW |
| JDCM3225W | E2JM3225W |
| JDCM3250A5MW | E2JM3250MAW |
| JDCM3250A5MWU18 | E2JM3250MAWU18 |
| JDCM3250A5W | E2JM3250AW |
| JDCM3250C5MW | E2JM3250MCW |
| JDCM3250D5MW | E2JM3250MDW |
| JDCM3250D5MWA06 | E2JM3250MDWA06 |
| JDCM3250D5W | E2JM3250DW |
| JDCM3250D5WS10 | E2JM3250DWS10 |
| JDCM3250F | E2JM3250F |
| JDCM3250F5MD01 | E2JM3250MFD01 |
| JDCM3250F5MW | E2JM3250MFW |
| JDCM3250G5MW | E2JM3250MGW |
| JDCM3250G5WA02D01 | E2JM3250MGA02D01 |
| JDCM3250J5MW | E2JM3250MJW |
| JDCM3250J5MWA02 | E2JM3250MJA02 |
| JDCM3250J5WA02D01 | E2JM3250MJA02D01 |
| JDCM3250J5WD01 | E2JM3250MJD01 |
| JDCM3250K5MW | E2JM3250MKW |
| JDCM3250L5MW | E2JM3250MLW |
| JDCM3250MW | E2JM3250MW |
| JDCM3250W | E2JM3250W |
| JDCMAA2D1 | E2JM3250MM02D01 |
| JDCMDD1S30 | E2JM3250MDS30D01 |
| JDCMFD01 | E2JM3250MFD01 |
| JDCMGA02D1 | E2JM3250MGA02D01 |
| JDCMJA2D1 | E2JM3250MJA02D01 |
| JDCMJD01 | E2JM3250MJD01 |
| JDM2250F | E2JM3250F |
| JDM3070W | E2J3070W |
| JDM3090W | E2J3090W |
| JDM3100W | E2J3100W |
| JDM3125W | E2J3125W |
| JDM3150W | E2J3150W |
| JDM3150WU18 | E2J3150WU18 |

E² Cross-Reference, continued

| Series C Mining | Superseded by E ² Mining |
|----------------------|-------------------------------------|
| JDM3175W | E2J3175W |
| JDM3200W | E2J3200W |
| JDM3200WA06 | E2J3200WA06 |
| JDM3225A5W | E2J3225AW |
| JDM3225D5W | E2J3225DW |
| JDM3225W | E2J3225W |
| JDM3250A5MW | E2J3250MAW |
| JDM3250A5W | E2J3250AW |
| JDM3250C5MW | E2J3250CW |
| JDM3250D5MW | E2J3250MDW |
| JDM3250D5W | E2J3250DW |
| JDM3250F | E2J3250F |
| JDM3250F5MW | E2J3250MFW |
| JDM3250G5MW | E2J3250MGW |
| JDM3250J5MW | E2J3250MJW |
| JDM3250K5MW | E2J3250MKW |
| JDM3250L5MW | E2J3250MLW |
| JDM3250MW | E2J3250MW |
| JDM3250W | E2J3250W |
| JDM3250WS10 | E2J3250WS10 |
| JM2225T1125-2250 | E2J3225T |
| JM3070T | E2J3070T |
| JM3090T | E2J3090T |
| JM3100T | E2J3100T |
| JM3125T | E2J3125T |
| JM3150T | E2J3150T |
| JM3175T | E2J3175T |
| JM3200T | E2J3200T |
| JM3225T | E2J3225T |
| JM3225TA5 | E2J3225TA |
| JM3225TD5 | E2J3225TD |
| JM3250T | E2J3250T |
| JM3250TA5 | E2J3250TA |
| JM3250TA5M_350-700 | E2J3250TMA |
| JM3250TC5M | E2J3250TMC |
| JM3250TD5_500-1000 | E2J3250TMD |
| JM3250TF5M_625-1250 | E2J3250TMF |
| JM3250TG5M_750-1500 | E2J3250TMG |
| JM3250TJ5M_875-1750 | E2J3250TMJ |
| JM3250TK5M_1000-2000 | E2J3250TMK |

| Series C Mining | Superseded by E ² Mining |
|----------------------|-------------------------------------|
| JM3250TL5M_1125-2250 | E2J3250TML |
| JM3250TM | E2J3250TM |
| KDCM3100W | E2KM3100W |
| KDCM3125W | E2KM3125W |
| KDCM3150W | E2KM3150W |
| KDCM3175W | E2KM3175W |
| KDCM3200W | E2KM3200W |
| KDCM3225A5MW | E2KM3200MAW |
| KDCM3225D5MW | E2KM3200MDW |
| KDCM3225W | E2KM3225W |
| KDCM3250W | E2KM3250W |
| KDCM3250WU18 | E2KM3250WU18 |
| KDCM3300W | E2KM3300W |
| KDCM3350W | E2KM3350W |
| KDCM3400D5MA02D09H04 | E2KM3400MDA02D09H04 |
| KDCM3400D5MW | E2KM3400MDW |
| KDCM3400D5MWA02D07 | E2KM3400MDA02D07 |
| KDCM3400D5W | E2KM3400DW |
| KDCM3400D5WD09 | E2KM3400DD09 |
| KDCM3400F | E2KM3400F |
| KDCM3400F5MW | E2KM3400MFW |
| KDCM3400FD09G04 | E2KM3400MFD09G04 |
| KDCM3400G5MW | E2KM3400MGD09G05 |
| KDCM3400G5MWD09H04 | E2KM3400MGD09H04 |
| KDCM3400G5W | E2KM3400MGW |
| KDCM3400G5WD07 | E2KM3400MGD07 |
| KDCM3400J5MA02D09 | E2KM3400MJA02D09 |
| KDCM3400J5MA2D9G4S30 | E2KM3400MJA2D9G4S30 |
| KDCM3400J5MD09 | E2KM3400MJD09 |
| KDCM3400J5MD09H04S30 | E2KM3400MJD09H04S30 |
| KDCM3400J5MW | E2KM3400MJW |
| KDCM3400J5MWA02D07 | E2KM3400MJA02D07 |
| KDCM3400J5MWA06 | E2KM3400MJWA06 |
| KDCM3400J5MWD07S30 | E2KM3400MJD07S30 |
| KDCM3400J5WD07 | E2KM3400MJD07 |
| KDCM3400K5MW | E2KM3400MKW |
| KDCM3400K5MWS10 | E2KM3400MKWS10 |
| KDCM3400K5MWU18 | E2KM3400MKWU18 |
| KDCM3400L5MW | E2KM3400MLW |
| KDCM3400L5MWD09H04 | E2KM3400MLD09H04 |

2.6

Molded Case Circuit Breakers

Specialty Breakers

2

E² Cross-Reference, continued

| Series C Mining | Superseded by E ² Mining |
|----------------------|-------------------------------------|
| KDCM3400L5MWS10 | E2KM3400MLWS10 |
| KDCM3400L5WD07 | E2KM3400MLD07 |
| KDCM3400MW | E2KM3400MW |
| KDCM3400N5MW | E2KM3400MNW |
| KDCM3400N5MWA06 | E2KM3400MNWA06 |
| KDCM3400N5WA02D07 | E2KM3400MNA02D07 |
| KDCM3400R5MW | E2KM3400MRW |
| KDCM3400W | E2KM3400W |
| KDCM3400W5MW | E2KM3400MWW |
| KDCMDMD07 | E2KM3400MDD07 |
| KDCMNA2D7 | E2KM3400MNA02D07 |
| KDM2400F | E2K2400F |
| KDM2400G5MS50 | E2K2400MGWS50 |
| KDM2400G5MW | E2K2400MGW |
| KDM2400W5MW | E2K2400MWW |
| KDM2400W5MWA06D07S10 | E2K2400MWA06D07S10 |
| KDM2400W5MWA06D10S10 | E2K2400MWA06D10S10 |
| KDM2400W5MWD07 | E2K2400MWD07 |
| KDM2400W5MWD07S10 | E2K2400MWD07S10 |
| KDM2400W5MWD10 | E2K2400MWD10 |
| KDM2400W5MWD10S10 | E2K2400MWD10S10 |
| KDM2400W5MWS10 | E2K2400MWS10 |
| KDM3100W | E2K3100W |
| KDM3125W | E2K3125W |
| KDM3150W | E2K3150W |
| KDM3150WA06 | E2K3150WA06 |
| KDM3175W | E2K3175W |
| KDM3200W | E2K3200W |
| KDM3225A5W | E2K3225AW |
| KDM3225D5A13D09U18 | E2K3225DA13D09U18 |
| KDM3225D5MW | E2K3400MDW |
| KDM3225D5W | E2K3225DW |
| KDM3225F | E2K3400F |
| KDM3225W | E2K3225W |
| KDM3225WK37 | E2KE3225W |
| KDM3225WK37U18 | E2KE3225WU18 |
| KDM3225WK38 | E2KE3225MW |
| KDM3250W | E2K3250W |
| KDM3300W | E2K3300W |
| KDM3300WA06U18 | E2K3300WA06U18 |

| Series C Mining | Superseded by E ² Mining |
|----------------------|-------------------------------------|
| KDM3300WS10 | E2K3300WS10 |
| KDM3350W | E2K3350W |
| KDM3400D5MW | E2K3400MDW |
| KDM3400D5W | E2K3400DW |
| KDM3400D5WU18 | E2K3400DWU18 |
| KDM3400F | E2K3400F |
| KDM3400F5MW | E2K3400MFW |
| KDM3400FK37A06D09D18 | E2KE3400A06D09D18 |
| KDM3400G5A06D09U18 | E2K3400GA06D09U18 |
| KDM3400G5A13D09U18 | E2K3400GA13D09U18 |
| KDM3400G5MW | E2K3400MGW |
| KDM3400G5W | E2K3400GW |
| KDM3400G5WA06 | E2K3400GWS10 |
| KDM3400G5WS10 | E2K3400GWS10 |
| KDM3400G5WU18 | E2K3400GWU18 |
| KDM3400J5MW | E2K3400MJW |
| KDM3400K5MS54 | E2K3400MKWS54 |
| KDM3400K5MW | E2K3400MKW |
| KDM3400L5MW | E2K3400MLW |
| KDM3400MW | E2K3400MW |
| KDM3400MWA06U18 | E2K3400MWA06U18 |
| KDM3400N5MW | E2K3400MNW |
| KDM3400R5MW | E2K3400MRW |
| KDM3400W | E2K3400W |
| KDM3400W5MW | E2K3400MWW |
| KEM3100T | KEM3100T |
| KEM3125T | KEM3125T |
| KEM3150T | KEM3150T |
| KEM3150TM | KEM3150TM |
| KEM3200T | KEM3200T |
| KEM3225T | KEM3225T |
| KEM3225T2 | KEM3225T2 |
| KEM3225TM | KEM3225TM |
| KEM3225TM2 | KEM3225TM2 |
| KM2225TA5 | E2K2225TA |
| KM2225TA5M | E2K2400TMA |
| KM2225TD5 | E2K2225TD |
| KM2225TD5M | E2K2400TMD |
| KM2400TD5 | E2K2400TD |
| KM2400TD5M | E2K2400TMD |

E² Cross-Reference, continued

| Series C Mining | Superseded by E ² Mining |
|-----------------|-------------------------------------|
| KM2400TG5M | E2K2400TMG |
| KM2400TN5M | E2K2400TMN |
| KM2400TW5M | E2K2400TMW |
| KM3100T | E2K3100T |
| KM3125T | E2K3125T |
| KM3150T | E2K3150T |
| KM3175T | E2K3175T |
| KM3200T | E2K3200T |
| KM3225T | E2K3225T |
| KM3225TA5 | E2K3225TA |
| KM3225TA5M | E2K3400TMA |
| KM3225TD5 | E2K3225TD |
| KM3225TD5M | E2K3400TMD |
| KM3250T | E2K3250T |
| KM3300T | E2K3300T |
| KM3350T | E2K3350T |
| KM3400T | E2K3400T |
| KM3400TD5 | E2K3400TD |
| KM3400TF5M | E2K3400TMF |
| KM3400TG5M | E2K3400TMG |
| KM3400TJ5M | E2K3400TMJ |
| KM3400TK5M | E2K3400TMK |
| KM3400TL5M | E2K3400TML |
| KM3400TM | E2K3400TM |
| KM3400TN5M | E2K3400TMN |
| KM3400TR5M | E2K3400TMR |
| KM3400TW5M | E2K3400TMW |
| LDCM3600EMA05W | E2LEM3600MA05W |
| LDCM3600F | E2LM3600F |
| LDM3600F | E2L3600F |

| Series C Mining | Superseded by E ² Mining |
|-----------------|-------------------------------------|
| LEM3300T | LEM3300T |
| LEM3350T | LEM3350T |
| LEM3400T | LEM3400T |
| LEM3400T2 | LEM3400T2 |
| LEM3400TM | LEM3400TM |
| LEM3400TM2 | LEM3400TM2 |
| LEM3600T | LEM3600T |
| LEM3600TM | LEM3600TM |
| LM3600TL6M | E2L3600TML |
| LM3600TN6M | E2L3600TMN |
| LM3600TP6M | E2L3600TMP |
| LM3600TR6M | E2L3600TMR |
| LM3600TS6M | E2L3600TM |
| LM3600TX6M | E2L3600TMX |
| UVE3LP08K | UVE3LP08K |
| UVE4LP08K | UVE4LP08K |

Additional Information on Mining Breakers

| Source | Description |
|----------------------|---|
| TD01217001E | E ² Mining Circuit Breaker Dimensional Data |
| BR01217001E | E ² Mining Circuit Breaker Brochure |
| TC01217001E | E ² Mining Circuit Breaker Time Current Curves |
| www.eaton.com/mining | Mining and Metals |

GFR Relay

2



Add-On Ground Fault Protection—Type GFR

Product Description

A Type GFR ground fault protection system, when properly installed on a grounded electrical system, will sense phase-to-ground fault currents. When the level of fault current is in excess of the pre-selected current pickup and time delay settings, the GFR relay will initiate a trip action of a disconnect device, which will open the faulted circuit and clear the fault.

The GFR devices are UL Class I devices designed to protect electrical equipment against extensive damage from arcing ground faults.

A basic Type GFR ground fault protection system consists of a ground fault relay, a ground fault current sensor and a disconnect device equipped with a shunt trip device. This disconnect device can be a molded case circuit breaker, a power circuit breaker, a bolted pressure switch or other fusible disconnect device, suitable for application with UL Class I ground fault sensing and relaying equipment.

Note: Suitable for either surface or semi-flush mounting.

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| PVGard Solar Circuit Breakers—600 Vdc Per-Pole and 1000 Vdc Poles-in-Series | V4-T2-363 |
| E ² Mining Service Circuit Breakers | V4-T2-376 |
| Classic Mining Breakers | V4-T2-402 |
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Standards and Certifications

Eaton's GFR ground fault relays, current sensors, test panels and accessory devices are UL listed by Underwriters Laboratories in accordance with their standard for ground fault sensing and relaying equipment, UL 1053, under File E48381.

Note: Relays are also listed with CSA under their file number 43357.



Product Selection

Each installation requires:

- One relay unit (select trip ampere as required)
- One current sensor (select configuration required)
- One circuit breaker or disconnect device with shunt trip, or a shunt trip attachment for mounting in existing breaker
- Test panel (optional)

GFR Relay**GFR Relay****GFR Relay Types****Ground Fault Pickup Amperes**

| GFR Relay Types | 1–12 | 5–60 | 100–1200 |
|--|-----------------------------|-----------------------------|-----------------------------|
| | Catalog Number ^① | Catalog Number ^① | Catalog Number ^① |
| For 120 Volt 50/60 Hz Control | | | |
| Electrical reset with zone interlocking | GFR12EI | GFR60EI | GFR1200EI |
| Electrical reset without zone interlocking | GFR12E | GFR60E | GFR1200E |
| Mechanical reset with zone interlocking | GFR12MI | GFR60MI | GFR1200MI |
| Mechanical reset without zone interlocking | GFR12M | GFR60M | GFR1200M |
| For 120 Vdc Control | | | |
| Electrical reset with zone interlocking | — | — | GFR1200EID |
| Electrical reset without zone interlocking | — | — | GFR1200ED |
| Mechanical reset with zone interlocking | — | — | GFR1200MID |
| Mechanical reset without zone interlocking | — | — | GFR1200MD |

Typical Current Sensor**Current Sensor****Window Size in Inches (mm)****Catalog Number****Used with Relays Rated 1–12 Amperes**

| | |
|-------------------|------------|
| 5.50 (139.7) I.D. | 1283C45G01 |
|-------------------|------------|

Used with Relays Rated 5–60 Amperes

| | |
|---|------------|
| 2.50 (63.5) I.D. | 179C768G01 |
| 5.50 (139.7) I.D. | 1256C13G01 |
| 7.81 x 11.00 (198.4 x 279.4) Rect. ^② | 1257C88G04 |
| 3.31 x 24.94 (84.1 x 760.5) Rect. ^② | 1257C92G03 |

Used with Relays Rated 100–1200 Amperes

| | |
|--|------------|
| 2.50 (63.5) I.D. | 179C768G02 |
| 5.50 (139.7) I.D. | 1256C13G02 |
| 8.25 (209.6) I.D. | 179C767G02 |
| 7.81 x 11.00 (198.4 x 279.4) Rect. ^② | 1257C88G03 |
| 9.94 x 16.94 (252.5 x 430.3) Rect. ^② | 1257C90G02 |
| 9.94 x 23.94 (252.5 x 608.1) Rect. ^② | 1257C91G02 |
| 15.94 x 19.94 (404.9 x 506.4) Rect. ^② | 1257C89G02 |
| 3.31 x 24.94 (84.1 x 633.5) Rect. ^② | 1257C92G04 |
| 6.75 x 29.64 (171.5 x 752.9) Rect. ^② | 1255C39G03 |

Notes

- ^① Suitable for either surface or semi-flush mounting.
^② One end removable for installation.

Accessories

Options

Additional optional equipment can be added to the protection system to meet the requirements of the specifying engineer, including:

- Ground fault test panel
- Ground fault warning indicator relay
- Ground fault indicating ammeter

GFR relays are available with zone selective interlocking circuitry to interlock several relays within the same system. This allows the relay which detects a ground fault to instantly clear the fault by tripping the disconnect device. The relay simultaneously sends a signal to relay units “upstream” from the fault to time delay or to block their operation completely. Current sensors in various designs provide a range of “window” sizes to accommodate standard bus and cable arrangements.

Shunt trip attachments may be ordered for field mounting in Eaton’s molded case circuit breakers, or may be ordered factory installed in the breaker.

Test Panel (120 Vac)

Used to test the ground fault system, to give an indication the relay has tripped the breaker, and to reset the relay after tripping. These functions may be separately mounted pilot devices.

Note: When a mechanically reset relay is used with a test panel, both the relay and test panel must be reset following either a simulated ground fault test or actual ground fault. Not UL listed.

Optional Test Panel

| Control | Test | Catalog Number |
|----------------------|----------------------|----------------|
| 120 Volt 50/60 Hz | 120 Volt 50/60 Hz | GFRTP |

Ground Fault Warning Indicator

This is an accessory item for use with GFR relays with interlocking circuitry. At approximately 30–50% of the relay pickup setting, the indicator switches separate 120 Vac control power to a lamp or relay, (not included) to give an indication of a ground fault. The indicator is rated 110/120 Vac 50/60 Hz for a maximum indicator load of 0.5 amperes.

Ground Fault Warning Indicator

| Description | Catalog Number |
|----------------|-------------------|
| Manual reset | 1234C67G01 |
| Self-resetting | 1234C67G02 |

Indicating Ammeter

The optional indicating ammeter connects to the sensor terminals through a momentary contact pushbutton, and will indicate (in amperes) any ground fault current flowing through the sensor. Kit includes the ammeter and pushbutton.

Note: Not UL listed.

Ammeter Kit

| GFR System Used with | Kit Catalog Number |
|----------------------|--------------------|
| 1–12 ampere | 752B820G01 |
| 5–60 ampere | 752B820G02 |
| 100–1200 ampere | 752B820G03 |

Shunt Trip Attachments

Use 120 Vac shunt trips.

Faceplate

Recommended when these relays are semi-flush mounted, to close the door cutout opening.

Face Plate

| Description | Catalog Number |
|-------------|-------------------|
| Faceplate | 752B410G01 |

Technical Data and Specifications

Sensor

- 600 volt, 50/60 Hz maximum system voltage

Electrical Ratings

GFR Relay

- Ground fault detection ranges:
 - 1 to 12, 5 to 60 or 100 to 1200 amperes
- Output contacts:
 - 240 volt, 50/60 Hz: 3.0 amperes
 - 120 volt, 50/60 Hz: 6.0 amperes
 - 28 Vdc: 3.0 amperes
 - 125 Vdc: 0.5 amperes
- Control power requirements:
 - 120 volt, 50/60 Hz or 125 Vdc (optional)

Handle Mechanisms



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| Direct (Close-Coupled) Handle Mechanisms . . . | V4-T2-441 |
| Flex Shaft. | V4-T2-443 |
| Handle Extension. | V4-T2-446 |

Handle Mechanisms—Series G

Product Overview

Handle mechanisms are used to operate molded case circuit breakers, molded case switches and motor circuit protectors. They are available in three basic configurations—Flange Mounted, Through-the-Door and Direct (Close-Coupled)—providing safe, dependable operation and ease of installation.

Through-the-Door

- High-Performance Rotary
- Universal Rotary

Direct (Close-Coupled)

- Universal Direct

Flange Mounted

- Flex Shaft™

Handle mechanisms are used on enclosed circuit breakers, control panels and motor control centers in many different applications. Eaton has a handle mechanism for virtually any need.

Handle Mechanisms

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| Universal Rotary | V4-T2-439 |
| Direct (Close-Coupled) Handle Mechanisms | V4-T2-441 |
| Flex Shaft | V4-T2-443 |
| Handle Extension | V4-T2-446 |

High-Performance Rotary Handle Mechanisms

Product Description

The high-performance rotary handle mechanism uses a simple, yet robust design to make installation and operation easy. The external handle's key functional components are all metallic, ensuring reliability. The metal-on-metal interface between the handle and shaft prevents contaminant buildup that could impede operation, while UV and chemical agent resistant materials protect the handle from heat and fading in direct sunlight, as well as chemicals that may be introduced in harsh environments.

In addition to its robust design features, the handle mechanism has stand-off support that allows for easy operation with a gloved hand. With a shallow profile, the handle can easily be used in applications where an internal or double door is required.

The high-performance external handle can accept padlocks or multi-hasps locks. The door is interlocked when padlocked and cannot be bypassed.

Features

- NEMA Type 1/3R/12 (IP54) and NEMA Type 4/4X (IP65) ratings
- Black/Blue or Red/Yellow external handle colors
- Three shaft lengths—6, 12 and 24 inches, which can be cut to size to match enclosure depth
- Conveniently packaged as kit containing handle, shaft and mechanism
- Replacement parts are available separately
- Metallic functional components ensure reliability
- Metal-on-metal interface between handle and shaft
- UV and chemical agent-resistant materials protect the handle
- Shallow profile
- Compatible with both Series C and Series G molded case circuit breakers and molded case switch platforms
- Same handle can be used on multiple frame sizes, reducing the number of parts needed
- Red and yellow handles to designate emergency disconnecting means
- All handle mechanisms can accept padlocks or multi-hasps locks for added flexibility
- Fast, easy installation (see video on website for step-by-step instructions)

Standards and Certifications

The mechanisms for EG, JG and LG breakers have an internal handle that can be operated independent of door position, and locked-out to meet one of the key NFPA requirements (NFPA® 79) and UL 508A disconnect requirements.





- NEMA 1/3R/12, IP54
- NEMA 4/4X, IP65



Product Selection

Handle Mechanisms for Series G Frames

Kits Only (Kit Includes Shaft, Mechanism and Handle)—EG-, JG- and LG-Frame

| | Description | Rating Type | | EG-Frame Catalog Number | JG-Frame Catalog Number | LG-Frame Catalog Number |
|---|-------------------------------------|-------------|----|-------------------------------|-------------------------------|-------------------------------|
| | | NEMA | IP | | | |
| S01 Blue Handle  | S01 blue handle, 6-inch shaft | 1/3R/12 | 54 | EGHMVD06B0 / 68C6040G25 | JGHMVD06B0 / 68C6041G13 | — |
| | | 4/4X | 65 | EGHMVD06BX0 / 68C6040G28 | JGHMVD06BX0 / 68C6041G16 | — |
| | S01 blue handle, 12-inch shaft | 1/3R/12 | 54 | EGHMVD12B0 / 68C6040G26 | JGHMVD12B0 / 68C6041G14 | — |
| | | 4/4X | 65 | EGHMVD12BX0 / 68C6040G29 | JGHMVD12BX0 / 68C6041G17 | — |
| | S01 blue handle, 24-inch shaft ① | 1/3R/12 | 54 | EGHMVD24B0 / 68C6040G27 | JGHMVD24B0 / 68C6041G15 | — |
| | | 4/4X | 65 | EGHMVD24BX0 / 68C6040G30 | JGHMVD24BX0 / 68C6041G18 | — |
| S01 Red Handle  | S01 red handle, 6-inch shaft | 1/3R/12 | 54 | EGHMVD06R0 / 68C6040G31 | JGHMVD06R0 / 68C6041G19 | — |
| | | 4/4X | 65 | EGHMVD06RX0 / 68C6040G34 | JGHMVD06RX0 / 68C6041G22 | — |
| | S01 red handle, 12-inch shaft | 1/3R/12 | 54 | EGHMVD12R0 / 68C6040G32 | JGHMVD12R0 / 68C6041G20 | — |
| | | 4/4X | 65 | EGHMVD12RX0 / 68C6040G35 | JGHMVD12RX0 / 68C6041G23 | — |
| | S01 red handle, 24-inch shaft ① | 1/3R/12 | 54 | EGHMVD24R0 / 68C6040G33 | JGHMVD24R0 / 68C6041G21 | — |
| | | 4/4X | 65 | EGHMVD24RX0 / 68C6040G36 | JGHMVD24RX0 / 68C6041G24 | — |
| S2 Blue Handle  | S2 blue handle, 6-inch shaft | 1/3R/12 | 54 | EGHMVD06B / 68C6040G13 | JGHMVD06B / 68C6041G01 | LGHMVD06B / 68C6042G01 |
| | | 4/4X | 65 | EGHMVD06BX / 68C6040G16 | JGHMVD06BX / 68C6041G04 | LGHMVD06BX / 68C6042G04 |
| | S2 blue handle, 12-inch shaft | 1/3R/12 | 54 | EGHMVD12B / 68C6040G14 | JGHMVD12B / 68C6041G02 | LGHMVD12B / 68C6042G02 |
| | | 4/4X | 65 | EGHMVD12BX / 68C6040G17 | JGHMVD12BX / 68C6041G05 | LGHMVD12BX / 68C6042G05 |
| | S2 blue handle, 24-inch shaft ① | 1/3R/12 | 54 | EGHMVD24B / 68C6040G15 | JGHMVD24B / 68C6041G03 | LGHMVD24B / 68C6042G03 |
| | | 4/4X | 65 | EGHMVD24BX / 68C6040G18 | JGHMVD24BX / 68C6041G06 | LGHMVD24BX / 68C6042G06 |
| S2 Red Handle  | S2 red handle, 6-inch shaft | 1/3R/12 | 54 | EGHMVD06R / 68C6040G19 | JGHMVD06R / 68C6041G07 | LGHMVD06R / 68C6042G07 |
| | | 4/4X | 65 | EGHMVD06RX / 68C6040G22 | JGHMVD06RX / 68C6041G10 | LGHMVD06RX / 68C6042G10 |
| | S2 red handle, 12-inch shaft | 1/3R/12 | 54 | EGHMVD12R / 68C6040G20 | JGHMVD12R / 68C6041G08 | LGHMVD12R / 68C6042G08 |
| | | 4/4X | 65 | EGHMVD12RX / 68C6040G23 | JGHMVD12RX / 68C6041G11 | LGHMVD12RX / 68C6042G11 |
| | S2 red handle, 24-inch shaft ① | 1/3R/12 | 54 | EGHMVD24R / 68C6040G21 | JGHMVD24R / 68C6041G09 | LGHMVD24R / 68C6042G09 |
| | | 4/4X | 65 | EGHMVD24RX / 68C6040G24 | JGHMVD24RX / 68C6041G12 | LGHMVD24RX / 68C6042G12 |

Notes





① 24-inch handle comes with support bracket.

Shaft guide (68C6048G49) is optional and can be used with any high-performance handle listed above for greater alignment tolerance.

Handle Mechanisms for Series G Frames

2

Kits Only (Kit Includes Shaft, Mechanism and Handle)—NG- and RG-Frame

| | Description | Rating Type | | NG-Frame | RG-Frame |
|---|----------------------------------|-------------|----|---------------------------------|--------------------------------|
| | | NEMA | IP | Catalog Number | Catalog Number |
| S3 Blue Handle  | S3 blue handle, 10-inch shaft | 1/3R/12 | 54 | NGHMVD08B / 68C6043G01 | — |
| | | 4/4X | 65 | NGHMVD08BX / 68C6043G03 | — |
| S3 Red Handle  | S3 red handle, 10-inch shaft | 1/3R/12 | 54 | NGHMVD08R / 68C6043G02 | — |
| | | 4/4X | 65 | NGHMVD08RX / 68C6043G04 | — |
| S4 Blue Handle  | S4 blue handle, 10-inch shaft | 1/3R/12 | 54 | NGHMVD08BT / 68C6043G05 | RGHMVD08B / 68C6044G01 |
| | | 4/4X | 65 | NGHMVD08BTX / 68C6043G07 | RGHMVD08BX / 68C6044G03 |
| S4 Red Handle  | S4 red handle, 10-inch shaft | 1/3R/12 | 54 | NGHMVD08RT / 68C6043G06 | RGHMVD08R / 68C6044G02 |
| | | 4/4X | 65 | NGHMVD08RTX / 68C6043G08 | RGHMVD08RX / 68C6044G04 |

Note

Shaft guide (68C6048G49) is optional and can be used with any high-performance handle listed above for greater alignment tolerance.

Separate Components for Series G Frames**Series G Components—Shafts and Mechanisms**

| Frame | Shaft Width | Shaft Length | | | | Mechanism Only |
|-------|-------------|--------------|------------|------------|----------------------|----------------|
| | | 6-Inch | 10-Inch | 12-Inch | 24-Inch ^① | |
| EG | 8 mm | 66A6010G95 | — | 66A6010G96 | 66A6010G97 | 1498D66G17 |
| JG | 8 mm | 66A6010G95 | — | 66A6010G96 | 66A6010G98 | 69D6025G17 |
| LG | 8 mm | 66A6010G95 | — | 66A6010G96 | 66A6010G99 | 69D6051G30 |
| NG | 12 mm | — | 66A6013H01 | — | — | 69D9101G30 |
| RG | 12 mm | — | 66A6013H01 | — | — | 69D9101G31 |

Series G Components—Handles Only

| Frame | Rating Type | | Handles Only | | | | | | | |
|-------|-------------|----|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | NEMA | IP | S01 Blue/Black | S01 Red/Yellow | S2 Blue/Black | S2 Red/Yellow | S3 Blue/Black | S3 Red/Yellow | S4 Blue/Black | S4 Red/Yellow |
| EG | 1/3R/12 | 54 | 68C6048G41 | 68C6048G42 | 68C6048G01 | 68C6048G02 | — | — | — | — |
| | 4/4X | 65 | 68C6048G43 | 68C6048G44 | 68C6048G03 | 68C6048G04 | — | — | — | — |
| JG | 1/3R/12 | 54 | 68C6048G41 | 68C6048G42 | 68C6048G01 | 68C6048G02 | — | — | — | — |
| | 4/4X | 65 | 68C6048G43 | 68C6048G44 | 68C6048G03 | 68C6048G04 | — | — | — | — |
| LG | 1/3R/12 | 54 | — | — | 68C6048G01 | 68C6048G02 | 68C6048G05 | 68C6048G06 | — | — |
| | 4/4X | 65 | — | — | 68C6048G03 | 68C6048G04 | 68C6048G07 | 68C6048G08 | — | — |
| NG | 1/3R/12 | 54 | — | — | — | — | 68C6048G05 | 68C6048G06 | 68C6048G09 | 68C6048G10 |
| | 4/4X | 65 | — | — | — | — | 68C6048G07 | 68C6048G08 | 68C6048G11 | 68C6048G12 |
| RG | 1/3R/12 | 54 | — | — | — | — | — | — | 68C6048G09 | 68C6048G10 |
| | 4/4X | 65 | — | — | — | — | — | — | 68C6048G11 | 68C6048G12 |

Series G Components—Optional Caps

As an alternative to blue or red, a black, replaceable cap is available.

| | | | Catalog Number |
|-----|------------|------------------|----------------|
| S01 | 66A6032H01 | Black handle cap | HPHC0DGX |
| S2 | 66A6032H02 | Black handle cap | HPHC2DGX |
| S3 | 66A6032H03 | Black handle cap | HPHC3DGX |

Series G Replacement Hardware

This kit provides replacement parts for Series G high performance handle only.

| | Catalog Number |
|---|----------------|
| High-performance handle replacement parts kit | 66A6029G01 |

Notes

① 24-inch handle comes with support bracket.

Shaft guide (68C6048G49) is optional and can be used with any high-performance handle listed above for greater alignment tolerance.

2.7

Molded Case Circuit Breakers

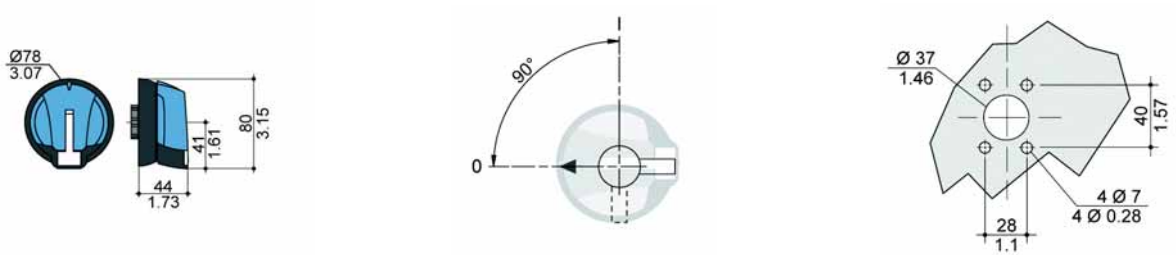
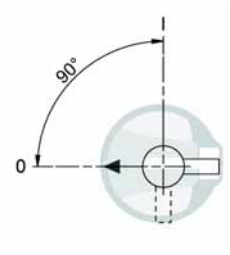
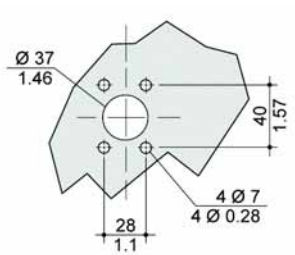
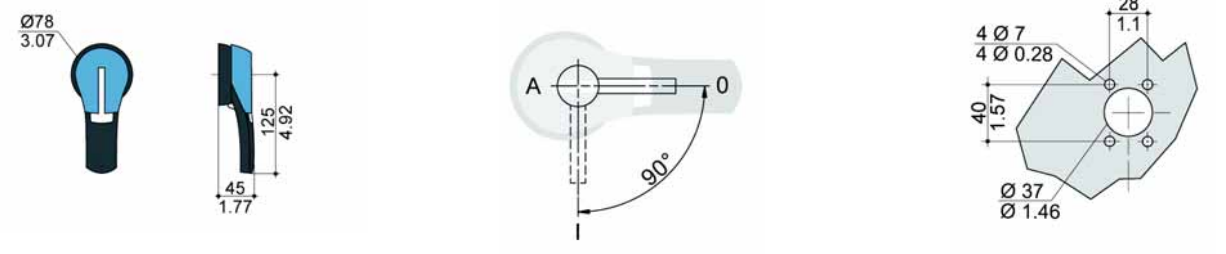
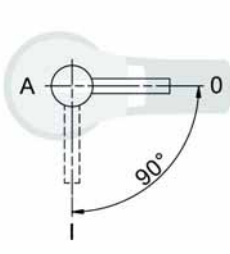
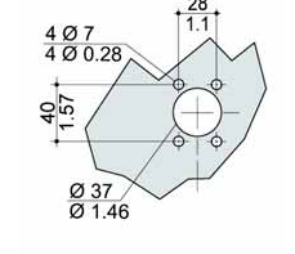
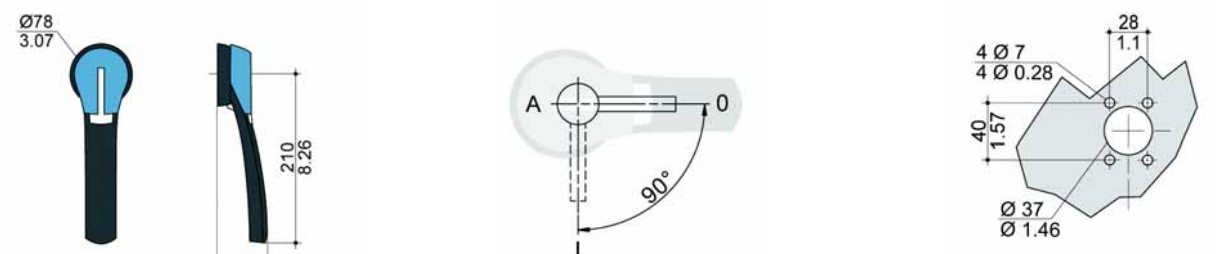
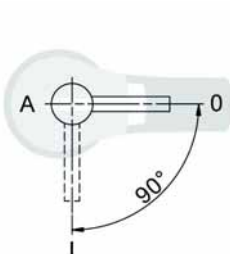
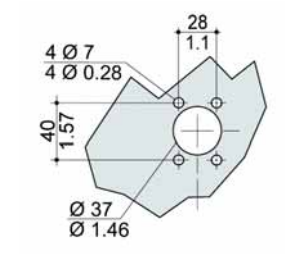
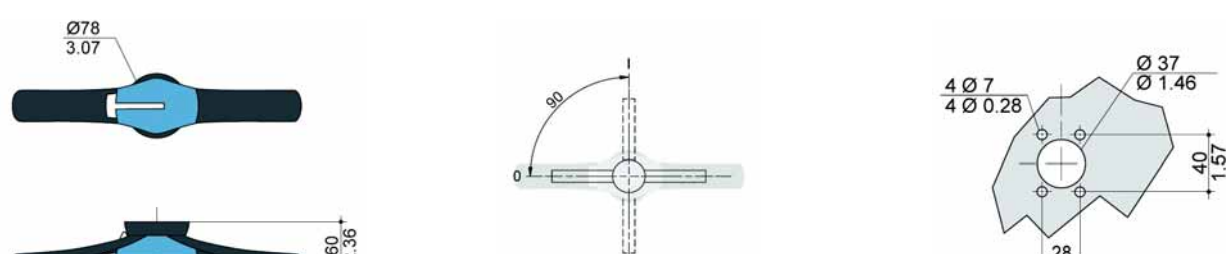
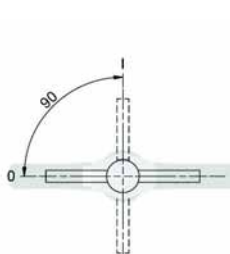
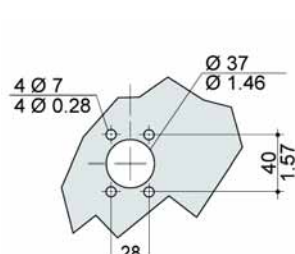
Handle Mechanisms

Dimensions

Approximate Dimensions in mm (Inches)

2

High-Performance Rotary Handle Mechanisms

| Handle Type | Front Operation Direction of Operation | Door Drilling |
|--|---|---|
| Type S01  <p>Technical drawing of Type S01 handle mechanism. Front view shows a circular handle with a diameter of $\varnothing 78$ (3.07 inches). Side view shows a height of 80 mm (3.15 inches) and a base width of 44 mm (1.73 inches). The door drilling pattern is a circular shape with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 2x2 grid. The distance between the center of the handle and the center of the mounting holes is 28 mm (1.1 inches). The distance between the centers of the mounting holes is 40 mm (1.57 inches).</p> |  <p>Technical drawing of Type S01 handle mechanism showing front view and direction of operation. The handle is shown in a vertical position, and the door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0 position.</p> |  <p>Technical drawing of Type S01 handle mechanism showing door drilling pattern. The door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0 position. The door drilling pattern is a circular shape with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 2x2 grid. The distance between the center of the handle and the center of the mounting holes is 28 mm (1.1 inches). The distance between the centers of the mounting holes is 40 mm (1.57 inches).</p> |
| Type S2  <p>Technical drawing of Type S2 handle mechanism. Front view shows a handle with a diameter of $\varnothing 78$ (3.07 inches). Side view shows a height of 125 mm (4.92 inches) and a base width of 45 mm (1.77 inches). The door drilling pattern is a circular shape with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 2x2 grid. The distance between the center of the handle and the center of the mounting holes is 28 mm (1.1 inches). The distance between the centers of the mounting holes is 40 mm (1.57 inches).</p> |  <p>Technical drawing of Type S2 handle mechanism showing front view and direction of operation. The handle is shown in a vertical position, and the door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0 position.</p> |  <p>Technical drawing of Type S2 handle mechanism showing door drilling pattern. The door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0 position. The door drilling pattern is a circular shape with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 2x2 grid. The distance between the center of the handle and the center of the mounting holes is 28 mm (1.1 inches). The distance between the centers of the mounting holes is 40 mm (1.57 inches).</p> |
| Type S3  <p>Technical drawing of Type S3 handle mechanism. Front view shows a handle with a diameter of $\varnothing 78$ (3.07 inches). Side view shows a height of 210 mm (8.26 inches) and a base width of 61 mm (2.4 inches). The door drilling pattern is a circular shape with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 2x2 grid. The distance between the center of the handle and the center of the mounting holes is 28 mm (1.1 inches). The distance between the centers of the mounting holes is 40 mm (1.57 inches).</p> |  <p>Technical drawing of Type S3 handle mechanism showing front view and direction of operation. The handle is shown in a vertical position, and the door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0 position.</p> |  <p>Technical drawing of Type S3 handle mechanism showing door drilling pattern. The door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0 position. The door drilling pattern is a circular shape with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 2x2 grid. The distance between the center of the handle and the center of the mounting holes is 28 mm (1.1 inches). The distance between the centers of the mounting holes is 40 mm (1.57 inches).</p> |
| Type S4  <p>Technical drawing of Type S4 handle mechanism. Front view shows a handle with a diameter of $\varnothing 78$ (3.07 inches). Side view shows a height of 60 mm (2.36 inches) and a base width of 350 mm (13.78 inches). The door drilling pattern is a circular shape with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 2x2 grid. The distance between the center of the handle and the center of the mounting holes is 28 mm (1.1 inches). The distance between the centers of the mounting holes is 40 mm (1.57 inches).</p> |  <p>Technical drawing of Type S4 handle mechanism showing front view and direction of operation. The handle is shown in a vertical position, and the door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0 position.</p> |  <p>Technical drawing of Type S4 handle mechanism showing door drilling pattern. The door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0 position. The door drilling pattern is a circular shape with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 2x2 grid. The distance between the center of the handle and the center of the mounting holes is 28 mm (1.1 inches). The distance between the centers of the mounting holes is 40 mm (1.57 inches).</p> |

Handle Mechanisms



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Universal Rotary

Product Description

Eaton’s Universal Rotary is suitable for use with Type 1 or 12 enclosure types. All rotary handle mechanisms include a handle “lock off” to prevent turning the breaker ON while in the OFF position, and indicate ON/OFF/Tripped/Reset positions. The Universal Rotary has the added feature of international markings for ON (I) and OFF (O). The Universal Rotary is made of molded material.

The Universal Rotary mechanisms for EG-, JG- and LG-Frame MCCBs can be operated by hand with the door open or “locked off” to prevent operation with the door open.

Standards and Certifications

Universal Rotary is UL listed and meets CSA requirements. Universal Rotary also meets IEC 60947-1 and IEC 60947-2 for international compliance. Rotary UL File Number is E64983.



Features

Features Comparison of Series C Rotary and Universal Rotary Handle Mechanism

| Rotary | Number of Poles | NEMA Enclosure Type | | | | Handle Lock-Off ② | Handle Indication: ON/OFF TRIPPED/RESET | International Markings ON (I) OFF (O) | Handle Material | Available Handle Colors | Handle Rotation | Shaft Lengths (Inches) |
|------------------|-----------------|---------------------|----|----|--------|-------------------|---|---------------------------------------|-----------------|-------------------------|-----------------|------------------------|
| | | 1 | 3R | 12 | 4/4X ① | | | | | | | |
| Series C rotary | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | Metal | Black | 45 deg. | 6, 12, 16, 24 |
| Universal rotary | — | ■ | — | ■ | — | ■ | ■ | ■ | Molded plastic | Yellow/Red/Black | 90 deg. | 6, 12, 24 |

Notes

- ① Type 4/4X application requires special handle. See “Ordering Information.”
- ② All rotary handle mechanisms include a handle “Lock Off” to prevent turning the breaker ON while in the OFF position.

Product Selection

2

Universal Rotary



Universal Rotary Through-the-Door Handle Mechanisms

| Handle Color | UL Rating | Shaft Length in Inches (mm) | Complete Catalog Number ^① |
|-----------------|-----------|-----------------------------|--------------------------------------|
| EG-Frame | | | |
| Black | 1, 12 | 6.00 (152.4) | EHMVD06B |
| | | 12.00 (304.8) | EHMVD12B |
| | | 24.00 (609.6) | EHMVD24B |
| Red | 1, 12 | 6.00 (152.4) | EHMVD06R |
| | | 12.00 (304.8) | EHMVD12R |
| | | 24.00 (609.6) | EHMVD24R |
| JG-Frame | | | |
| Black | 1, 12 | 6.00 (152.4) | FJHMVD06B |
| | | 12.00 (304.8) | FJHMVD12B |
| | | 24.00 (609.6) | FJHMVD24B |
| Red | 1, 12 | 6.00 (152.4) | FJHMVD06R |
| | | 12.00 (304.8) | FJHMVD12R |
| | | 24.00 (609.6) | FJHMVD24R |
| LG-Frame | | | |
| Black | 1, 12 | 6.00 (152.4) | KLHMVD06B |
| | | 12.00 (304.8) | KLHMVD12B |
| | | 24.00 (609.6) | KLHMVD24B |
| Red | 1, 12 | 6.00 (152.4) | KLHMVD06R |
| | | 12.00 (304.8) | KLHMVD12R |
| | | 24.00 (609.6) | KLHMVD24R |
| NG-Frame | | | |
| Black | 1 | 6.00 (152.4) | HMVD5B |
| RG-Frame | | | |
| Black | 1 | 9.00 (228.6) | HMVD6B |

Series G Rotary



Series G Rotary Ordering Information

| Shaft Length Inches (mm) | Complete Catalog Number ^② | Separate Catalog Number | | Shaft ^⑤ | Catalog Number | |
|----------------------------|--------------------------------------|------------------------------|--------------------------------|--------------------|------------------------|------------------------|
| | | Standard Handle ^③ | Breaker Mechanism ^④ | | IEC IP65 ^{⑥⑦} | IEC IP66 ^{⑥⑦} |
| N-Frame (ND and NG) | | | | | | |
| 6.00 (152.4) | HM5R06 | 6648C22G21 | 6648C23G08 | 4217B37G08 | WHM5R06 | WHM5R06X |
| 12.00 (304.8) | HM5R12 | 6648C22G21 | 6648C23G08 | 4217B37G05 | WHM5R12 | WHM5R12X |
| 16.00 (406.4) | HM5R16 | 6648C22G21 | 6648C23G08 | 4217B37G06 | WHM5R16 | WHM5R16X |
| 24.00 (609.6) | HM5R24 | 6648C22G21 | 6648C23G08 | 4217B37G07 | WHM5R24 | WHM5R24X |

Notes

- ① Complete catalog number includes handle, mechanism, shaft and mounting hardware.
- ② Complete catalog number includes the standard handle, mechanism, shaft and support brace/bracket.
- ③ Handle is designed suitable for NEMA Types 1, 3R and 12 enclosures. Use style number **6648C22G03** for Type 4/4X handle or add **X** Suffix to complete catalog number. Handle is cast aluminum.
- ④ Breaker mechanism includes a shaft support bracket and its parts. Shaft is .50-inch (12.7 mm).
- ⑤ Longer shafts, 16-inch (406.4 mm) and 24-inch (609.6 mm), include an adjustable support extension.
- ⑥ IEC handle mechanism supplied with metric thread mounting hardware.
- ⑦ Complete catalog number includes a handle, mechanism and shaft.

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| Flex Shaft | V4-T2-443 |
| Handle Extension | V4-T2-446 |

Direct (Close-Coupled) Handle Mechanisms

Product Description

Direct (close-coupled) handle mechanisms mount directly to the circuit breaker. They are used in shallow enclosures where the standard variable depth Through-the-door type mechanism is not practical or cannot be used.

The Universal Direct handle mechanisms are rated Type 1 and Type 12.

The Universal Direct handle mechanism is available as standard with a door interlock to prevent opening the enclosure while the circuit breaker is in the ON position. It is also available without a door interlock.

Application Description

Direct (close-coupled) handle mechanisms are typically used for applications where high volume, standardized enclosures are being fabricated.

Standards and Certifications

The Universal Direct handle mechanism is UL listed, IEC 60947-1 and IEC 60947-2 compliant, and meets CSA requirements.



Product Selection

Universal Direct (EG-LG)



Universal Direct Handle Mechanisms

| Frame | Black Handle Color | | Red Handle Color | |
|-------|-------------------------------------|--|-------------------------------------|--|
| | With Interlock Catalog Number | Without Interlock Catalog Number | With Interlock Catalog Number | Without Interlock Catalog Number |
| EG | EHMCCBI | EHMCCB | EHMCCRI | EHMCCR |
| JG | JHMCCBI | JHMCCB | JHMCCRI | JHMCCR |
| LG | LHMCCBI | LHMCCB | LHMCCRI | LHMCCR |

Handle Mechanisms

2



Flex Shaft

Product Description

Flange-Mounted Handle Mechanisms

Flange-mounted handle mechanisms mount on the flange of an enclosure door. The Flex Shaft is an extra heavy-duty mechanism that includes a flexible shaft in various lengths, 3 feet (0.9m) through 10 feet (3m) for use with various size enclosures.

The Flex Shaft handle will accept up to three padlock shackles, each with a maximum diameter of 3/8 inches (9.5 mm). It can be used with Type 12 fabricated enclosures. An optional handle is available for Flex Shaft that is suitable for use with Type 4 environments.

Flex Shaft comes preset from the factory, requiring only minor field adjustments on installation, which takes about 10 minutes—a significant time savings compared to installation of other types of flange handle mechanisms. The Flex Shaft mechanism also takes up less interior enclosure space than competitive designs, and the handle fits standard flange cutouts. Flex Shaft handle can be remotely mounted from breaker, where an operator can use it by “funneling” the cable through conduit.

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| Flex Shaft | V4-T2-443 |
| Handle Extension | V4-T2-446 |

Standards and Certifications

Flex Shaft is UL listed under File E64983 and meets CSA requirements.



Product Selection

Note: Type 4X handle mechanisms are available. Add Suffix X to the complete Catalog Number.

Note: When selecting the length of shaft, ensure minimum bending radius of 4 inches (101.6 mm) is maintained to operate properly.

Note: The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

Flex Shaft



Flex Shaft Flange-Mounted Handle Mechanisms ①②

| Breaker Frame | Flexible Shaft Length in Feet (m) | | | | |
|---------------|-----------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | 2 (0.6) Catalog Number | 3 (0.9) Catalog Number | 4 (1.2) Catalog Number | 5 (1.3) Catalog Number | 6 (1.8) Catalog Number |
| EG | EHMFS02 | EHMFS03 | EHMFS04 | EHMFS05 | EHMFS06 |
| JG | N/A | JHMFS03 | JHMFS04 | JHMFS05 | JHMFS06 |
| LG | N/A | — | LHMFS04 | — | — |
| NG | N/A | N/A | F5S04C | F5S05C | F5S06C |
| RG | N/A | N/A | F6S04 | F6S05 | F6S06 |

| Breaker Frame | Flexible Shaft Length in Feet (m) | | | |
|---------------|-----------------------------------|---------------------------|---------------------------|----------------------------|
| | 7 (2.1) Catalog Number | 8 (2.4) Catalog Number | 9 (2.7) Catalog Number | 10 (3.1) Catalog Number |
| EG | EHMFS07 | EHMFS08 | EHMFS09 | EHMFS10 |
| JG | JHMFS07 | JHMFS08 | JHMFS09 | JHMFS10 |
| LG | LHMFS07 | — | — | LHMFS10 |
| NG | N/A | N/A | N/A | F5S10C |
| RG | N/A | N/A | N/A | N/A |

High-Performance Flex Shaft



High-Performance Flex Shaft Flange Mounted Handle Mechanism ①②

| Breaker Frame | Flexible Shaft Length in Feet (m) | | | | |
|---------------|-----------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | 2 (0.6) Catalog Number | 3 (0.9) Catalog Number | 4 (1.2) Catalog Number | 5 (1.3) Catalog Number | 6 (1.8) Catalog Number |
| EG | EGFS02HP | EGFS03HP | EGFS04HP | EGFS05HP | EGFS06HP |
| JG | N/A | JGFS03HP | JGFS04HP | JGFS05HP | JGFS06HP |
| LG | N/A | N/A | LGFS04HP | N/A | N/A |
| NG | N/A | N/A | F5S04HP | F5S05HP | F5S06HP |
| RG | N/A | N/A | F6S04HP | F6S05HP | F6S06HP |

| Breaker Frame | Flexible Shaft Length in Feet (m) | | | |
|---------------|-----------------------------------|---------------------------|---------------------------|----------------------------|
| | 7 (2.1) Catalog Number | 8 (2.4) Catalog Number | 9 (2.7) Catalog Number | 10 (3.1) Catalog Number |
| EG | EGFS07HP | EGFS08HP | EGFS09HP | EGFS10HP |
| JG | JGFS07HP | JGFS08HP | JGFS09HP | JGFS10HP |
| LG | LGFS07HP | N/A | N/A | LGFS10HP |
| NG | N/A | N/A | N/A | F5S10HP |
| RG | N/A | N/A | N/A | N/A |

Notes

- ① Three-pole only for EG-; three- and four-pole for JG- and LG-Frame.
- ② EG-, JG- and LG-Frame can be left- or right-hand mounted.

Accessories

2

Handle Auxiliary Switch—Early Break Design,
1A–1B Contact for Flex Shaft

| Breaker Frame | Catalog Number |
|---------------|----------------|
| EG | AUX1EBFSEG |
| JG | AUX1EBFSJG |
| LG | AUX1EBFSLG |

Auxiliary contact changes state prior to parting of breaker contacts to allow for shutdown of equipment. Contacts mounted on breaker mechanism customer supplied wiring.

Type 12 Safety Door Hardware for Flex Shaft
(E- through R-Frame) ^①

| Catalog Number ^② |
|-----------------------------|
| C361KJ4 |
| C361KJ6 |
| C361KR |

Dimensions

Type 12 Safety Door Hardware for Flex Shaft
(E- through R-Frame) ^①

| Catalog Number ^② | Handle Length in Inches (mm) |
|-----------------------------|------------------------------|
| C361KJ4 | 4.00 (101.6) |
| C361KJ6 | 6.00 (152.4) |
| C361KR | Roller latch ^③ |

Notes

- ① Customer: Consult with box manufacturer for correct door hardware and any adapters required for assembly.
- ② The 1/4-inch x 1/2-inch (6.35 x 12.7 mm) standard mill rectangular locking bar is not supplied with these kits.
- ③ Third roller latch for use with 4.00- or 6.00-inch (101.6 or 152.4 mm) handle when three-point latching is required.

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Handle Mechanisms—Series C

Product Overview

Handle mechanisms are used to operate molded case circuit breakers, molded case switches and motor circuit protectors. They are available in three basic configurations—Flange Mounted, Through-the-Door and Direct (Close-Coupled)—providing safe, dependable operation and ease of installation.

Through-the-Door

- High-Performance Rotary
- Series C Rotary
- Universal Rotary

Direct (Close-Coupled)

- Universal Direct
- Euro IEC
- G Direct

Flange Mounted

- Flex Shaft
- C371

Handle mechanisms are used on enclosed circuit breakers, control panels and motor control centers in many different applications. Eaton has a handle mechanism for virtually any need.

Through-the-Door Handle Mechanisms

Eaton's through-the-door handle mechanisms mount on the front of an enclosure or cabinet door and externally operate the circuit breaker via a variable depth shaft or a linear operator (Type MC). Each rotary type handle mechanism includes a handle, base operating mechanism and shaft that can be cut to various lengths.

Series C Rotary and Universal Rotary handle mechanisms are for use with molded case circuit breakers (G, F, J, K, L, MDL), molded case switches and motor circuit protectors.

Type 4/4X handles are similar to standard handles except they include an internal neoprene gasket. Type 4/4X handle style number is 6648C22G03. Due to gasketing effect between the handle and the housing, the handle may not indicate a tripped position.

Universal Rotary F-Frame**Direct (Close-Coupled) Handle Mechanisms**

Direct (close-coupled) handle mechanisms mount directly to the circuit breaker. They are used in shallow enclosures where the standard variable depth Through-the-door type mechanism is not practical or cannot be used. They are typically for applications where high volume, standardized enclosures are being fabricated.

The Euro IEC Direct handle mechanism can be used on F- through R-Frames.

The G Direct is available with a black or the yellow handle, and with or without a shroud. It is suitable for use with NEMA 1 enclosures. It is for use only with the G-Frame (GD, GC, GHC, GMCP).

An escutcheon ring and interlock clip are provided as standard. The standard design includes a lock-off feature.

Flange-Mounted Handle Mechanisms

Flange-mounted handle mechanisms mount on the flange of an enclosure door. The Flex Shaft is an extra heavy-duty mechanism that includes a flexible shaft in various lengths, 3 feet (0.9m) through 10 feet (3m) for use with various size enclosures.

The Flex Shaft handle will accept up to three padlock shackles, each with a maximum diameter of 3/8-inch (9.5 mm). Can be used with NEMA 1, 3R and 12 fabricated enclosures. An optional handle is available for Flex Shaft that is suitable for use with NEMA 4 and 4X environments. Flex Shaft comes preset from the factory, requiring only minor field adjustments on installation, which takes about 10 minutes—a significant time savings compared to installation of other types of flange handle mechanisms. The Flex Shaft mechanism also takes up less interior enclosure space than competitive designs and the handle fits standard flange cutouts. Flex Shaft handle can be remotely mounted from breaker, where an operator can use it by "funneling" the cable through conduit.

The Type C371 circuit breaker operating mechanisms are designed for installation in control enclosures where main or branch circuit protective devices are required. All circuit breaker mechanisms are suitable for right-hand mounting.

Auxiliary contacts are not available for mounting on operating mechanisms. Where required, have them installed in circuit breaker.

Handle Extension

Handle extension is not included with J, K, L, M and N-Frame breakers. It must be purchased separately.

Standards and Certifications

Type C371 is UL Listed under File E62635.

Flex Shaft is UL Listed under File E64983 and meets CSA requirements.

Series C Rotary and Universal Rotary, are UL Listed and meet CSA requirements. Universal Rotary also meets IEC 60947-1 and IEC 60947-2 for international compliance. Rotary UL File Number is E64983.

The Universal Direct handle mechanism is UL 489 Listed, IEC 60947-1 and IEC 60947-2, and meets CSA requirements. The Euro IEC Direct handle mechanism is IEC-240-1. G Direct is UL Listed and meets CSA requirements.



Handle Mechanisms



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High-Performance Rotary Handle Mechanisms

Product Description

The high-performance rotary handle mechanism uses a simple, yet robust design to make installation and operation easy. The external handle's key functional components are all metallic, ensuring reliability. The metal-on-metal interface between the handle and shaft prevents contaminant buildup that could impede operation, while UV and chemical agent resistant materials protect the handle from heat and fading in direct sunlight, as well as chemicals that may be introduced in harsh environments.

In addition to its robust design features, the handle mechanism has stand-off support that allows for easy operation with a gloved hand. With a shallow profile, the handle can easily be used in applications where an internal or double door is required.

The high-performance external handle can accept padlocks or multi-hasps locks. The door is interlocked when padlocked and cannot be bypassed.

Features

- NEMA Type 1/3R/12 (IP54) and NEMA Type 4/4X (IP65) ratings
- Black/Blue or Red/Yellow external handle colors
- Three shaft lengths—6, 12 and 24 inches, which can be cut to size to match enclosure depth
- Conveniently packaged as kit containing handle, shaft and mechanism
- Replacement parts are available separately
- Metallic functional components ensure reliability
- Metal-on-metal interface between handle and shaft
- UV and chemical agent-resistant materials protect the handle
- Shallow profile
- Compatible with both Series C and Series G molded case circuit breakers and molded case switch platforms
- Same handle can be used on multiple frames sizes reducing the number of parts needed
- Red and yellow handles to designate emergency disconnecting means
- All handle mechanisms can accept padlocks or multi-hasps locks for added flexibility
- Fast, easy installation (see video on website for step-by-step instructions)

Standards and Certifications

The mechanisms for EG, JG and LG breakers have an internal handle that can be operated independent of door position, and locked-out to meet one of the key NFPA requirements (NFPA® 79) and UL 508A disconnect requirements.

- NEMA 1/3R/12, IP54
- NEMA 4/4X, IP65





Product Selection

Handle Mechanisms for Series C Frames

2

Kits Only (Kit Includes Shaft, Mechanism and Handle)—GC/GD- and GMCP-Frame

| | Description | Rating Type | | GC/GD-Frame | GMCP-Frame |
|---|--------------------------------|-------------|----|--------------------------------|--------------------------------|
| | | NEMA | IP | Catalog Number | Catalog Number |
| S01 Blue Handle  | S01 blue handle, 12-inch shaft | 1/3R/12 | 54 | GCHMVD12B / 68C6039G01 | GMHMVD12B / 68C6039G05 |
| | | 4/4X | 65 | GCHMVD12BX / 68C6039G03 | GMHMVD12BX / 68C6039G07 |
| S01 Red Handle  | S01 red handle, 12-inch shaft | 1/3R/12 | 54 | GCHMVD12R / 68C6039G02 | GMHMVD12R / 68C6039G06 |
| | | 4/4X | 65 | GCHMVD12RX / 68C6039G04 | GMHMVD12RX / 68C6039G08 |

Separate Components for Series C Frames

Series C Components—Shaft and Mechanism

| Frame | Shaft Width | Shaft Length | | | Mechanism Only |
|-------|-------------|-------------------|-------------------|-------------------|----------------------------|
| | | 6-Inch | 10-Inch | 12-Inch | |
| GC/GD | 6 mm | — | — | 66A6013H02 | GCHMVD / 2A92095G15 |
| GMCP | 6 mm | — | — | 66A6013H02 | GMHMVD / 2A92095G16 |
| GD | 8 mm | 66A6010G95 | — | 66A6010G96 | 1498D34G90 |
| FD | 8 mm | 66A6010G95 | — | 66A6010G96 | 1498D34G91 |
| JD | 10 mm | 66A6012G15 | — | 66A6012G16 | 1498D34G92 |
| KD | 10 mm | 66A6012G15 | — | 66A6012G16 | 1498D34G93 |
| LD | 10 mm | 66A6012G15 | — | 66A6012G16 | 1498D34G94 |
| MDL | 10 mm | 66A6012G15 | — | 66A6012G16 | 1498D34G95 |
| ND | 12 mm | — | 66A6013H01 | — | 69D9101G30 |
| RD | 12 mm | — | 66A6013H01 | — | 69D9101G31 |

Note

Shaft guide (68C6048G49) is optional and can be used with any high-performance handle listed above for greater alignment tolerance.

Series C Components—Handles Only

| Frame | Rating Type | | Handles Only | | | | | | | |
|-------|-------------|----|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | NEMA | IP | S01 Blue/Black | S01 Red/Yellow | S2 Blue/Black | S2 Red/Yellow | S3 Blue/Black | S3 Red/Yellow | S4 Blue/Black | S4 Red/Yellow |
| GC/GD | 1/3R/12 | 54 | 68C6048G41 | 68C6048G42 | — | — | — | — | — | — |
| | 4/4X | 65 | 68C6048G43 | 68C6048G44 | — | — | — | — | — | — |
| GMCP | 1/3R/12 | 54 | 68C6048G41 | 68C6048G42 | — | — | — | — | — | — |
| | 4/4X | 65 | 68C6048G43 | 68C6048G44 | — | — | — | — | — | — |
| GD | 1/3R/12 | 54 | 68C6048G41 | 68C6048G42 | 68C6048G01 | 68C6048G02 | — | — | — | — |
| | 4/4X | 65 | 68C6048G43 | 68C6048G44 | 68C6048G03 | 68C6048G04 | — | — | — | — |
| FD | 1/3R/12 | 54 | 68C6048G41 | 68C6048G42 | 68C6048G01 | 68C6048G02 | — | — | — | — |
| | 4/4X | 65 | 68C6048G43 | 68C6048G44 | 68C6048G03 | 68C6048G04 | — | — | — | — |
| JD | 1/3R/12 | 54 | — | — | 68C6048G01 | 68C6048G02 | — | — | — | — |
| | 4/4X | 65 | — | — | 68C6048G03 | 68C6048G04 | — | — | — | — |
| KD | 1/3R/12 | 54 | — | — | 68C6048G01 | 68C6048G02 | — | — | — | — |
| | 4/4X | 65 | — | — | 68C6048G03 | 68C6048G04 | — | — | — | — |
| LD | 1/3R/12 | 54 | — | — | 68C6048G01 | 68C6048G02 | 68C6048G05 | 68C6048G06 | — | — |
| | 4/4X | 65 | — | — | 68C6048G03 | 68C6048G04 | 68C6048G07 | 68C6048G08 | — | — |
| MDL | 1/3R/12 | 54 | — | — | 68C6048G01 | 68C6048G02 | 68C6048G05 | 68C6048G06 | — | — |
| | 4/4X | 65 | — | — | 68C6048G03 | 68C6048G04 | 68C6048G07 | 68C6048G08 | — | — |
| ND | 1/3R/12 | 54 | — | — | — | — | 68C6048G05 | 68C6048G06 | 68C6048G09 | 68C6048G10 |
| | 4/4X | 65 | — | — | — | — | 68C6048G07 | 68C6048G08 | 68C6048G11 | 68C6048G12 |
| RD | 1/3R/12 | 54 | — | — | — | — | — | — | 68C6048G09 | 68C6048G10 |
| | 4/4X | 65 | — | — | — | — | — | — | 68C6048G11 | 68C6048G12 |

Note

Shaft guide (68C6048G49) is optional and can be used with any high-performance handle listed above for greater alignment tolerance.

2.7

Molded Case Circuit Breakers

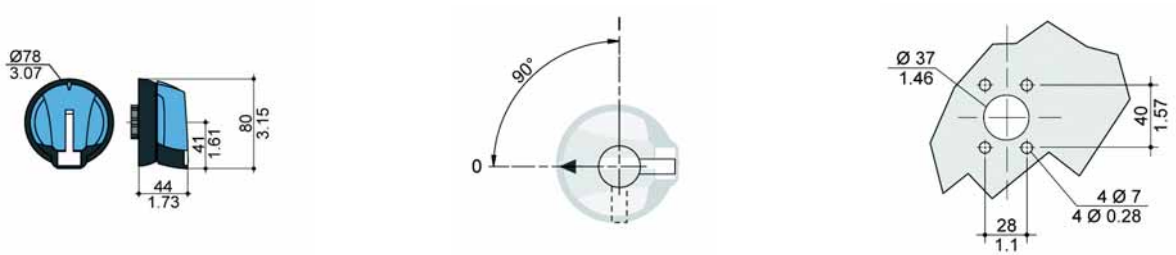
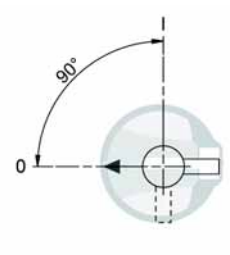
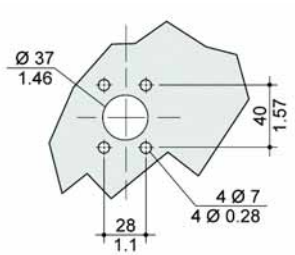
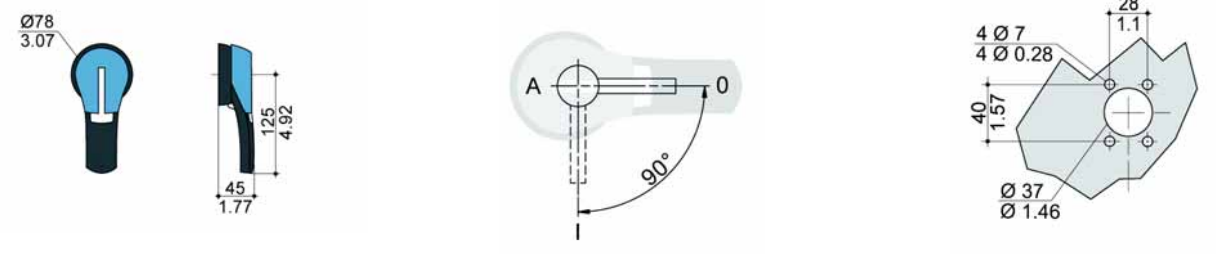
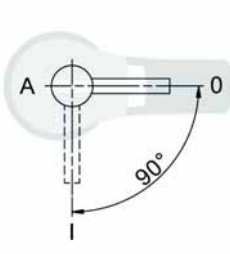
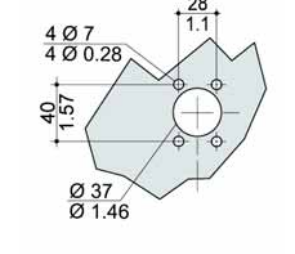
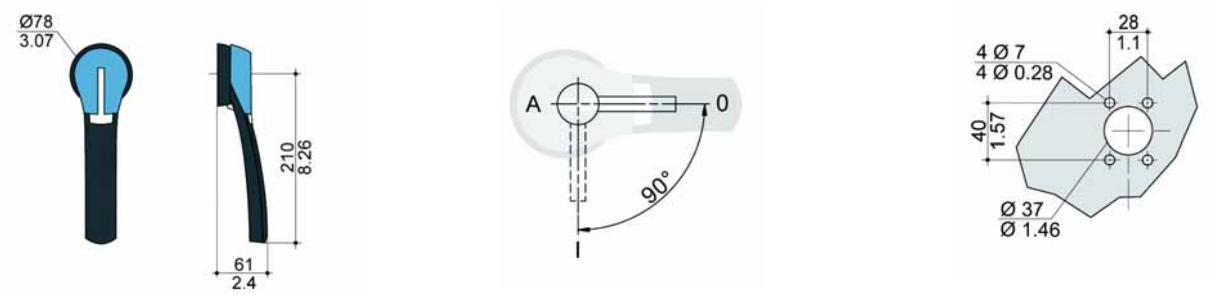
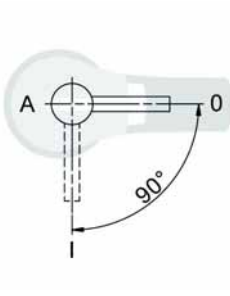
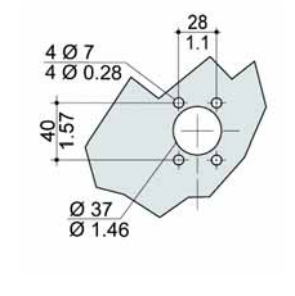
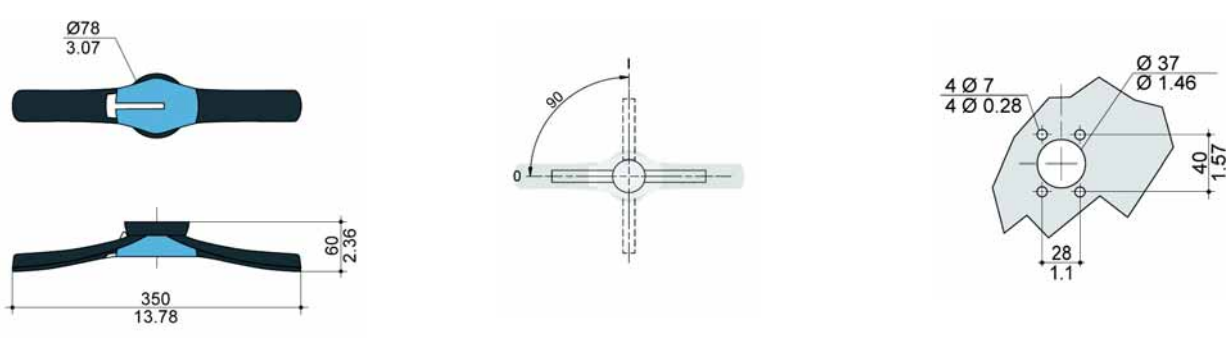
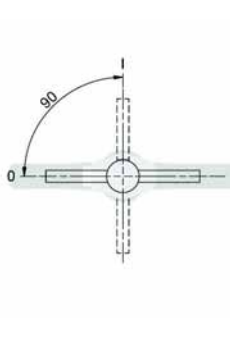
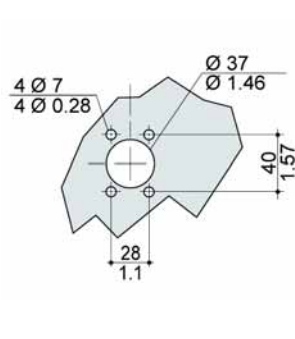
Handle Mechanisms

Dimensions

Approximate Dimensions in mm (Inches)

2

High-Performance Rotary Handle Mechanisms

| Handle Type | Front Operation Direction of Operation | Door Drilling |
|---|--|--|
| Type S01  <p>Technical drawing of Type S01 handle mechanism. Front view shows a circular handle with a diameter of $\varnothing 78$ (3.07 inches). Side view shows a height of 80 mm (3.15 inches) and a base width of 44 mm (1.73 inches). The door drilling pattern is a circular plate with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 28 mm (1.1 inch) square. The plate has a diameter of 40 mm (1.57 inches).</p> |  <p>Technical drawing of Type S01 handle mechanism showing front view and direction of operation. The handle is shown in a vertical position, and the door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0-degree position.</p> |  <p>Technical drawing of Type S01 handle mechanism showing door drilling pattern. The door has a diameter of 40 mm (1.57 inches) and a central hole of $\varnothing 37$ (1.46 inches). There are four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 28 mm (1.1 inch) square.</p> |
| Type S2  <p>Technical drawing of Type S2 handle mechanism. Front view shows a handle with a diameter of $\varnothing 78$ (3.07 inches). Side view shows a height of 125 mm (4.92 inches) and a base width of 45 mm (1.77 inches). The door drilling pattern is a circular plate with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 28 mm (1.1 inch) square. The plate has a diameter of 40 mm (1.57 inches).</p> |  <p>Technical drawing of Type S2 handle mechanism showing front view and direction of operation. The handle is shown in a vertical position, and the door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0-degree position.</p> |  <p>Technical drawing of Type S2 handle mechanism showing door drilling pattern. The door has a diameter of 40 mm (1.57 inches) and a central hole of $\varnothing 37$ (1.46 inches). There are four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 28 mm (1.1 inch) square.</p> |
| Type S3  <p>Technical drawing of Type S3 handle mechanism. Front view shows a handle with a diameter of $\varnothing 78$ (3.07 inches). Side view shows a height of 210 mm (8.26 inches) and a base width of 61 mm (2.4 inches). The door drilling pattern is a circular plate with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 28 mm (1.1 inch) square. The plate has a diameter of 40 mm (1.57 inches).</p> |  <p>Technical drawing of Type S3 handle mechanism showing front view and direction of operation. The handle is shown in a vertical position, and the door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0-degree position.</p> |  <p>Technical drawing of Type S3 handle mechanism showing door drilling pattern. The door has a diameter of 40 mm (1.57 inches) and a central hole of $\varnothing 37$ (1.46 inches). There are four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 28 mm (1.1 inch) square.</p> |
| Type S4  <p>Technical drawing of Type S4 handle mechanism. Front view shows a handle with a diameter of $\varnothing 78$ (3.07 inches). Side view shows a height of 60 mm (2.36 inches) and a base width of 350 mm (13.78 inches). The door drilling pattern is a circular plate with a central hole of $\varnothing 37$ (1.46 inches) and four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 28 mm (1.1 inch) square. The plate has a diameter of 40 mm (1.57 inches).</p> |  <p>Technical drawing of Type S4 handle mechanism showing front view and direction of operation. The handle is shown in a vertical position, and the door is shown in a horizontal position. The handle is rotated 90 degrees clockwise to the 0-degree position.</p> |  <p>Technical drawing of Type S4 handle mechanism showing door drilling pattern. The door has a diameter of 40 mm (1.57 inches) and a central hole of $\varnothing 37$ (1.46 inches). There are four mounting holes of $\varnothing 7$ (0.28 inches) arranged in a 28 mm (1.1 inch) square.</p> |

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Series C Rotary

Product Description

Eaton’s through-the-door handle mechanisms mount on the front of an enclosure or a cabinet door and externally operate the circuit breaker via a variable depth shaft or a linear operator (Type MC). Each rotary type handle mechanism includes a handle, a base operating mechanism and a shaft that can be cut to various lengths.

Series C Rotary handle mechanisms are used with molded case circuit breakers (F, J, K, L, MDL), molded case switches and motor circuit protectors.

These rotary handles are robust and durable, made entirely of metal parts. It also has a lock-out tag-out level at the tip of the handle for padlocking.

NEMA Type 4/4X handles are similar to standard handles except they include an internal neoprene gasket. NEMA Type 4/4X handle style number is 6648C22G03. Due to gasketing effect between the handle and the housing, the handle may not indicate a tripped position.

Standards and Certifications

Series C Rotary is UL listed and meets CSA requirements.



Features

Features Comparison of Series C Rotary and Universal Rotary Handle Mechanism

| Rotary | Number of Poles | NEMA Enclosure Type | | | | Handle Lock-Off ② | Handle Indication: ON/OFF TRIPPED/RESET | International Markings ON (I) OFF (O) | Handle Material | Available Handle Colors | Handle Rotation | Shaft Lengths (Inches) |
|------------------|-----------------|---------------------|----|----|--------|-------------------|---|---------------------------------------|-----------------|-------------------------|-----------------|------------------------|
| | | 1 | 3R | 12 | 4/4X ① | | | | | | | |
| Series C rotary | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | Metal | Black | 45 deg. | 6, 12, 16, 24 |
| Universal rotary | — | ■ | — | ■ | — | ■ | ■ | ■ | Molded plastic | Yellow/Red/Black | 90 deg. | 6, 12, 24 |

Notes

- ① Type 4/4X application requires special handle. See “Ordering Information.”
- ② All rotary handle mechanisms include a handle “Lock Off” to prevent turning the breaker ON while in the OFF position.

Product Selection

2

Through-the-Door Handle Mechanisms

Series C Rotary

Series C Rotary Ordering Information



| Shaft Length Inches (mm) | Complete Catalog Number ① | Separate Catalog Number | | Shaft ④ | Catalog Number | |
|-----------------------------|---------------------------|-------------------------|---------------------|------------|----------------|-------------|
| | | Standard Handle ② | Breaker Mechanism ③ | | IEC IP65 ⑤⑥ | IEC IP66 ⑤⑥ |
| F-Frame | | | | | | |
| 6.00 (152.4) | HM1R06 | 6648C22G25 | 6648C23G11 | 4217B37G08 | WHM1R06 | WHM1R06X |
| 12.00 (304.8) | HM1R12 | 6648C22G25 | 6648C23G11 | 4217B37G05 | WHM1R12 | WHM1R12X |
| 16.00 (406.4) | HM1R16 | 6648C22G25 | 6648C23G11 | 4217B37G06 | WHM1R16 | WHM1R16X |
| 24.00 (609.6) | HM1R24 | 6648C22G25 | 6648C23G11 | 4217B37G07 | WHM1R24 | WHM1R24X |
| J-Frame | | | | | | |
| 6.00 (152.4) | HM2R06 | 6648C22G01 | 6648C23G21 | 4217B37G08 | WHM2R06 | WHM2R06X |
| 12.00 (304.8) | HM2R12 | 6648C22G01 | 6648C23G21 | 4217B37G05 | WHM2R12 | WHM2R12X |
| 16.00 (406.4) | HM2R16 | 6648C22G01 | 6648C23G21 | 4217B37G06 | WHM2R16 | WHM2R16X |
| 24.00 (609.6) | HM2R24 | 6648C22G01 | 6648C23G21 | 4217B37G07 | WHM2R24 | WHM2R24X |
| K-Frame | | | | | | |
| 6.00 (152.4) | HM3R06 | 6648C22G01 | 6648C23G25 | 4217B37G08 | WHM3R06 | WHM3R06X |
| 12.00 (304.8) | HM3R12 | 6648C22G01 | 6648C23G25 | 4217B37G05 | WHM3R12 | WHM3R12X |
| 16.00 (406.4) | HM3R16 | 6648C22G01 | 6648C23G25 | 4217B37G06 | WHM3R16 | WHM3R16X |
| 24.00 (609.6) | HM3R24 | 6648C22G01 | 6648C23G25 | 4217B37G07 | WHM3R24 | WHM3R24X |
| L- and MDL-Frame | | | | | | |
| 6.00 (152.4) | HM4R06 | 6648C22G11 | 6648C23G19 | 4217B37G08 | WHM4R06 | WHM4R06X |
| 12.00 (304.8) | HM4R12 | 6648C22G11 | 6648C23G19 | 4217B37G05 | WHM4R12 | WHM4R12X |
| 16.00 (406.4) | HM4R16 | 6648C22G11 | 6648C23G19 | 4217B37G06 | WHM4R16 | WHM4R16X |
| 24.00 (609.6) | HM4R24 | 6648C22G11 | 6648C23G19 | 4217B37G07 | WHM4R24 | WHM4R24X |
| MD/MDS | | | | | | |
| 6.00 (152.4) | HM7R06 | 6648C22G21 | 6648C23G17 | 4217B37G08 | — | — |
| 12.00 (304.8) | HM7R12 | 6648C22G21 | 6648C23G17 | 4217B37G05 | — | — |
| 16.00 (406.4) | HM7R16 | 6648C22G21 | 6648C23G17 | 4217B37G06 | — | — |
| 24.00 (609.6) | HM7R24 | 6648C22G21 | 6648C23G17 | 4217B37G07 | — | — |
| N-Frame (ND and NG) | | | | | | |
| 6.00 (152.4) | HM5R06 | 6648C22G21 | 6648C23G08 | 4217B37G08 | WHM5R06 | WHM5R06X |
| 12.00 (304.8) | HM5R12 | 6648C22G21 | 6648C23G08 | 4217B37G05 | WHM5R12 | WHM5R12X |
| 16.00 (406.4) | HM5R16 | 6648C22G21 | 6648C23G08 | 4217B37G06 | WHM5R16 | WHM5R16X |
| 24.00 (609.6) | HM5R24 | 6648C22G21 | 6648C23G08 | 4217B37G07 | WHM5R24 | WHM5R24X |

Notes

- ① Complete catalog number includes the standard handle, mechanism, shaft and support brace/bracket.
- ② Handle is designed suitable for NEMA Types 1, 3R and 12 enclosures. Use style number **6648C22G03** for Type 4/4X handle or add **X** Suffix to complete catalog number. Handle is cast aluminum.
- ③ Breaker mechanism includes a shaft support bracket and its parts. Shaft is .50-inch (12.7 mm).
- ④ Longer shafts, 16-inch (406.4 mm) and 24-inch (609.6 mm), include an adjustable support extension.
- ⑤ IEC handle mechanism supplied with metric thread mounting hardware.
- ⑥ Complete catalog number includes a handle, mechanism and shaft.

Handle Mechanisms



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Universal Rotary

Product Description

Eaton’s Universal Rotary is suitable for use with Type 1 or 12 enclosure types. All rotary handle mechanisms include a handle “lock off” to prevent turning the breaker ON while in the OFF position, and indicate ON/OFF/Tripped/Reset positions. The Universal Rotary has the added feature of international markings for ON (I) and OFF (O). The Universal Rotary is made of molded material.

The Universal Rotary mechanisms for EG-, JG- and LG-Frame MCCBs can be operated by hand with the door open or “locked off” to prevent operation with the door open.

Standards and Certifications

Universal Rotary is UL listed and meets CSA requirements. Universal Rotary also meets IEC 60947-1 and IEC 60947-2 for international compliance. Rotary UL File Number is E64983.



Features

Features Comparison of Series C Rotary and Universal Rotary Handle Mechanism

| Rotary | Number of Poles | NEMA Enclosure Type | | | | Handle Lock-Off ② | Handle Indication: ON/OFF TRIPPED/RESET | International Markings ON (I) OFF (O) | Handle Material | Available Handle Colors | Handle Rotation | Shaft Lengths (Inches) |
|------------------|-----------------|---------------------|----|----|--------|-------------------|---|---------------------------------------|-----------------|-------------------------|-----------------|------------------------|
| | | 1 | 3R | 12 | 4/4X ① | | | | | | | |
| Series C rotary | — | ■ | ■ | ■ | ■ | ■ | ■ | ■ | Metal | Black | 45 deg. | 6, 12, 16, 24 |
| Universal rotary | — | ■ | — | ■ | — | ■ | ■ | ■ | Molded plastic | Yellow/Red/Black | 90 deg. | 6, 12, 24 |

Notes

- ① Type 4/4X application requires special handle. See “Ordering Information.”
- ② All rotary handle mechanisms include a handle “Lock Off” to prevent turning the breaker ON while in the OFF position.

Product Selection

2

Universal Rotary F-Frame

Universal Rotary
F-FrameSeries C Universal Rotary ^①

| Handle Color | Shaft Length in Inches (mm) | Complete Catalog Number |
|----------------|-----------------------------|-------------------------|
| G-Frame | | |
| Black | 6.00 (152.4) | GHMVD06B |
| | 12.00 (304.8) | GHMVD12B |
| Red | 6.00 (152.4) | GHMVD06R |
| | 12.00 (304.8) | GHMVD12R |
| F-Frame | | |
| Black | 6.00 (152.4) | FHMVD06B |
| | 12.00 (304.8) | FHMVD12B |
| Red | 6.00 (152.4) | FHMVD06R |
| | 12.00 (304.8) | FHMVD12R |
| | 24.00 (609.6) | FHMVD24R |
| J-Frame | | |
| Black | 6.00 (152.4) | JHMVD06B |
| | 12.00 (304.8) | JHMVD12B |
| Red | 6.00 (152.4) | JHMVD06R |
| | 12.00 (304.8) | JHMVD12R |
| K-Frame | | |
| Black | 6.00 (152.4) | KHMVD06B |
| | 12.00 (304.8) | KHMVD12B |
| Red | 6.00 (152.4) | KHMVD06R |
| | 12.00 (304.8) | KHMVD12R |
| L-Frame | | |
| Black | 6.00 (152.4) | LHMVD06B |
| | 12.00 (304.8) | LHMVD12B |
| Red | 6.00 (152.4) | LHMVD06R |
| | 12.00 (304.8) | LHMVD12R |

Note

^① Only available as complete handle mechanism. Parts not sold separately.

Handle Mechanisms



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Direct (Close-Coupled) Handle Mechanisms

Product Description

Direct (close-coupled) handle mechanisms mount directly to the circuit breaker. They are used in shallow enclosures where the standard variable depth Through-the-door type mechanism is not practical or cannot be used.

The Universal Direct handle mechanisms are rated Type 1 and Type 12.

The Universal Direct handle mechanism is available as standard with a door interlock to prevent opening the enclosure while the circuit breaker is in the ON position. It is also available without a door interlock.

Application Description

Direct (close-coupled) handle mechanisms are typically used for applications where high volume, standardized enclosures are being fabricated.

Standards and Certifications

The Universal Direct handle mechanism is IEC 60947-1 and IEC 60947-2 compliant.

Product Selection**Direct (Close-Coupled) Handle Mechanisms**

2

Euro IEC Direct

| Frame | Black Handle |
|---------|----------------|
| | Catalog Number |
| F | HMCC1B |
| J | HMCC2B |
| K | HMCC3B |
| L and M | HMCC4B |
| N | HMVD5B |
| R | HMVD6B |

G Direct ^①

| Frame | Black Handle | | Yellow Handle | |
|--------|-------------------------------|----------------------------------|-------------------------------|----------------------------------|
| | With Shroud Catalog Number | Without Shroud Catalog Number | With Shroud Catalog Number | Without Shroud Catalog Number |
| GD/GHC | HRGCC1S | HRGCC10 | HRGCC3S | HRGCC30 |
| GMCP | HRGMC1S | HRGMC10 | HRGMC3S | HRGMC30 |

Note

^① Suitable for use on two- or three-pole G-Frame.

Handle Mechanisms



Flex Shaft

Product Description

Flange-Mounted Handle Mechanisms

Flange-mounted handle mechanisms mount on the flange of an enclosure door. The Flex Shaft is an extra heavy-duty mechanism that includes a flexible shaft in various lengths, 3 feet (0.9m) through 10 feet (3m) for use with various size enclosures.

The Flex Shaft handle will accept up to three padlock shackles, each with a maximum diameter of 3/8 inches (9.5 mm). It can be used with Type 12 fabricated enclosures. An optional handle is available for Flex Shaft that is suitable for use with Type 4 environments.

Flex Shaft comes preset from the factory, requiring only minor field adjustments on installation, which takes about 10 minutes—a significant time savings compared to installation of other types of flange handle mechanisms. The Flex Shaft mechanism also takes up less interior enclosure space than competitive designs, and the handle fits standard flange cutouts. Flex Shaft handle can be remotely mounted from breaker, where an operator can use it by “funneling” the cable through conduit.

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Standards and Certifications

Flex Shaft is UL listed under File E64983 and meets CSA requirements.



Product Selection

Handle Mechanisms

Flex Shaft ^{①②}

| Breaker Frame | Flexible Shaft Length in Feet (m) | | | | | | | |
|----------------|-----------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | 3 (0.9) | 4 (1.2) | 5 (1.5) | 6 (1.8) | 7 (2.1) | 8 (2.4) | 9 (2.7) | 10 (3.0) |
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| G ^① | F0S03C | F0S04C | F0S05C | F0S06C | — | — | — | — |
| F | F1S03C | F1S04C | F1S05C | F1S06C | F1S07C | F1S08C | F1S09C | F1S10C |
| F (dual) | F1S03CD | F1S04CD | F1S05CD | F1S06CD | F1S07CD | F1S08CD | F1S09CD | F1S10CD |
| J | F2S03C | F2S04C | F2S05C | F2S06C | F2S07C | F2S08C | F2S09C | F2S10C |
| K | F3S03C | F3S04C | F3S05C | F3S06C | F3S07C | F3S08C | F3S09C | F3S10C |
| L and MDL | — | F4S04C | F4S05C | F4S06C | — | — | — | F4S10C |
| N | — | F5S04C | F5S05C | F5S06C | — | — | — | F5S10C |
| R | — | F6S04 | F6S05 | F6S06 | — | — | — | — |
| MD, MDS (old) | — | F7S04 | F7S05 | F7S06 | — | — | — | F7S10C |

High Performance Flex Shaft ^{①②}

| Breaker Frame | Flexible Shaft Length in Feet (m) | | | | | | | |
|---------------|-----------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | 3 (0.9) | 4 (1.2) | 5 (1.3) | 6 (1.8) | 7 (2.1) | 8 (2.4) | 9 (2.7) | 10 (3.1) |
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| G | F0S03HP | F0S04HP | F0S05HP | F0S06HP | N/A | N/A | N/A | N/A |
| F | F1S03HP | F1S04HP | F1S05HP | F1S06HP | F1S07HP | F1S08HP | F1S09HP | F1S10HP |
| F (dual) | F1S03HPD | F1S04HPD | F1S05HPD | F1S06HPD | F1S07HPD | F1S08HPD | F1S09HPD | F1S10HPD |
| J | F2S03HP | F2S04HP | F2S05HP | F2S06HP | F2S07HP | F2S08HP | F2S09HP | F2S10HP |
| K | F3S03HP | F3S04HP | F3S05HP | F3S06HP | F3S07HP | F3S08HP | F3S09HP | F3S10HP |
| L and MDL | N/A | F4S04HP | F4S05HP | F4S06HP | N/A | N/A | N/A | F4S10HP |
| N | N/A | F5S04HP | F5S05HP | F5S06HP | N/A | N/A | N/A | F5S10HP |
| R | N/A | F6S04HP | F6S05HP | F6S06HP | N/A | N/A | N/A | N/A |

Flange-Mounted Handle Mechanisms

Type C371

| Circuit Breaker or Motor Circuit Protector | Frame Size | Variable Depth Mounting Range Min./Max. ^{②③} | Operating Mechanism Only ^④ | Operating Mechanism w/ 4-Inch Handle | |
|--|------------|---|---------------------------------------|---|---|
| | | | Catalog Number | For NEMA 1–12 Enclosure Catalog Number | For NEMA 4/4X Enclosure Catalog Number |
| HMCP and Series C—EHD, FDB, FD, FDC, HFD, ED | 150 | 6.50–16 (165.1–406.4) | C371E | C371E1 | C371E2 |
| HMCP and Series C—HJD, JD, JDB, JDC | 250 | 6.50–16.63 (165.1–422.4) | C371F | C371F5 | C371F6 |
| HMCP and Series C—DK, HKD, KD, KDB | 400 | 6.50–16.63 (165.1–422.4) | C371F | C371F5 | C371F6 |
| Series C—HLD, LD, LDC | 600 | 8.50–22 (215.9–558.8) | C371G | C371G5 | C371G6 |
| Series C MD, MDS—(No MDL) | 800 | 8.75–22 (222.3–558.8) | C371K | C371K5 | C371K6 |
| Series C—HND, ND, NDC | 1200 | 9.75–22 (247.7–558.8) | C371K | C371K5 | C371K6 |

Notes

- ① Suitable for GC/GD MCCB; not suitable for GMCP.
- ② For increased maximum allowable depth, see connecting rods on **Page V4-T2-445**.
- ③ Dimensions shown are from panel flange surface.
- ④ Does not include handle.

Type 4/4X handle mechanisms are available. Add Suffix **X** to complete catalog number. Add Suffix **I** to complete catalog number for IEC handle. Original narrow handle design (No C Suffix) is available. Remove C from catalog number.

When selecting the length of shaft, ensure minimum bending radius of 4 inches (101.6 mm) (5 inches, 12.7 mm for L-, N- and R-Frames) is maintained to operate properly. The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

Dual breakers operator available on F-Frame only. Only the F, J and K can mount LH and RH all other RH only.

Approximate Dimensions in Inches (mm)

Handle Only

| Circuit Breaker Frame Size (Amperes) | NEMA Enclosure Type | Operating Handle Length | Catalog Number |
|--------------------------------------|---------------------|-------------------------|----------------|
| 150 | 1/3R/3/12 | 4.00 (101.6) | C371H1 |
| | 4/4X | 4.00 (101.6) | C371H2 |
| | 1/3R/3/12 | 6.00 (152.4) | C371H3 |
| | 4/4X | 6.00 (152.4) | C371H4 |
| 250–1200 | 1/3R/3/12 | 4.00 (101.6) | C371H5 |
| | 4/4X | 4.00 (101.6) | C371H6 |
| | 1/3R/3/12 | 6.00 (152.4) | C371H7 |
| | 4/4X | 6.00 (152.4) | C371H8 |

Channel Support Kit (Rod Not Supplied)

For use to prevent bending of the operating handle mounting surface. This is especially useful when the operating handle is mounted on a channel in a multi-door enclosure.

| Amperes | Catalog Number |
|----------|----------------|
| 600–1200 | C371CS6 |

Connecting Rods ^①

| Application | Catalog Number |
|--|----------------|
| Disconnect switches (30, 60, 100, 200 A sizes) | C371CS1 |
| Circuit breakers (150, 250, 400 A sizes) | C371CS1 |
| Circuit breakers (600, 800, 1200 A sizes) | C371CS2 |

Note

^① Increase maximum allowable depth by 5 inches (127 mm).

Handle Extension

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Handle Extension

Product Description

- Suitable for use on two- or three-pole G-Frame
- Not included with J, K, L, M and N-Frame breakers; it must be purchased separately
- Included with R-Frame breakers

Product Selection

Handle Extension



Handle Extension ①②

| Frame | Style Number |
|-------|--------------|
| J, K | HEX3 |
| L, M | HEX4 |
| N | HEX5 |
| R | HEX6 |

Notes

- ① Handle extension is not included with J, K, L, M and N-Frame breakers. It must be purchased separately.
- ② Handle extension is included with breaker with R-Frame breakers.