

Aftermarket and mining MCCB



Series C, moulded case circuit breakers - FW/HFW

255A F Frame World Series C

Supplied with chassis mounting screws for the line side & terminals fitted on the load side. Trip units are non-interchangeable.

Thermal setting	fixed (FWF), adjustable (FW: 80-100%) fixed (HFWF), adjustable (HFW: 80-100%)
Magnetic setting	fixed ($8 \times I_n$)
Interrupting capacity	FW 40kA at 415Vac 10kA at 250Vdc/2,3,4 pole
	HFWF, 70kA at 415Vac
	HFW 20kA at 250Vdc/2,3,4 pole
Approvals	IEC947-2
Dimensions	H x W x D (mm) Weight (kg)
For both Series C FW/HFW and 'The Rock' F Frame	1 pole 153 x 35 x 86 0.9
	2 pole 153 x 70 x 86 1.6
	3 pole 153 x 105 x 86 2.3
	4 pole 153 x 140 x 86 3.0

"The Rock" 1100V mining circuit breakers - F Frame



40kA (225AF thermal magnetic circuit breakers)

Ampere rating	1 pole* item no.	2 pole item no.	3 pole item no.	4 pole ① item no.
16	FWF1016	FWF2016	FWF3016	FWF4016
20	FWF1020	FWF2020	FWF3020	FWF4020
25	FWF1025	FWF2025	FWF3025	FWF4025
32	FWF1032	FWF2032	FWF3032	FWF4032
40	FWF1040	FWF2040	FWF3040	FWF4040
50	FWF1050	FWF2050	FW3050	FWF4050
63	FWF1063	FWF2063	FW3063	FWF4063
80	FWF1080	FWF2080	FW3080	FWF4080
100	FWF1100	FWF2100	FW3100	FWF4100
125	FWF1125	FWF2125	FW3125	FWF4125
160	FWF1160	FWF2160	FW3160	FWF4160
200	-	FWF2200	FW3200	FWF4200
225	-	FWF2225	FWF3225	FWF4225

① 4 pole with unprotected neutral. 100% & 60% protected neutral available on application.

70kA (225AF thermal magnetic circuit breakers)

Ampere rating	1 pole* item no.	2 pole item no.	3 pole item no.
16	HFWF1016	HFWF2016	HFWF3016
20	HFWF1020	HFWF2020	HFWF3020
25	HFWF1025	HFWF2025	HFWF3025
32	HFWF1032	HFWF2032	HFWF3032
40	HFWF1040	HFWF2040	HFWF3040
50	HFWF1050	HFWF2050	HFW3050
63	HFWF1063	HFWF2063	HFW3063
80	HFWF1080	HFWF2080	HFW3080
100	HFWF1100	HFWF2100	HFW3100
125	HFWF1125	HFWF2125	HFW3125
160	HFWF1160	HFWF2160	HFW3160
200	-	-	HFW3200
225	-	-	HFWF3225

* No internal accessories can be used with the 1 pole F frame.

1100V mining circuit breakers - F Frame

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
16	10kA	7.5kA	E2FM3016
20	10kA	7.5kA	E2FM3020
25	10kA	7.5kA	E2FM3025
32	10kA	7.5kA	E2FM3032
40	10kA	7.5kA	E2FM3040
50	10kA	7.5kA	E2FM3050
63	10kA	7.5kA	E2FM3063
80	10kA	7.5kA	E2FM3080
100	10kA	7.5kA	E2FM3100
125	10kA	7.5kA	E2FM3125
160	10kA	7.5kA	E2FM3160

Magnetic only adjustable - F Frame

Description	Item no.
Magnetic only trip 150 to 500A	E2FM100KM
Magnetic only trip 300 to 1000A	E2FM100RM
Magnetic only trip 450 to 1500A	E2FM150TM
Magnetic only trip 750 to 2500A	E2FM150UM

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

Series C, moulded case circuit breakers - FW/HFW and E2FM Rock

Accessory - F frame

Description	Item no.
Alarm switch with pigtail lead connection	A1L1LPK ①
Alarm switch with pigtail lead connection for magnetic only breakers	MA1L1LPK ①
Auxiliary switch with pigtail lead connection	A1X1PK ①
Auxiliary switch, 2 pole, Left Hand mount with pigtail lead connection	A2X1LPK ①
Auxiliary switch, 2 pole, Right Hand mount with pigtail lead connection	A2X1RPK ①
Combination auxiliary/alarm switch, Left hand mount with pigtail lead connection	AAL1LPK ①
Shunt trip, 9-24Vac, 12-24Vdc, Right hand mount with pigtail lead connection	SNT1RP03K ①
Shunt trip, 48-127Vac, 48-60Vdc, Right hand mount with pigtail lead connection	SNT1RP08K ①
Shunt trip, 208-380Vac, 110-127Vdc, Right hand mount with pigtail lead connection	SNT1RP12K ①
Shunt trip, 415-600Vac, 220-250Vdc, Right hand mount with pigtail lead connection	SNT1RP18K ①
Under-voltage release fixed breaker 24Vac with pigtail lead connection	UVH1RP03K ①
Under-voltage release fixed breaker 48-60Vac/dc with pigtail lead connection	UVH1RP05K ①
Under-voltage release fixed breaker 110-127Vac with pigtail lead connection	UVH1RP08K ①
Under-voltage release fixed breaker 208-240Vac with pigtail lead connection	UVH1RP11K ①
Under-voltage release fixed breaker 380-480Vac with pigtail lead connection	UVH1RP15K ①
Under-voltage release fixed breaker 24Vdc with pigtail lead connection	UVH1RP21K ①
Under-voltage release fixed breaker 48Vdc with pigtail lead connection	UVH1RP22K ①
Under-voltage release fixed breaker 110-127Vdc with pigtail lead connection	UVH1RP26K ①
Under-voltage release adjustable breaker 208-240Vac with pigtail lead connection	WUVH1RP11K ①
Under-voltage release adjustable breaker 380-480Vac with pigtail lead connection	WUVH1RP15K ①
Under-voltage release adjustable breaker 24Vdc with pigtail lead connection	WUVH1RP21K ①
Under-voltage release adjustable breaker 60Vac/dc with pigtail lead connection	WUVH1RP24K ①
Under-voltage release adjustable breaker 110-127Vdc with pigtail lead connection	WUVH1RP26K ①
Solenoid operator, 240Vac,	EOP1T11 ②
Padlockable handle lock, 1 pole (PHL1) - style no.4208B81G02	373/1128
Padlockable handle lock hasp (2,3,4 pole only, Padlock not included, PLK1) - style no.4210B81G01	373/1121
Non-padlockable handle block (LKD1 Lockdog) - style no.4210B80G01	373/1126
F LH Lock OFF only hasp	PLK1LOFF
E-to-F frame conversion kit, 1 pole, F frame on E Frame Chassis	E-FB1P ③
E-to-F frame conversion kit, 3 pole, F frame on E Frame Chassis	E-FB3P ③
Terminal kit, 32A 6mm ² (kit of 3)	T32FB
Terminal Kit (3T150FB), 160A 25-95mm ² (kit of 3)	T160FB
Terminal kit, 225A 25-95mm ² (kit of 3)	3TA225FD
General purpose connector - Rear stud (kit of 2), 1 x long, 1 x short	1517-2013/1 ③
Terminal extension kit - (set of 1 straight busbars + fasteners)	1517-2082/1 ④
Terminal extension spreader kit - offset tag - 3 tags	FOST3 ④
Keeper nut kit	1517-2021/1
Interphase barriers (2)	IPB1
Terminal shields, plastic (2), 3-pole	TSF
Insulation sheet mining breaker	1543-0245/1
Rotary handle kit - metal handle with mechanism & 30cm shaft - IP66	WHM1R12X
F Frame VariDepth mechanism - style no.373D958G23	373/1120*
Handle only, VariDepth - style no.504C323G07	1517-0488/1 *
Weatherproof handle, VariDepth - style no.504C323G08	1517-0488/2 *
Shaft, 165mm for VariDepth - style no.47A4446G36	368/187 *
Shaft, 260mm for VariDepth - style no.47A4446G37	368/186 *
Pole Filler - F frame	FPF
Mounting hardware - 1 Pole F Frame	4218B80G15
Mounting hardware M4 - style no.4218B80G12	373/1123



A1X1PK



SNT1RP08K



E-FB3P



WHM1R12X

FAQ's

Alarm switches will signal only closed + tripped positions

Auxiliary switches will signal only open + closed positions

Under-voltage release must be energised before closing breaker

Supplied with chassis mounting screws for the LINE side & terminals fitted on the LOAD side

① Factory fitted only. No internal accessories can be used with the 1-pole F-frame.
 UVH undervoltage release is for use with FWF & HFWF MCCB's only.
 WUVH undervoltage release is for use with FW & HFW MCCB's only.
 MUVH undervoltage release is for use with HMCP MCCB's, please contact Eaton for ordering details.

② Can only be fitted to 3+4-pole Moulded Case Circuit Breakers.

③ Cannot be used on Rock breakers.

④ Not recommended on Rock breakers due to impacting insulation clearance distances.

* For VariDepth option please select mechanism, handle and shaft.

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series C, moulded case circuit breakers - J Frame

"The Rock" 1100V mining circuit breakers - J Frame



J Frame 250A

Thermal magnetic breaker is made up of two components, frame & interchangeable trip unit.

**J Frame
+
Trip unit
Breaker**

Thermal setting - adjustable

Magnetic setting - adjustable (5 to 10 x In)

Interrupting capacity - see below

Approvals - IEC947-2

Dimensions		H x W x D (mm)	Weight (kg)
For both Series C and 'The Rock' J Frame	3 pole	254 x 105 x 103	5.0
	4 pole	254 x 140 x 103	6.8

J Frame (only)

Interrupting capacity	Item no.
40kA at 415Vac	JW3250F
70kA at 415Vac	HJW3250F
70kA at 415Vac (4 pole)	HJW4250F
100kA at 415Vac	JWC3250F
30kA at 500Vdc	HJDDC3250F

1100V mining circuit breaker - J Frame

Description	PSCC at 1000V	PSCC at 1100V	Item no.
100-250A J Frame	10kA	8kA	E2JM3250F

Trip unit - (thermal magnetic)

Ampere rating	Item no.
100-125	JT3125TA
125-160	JT3160TA
160-200	JT3200TA
200-250	JT3250TA
4 pole 160-200A	JT4200TA
4 pole 200-250A	JT4250TA



JT3250TA

Trip unit - (thermal magnetic)

Ampere rating	Item no.
100-125	JT3125TA
125-160	JT3160TA
160-200	JT3200TA
200-250	JT3250TA

J Frame magnetic only trip unit

Motor FLC	Max. current	HMCP magnetic trip settings - selected position & current ratings										Item no.
		A	B	C	D	E	F	G	H	I		
27.0 - 57.2A	250	350	400	440	480	525	570	610	660	700	HMCP250A	
34.7 - 73.5A	250	450	505	565	620	680	735	790	845	900	HMCP250C	
38.5 - 81.6A	250	500	565	625	690	750	810	875	935	1000	HMCP250D	
48.1 - 102.0A	250	625	700	780	860	940	1020	1090	1170	1250	HMCP250F	
57.7 - 122.4A	250	750	840	935	1030	1125	1220	1315	1410	1500	HMCP250G	
67.4 - 142.8A	250	875	980	1090	1200	1310	1420	1530	1640	1750	HMCP250J	
77.0 - 163.3A	250	1000	1125	1250	1375	1500	1625	1750	1875	2000	HMCP250K5	
86.6 - 183.6A	250	1125	1265	1410	1545	1690	1830	1970	2110	2250	HMCP250L5	
96.2 - 204.0A	250	1250	1405	1560	1720	1875	2030	2185	2340	2500	HMCP250W5	

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

Series C, moulded case circuit breakers - J Frame and E2JM Rock

Accessory - J frame

Description	Item no.
Alarm switch with pigtail lead connection	A1L2RPK ①
Auxiliary switch with pigtail lead connection	A1X2PK ①
Auxiliary switch, 2 pole with pigtail lead connection	A2X2PK ①
Combination auxiliary/alarm switch with pigtail lead connection	AAL2RPK ①
Shunt trip, 12-24Vac, 12-24Vdc with pigtail lead connection	SNT2P04K ①
Shunt trip, 110-240Vac, 110-125Vdc with pigtail lead connection	SNT2P11K ①
Shunt trip, 380-440Vac, 220-250Vdc with pigtail lead connection	SNT2P14K ①
Under-voltage release, 24Vac with pigtail lead connection	UVH2LP03K ①
Under-voltage release, 110-127Vac with pigtail lead connection	UVH2LP08K ①
Under-voltage release, 208-240Vac with pigtail lead connection	UVH2LP11K ①
Under-voltage release, 380-480Vac with pigtail lead connection	UVH2LP15K ①
Under-voltage release, 24Vdc with pigtail lead connection	UVH2LP21K ①
Under-voltage release, 220-250Vdc with pigtail lead connection	UVH2LP28K ①
Solenoid operator, 240Vac	EOP2T11 ①
Handle extension	HEX3
Padlockable handle lock hasp	PLK3
Non-padlockable handle block	LKD3
Plug Nut kit (6)	PLN2M
Terminal extension kit (3) Straight	1517-2024/1
General purpose rear connector (kit of 2) - 1 x long, 1 x short (bolt)	1517-2009/1 ③
Rear connecting studs (kit of 2) - 1 x long, 1 x short (M12 nut)	1517-2004/1 ②
Metric End Cap Kit (3P)	KPEKM2
J Frame Terminal Hardware Kit (3 pole)	JTH
Terminal lug 250A 25-185mm ² conductor (1)	T250KB
Terminal shields, plastic (2)	TSJ
Insulation sheet mining breaker	1543-0246/1
Interphase barriers (2)	IPB3
Rotary handle kit - metal handle with mechanism & 30cm shaft - IP66	WHM2R12X
J Frame VariDepth mechanism - style no.5092A62G04	392/1024 *
Handle only, VariDepth - style no.504C323G07	1517-0488/1 *
Weatherproof handle, VariDepth - style no.504C323G08	1517-0488/2 *
Shaft, 165mm - VariDepth - style no.47A4446G36	368/187 *
Shaft, 260mm - VariDepth - style no.47A4446G37	368/186 *
Mounting hardware M6x70 - style no.4218B80G13	392/1019



AAL2RPK



UVH2LP03K



PLK3



T250KB

FAQ's

Alarm switches will signal only closed + tripped positions
 Auxiliary switches will signal only open + closed positions
 Under-voltage release must be energised before closing breaker
 Supplied standard with screw terminals for both the LINE and LOAD side connections

① Field mountable. If factory fitting required, add \$100 for each accessory.
 ② Cannot be used on Rock breakers.
 ③ Not recommended on Rock breakers due to impacting insulation clearance distances.
 * For VariDepth option please select mechanism, handle and shaft.

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series C, moulded case circuit breakers - K Frame

"The Rock" 1100V mining circuit breakers - K Frame



K Frame 400A

Thermal magnetic or electronic breaker with interchangeable trip units is made up of two components, frame and trip unit.

K Frame	K Frame
+ Thermal Magnetic Trip Unit	+ Digitrip Unit
Thermal Magnetic Breaker	Electronic Breaker

Approvals - IEC947-2

Dimensions	H x W x D (mm)	Weight (kg)
For both Series C and 'The Rock' K Frame	257 x 140 x 103	6.0

K Frame (400AF thermal magnetic & electronic circuit breakers)

Interrupting capacity	Thermal magnetic	Electronic	Item no.
45kA at 415Vac	✓	✓	KW3400F
70kA at 415Vac	✓	✓	HKW3400F
70kA at 415Vac - 4 pole	✓	✓	HKW4400F
100kA at 415Vac	✓	✓	KWC3400F

1100V mining circuit breaker - K Frame

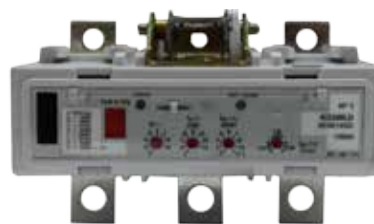
Description	PSCC at 1000V	PSCC at 1100V	Item no.
125-400A K Frame	14kA	12kA	E2KM3400F

Thermal magnetic trip units

Ampere rating	Item no.
160-200	KT3200TA
200-250	KT3250TA
250-315	KT3315TA
315-400	KT3400TA
160-200 4 pole	KT4200TA
200-250 4 pole	KT4250TA
250-315 4 pole	KT4315TA
315-400 4 pole	KT4400TA

Electronic trip units

Ampere rating	Digitrip 310+ item no.	Ampere rating
Electronic trip units		
125	KES3125LSI	55, 60, 70, 80, 90, 100, 110, 125
250	KES3250LSI	100, 125, 150, 160, 175, 200, 225, 250
400	KES3400LSI	160, 200, 225, 250, 300, 315, 350, 400



KES3400LSI

1100V mining circuit breaker thermal magnetic trip units - K Frame

Ampere rating	Item no.
250	E2K3250T
300	E2K3300T
350	E2K3350T
400	E2K3400T

1100V mining circuit breaker electronic trip units - K Frame

Ampere rating	Digitrip 310+ item no.
125	KEM3125T
200	KEM3200T
400	KEM3400T2

Magnetic only trip, K Frame HMCP - Trip Unit only, all ratings (for use with K Frame 3 pole circuit breakers)

Motor FLC	Max. current	HMCP magnetic trip settings - selected position & current ratings										Item no.
		A	B	C	D	E	F	G	H	I		
48.1-102.0A	400	625	700	780	860	940	1020	1090	1170	1250	HMCP400F5	
67.4-142.8A	400	875	980	1090	1200	1310	1420	1530	1640	1750	HMCP400J5	
77.0-163.3A	400	1000	1125	1250	1375	1500	1625	1750	1875	2000	HMCP400K5	
86.6-183.6A	400	1125	1265	1410	1545	1690	1830	1970	2110	2250	HMCP400L5	
96.2-204.0A	400	1250	1405	1560	1720	1875	2030	2185	2340	2500	E2K3400TMW	
153.9-326.9A	400	2000	2250	2500	2750	3000	3250	3500	3750	4000	HMCP400X5	

* ARMS enabled 1100V mining circuit breakers are now available. Contact Eaton for more details.

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

Series C, moulded case circuit breakers - K Frame and E2KM Rock

Accessory - K frame

Accessory	Item no.
Alarm Switch with pigtail lead connection	A1L3RPK ①
Auxiliary Switch - 1 pole with pigtail lead connection	A1X3PK ①
Auxiliary Switch - 2 pole with pigtail lead connection	A2X3PK ①
Alarm + Auxiliary Combination Switch with pigtail lead connection	AAL3RPK ①
Shunt Trip Device 12-24V ac/ac with pigtail lead connection	SNT3P04K ①
Shunt Trip Device 110-240Vac with pigtail lead connection	SNT3P11K ①
Shunt Trip Device 380-440Vac with pigtail lead connection	SNT3P14K ①
Shunt trip device 48Vdc with pigtail lead connection	SNT3P06K ①
Under-voltage Trip Device 24Vac with pigtail lead connection	UVH3LP03K ①
Under-voltage Trip Device 48-60Vac with pigtail lead connection	UVH3LP05K ①
Under-voltage Trip Device 110-127Vac with pigtail lead connection	UVH3LP08K ①
Under-voltage Trip Device 208-240Vac with pigtail lead connection	UVH3LP11K ①
Under-voltage Trip Device 380-480Vac with pigtail lead connection	UVH3LP15K ①
Under-voltage Trip Device 24Vdc with pigtail lead connection	UVH3LP21K ①
Under-voltage Trip Device 48-60V DC (left) c/w Pigtail Leads with pigtail lead connection	UVH3LP23K ①
Under-voltage Trip Device 48-60V DC (right) c/w Pigtail Leads with pigtail lead connection	UVH3RP23K ①
Under-voltage Trip Device 110-125V DC with pigtail lead connection	UVH3LP26K ①
Under-voltage Trip Device 220-250V DC with pigtail lead connection	UVH3LP28K ①
Electrical Motor Operator - 240Vac	EOP3T11
Toggle Extension Handle	HEX3
Lockdog JW/KW	LKD3
Handle Padlock Hasp	PLK3
Handle, Lock OFF only	PLK3ROFF
Metric End Cap Kit - suitable for line or load (3 pole)	KPEKM3
Keeper Nut Kit - Line side	KPR3AM
Keeper Nut Kit - Load side	KPR3BM
Terminal Hardware Kit (3 Pole)	KTH
T300K Terminal 225A 35-185mm ² conductor (1)	T300K
T350K Terminal 400A 120-240mm ² conductor (1)	T350K
Threaded terminal adaptor (3)	TAD3
Rear Connection Stud Kit (2) - 1 x long, 1 x short	1517-2006/1 ②
HKW General Purpose Connection Kit (1 x Long + Short)	1517-2010/1 ③
Terminal Extension Link Kit (3)	1517-2032/1 ③
Inter Phase Barrier	IPB3
Terminal Shield (Pair)	TSK
Insulation sheet mining breaker	1543-0247/1
Rotary Metal Handle IP66 Black 30cm Shaft with mechanism	WHM3R12X
K Frame VariDepth mechanism - style no.5092A62G01	393/1128 *
Handle only, VariDepth - style no.504C323G07	1517-0488/1 *
Weatherproof handle, VariDepth - style no.504C323G08	1517-0488/2 *
Shaft, 165mm, VariDepth - style no.5092A62G01	368/187 *
Shaft, 260mm, VariDepth - style no.47A4446G37	368/186 *
Mounting hardware M6x50 Four (4) required	2031-1206



A1L3RPK



SNT3P11K



KPEKM3



TAD3

FAQ's

Alarm switches will signal only closed + tripped positions
 Auxiliary switches will signal only open + closed positions
 Under-voltage release must be energised before closing breaker
 Supplied standard with screw terminals for both the LINE and LOAD side connections

① Field mountable. If factory fitting required, add \$100 for each accessory.
 ② Cannot be used on Rock breakers.
 ③ Not recommended on Rock breakers due to impacting insulation clearance distances.
 * For VariDepth option please select mechanism, handle and shaft.

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series C, moulded case circuit breakers - L Frame

L Frame 630A & 800A

Thermal magnetic or electronic breaker with interchangeable trip units is made up of two components, frame and trip unit.

L Frame	L Frame
+	+ Digitrip Unit
Thermal Magnetic Trip Unit	+ Rating Plug
Thermal Magnetic Breaker	Electronic Breaker



"The Rock" 1100V mining circuit breakers - L Frame

Trip units	630A interchangeable, 800A fixed		
Thermal setting	adjustable 80-100% x I _n		
Magnetic setting	adjustable (5-10 x I _n)		
Approvals	IEC947-2		
Dimensions	H x W x D (mm)	Weight (kg)	
For both	3 pole 630A	273 x 210 x 103	9.0
Series C and	3 pole 800A	406 x 210 x 103	10.0
'The Rock' L Frame	4 pole 630A	273 x 280 x 103	11.0

L Frame (only) (630AF & 800AF thermal magnetic & electronic breakers)

Interrupting Capacity	Thermal Magnetic	Electronic	Item no.
45kA at 15Vac	✓	✓	LW3630F
45kA at 15Vac	✓	-	LW4630F
70kA at 15Vac	✓	✓	HLW3630F
70kA at 15Vac	✓	-	HLW4630F
100kA at 415Vac	✓	✓	LWC3630F
22kA at 500Vdc	✓	-	HLDDC3600F
50kA at 415Vac	✓	-	LW3800W (800A) trip unit installed
50kA at 415Vac	-	✓	LW3800T33W (400 - 800A trip unit + rating plug installed)

Thermal magnetic trip units

Adjustable Ampere Rating	Item no.
250 - 315	LT3315TA
315 - 400	LT3400TA
400 - 500	LT3500TA
500 - 630	LT3630TA
400 - 500 4 pole	LT4500TA
500 - 630 4 pole	LT4630TA

Electronic trip units

Digitrip Item no.	Ampere Rating	Rating plug Item no.
LES3630LSI	315, 400, 500, 630	A6LES630T2

Magnetic Only Trip, L Frame HMCP - Trip Unit only, all ratings (for use with L Frame 3 pole circuit breakers)

Motor FLC	Max. current	HMCP magnetic trip settings - selected position & current ratings									Item no.
		A	B	C	D	E	F	G	H	I	
86.6-183.6A	600	1125	1266	1406	1547	1688	1828	1969	2109	2250	E2L3600TML
115.4-244.9A	600	1500	1688	1875	2063	2250	2438	2625	2813	3000	E2L3600TMN
134.7-285.7A	600	1750	1969	2188	2406	2625	2844	3063	3281	3500	E2L3600TMR
153.9-326.9A	600	2000	2250	2500	2750	3000	3250	3500	3750	4000	E2L3600TMX
192.3-408.2A	600	2500	2813	3125	3438	3750	4063	4375	4688	5000	E2L3600TMP
230.8-489.8A	600	3000	3375	3750	4125	4500	4875	5250	5625	6000	E2L3600TM

The recommended full load current range is based on the breaker having continuous current rating of not less than 115% of the motor full load current.

* ARMS enabled 1100V mining circuit breakers are now available. Contact Eaton for more details.

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

1100V mining circuit breaker - L Frame

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
300-600A L Frame	18kA	12kA	E2LM3600F



LEM3600T

1100V mining circuit breaker thermal magnetic trip units - L Frame

Ampere rating	Item no.
300	E2L3300T
400	E2L3400T
500	E2L3500T
600	E2L3600T

1100V mining circuit breaker electronic trip units - L Frame

Ampere rating	Digitrip 310+ item no.
300	LEM3300T
400	LEM3400T
600	LEM3600T

Aftermarket and mining MCCB

Series C, moulded case circuit breakers - LW and E2LM Rock

Accessory - L frame

Description	Item no.
Alarm switch with pigtail lead connection	A1L4RPK ①
Auxiliary switch with pigtail lead connection	A1X4PK ①
Auxiliary switch, 2 pole with pigtail lead connection	A2X4PK ①
Auxiliary switch, 3 pole with pigtail lead connection	A3X4PK ①
Combination auxiliary/alarm switch with pigtail lead connection	AA214RPK ①
Shunt trip, 9-24Vac/dc with pigtail lead connection	SNT4LP03K ①
Shunt trip, 110-240Vac, 110-125Vdc with pigtail lead connection	SNT4LP11K ①
Shunt trip, 380-440Vac, 220-250Vdc with pigtail lead connection	SNT4LP14K ①
Under-voltage release, 24Vdc with pigtail lead connection	UVH4LP21K ①
Under-voltage release, 110-127Vac with pigtail lead connection	UVH4LP08K ①
Under-voltage release, 208-240Vac with pigtail lead connection	UVH4LP11K ①
Under-voltage release, 380-480Vac with pigtail lead connection	UVH4LP15K ①
Under-voltage release, 110-125Vdc with pigtail lead connection	UVH4LP26K ①
Motor operator 240Vac	EOP4MT11A ①
Handle (Toggle) Extension	HEX4
Padlockable handle lock hasp	HLK4
Busbar mounting kit (3)	1514-1011/1 ②
Terminal extension kit (3)	1517-0692/1 ③
Rear connecting stud - threaded stud SA800	1518-0310/2 ②
Metric End Cap Kit (3 pole)	KPEKM4
Interphase barriers (2)	IPB4
Terminal shields, plastic (2)	TSL
Insulation sheet mining breaker	1543-0248/1
Rotary Metal Handle IP66 Black 30cm Shaft with mechanism	WHM4R12X
L Frame VariDepth mechanism - style no.5092A62G05	394/1246 *
Handle only, VariDepth mechanism - style no.504C323G07	1517-0488/1 *
Weatherproof handle, VariDepth - style no.504C323G08	1517-0488/2 *
Shaft, 165mm, VariDepth - style no.47a4446g36	368/187 *
Shaft, 260mm, VariDepth - style no.47a4446g37	368/186 *

① Field mountable. If factory fitting required, add \$100 for each accessory.
 ② Cannot be used on Rock breakers.
 ③ Not recommended on Rock breakers due to impacting insulation clearance distances.
 * For VariDepth option please select mechanism, handle and shaft.



A3X4PK



1517-0692/1



IPB4



TSL

FAQ's

Alarm switches will signal only closed + tripped positions
 Auxiliary switches will signal only open + closed positions
 Under-voltage release must be energised before closing breaker
 Supplied standard with screw terminals for both the LINE and LOAD side connections

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series G, moulded case circuit breaker - N Frame

"The Rock" 1100V mining circuit breakers - N Frame 1200 A



N Frame 1600 A

Digitrip 310+ Electronic trip unit is standard.
Non-auto switch versions available.

Dimensions		H x W x D (mm)	Weight (kg)
For both Series G and 'The Rock' N Frame	3 pole	406 x 210 x 140	21.3
	4 pole	406 x 280 x 140	28.3

LSI trip unit, interrupting capacity (Icu/Ics) = 50/50kA @ 415Vac. rating plug included

Ampere rating	3 pole item no.	4 pole item no.
320 ~ 800A	NGS308032M	NGS408032M
500 ~ 1250A	NGS312532M	NGS412532M
630 ~ 1600A Front	NGSF316032M	NGSF416032M
630 ~ 1600A Rear	NGS316032M	NGS416032M

LSIG trip unit, Interrupting capacity (Icu/Ics) = 50/50kA @ 415Vac. rating plug included

Ampere rating	3 pole item no.	4 pole item no.
320 ~ 800A	NGS308036M	NGS408036M
500 ~ 1250A	NGS312536M	NGS412536M
630 ~ 1600A Front	NGSF316036M	NGSF416036M
630 ~ 1600A Rear	NGS316036M	NGS416036M

LSI trip unit, interrupting capacity (Icu/Ics) = 70/50kA @ 415Vac. rating plug included

Ampere rating	3 pole item no.	4 pole item no.
320 ~ 800A	NGH308032M	NGH408032M
500 ~ 1250A	NGH312532M	NGH412532M
630 ~ 1600A Front	NGHF316032M	NGHF416032M
630 ~ 1600A Rear	NGH316032M	NGH416032M

LSIG trip unit, interrupting capacity (Icu/Ics) = 70/50kA @ 415Vac. rating plug included

Ampere rating	3 pole item no.	4 pole item no.
320 ~ 800A	NGH308036M	NGH408036M
500 ~ 1250A	NGH312536M	NGH412536M
630 ~ 1600A Front	NGHF316036M	NGHF416036M
630 ~ 1600A Rear	NGH316036M	NGH416036M

Moulded case switches (non-auto)

Ampere rating	3 pole item no.	4 pole item no.
800	NGK3080KSM	NGK4080KSM
1250	NGK3125KSM	NGK4125KSM

Note: 4 pole breakers are not offered with neutral protection or ground fault protection. i.e. these are 0% protection on neutral.

1100V mining circuit breaker - N Frame with 310+ mining electronic trip unit fitted

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
600A N Frame	25kA	20kA	E2NM3600W
700A N Frame	25kA	20kA	E2NM3700W
800A N Frame	25kA	20kA	E2NM3800W
900A N Frame	25kA	20kA	E2NM3900W
1000A N Frame	25kA	20kA	E2NM310W
1200A N Frame	25kA	20kA	E2NM312W

* ARMS enabled 1100V mining circuit breakers are now available. Contact Eaton for more details.

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

Series G, moulded case circuit breaker - N Frame 1600 Ampere and E2NM Rock

Accessory - N Frame

Description	Item no.
Alarm Lockout (L) 1M1B with pigtail lead connection	A1L5LPK ①
Alarm Lockout (R) 1M1B with pigtail lead connection	A1L5RPK ①
Alarm Lockout (L) 2M2B with pigtail lead connection	A2L5LPK ①
Alarm Lockout (R) 2M2B with pigtail lead connection	A2L5RPK ①
Auxiliary switch (Right Side Mount) with pigtail lead connection	A1X5PK ①
Aux. SW 2A2B with pigtail lead connection	A2X5PK ①
Aux. SW (L) 3A3B with pigtail lead connection	A3X5LPK ①
Aux. SW (R) 3A3B with pigtail lead connection	A3X5RPK ①
Aux. SW + AL (L) 1A1B with pigtail lead connection	AA115LPK ①
Aux. SW + AL (R) 1A1B with pigtail lead connection	AA115RPK ①
Auxiliary alarm switch (2pole aux. + 1pole alarm) with pigtail lead connection	AA215RPK ①
Shunt trip, 24Vac/dc with pigtail lead connection	SNT5LP03K ①
Shunt trip, 48-60Vac with pigtail lead connection	SNT5LP05K ①
Shunt trip, 110-240Vac with pigtail lead connection	SNT5LP11K ①
Shunt trip, 380-440Vac , 220-250Vdc with pigtail lead connection	SNT5LP14K ①
Shunt Trip (L) 480-600VAC with pigtail lead connection	SNT5LP18K ①
Shunt trip, 48-60Vdc with pigtail lead connection	SNT5LP23K ①
Shunt trip, 110-125Vdc with pigtail lead connection	SNT5LP26K ①
Shunt Trip (L) Low Energy with pigtail lead connection	LST5LPK ①
Under-voltage release, 110-127Vac with pigtail lead connection	UVH5LP08K ①
Undervoltage Trip (L) 24VAC/DC with pigtail lead connection	UVH5LP21K ①
Under-voltage release, 208-240Vac with pigtail lead connection	UVH5LP11K ①
Under-voltage release, 380-440Vac with pigtail lead connection	UVH5LP29K ①
Electrical operator, 240V AC	EOP5T11 ①
Handle Extension (Spare)GN or NW Frame	HEX5
Handle Block-Non padlockable GN or NW Frame	LKD4
Key Interlock provision N Frame Series G	KYK4
Padlockable lockdog	PLK5
Mech interlock sliding Bar 3-4P N frame series G	SBK5
NG 1250A 3P metric conductor extension kit	5104A24G04
NG 1600A 3P term extn kit (1 side)	N16TE3
NG 1600A 4P term extn kit (1 side)	N16TE4
Busbar mounting kit	1517-2055/1 ②
Interphase barriers (2)	IPB5
Insulation sheet mining breaker	1543-0249/1
Test Kit-230Vac-DT310 trip unit	STK2
Handle Assy Direct Mount Black N Frame Series G	HMVD5B
Rotary Metal Handle IP65 Black 12" Shaft with mechanism	WHM5R12

① Field mountable. If factory fitting required, add \$100 for each accessory.
 ② Cannot be used on Rock breakers.



A1X5PK



AA215RPK



HEX5



EOP5T11

FAQ's

Alarm switches will signal only closed + tripped positions
 Auxiliary switches will signal only open + closed positions
 Under-voltage release must be energised before closing breaker
 Supplied standard with screw terminals for both the LINE and LOAD side connections

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series G, moulded case circuit breaker - R Frame

"The Rock" 1100V mining circuit breakers - R Frame 2000 A



R frame 2500 A

Electronic trip unit characteristics

- L Adjustable Long Delay Pickup (A)
- S Short Time Range (A)
- I Short Time Delay (sec)
- G Ground Fault Pickup (A)
- Ground Fault Time (sec)

Dimensions		H x W x D (mm)	Weight (kg)
For both Series G and 'The Rock' R Frame	3 pole	406 x 394 x 229	47
	4 pole	406 x 508 x 229	54

LSI 310+ trip unit, interrupting capacity (Icu/Ics) = 70/50kA @ 415Vac

Ampere rating	3 pole item no.	4 pole item no.
800 ~ 1600A	RGH316032M	RGH416032M
1000 ~ 2000A	RGH320032M	RGH420032M
1250 ~ 2500A	RGH325032M	RGH425032M

LSIG 310+ trip unit, interrupting capacity (Icu/Ics) = 70/50kA @ 415Vac

Ampere rating	3 pole item no.	4 pole item no.
800 ~ 1600A	RGH316036M	RGH416036M
1000 ~ 2000A	RGH320036M	RGH420036M
1250 ~ 2500A	RGH325036M	RGH425036M

Moulded case switches (non-auto)

Ampere rating	3 pole item no.	4 pole item no.
1600	RGK3160KSM	RGK4160KSM
2000	RGK3200KSM	RGK4200KSM

Note: 4 pole breakers are not offered with neutral protection or ground fault protection. i.e. these are 0% protection on neutral.

1100V mining circuit breaker - R Frame with 310+ mining electronic trip unit fitted

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
1600A R Frame	25kA	20kA	E2RM316W
2000A R Frame	25kA	20kA	E2RM320W

* ARMS enabled 1100V mining circuit breakers are now available. Contact Eaton for more details.

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

Series G, moulded case circuit breaker - RG and E2RM Rock

Accessory - R Frame

Description	Item no.
Alarm switch with pigtail lead connection	A1L6RPK ①
Alarm switch, 2 pole with pigtail lead connection	A2L6RPK ①
Auxiliary switch, 2 pole with pigtail lead connection	A2X6RPK ①
Auxiliary switch, 4 pole with pigtail lead connection	A4X6RPK ①
Shunt trip, 24Vdc with pigtail lead connection	SNT6P03K ①
Shunt trip, 120 to 240Vac with pigtail lead connection	SNT6P11K ①
Shunt Trip (R) 480-600VAC with pigtail lead connection	SNT6P18K ①
Shunt trip, 440Vac with pigtail lead connection	SNT6P14K ①
Shunt trip, 48 to 60Vdc with pigtail lead connection	SNT6P23K ①
Shunt Trip (R) Low Energy with pigtail lead connection	LST6RPK ①
Under-voltage Trip (R) 208-240VAC with pigtail lead connection	UVH6RP11K ①
Under-voltage Trip (R) 24VDC with pigtail lead connection	UVH6RP21K ①
Under-voltage Trip (R) 300-500VAC with pigtail lead connection	UVH6RP29K ①
Electrical Operator 240Vac GR or RW Frame	EOP6T11K ①
Handle extension	HEX6
Key interlock provision	KYK6
Padlockable handle lock hasp	HLK6
Insulation sheet mining breaker	1543-0252/1
Test KIT-230Vac-DT310 trip unit	STK2
Terminal Cable (1) 4 x 50-300mm ² R Frame Series G	T1600RDM ②
Terminal Cable (1) 4 x 300-500mm ² R Frame Series G	TA1600RDM ②
Terminal Cable (1) 6 x 35-300mm ² R Frame Series G	TA2000RDM ②
Vari-Depth Handle Mech R Frame Series G	HMVD6B
Terminal Rear (1) 2000A R Frame Series G	B2016RDLM ②

① Field mountable. If factory fitting required, add \$100 for each accessory.
 ② Cannot be used on Rock breakers.



STK2

FAQ's

Alarm switches will signal only closed + tripped positions
 Auxiliary switches will signal only open + closed positions
 Under-voltage release must be energised before closing breaker
 Supplied standard with screw terminals for both the LINE and LOAD side connections

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB

Replacement moulded case circuit breakers (for previous Westinghouse & Cutler-Hammer moulded case circuit breakers)

In all cases fitted accessories must also be changed with exception to NEMA Series C & IEC Series C where all accessories are common within same frame sizes.

Model	Notes	Replacement	Notes
G-frame			
GC/GHC/ GCH	US BREAKER	GWF	Direct physical replacement
GD	NEMA VERSION GW	GWF	Direct physical replacement
GB/GHB/ GC/GHC	NEMA VERSION GW	GWF	Direct physical replacement
F-frame			
MCP	US BREAKER	HMCP (Series C)	Direct physical replacement
ED	NEMA SERIES C	FW	Direct physical replacement
EDH	NEMA SERIES C	HFW	Direct physical replacement
EDC	NEMA SERIES C	FWC	Direct physical replacement
EHD	NEMA SERIES C	FW	Direct physical replacement
FDB	NEMA SERIES C	FW	Direct physical replacement
EB	US BREAKER	FW	Direct physical replacement
EHB	US BREAKER	FW	Direct physical replacement
FB	EX.NZ.MADE	FW	Direct physical replacement
HFB	EX.NZ.MADE	FW	Direct physical replacement
FD	NEMA VERSION FW	FW	Direct physical replacement
HFD	NEMA VERSION HFW	HFW	Direct physical replacement
FDC	NEMA VERSION FWC	FWC	Direct physical replacement
J-frame			
JDB	NEMA SERIES C	JW	Direct physical replacement
JB/KB	US BREAKER	JW	Direct physical replacement
HKB	US BREAKER	JW	Direct physical replacement
JD	NEMA VERSION JW	JW	Direct physical replacement
HJD	NEMA VERSION HJW	HJW	Direct physical replacement
JDC	NEMA VERSION JWC	JWC	Direct physical replacement
K-frame			
KDB	NEMA SERIES C	KW	Terminals slightly higher
JA/KA	US BREAKER	KW	Terminals slightly higher
HKA	US BREAKER	KW	Terminals slightly higher
LB/LLB	US BREAKER	KW	Terminals slightly higher
HLB	EX.AUST.MADE	KW	Terminals slightly higher
DA	US BREAKER	KW	Terminals slightly higher
DK	NEMA SERIES C	KW	Terminals slightly higher
KD	NEMA VERSION KW	KW	Direct physical replacement
HKD	NEMA VERSION HKW	HKW	Direct physical replacement
KDC	NEMA VERSION KWC	KWC	Direct physical replacement

Model	Notes	Replacement	Notes
L-frame			
LDB	NEMA SERIES C	LW	Thread changes from imperial to metric
LA/LAB/ HLA 400	US BREAKER	LW	Thread changes from imperial to metric
LA/HLA 600	US BREAKER	LW	Thread changes from imperial to metric
LC/LCC/ HLC	US BREAKER	LW+DIGI310	Thread changes from imperial to metric
LD	NEMA VERSION LW	LW	Thread changes from imperial to metric
HLD	NEMA VERSION HLW	HLW	Thread changes from imperial to metric
LDC	NEMA VERSION LWC	LWC	Thread changes from imperial to metric
M-frame			
MA/HMA	US BREAKER	LW3800T33W	Replacement physically smaller
MC/HMC	US BREAKER	LW3800T33W	Replacement physically smaller
N-frame			
NB/NC	US BREAKER	NGS312532M	Thread changes from imperial to metric
HNB/HNC	US BREAKER	NGS312532M	Thread changes from imperial to metric
ND	NEMA VERSION NW	NGS312532M	Thread changes from imperial to metric
HND	NEMA VERSION HNW	NGH312532M	Thread changes from imperial to metric
HDC	NEMA VERSION NWC	GNC3125T32WP09	Thread changes from imperial to metric
R-frame		1600A	
RD	NEMA VERSION RW	RGH316032M	Thread changes from imperial to metric
RDC	NEMA VERSION RWC	GRC316T32WP09	Thread changes from imperial to metric
		2000A	
RD	NEMA VERSION RW	RGH320032M	Thread changes from imperial to metric
RDC	NEMA VERSION RWC	GRC320T32WP17	Thread changes from imperial to metric
		2500A	
RD	NEMA VERSION RW	RGH325032M	Thread changes from imperial to metric
RDC	NO IEC VERSION	GRC325T32WP40	N/A

Aftermarket and mining MCCB

“The Rock” 1100V mining circuit breaker application data

Adapter plates

Description	Item no.
Adaptor to replace NZM with E2FM	ROCKLBSTRF
Adaptor to replace NZM with E2JM	ROCKLBSTRJ
Adaptor to replace NZM with E2LM	ROCKLBSTRL
Adaptor to replace NZM with E2NM	ROCKLBSTRN

Retrofit is only possible if Enclosure Dimensions comply with Rock Installation Instructions (see below).

Installation instructions for the complete line of E2 mining service circuit breakers

The state of the art E² Mining Breakers have been designed to meet stringent standards developed by Eaton to suit mining industry needs. In order to maintain system integrity, the following additional installation requirements must be met.

Warning: failure to comply with the following installation requirements & instructions will reduce the ability of the circuit breaker to conform to its ratings & void any warranty claims.

Requirements

The circuit breaker must be installed with insulation sheets & inter-phase barriers. The installation must confirm to & maintain the clearance & creepage distances detailed.

Additional insulation part numbers

- Circuit breakers must be mounted with a phase barrier between each phase on the line end of the breaker, or with a terminal shield on the line end. Refer note 3.
- All breakers must be mounted with an insulation sheet between them & the mounting plate. The size of the sheet & sheet material is shown in the next column. For mounting details refer to the figure in the next column.
- If any mining frame breakers are installed behind a non-insulating escutcheon which is located within 50mm from the face of the breaker, a terminal shield must be used.

Breaker frame	Phase barrier*	Terminal shield*	Rear panel insulation sheet
F	IPB1	TSF	1543-0245/1
J	IPB3	TSJ	1543-0246/1
K	IPB3	TSK	1543-0247/1
L	IPB4	TSL	1543-0248/1
N	IPB5	-	1543-0249/1
R	-	-	1543-0252/1

*Select either phase barriers or terminal shields. Both come in sets of two.
Ordering quantities for line and load side connections:
Phase barriers - 2 sets. Terminal shields - 1 set.
Insulation sheets supplied with each complete Moulded Case Circuit Breaker.

Insulation sheet material:

The additional insulation provided with the circuit breakers is a polyester fill with a thickness of 250 microns. If the insulation is damaged or lost, a replacement insulation sheet may be obtained from Eaton, or must have the following characteristics:

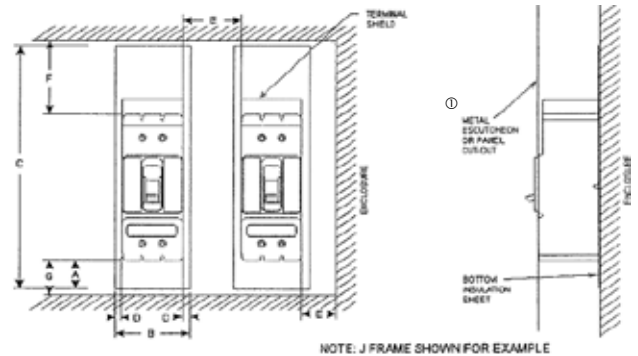
Thermal class: E (120°C) Dielectric strength: 80kV/mm
Service temperature: -70 to +130°C Breakdown voltage: 20kV
Resistivity @ 25°C: 1.8x10¹⁶ ohm-cm

Insulation sheet & minimum mounting dimensions

Replacement insulation sheets must have the following dimensions & be mounted so that the following minimum clearances are maintained.

Breaker frame	Item no.	Sheet Dim A (mm)	Sheet Dim B (mm)	Sheet Dim C (mm)	Mounting Dim D (mm)	Mounting Dim E (mm)	Mounting Dim F (mm)	Mounting Dim G (mm)
F	1543-0245/1	50	115	322	5	30	120	50
J	1543-0246/1	50	115	424	5	30	120	50
K	1543-0247/1	50	149	427	5	30	120	50
L	1543-0248/1	50	220	443	5	30	120	50
N**	1543-0249/1	120	220	210	5	30	120	120
R**	1543-0252/1	200	404	300	5	30	200	200

**Two identical sheets listed to be used at line & load ends.



① Must have 50mm clearance from breaker or terminal shield must be used.

Clearance & creepage distances

The circuit breakers should be mounted with the additional equipment listed above, as well as maintaining clearance & creepage distances in accordance with AS60947.1 cl 7.2.3 & AS3000:2007 cl 2.9.3.3