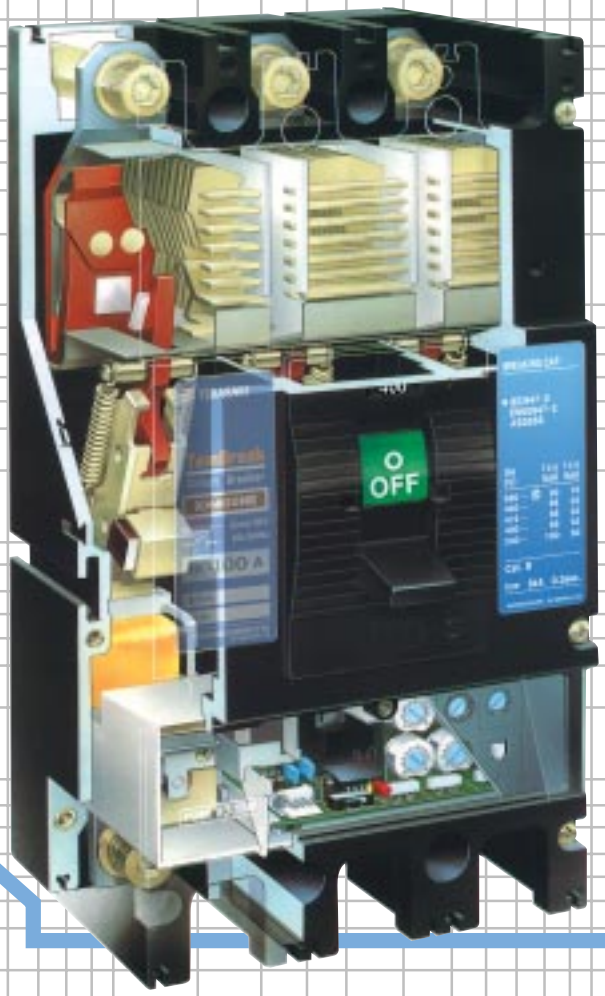
TERASAKI

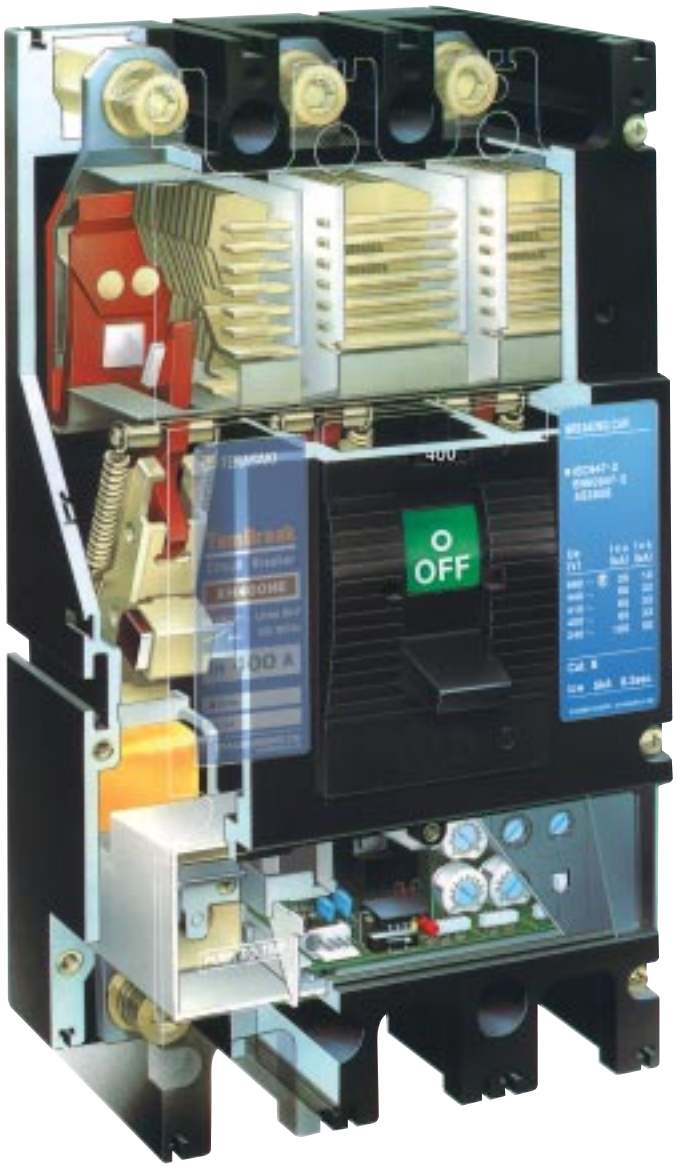
Innovators in Protection Technology

TemBreak

Total Protection, Complete Control



Catalogue No. 03 - I20EJ


400
O
OFF

Mission Statement.

"Terasaki aims to be the best supplier of circuit breakers and associated equipment to the low voltage markets for which we are responsible. In the eyes of our customers; suppliers, employees and competitors we will build our reputation through enhanced value, quality, reliability and total integrity."

Certifications, Standards and Approvals by the World's Leading Organizations	
Air Circuit Breakers ASTA/UK The Association of Short Circuit Testing Authorities (Inc.) SECV/Australia State Electricity Commission of Victoria LR/UK Lloyd's Register of Shipping BV/France Bureau Veritas GL/Germany Germanischer Lloyd AB/USA American Bureau of Shipping DNV/Norway Det Norske Veritas NK/Japan Nippon Kaiji Kyokai	**Moulded Case Circuit Breakers** ASTA/UK The Association of Short Circuit Testing Authorities (Inc.) SECV/Australia State Electricity Commission of Victoria LR/UK Lloyd's Register of Shipping BV/France Bureau Veritas GL/Germany Germanischer Lloyd AB/USA American Bureau of Shipping NK/Japan Nippon Kaiji Kyokai DNV/Norway Det Norske Veritas
Based Standards	
Air Circuit Breakers IEC 947-2 International Electrotechnical Commission BS EN 60947 Part 2/UK British Standard VDE 0660 Part 101/Germany Verband Deutscher Elektrotechniker CEI EN 60947 Part 2/Italy Italian Standard NEMA PUB NO. SG3/USA National Electrical Manufacturers Association ANSI C37.13/USA American National Standards Institute JIS C8372/Japan Japanese Industrial Standard JEC 160/Japan Japanese Electrical Committee	**Moulded Case Circuit Breakers** IEC 947-2 International Electrotechnical Commission BS EN 60947 Part 2/UK British Standard VDE 0660 Part 101/Germany Verband Deutscher Elektrotechniker CEI EN 60947 Part 2/Italy Italian Standard NEMA AB-1/USA National Electrical Manufacturers Association JIS C8370/Japan Japanese Industrial Standard

1 Profile

TemBreak

The Complete Solution for Thermal/Magnetic & Microprocessor MCCBs

Frame size	50	125	160	250	400	630	800	1000	1250	1600	2000	2500
XE Economical Series		XE100NS 10-100A 15kA 400V 10kA 415v		XE225NS 125-225A 18kA 400V 15kA 415v	XE400NS 250-400A 25kA 400V 25kA 415v	XE600NS 500-600A 25kA 400V 25kA 415v						
XS Standard Series	XS50NB 10-50A 15kA 400v 10kA 415v	XS125CJ 12.5-125A 18kA 400v 14kA 415v XS125NJ 12.5-125A 30kA 400v 25kA 415v	XS160NJ 100-160A 35kA 400v 25kA 415v	XS250NJ 100-250A 35kA 400v 25kA 415v XS250PJ 100-250A 35kA 400v 35kA 415v	XS400CJ 160-400A 35kA 400V 35kA 415v XS400NJ 160-400A 50kA 400v 50kA 415v XS400CE 125-400A 35kA 400v 35kA 415v XS400NE 125-400A 50kA 400v 50kA 415v	XS630CJ 250-630A 45kA 400V 35kA 415v XS630NJ 250-630A 65kA 400V 50kA 415v XS630CE 315-630A 40kA 400V 35kA 415v XS630NE 315-630A 50kA 400V 50kA 415v	XS800NJ 500-800A 65kA 400V 50kA 415v XS800NE 400-800A 50kA 400V 50kA 415v		XS1250NE 500-1250A 85kA 400V 65kA 415v	XS1600NE 800-1600A 100kA 400V 85kA 415v	XS2000NE 1000-2000A 100kA 400V 85kA 415v	XS2500NE 1250-2500A 100kA 400V 85kA 415v
XH High Fault Series		XH125NJ 12.5-125A 50kA 400v 50kA 415v	XH160NJ 100-160A 50kA 400v 50kA 415v	XH250NJ 100-250A 50kA 400v 50kA 415v XH250PE 12.5-250A 65kA 400v 65kA 415v	XH400NE 125-400A 65kA 400v 65kA 415v	XH630NE 315-630A 65kA 400V 65kA 415v	XH800PS 700-800A 100kA 400V 85kA 415v XH800NE 400-800A 65kA 400V 65kA 415v	XS1000ND 1000A 30kA 350V 20kA 600v (D.C.)	XS1250ND 1250A 30kA 350V 20kA 600v (D.C.)	XS1600ND 1600A 30kA 350V 20kA 600v (D.C.)	XS2000ND 2000A 30kA 350V 20kA 600v (D.C.)	XS2500ND 2500A 30kA 350V 20kA 600v (D.C.)

End Suffix

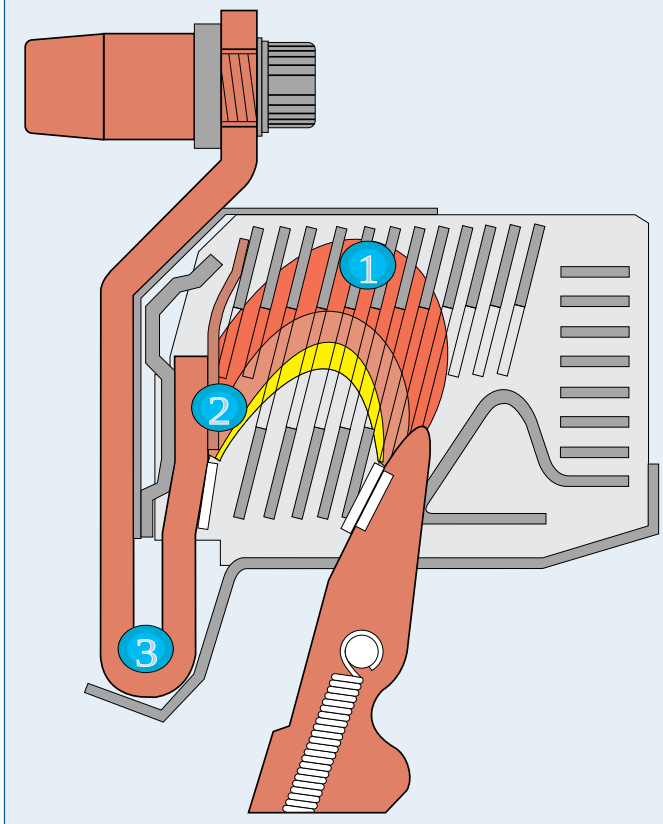
S = Fixed Thermal Trip
J = Adjustable Thermal Trip
D = Special D.C. Application
E = Electronic Trip

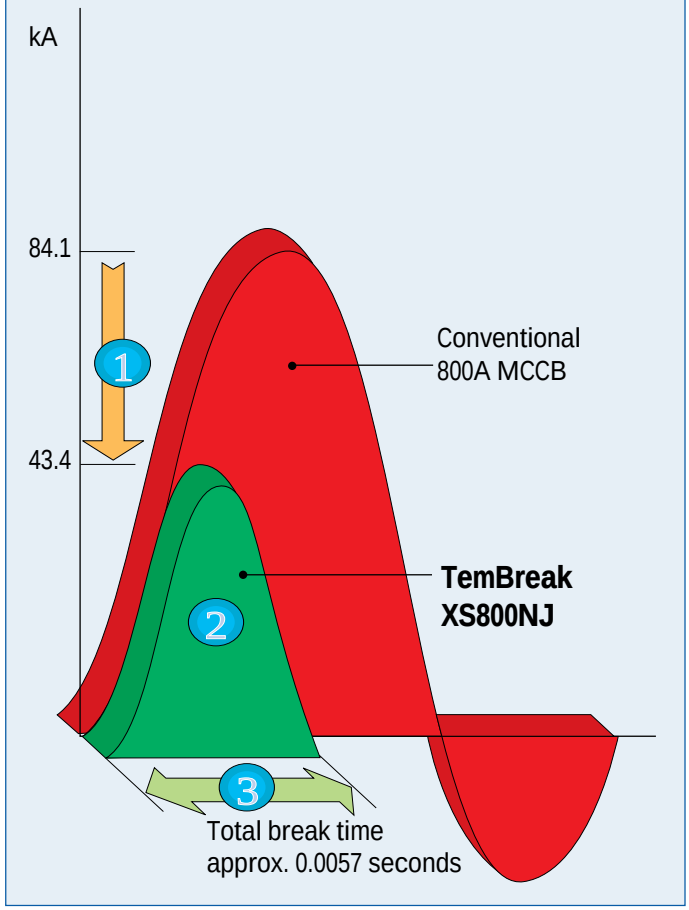
Thermal Magnetic MCCBs still available at 400, 630 and 800 amps

EXCEPTIONAL CURRENT LIMITING, QUICK-BREAKING PERFORMANCE

TERASAKI'S ingenuity on current breaking is reflected in the new Fast Break Mechanism (FBM) of the TemBreak series. The current limiting, quick-breaking performance of TemBreak provides exceptional current-limiting characteristics that have not been possible with existing moulded case circuit breakers.

F.B.M. FAST BREAK MECHANISM — Provides — **EXCEPTIONAL CURRENT LIMITATION**





1. Quick-break arc chutes
2. Dual repulsive contacts
3. U-shaped conductors

Provides

1. Reduced Peak let through minimises electrodynamic stress on conductors
2. Reduced ∫idt energy let through minimises thermal stress on conductors
3. Reduced tripping time minimises damage after fault to both system and MCCB

"PIONEERS IN CURRENT LIMITING TECHNOLOGY"

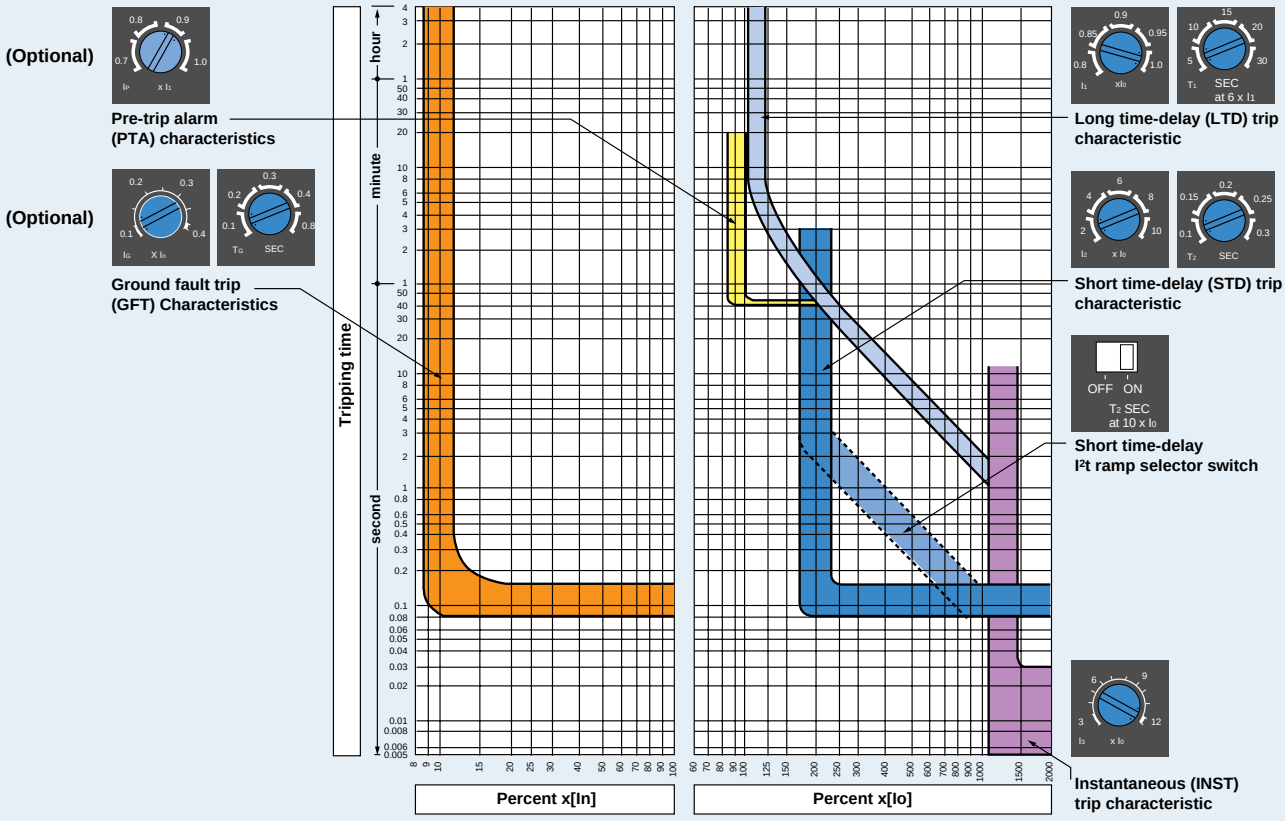
1 Profile

TemBreak

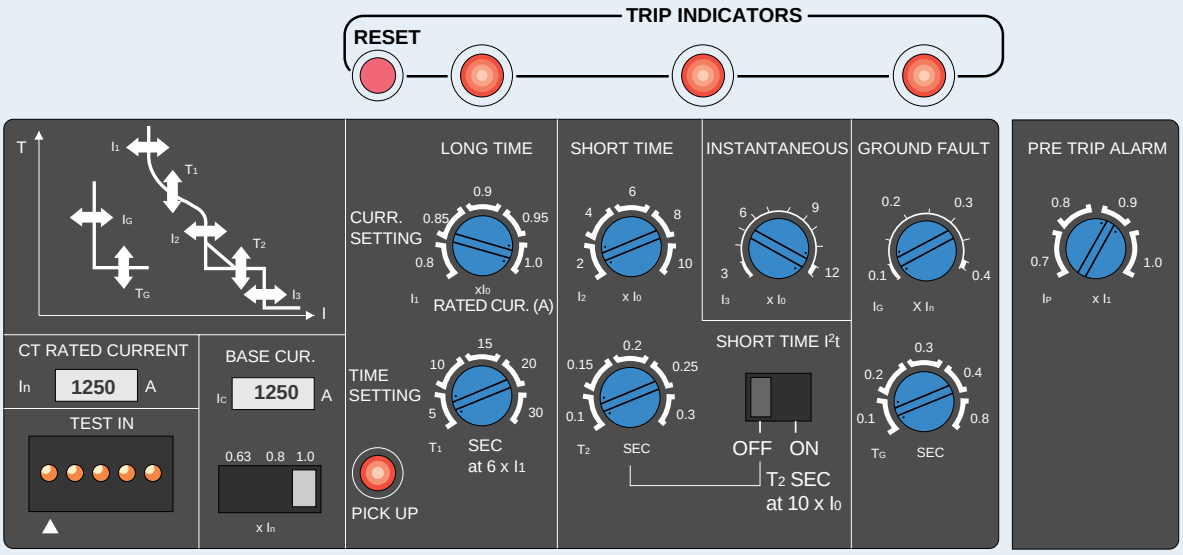
Enhanced co-ordinated protection,the most flexible MCCB in the world

Very often, MCCBs must grade with other protective devices that may not have adjustable characteristics. This could be either a downstream fuse or an upstream electricity authority relay. Each microprocessor based TemBreak can achieve as standard over 200,000 independant time current characteristics. This unique curve flexibility enables TemBreak to achieve full selectivity even in the tightest of grading systems.

MICROPROCESSOR TIME CURRENT CHARACTERISTICS



MICROPROCESSOR ADJUSTMENT FACIA

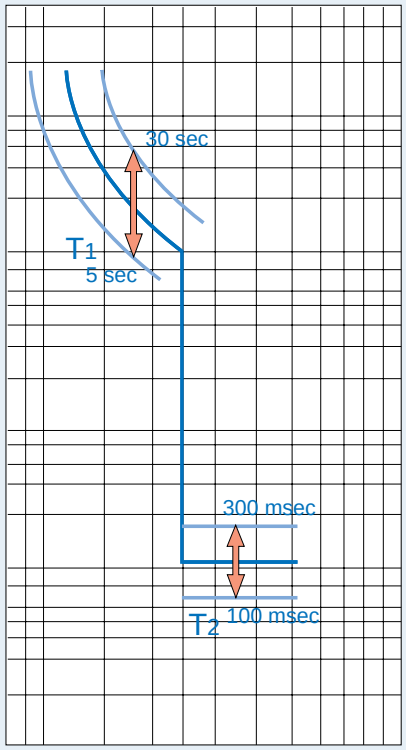


Example XS1250NE

In addition to TemBreak microprocessor MCCBs being the most flexible on the market, a number of important features are available as STANDARD! Most other MCCB manufacturers offer these relevant features at a premium price.

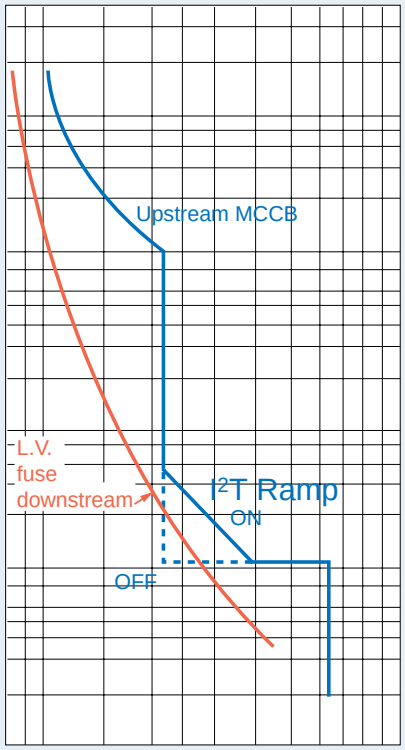
ADJUSTABLE TIME SETTINGS

1



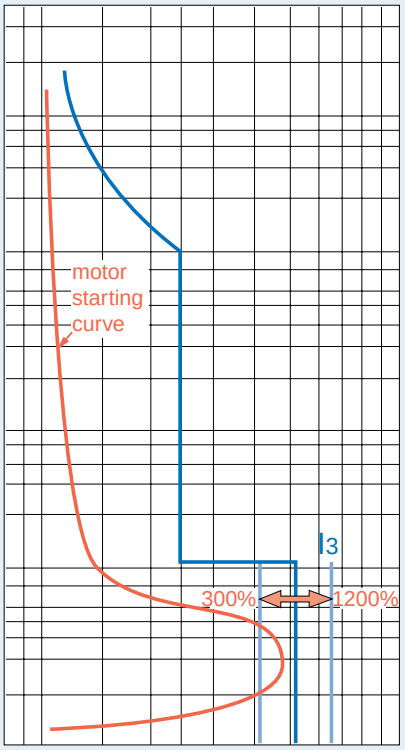
ADJUSTABLE I²T RAMP

2



ADJUSTABLE INST TRIP

3



1 Provision of adjustable LTD T_1 settings and STD T_2 setting are important to match the protective characteristic to the load requirement. It is also extremely useful to provide flexible grading with other devices.

2 When co-ordinating between MCCB and fuses, it can often be difficult to obtain the required selectivity due to the different shape of the time current curves. With a flick of a switch the I^2t ramp can be enabled to make grading easier.

3 Inductive loads such as motors often produce a transient inrush on initial switching. In this application it is important to have an adjustable instantaneous trip to set above this inrush current.

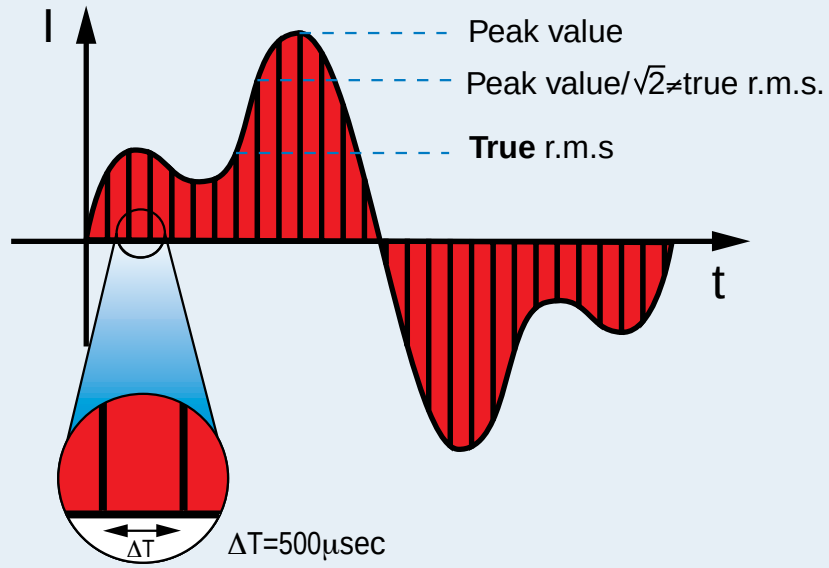
"INNOVATORS IN PROTECTION TECHNOLOGY"

From 10A to 2500A, TemBreak detects true r.m.s. as standard

Due to the amount of non-linear loads such as UPS, variable speed drives, soft starters & thyristor controls the level of harmonics in L.V. distribution is substantially increasing.

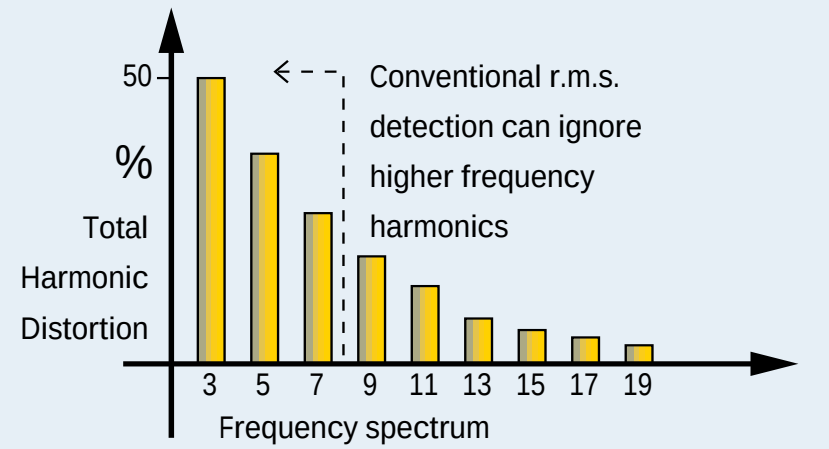
Conventional electronic MCCBs incorporating 'peak detection' are prone to nuisance tripping if Harmonic distortion exists.

TRUE R.M.S. PROTECTION, UNEFFECTED BY HARMONICS

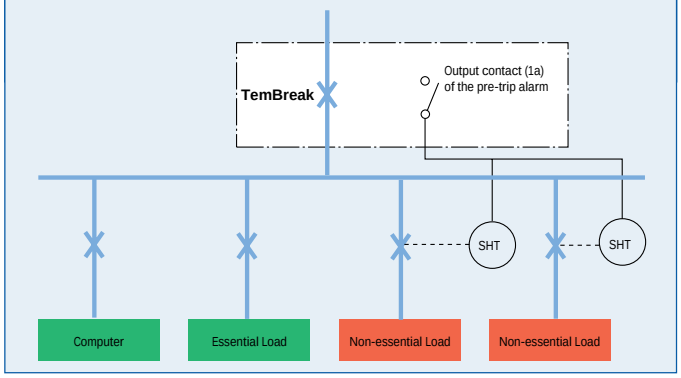


TemBreak MCCBs employ a True R.M.S. detection through a process of sampling and integrating.
Even those MCCBs that claim True R.M.S. may only do so up until the 3rd or 5th Harmonic. Ignoring higher frequency harmonics can lead to 'under protection' of the conductor. By utilizing a high sampling rate of 500 μsec TemBreak microprocessor MCCBs detect up until and including the 19th Harmonic.

HIGH FREQUENCY HARMONICS DETECTED



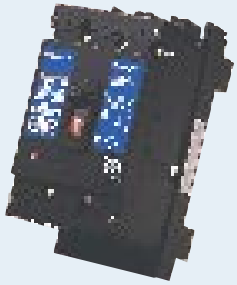
PRE-TRIP ALARM FUNCTION (OPTIONAL)



Electronic office equipment is being increasingly used in today's buildings and factories.
The power demand at peak time can reach over-load levels of the breakers installed in the system. If such a situation continued a sudden trip may be generated by the long time-delay trip function of the breaker.
The pre-trip alarm prevents this "sudden trip" by tripping out non-essential loads thus ensuring an uninterrupted supply to essential loads.

All TemBreak Plugin and drawout MCCBs are fitted with a safety trip as standard. If an attempt is made to remove an MCCB while ON it will automatically trip.

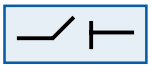
SAFETY TRIP (STANDARD)



The neutral pole of all TemBreak MCCBs are of early make / late break design.
This eliminates the risk of abnormal line to neutral voltages which may damage sensitive electronic equipment.

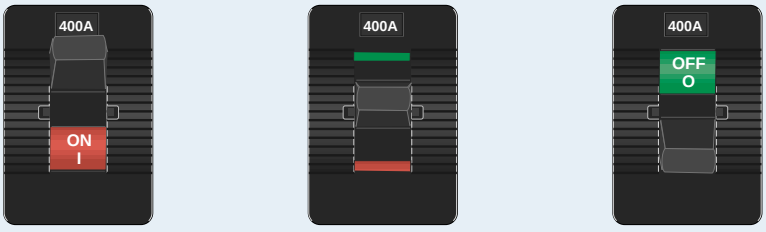
EARLY MAKE / LATE BREAK NEUTRAL

TemBreak MCCBs from 125AF to 1600AF are suitable for isolation as defined by IEC 947-2. Positive Contact Indication (PCI) is achieved via the toggle mechanism.
Padlocks can only be installed if the contacts are fully open.

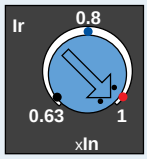


SUITABLE FOR ISOLATION

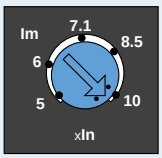
I (ON) TRIP 0 (OFF)



CHOICE OF PROTECTION



Thermal Adjustment
63% - 100% x In



Magnetic Adjustment
500% - 1000% x In

Terasaki is one of the few manufacturers who can still offer a complete range of Thermal Magnetic MCCBs up to 800 AF.
The thermal adjustment of the TemBreak range, 63% to 100% of the nominal rating, is one of the biggest on the market.
This proven form of electromechanical technology still represents by far the largest type of MCCBs sold on the European Market.
Wouldn't you prefer the choice?

NEW!

ADD ON EARTH LEAKAGE BLOCK

- Wide range of current & time adjustments
- Trip/Non Trip option
- Pre Trip alarm function
- Local/Remote indication

See page 54 for more information

NEW!

XMD MOTOR OPERATOR

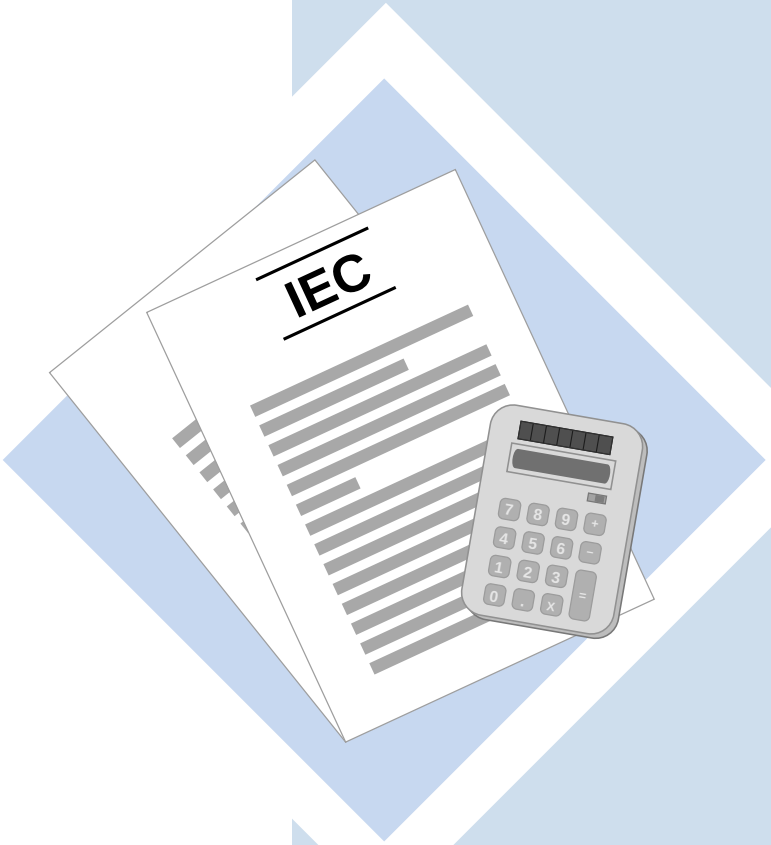
- Positive contact indication
- Access to O.C.R. settings
- One stroke on/off mechanism
- Fast closing mechanism

See page 52 for more information

Ratings and Specifications

11-20

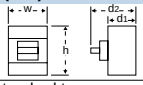
2



Ratings and Specifications

TemBreak

Economical Series

Ampere Frame				100	225	400	600
Type				XE100NS	XE225NS	XE400NS	XE600NS
Number of poles				2 | 3	3	3	3
RATED CURRENT (A). [In]				*			
Calibrated at 45°C				10 30 60	125 200	250 400	500
(* : Calibrated at 40°C)				15 40 75	150 225	300	600
				20 50 100	175	350	
RATED IMPULSE WITHSTAND VOLTAGE Uimp [kV]				6	8	8	8
AC RATED INSULATION VOLTAGE [Ui]				660	690	690	690
AC RATED BREAKING CAPACITY sym. r.m.s. [kA]							
IEC 947-2 **[Icu]** / IEC 947-2 **[Ics]**			690V	–	–	–	–
BS EN 60947-2 **[Icu]** / BS EN 60947-2 **[Ics]**			500V	7.5/3.8	10/5	15/7.5	18/9
CEI EN 60947-2 **[Icu]** / CEI EN 60947-2 **[Ics]**			440V	10/5	15/7.5	18/9	20/10
			415V	10/5	15/7.5	25/13	25/13
			400V	15/7.5	18/9	25/13	25/13
			380V	15/7.5	18/9	25/13	25/13
			240V	25/13	25/13	35/18	35/18
NEMA AB-1			600V	–	–	–	–
			480V	–	15	18	20
			240V	25	25	35	35
Without Inst.			240-690V	–	–	–	–
DC RATED BREAKING			250V	7.5	10	20	20
CAPACITY [kA] ①			125V	15	15	20	20
RATED SHORT TIME CURRENT r.m.s. [kA] [Icw]				–	–	–	–
UTILIZATION CATEGORY				A	A	A	A
OUTLINE DIMENSIONS (mm)							
			w	50 | 75	105	140	210
			h	130	165	260	273
			d1	68	86	103	103
			d2	87	107	131	145
Weight (kg) ⊙ marked standard type				0.48 | 0.74	1.85	4.7	9.0
CONNECTIONS AND MOUNTINGS							
Front	Terminal screw (FCS)			⊙ ④	⊙	⊙	–
connected (FC)	Attached flat bar (BAR)			–	○ (BAR)	○ (BAR)	⊙
	Solderless terminal (PWC)			○	○	○	○
Rear	Bolt stud (REB)			○	–	–	–
connected (RC)	Flat bar stud (REF)			–	○	○	○
Plug-in (PM)	For switchboard (PRC/PMB)			○	○	–	–
	For distribution board			○	–	–	–
Draw-out (DO)				–	–	–	–
STANDARD FEATURES							
ON-OFF colour indication				•	•	•	•
Trip button				•	•	•	•
PROTECTIVE FUNCTIONS							
Electronic type							
Adjustable LTD, STD & INST.				–	–	–	–
Adjustable GFT or Adjustable PTA (option)				–	–	–	–
Trip Indicators (option)				–	–	–	–
Thermal-magnetic type							
Thermal and fixed magnetic trips				• ⑦	•	–	–
Thermal and adjustable magnetic trips				–	–	•	•
Adjustable thermal and fixed magnetic trips				–	–	–	–
Adjustable thermal and magnetic trips				–	–	–	–
ACCESSORIES (option)			**CODE**				
Internally	Auxiliary switch		AX,AXE	•(AXE)	•(AXE)	•(AX)	•(AX)
mounted	Alarm switch		AL,ALE	•(ALE)	•(ALE)	•(AL)	•(AL)
	Shunt trip		SHT	•	•	•	•
	Undervoltage trip ⑨		UVT	•	•	•	•
Externally	Motor operator		MOT	– | •	•	•	•
mounted	Handle	Panel mounted type	OHE	•	•	•	•
	operating	Breaker mounted type	OHJ	– | •	•	•	•
	mechanism	Variable depth type	OHH	– | •	•	•	•
	Handle extension		EHA	–	–	–	•
	Mechanical	Front type	MIF	– | •	•	•	•
	interlock	Rear type	MIB	– | •	•	•	•
	Handle holder		HH	•	•	•	•
	Handle lock		HL	•	•	•	•
	Terminal	Front conn. type	TCF	•	•	•	•
	cover	Rear conn./ plug-in type	TCR	•	•	•	•
	Interpole barrier		TBA	•	•	•	•
	Accessory lead terminal		㉒ LTF	–	•	•	•
			㉓ LTS	•	•	–	–
	Door flange		D.F	•	•	•	•
	IP20 Protection (Plug-in type)		IP20	•	•	–	–

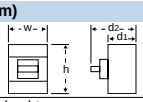
Notes:

⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available.
– : No or not available.
① : DC rating available on request.
③ : Comes with conductor pressing terminal.
④ : Comes with conductor pressing terminal for 10-50A.
⑦ : Hydraulic-magnetic type for below 10A rating.
⑨ : For AC UVT, a UVT controller is mounted externally.
⑪ : Applicable to the rear-connected type only.
㉒ : Draw-out leads, horizontally.
㉓ : Draw-out leads, vertically.

Ratings and Specifications

TemBreak

Standard Series

Ampere Frame				50	125	125	125	125	160	250	250
Type				XS50NB	XS125CS	XS125NS	XS125CJ	XS125NJ	XS160NJ	XS250NJ	XS250PJ
Number of poles				2 | 3	1	1	3 | 4	3 | 4	3 | 4	3 | 4	3 | 4
RATED CURRENT (A). [In]				*			NRC ASR	NRC ASR	NRC ASR	NRC ASR	NRC ASR
Calibrated at 45°C							min. max.	min. max.	min. max.	min. max.	min. max.
(* : Calibrated at 40C)				10 30 15 40 20 50	16 40 100 20 50 125 25 63 32 80	16 40 100 20 50 125 25 63 32 80	20 12.5 20 32 20 32 50 32 50 63 40 63 100 63 100 125 80 125	20 12.5 20 32 20 32 50 32 50 63 40 63 100 63 100 125 80 125	160 100 160	160 100 160 250 160 250	160 100 160 250 160 250
RATED IMPULSE WITHSTAND VOLTAGE Uimp [kV]				6	8	8	8	8	8	8	8
AC RATED INSULATION VOLTAGE [Ui]				660	690	690	690	690	690	690	690
AC RATED BREAKING CAPACITY sym. r.m.s. [kA]											
IEC 947-2 **[Icu]** / BS EN 60947-2 **[Icu]** / CEI EN 60947-2 **[Icu]**	IEC 947-2 **[Ics]** / BS EN 60947-2 **[Ics]** / CEI EN 60947-2 **[Ics]**	690V		–	–	–	–	5/2.5	8/4	8/4	8/4
		500V		7.5/3.8	–	–	7.5/3.8	12/6	22/11	22/11	22/11
		440V		10/5	10/5 ⑬	22/11 ⑬	10/5	22/11	25/13	25/13	25/13
		415V		10/5	14/7 ⑬	25/13 ⑬	14/7	25/13	25/13	25/13	35/18
		400V		15/7.5	18/9 ⑬	30/15 ⑬	18/9	30/15	35/18	35/18	35/18
		380V		15/7.5	18/9 ⑬	30/15 ⑬	18/9	30/15	35/18	35/18	35/18
		240V		25/13	14/7	25/13	25/13	50/25	50/25	50/25	50/25
NEMA AB-1		600V		–	–	–	–	12	22	22	22
		480V		–	–	–	10	22	25	25	25
		240V		25	14 ⑭	25 ⑮	25	50	50	50	50
Without Inst.		240-690V		–	–	–	–	–	–	–	–
DC RATED BREAKING CAPACITY [kA] ①		250V		7.5	–	–	10	15	40	40	40
		125V		15	10	15	15	20	40	40	40
RATED SHORT TIME CURRENT r.m.s. [kA] [Icw]				–	–	–	–	–	–	–	–
UTILIZATION CATEGORY				A	A	A	A	A	A	A	A
OUTLINE DIMENSIONS (mm)											
		w		50 | 75	30	30	90 | 120	90 | 120	105 | 140	105 | 140	105 | 140
		h		130	155	155	155	155	165	165	165
		d1		68	86	86	86	86	86	86	103
		d2		87	104	104	104	104	107	107	124
Weight (kg) ⊙ marked standard type				0.48 | 0.74	0.51	0.51	1.30 | 1.58	1.30 | 1.58	1.85 | 2.4	1.85 | 2.4	2.1 | 2.6
CONNECTIONS AND MOUNTINGS											
Front connected (FC)	Terminal screw (FCS)			⊙ ③	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	Attached flat bar (BAR)			–	–	–	–	–	○ (BAR)	○ (BAR)	○ (BAR)
	Solderless terminal (PWC)			○	○	○	○	○	○	○	○
Rear connected (RC)	Bolt stud (REB)			○	–	–	○	○	–	–	–
	Flat bar stud (REF)			–	–	–	–	–	○	○	○
Plug-in (PM)	For switchboard (PRC/PMB)			○	–	–	○	○	○	○	○
	For distribution board			○	–	–	○ | –	○ | –	–	–	–
Draw-out (DO)				–	–	–	–	–	–	–	○ ⑯
STANDARD FEATURES											
ON-OFF colour indication				•	•	•	•	•	•	•	•
Trip button				•	–	–	•	•	•	•	•
PROTECTIVE FUNCTIONS											
Electronic type											
Adjustable LTD, STD & INST.				–	–	–	–	–	–	–	–
Adjustable GFT or Adjustable PTA (option)				–	–	–	–	–	–	–	–
Trip Indicators (option)				–	–	–	–	–	–	–	–
Thermal-magnetic type											
Thermal and fixed magnetic trips				•	•	•	–	–	–	–	–
Thermal and adjustable magnetic trips				–	–	–	–	–	–	–	–
Adjustable thermal and fixed magnetic trips				–	–	–	•	•	•	•	•
Adjustable thermal and magnetic trips				–	–	–	–	–	–	–	–
ACCESSORIES (option)			**CODE**								
Internally mounted	Auxiliary switch		AX,AXE	•(AXE)	–	–	•(AXE)	•(AXE)	•(AXE)	•(AXE)	•(AXE)
	Alarm switch		AL,ALE	•(ALE)	–	–	•(ALE)	•(ALE)	•(ALE)	•(ALE)	•(ALE)
	Shunt trip ⑨		SHT	•	•	•	•	•	•	•	•
	Undervoltage trip		UVT	•	–	–	•	•	•	•	•
Externally mounted	Motor operator		MOT	– | •	–	–	•	•	•	•	•
	Handle operating mechanism	Panel mounted type	OHE	•	•	•	•	•	•	•	•
		Breaker mounted type	OHJ	– | •	–	–	•	•	•	•	•
		Variable depth type	OHH	– | •	–	–	•	•	•	•	•
	Handle extension		EHA	–	–	–	–	–	–	–	–
	Mechanical interlock	Front type	MIF	– | •	–	–	•	•	•	•	•
		Rear type	MIB	– | •	–	–	•	•	•	•	•
	Handle holder		HH	•	•	•	•	•	•	•	•
	Handle lock		HL	•	•	•	•	•	•	•	•
	Terminal cover	Front conn. type	TCF	•	•	•	•	•	•	•	•
		Rear conn./ plug-in type	TCR	•	–	–	•	•	•	•	•
	Interpole barrier		TBA	•	–	–	• ⑫	• ⑫	• ⑫	• ⑫	• ⑫
	Accessory lead terminal	㉒	LTF	–	–	–	–	–	–	–	–
		㉓	LTS	•	–	–	•	•	•	•	•
	Door flange		D.F	•	•	•	•	•	•	•	•
	IP20 Protection (Plug-in type)		IP20	•	–	–	•	•	•	•	•

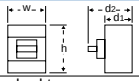
Notes:

NRC : Nominal Rated Current
ASR : Adjustable Setting Range
⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available.
– : No or not available.
① : DC rating available on request.
③ : Comes with conductor pressing terminal.
⑨ : For AC UVT, a UVT controller is mounted externally.
⑪ : Applicable to the rear-connected type only.
⑫ : Line side interpole barriers are supplied as standard.
⑬ : Value at $1/\sqrt{3}$ times stated voltage.
⑭ : 10 kA at 277V.
⑮ : 22kA at 277V.
⑯ : Available on request, contact Terasaki for details.
㉒ : Draw-out leads, horizontally.
㉓ : Draw-out leads, vertically.

Ratings and Specifications

TemBreak

Standard Series

Ampere Frame			400	400	400	400	630	630
Type			XS400CJ	XS400NJ	XS400CE	XS400NE	XS630CJ	XS630NJ
Number of poles			3 | 4	3 | 4	3 | 4	3 | 4	3 | 4	3 | 4
RATED CURRENT (A). [In]			NRC ASR	NRC ASR	NRC ASR	NRC ASR	NRC ASR	NRC ASR
Calibrated at 45°C			min. max.	min. max.	min. max.	min. max.	min. max.	min. max.
			250 160 250	250 160 250	250 125 250	250 125 250	400 250 400	400 250 400
			400 250 400	400 250 400	400 200 400	400 200 400	630 400 630	630 400 630
RATED IMPULSE WITHSTAND VOLTAGE Uimp [kV]			8	8	8	8	8	8
AC RATED INSULATION VOLTAGE [Ui]			690	690	690	690	690	690
AC RATED BREAKING CAPACITY sym. r.m.s. [kA]								
IEC 947-2 **[Icu]** / IEC 947-2 **[Ics]**		690V	16/8	18/9	16/8	18/9	16/8	20/10
BS EN 60947-2 **[Icu]** / BS EN 60947-2 **[Ics]**		500V	22/11	30/15	22/11	30/15	25/13	35/18
CEI EN 60947-2 **[Icu]** / CEI EN 60947-2 **[Ics]**		440V	30/15	42/21	30/15	42/21	30/15	50/25
		415V	35/18	50/25	35/18	50/25	35/18	50/25
		400V	35/18	50/25	35/18	50/25	45/23	65/33
		380V	35/18	50/25	35/18	50/25	45/23	65/33
		240V	50/25	85/43	50/25	85/43	50/25	85/43
NEMA AB-1		600V	22	30	22	30	25	30
		480V	30	42	30	42	35	50
		240V	50	85	50	85	50	85
Without Inst.		240-690V	–	–	5	5	–	–
DC RATED BREAKING		250V	40	40	–	–	40	40
CAPACITY [kA] ①		125V	40	40	–	–	40	40
RATED SHORT TIME CURRENT r.m.s. [kA] [Icw]			–	–	5 (0.3 sec)	5 (0.3 sec)	–	–
UTILIZATION CATEGORY			A	A	B	B	A	A
OUTLINE DIMENSIONS (mm)								
		w	140 | 185	140 | 185	140 | 185	140 | 185	210 | 280	210 | 280
		h	260	260	260	260	273	273
		d1	103	103	103	103	103	103
		d2	131	131	131	131	145	145
Weight (kg) ⊙ marked standard type			4.7 | 6.1	4.7 | 6.1	4.8 | 6.2	4.8 | 6.2	9.0 | 11.5	9.0 | 11.5
CONNECTIONS AND MOUNTINGS								
Front connected (FC)	Terminal screw (FCS)		⊙	⊙	⊙	⊙	–	–
	Attached flat bar (BAR)		○ (BAR)	○ (BAR)	○ (BAR)	○ (BAR)	⊙	⊙
	Solderless terminal (PWC)		○	○	○	○	○	○
Rear connected (RC)	Bolt stud (REB)		–	–	–	–	–	–
	Flat bar stud (REF)		○	○	○	○	○	○
Plug-in (PM)	For switchboard (PRC/PMB)		○	○	○	○	○	○
	For distribution board		–	–	–	–	–	–
Draw-out (DO)			○ ⑯	○ ⑯	○ ⑯	○ ⑯	○ ⑯	○ ⑯
STANDARD FEATURES								
ON-OFF colour indication			•	•	•	•	•	•
Trip button			•	•	•	•	•	•
PROTECTIVE FUNCTIONS								
Electronic type								
Adjustable LTD, STD & INST.			–	–	•	•	–	–
Adjustable GFT or Adjustable PTA (option)			–	–	• (PTA only)	• (PTA only)	–	–
Trip Indicators (option)			–	–	• ⑯	• ⑯	–	–
Thermal-magnetic type								
Thermal and fixed magnetic trips			–	–	–	–	–	–
Thermal and adjustable magnetic trips			–	–	–	–	–	–
Adjustable thermal and fixed magnetic trips			–	–	–	–	–	–
Adjustable thermal and magnetic trips			•	•	–	–	•	•
ACCESSORIES (option)		**CODE**						
Internally mounted	Auxiliary switch	AX,AXE	•(AX)	•(AX)	•(AX)	•(AX)	•(AX)	•(AX)
	Alarm switch	AL,ALE	•(AL)	•(AL)	•(AL)	•(AL)	•(AL)	•(AL)
	Shunt trip	SHT	•	•	•	•	•	•
	Undervoltage trip ⑨	UVT	•	•	•	•	•	•
Externally mounted	Motor operator	MOT	•	•	•	•	•	•
	Handle operating mechanism — Panel mounted type	OHE	•	•	•	•	•	•
	Handle operating mechanism — Breaker mounted type	OHJ	•	•	•	•	•	•
	Handle operating mechanism — Variable depth type	OHH	•	•	•	•	•	•
	Handle extension	EHA	–	–	–	–	•	•
	Mechanical interlock — Front type	MIF	•	•	•	•	•	•
	Mechanical interlock — Rear type	MIB	•	•	•	•	•	•
	Handle holder	HH	•	•	•	•	•	•
	Handle lock	HL	•	•	•	•	•	•
	Terminal cover — Front conn. type	TCF	•	•	•	•	•	•
	Terminal cover — Rear conn./ plug-in type	TCR	•	•	•	•	•	•
	Interpole barrier	TBA	• ⑫	• ⑫	• ⑫	• ⑫	•	•
	Accessory lead terminal ㉒	LTF	•	•	•	•	•	•
	Accessory lead terminal ㉓	LTS	–	–	–	–	–	–
	Door flange	D.F	•	•	•	•	•	•
	IP20 Protection (Plug-in type)	IP20	•	•	•	•	•	•

Notes:

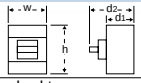
NRC : Nominal Rated Current
ASR : Adjustable Setting Range
⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available.
– : No or not available.

① : DC rating available on request.
⑨ : For AC UVT, a UVT controller is mounted externally.
⑫ : Line side interpole barriers are supplied as standard.
⑯ : Available on request, contact Terasaki for details.
㉒ : Draw-out leads, horizontally.
㉓ : Draw-out leads,vertically.

Ratings and Specifications

TemBreak

Standard Series

Ampere Frame				630		630		800		800		* * 1250		1600		2000		2500	
Type				XS630CE		XS630NE		XS800NJ		XS800NE		XS1250NE		XS1600NE		XS2000NE		XS2500NE	
Number of poles				3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4
RATED CURRENT (A). [In]				NRC	ASR	NRC	ASR	NRC	ASR	NRC	ASR	NRC	ASR	NRC	ASR	NRC	ASR	NRC	ASR
Calibrated at 45°C					min. max.		min. max.		min.max.		min.max.		min.max.		min.max.		min.max.		min. max.
				630	315 630	630	315 630	800	500 800	800	400 800	1000	500 1000 1250	1600	800 1600	2000	1000 2000	2500	1250 2500
RATED IMPULSE WITHSTAND VOLTAGE Uimp [kV]				8		8		8		8		8		8		8		8	
AC RATED INSULATION VOLTAGE [Ui]				690		690		690		690		690		690		690		690	
AC RATED BREAKING CAPACITY sym. r.m.s. [kA]																			
IEC 947-2 **[Icu]**	IEC 947-2 **[Ics]**		690V	16/8		20/10		20/10		20/10		25/19		45/34		45/42		45/42	
BS EN 60947-2 **[Icu]**	BS EN 60947-2 **[Ics]**		500V	25/13		35/18		35/18		35/18		45/34		65/49		65/49		65/49	
CEI EN 60947-2 **[Icu]**	CEI EN 60947-2 **[Ics]**		440V	30/15		50/25		50/25		50/25		65/49		85/64		85/64		85/64	
			415V	35/18		50/25		50/25		50/25		65/49		85/64		85/64		85/64	
			400V	40/20		50/25		65/33		50/25		85/64		100/75		100/75		100/75	
			380V	40/20		50/25		65/33		50/25		85/64		100/75		100/75		100/75	
			240V	50/25		85/43		85/43		85/43		100/75		125/94		125/94		125/94	
NEMA AB-1			600V	25		30		30		30		42		65		65		65	
			480V	35		50		50		50		65		85		85		85	
			240V	50		85		85		85		85		125		125		125	
Without Inst.			240-690V	10		10		–		10		15		20		42		42	
DC RATED BREAKING			250V	–		–		40		–		–		–		–		–	
CAPACITY [kA] ①			125V	–		–		40		–		–		–		–		–	
RATED SHORT TIME CURRENT r.m.s. [kA] [Icw]				10 (0.3 sec)		10 (0.3 sec)		–		10 (0.3 sec)		15 (0.3 sec)		20 (0.3 sec)		42 (0.3 sec)		42 (0.3 sec)	
UTILIZATION CATEGORY				B		B		A		B		B		B		B		B	
OUTLINE DIMENSIONS (mm)																			
		w		210	280	210	280	210	280	210	280	210	280	210	280	320	429	320	429
		h		273		273		273		273		370		370		450		450	
		d1		103		103		103		103		120		140		185		185	
		d2		145		145		145		145		171		191		245		245	
Weight (kg) ⊙ marked standard type				9.6	12.0	9.6	12.0	9.4	12.2	9.7	12.5	22.0	28.0	27.0	35.0	54.0	67.0	62.5	78.2
CONNECTIONS AND MOUNTINGS																			
Front connected (FC)	Terminal screw (FCS)			–		–		–		–		–		–		–		–	
	Attached flat bar (BAR)			⊙		⊙		⊙		⊙		⊙		○		○		–	
	Solderless terminal (PWC)			○		○		○		○		–		–		–		–	
Rear connected (RC)	Bolt stud (REB)			–		–		–		–		–		–		–		–	
	Flat bar stud (REF)			○		○		○		○		○		⊙		⊙		⊙	
Plug-in (PM)	For switchboard (PRC/PMB)			○		○		○		○		○		–		–		–	
	For distribution board			–		–		–		–		–		–		–		–	
Draw-out (DO)				○ ⑯		○ ⑯		○ ⑯		○ ⑯		○ ⑯		○		○		–	
STANDARD FEATURES																			
ON-OFF colour indication				•		•		•		•		•		•		•		•	
Trip button				•		•		•		•		•		•		•		•	
PROTECTIVE FUNCTIONS																			
Electronic type																			
Adjustable LTD, STD & INST.				•		•		–		•		•		•		•		•	
Adjustable GFT or Adjustable PTA (option)				•		•		–		•		•		•		•		•	
Trip Indicators (option)				• ⑯		• ⑯		–		• ⑯		•		•		•		•	
Thermal-magnetic type																			
Thermal and fixed magnetic trips				–		–		–		–		–		–		–		–	
Thermal and adjustable magnetic trips				–		–		–		–		–		–		–		–	
Adjustable thermal and fixed magnetic trips				–		–		–		–		–		–		–		–	
Adjustable thermal and magnetic trips				–		–		•		–		–		–		–		–	
ACCESSORIES (option)																			
Internally mounted	Auxiliary switch		AX,AXE	•(AX)		•(AX)		•(AX)		•(AX)		•(AX)		•(AX)		•(AX)		•(AX)	
	Alarm switch		AL,ALE	•(AL)		•(AL)		•(AL)		•(AL)		•(AL)		•(AL)		•(AL)		•(AL)	
	Shunt trip		SHT	•		•		•		•		•		•		•		•	
	Undervoltage trip ⑨		UVT	•		•		•		•		•		•		•		•	
Externally mounted	Motor operator		MOT	•		•		•		•		•		•		•		•	
	Handle operating mechanism	Panel mounted type	OHE	•		•		•		•		•		•		•		•	
		Breaker mounted type	OHJ	•		•		•		•		•		•		–		–	
		Variable depth type	OHH	•		•		•		•		•		•		–		–	
	Handle extension		EHA	•		•		•		•		• ⑩		• ⑩		• (supplied standard)		• (supplied standard)	
	Mechanical interlock	Front type	MIF	•		•		•		•		•		•		•		•	
		Rear type	MIB	•		•		•		•		•		•		•		•	
	Handle holder		HH	•		•		•		•		•		•		•		•	
	Handle lock		HL	•		•		•		•		•		•		•		•	
	Terminal cover	Front conn. type	TCF	•		•		•		•		•		–		–		–	
		Rear conn./ plug-in type	TCR	•		•		•		•		–		–		–		–	
	Interpole barrier		TBA	•		•		•		•		•		•		–		–	
	Accessory lead terminal	㉒	LTF	•		•		•		•		•		•		•		•	
		㉓	LTS	–		–		–		–		–		–		–		–	
	Door flange		D.F	•		•		•		•		•		•		•		•	
	IP20 Protection (Plug-in type)		IP20	•		•		•		•		•		–		–		–	

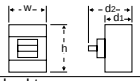
Notes:

* * : XS1250NE, 400A and 800A CT's available, only in a fixed high Inst. setting, (refer to page 24 for details).
NRC : Nominal Rated Current.
ASR : Adjustable Setting Range.
⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available.
– : No or not available.
① : DC rating available on request.
⑨ : For AC UVT, a UVT controller is mounted externally.
⑩ : One is supplied with every five breakers. Please specify if more are required.
⑯ : Available on request, contact Terasaki for details
㉒ : Draw-out leads, horizontally.
㉓ : Draw-out leads, vertically.

Ratings and Specifications

TemBreak

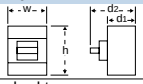
High Fault Level Series

Ampere Frame				125	160	250	250	400	630	800	800
Type				XH125NJ	XH160NJ	XH250NJ	XH250PE	XH400NE	XH630NE	XH800NE	XH800PS
Number of poles				3 | 4	3 | 4	3 | 4	3 | 4	3 | 4	3 | 4	3 | 4	3 | 4
RATED CURRENT (A). [In]				NRC ASR	NRC ASR	NRC ASR	NRC ASR	NRC ASR	NRC ASR	NRC ASR	NRC ASR
Calibrated at 45°C				min. max.	min. max.	min. max.	min. max.	min. max.	min. max.	min.max.	700
				20 12.5 20	160 100 160	160 100 160	250 125 250	250 125 250	630 315 630	800 400 800	800
				32 20 32		250 160 250		400 200 400			
				50 32 50							
				63 40 63							
				100 63 100							
				125 80 125							
RATED IMPULSE WITHSTAND VOLTAGE Uimp [kV]				8	8	8	8	8	8	8	8
AC RATED INSULATION VOLTAGE [Ui]				690	690	690	690	690	690	690	690
AC RATED BREAKING CAPACITY sym. r.m.s. [kA]											
IEC 947-2 **[Icu]** / IEC 947-2 **[Ics]**			690V	8/4	15/7.5	15/7.5	20/10	20/10	20/10	20/10	45/23
BS EN 60947-2 **[Icu]**	BS EN 60947-2 **[Ics]**		500V	25/13	25/13	25/13	42/21	42/21	42/21	42/21	65/33
CEI EN 60947-2 **[Icu]** /	CEI EN 60947-2 **[Ics]**		440V	42/21	42/21	42/21	65/33	65/33	65/33	65/33	85/43
			415V	50/25	50/25	50/25	65/33	65/33	65/33	65/33	85/43
			400V	50/25	50/25	50/25	65/33	65/33	65/33	65/33	100/50
			380V	50/25	50/25	50/25	65/33	65/33	65/33	65/33	100/50
			240V	85/43	85/43	85/43	100/50	100/50	100/50	100/50	125/63
NEMA AB-1			600V	25	25	25	42	42	42	42	65
			480V	42	42	42	65	65	65	65	85
			240V	85	85	85	85	85	85	85	125
Without Inst.			240-690V	–	–	–	–	5	10	10	–
DC RATED BREAKING			250V	40	40	40	–	–	–	–	40
CAPACITY [kA] ①			125V	40	40	40	–	–	–	–	40
RATED SHORT TIME CURRENT r.m.s. [kA] [Icw]				–	–	–	5 (0.3 sec)	5 (0.3 sec)	10 (0.3 sec)	10 (0.3 sec)	–
UTILIZATION CATEGORY				A	A	A	B	B	B	B	A
OUTLINE DIMENSIONS (mm)											
			w	90 | 120	105 | 140	105 | 140	140 | 185	140 | 185	210 | 280	210 | 280	210 | 280
			h	155	165	165	260	260	273	273	273
			d1	86	103	103	103	103	103	103	103
			d2	104	124	124	131	131	145	145	145
Weight (kg) ⊙ marked standard type				1.3 | 1.58	2.1 | 2.6	2.1 | 2.6	4.8 | 6.2	4.8 | 6.2	9.6 | 12.0	9.7 | 12.5	9.4 | 12.2
CONNECTIONS AND MOUNTINGS											
Front	Terminal screw (FCS)			⊙	⊙	⊙	⊙	⊙	–	–	–
connected (FC)	Attached flat bar (BAR)			–	○ (BAR)	○ (BAR)	○ (BAR)	○ (BAR)	⊙ (BAR)	⊙	⊙
	Solderless terminal (PWC)			○	○	○	○	○	○	○	–
Rear	Bolt stud (REB)			○	–	–	–	–	–	–	–
connected (RC)	Flat bar stud (REF)			–	○	○	○	○	○	○	○
Plug-in (PM)	For switchboard (PRC/PMB)			○	○	○	○	○	○	○	○
	For distribution board			○ | –	–	–	–	–	–	–	–
Draw-out (DO)				–	○ ⑯	○ ⑯	○ ⑯	○ ⑯	○ ⑯	○ ⑯	○ ⑯
STANDARD FEATURES											
ON-OFF colour indication				•	•	•	•	•	•	•	•
Trip button				•	•	•	•	•	•	•	•
PROTECTIVE FUNCTIONS											
Electronic type											
Adjustable LTD, STD & INST.				–	–	–	•	•	•	•	–
Adjustable GFT or Adjustable PTA (option)				–	–	–	• (PTA only)	• (PTA only)	•	•	–
Trip Indicators (option)				–	–	–	• ⑯	• ⑯	• ⑯	• ⑯	–
Thermal-magnetic type											
Thermal and fixed magnetic trips				–	–	–	–	–	–	–	–
Thermal and adjustable magnetic trips				–	–	–	–	–	–	–	•
Adjustable thermal and fixed magnetic trips				•	•	•	–	–	–	–	–
Adjustable thermal and magnetic trips				–	–	–	–	–	–	–	–
ACCESSORIES (option)			**CODE**								
Internally	Auxiliary switch		AX,AXE	•(AXE)	•(AXE)	•(AXE)	•(AX)	•(AX)	•(AX)	•(AX)	•(AX)
mounted	Alarm switch		AL,ALE	•(ALE)	•(ALE)	•(ALE)	•(AL)	•(AL)	•(AL)	•(AL)	•(AL)
	Shunt trip		SHT	•	•	•	•	•	•	•	•
	Undervoltage trip ⑨		UVT	•	•	•	•	•	•	•	•
Externally	Motor operator		MOT	•	•	•	•	•	•	•	•
mounted	Handle operating mechanism	Panel mounted type	OHE	•	•	•	•	•	•	•	•
		Breaker mounted type	OHJ	•	•	•	•	•	•	•	•
		Variable depth type	OHH	•	•	•	•	•	•	•	•
	Handle extension		EHA	–	–	–	–	–	•	•	•
	Mechanical interlock	Front type	MIF	•	•	•	•	•	•	•	•
		Rear type	MIB	•	•	•	•	•	•	•	•
	Handle holder		HH	•	•	•	•	•	•	•	•
	Handle lock		HL	•	•	•	•	•	•	•	•
	Terminal cover	Front conn. type	TCF	•	•	•	•	•	•	•	•
		Rear conn./ plug-in type	TCR	•	•	•	•	•	•	•	•
	Interpole barrier		TBA	• ⑫	• ⑫	• ⑫	• ⑫	• ⑫	•	•	•
	Accessory lead terminal	㉒	LTF	–	–	–	•	•	•	•	•
		㉓	LTS	•	•	•	–	–	–	–	–
	Door flange		D.F	•	•	•	•	•	•	•	•
	IP20 Protection (Plug-in type)		IP20	•	•	•	•	•	•	•	•

Notes:

NRC : Nominal Rated Current
ASR : Adjustable Setting Range
⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available.
– : No or not available.

① : DC rating available on request.
⑨ : For AC UVT, a UVT controller is mounted externally.
⑫ : Line side interpole barriers are supplied as standard.
⑯ : Available on request, contact Terasaki for details.
㉒ : Draw-out leads, horizontally.
㉓ : Draw-out leads,vertically.

Rated Current (A)			125	160	250	400	630	800	1250	1600
Type			XS125NN	XS160NN	XS250NN	XS400NN	XS630NN	XS800NN	XS1250NN	XS1600NN
Number of poles			3 | 4	3 | 4	3 | 4	3 | 4	3 | 4	3 | 4	3 | 4	3 | 4
RATING										
Rated operational voltage (V)		AC	690	690	690	690	690	690	690	690
IEC 947-3, EN 60947-3		DC	250	250	250	250	250	250	250	250
RATED SHORT CIRCUIT MAKING CAPACITY		peak/kA	2.5	6	6	9	15	15	32	45
RATED SHORT TIME CURRENT r.m.s./kA		1 sec (* 0.3s)	1.8	4	4	5*	9.6*	9.6*	15*	20*
OUTLINE DIMENSIONS (mm)										
		w	90 | 120	105 | 140	105 | 140	140 | 185	210 | 280	210 | 280	210 | 280	210 | 280
		h	155	165	165	260	273	273	370	370
		d1	86	86	86	103	103	103	120	140
		d2	104	107	107	131	145	145	171	191
Weight (kg) ⊙ Marked standard type			1.1 | 1.4	1.85 | 2.4	1.85 | 2.4	4.7 | 6.1	9.0 | 11.5	9.4 | 12.2	20.4 | 26.4	24.9 | 32.9
CONNECTIONS AND MOUNTINGS										
Front connected (FC)	Terminal screw (FCS)		⊙	⊙	⊙	⊙	–	–	–	–
	Attached flat bar (BAR)		–	○ (BAR)	○ (BAR)	○ (BAR)	⊙	⊙	⊙	○
	Solderless terminal (PWC)		○	○	○	○	○	○	○	–
Rear connected (RC)	Bolt stud (REB)		○	–	–	–	–	–	–	–
	Flat bar stud (REF)		–	○	○	○	○	○	○	⊙
Plug-in (PM)	For switchboard (PRC/PMB)		○	○	○	○	○	○	○	–
	For distribution board		○ | –	–	–	–	–	–	–	–
Draw-out (DO)			–	–	–	○ ⑯	○ ⑯	○ ⑯	○ ⑯	○
STANDARD FEATURES										
ON-OFF colour indication			•	•	•	•	•	•	•	•
Trip button			•	•	•	•	•	•	•	•
ACCESSORIES (option)		**CODE**								
Internally mounted	Auxiliary switch	AX,AXE	•(AXE)	•(AXE)	•(AXE)	•(AX)	•(AX)	•(AX)	•(AX)	•(AX)
	Alarm switch	AL,ALE	•(ALE)	•(ALE)	•(ALE)	•(AL)	•(AL)	•(AL)	•(AL)	•(AL)
	Shunt trip	SHT	•	•	•	•	•	•	•	•
	Undervoltage trip ⑨	UVT	•	•	•	•	•	•	•	•
Externally mounted	Motor operator	MOT	– | •	•	•	•	•	•	•	•
	External operating handle: Panel mounted type	OHE	•	•	•	•	•	•	•	•
	External operating handle: Breaker mounted type	OHJ	– | •	•	•	•	•	•	•	•
	External operating handle: Variable depth type	OHH	– | •	•	•	•	•	•	•	•
	Extension handle	EHA	–	–	–	–	•	•	• ⑩	• ⑩
	Mechanical interlock: Front type	MIF	– | •	•	•	•	•	•	•	•
	Mechanical interlock: Rear type	MIB	– | •	•	•	•	•	•	•	•
	Handle holder	HH	•	•	•	•	•	•	•	•
	Handle lock	HL	•	•	•	•	•	•	•	•
	Terminal cover: Front conn. type	TCF	•	•	•	•	•	•	•	–
	Terminal cover: Rear conn. / plug-in type	TCR	•	•	•	•	•	•	–	–
	Interpole barrier	TBA	• ⑫	• ⑫	• ⑫	• ⑫	•	•	•	•
	Accessory lead terminal ㉒	LTF	–	–	–	•	•	•	•	•
	Accessory lead terminal ㉓	LTS	•	•	•	–	–	–	–	–
	Door flange	D.F	•	•	•	•	•	•	•	•
	IP20 Protection (Plug-in type)	IP20	•	•	•	•	•	•	•	•
Maximum Switching Current		AC	750	960	1500	2400	3780	4800	7500	9600
		DC	313	400	625	1000	1575	2000	3125	4000
Utilization Category			AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A
Endurance:	Number of operations without current		7000	7000	7000	4000	4000	2500	2500	2500
	Number of operations with current		1000	1000	1000	1000	1000	500	500	500

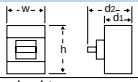
Notes:

⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available.
– : No or not available.
③ : Comes with conductor pressing terminal.
⑨ : For AC UVT, a UVT Controller is mounted externally.
⑫ : Line side interpole barriers are supplied as standard.
㉒ : Draw-out leads, horizontally.
㉓ : Draw-out leads, vertically.

Ratings and Specifications

TemBreak

Mining Series (1100V)

Ampere Frame				100	400	630	800	1250			
Type				TL-100EM	XV400NE	XV630PE	XV800PE	XV1250NE			
Number of poles				3	3	3	3	3			
RATED CURRENT (A). In					NRC ASR	NRC ASR	NRC ASR	NRC ASR			
Calibrated at 45°C				15 50 20 60 30 75 40 100	min.max. 250 125 250 400 200 400	min.max. 630 315 630	min.max. 800 400 800	min.max. 1000 500 1000 1250 630 1250			
AC RATED INSULATION VOLTAGE [Ui]				1100	1100	1100	1100	1100			
AC RATED BREAKING CAPACITY sym. r.m.s. [kA]											
Cos ø = 0.3			1100V	6.5	12.5	12.5	12.5	20			
			900V	10	–	18 ㉔	18 ㉔	–			
OUTLINE DIMENSIONS (mm)											
			w	105	140	210	210	210			
			h	165	260	273	273	370			
			d1	125	103	103	103	120			
			d2	143	131	145	145	171			
Weight (kg) ⊙ marked standard type				3.2	4.8	9.6	9.7	22			
CONNECTIONS AND MOUNTINGS											
Front	Terminal screw (FCS)			⊙	⊙	–	–	–			
connected (FC)	Attached flat bar (BAR)			–	○ (BAR)	⊙	⊙	⊙			
	Solderless terminal (PWC)			–	–	–	–	–			
Rear	Bolt stud (REB)			○	–	–	–	–			
connected (RC)	Flat bar stud (REF)			–	○	○	○	○			
Plug-in (PM)	For switchboard (PRC/PMB)			○	○	○	○	○			
	For distribution board			–	–	–	–	–			
Draw-out (DO)				–	–	–	–	–			
STANDARD FEATURES											
ON-OFF colour indication				–	•	•	•	•			
Trip button				•	•	•	•	•			
PROTECTIVE FUNCTIONS											
Electronic type											
Adjustable LTD, STD & INST.				–	•	•	•	•			
Adjustable GFT or Adjustable PTA (option)				–	• (PTA only)	•	•	•			
Trip Indicators (option)				–	• ⑯	• ⑯	• ⑯	•			
Thermal-magnetic type											
Thermal and fixed magnetic trips				•	–	–	–	–			
Thermal and adjustable magnetic trips				–	–	–	–	–			
Adjustable thermal and fixed magnetic trips				–	–	–	–	–			
Adjustable thermal and magnetic trips				–	–	–	–	–			
ACCESSORIES (option)			**CODE**								
Internally mounted	Auxiliary switch		AX,AXE	•(AX)	•(AX)	•(AX)	•(AX)	•(AX)			
	Alarm switch		AL,ALE	•(AL)	•(AL)	•(AL)	•(AL)	•(AL)			
	Shunt trip		SHT	•	•	•	•	•			
	Undervoltage trip		UVT	•	• ⑨	• ⑨	• ⑨	• ⑨			
Externally mounted	Motor operator		MOT	•	•	•	•	•			
	Handle operating mechanism	Panel mounted type	OHE	•	•	•	•	•			
		Breaker mounted type	OHJ	•	•	•	•	•			
		Variable depth type	OHH	•	•	•	•	•			
	Handle extension		EHA	–	–	•	•	• ⑩			
	Mechanical interlock	Front type	MIF	•	•	•	•	•			
		Rear type	MIB	–	•	•	•	•			
	Handle holder		HH	•	•	•	•	•			
	Handle lock		HL	•	•	•	•	•			
	Terminal cover	Front conn. type	TCF	–	•	•	•	•			
		Rear conn. / plug-in type	TCR	–	•	•	•	•			
	Interpole barrier		TBA	• ⑫	•	•	•	•			
	Accessory lead terminal	㉒	LTF	• (TYD)	•	•	•	•			
		㉓	LTS	–	–	–	–	–			
	Door flange		D.F	•	•	•	•	•			
	IP20 Protection (Plug-in type)		IP20	–	•	•	•	•			

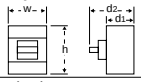
Notes:

NRC : Nominal Rated Current
ASR : Adjustable Setting Range
⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available.
– : No or not available.
⑨ : For AC UVT, a UVT Controller is mounted externally.
⑩ : One is supplied with every five breakers. Please specify if more are required.
⑫ : Line side interpole barriers are supplied as standard.
⑯ : Available on request, contact Terasaki for details.
㉒ : Draw-out leads, horizontally.
㉓ : Draw-out leads, vertically.
㉔ : Values at 1000V AC.

Ratings and Specifications

TemBreak

D.C. Application Series

Ampere Frame				1000		1250		1600		2000		2500				
Type				XS1000ND		XS1250ND		XS1600ND		XS2000ND		XS2500ND				
Number of poles				2	3	2	3	2	3	2	3	2	3			
RATED CURRENT (A). [In]																
Calibrated at 45°C																
				1000		1250		1600		2000		2500				
DC RATED OPERATIONAL VOLTAGE (Ue) [VDC]				250	600	250	600	250	600	250	600	250	600			
DC RATED INSULATION VOLTAGE [Ui] [VDC]				600		600		600		600		600				
DC RATED BREAKING CAPACITY [kA]																
IEC 947-2 **[Icu]**	IEC 947-2 **[Ics]**	㉛	600V	–	20/10	–	20/15	–	20/15	–	20/15	–	20/15			
BS EN 60947-2 **[Icu]**	BS EN 60947-2 **[Ics]**	㉛	500V	–	20/10	–	20/15	–	20/15	–	20/15	–	20/15			
CEI EN 60947-2 **[Icu]**	CEI EN 60947-2 **[Ics]**	㉛	350V	–	30/15	–	30/23	–	30/23	–	30/23	–	30/23			
			250V	40/20	–	40/30	–	40/30	–	40/30	–	40/30	–			
OUTLINE DIMENSIONS (mm)																
			w	210		210		210		320		320				
			h	273		370		370		450		450				
			d1	103		140		140		185		185				
			d2	145		191		191		245		245				
Weight (kg) ⊙ marked standard type				9.2	10.3	23.8	26.0	24.0	27.0	50.0	54.0	55.7	62.5			
CONNECTIONS AND MOUNTINGS																
Front	Terminal screw (FCS)			–		–		–		–		–				
connected (FC)	Attached flat bar (BAR)			⊙		⊙		○		○		–				
	Solderless terminal (PWC)			–		–		–		–		–				
Rear	Bolt stud (REB)			–		–		–		–		–				
connected (RC)	Flat bar stud (REF)			○		○		⊙		⊙		⊙				
Plug-in (PM)	For switchboard (PRC/PMB)			–		–		–		–		–				
	For distribution board			–		–		–		–		–				
Draw-out (DO)				–		–		○		○		–				
STANDARD FEATURES																
ON-OFF colour indication				•		•		•		•		•				
Trip button				•		•		•		•		•				
PROTECTIVE FUNCTIONS																
Thermal and adjustable magnetic trips				•		–		–		–		–				
Adjustable magnetic trips only				–		•		•		•		•				
ACCESSORIES (option)			CODE													
Internally	Auxiliary switch		AX,AXE	•(AX)		•(AX)		•(AX)		•(AX)		•(AX)				
mounted	Alarm switch		AL,ALE	•(AL)		•(AL)		•(AL)		•(AL)		•(AL)				
	Shunt trip		SHT	•		•		•		•		•				
	Undervoltage trip		UVT	–		–		–		–		–				
Externally	Motor operator		MOT	•		•		•		•		•				
mounted	Handle	Panel mounted type	OHE	•		•		•		•		•				
	operating	Breaker mounted type	OHJ	•		•		•		–		–				
	mechanism	Variable depth type	OHH	•		•		•		–		–				
	Handle extension		EHA	•		• ⑩		• ⑩		⊙		⊙				
	Mechanical	Front type	MIF	•		•		•		•		•				
	interlock	Rear type	MIB	•		•		•		•		•				
	Handle holder		HH	•		•		•		•		•				
	Handle lock		HL	•		•		•		•		•				
	Terminal	Front conn. type	TCF	•		–		–		–		–				
	cover	Rear conn./ plug-in type	TCR	•		–		–		–		–				
	Interpole barrier		TBA	•		•		•		–		–				
	Accessory lead terminal		㉒ LTF	•		•		•		•		•				
			㉓ LTS	–		–		–		–		–				
	Door flange		D.F	•		•		•		•		•				
	IP20 Protection (Draw-out type)		IP20	–		–		•		•		–				

Notes:

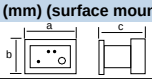
NRC : Nominal Rated Current.
ASR : Adjustable Setting Range.
⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available.

– : No or not available.
⑩ : One supplied with every five breakers.
㉛ : The time constant (L/R) of the circuit should be less than 2.0ms at or below rated current, less than 7ms for short circuit equal and below 10kA, less than15ms for short circuit over 10kA and the connection should be three poles in series.
㉒ : Draw-out leads, horizontally.
㉓ : Draw-out leads, vertically.

Accessory and mounting details for D.C. Application Series are identical to those for the same frame size Standard Series (i.e. for XS1000ND refer to XS800NJ, XS1250ND and XS1600ND refer to XS1600NE, XS2000ND and XS2500ND refer to XS2500NE).

Note: All TemBreak Thermal Magnetic MCCBs can be used for D.C. application.

Ratings

Type			TZS-AD
Phase and wires	1ø2W,3ø3W		•
	3ø4W		•
RATINGS			
AC Rated control voltage		50/60Hz	120 ① ②
			240 ① ②
Applicable range		120V	96-132
		240V	192-264
Rated sensitivity current **[mA]**			30 ③
			100 ③
			300 ③
			500 ③
			1000 ③
Rated operating time (sec)			below 0.04
			0.3 ③ ④
			0.5 ③ ④
			1 ③ ④
			2 ③ ④
OUTLINE DIMENSIONS (mm) (surface mount)			
			a 60
			b 78
			c 100
Weight (kg) (surface mount)			0.22
MOUNTINGS			
Surface mount			⊙
Flush mount			•
STANDARD FEATURES			
Earth leakage detection			⑤
Output contact			1C ⑥
Earth leakage indication			LED (Red)
Reset function			Electrical ⑦
Power source required			1VA

Notes: ⊙ : Standard. This configuration is used unless otherwise specified.
• : Yes or available.
① : Terminals for 120VAC and 240VAC are provided. Please specify at time of ordering.
CAUTION: DO NOT APPLY 240VAC TO THE 120VAC TERMINAL AS BURN-OUT WILL RESULT.
② : Terminals for 415VAC and 440VAC, please contact Terasaki.
③ : Adjustable type by slide switch.
④ : Operating time range and Non-operating time range.

Rated operating time (sec)	Operating time range (sec)	Non-operating time range (sec)
0.3	0.2~0.36	0.15
0.5	0.4~0.6	0.38
1	0.8~1.2	0.7
2	1.3~2	1.25

⑤ : Solid-state type, current operating type.
⑥ : Ratings of output contact.

	Resistive load cos ø = 1	Inductive load cos ø = 0.4 (L/R = 7ms)	Min. Load
120V AC	6A	3.5A	10mA @ 5VDC
240V AC	6A	3.5A	10mA @ 5VDC
30V DC	6A	3A	10mA @ 5VDC

⑦ : The output contacts remain until the RESET button is operated. Interruption of the control supply will also reset the contact.

Core Balanced Current Transformers

Ratings

Type		TZS-15	TZS-24	TZS-40	TZS-68	TZS-100			
Applicable numbers, size and continuous current of wires (IV cable wires)									
2 wires	Max. continuous current (A)	61	139	298	650	1185			
	Max. wire size (mm²)	8	30	100	325	850			
	Max. diameter of wire (mm)	6	10.5	17	29	45			
3 wires	Max. continuous current (A)	61	139	298	650	1185			
	Max. wire size (mm²)	8	30	100	325	850			
	Max. diameter of wire (mm)	6	10.5	17	29	45			
4 wires	Max. continuous current (A)	49	115	257	556	992			
	Max. wire size (mm²)	5.5	22	80	250	600			
	Max. diameter of wire (mm)	5	9.5	15.5	26	38			
Diameter of transit part (mm)		15	24	40	68	100			
Weight (kg)		0.2	0.3	0.7	1.1	2.0			

Earth Leakage Blocks (ELB)

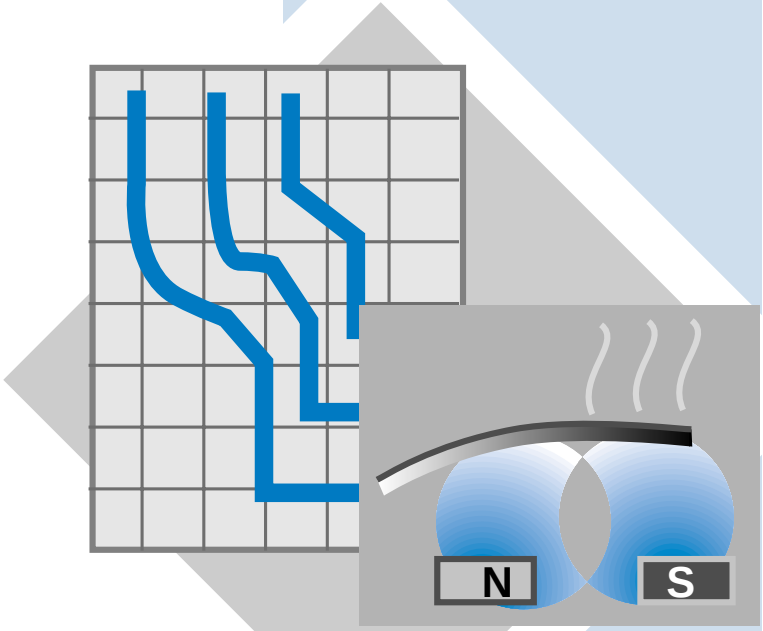
Type		ELB-S	ELB-A
Applicable breakers	125 AF	YES	YES
	250 AF (2)	YES	YES
RATINGS			
Current sensitivity	0.03	⊙	⊙
IΔn (A)	0.1	⊙	⊙
(adjustable)	0.3	⊙	⊙
	1.0	⊙	⊙
	3.0	⊙	⊙
Operating voltage	200-440V AC	⊙	⊙
Operating frequency	50/60 Hz	⊙	⊙
FEATURES			
Visual trip indication		⊙	⊙
Push-Button test		⊙	⊙
Pick-Up LED		–	⊙
Pre-Trip alarm contact (3)		–	⊙
Trip/Non-Trip function (4)		–	⊙

Note: ELB units are factory fitted to the required MCCB. Please refer to page 54 for more details.

⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available
– : No or not available.
(1) : Internal Diameter 35mm, 60mm, 80mm or 110mm
(2) : Excluding XH250PE
(3) : Set at 50% or 70% IΔn by dip-switch
(4) : Set by dip-switch

Thermal Magnetic Characteristics and Adjustments

3



Characteristics

TemBreak thermal magnetic MCCBs are available from 50AF to 800AF. Depending on the type of MCCB chosen the thermal and/or magnetic trip setting may be adjustable.

MCCB type	Fixed Thermal	Adjustable Thermal	Fixed Magnetic	Adjustable Magnetic
XS50NB, XE100NS	•	–	•	–
XS125CS, XS125NS	•	–	•	–
XS125CJ, XS125NJ, XH125NJ	–	•	•	–
XS160NJ, XH160NJ	–	•	•	–
XE225NS	•	–	•	–
XS250NJ, XS250PJ, XH250NJ	–	•	•	–
XE400NS	•	–	–	•
XS400CJ, XS400NJ	–	•	–	•
XE600NS	•	–	–	•
XS630CJ, XS630NJ	–	•	–	•
XH800PS	•	–	–	•
XS800NJ	–	•	–	•

• : Yes
– : No

Access to Setting Dials

From 125AF to 250AF the thermal adjustment is visible from the front of the MCCB. At 400AF and above a protective cover must be removed to gain access to the settings. To achieve access to the settings the cover screw under the 'sealed' label must be removed.
To adjust the individual trip settings turn the setting dial with a flat bladed screwdriver.
Once set secure the cover and apply a new sealing label.

XS250NJ

Thermal adjustment setting dial.

XS400NJ

Sealed label

Spare sealing labels

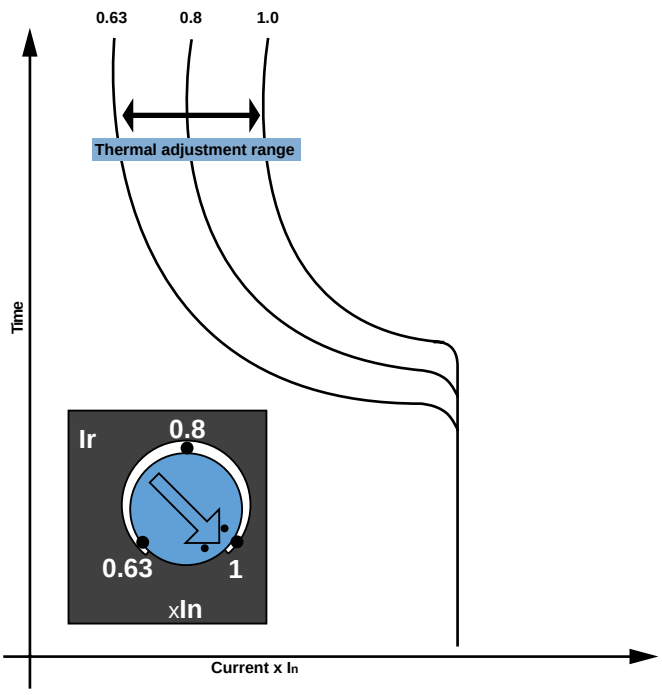
XS400NJ (cover removed)

Thermal adjustment setting dial

Magnetic adjustment setting dial

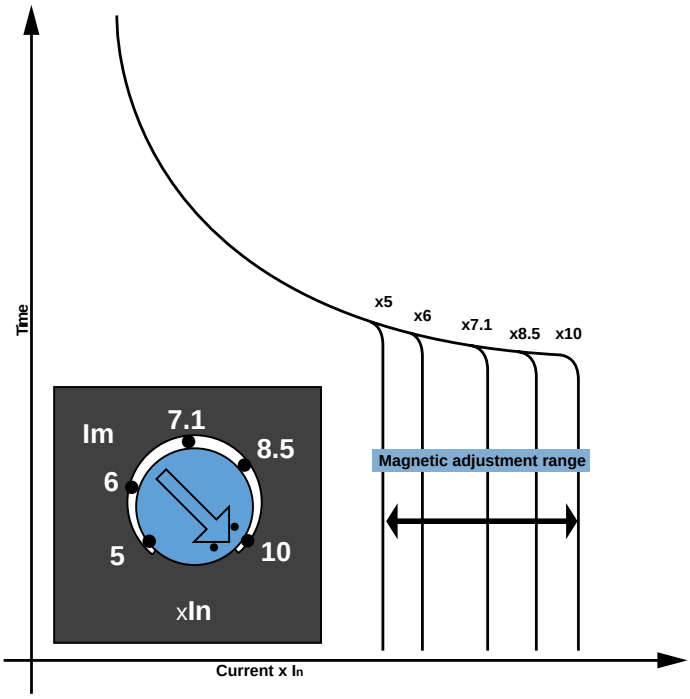
Thermal Adjustment

TemBreak MCCBs have a wide thermal adjustment range, one of the largest on the market. The rated current 'I_r' is continuously adjustable from 63% to 100% of its nominal current 'I_n'. There are three main points of calibration marked at 63%, 80% and 100%, as shown in the diagram below.



Magnetic Adjustment

The magnetic adjustment is available on MCCBs of 400AF and above. The magnetic setting 'I_m' is continuously adjustable from 500% to 1000% of its rated current 'I_n'. There are five main points of calibration marked as multiples of I_n ; 5, 6, 7.1, 8.5 & 10. These are shown in the diagram below.



Examples

1. XS125NJ/125A MCCB set at I_r = 0.8, the rated current is calculated as 125 x 0.8 = 100A

2. XS400NJ/400A MCCB set at I_m = 6, the magnetic setting is calculated as 400 x 6 = 2400A

3. XS630NJ/630A MCCB set at I_r = 0.8 & I_n = 5.0
   The rated current is calculated as 630 x 0.8 = 504A
   The magnetic setting is calculated as 630 x 5 = 3150A

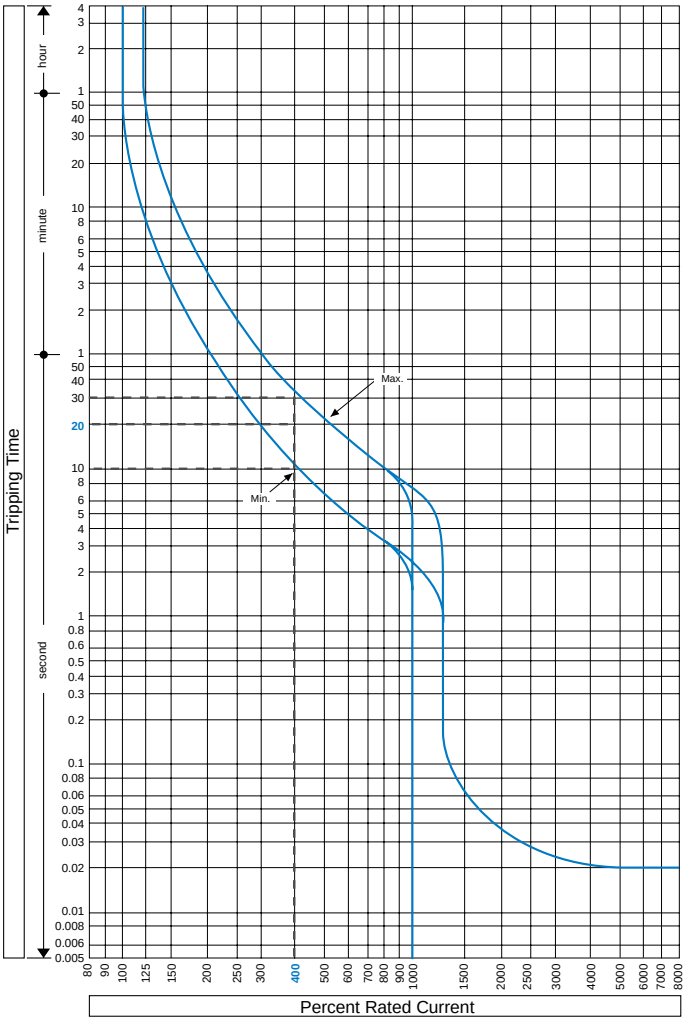
Note that the magnetic setting is a multiple of the nominal current I_n and not the rated current I_r.
All thermal and magnetic trip settings are expressed as AC r.m.s. values.
All MCCBs are calibrated at 45°C unless otherwise specified.

Breakers with adjustable magnetic trip

Breaker	Rated current (A)	Magnetic trip current (A)				
		Scale 10	8.5	7.1	6	5
XE400NS	250	2500	2125	1775	1500	1250
	300	3000	2550	2130	1800	1500
	350	3500	2975	2485	2100	1750
	400	4000	3400	2840	2400	2000
XS400CJ	250	2500	2125	1775	1500	1250
XS400NJ	400	4000	3400	2840	2400	2000
XE600NS	500	5000	4250	3550	3000	2500
	600	6000	5100	4260	3600	3000
XS630CJ	400	4000	3400	2840	2400	2000
XS630NJ	630	6300	5355	4473	3780	3150
XS800NJ	800	8000	6800	5680	4800	4000
XH800PS	700	7000	5950	4970	4200	8500
	800	8000	6800	5680	4800	4000

Note: The figures mentioned are standard values, if values other than those shown are required, please contact Terasaki.
Note: Setting;3-poles can be adjusted simultaneously with one adjustment dial.

Time/current characteristic curves



Example 1

The XS160NJ set at its maximum thermal setting of 160A experiences an overload of 640A.
What would be the tripping time?

Solution

As the axis are 'percent' rated current the overload as a percentage to rated current is

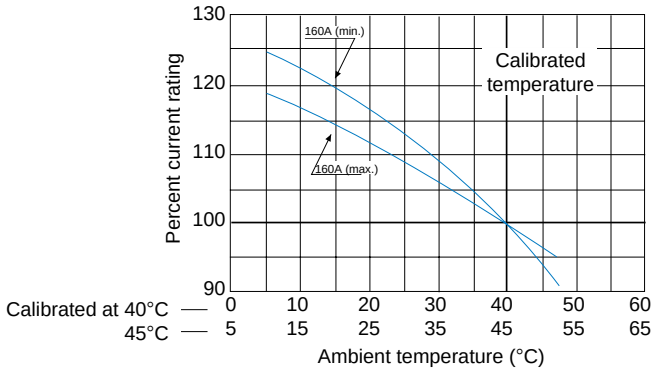
$$\frac{640}{160} = 400\%$$

The maximum and minimum on the curve are the tolerance bands. Therefore at 400% overload the tripping time would be as follows:

Max. trip time ≈ 30 seconds
Min. trip time ≈ 10 seconds
Average trip time ≈ 20 seconds

Due to strict quality control of the manufacturing and calibration processes, the characteristic curve of most MCCBs will follow the 'average' curve within the tolerance band.

Ambient compensating curves



Example 2

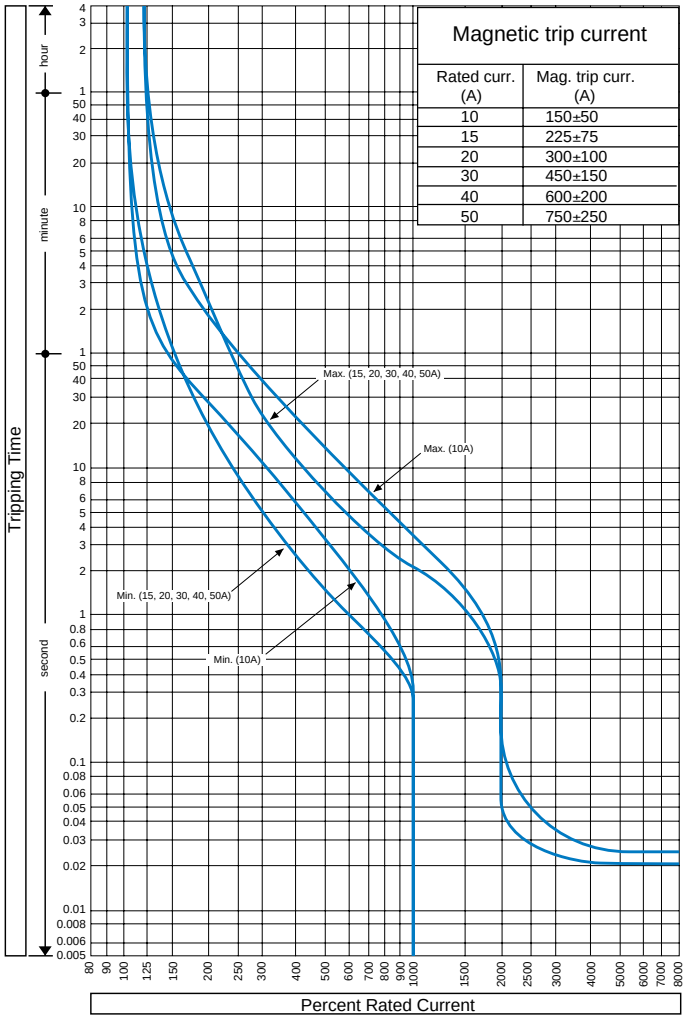
The XS160NJ is calibrated at 160A for 45°C ambient. If the temperature rose to 55°C what effect would this have?

Solution

At 55°C the ambient compensating factor is 93%, i.e. 160 x 0.93 = 149A.
In other words the XS160NJ would act as an MCCB set at 149A, in 55°C.

Time/current characteristic curves

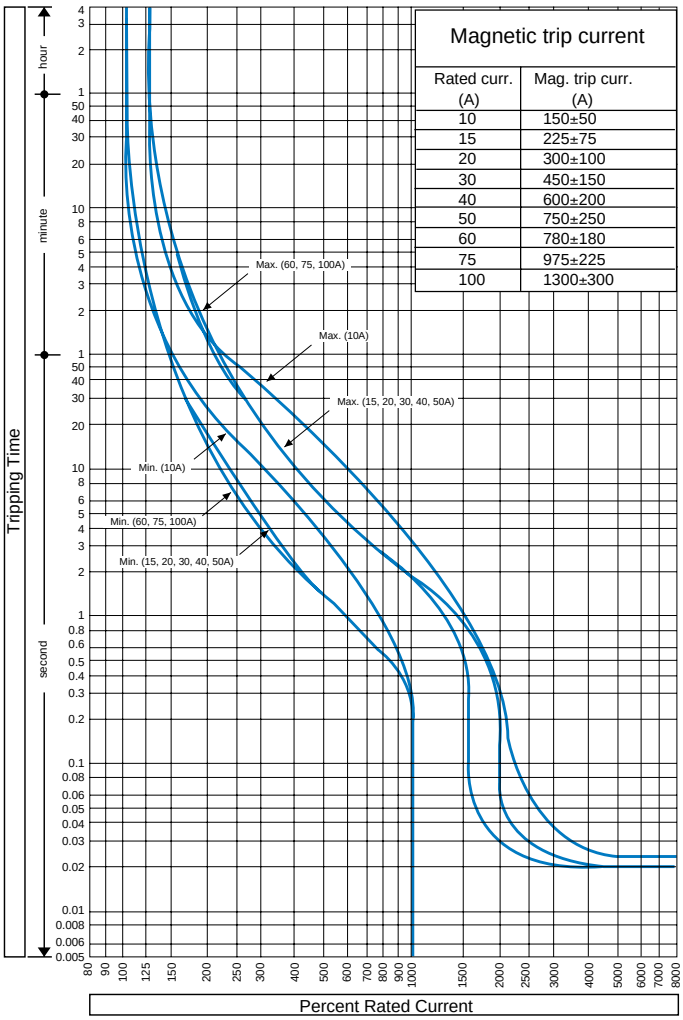
XS50NB



Magnetic trip current	
Rated curr. (A)	Mag. trip curr. (A)
10	150±50
15	225±75
20	300±100
30	450±150
40	600±200
50	750±250

Time/current characteristic curves

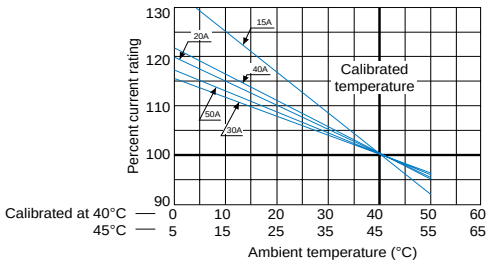
XE100NS



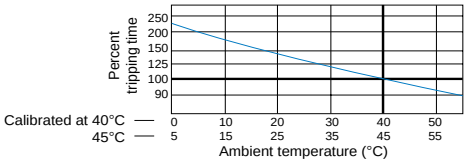
Magnetic trip current	
Rated curr. (A)	Mag. trip curr. (A)
10	150±50
15	225±75
20	300±100
30	450±150
40	600±200
50	750±250
60	780±180
75	975±225
100	1300±300

Ambient compensating curves

15-50A

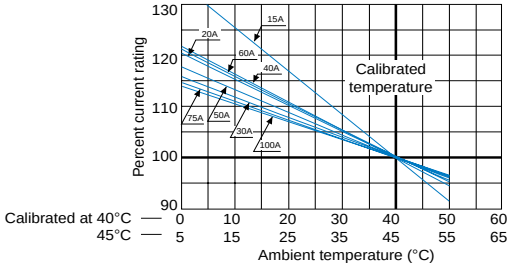


10A

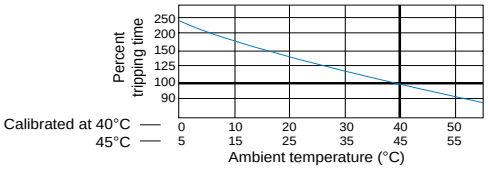


Ambient compensating curves

15-100A

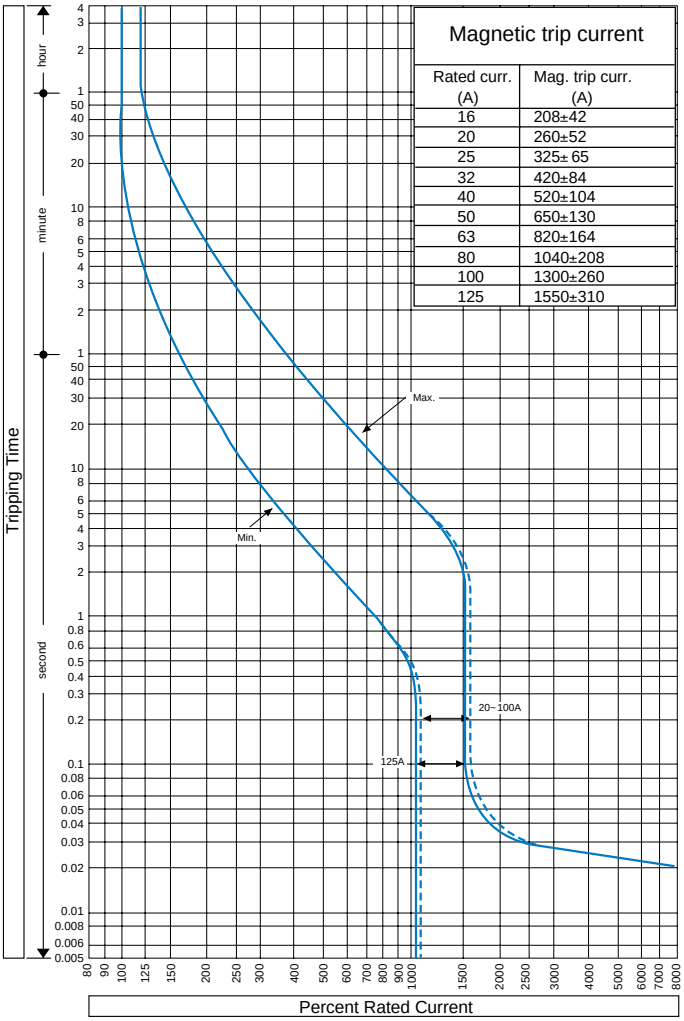


10A



Time/current characteristic curves

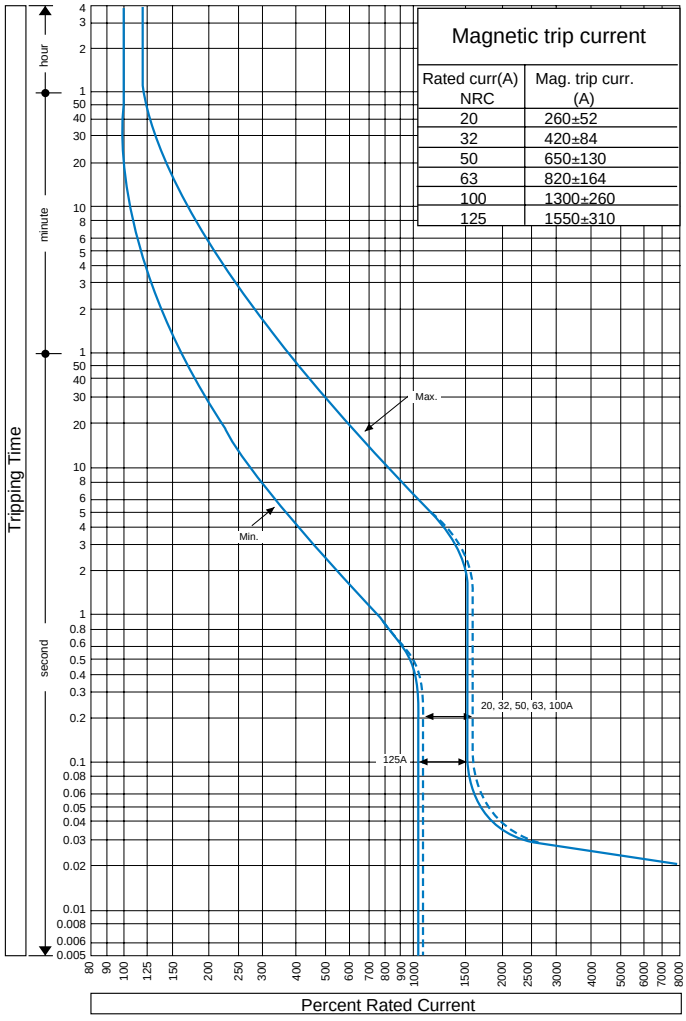
XS125CS, XS125NS



Magnetic trip current	
Rated curr. (A)	Mag. trip curr. (A)
16	208±42
20	260±52
25	325± 65
32	420±84
40	520±104
50	650±130
63	820±164
80	1040±208
100	1300±260
125	1550±310

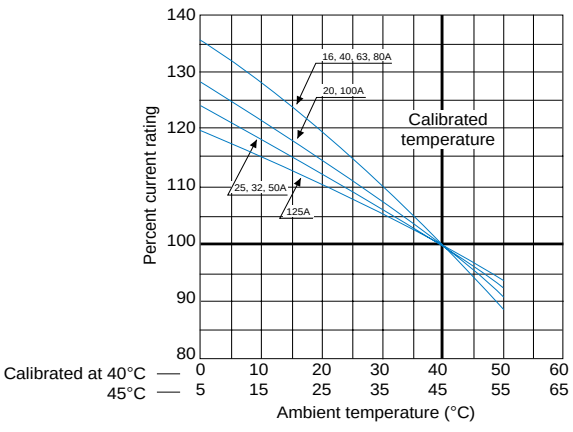
Time/current characteristic curves

XS125CJ, XS125NJ, XH125NJ

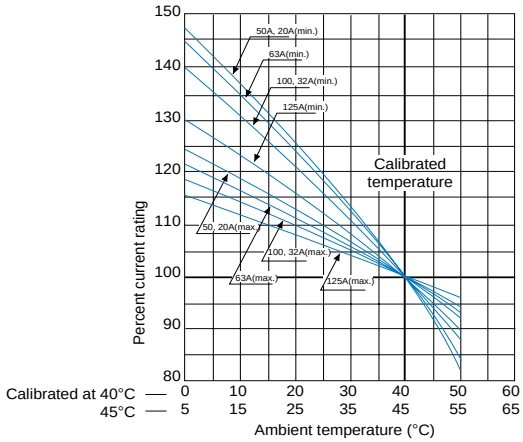


Magnetic trip current	
Rated curr(A) NRC	Mag. trip curr. (A)
20	260±52
32	420±84
50	650±130
63	820±164
100	1300±260
125	1550±310

Ambient compensating curves

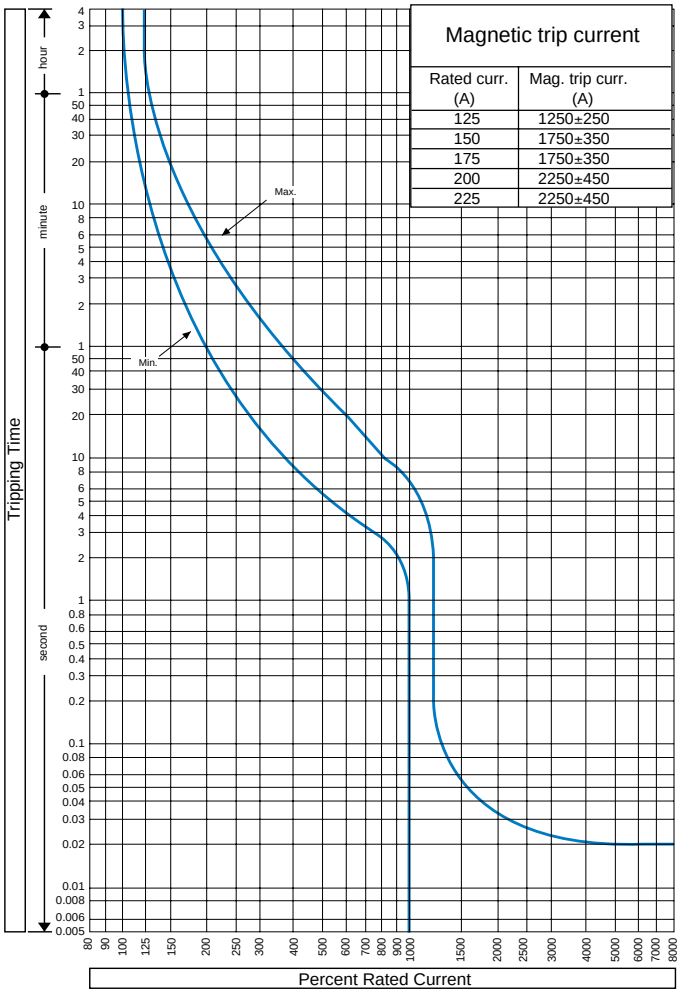


Ambient compensating curves



Time/current characteristic curves

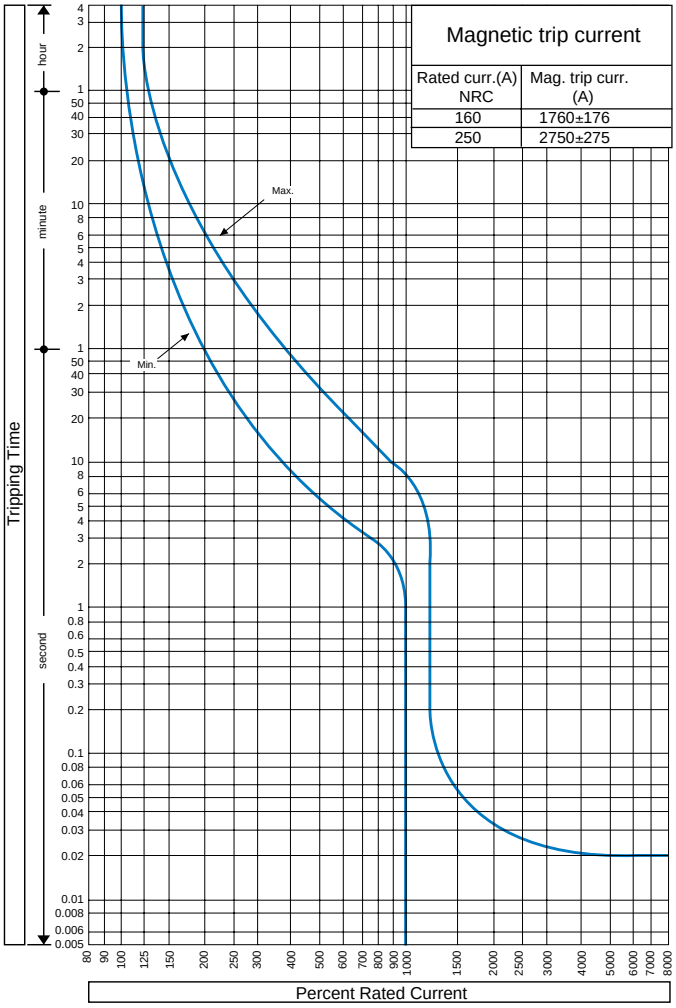
XE225NS



Magnetic trip current	
Rated curr. (A)	Mag. trip curr. (A)
125	1250±250
150	1750±350
175	1750±350
200	2250±450
225	2250±450

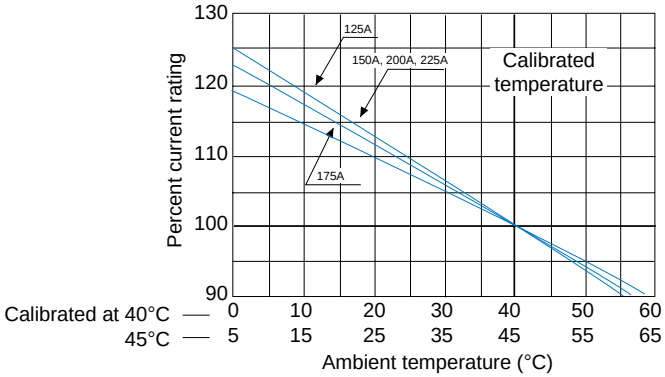
Time/current characteristic curves

XS160NJ, XH160NJ, XS250NJ, XS250PJ, XH250NJ

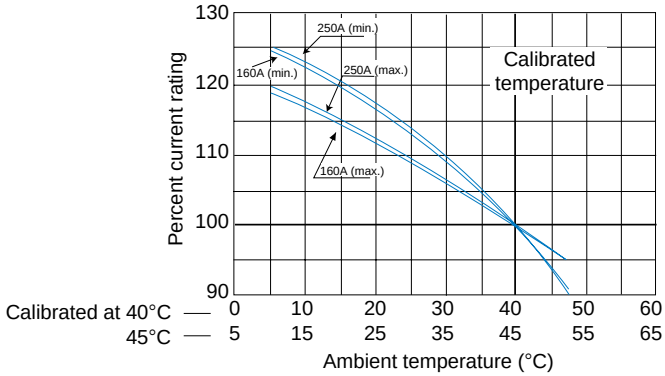


Magnetic trip current	
Rated curr.(A) NRC	Mag. trip curr. (A)
160	1760±176
250	2750±275

Ambient compensating curves

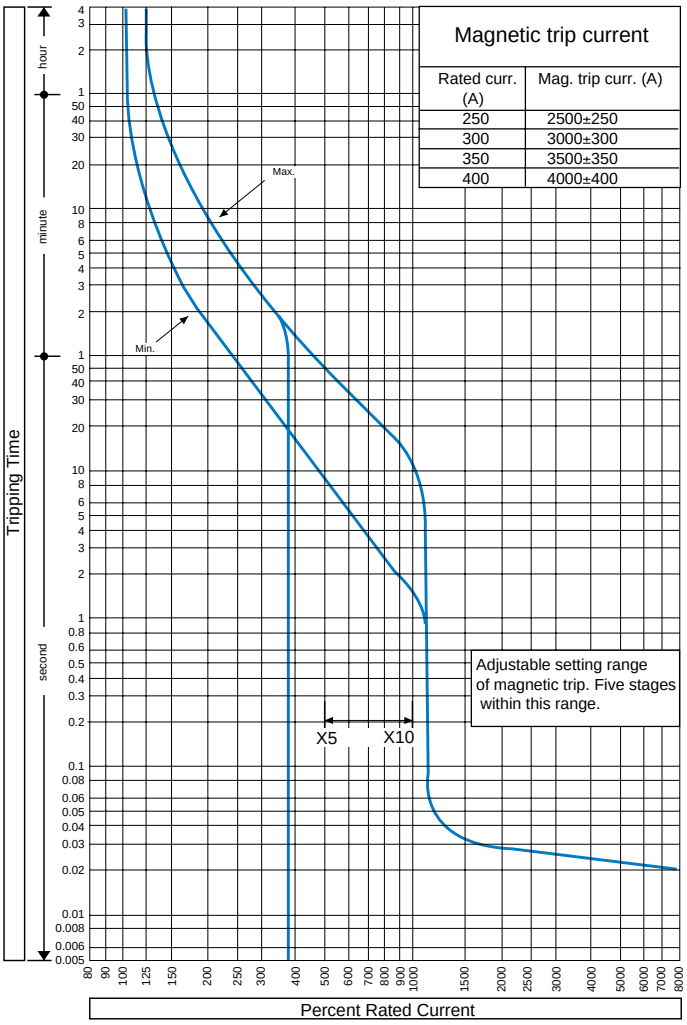


Ambient compensating curves



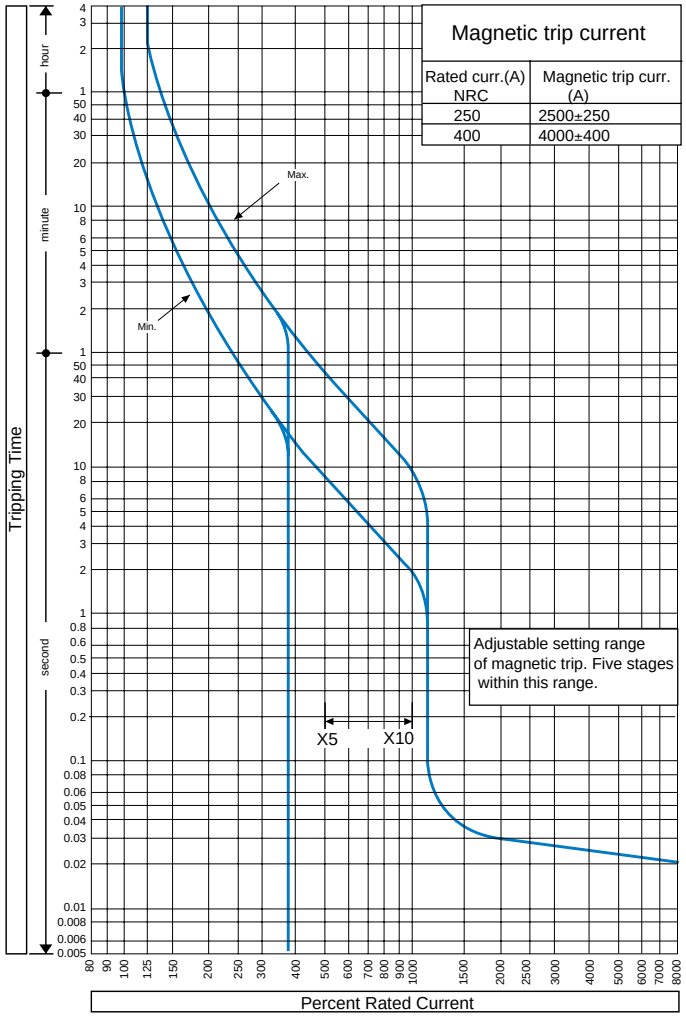
Time/current characteristic curves

XE400NS

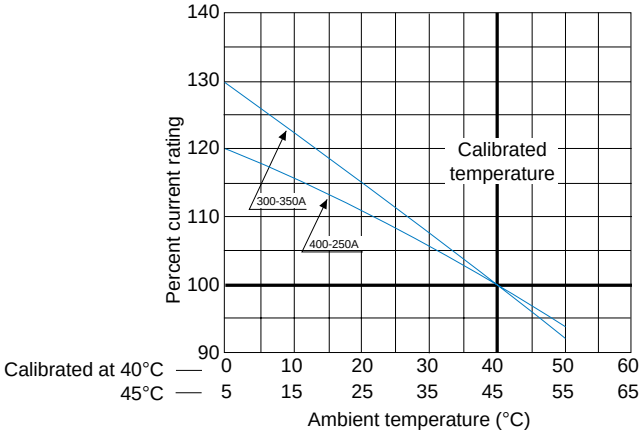


Time/current characteristic curves

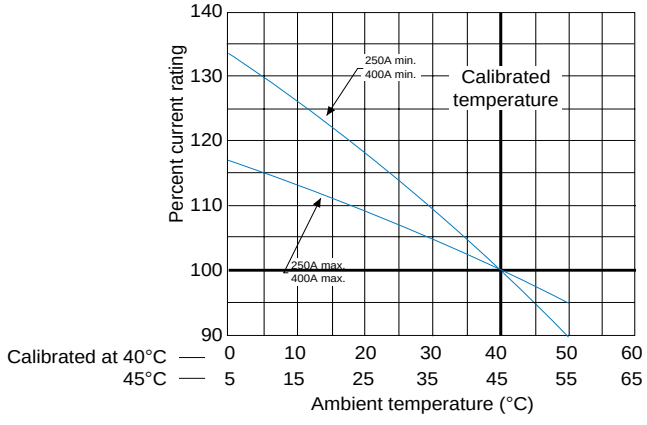
XS400CJ, XS400NJ



Ambient compensating curves

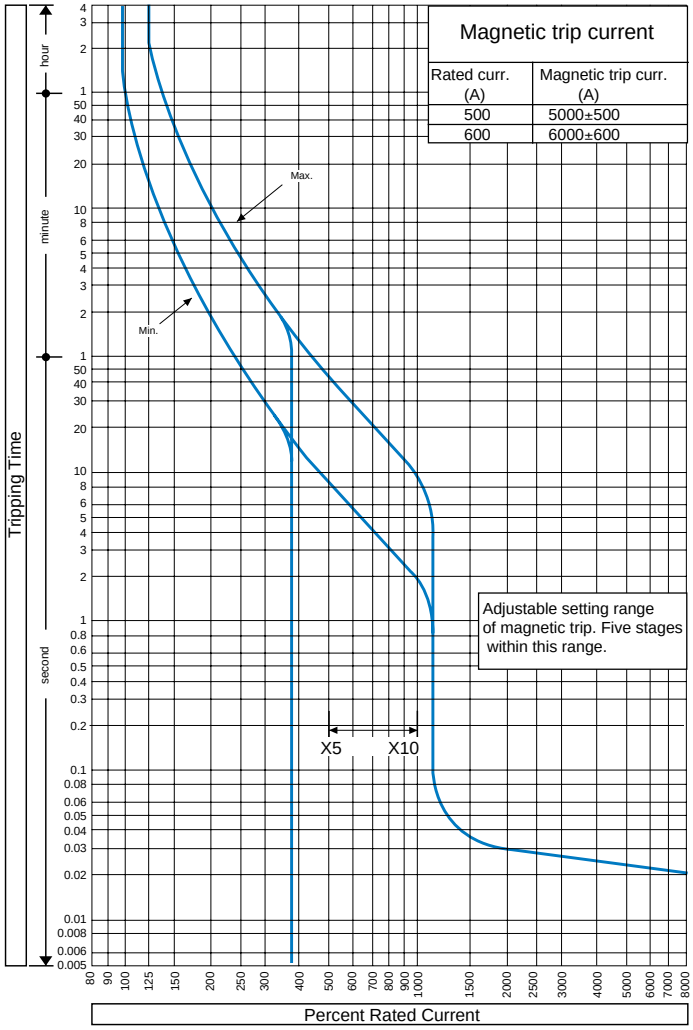


Ambient compensating curves



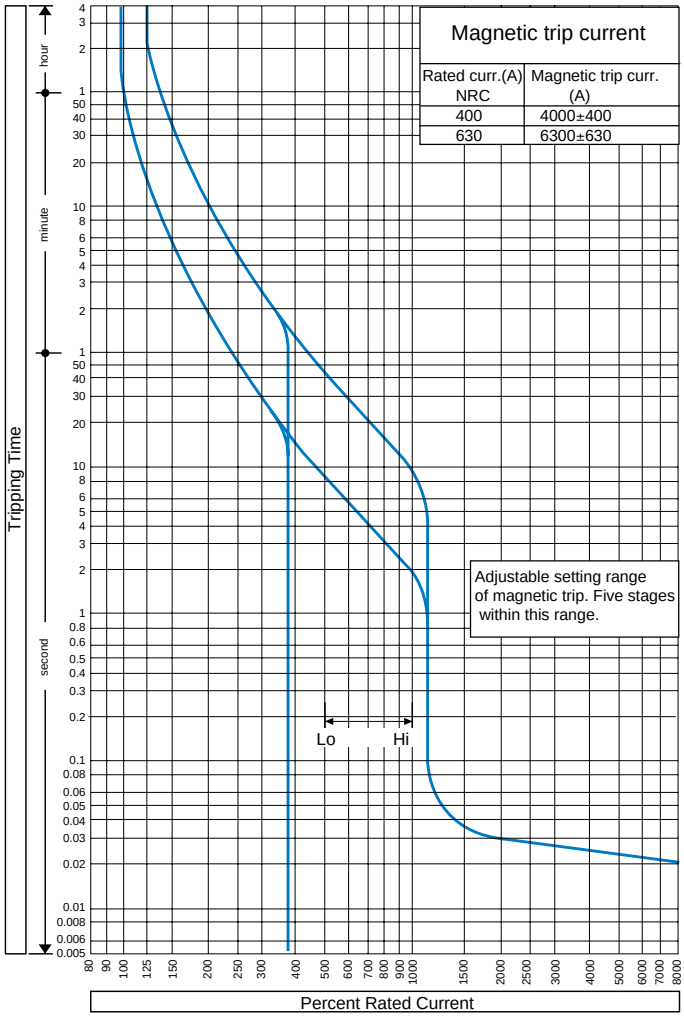
Time/current characteristic curves

XE600NS

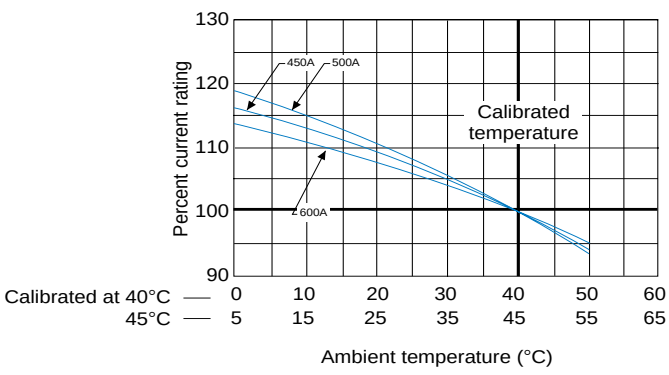


Time/current characteristic curves

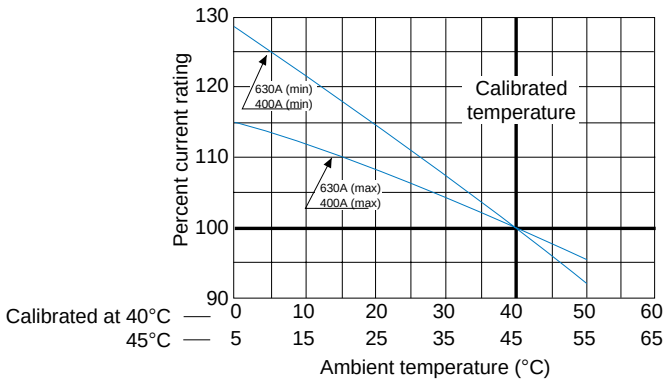
XS630CJ, XS630NJ



Ambient compensating curves

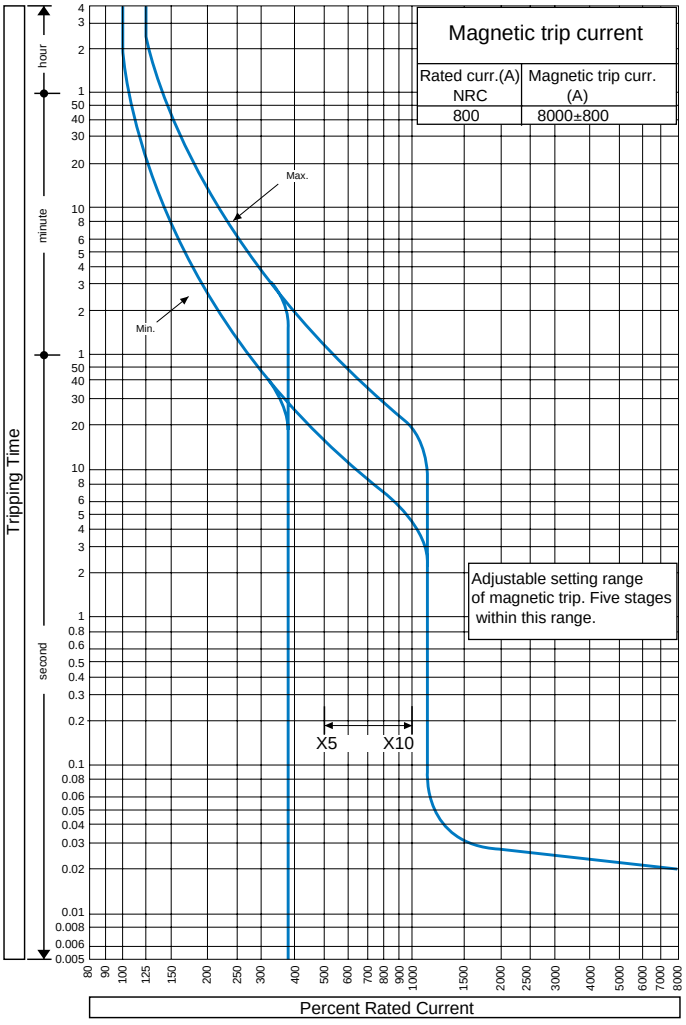


Ambient compensating curves



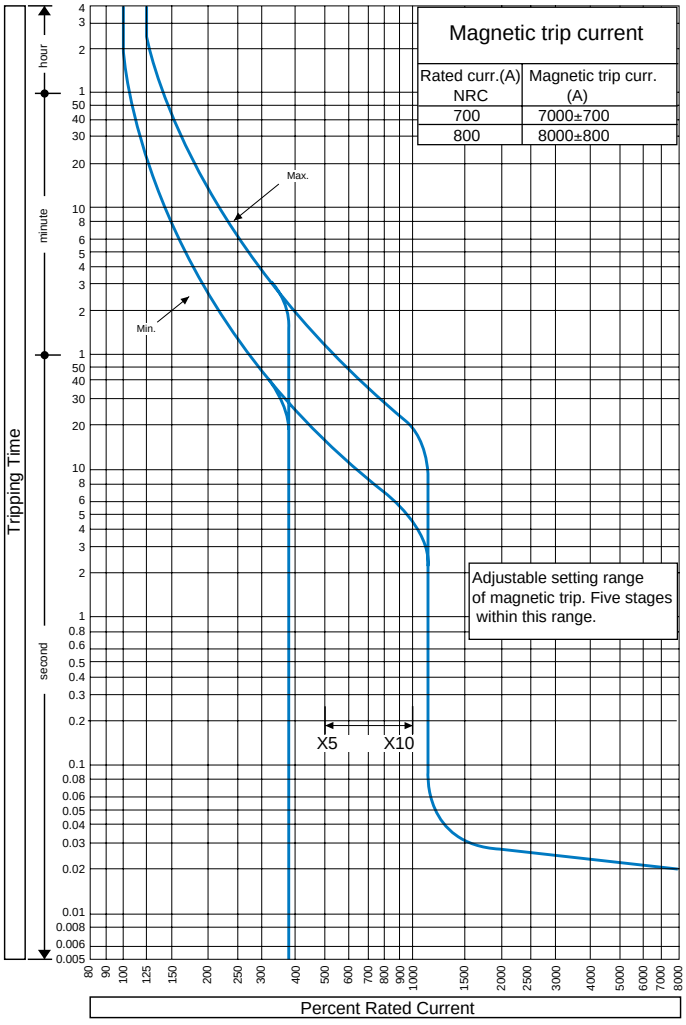
Time/current characteristic curves

XS800NJ

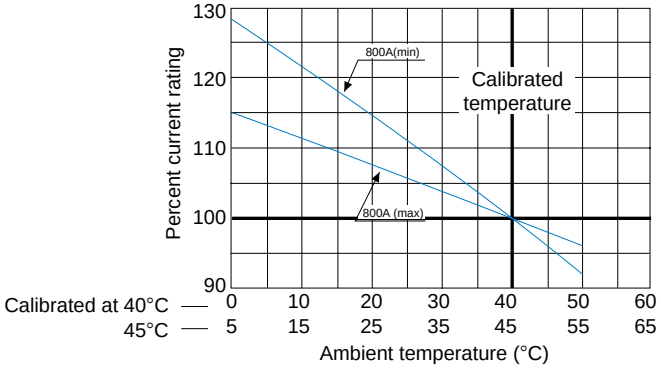


Time/current characteristic curves

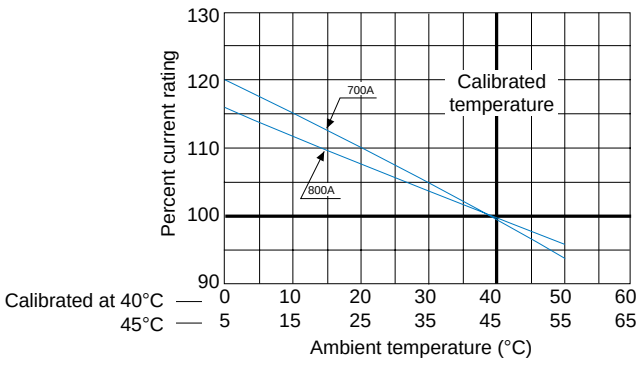
XH800PS



Ambient compensating curves

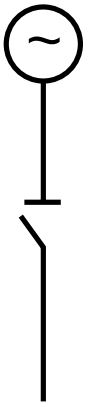


Ambient compensating curves



Generator protection

The steady state current produced by a generator under a fault condition can be as low as 3 to 5 times the rated full load current. In this situation it is advisable to use a 'generator protection' MCCB. This has its magnetic setting calibrated low enough to trip quickly on low generator faults, as shown in the table on the right. The thermal part of the characteristic curve is the same for the corresponding MCCB.



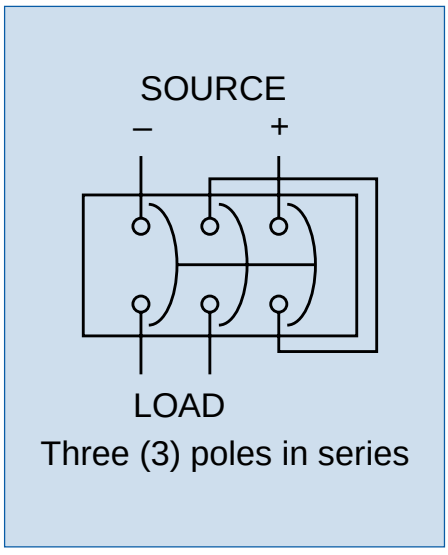
Generator protection INST. settings

Breaker	Rating	Trip current (A)	X In
XS125NJG	20	95	4.75
	32	120	3.75
	50	150	3.0
	63	200	3.0
	100	300	3.0
	125	375	3.0
XS/XH160NJG	160	200	2.5
XS/XH250NJG	250	625	2.5
XS400NJG	250	HI=1250	5.0
	250	LO=625	2.5
	400	HI=2000	5.0
	400	LO=1000	2.5
XS630NJG	400	HI=2000	5.0
	400	LO=1000	2.5
	630	HI=3150	5.0
	630	LO=1600	2.5
XS800NJG	800	HI=4000	5.0
	800	LO=2000	2.5

Note: The figures mentioned are standard values, if values other than those shown are required contact Terasaki**.**

D.C. Application

All TemBreak thermal magnetic MCCBs are suitable for D.C. application, such as U.P.S. systems and thyristor drives. Overload & short circuit protection are provided up to 1000A. Above this rating only short current protection is provided. When using on systems at 350v D.C. or greater the following connection should be followed.



Type	breaking capacity (KA) 3 poles in series			Remarks
	350V DC	500V DC	600V DC	
XS50NB	2.5	---	---	
XE100NS	2.5	---	---	
XS125NJ	10	7.5 (1)	5 (1)	(3)
XH125NJ	10	7.5 (1)	5 (1)	(3)
XS250NJ	10	7.5 (1)	5 (1)	
XH250NJ	20	15 (1)	10 (1)	
XS400NJ	20	15 (1)	15 (1)	
XS630NJ	30	20	20	
XS800NJ	30	20	20	
XS1000ND	30	20	20	(3)
XS1250ND	30	20	20	(2) (3)
XS1600ND	30	20	20	(2) (3)
XS2000ND	30	20	20	(2) (3)
XS2500ND	30	20	20	(2) (3)

(1) This is a special version of the standard circuit breaker and you can not use the standard circuit breaker for this application.
Please specify for use of 500V DC or 600V DC when ordering.
(2) The breaker is magnetic trip only without overload protection.
(3) UVT can not be fitted.

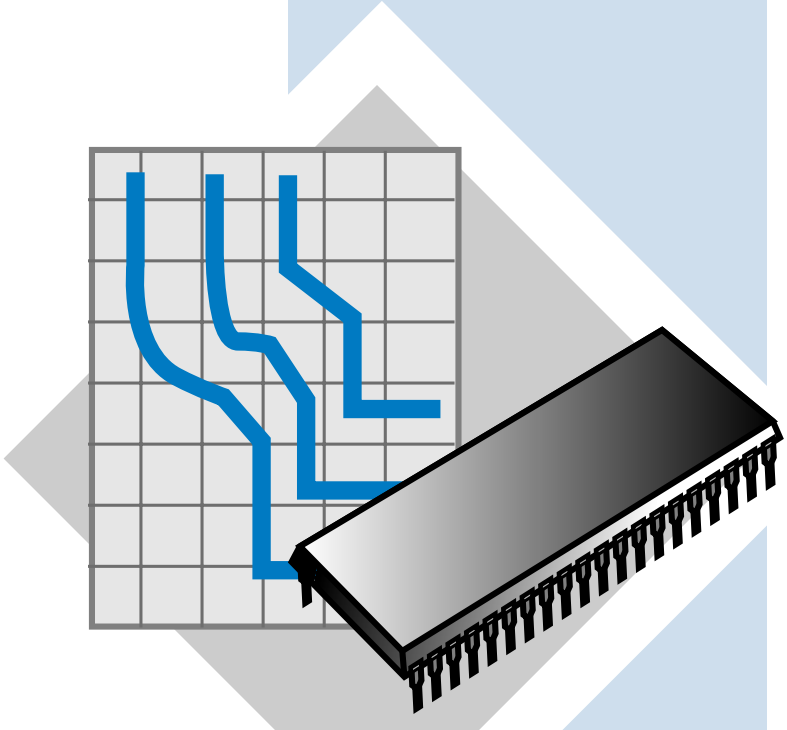
Note that the DC ratings shown apply when the time constant of the circuit is:

- less than 2.0 ms at approximately rated current (In)
- less than 2.5 ms for overloads of between In and 2.5xIn
- less than 7 ms for short circuits of 10 kA or less
- less than 15 ms for short circuits greater than 10 kA

Microprocessor Based Characteristics and adjustments

33-42

4



Characteristics

The standard microprocessor based MCCB from Terasaki has the most flexible characteristics on the European market. In addition to the standard overload and short circuit protection, there are a number of options available to meet specific applications.

MCCB Type	LTD	STD	INST	I²T RAMP	PICK-UP LED	TEST PORT	PTA	GFT	LEDs INTERNAL	LEDs EXTERNAL	SPECIAL HI-INST
XH250PE	⊙	⊙	⊙	⊙	⊙	⊙	○	–	–	○	○
XS400CE, XS400NE	⊙	⊙	⊙	⊙	⊙	⊙	○	–	–	○	○
XH400NE	⊙	⊙	⊙	⊙	⊙	⊙	○	–	–	○	○
XS630CE, XS630NE	⊙	⊙	⊙	⊙	⊙	⊙	○	–	–	○	○
XH630NE	⊙	⊙	⊙	⊙	⊙	⊙	○	○	–	○	○
XS800NE	⊙	⊙	⊙	⊙	⊙	⊙	○	○	–	○	–
XH800NE	⊙	⊙	⊙	⊙	⊙	⊙	○	○	–	○	–
XS1250NE	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	–	○
XS1600NE	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	–	–
XS2000NE	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	–	○
XS2500NE	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	–	○

⊙ **Standard**
○ **Optional**
– **Not available**

Standard for all TemBreak Microprocessor MCCBs

Legend		Application
LTD	**Long Time Delay**	: Overload protection, True R.M.S.
STD	**Short Time Delay**	: Short circuit protection and selectivity
INST	**Instantaneous**	: Short circuit protection, fast acting
I²t RAMP		: Provides easier grading with downstream fuses
Pick-up LED		: Lights on LTD overload, flashes on PTA pick-up
Test Port		: Facility for TNS-1 OCR checker for calibration checking
PTA	**Pre-Trip Alarm**	: Useful for loadshedding application
GFT	**Ground Fault Trip**	: Protection against ground faults
LEDS	**Light Emitting Diodes**	: Indication of fault for faster diagnosis
HI-INST	**High Instantaneous**	: High inrush applications, increased selectivity

Standard for all TemBreak Microprocessor MCCBs

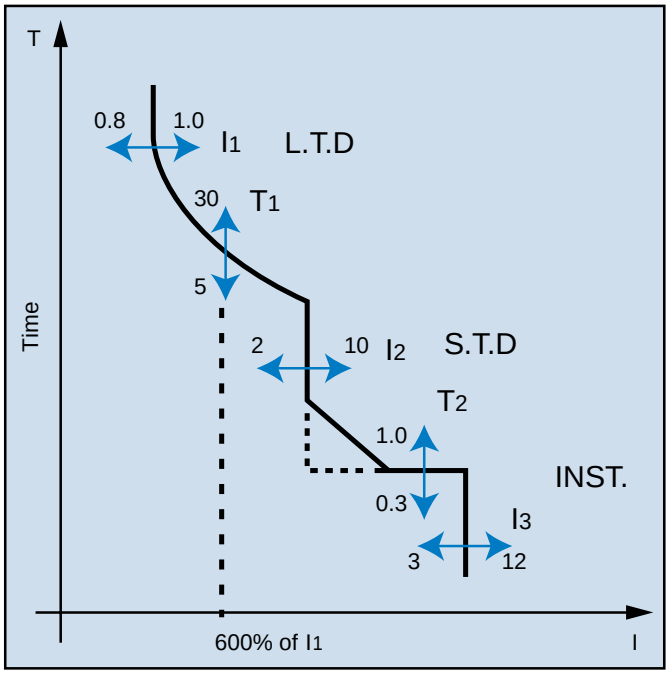
Access to Setting Dials

To adjust the settings on the microprocessor TemBreak, the sealed label must be broken and the covering fixing screws removed. To adjust the individual trip settings, turn the setting dial with a flat bladed screw driver. Align the setting required between the black dots marked on the dial.

XS400NE

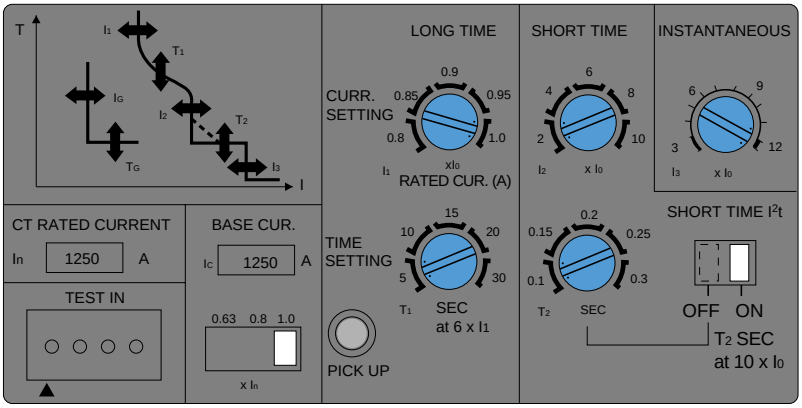
XS400NE (cover removed)

Standard Time Curent Curves



Each part of the characteristic curve can be independently adjusted. This unique adjustability of LTD, STD and INST enables the standard microprocessor MCCB to achieve more than 200,000 permutations of its time/current characteristic.
This makes the TemBreak microprocessor range one of the most flexible on the market.
To complement this range, Terasaki have developed TemCurve, selectivity analysis software which contains the full range of TemBreak MCCBs on database. This software package highlights the full benefit of having highly adjustable microprocessor MCCBs when involved with difficult selectivity problems. Please refer to page 10 for more information.

Standard Microprocessor Adjustments



The I²t ramp switch, which is provided as standard, assists in discrimination with downstream fuses.
With the switch off, the STD operates with a definite time characteristic: ⌊ with the switch on, the characteristic alters to a ramp: ⌊ , cutting off the corner which poses a potential selectivity problem.

Setting Dial		Available Adjustments	
Base Current Setting	**I_0**	**0.63 - 0.8 - 1.0 x I_n**	**Amps**
LTD Pick up	**I_1**	**0.8 - 0.85 - 0.9 - 0.95 - 1.0 x I_0**	**Amps**
LTD Setting	**T_1**	**5 - 10 - 15 - 20 - 25 - 30 (at I_1 x 600%)**	**Secs**
STD Pick up	**I_2**	**2 - 4 - 6 - 8 - 10 x I_0**	**Amps**
STD Setting	**T_2**	**0.1 - 0.15 - 0.2 - 0.25 - 0.3**	**Secs**
INST Pick up	**I_3**	**3 - 12 x I_0 (continuously adjustable)**	**Amps**

Note: A special generator T_1 setting adjustment of 1-5 sec (at I_1 x 600%), and fixed high instantaneous (I_3) setting for high inrush/high selectivity are also available. Please contact Terasaki for details.

Overload Adjustment

The rated current of the microprocessor based TemBreak is adjusted using two current multipliers. This process achieves high accuracy adjustment from 50% to 100%. These are the LTD pickup dial I_1 and the Base Current I_0 selector switch.

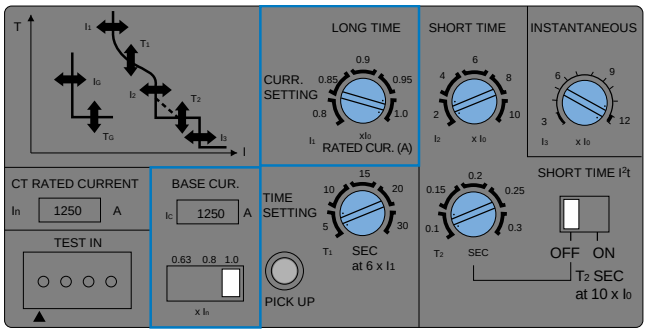
The rated current (LTD pickup) is achieved as follows:

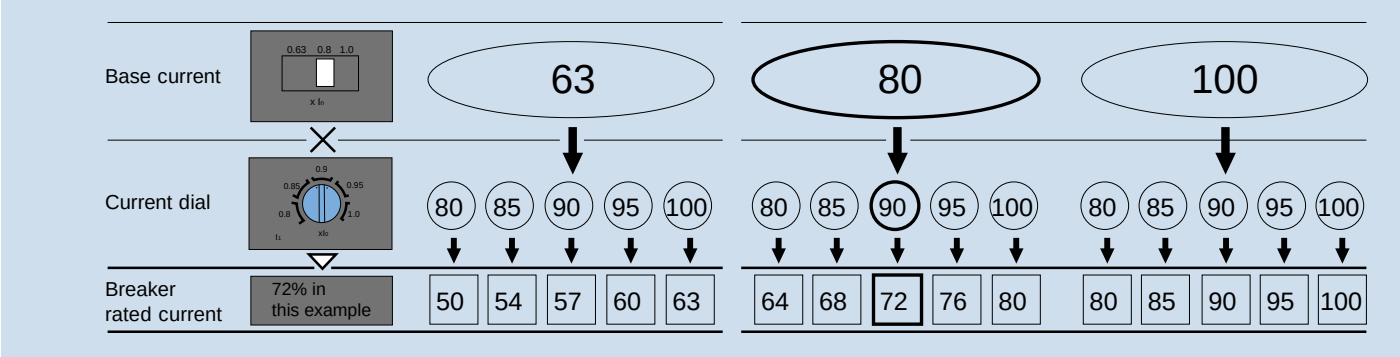
$$I_{RATED} = I_n \times I_0 \times I_1$$

In the example shown on the right the rating would be:

$$I_{RATED} = 1250 \times 1.0 \times 1.0 = 1250A$$

In total there are 15 possible increments of adjustment between 50 and 100% as shown below.





Example - Settings

In the example shown on the right what are all the settings in Amps?

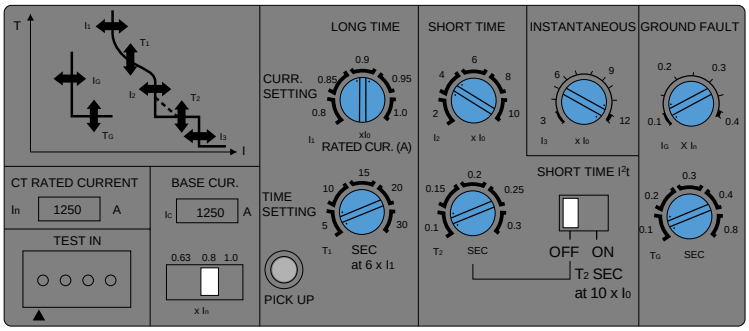
Solution I_{RATING}

LTD pickup = $I_n \times I_0 \times I_1$
1250 x 0.8 x 0.9 = 900A

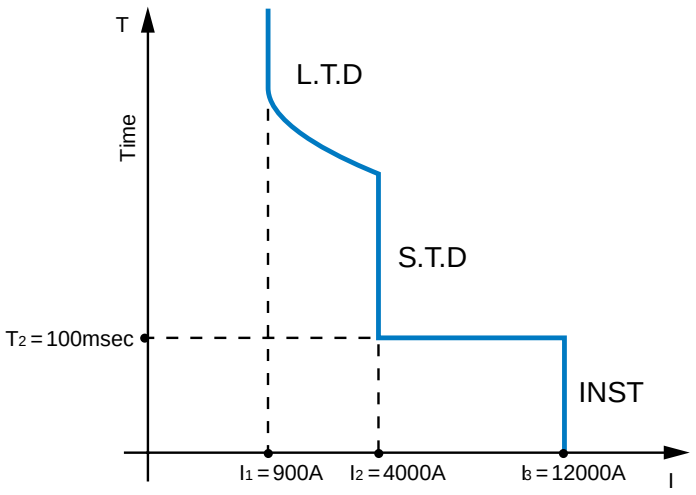
STD pickup = $I_n \times I_0 \times I_2$
1250 x 0.8 x 4 = 4000A

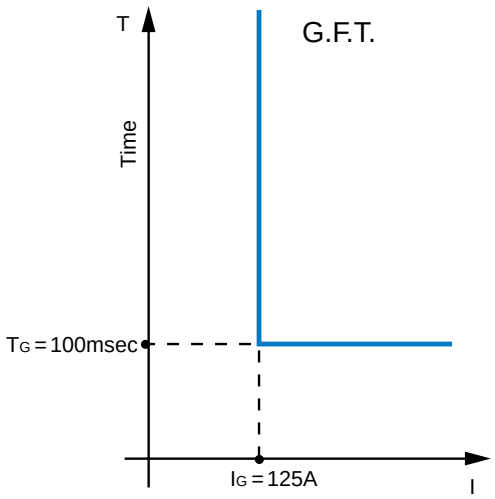
INST pickup = $I_n \times I_0 \times I_3$
1250 x 0.8 x 12 = 12,000A

GFT pickup = $I_n \times I_G$
1250 x 0.1 = 125A
(Note that GFT is a function of I_n and not I_0)

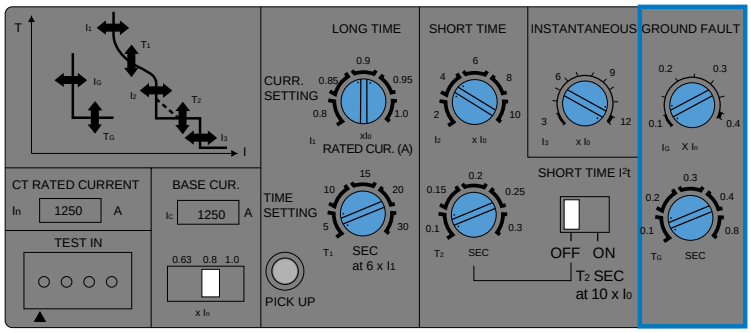


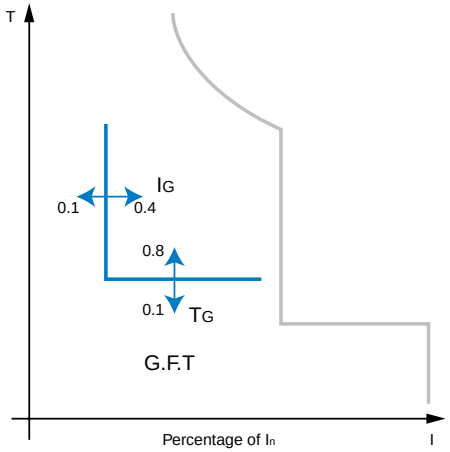
Example - Time/Current Curves





Ground Fault Adjustments



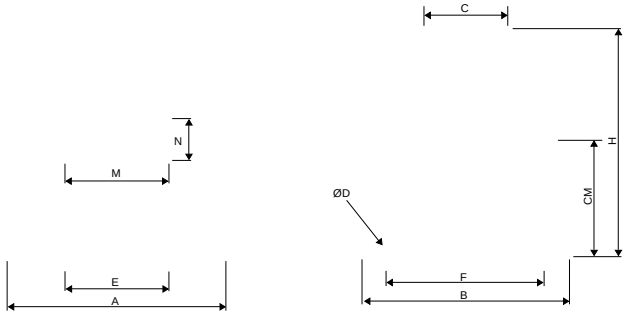


Setting Dial Available Adjustments

GFT Pickup	**I_G**	**0.1 to 0.4 continuously adjustable x In**	**Amps**
GFT Setting	**T_G**	**0.1 - 0.2 - 0.3 - 0.4 - 0.8**	**seconds**

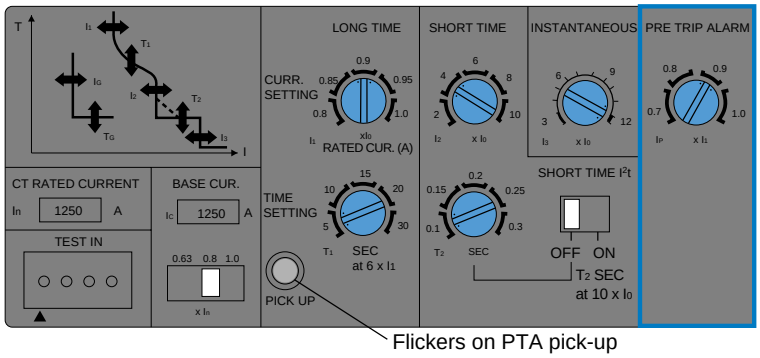
When a 3 pole MCCB is used on a 3 phase 4 wire system a separate CT is required for the neutral line. No control power is required for this option.

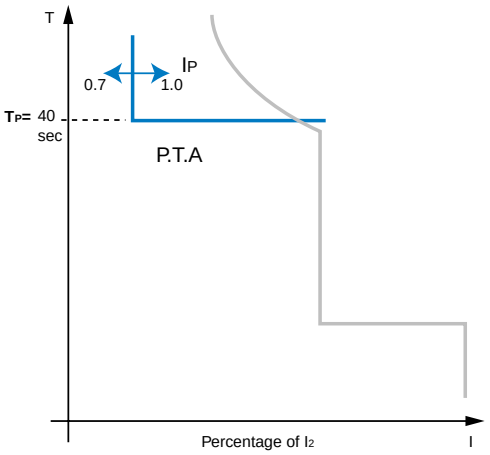
MCCB Frame Size	A	B	C	ØD	E	F	H	CM	M	N	W(kg)
630A, 800A	105	100	40	8	50	75	110	57	50	20	1.2
1250A, 1600A, 2000A, 2500A	140	110	50	10	80	85	145	75	85	35	2.2



Note: CT mounting base can be rotated by 90°

Pre Trip Alarm Adjustments





Setting Dial Available Adjustments

PTA Pickup	**I_P**	**0.7 - 0.8 - 0.9 - 1.0 x I_1**	**Amps**
PTA Setting	**T_P**	**Fixed at 40 secs**	**–**

The PTA (Pre-Trip Alarm) option continuously monitors the true r.m.s value of the load current. When the load current exceeds the preset current value I_P the pick-up led 'flashes' to provide a local alarm. If the current continues to exceed the I_P setting for 40 secs or more a volt free contact will close to provide a remote alarm. This volt free contact could also be used to trip non-essential load or start additional generator capacity.
The volt free contact will only reset if the load current decreases to a value below I_P or the control voltage is interrupted. To operate the PTA function an OCR controller is required, this is supplied as standard with the option.

Output Contact

Normally open contact, (1a) Integral lead is standard length (450mm)

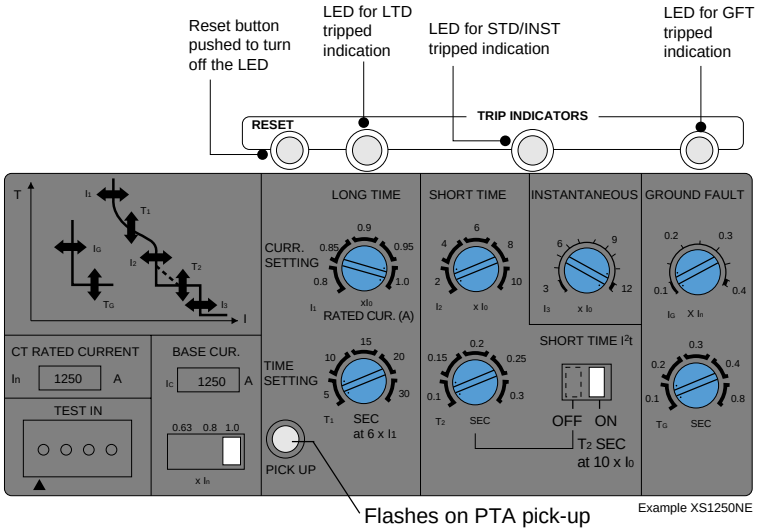
	Resistive load	Inductive load
Rating of	250V AC 125V A (2A max)	20V A (2A max)
contact	220V AC 60W (2A max)	10W (2A max)
Tripped indication		Pick-up LED flickers

LED Indication

Faster Fault Diagnostics can be achieved through indication of fault type. On occurrence of a fault the relevant LED will light for that particular fault conditions.

LED	Fault Type
LTD	Overload
STD/INST	Short Circuit
GFT	Earth Fault
Pick-up	This flashes for PTA pick-up and lights for LTD pick-up

On 1250AF and above the LED's are integral to the OCR. On breakers of below 1250AF, LED's are mounted on a block on the right hand side of the breaker. Please contact Terasaki for details.



OCR controller (PTA and trip indication)

The OCR controller is installed in the left hand side of the breaker (standard). This can also be installed externally to the breaker (please specify when ordering).
Note: Installation position and accessory lead terminal block arrangements, refer to pages 74-75.

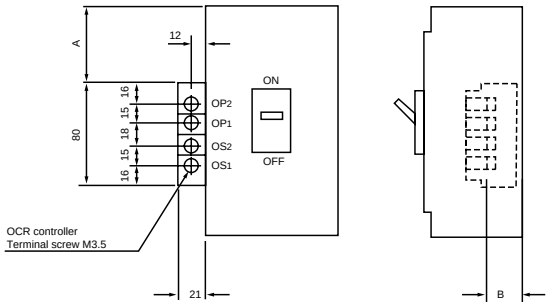
OCR controller specifications

Control power source 100-120 VAC or 200-240 VAC
Terminals OP_1 and OP_2

Consumption 2VA

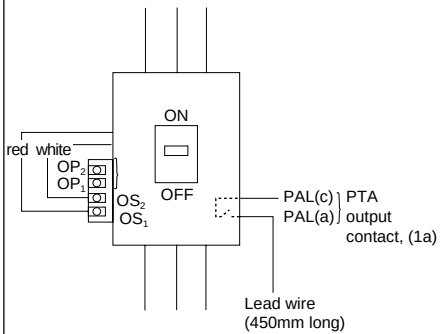
Note: The permissible range of control power is 85-110% of the rated voltage.

OCR controller installed external to the breaker



OCR Controller connection diagram

OCR controller mounted on the left hand side of the breaker

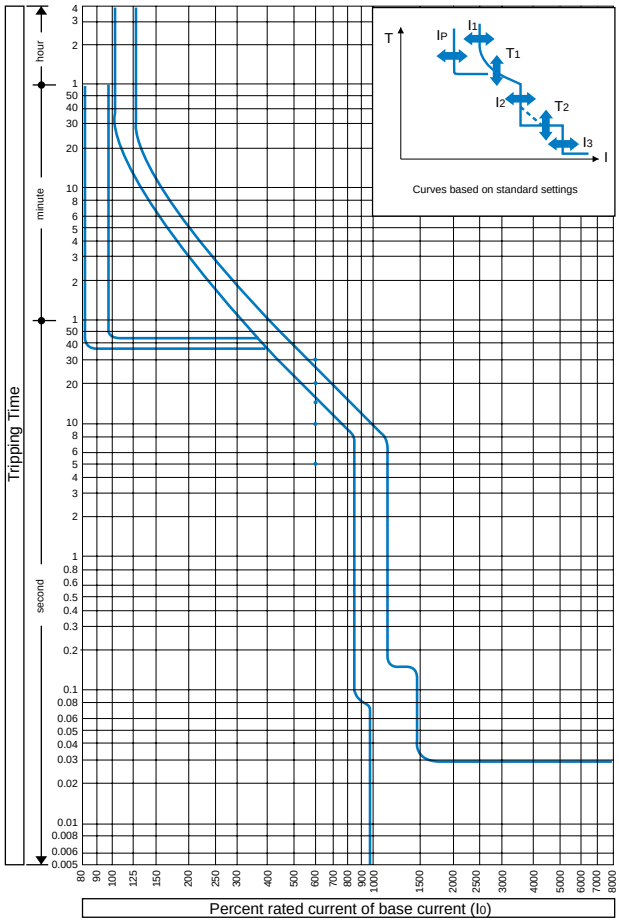


Dimensions table (mm)

Frame (A)	Type of MCCB	A		B
		Wtih UVT controller	Without UVT controller	
250	XH250PE	34	97	48
400	XS400CE XS400NE XH400NE	34	97	48
630	XS630CE XS630NE XH630NE	64	151	60
800	XS800NE XH800NE	64	151	60
1250	XS1250NE	51	114	72
1600	XS1600NE	51	114	92
2000	XS2000NE	54	180	115
2500	XS2500NE	54	180	115

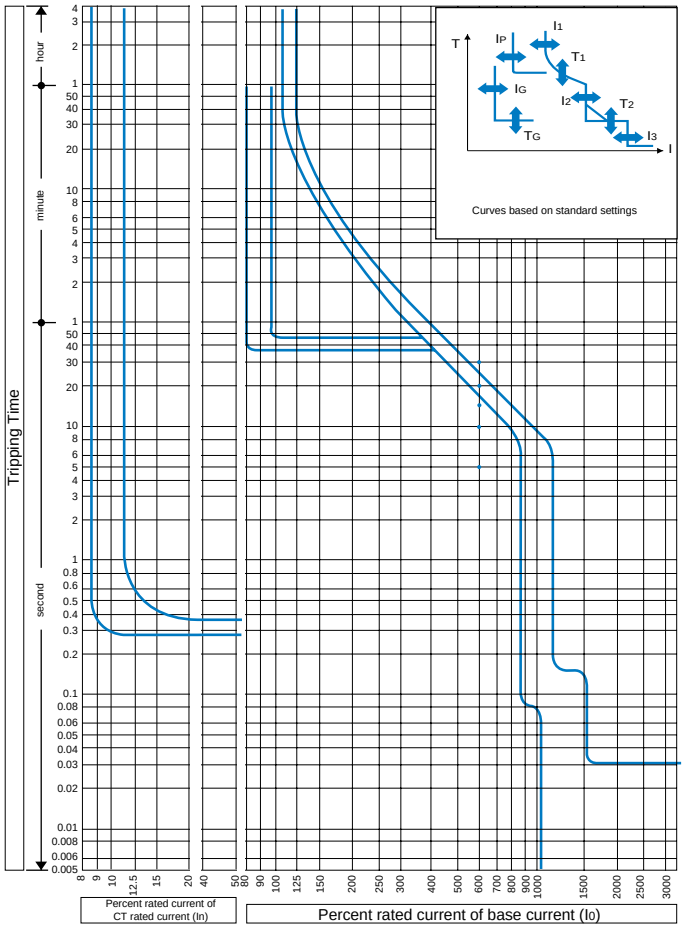
Time/current characteristic curves

XH250PE, XS400CE, XS400NE, XH400NE



Time/current characteristic curves

XS630CE, XS630NE, XH630NE, XS800NE, XH800NE



Overcurrent tripping characteristics

CT rated current (A) (In)	250,400
Base current setting (A): (Io)	(In) x (0.63-0.8-1.0)
Long time-delay pick-up current (A): (I_1)	(Io) x (0.8-0.85-0.9-0.95-1.0) Non-tripping at (I_1) setting x 105% and below. Tripping at 125% and above.
Long time-delay time settings (S) (T_1)	(5–10–15–20–30) at (I_1) x 600% current. Setting tolerance ± 20%
Short time-delay pick-up current (A): (I_2)	(Io) x (2-4-6-8-10) Setting tolerance ± 15%
Short time-delay time settings (S) (T_2)	Opening time (0.1, 0.15, 0.2, 0.25, 0.3) in the definite time-delay. Total clearing time is + 50 mS and resettable time -20mS for the time-delay setting
Instantaneous trip pick-up current (A) (I_3)	Continuously adjustable from (Io) x (3 to12) Setting tolerance ± 20%
* Pre-trip alarm pick-up current (A) (I_P)	(I_1) x (0.7, 0.8, 0.9, 1.0) Setting tolerance ±10%
* Pre-trip alarm time setting (S) (T_P)	40 fixed definite time-delay.Setting tolerance ±10%

Note: *Optional
Note: The underlined values will be applied as standard ratings unless otherwise specified when ordering.

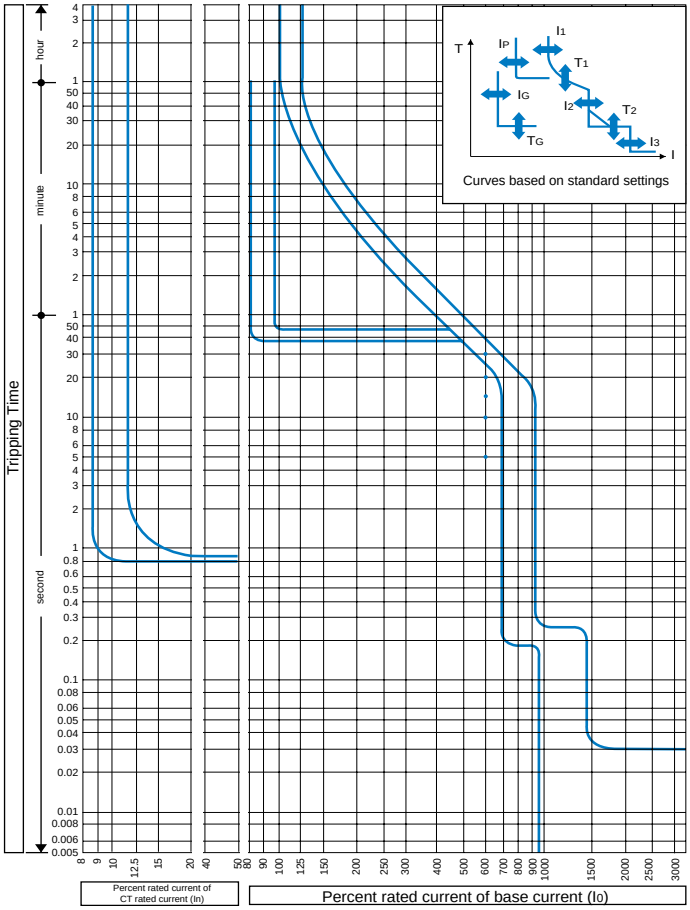
Overcurrent tripping characteristics

CT rated current (A) (In)	630,800
Base current setting (A): (Io)	(In) x (0.63-0.8-1.0)
Long time-delay pick-up current (A): (I_1)	(Io) x (0.8-0.85-0.9-0.95-1.0) Non-tripping at (I_1) setting x 105% and below. Tripping at 125% & above.
Long time-delay time settings (S) (T_1)	(5–10–15–20–30) at (I_1) x 600% current. Setting tolerance ± 20%
Short time-delay pick-up current (A): (I_2)	(Io) x (2-4-6-8-10) Setting tolerance ± 15%
Short time-delay time settings (S) (T_2)	Opening time (0.1, 0.15, 0.2, 0.25, 0.3) in the definite time-delay. Total clearing time is + 50 mS and resettable time -20mS for the time-delay setting.
Instantaneous trip pick-up current (A) (I_3)	Continuously adjustable from (Io) x (3 to12) Setting tolerance ± 20%
* Pre-trip alarm pick-up current (A) (I_P)	(I_1) x (0.7, 0.8, 0.9, 1.0) Setting tolerance ±10%
* Pre-trip alarm time setting (S) (T_P)	40 fixed definite time-delay.Setting tolerance ±10%
* Ground fault trip pick-up current (A): (I_G)	Continiuously adjustable from (In) x (0.1 to 0.4) Setting tolerance ± 15%
* Ground fault trip time setting (S): (T_G)	Opening time (0.1-0.2-0.3-0.4-0.8) in the definite time-delay. Total clearing time is + 50mS and resettable time is - 20mS for the time-delay settings

Note: *Optional
Note: The underlined values will be applied as standard ratings unless otherwise specified when ordering.

Time/current characteristic curves

XS1250NE, XS1600NE, XS2000NE, XS2500NE



Overcurrent tripping characteristics

CT rated current (A) (In)	1000, 1250, 1600, 2000, 2500
Base current setting (A): (Io)	(In) x (0.63-0.8-1.0)
Long time-delay pick-up current (A): (I_1)	(Io) x (0.8-0.85-0.9-0.95-1.0) Non-tripping at (I_1) setting x 105% and below. Tripping at 125% & above.
Long time-delay time settings (S) (T_1)	(5–10–15–20–30) at (I_1) x 600% current. Setting tolerance ± 20%
Short time-delay pick-up current (A): (I_2)	(Io) x (2-4-6-8-10) Setting tolerance ± 15%
Short time-delay time settings (S) (T_2)	Opening time (0.1, 0.15, 0.2, 0.25, 0.3) in the definite time-delay. Total clearing time is + 50 mS and resettable time -20mS for the time-delay setting.
Instantaneous trip pick-up current (A) (I_3)	Continuously adjustable from (Io) x (3 to 12) Setting tolerance ± 20%
* Pre-trip alarm pick-up current (A) (I_P)	(I_1) x (0.7, 0.8, 0.9, 1.0) Setting tolerance ±10%
* Pre-trip alarm time setting (S) (T_P)	40 fixed definite time-delay.Setting tolerance ±10%
* Ground fault trip pick-up current (A): (I_G)	Continiuously adjustable from (In) x (0.1 to 0.4) Setting tolerance ± 15%
* Ground fault trip time setting (S): (T_G)	Opening time (0.1-0.2-0.3-0.4-0.8) in the definite time-delay. Total clearing time is + 50mS and resettable time is - 20mS for the time-delay settings

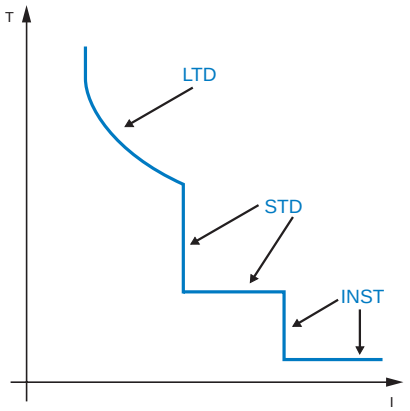
Note: *Optional
Note: The underlined values will be applied as standard ratings unless otherwise specified when ordering.

MCCB Curves

A microprocessor MCCB has three main regions on it' s overcurrent tripping characteristic, namely Long Time Delay (**LTD**) for overload protection, Short Time Delay (**STD**) and Instantaneous (**INST**), both for short-circuit protection.

The following is an insight into how these curves interact and could act as a guide for hand-drawing the curves. TemCurve Selectivity Analysis Software is available for computerised generation of curves (refer to page 10).

Firstly consider the following basic characteristic curve shown in figure 1.



The LTD takes the form of a curve and has the following characteristic equation:

$$(I^2-1) \cdot t = k$$

where ' k' is a constant. To determine k, the calibration point of the LTD should be used, i.e. **$t = T_1$** at **I_1 = 6 (600%).**

IEC-947-2 states that a breaker must not trip below 105% of it' s rated current, and always trip at 130% of it' s rated current. Terasaki microprocessor MCCBs however are calibrated to trip between 105% and 125%, giving them a higher degree of accuracy. If the middle point is taken then the pick-up of the MCCB is 115% of it' s rated current.

The STD and INST parts of the curve can be drawn more easily as they are simply a series of horizontal and vertical lines determined by the I_2 and T_2 settings for the STD, and I_3 setting for the INST.

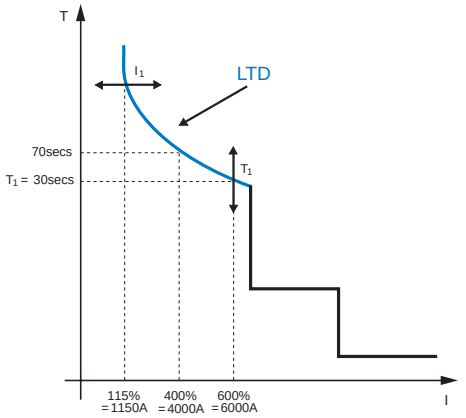
Example

If we assume that we have:

XS1250NE with **1250A CT' s** and
I_0 = 1, I_1 = 0.8, T_1 = 30secs,
I_2 = 8, T_2 = 0.2secs and
I_3 = 12

then the characteristic curve can be constructed as follows.

LTD



To draw the LTD we firstly need to determine the constant **k**, as follows:

$k = (I^2 - 1) \cdot t = (6^2 - 1) \cdot 30 = 1050$

giving the characteristic equation:

$(I^2-1) \cdot t = 1050$

By simple arithmetic the tripping times for each level of overload can now be determined.

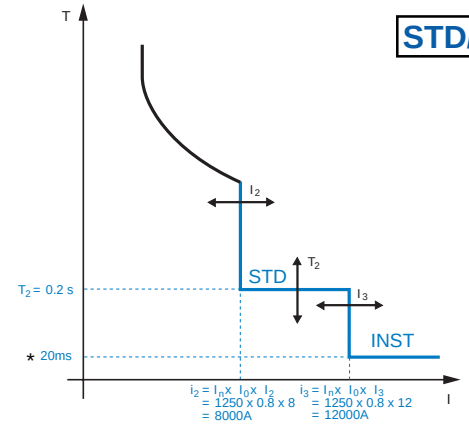
For 400% overload (for the example this is equivalent to 1250 x 1.0 x 0.8 x 4 = 4000A). $t = \frac{1050}{(I^2 - 1)} = \frac{1050}{(4^2 - 1)}$ = **70 secs**

The STD and INST can be constructed as follows with

$i_2 = I_n \times I_0 \times I_2$

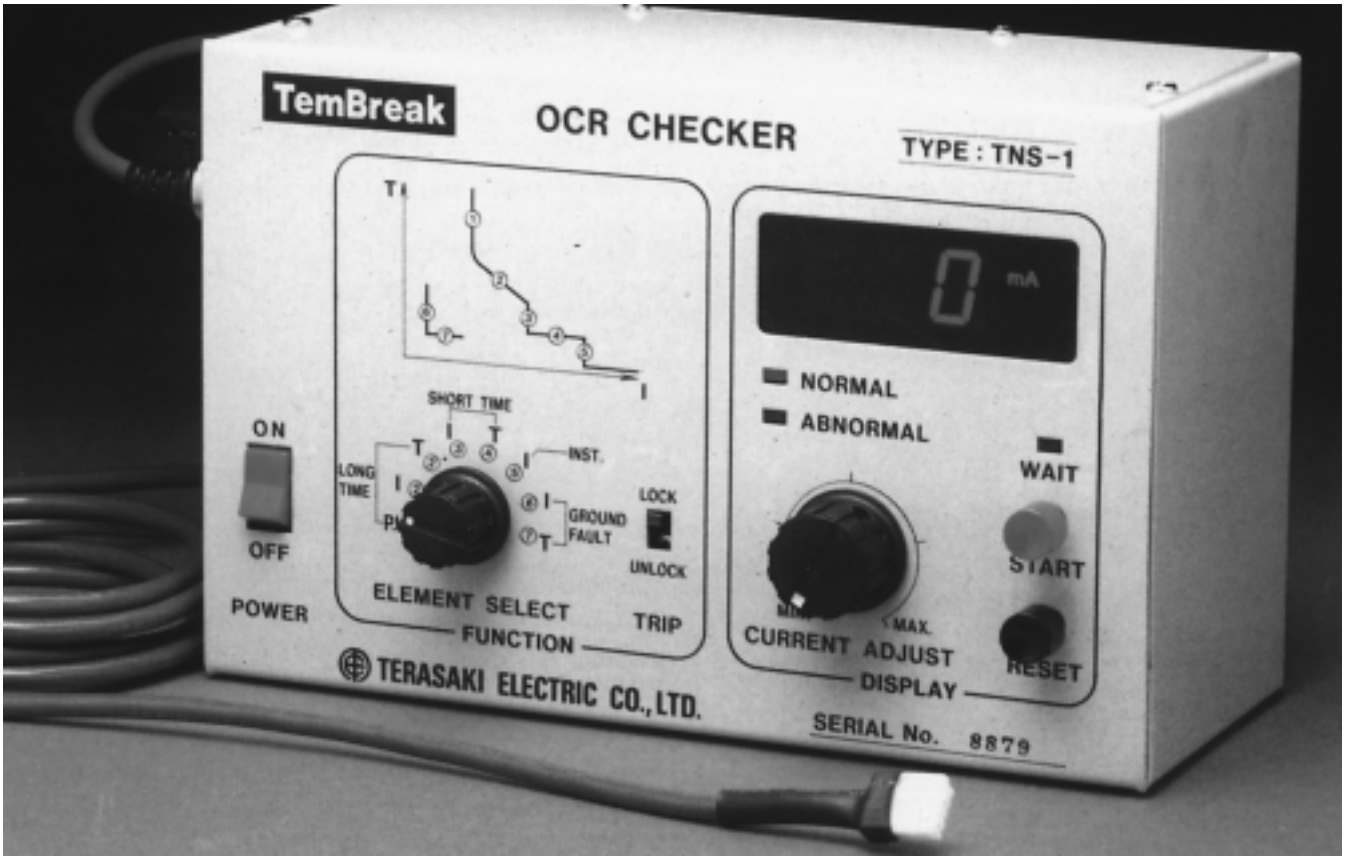
$i_3 = I_n \times I_0 \times I_3$

STD/INST



* Please note that 20ms is taken as an average time for the INST trip of the MCCB as it is the maximum time it will take the MCCB to trip. In practice the breaker will open much faster, particularly at high faults where the current limiting qualities of the MCCB become more effective.

OCR Checker



The TemBreak (Electronic) OCR Checker, is a portable easy-to-use instrument for field testing the trip functions.
It checks the pick-up current and tripping time values of the LTD, STD, INST and GFT functions.

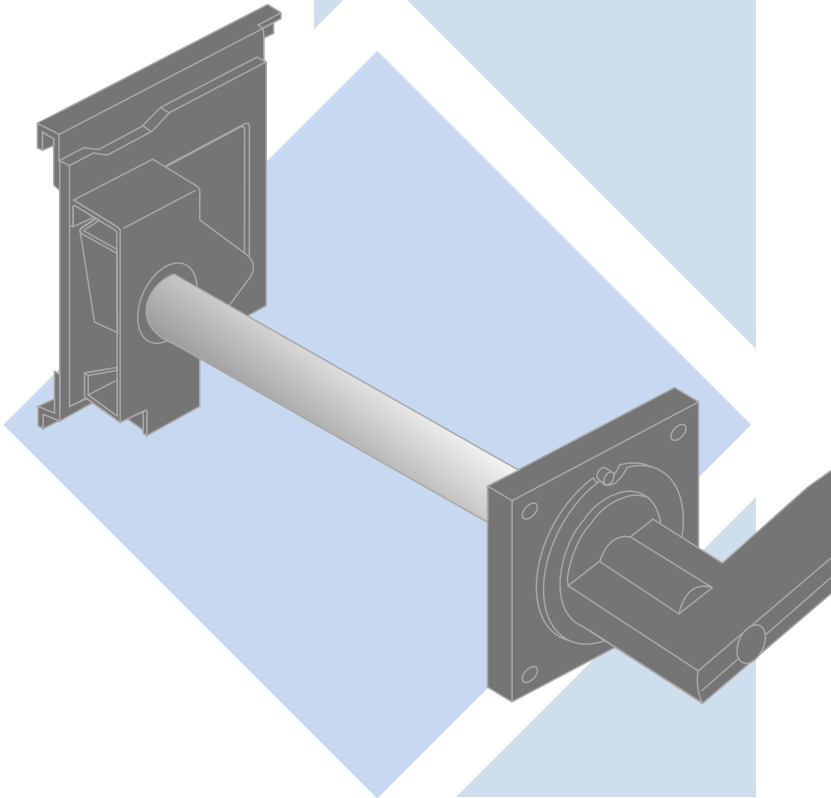
Ratings and Specifications

Power Source	100~110V AC Single phase 50/60Hz TNS- 1/1
	200~220V AC Single phase 50/60Hz TNS- 1/2
Power Consumption	30VA
Application	LTD function check (Set current and trip time values)
	STD function check (Set current and trip time values)
	INST function check (Set current value)
	GFT function check (Set current and trip time values)
Measurement of set current values	Display 3-digit digital display
	Range 0-900mA
Measurement of tripping time values	Range 0.00-99.9 seconds
Outline Dimensions	200mm (W) x 84mm (H) x 130mm (D)
Weight	2.7kg
Accessories	Power cord (3-core with grounding pole 2.4m one pc)
	Connecting cable 3m one pc.

Optional Accessories

5

43-80



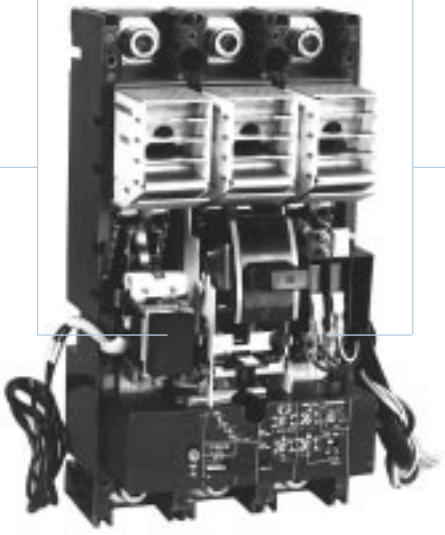
Shunt Trip (SHT)

Remote tripping of the breaker

Undervoltage Trip (UVT)

Automatically trips the breaker when the circuit breaker falls below pre-set value. Remote tripping of the breaker is also possible.
Note: The UVT controller is installed externally, when provided with AC UVT. (Refer to page 46)

Note: The SHT and UVT cannot be mounted in the same breaker.



Auxiliary Trip (AX, AXE)

Electrically indicates On/Off status of the breaker.

Alarm Switch (AL,ALE)

Electrically indicates when the breaker is in the "Tripped" state.

Accessory lead terminal configurations (three types)

Integral lead (450mm)
•Applicable to front connected, rear connected and plug-in type breakers as standard features.

Lead specifications

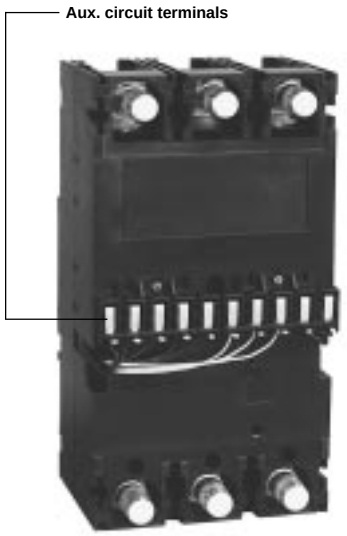
Internal accessories	Type	Size	Finish O.D.	Colour
SHT	* Wire (1)	0.5mm²	3mmØ	Black
UVT 225AF	* Wire		1.8mmØ	Black
400AF or larger			3mmØ	Black
AX, AXE			1.8mmØ	Grey
AL, ALE			1.8mmØ	Black

(1) * Heat resistant

Note: When breakers are installed in series left to right, distances must be considered in determining lead diameter.

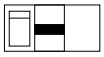
Terminal block type (LTS, LTF)
Applicable to front connection, rear connection and plug-in type breakers as optional features. Standard terminal arrangements. (Refer to pages 74-75)

Auxiliary circuit terminal (auto coupling) type (LTP)
Applicable to plug-in breakers as a standard feature.
Auxiliary circuit terminal standard arrangements (Refer to Section 6, page 92)



Shunt trip (SHT) 1P
No anti-burn switch

3, 4P Provided with anti-burn switch

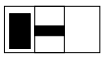


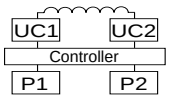
With anti-burn switch

Single pole (125AF)

No anti-burn switch

Undervoltage trip (UVT) 3, 4P AC rated voltage

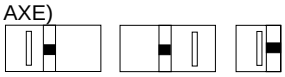




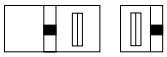
DC rated voltage

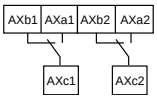
Auxiliary switch (AX, AXE) 3, 4P No. of mountings

1 unit

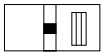


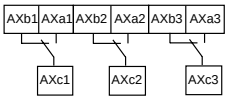
2 units



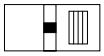


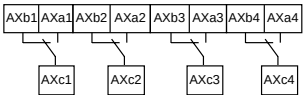
3 units



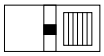


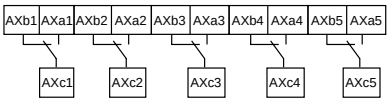
4 units



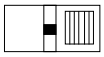


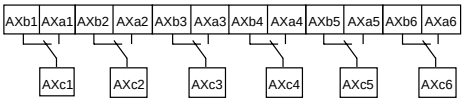
5 units



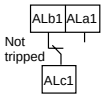


6 units





Alarm switch (AL, ALE) 3, 4P

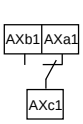
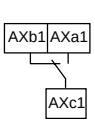
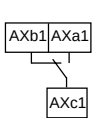


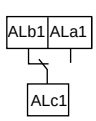
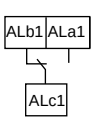
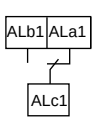
Ratings of auxiliary switches (AX,AXE) and alarm switches (AL,ALE)

Applicable breakers			250AF or smaller			400AF or larger (including:XH250PE)		
Switch type			* AV39052(AXE, ALE)			* V-10(AX, AL)		
AC	Voltage (V)		480	250	125	480	250	125
	Current (A)	Resistive load	0.4	3	3	3	5	5
		Lamp load	0.05	0.3	0.5	0.3	1.5	2
		Inductive load	0.25	2	2	2	5	5
		Motor load	0.1	0.5	0.7	0.4	2	3
DC	Voltage (V)		250	125	30	250	125	30
	Current (A)	Resistive load	0.2	0.4	3	0.3	0.6	5
		Lamp load	0.03	0.05	1	0.05	0.1	3
		Inductive load	0.03	0.05	2	0.3	0.6	4
		Motor load	0.03	0.05	2	0.05	0.1	3

Note:* For use in the micro current (mA) range. Contact Terasaki for details.

Operation of AX, AXE and AL, ALE

Switch type	Breaker 'ON'	Breaker 'OFF'	Breaker 'TRIP'
AX, AXE			

Switch type	Breaker 'ON'	Breaker 'OFF'	Breaker 'TRIP'
AL, ALE			

Shunt trip (SHT) rating

Series	Breaker	Rated voltage:	Exciting coil current [peak value (A)] Values at the highest voltage (60Hz for AC use) 110-115VAC	200-480VAC	24VDC	48VDC	100-115VDC	200-230VDC
XE	XE100NS		3.4	0.83	1.6	0.71	0.4	–
	XE225NS		2.6	1.6	2.6	1.2	0.77	–
	XE400NS, XE600NS		1.1	0.93	2.52	1.55	0.67	0.35
XS	XS50NB XS125CJ, XS125NJ XS160NJ, XS250NJ, XS250PJ		3.4	0.83	1.6	0.71	0.4	–
	XS400CJ, XS400NJ, XS400CE XS400NE,XS630CJ XS630NJ,XS630CE, XS630NE XS800NJ, XS800NE XS1250NE,XS1600NE		1.1	0.93	2.52	1.55	0.67	0.35
	XS2000NE XS2500NE		1.1	*0.4 (200-240VAC) *0.93 (380-480VAC)	2.52	1.55	0.67	0.35
XH	XH125NJ,XH160NJ, XH250NJ		3.4	0.83	1.6	0.71	0.4	–
	XH250PE, XH400NE XH630NE, XH800PS, XH800NE		1.1	0.93	2.52	1.55	0.67	0.35

Note: AC rated, permissible operating voltage range is 85 to 110%. DC 75 to 125%.
Note: * Applicable to 200V and 400V class only
Note: Special voltages available on request. Contact Terasaki for details.
Note: Shunt trip is provided with anti-burnout switch.

Shunt trip (SHT) rating 1-Pole breaker only

Series	Breaker	Rated voltage:	Exciting coil current [peak value (A)] Values at the highest voltage (60Hz for AC use) 110-440VAC	48-250V DC
XS	XS125CS		2.99A	1.25
	XS125NS		2.99A	1.25

Note: AC rated, permissible operating voltage range is 85 to 110%. DC 75 to 125%.
Note: 1-Pole breakers are not fitted with anti-burn-out switches (SHT).
Note: Shunt trip supply must be fed from load side.

Undervoltage trip (UVT) ratings

Series	Breaker	Rated voltage:	Power supply, VA (with UVT controller) 100-120VAC	200-240VAC	300-450VAC	Exciting coil current (mA) 24VDC	100-115VDC	200-230VDC
XE	XE100NS,		5VA	5VA	5VA	18.2	4.8	* –
	XE400NS,XE600NS					22.7	6.0	* –
XS	XS50NB, XS125CJ, XS125NJ, XS160NJ, XS250PJ,					18.2	4.8	* –
	XS400CJ, XS400NJ, XS400CE XS400NE, XS630CJ XS630NJ, XS630CE, XS630NE XS800NJ, XS800NE XS1250NE, XS1600NE XS2000NE, XS2500NE		2VA	2VA	2VA	86.5	21.2	12.1
XH	XH125NJ, XH160NJ XH250NJ		5VA	5VA	5VA	18.2	4.8	* –
	XH250PE, XH400NE XH630NE, XH800NE, XS800PS					22.7	6.0	* –

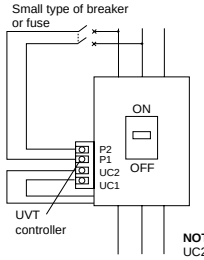
Note: Tripping voltage is 35-70% of the rated voltage. Resettable voltage is 85% or less, of the rated voltage.
Note: * 200V DC application available on request as a special specification and equipped with resistor. Contact Terasaki for details.
Note: Special voltages available on request. Contact Terasaki for details

UVT controller

If the UVT is for AC use a UVT controller must be installed. Standard installation of the UVT controller is on the left side of the breaker. However, this may be installed in a separate location (please specify). Separate installation is standard for breakers fitted with Mechanical Interlocks. A time-delay UVT controller is available with the same outside configurations (please contact Terasaki for details). For the mounting position of UVT controller, OCR controller and accessory lead terminal blocks, please refer to pages 38,74 and 75.

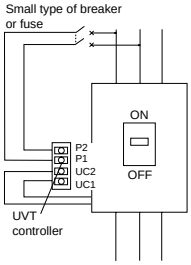
Undervoltage trip (UVT) ratings

Left side installation



NOTE: Terminals UC1 and UC2 are already connected

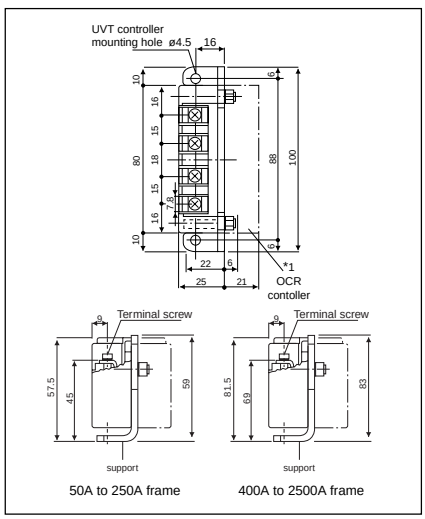
Separate installation



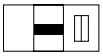
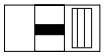
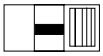
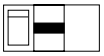
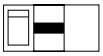
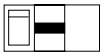
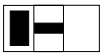
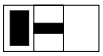
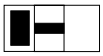
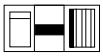
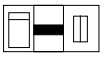
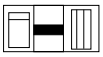
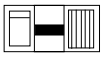
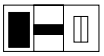
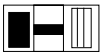
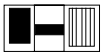
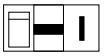
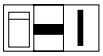
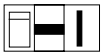
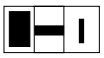
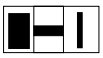
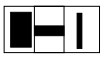
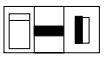
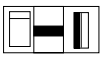
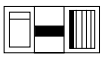
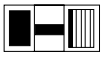
Controller Designations

Frame size	50A-250A	400A-2500A
Instantaneous type	XCU IS	XCU 4JS
Time delay type	XCU ID	XCU 4JD

UVT controller, outside configuration

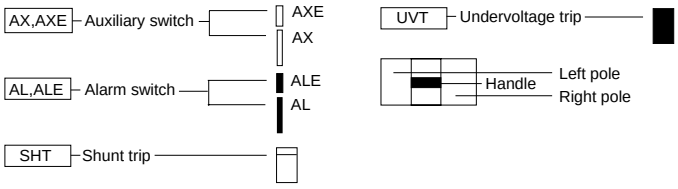


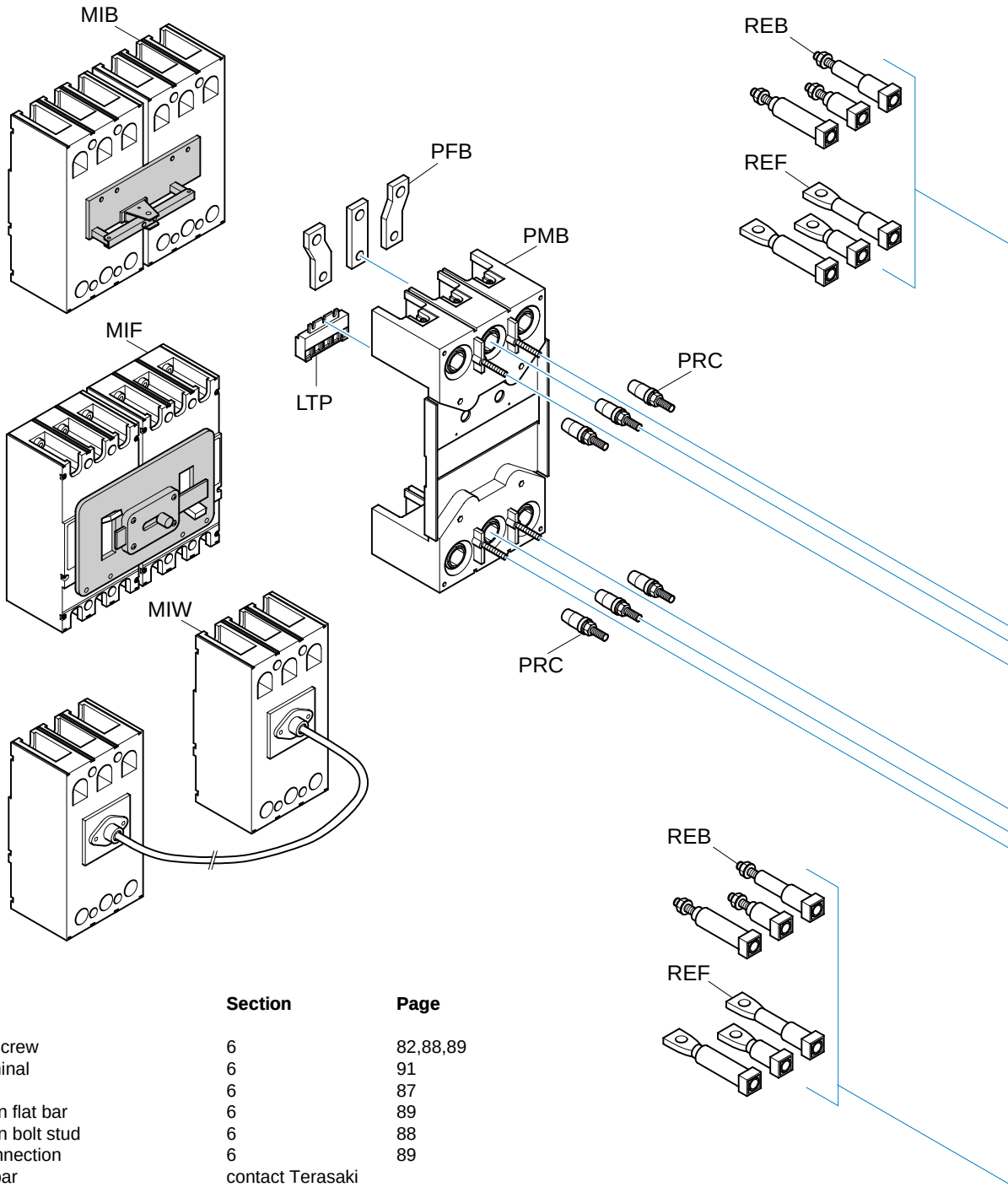
Breaker type

XE		XE100NS	XE100NS XE225NS	XE400NS XE600NS	
XS	XS125CS XS125NS	XS50NB	XS50NB XS125CJ XS125NJ XS160NJ XS250NJ XS250PJ	XS400CJ XS400NJ XS400CE XS400NE XS630CJ XS630NJ XS630CE XS630NE XS800NJ XS800NE XS1250NE XS1600NE	XS2000NE XS2500NE
XH			XH125NJ XH160NJ XH250NJ	XH400NE XH630NE XH800PS	
No. of poles	1	2	3,4	3,4	3,4
Internally mounted accessories					
AX,AXE					
AL,ALE					
SHT	* * 				
UVT					
AX,AXE AL,ALE					
AX,AXE SHT					
AX,AXE UVT					
AL,ALE SHT					
AL,ALE UVT					
AX,AXE AL,ALE SHT					
AX,AXE AL,ALE UVT					

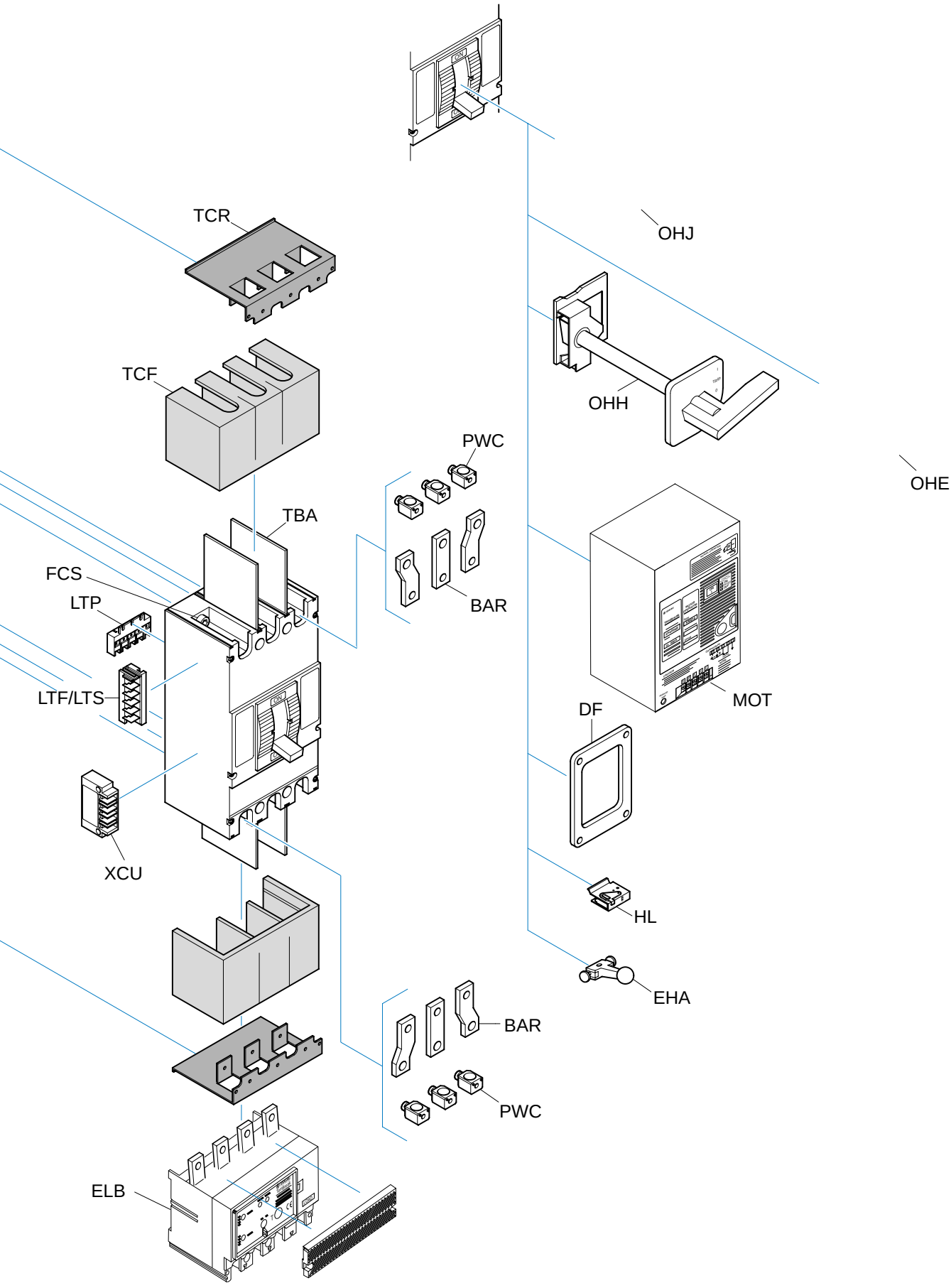
Note: Accessory combinations are restricted when utilizing plug-in types. Please refer to page 92.
Note: * * Not fitted with anti-burn out switch.

Key:



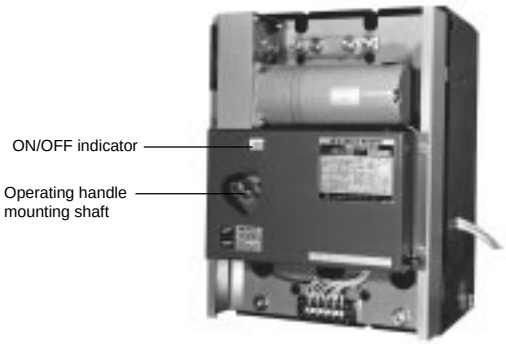


Designation	Description	Section	Page
FCS	Front connect screw	6	82,88,89
PWC	Solderless terminal	6	91
BAR	Attach bar	6	87
REF	Rear connection flat bar	6	89
REB	Rear connection bolt stud	6	88
PRC	Plug-in rear connection	6	89
PFB	Plug-in attach bar	contact Terasaki	
LTP	Plug-in lead terminal	6	92
LTF	Accessory lead terminal	5	74,75
LTS	Accessory lead terminal (angled entry)	5	74,75
PMB	Plug-in mounting base	6	84
TCF	Terminal cover (front connected)	5	71
TCR	Terminal cover (rear connected)	5	72
TBA	Interpole barrier	5	73
XCU	UVT controller	5	46
ELB	Earth leakage block	5	54
EHA	Extension handle	5	65
HL	Handle lock	5	66
MOT	Motor operator	5	50-53
OMM	Operating handle, variable depth	5	61-64
OHE	Operating handle, panel mounted	5	56-58
OHJ	Operating handle, breaker mounted	5	59,60
MIF	Front mechanical interlock	5	67
MIB	Rear mechanical interlock	5	68
MIW	Wire mechanical interlock	5	69


TCR
TCF
TBA
FCS
LTP
LTF/LTS
XCU
ELB
PWC
BAR
BAR
PWC
OHJ
OHH
OHE
MOT
DF
HL
EHA

Motor driven types

Motor driven type 1



Motor driven type 2

Ratings and specifications

Applicable breakers		XE Series		XE100NS, XE225NS	–
		XS Series		XS50NB, XS125CJ, XS125NJ	XS2000NE
				XS160NJ, XS250PJ, XS250NJ	XS2500NE
		XH Series		XH125NJ, XH160NJ, XH250NJ	–
Operating voltage ①		AC100, 110V		•	•
		200, 220V		•	•
		DC100, 110V		•	•
Automatic Reset	Yes	② AC100-110V		•	•
	No	200-220V		•	•
Steady-state r.m.s. amp/inrush amp (A)		⑤ AC100	50/60Hz	0.9/3.9	0.85/2.2
		-110V	50/60Hz	0.9/3.7	0.85/2.2
		⑥ AC200	50/60Hz	0.45/1.8	1.3/2.1
		-220V	50/60Hz	0.45/1.6	1.3/2.1
		⑦ DC100V		0.85/3.2	1.1/1.8
		110V		0.85/3.2	1.2/2.0
Operator Type				Motor driven types (1)	Motor driven type (2)
Operating Time(s)		ON		1.0	2.0
③ ④		OFF, RESET		0.85	1.6
Control switch ratings				250V, 5A	250V, 5A
Power source capacity (VA)				100	300
Withstand voltage				AC1000V	AC1000V
Weight (kg)				1.8	17

Note: • ; Yes or available,
– ; No or not available

Reference Notes

① Permissible operating voltage range as follows:
AC rated, 85 to 110% of the rated voltage
DC rated, 75 to 110% of the rated voltage
Note: AC rated operating voltage 380V or 400-460V a power transformer is available (optional)

② Requires breaker' s auxiliary switch (1b-contact). This will be wired at the factory (on request) when the breaker/motor operator assemblies are ordered. However, when all the auxiliary switch contacts are specified for other purposes, an external auxiliary relay (not supplied) is required to be controlled by the auxiliary a-contact of the breaker and use the relay' s normally closed contact (b-contact) for automatic reset.

③ Time values at the rated operating voltage. Allow a longer time for the motor operator to complete the operation, at lower operating voltage.

④ The motor operator is of a short time duty. Do not subject it to more than 10 continuous ON-OFF operations. If this occurs, allow the motor operator to cool for at least 15 minutes.

⑤ Maximum values at 110V AC
⑥ Maximum values at 220V AC
⑦ Special specification, available on request.

Operating Procedures for Motor Driven Type (1)

Motor Operation

ON Control
Operating the ON switch energises the motor which turns ON the breaker. When the breaker is energised the limit switch operates to de-energise the motor.
Note: This is not a self-holding type. Gives a signal exceeding the operating time.

OFF Control
Operating the OFF/RESET switch energises the motor which turns OFF the breaker. When the breaker is energised the limit switch operates to de-energise the motor.
Note: This is not a self holding type. Gives a signal exceeding the operating time.

RESET Control
Operate the OFF/RESET switch to reset the tripped breaker. When the breaker is reset (OFF) the limit switch operates to de-energise the motor.
Note: This is not a self holding type. Gives a signal exceeding the operating time

Automatic Reset (Optional)
The automatic reset feature
can be incorporated by adding the breaker' s auxiliary switch contact (b-contact) in parallel with the OFF/RESET control switch.
Note: When the cause of the trip has not been removed the ON-TRIP-RESET-ON operation is repeated. Therefore, do not use the ON operation switch which is normally closed.

Manual Operation
To operate the mechanical test facility of the motor operator pump the manual lever left and right approximately 20 times.
Note: This facility **must not** be used for ON load operations.

Lock in OFF position
The breaker can be padloked in the OFF position. (padlock not supplied).

CAUTIONARY NOTES
If the motor operator is turned ON with the breaker OFF and the UVT de-energised, apply the power and complete one ON-OFF operation. (The breaker cannot be turned ON). Then complete one ON operation again (The breaker can be turned ON)

When the breaker is ON and is then tripped, the ON/OFF indicator on the motor operator will be indicating ON until the breaker is reset.
Note: The breaker' s condition may differ.
Note: Allow several minutes to cool when a thermal-magnetic breaker is tripped by a thermal overload trip, then reset the breaker.

Operating procedures for motor driven type (2)

Motor operation

‘ ON’ control
Operating the ON switch energises the relay (X) via the motor switch 2-3 (closed). This in turn energises the motor, which turns the breaker ON. When the breaker is ON, the motor switch is thrown to the other side resulting in the relay (X) de-energising and stopping the motor.

‘ OFF’ control
Operating the OFF/RESET Switch energises the relay (Y) via the motor switch 1-2 (closed). This in turn energises the motor which turns the breaker OFF. When the breaker is OFF the motor switch is thrown to the other side resulting in the relay (Y) de-energising and stopping the motor.

“ RESET” control
Operate the OFF/RESET Switch to reset the tripped breaker. Circuit operation is the same for the OFF Control procedures.

Automatic reset (Optional)
The automatic reset feature can be incorporated by connecting the breaker’ s auxiliary switch contact (b-contact) in parallel with the OFF/RESET control switch.

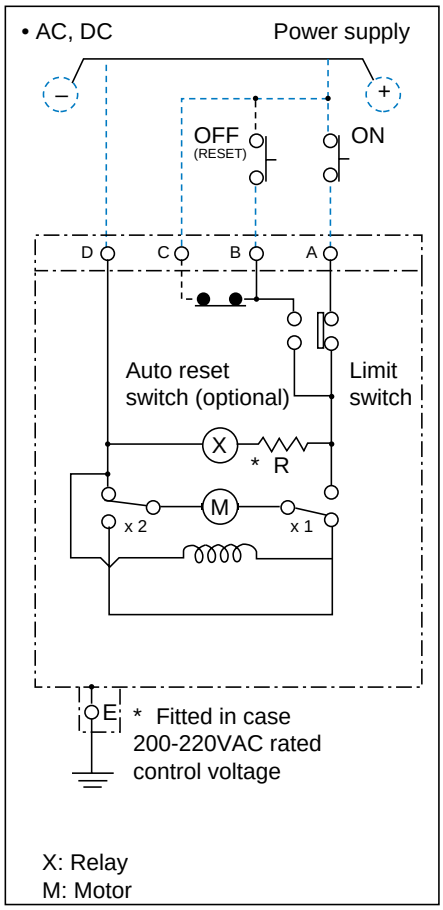
Manual operation
Position the manual handle (supplied with motor operator) onto the motor operator shaft. Turn the handle anti-clockwise to turn the breaker OFF or RESET. During manual operation (by handle) the motor operator shaft is disengaged from the mechanism. Removing the handle automatically engages the shaft with the motor operator mechanism.

Handle switch
With the addition of a handle switch, the motor operator mechanism can be automatically brought to the manually operated position (ON or OFF) on removal of the handle, providing that the motor operator is powered up.

CAUTIONARY NOTES
When the breaker is ON and is then tripped, the ON/OFF indicator on the motor operator will indicate ON until the breaker is reset.
Note: The breaker’ s condition may differ.

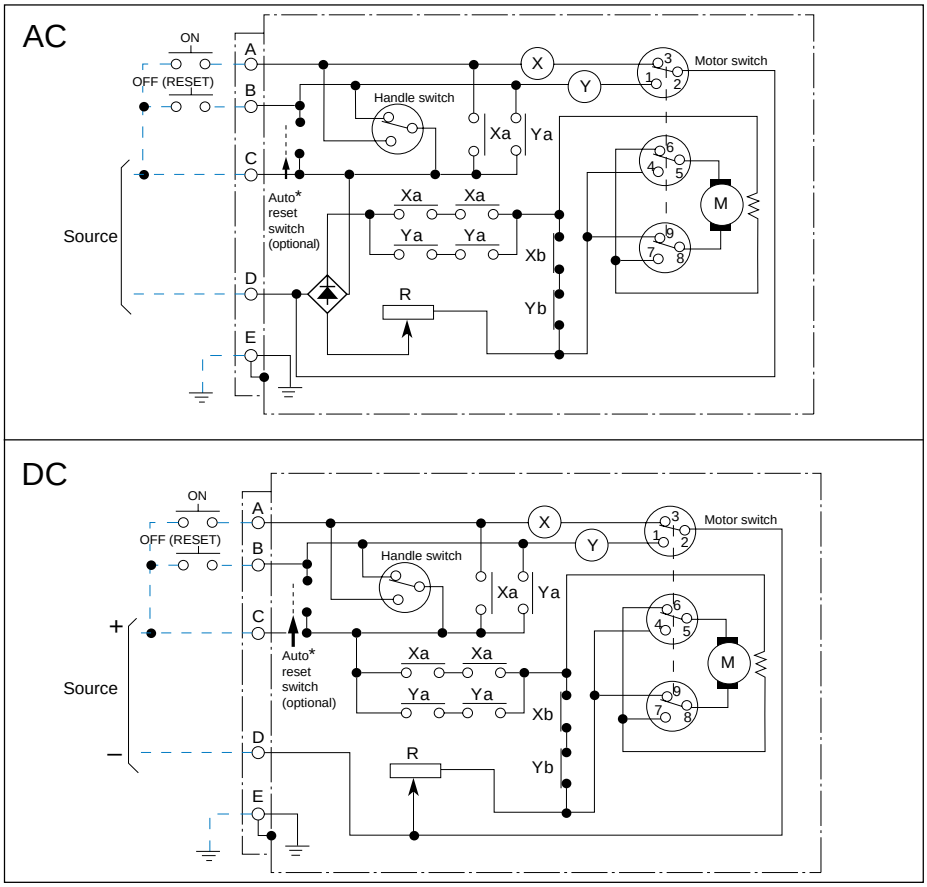
Control circuit

Motor driven type (1)



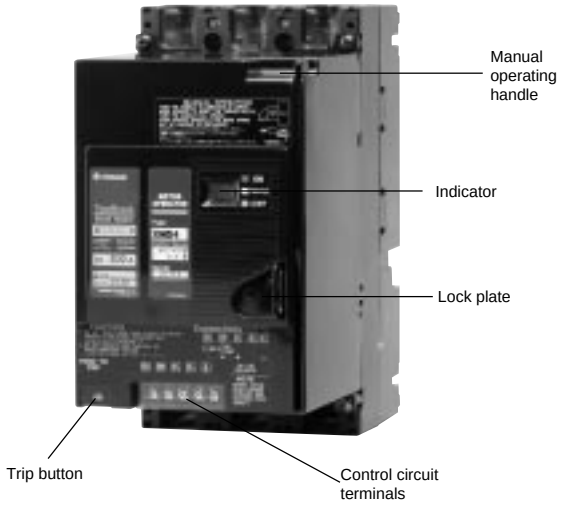
Note: * External to motor operator
⊕ ⊖ DC Application available on request.
Customer wiring shown in blue

Motor driven type (2)

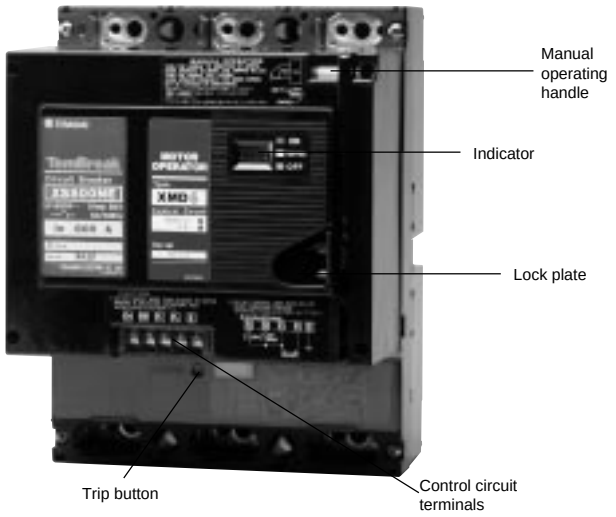


Note: * External to motor operator
Customer wiring shown in blue

NEW
Spring Charged Types



Type XMD4



Type XMD6, XMD9

Positive contact indication

Colour coding indicates the true position of the contacts clearly: ON (red), OFF (green), TRIP (white).

Easy maintenance

Breaker mounting, removal, and even setting changes can be done without removing the motor operator.

Availability

XMD9 available now.
XMD4/6 available by the end of 2003. Until then the XMC motor operator will be supplied for 400, 630 and 800AF. Please refer to catalogue '98-T20E for XMC information.

Manual ON/OFF operation with one stroke

Lever pumping is no longer required.

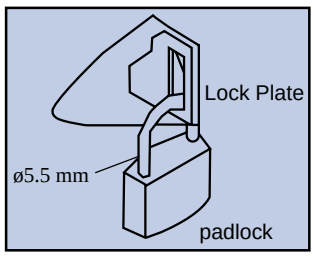
Fast closing operation

Closing in 60ms or less. The closing time remains constant over repeated operations.

Ratings and Specifications

Type of Motor Operators		XMD4	XMD6	XMD9
Applicable Breakers	XE Series	XE400NS	XE600NS	–
	XS Series	XS400CJ	XS630CJ XS630NE	XS1250NE XS1250ND
		XS400NJ	XS630NJ XS800NJ	XS1600NE XS1600ND
		XS400CE XS400NE	XS630CE XS800NE	–
			XS1000ND	–
	XH Series	XH250PE	XH630NE XH800PS	–
		XH400NE	XH800NE	–
Rated Operating Voltage (V)	AC 100-115V 50/60Hz	•	•	•
	200-230V 50/60Hz	•	•	•
	DC 100-110V	•	•	•
	24V	•	•	•
Lock in " OFF" position (standard)		•	•	•
Manual Trip Button		•	*	*
Steady-state r.m.s. Amp/inrush Amp (A)	AC100 ON ①	–/3.1	–/3.1	–/3.1
	-115V OFF, RESET ①	1.2/5.7	1.8/6.0	1.8/6.0
	AC200 ON ②	–/1.2	–/1.2	–/1.2
	-230V OFF, RESET ②	0.7/3.0	1.0/3.2	1.0/3.2
	DC100 ON ③	–/0.8	–/0.8	–/0.8
	-110V OFF, RESET ③	1.0/4.0	1.1/4.2	1.1/4.2
	DC24V ON	–/4.5	–/4.5	–/4.5
	OFF, RESET	4.0/12.0	4.0/12.0	4.0/12.0
Type of operation		Spring Charged	Spring Charged	Spring Charged
Operating Time(s)	ON (Maximum values)	0.06	0.06	0.06
	OFF, RESET ④	3	3	3
Control Switch Ratings		250V, 5A	250V, 5A	250V, 5A
Power Source Capacity (VA)		300VA	300VA	300VA
Dielectric withstand voltage		AC1500V (AC500V)	AC1500V (AC500V)	AC1500V (AC500V)
The value in brackets for 24V DC				
Weight (kg)		4.7	5.6	6.4

* Trip button on breaker to be used (accessible with motor fitted)



The breaker can be padlocked in the "OFF" position by pulling out the lock plate, and locking it with a padlock.
When the breaker is "ON", the lock plate cannot be pulled out.
Up to three locks can be used.
Padlocks not supplied.

NOTE
• : Yes or available
① : Maximum values at AC115V, 50Hz
② : Maximum values at AC230V, 50Hz
③ : Maximum values at DC110V
④ : Maximum values at the rated operating voltages

Motorised operation

ON CONTROL
When the ON switch is closed, the latch release coil (LRC) is excited and the closing spring is released. The breaker quickly closes and goes into ON status. When the closing spring is released, the limit switch (LS) is opened and the LRC is de-excited.

OFF CONTROL
When the off switch is closed, self-hold control relay (Y) is activated and motor (M) operates to charge the closing spring. The breaker changes to OFF status.

RESET CONTROL
When the breaker is in TRIP status, closing the OFF switch activates self-hold control relay (Y) and starts motor (M). Motor (M) charges the closing spring and resets the breaker.

Manual operation

ON, OFF (RESET)
The breaker can be opened (OFF or RESET) and closed (ON) alternately by pulling the operating lever down in one full stroke. ON/OFF operation of the breaker is possible without charging or releasing the closing spring.

TRIP
The breaker can be tripped by pushing the TRIP button on the motor operator of type XMD4. (For XMD6 and XMD9, use the Trip button of the breaker)

Emergency Trip
Opening the breaker (OFF) using the motor operator takes up to 3 seconds. If a remote emergency OFF function is necessary, incorporate the shunt trip device (SHT) or the undervoltage trip device (UVT) into the breaker.

PRECAUTIONS REGARDING USAGE

- If using the UVT option, be sure to reset the UVT before closing the breaker.
- The motor operator must be supplied with voltage within the following range:
  DC: 85-110% of rated voltage
  AC: 85-110% of rated voltage
  Operation at low voltage may burn out the motor.

Anti-pumping function

When the breaker is turned ON and the closing spring is released, self-hold control relay X is activate. Xa-contact is held closed, and Xb-contact is opened. While the ON switch is closed, latch release coil (LRC) will not be excited even if the OFF switch is closed or an automatic reset circuit is being used. Pumping is thus prevented.

Automatic charge/discharge function

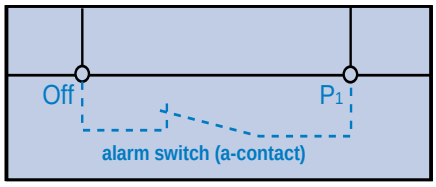
If the breaker is closed manually (ON) while the power source is on, the handle switch (HS) induces automatic release of the closing spring. Likewise, if the breaker is opened manually (OFF), the springs are automatically charged. If the breaker is opened or closed while the power source is off, later when the power source is turned on, the closing spring will automatically be charged or discharged to match the ON/OFF status of the breaker. This automatic charge/discharge function is necessary to prepare the closing mechanism for the next ON/OFF operation. The sound of the charging or discharging of the spring should not be mistaken for a malfunction.

Automatic reset

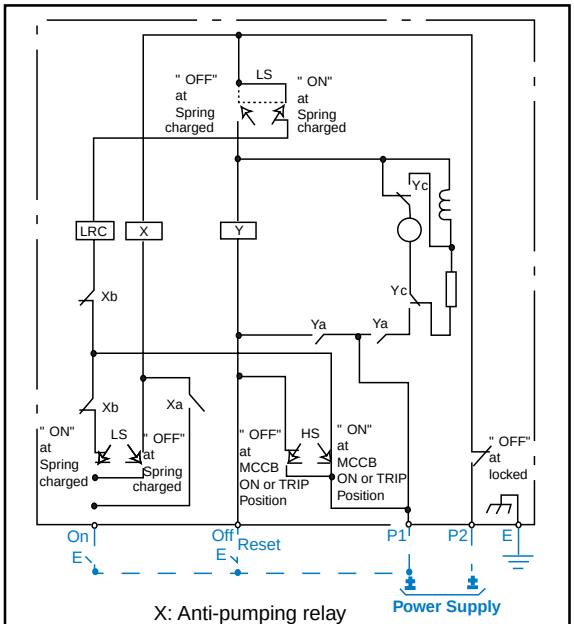
An alarm switch (a-contact) fitted in the breaker, can be used to induce recharging of the closing spring and automatically reset the MCCB. Connect the automatic reset circuit as shown below.

It is recommended that a time delay of approximately 3 minutes is introduced to the automatic reset circuit for thermal magnetic MCCB's. In the event of an overload trip this will prevent the motor operator repeatedly driving the MCCB between the tripped and reset positions while the thermal element is hot.

If an alarm signal is also required for external control, contact Terasaki for details.



Control circuit AC and DC

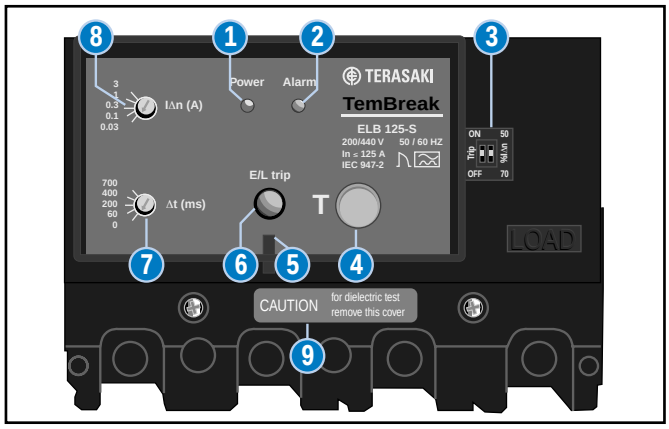


X: Anti-pumping relay
Y: OFF signal self-holding relay
LRC: Latch release coil (closing coil)
M: Motor
m: Field coil
HS: Breaker handle position switch

Note: Customer wiring shown in blue

NEW

Introducing advanced earth leakage protection for Terasaki' s range of compact MCCBs.
Designed as a space saving module, the earth leakage block adds comprehensive personnel and equipment protection to the impressive current limiting abilities of the TemBreak 125A and 250A range of MCCBs.
Manufacturted to the highest degree of quality the earth leakage block is fully compliant with all relevant national and international standards as well as satisfying all EMC requirements, giving protection you can rely on.

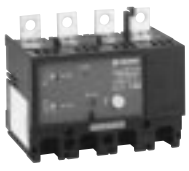


1. Power indication LED (Green)
2. * Local pre-trip alarm indication LED (Red)
3. * Trip/Non-Trip and alarm current sensitivity dip switches
4. Test push button
5. Front cover sealing point
6. Mechanical trip indication
7. Time delay setting dial
8. IΔn residual current setting dial
9. Dielectric test disconnect cover

Note * Available on ELB - A only

Available in two models.
The ELB - S offers a flexible range of settings for earth leakage protection, as well as local voltage presence and trip indication.
The ELB - A is equipped with all standard features and in addition provides a Trip/Non Trip function which allows the unit to act as alarm or tripping device, together with local and remote earth leakage indication. Refer to page 20 for specifications.

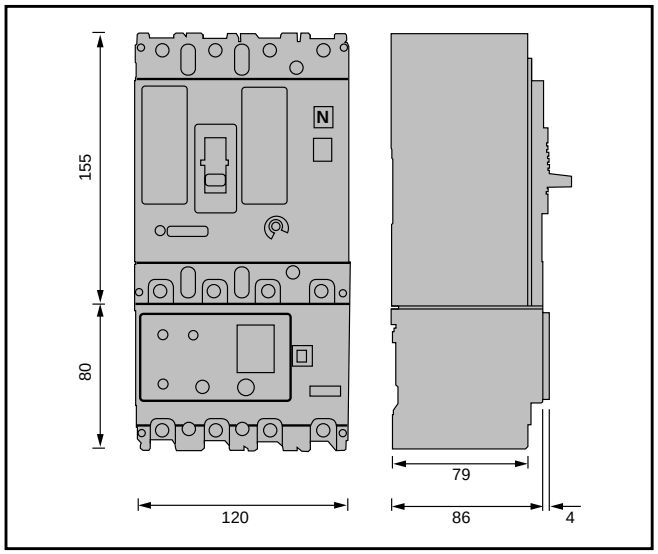
Type		ELB-S	ELB-A
Applicable breakers	125 AF	YES	YES
	250 AF (2)	YES	YES
RATINGS			
Current sensitivity IΔn (A) (adjustable)	0.03	⊙	⊙
	0.1	⊙	⊙
	0.3	⊙	⊙
	1.0	⊙	⊙
	3.0	⊙	⊙
Operating voltage	200-440V AC	⊙	⊙
Operating frequency	50/60 Hz	⊙	⊙
FEATURES			
Visual trip indication		⊙	⊙
Push-Button test		⊙	⊙
Pick-Up LED		–	⊙
Pre-Trip alarm contact (3)		–	⊙
Trip/Non-Trip function (4)		–	⊙



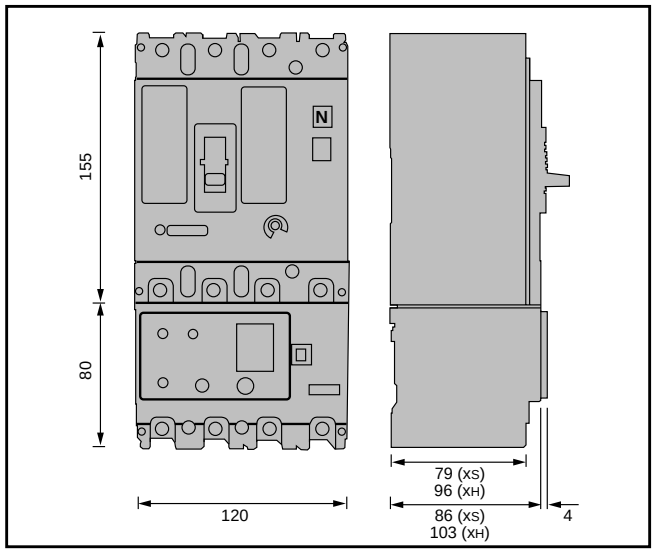
Note: ELB units are factory fitted to the required MCCB.

⊙ : Standard. This configuration is used unless otherwise specified.
○ : Optional. Specify when ordering.
• : Yes or available
– : No or not available.
(1) : Internal Diameter 35mm, 60mm, 80mm or 110mm
(2) : Excluding XH250PE
(3) : Set at 50% or 70% IΔn by dip-switch
(4) : Set by dip-switch

ELB-S and ELB-A Dimensions



125AF



160/250AF

TZS-AD Relay

Owing to the wide range of applications for the use of earth leakage protection, TZS-AD has been designed to be as flexible as possible. Response sensitivity current is adjustable in five steps to eliminate the need to change the relay in the case of a change in circuit specification.

The relay features surge protection as standard, and is resistant to nuisance tripping caused by harmonics.

A range of current tansformers with internal diameters of between 15 and 100mm are available to interface with the TZS-AD relay.

Please refer to page 20 for ratings and specifications.

Handle Operating Mechanism, Panel Mounted Type (OHE)

This is used when the breaker is installed in a control centre/switchboard or when it is required to be manually operated from the outside of the door.

Panel lock
This enables the door(s) of the control centre / switchboard to remain closed.
Note: Terasaki recommend provision should be made for a hook holder (not supplied. Refer to figure 2).

Panel/lock release (refer to Figure 1)
When the release knob is turned clockwise the door can be opened with the handle in any position (ON/OFF or TRIP).

Handle lock (refer to Figure 1)
The external operating handle can be locked (padlock not supplied) to prevent unauthorised switching (ON and OFF) of the handle.

Operation

ON - Turn the handle anti-clockwise to the ON position on the indication plate.
OFF - Turn the handle clockwise to the OFF position on the indication plate.

RESET
When the breaker trips, the handle indicates TRIPPED. Turn the handle clockwise to the RESET position. This will reset the breaker.

Opening the panel
Turn the handle clockwise to ‘ OPEN COVER’ . The lock is released and the panel can be opened.

Colour of handle: Black

Ordering
Specify the panel mount and position indication plate types (refer to Table 1).
Panel mount: XFE21 Indication plate 1B-B-NP (example)

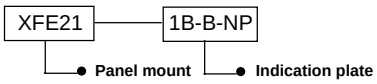
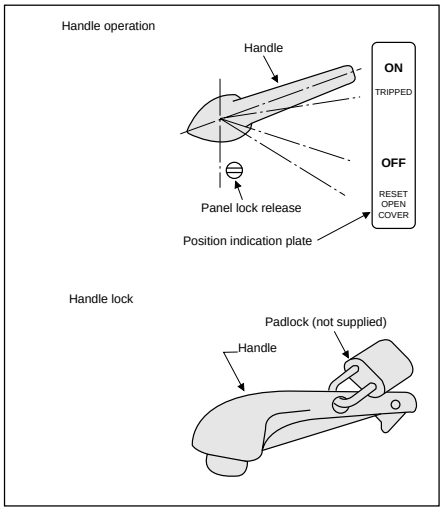
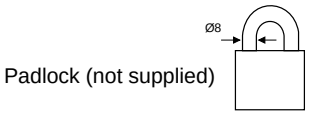


Figure 1



Note: Panel lock release knob and padlock are not supplied.

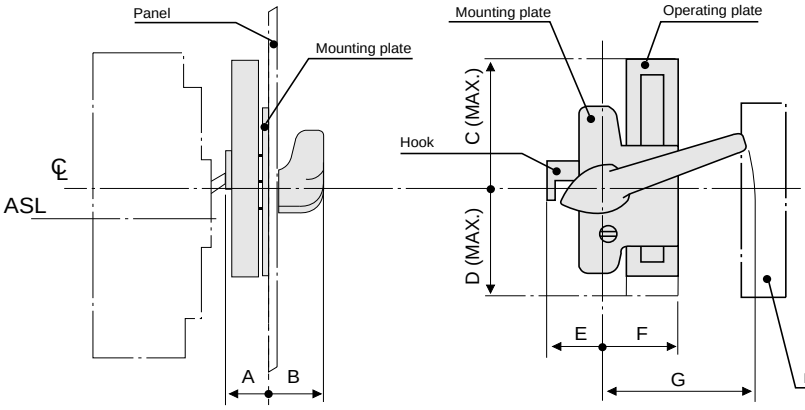


Outline dimensions (mm). Types : XFE2-6

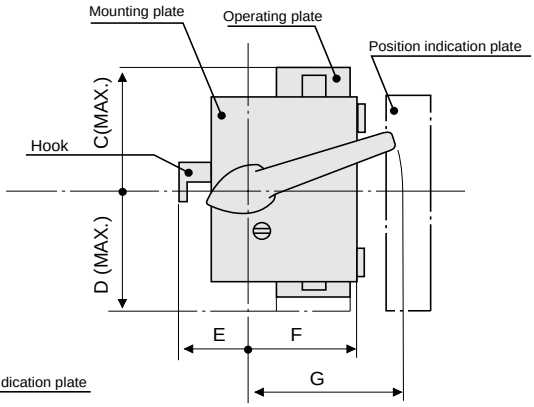
Figure 2

ASL : Arrangement Standard Line

XFE2 (TFE-1)

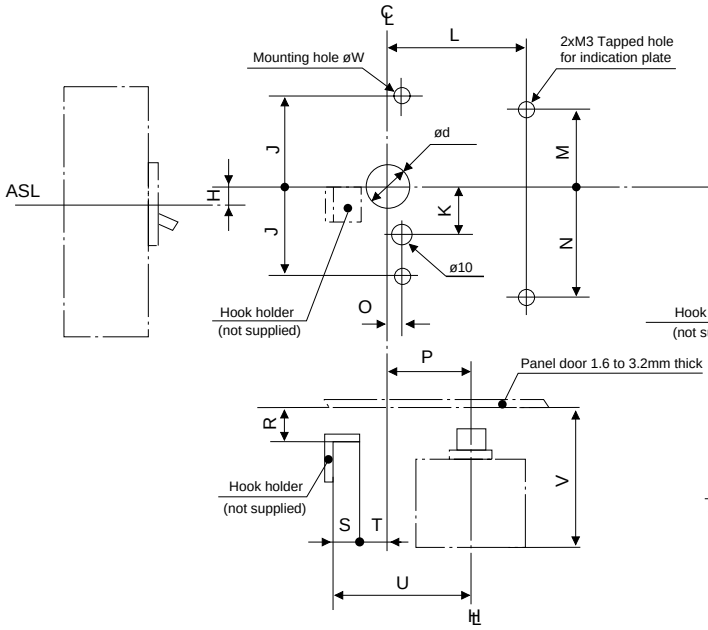


XFE4, 6

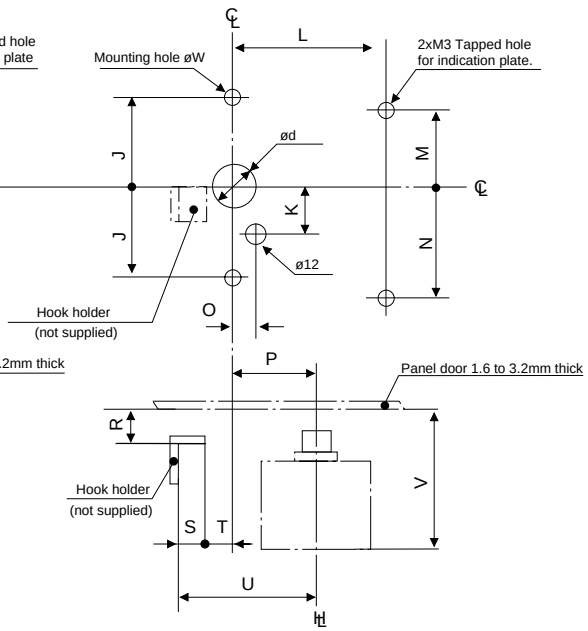


Mounting dimensions

XFE 2, (TFE-1)



XFE4, 6,



Dimensions table (mm)

Table 1

Frame (A)	Breaker	Op. handle	Ind. plate	d	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U	V	W
50	XS50NB	XFE21	1B-B-NP	24	27.5	40	89	103	35	56.6	100	5	50	27	110	58	58	5	35	12.5	12	28	75	104	6
100	XE100NS	XFE21	1B-B-NP	24	27.5	40	89	103	35	56.6	100	5	50	27	110	58	58	5	35	12.5	12	28	75	104	6
125	XS125CJ, XS125NJ XH125NJ	XFE22										3												122	
225/250	XE225NS XS160NJ, XS250NJ XH160NJ XS250PJ XH250NJ	XFE22	3X-A-NP	24	27.5	40	89	103	35	56.6	100	2.5	50	27	110	58	82	5	35	12.5	12	28	75	122 139	6
	XH250PE	XFE4	4X-A-NP	27	35.6	40	112	122	50	80.8	130	8	60	30	110	58	82	10	50	18.5	15	40	105	152	8
400	XE400NS, XS400CJ XS400CE, XS400NE XS400NS, XH400NE	XFE4	4X-A-NP	27	35.6	40	112	122	50	80.8	130	8	60	30	110	58	82	10	50	18.5	15	40	105	152	8
600	XE600NS, XS630CJ XS630NJ, XS630CE XS630NE, XH630NE	XFE6	4B-A-NP	40	47.4	58	142	142	60	105	130	8	70	35	140	70	105	10	60	18.5	15	50	125	168.9	12
800	XS800NE, XH800PS XS800NJ, XH800NE	XFE6	4B-A-NP	40	47.4	58	142	142	60	105	130	8	70	35	140	70	105	10	60	18.5	15	50	125	168.9	12
1250	XS1250NE	XFE6	4B-A-NP	40	47.4	58	142	142	60	105	130	12	70	35	140	70	105	10	60	18.5	15	50	125	199.4	12
1600	XS1600NE	XFE6	4B-A-NP	40	47.4	58	142	142	60	105	130	12	70	35	140	70	105	10	60	18.5	15	50	125	219.4	12

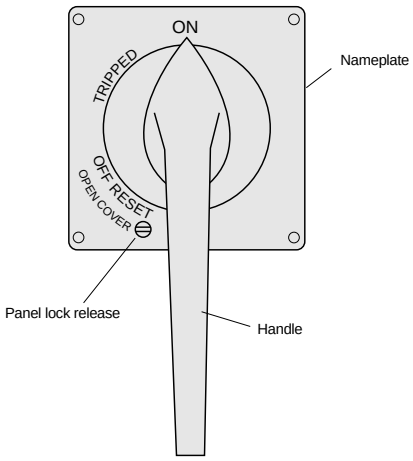
Operation Type XFE 10

ON
Turn the handle clockwise to the ‘ ON’ position on the indication plate.

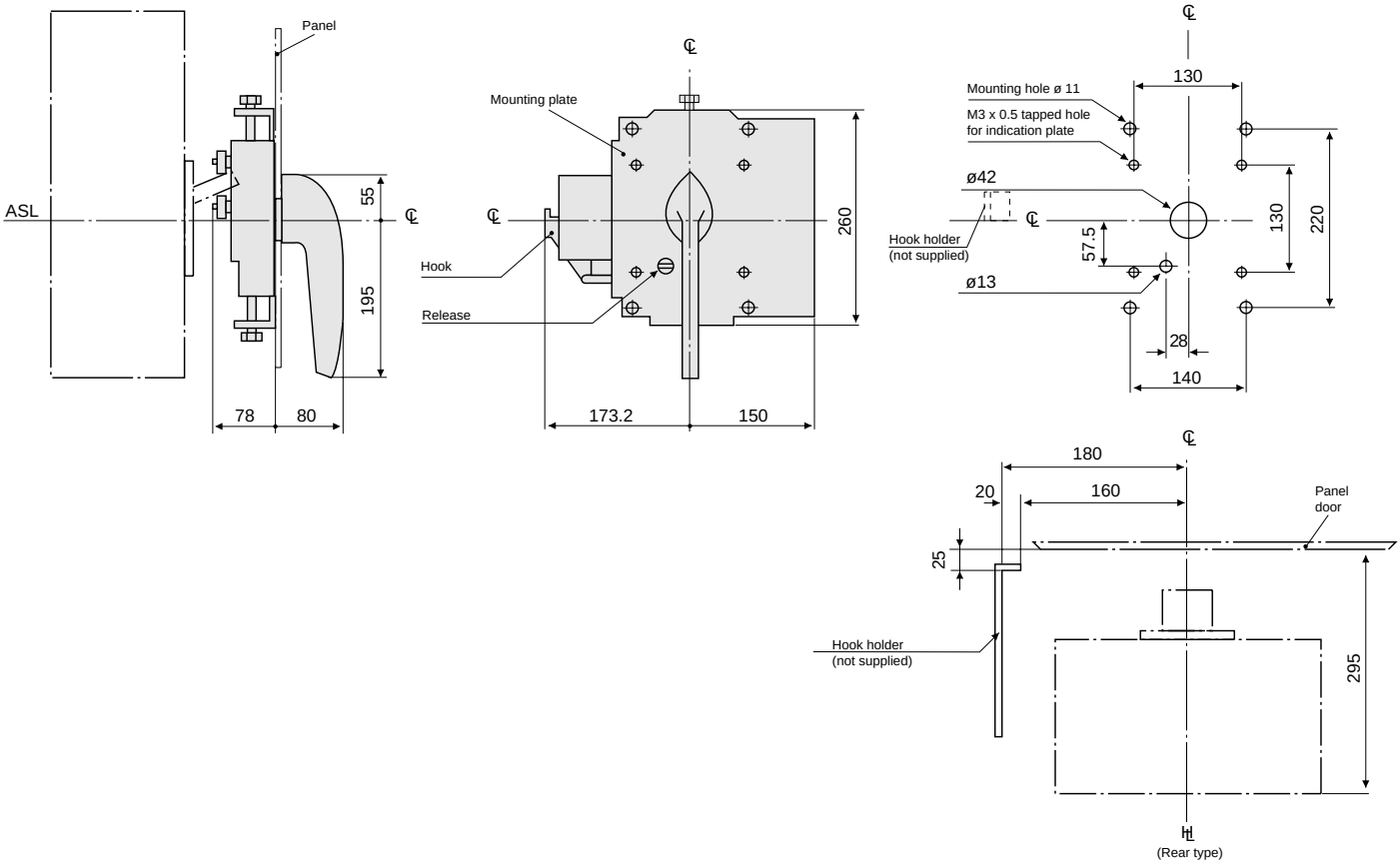
OFF
Turn the handle anti-clockwise to the ‘ OFF’ position on the indication plate.

RESET
When the breaker trips, the handle indicates tripped. Turn the handle anti-clockwise to the RESET position. This will reset the breaker.

OPENING THE PANEL
Turn the handle anti-clockwise to ‘ OPEN COVER’ . The lock is released and the panel can be opened.



Outline Dimensions (mm) (Breaker types XS2000NE, XS2500NE)



90° ON/OFF OPERATION.

The handle operation and ON/OFF indicator are the same irrespective of the breaker mounting direction, being vertical or horizontal. This also applies to the panel cut-out.

Double insulation structure

Provides an even higher degree of safety.

Panel lock mechanism

The panel door cannot be opened when the handle is in the ON or OFF position. The panel door can only be opened in the RESET position.

•Equipped with a lock (reverse interlock) mechanism which does not permit the breaker to be closed while the panel door is opened. The lock can be released.

•When the panel lock release is turned counterclockwise the panel door can be opened even when the handle is in the ON or OFF position.

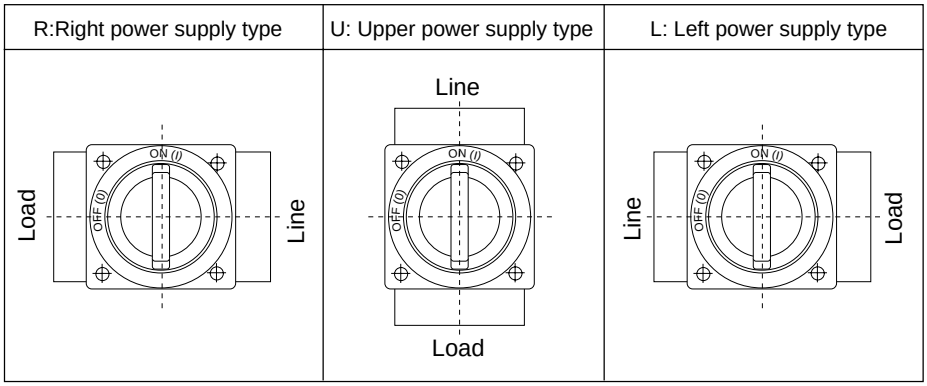
Handle Lock Mechanism

The handle can be locked in the ON or OFF position. Upto 3 padlocks can be fitted (padlock not supplied).

Ordering code

Please specify the correct type code when ordering (refer to Figure 3).

Figure 3



TFJXX – U

Mounting Direction	
U	Upper power supply
L	Left hand power supply
R	Right hand power supply

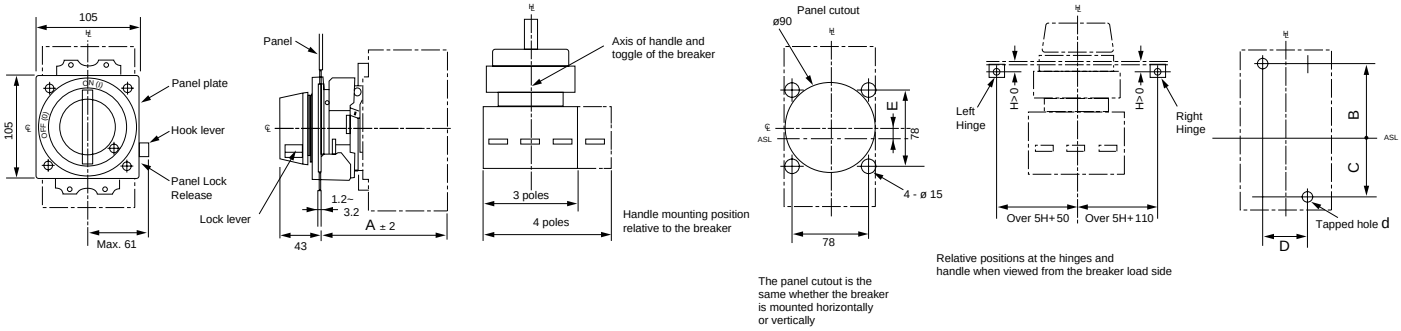
Additional Options

Please specify at the time of ordering

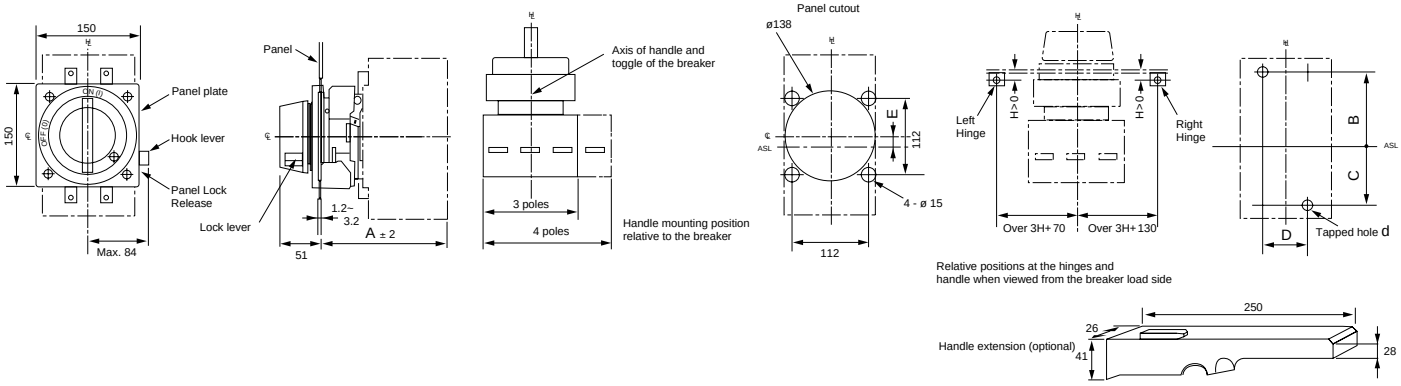
	Standard	Option
Colour	Black	Yellow base Red handle
IP	3X	55

Outline dimensions (mm)

TYPE TFJ-2



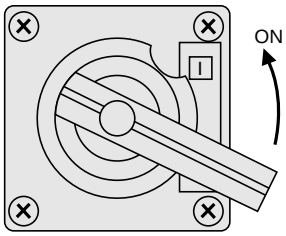
TYPE TFJ-3



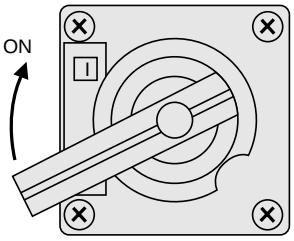
Dimensions table (mm)

Frame (A)	Breaker	No. of poles	Op. handle	A	B	C	D	d	E
50	XS50NB	3	TFJ21B	106	55.5	55.5	25	M4	0
100/125	XE100NS	3	TFJ21XH	106	55.5	55.5	25	M4	0
	XS125CJ	3,4	TFJ22X	124	66	66	30	M4	0
	XS125NJ								
	XH125NJ								
160/225/250	XE225NS	3	TFJ23XS	130	63	63	35	M4	0
	XS160NJ	3,4							
	XS250NJ								
	XH160NJ	3,4	TFJ23XH	147					
	XS250PJ								
	XH250NJ								
	XH250PE		TFJ34X	157	107	107	45	M6	0
400	XE400NS	3	TFJ34X	157	107	107	45	M6	0
	XS400CJ	3,4							
	XS400NJ								
	XS400CE								
	XS400NE								
	XH400NE								
600/630	XE600NS	3	TFJ36X	168	126	117	70	M8	+4.5
	XS630CJ	3,4							
	XS630NJ								
	XS630CE								
	XS630NE								
	XH630NE								
800	XS800NJ	3,4	TFJ36X	168	126	117	70	M8	+4.5
	XS800NE								
	XH800NE								
1250	XS1250NE	3,4	TFJ38X	197	184	154	70	Ø9	+15
1600	XS1600NE	3,4	TFJ38X	217	184	154	70	Ø9	+15

This consists of an operating mechanism mounted on the breaker, an operating handle mounted on the panel door and a square shaft to connect the mechanism with the handle.



Anti-clockwise 'ON'



Clockwise 'ON'

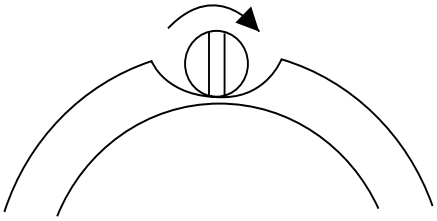
Operating direction of handle
There are two types: Anti-clockwise for ' ON' and clockwise for ' ON' . They are distinguished by their type designation.

Panel lock
The external operating handle keeps the panel door locked when in the ' ON' position. There are two types, RESET, Open and OFF, Open.

Reset, Open (Standard type)
The handle is turned to the ' RESET/OPEN COVER' position to open the panel door.

OFF, Open
The handle is turned to the OFF position to open the panel door.

Panel lock release knob
The release knob enables the panel door to be opened with the handle in the ' ON' position. To release: turn the release knob in the direction of the arrow (marked) with a flat-bladed screwdriver.



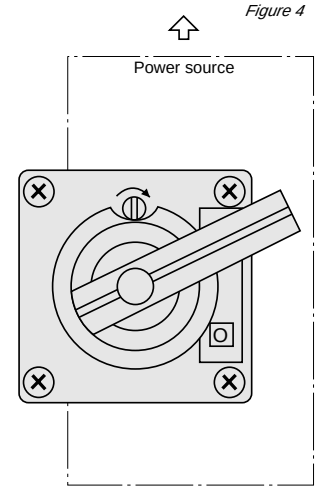
Panel lock release knob

Handle lock (Variations of use)
The operating handle can be padlocked in the ' ON' or ' OFF' position. The operating mechanism mounted on the breaker can be padlocked (not supplied) in the ' ON' or ' OFF' position.

Handle switch (optional)
A microswitch (contact 1C) may be fitted onto the operating mechanism for ON-OFF status indication and electrical interlocking purposes.

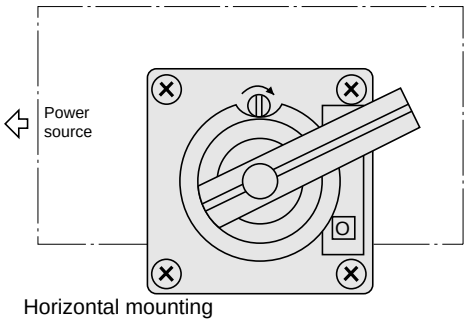
Mounting direction of breaker
The breaker mounting directions are allowed with this type of handle (OHH), as follows:
(1) Vertical with the ' ON' position up. (normal) (refer to figure 4).
(2) Horizontal with the ' ON' position left hand side (Refer to Figure 5).
(3) Horizontal with the ' ON' position right hand side (Refer to Figure 6).
Note: Relative positioning of the breaker and the handle (OHH) differs from one mounting direction to another (Refer to Figures 4,5 and 6).

Figure 4



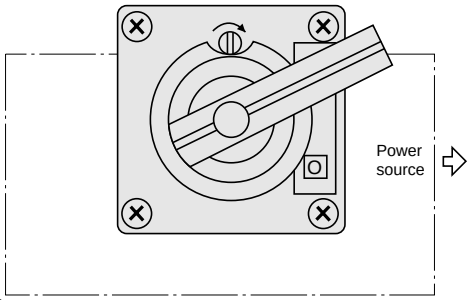
Vertical mounting ('ON' position up)

Figure 5



Horizontal mounting
('ON' position left hand side)

Figure 6



Horizontal mounting
('ON' position right hand side)

Position labels (two types) ON and OFF or I and O

Square shaft standard dimensions (refer to Table 2). Shafts can be cut to required length. Refer to page 62 for cutting procedure, and Tables 3 and 4 for dimensions.

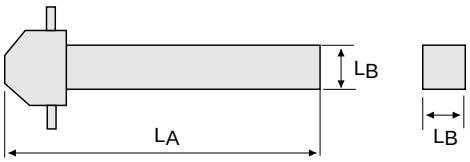


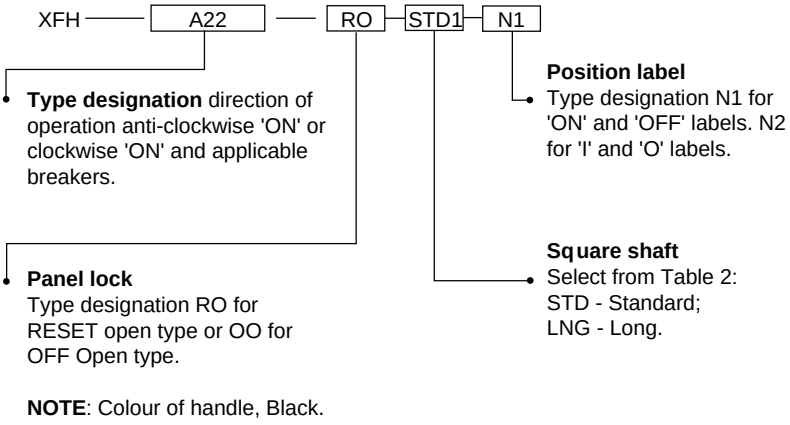
Table 2

Shaft type	LA (mm)	LB (mm)	Frame (A)
STD1	327	8	50-250
LNG1	427		
STD2	304.5	15.8	400-1600
LNG2	404.5		

Handle Operating Mechanism, Panel Mounted, Variable Depth Type (OHH)

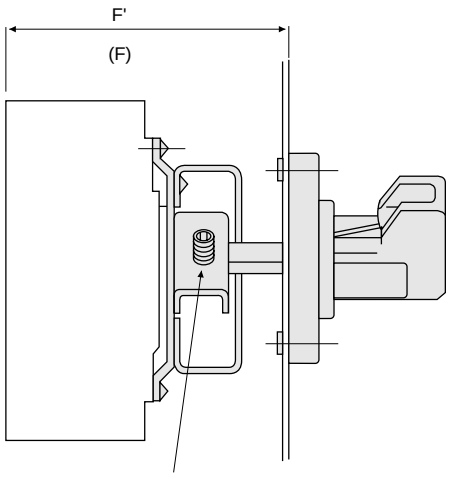
Shaft selection and cutting procedures
Measure the length (F) between the front cover surface and mounting face of the breaker (Refer to Figure 7). Compare this length to the dimension table (Refer to Tables 3 and 4. Applicable Shaft ' F').
If the shaft measured is not of a standard length ' F' , then cut the shaft to the required length (Refer to Figure 8).
Apply rust inhibitor to the exposed end (aluminium bronze paint or similar).

Note: Please specify the correct catalogue code when ordering, as follows:



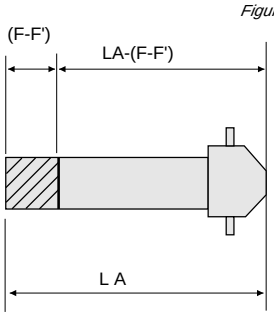
NOTE: Colour of handle, Black.

Figure 7

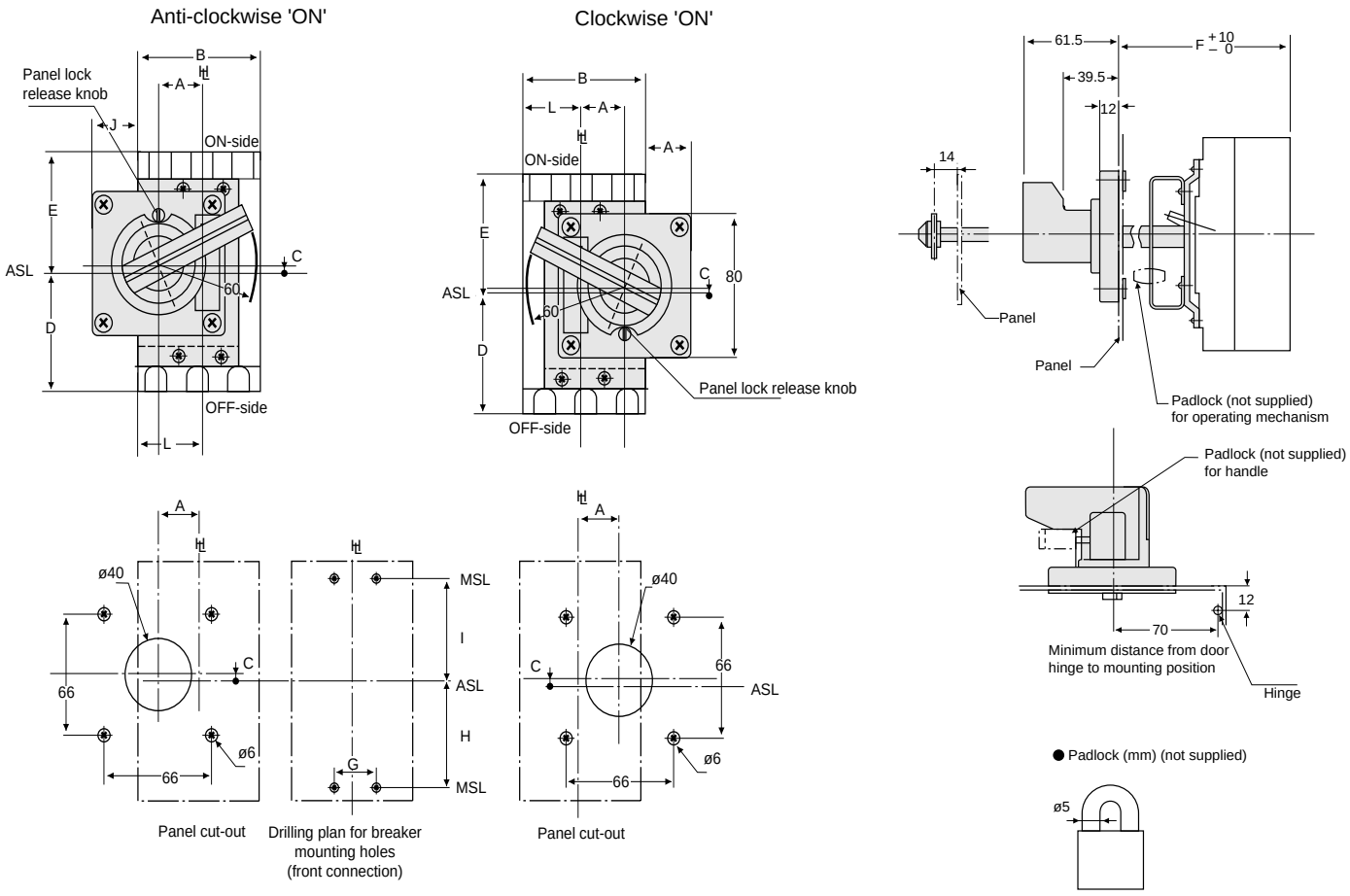


Square shaft fixing screw
For types 1 and 2 size M5
For types 3 and 4 size M6

Figure 8



Outline dimensions (mm)

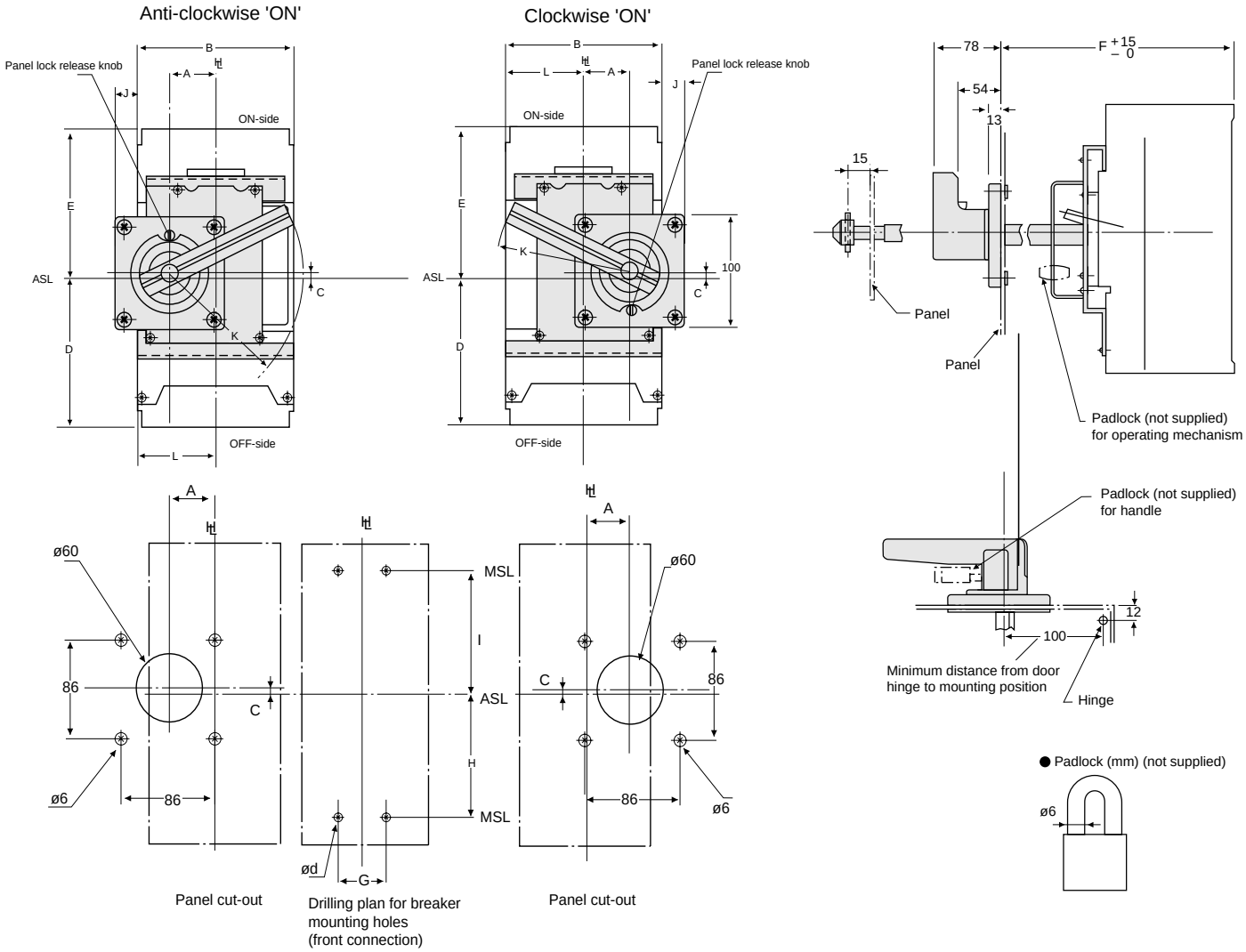


Dimensions table (mm)

Table 3

Frame (A)	Breaker	No. of poles	Anti-clockwise ON	Clockwise ON	A	B	C	D	E	F Applicable shaft STD1	F Applicable shaft LNG1	G	H	I	J	L
50	XS50NB	3	XFHA1	XFHC1	25	75	4	65	65	373	473	25	55.5	55.5	27.75	37.5
100/125	XE100NS	3	XFHA1	XFHC1	25	75	4	65	65	373	473	25	55.5	55.5	27.75	37.5
	XS125CJ	3	XFHA22	XFHC22	30	90	4	77.5	77.5	373	473	30	66	66	25	45
	XS125NJ	4				120										
	XH125NJ															
160/225250	XE225NS	3	XFHA23S	XFHC23S	30	105	0	82.5	82.5	390	490	35	63	63	17.5	52.5
	XS160NJ	4				140										
	XS250NJ															
	XS250PJ	3	XFHA23H	XFHC23H	30	105	0	82.5	82.5	407	507	35	63	63	17.5	52.5
	XH160NJ	4				140										
	XH250NJ															

Outline dimensions (mm)

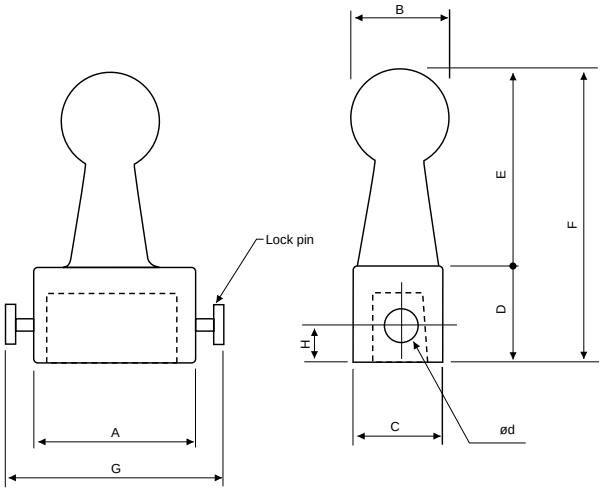


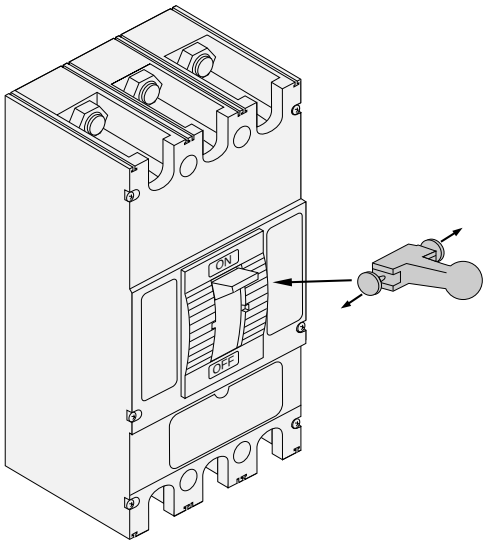
Dimensions table (mm)

Table 4

rame (A)	Breaker	No. of poles	Anti-clockwise ON	Clockwise ON	A	B	C	D	E	F Applicable shaft STD2	F Applicable shaft LNG2	G	H	I	J	K	L	d
250	XH250PE	3	XFHA34	XFHC34	42	140	4	130	130	382.5	482.5	45	107	107	22	100	70	M6
		4				185												
400	XE400NS	3	XFHA34	XFHC34	42	140	4	130	130	382.5	482.5	45	107	107	22	100	70	M6
	XS400CJ	3				140												
	XS400NJ	4				185												
	XS400CE																	
	XS400NE																	
	XH400NE																	
600	XE600NS	3	XFHA46	XFHC46	55	210	4.5	132	141	384	484	70	117	126	0	140	105	M8
	XS630CJ	3				210												
	XS630NJ	4				280												
	XS630CE																	
	XS630NE																	
	XH630NE																	
800	XS800NJ	3	XFHA46	XFHC46	55	210	4.5	132	141	384	484	70	117	126	0	140	105	M8
	XS800NE	4				280												
	XH800PS																	
	XH800NE																	
1250	XS1250NE	3	XFHA49	XFHC49	55	210	8.5	170	200	415	515	70	154	184	0	140	105	M8
		4				280												
1600	XS1600NE	3	XFHA49	XFHC49	55	210	8.5	170	200	435	535	70	154	184	0	140	105	M8
		4				280												

Outline dimensions (mm)





Handle Mounting and Removal
Pull lock pins out left and right in the direction of the arrows, and slot the extension handle in to place.

CAUTION! The lock pins are spring loaded.
Removal - Pull out left and right hand lock pins and hold while removing.

Dimensions table (mm)

Frame (A)	Breaker	Type	A	B	C	D	E	F	G	H	ø d
600/630	XE600NS XS630CJ XS630CE XS630NE XH630NE	XHA9	60	40	26	37	71	108	78	10.5	10
800	XS800NJ XS800NE, XH800PS XH800NE										
1250	XS1250NE										
1600	XS1600NE										
*2000	XS2000NE	XHA10	79	46	40	48	88	136	115	17	16
*2500	XS2500NE										

Note: *Handle is supplied as standard with each breaker. (Optional with all other breakers)

Handle holder (HH)

Position the handle holder (Refer to Figure 9) onto the breaker handle. This retains the handle in the position required (ON or OFF) and also informs other would-be operators to leave the breaker in the position indicated.

Handle lock (HL)

The Handle lock (Refer to Figures 10 and 11) enables the breaker to be padlocked (not supplied) in either the ‘ ON’ or ‘ OFF’ position.

Handle holder and handle lock types

Frame (A)	Breaker	Handle holder	Figure No.	Handle lock	Figure No.
50	XS50NB	TKB-1DH	9	*	10
100/125	XE100NS	TKB-1DH	9	*	10
	XS125CS, XS125NS	–	–	XKC2	11 (l = 36)
	XS125CJ, XS125NJ, XH125NJ	XKC2	11 (l = 36)	XKC2	11 (l = 36)
160/225/250	XE225NS, XS160NJ, XS250NJ XS250PJ, XH160NJ, XH250NJ	XKC3	11 (l = 39)	XKC3	11 (l = 36)
	XH250PE	XKC4	11 (l = 58)	XKC4B	11 (l = 58)
400	XE400NS, XS400CJ, XS400NJ XS400CE, XS400NE, XH400NE	XKC4	11 (l = 58)	XKC4B	11 (l = 58)
600/630	XE600NS, XS630CJ , XS630NJ XS630CE, XS630NE, XH630NE	XKC-6	11 (l = 76)	XKC6	11 (l = 76)
800	XS800NJ, XS800NE , XH800PS XH800NE	XKC6	11 (l = 76)	XKC6	11 (l = 76)
1250	XS1250NE	XKC9	11 (l = 86)	XKC9	11 (l = 86)
1600	XS1600NE	XKC9	11 (l = 86)	XKC9	11 (l = 86)
2000	XS2000NE	XKC10	11 (l = 94)	XKC10	11 (l = 94)
2500	XS2500NE	XKC10	11 (l = 94)	XKC10	11 (l = 94)

Note: *Specify handle lock (HL) at the time of ordering the breaker

Figure 9

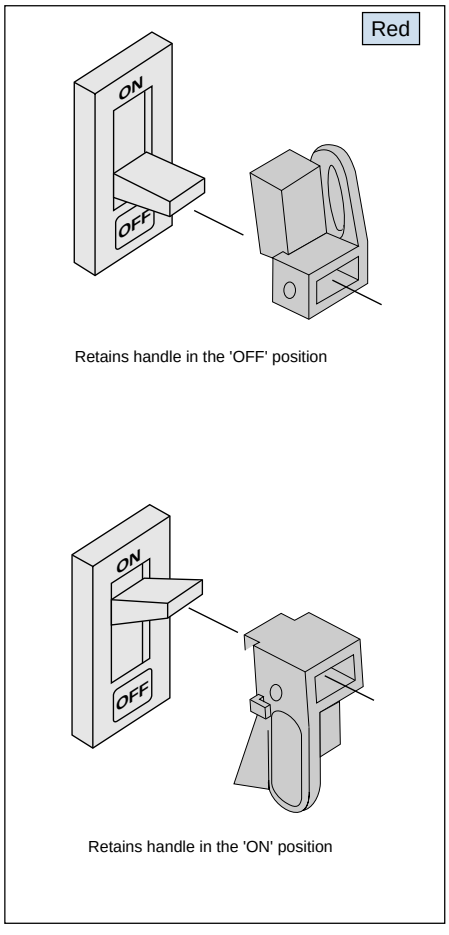


Figure 10

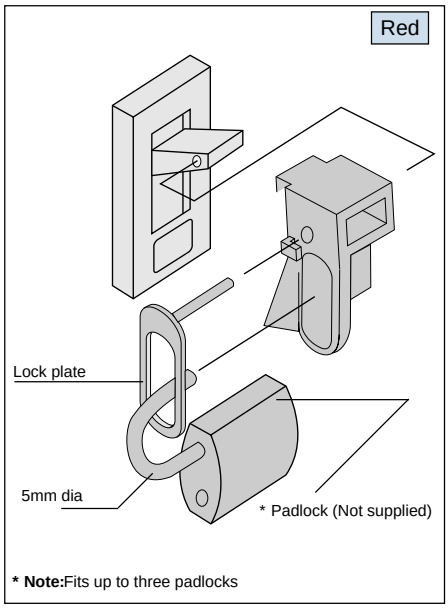
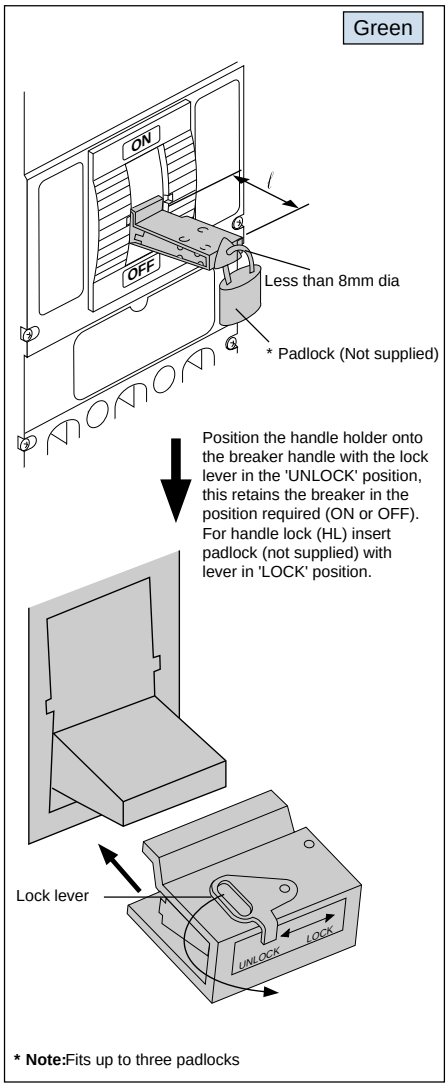


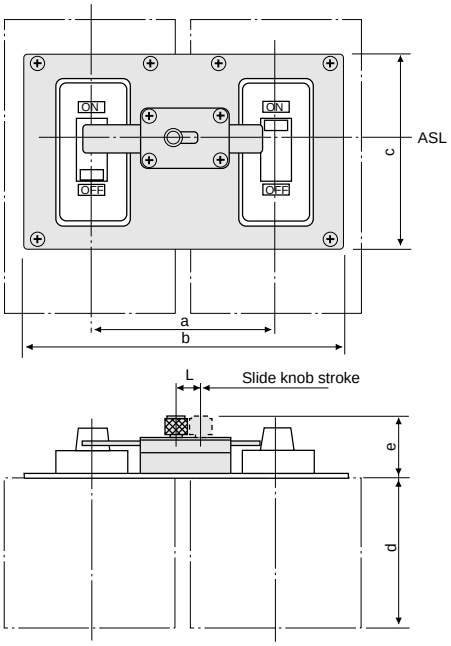
Figure 11



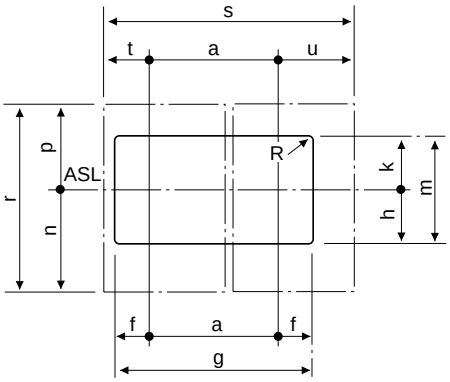
Front Mechanical Interlock (MIF)

Outline dimensions (mm)

ASL: Arrangement Standard Line



Panel cut-out



Note: Not applicable to front connection/ attached flat bar type breakers of 160,225,250 and 400A frame sizes

Dimensions table (mm)

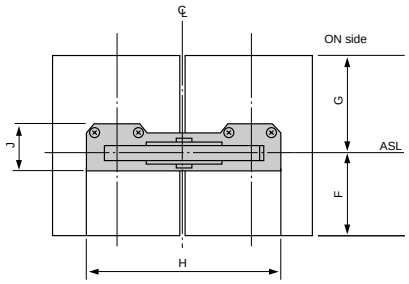
Frame (A)	Breaker	Pole	a	b	c	d	e	f	g	h	k	m	n	p	r	s	t	u	L	R
50	XS50NB	3	100	150	102	68	31.6	26.5	153	52.5	52.5	105	65	65	130	175	37.5	37.5	15	8.5
100/125	XE100NS	3	100	150	102	68	31.6	26.5	153	52.5	52.5	105	65	65	130	175	37.5	37.5	15	8.5
	XS125CJ XS125NJ	3	100	150	122	86	31.6	26.5	153	62.5	62.5	125	77.5	77.5	155	190	45	45	15	8.5
	XH125NJ	4	130	180	122	86	31.6	26.5	183	62.5	62.5	125	77.5	77.5	155	250	45	75	15	8.5
160/225/250	XE225NS	3	115	180	108.5	86	31.6	34	183	51.5	60	111.5	82.5	82.5	165	220	52.5	52.5	15	8.5
	XS160NJ XS250NJ XS250PJ XH160NJ XH250NJ	4	150	215	108.5	86 103 103 103	31.6	34	218	51.5	60	111.5	82.5	82.5	165	290	52.5	87.5	15	8.5
	XH250PE	3	150	280	124	103	31.6	66.5	283	57.5	69.5	127	130	130	260	290	70	70	15	8.5
		4	195	325	124	103	31.6	66.5	328	57.5	69.5	127	130	130	260	380	70	115	15	8.5
400	XE400NS	3	150	280	124	103	31.6	66.5	283	57.5	69.5	127	130	130	260	290	70	70	15	8.5
	XS400CJ XS400NJ XS400CE XS400NE XH400NE	4	195	325	124	103	31.6	66.5	328	57.5	69.5	127	130	130	260	380	70	115	15	8.5
600/630	XE600NS	3	220	350	136	103	31.6	66.5	353	57.5	81.5	139	132	141	273	430	105	105	30	8.5
	XS630CJ XS630NJ XS630CE XS630NE XH630NE	4	290	420	136	103	31.6	66.5	423	57.5	81.5	139	132	141	273	570	105	175	30	8.5
800	XS800NJ	3	220	350	136	103	31.6	66.5	353	57.5	81.5	139	132	141	273	430	105	105	30	8.5
	XS800NE XH800PS XH800NE	4	290	420	136	103	31.6	66.5	423	57.5	81.5	139	132	141	273	570	105	175	30	
1250	XS1250NE	3	220	340	129	120	39.6	61.5	343	58	74	132	170	200	370	430	105	105	30	8.5
		4	290	410	129	120	39.6	61.5	413	58	74	132	170	200	370	570	105	175	30	8.5
1600	XS1600NE	3	220	340	129	140	39.6	61.5	343	58	74	132	170	200	370	430	105	105	30	8.5
		4	290	410	129	140	39.6	61.5	413	58	74	132	170	200	370	570	105	175	30	8.5
2000	XS2000NE	3	330	–	–	185	40	59.5	449	72	72	144	193	257	450	650	160	160	25	10
		4	440	–	–	185	40	59.5	559	72	72	144	193	257	450	869	160	269	25	10
2500	XS2500NE	3	330	–	–	185	40	59.5	449	72	72	144	193	257	450	650	160	160	25	10
		4	440	–	–	185	40	59.5	559	72	72	144	193	257	450	869	160	269	25	10

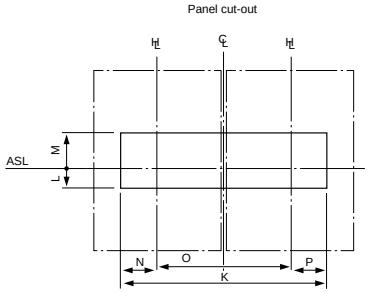
Key Interlock

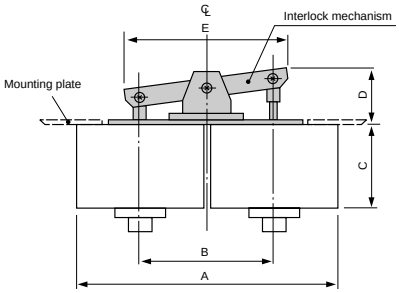
Remotely located MCCBs, or those at different frame sizes, can be interlocked using the Castell key exchange system. MCCBs of 125AF to 2500AF can be supplied fitted with Castell locks, including those with OHH handles (pages 61-64) and certain motor operators. Please contact Terasaki for details.

Rear Mechanical Interlock (MIB)
Outline dimensions (mm)

ASL: Arrangement Standard Line
℄ :Handle Frame Centre Line







Note: Not applicable for front connected type with terminal bars of 160, 225, 250, and 400A frame sizes. Contact Terasaki for details.

Dimensions table (mm)

Frame (A)	Breaker	Pole	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
50	XS50NB	3	155	80	68	34	92	65	65	155	55	165	40	25	42.5	80	42.5
100/125	XE100NS	3	155	80	68	34	92	65	65	155	55	165	40	25	42.5	80	42.5
	XS125CJ XS125NJ	3	185	95	86	35	107	77.5	77.5	160	43	170	33	20	28	95	47
	XH125NJ	4	245	125	86	35	137	77.5	77.5	190	43	200	33	20	28	125	47
160/225/250	XE225NS	3	220	115	86	45	130	82.5	82.5	190	44	200	19.5	34.5	30	115	40
	XS160NJ XS250NJ	4	290	150	86	45	165	82.5	82.5	225	44	220	19.5	34.5	30	150	40
	XS250PJ				103												
	XH160NJ				103												
	XH250NJ				103												
	XH250PE	3	285	145	103	58	161	130	130	220	72	250	21	41	52.5	145	52.5
		4	375	190	103	58	206	130	130	265	72	295	21	41	52.5	190	52.5
400	XE400NS	3	285	145	103	58	161	130	130	220	72	250	21	41	52.5	145	52.5
	XS400CJ XS400NJ XS400CE XS400NE XH400NE	4	375	190	103	58	206	130	130	265	72	295	21	41	52.5	190	52.5
600/630	XE600NS	3	430	220	103	74	250	132	141	430	83	440	41	52	110	220	110
	XS630CJ XS630NJ XS630CE XS630NE XH630NE	4	570	290	103	74	320	132	141	500	83	510	41	52	110	290	110
800	XS800NJ	3	430	220	103	74	250	132	141	430	83	440	41	52	110	220	110
	XS800NE XH800PS XH800NE	4	570	290	103	74	320	132	141	500	83	510	41	52	110	290	110
1250	XS1250NE	3	*														
		4	*														
1600	XS1600NE	3	*														
		4	*														
2000	XS2000NE	3	*														
		4	*														
2500	XS2500NE	3	*														
		4	*														

Note: *Contact Terasaki for details.

Wire Mechanical Interlock (MIW)

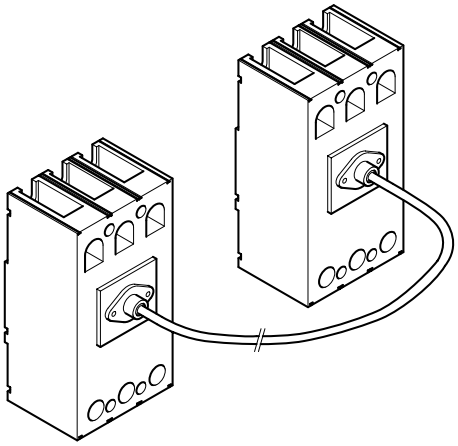
Wire mechanical interlocking is a practical solution for breakers mounted in seperate cubicle compartments, or of different frame sizes. The system can be applied to breakers positioned at any angle relative to each other, provided the installation limits are observed.

Combination tables for wire mechanical interlock

	XLW4	XLW6	XLW8	XLW9	XLW10
XLW4	•	•	–	–	–
XLW6	•	•	•	•	–
XLW8	–	•	•	•	–
XLW9	–	•	•	•	•
XLW10	–	–	–	•	•

Note: • 'Yes' or available.
– 'No' or not available.

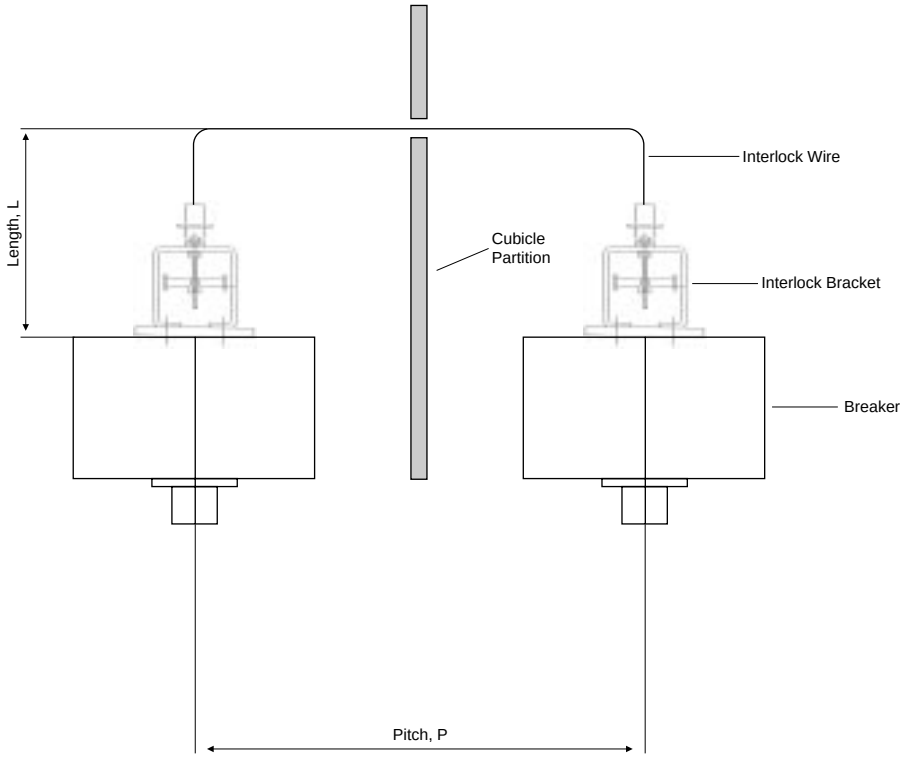
XLW4	XLW6	XLW8	XLW9	XLW10
XE400NS	XE600NS	XS1250NN	XS1600NN	XS2000NN
XS400NN	XS630CJ	XS1250NE	XS1600NE	XS2000NE
XS400CJ	XS630NJ			XS2500NN
XS400NJ	XS630NN			XS2500NE
XS400NE	XS630CE			
XH250PE	XS630NE			
XH400NE	XH630NE			
	XS800NJ			
	XS800NN			
	XS800NE			
	XH800PS			
	XH800NE			



Installation of wire mechanical interlock

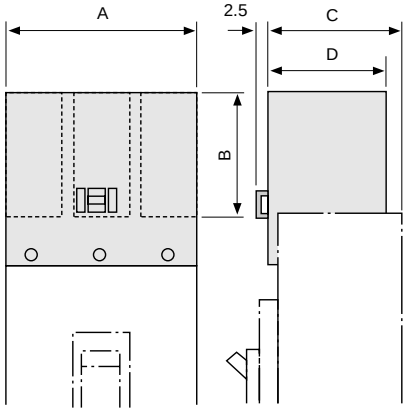
Wire Length (m)	Mounting Pitch, P (mm)	Hole Position Length, L (mm)	Wire Support Method
1.5	1000 ↓ 900 ↓ 750 ↓	550 ↓ 600 ↓ 700 ↓	Support 2 points at equal intervals
1.0	650 ↓ 500 ↓ 350 ↓ * (1) * (2)	450 ↓ 500 ↓ 530 ↓	Support at the centre

* (1): minimum of 60mm + cubicle partition thickness
* (2): minimum of arc base distance if vertical.
↓: intermediate dimensions are acceptable.



Front-connection application (TCF)

Note: The terminal cover protects breaker terminals and other live parts from exposure. Terminal covers available for front or rear connection and plug-in types.
Adapts to breaker type and use application.

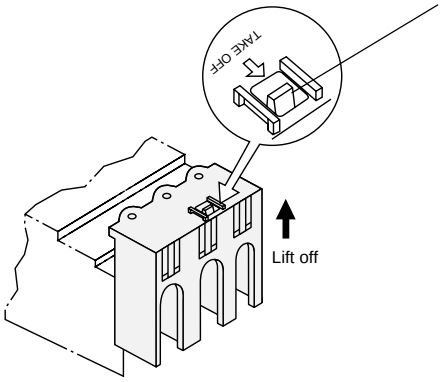


Snap-on Cover
XPR Type. To remove: press lever in direction of ' TAKE OFF' position (Refer to Figure 24).

Screw-on Cover (Refer to Figure 13)
Screw directly onto insert nuts in breaker cover.
Note: Insert nuts are not provided as standard on breaker cover. Please specify if terminal cover (TCF) is to be used when ordering the breaker.

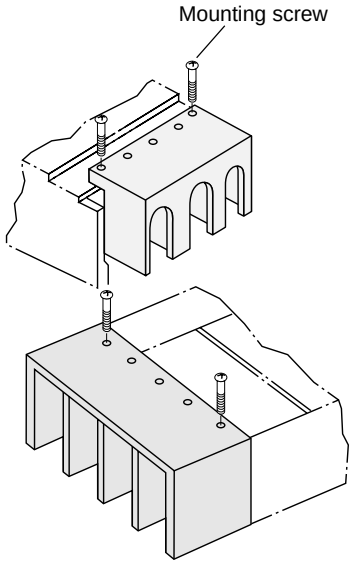
Figure 12

Lever detail



(Option for IP20 protection)

Figure 13



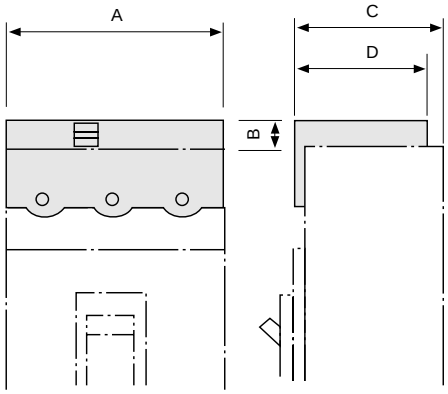
Fitting instructions (Option for IP20 protection). Figure 12
1: Cut holes in the pole covers to suit the size of the cable.(An elongated hole is recommended)
2: Before cable crimps are fitted,attach the pole covers to the cables.
3: Attach the cables to the MCCB terminals.
4: Attach the terminal cover to the MCCB. Ensure that the pole covers slide into the pole cover slots as the terminal cover is fitted.

Dimensions table (mm)

Frame (A)	Breaker	Type	Pole	A	B	C	D	Snap-on	Screw-on	Figure No.
50	XS50NB	XPR0	2	49	25	63	54	•	–	24
			3	74						
100/125	XE100NS	XPR1	3	49	25	63	54	•	–	24
			4	74						
	XS125CS, XS125NS	XPR2H	1	30	40	79	78	•	–	–
	XS125CJ	XPR2H	3	89	40	79	78	•	–	24
	XS125NJ, XH125NJ		4	124	70	79.4		–	M2.6	24
160/225/250	XE225NS, XS160NJ	XPR3S	3	104	40	81	80	•	–	24
	XS250NJ		4	144	70	81.4		–	M2.6	24
	XS250PJ, XH160NJ	XPR3H	3	104	40	98	97	•	–	24
	XH250NJ		4	144	70	98.4		–	M2.6	24
	XH250PE	TPR-4BA	3	140 *180	110	99	96	–	M3	25
			4	185 *240						
400	XE400NS, XS400CJ	TPR-4BA	3	140 *180	110	99	96	–	M3	25
	XS400NJ	TPR-4BS	3	140 *180						
	XS400CE		4	185 *240						
	XS400NE, XH400NE									
600/630	XE600NS, XS630CJ	TPR-5BA	3	215	130	99.5 ('ON' side)	99	–	M3	25
	XS630NJ, XS630CE		4	285		102.5 ('OFF' side)				
	XS630NE, XH630NE									
800	XS800NJ, XH800PS	TPR-5BA	3	215	130	99.5 ('ON' side)	99	–	M3	25
	XS800NE, XH800NE		4	285		102.5 ('OFF' side)				
1250	XS1250NE	TPR-5BA	3	215	130	115	99	–	M3	25
			4	285						

Note: • Yes or Available. – No or Not available
Note: * Breakers fitted with attached bars require the larger type terminal covers

Rear-connection and Plug-in Application (TCR)



Snap-on cover
(Refer to Figure 14)
To fit; ' snap-on' the cover on to the breaker.
To remove, press lever to 'TAKE OFF' position and lift off.

Screw-on cover (Refer to Figure 15)
Screw directly onto insert nuts in breaker cover.
Note: Insert nuts are not provided as standard on breaker cover. Please specify if terminal cover (TCR) is to be used when ordering breaker.

Figure 14

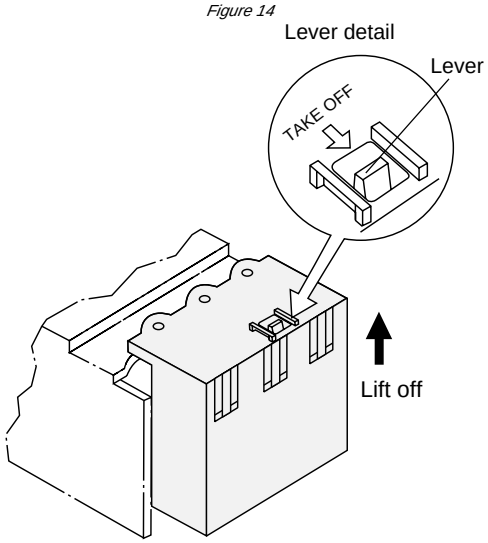
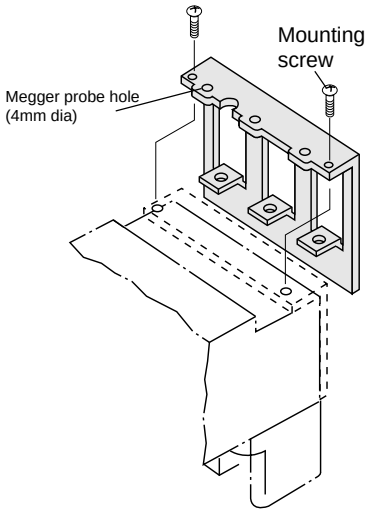


Figure 15

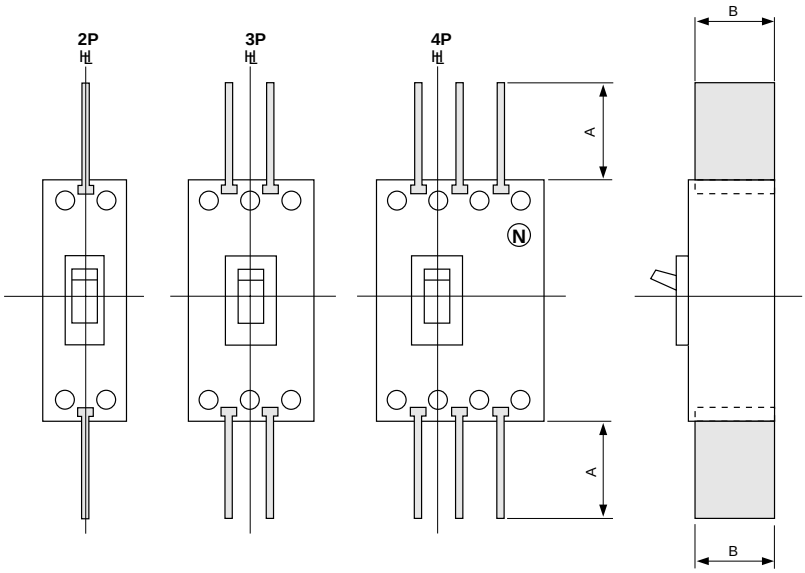


Dimensions table (mm)

Frame (A)	Breaker	Type	Pole	A	B	C	D	Snap-on cover	Screw-on	Figure No.
50	XS50NB	XPS1	2	49	10	55	54	•	–	26
			3	74		63				
100/125	XE100CS	XPS1	2	49	10	55	54	•	–	26
	XE100NS		3	74		63				
	XS125CJ, XS125NJ	XPS2H	3	89	2	61.4	60.4	•	M2.6	27
	XH125NJ		4	119						
160/225/250	XE225NS, XS160NJ	XPS3S	3	104	3	81.5	80.5	•	M2.6	27
			4	139						
	XS250PJ, XH160NJ	XPS3H	3	104	3	78.5	97.5	–	M3	
	XH250PE	XPS4	3	140	3	99	98	–	M3	27
			4	185						
400	XE400NS, XS400CJ	XPS4	3	140	3	99	98	–	M3	27
	XS400NJ, XS400CE		4	185						
	XS400NE XH400NE									
600/630	XE600NS, XS630CJ	XPS6	3	210	3	102 ('ON' side)	93	–	M3	27
	XS630NJ, XS630CE		4	280		102 ('OFF' side)				
	XS630NE, XH630NE									
800	XS800NJ, XH800PS	XPS6	3	210	3	102 ('ON' side)	93	–	M3	27
	XS800NE, XH800NE		4	280		102 ('OFF' side)				

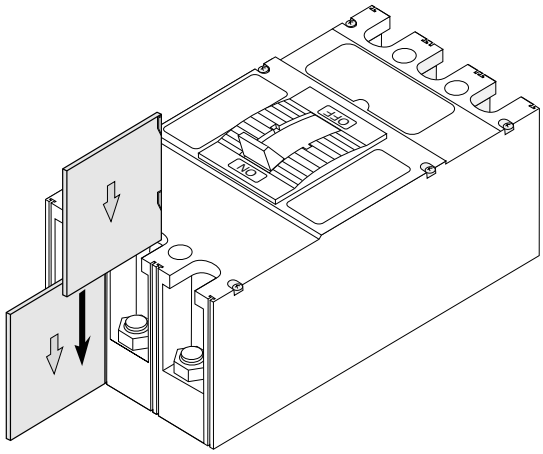
Note: • ' Yes' or 'Available. –' No' or Not available

Interpole Barrier (TBA)



Colour: Black

Interpole barriers are inserted into the grooves between terminals (as shown).



Dimensions table (mm)

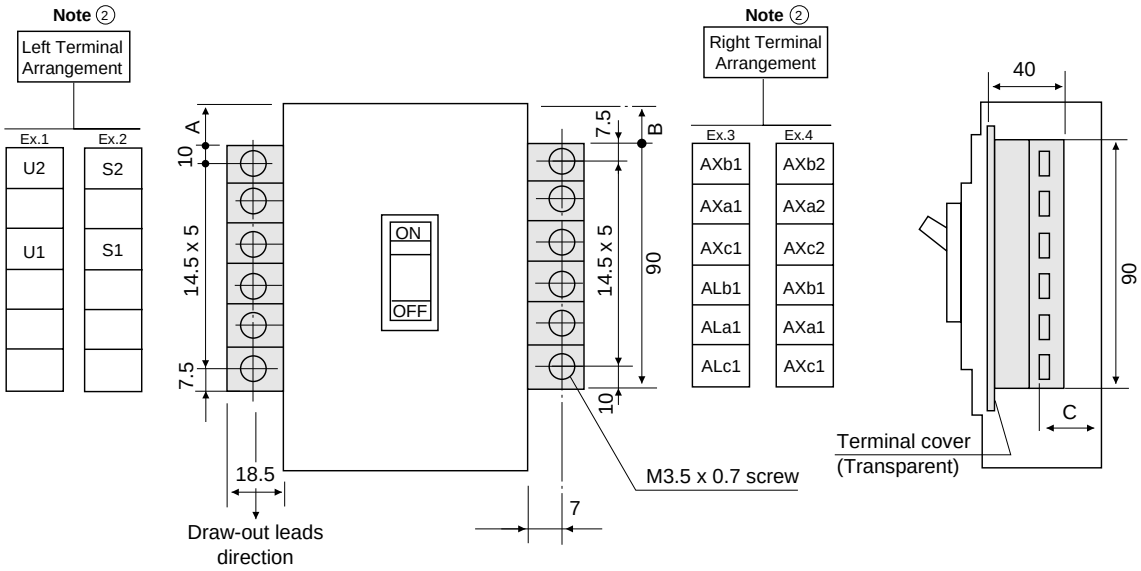
Frame (A)	Breaker	Type	A	B
50	XS50NB	TQQ-2CC	36	50
100/125	XE100NS	TQQ-2CC	36	50
	*XS125CJ *XS125NJ *XH125NJ	XQQ2	67	77
160/125/250	*XE225NC *XS160NJ *XS250NJ	XQQ2	67	77
	*XS250PJ *XH160NJ *XH250NJ	TQQ-3GB	67	96
	*XH250PE	TQQ-5BA	110	95
400	*XE400NS *XS400CJ *XS400NJ *XS400CE *XS400NE *XH400NE	TQQ-5BA	110	95
600/630	XE600NS XS630CJ XS630NJ XS630CE XS630NE XH630NE	TQQ-5BA	110	95
800	XS800NJ XS800NE XH800PS XH800NE	TQQ-5BA	110	95
1250	XS1250NE	TQQ-5BA	110	95
1600	XS1600NE	TQQ-5BA	110	95

Note: *Line side interpole barriers are supplied as standard, as follows: 1 for 2-pole, 2 for 3-pole and 3 for 4-pole breakers.

Leads for internally mounted accessories are connected to the terminal block. Each terminal block incorporates six terminals. Terminal arrangement assemblies (Refer to Figure 29) are standard. Please contact Terasaki if terminal arrangement assemblies other than standard are required.

LTS

Mounting position/standard terminal arrangements.



Dimensions table (mm)

Frame (A)	Breaker	A	B	C
50	XS50NB ① ②	16.5	16.5	36
100/125	XS125CS XS125NJ XH125NJ	32.5	32.5	53
	XE100NS ①	16.5	16.5	36
160/225/250	XE225NS ① XS160NJ XS250NJ	42	42	43
	XS250PJ XH160NJ XH250NJ	42	42	60

Note ① Lead terminal block can not be fitted with motor operator.

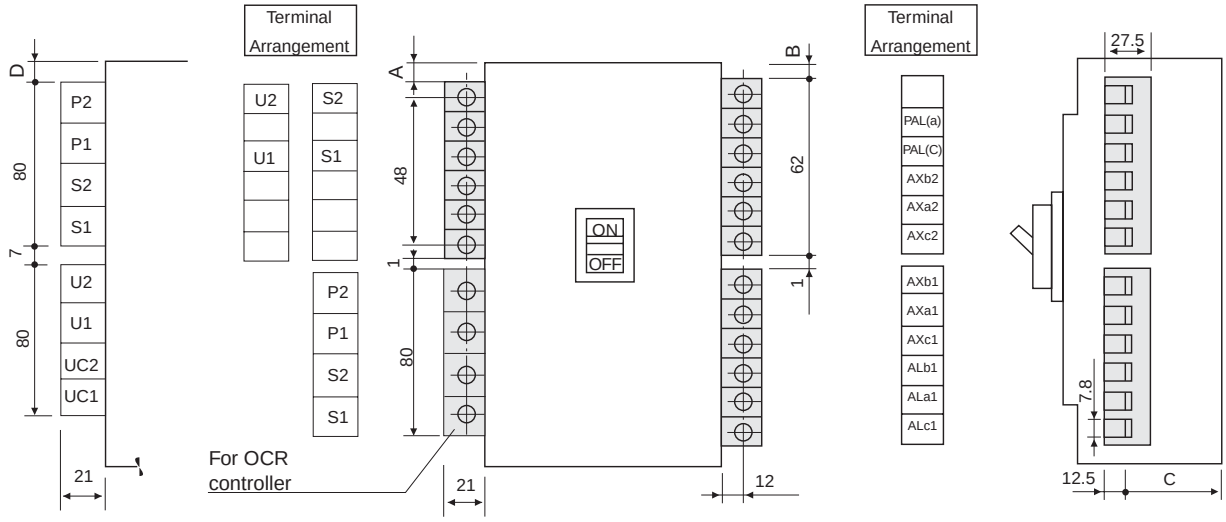
Note ② For XS50NB 3P and 4P, Lead terminal block is mounted on the right hand side, so that the draw-out leads go in the upper direction.

Remark 1) Standard Torque for the terminal screws M3.5 - 0.88~1.18 Nm { 9~12Kgf.cm}

Remark 2) Connected cable size - Max. 1.25mm^2

Mounting position/standard terminal arrangements.

When used, jointly, with a UVT controller and OCR controller



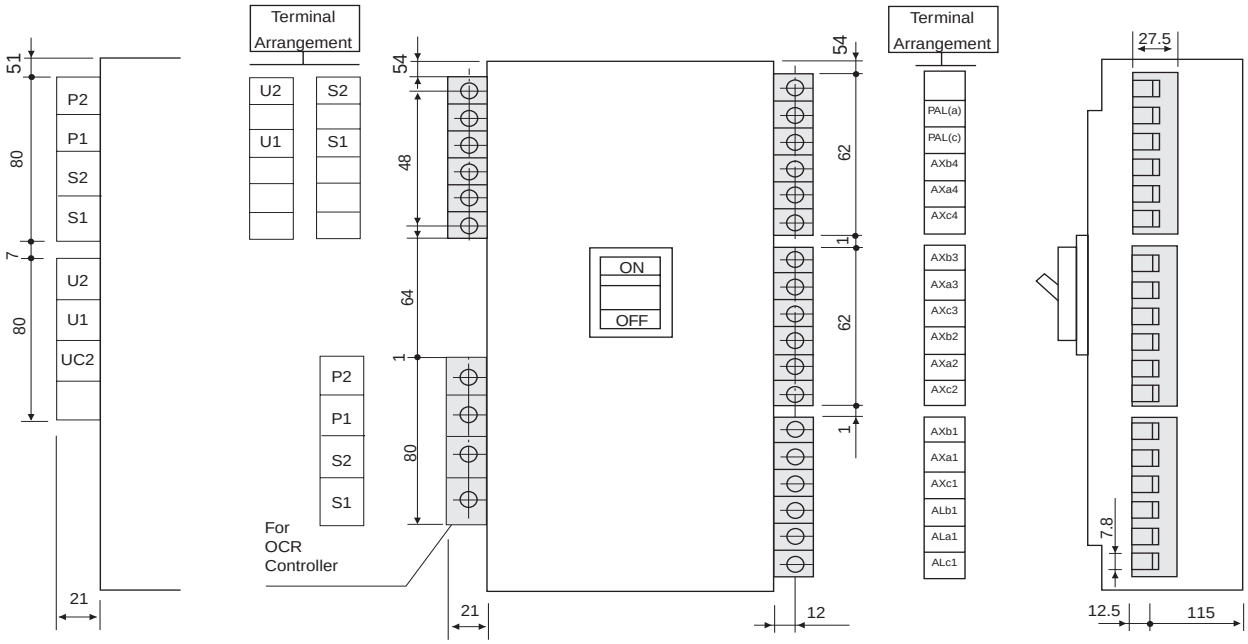
Dimensions table (mm)

Frame (A)	Breaker	A	B	C	D
250	XH250PE	34	34	48	34
400	XE400NS XS400CJ XS400NJ XS400CE XS400NE XH400NE	34	34	48	34
600	XE600NS XS630CJ XS630NJ XS630CE XS630NE XH630NE	88	88	60	64
800	XS800NJ XS800NE XH800PS XH800NE	88	88	60	64
1250	XS1250NE	51	51	72	51
1600	XS1600NE	51	51	92	51

LTF

Mounting position/standard terminal arrangements (2000 to 2500A Frame sizes).

When used, jointly, with a UVT controller and OCR controller



There are five types of panel door cut-out dimensions

Figure 16

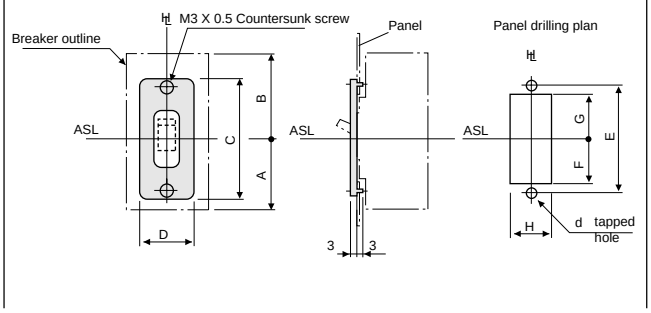
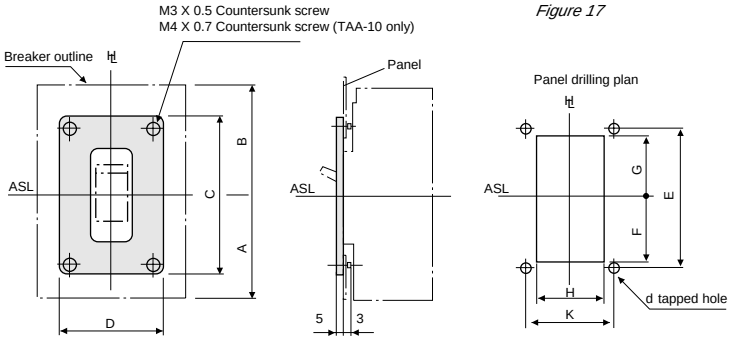


Figure 17

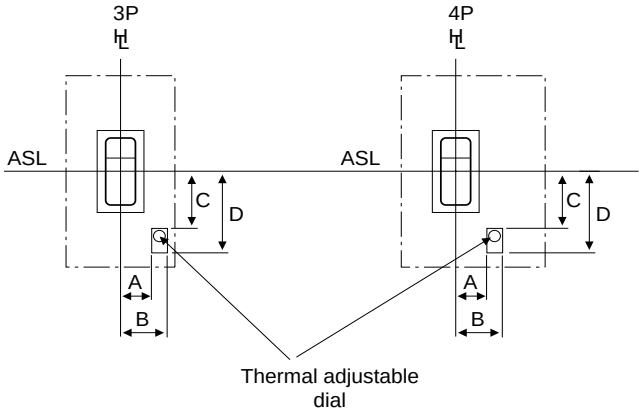


Dimensions table (mm)

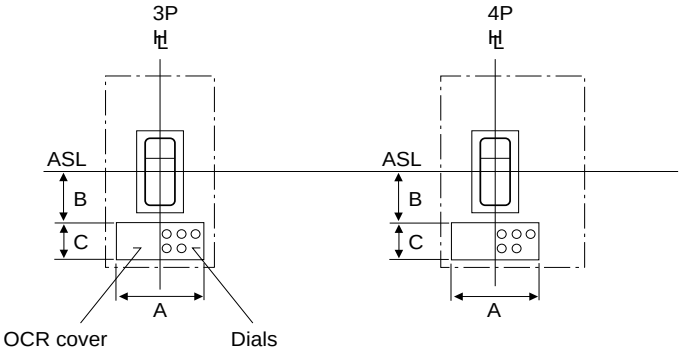
Frame (A)	Breaker	Type	A	B	C	D	E	F		G		H		K	d	Figure
								Min	Max	Min	Max	Min	Max			
50	XS50NB	XAA-1	65	65	105	50	92	37	42	37	42	32	45	–	M3x0.5	16
100/125	XE100NS	XAA-1	65	65	105	50	92	37	42	37	42	32	45	–	M3x0.5	16
	XS125CJ	XAA-1	77.5	77.5	105	50	92	37	42	37	42	32	45	–	M3x0.5	16
	XS125NJ															
	XH125NJ															
160/225/250	XE225NS	TAA-3CA	85	75	105	50	92	37	42	37	42	32	45	–	M3x0.5	16
	XS160NJ															
	XS250NJ															
	XS250PJ															
	XH160NJ															
	XH250NJ															
	XH250PE	TAA-4	130	130	135	95	120	48	56	48	56	70	90	80	M3x0.5	17
400	XE400NS	TAA-4	130	130	135	95	120	48	56	48	56	70	90	80	M3x0.5	17
	XS400CJ															
	XS400NJ															
	XS400CE															
	XS400NE															
	XH400NE															
600/630	XE600NS	TAA-4	132	141	135	95	120	48	56	48	56	70	90	80	M3x0.5	17
	XS630CJ															
	XS630NJ															
	XS630CE															
	XS630NE															
	XH630NE															
800	XS800NJ	TAA-4	132	141	135	95	120	48	56	48	56	70	90	80	M3x0.5	17
	XS800NE															
	XH800PS															
	XH800NE															
1250	XS1250NE	TAA-5	170	200	150	120	135	51	63.5	51	63.5	85	115	80	M3x0.5	17
1600	XS1600NE	TAA-5	170	200	150	120	135	51	63.5	51	63.5	85	115	80	M3x0.5	17
2000	XS2000NE	TAA-10	193	257	200	175	175	74	83.5	74	83.5	123	170	150	M4x0.7	17
2500	XS2500NE	TAA-10	193	257	200	175	175	74	83.5	74	83.5	123	170	150	M4x0.7	17

Outline dimensions (mm)

Adjustable thermal type



Electronic and Adjustable thermal-magnetic type

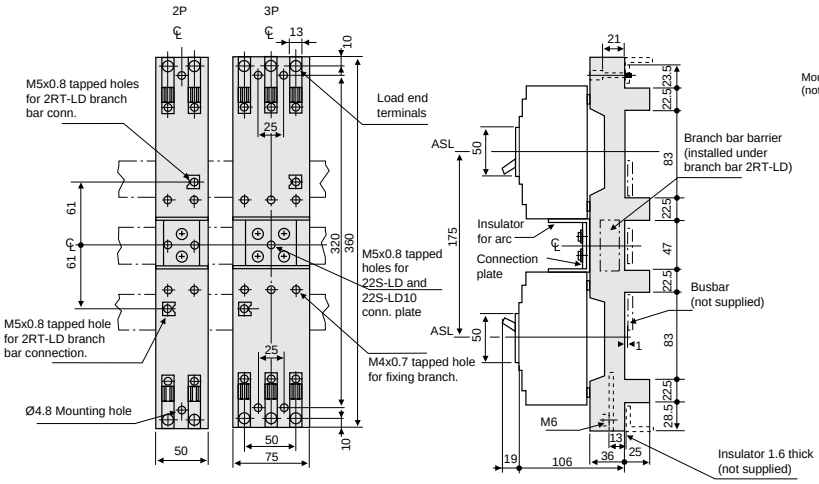


Dimension table (mm)

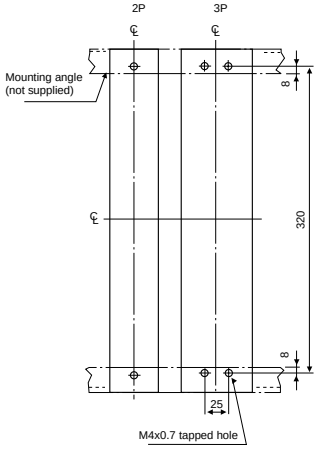
Frame size (A)	MCCB type	Poles	Dimensions			
			A	B	C	D
125	XS125CJ XS125NJ XH125NJ	3,4	25	43	23.5	50.5
160	XS160NJ XH160NJ	3,4	18	50	20.5	48.5
250	XS250PJ XS250NJ XH250NJ	3,4	18	50	20.5	48.5
	XH250PE	3,4	140	56	40	–
400	XE400NS XS400CJ XS400NJ XS400CE XS400NE XH400NE	3,4	140	56	40	–
600/630	XE600NS	3	210	57	48.5	–
	XS630CJ XS630NJ XS630CE XS630NE XH630NE	3,4	210	57	48.5	–
800	XS800NJ XS800NE XH800PS XH800NE	3,4	210	57	48.5	–
1250	XS1250NE	3,4	210	57.5	58	–
1600	XS1600NE	3,4	210	57.5	58	–
2000	XS2000NE	3,4	140	98.5	58	–
2500	XS2500NE	3,4	140	98.5	58	–

Outline Dimensions (mm) — XE100NS, XS50NB

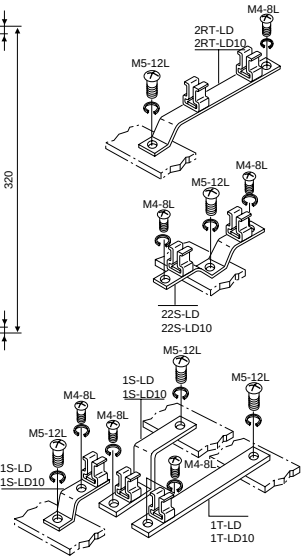
Double mounting block



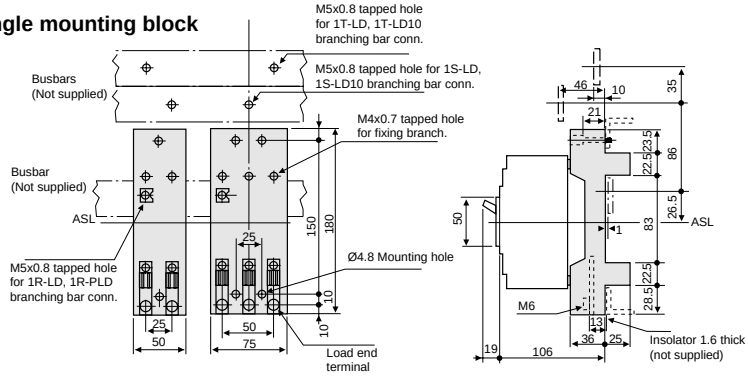
Mounting dimensions



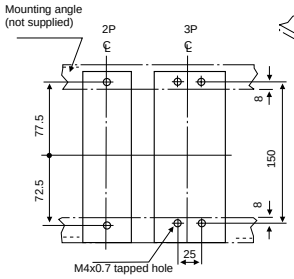
Branching bar



Single mounting block



Mounting dimensions

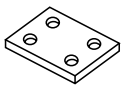


Components / Parts to be purchased

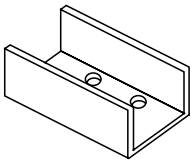
	Components / Parts to be purchased	Type	* Quantity	Remarks; 1) Screws supplied. 2) With load side terminals.
Double mounting block	Mounting block	XDA-ID	2	M4-30L-4 pcs (For fixing)
	Branching bar	2RT-LD	2	M5-12L-12 pcs (Busbar connection) M4-8L-2 pcs (Fixing on mounting block) 10~50A
		2RT-LD10	2	M5-12L-2 pcs (Busbar connection) M4-8L-2 pcs (Fixing on mounting block) 60~100A
		22S-LD	1	M5-12L-1 pc (Busbar connection) M4-8L-2 pcs (Fixing on mounting block) 10~50A
		22S-LD10	2	M5-12L-1 pc (Busbar connection) M4-8L-2 pcs (Fixing on mounting block) 60~100A
	Connection plate		1	M4-35L-4 pcs
	Insulator for arc		1	
	Branching bar barrier	BBBD	2	
Single mounting block	Mounting block	XDA-IS	1	M4-30L-4 pcs (For fixing)
	Branching bar	1R-LD	1	M5-12L-3 pcs (Busbar connection) M4-8L-3 pcs (Fixing on mounting block) 10~50A
	Connection plate	1R-LD	1	
		1S-LD	1	
		1T-LD	1	
		1R-LD10	1	M5-12L-3 pcs (Busbar connection) M4-8L-3 pcs (Fixing on mounting block) 60~100A
		1S-LD10	1	
		1T-LD10	1	

Note: *The number required to form either single or double mounting blocks

Connecting Plate



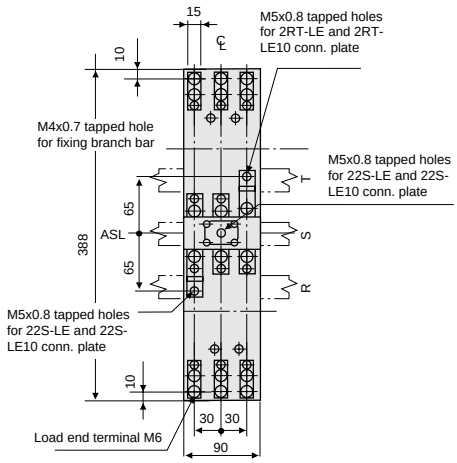
Insulator for Arc

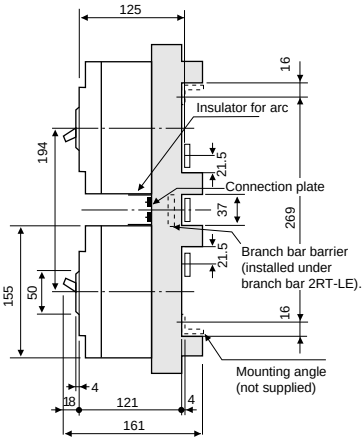


Branching Bar Barrier

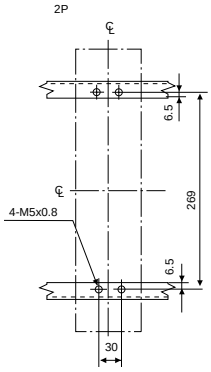
Outline Dimensions (mm) — XS125NJ, XS125CJ, XH125NJ

Double mounting block

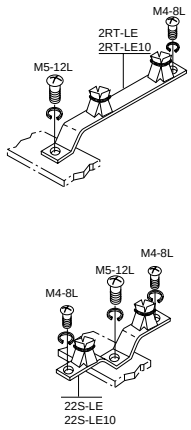




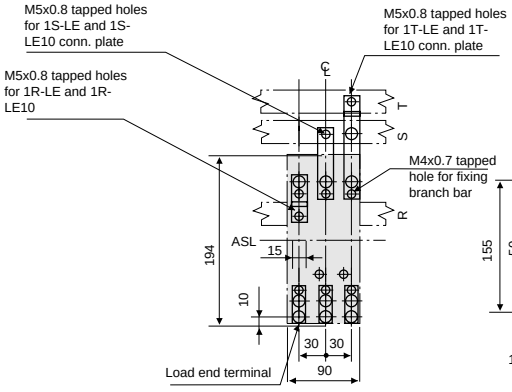
Mounting dimensions

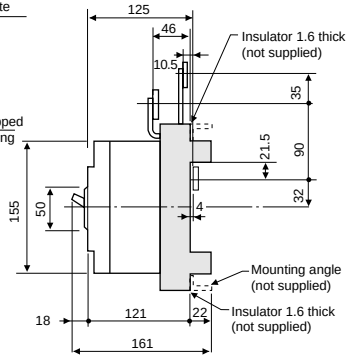


Branching Bar

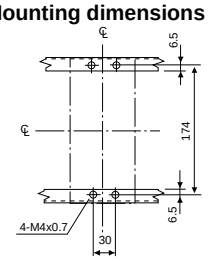


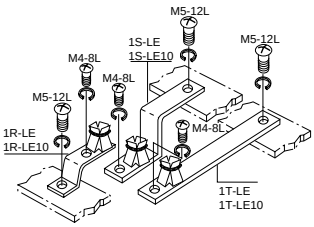
Single mounting block



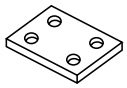


Mounting dimensions

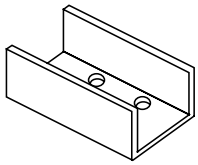




Connecting Plate



Insulator for Arc



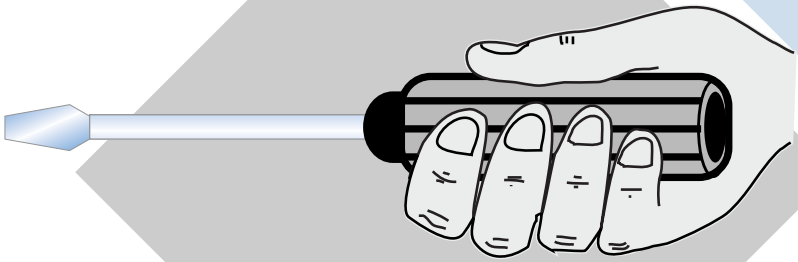
Branching Bar Barrier

Components / Parts to be purchased

	Components / Parts to be purchased	Type	* Quantity	Remarks; 1) Screws supplied. 2) With load side terminals.
Double mounting block	Mounting block	XDA-2D	2	M5-25L-4 pcs (For fixing)
	Branching bar	2RT-LE	2	M5-12L-2 pcs (Busbar connection)
				M4-8L-4 pcs (Fixing on mounting block) up to 50A
		22S-LE	1	M5-12L-1 pc (Busbar connection)
				M4-8L-2 pcs (Fixing on mounting block) up to 50A
		2RT-LE10	2	M5-12L-2 pcs (Busbar connection)
				M4-8L-4 pcs (Fixing on mounting block) 60~100A
		22S-LE10	1	M5-12L-1 pc (Busbar connection)
				M4-8L-1 pcs (Fixing on mounting block) 60~100A
	Connection plate		1	M4-30L-4 pcs
	Insulator for arc		1	
	Branching bar barrier	BBBE	2	
Single mounting block	Mounting block	XDA-2S	1	M5-25L-2 pcs (For fixing)
	Branching bar	1R-LE	1	M5-12L-1pc (Busbar connection)
				M4-8L-1 pcs (Fixing on mounting block) up to 50A
	Connection plate	1R-LE	1	
		1S-LE	1	
		1T-LE	1	
		1R-LE10	1	M5-12L-1 pc (Busbar connection)
				M4-8L-1 pc (Fixing on mounting block) 60~100A
		1S-LE10	1	
		1T-LE10	1	

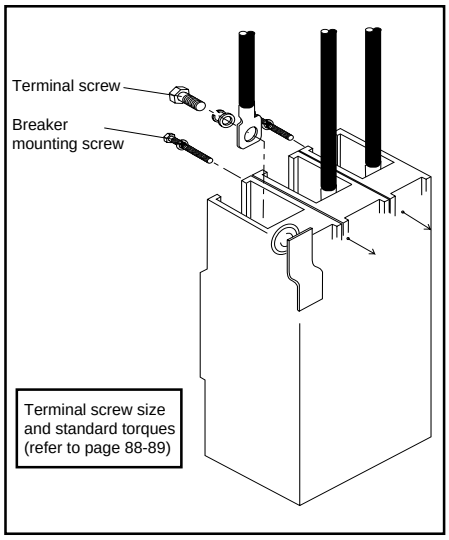
Note: *The number required to form either single or double mounting blocks for 3-pole construction
Note: Specify 2-pole or 3-pole

Connections and Mountings

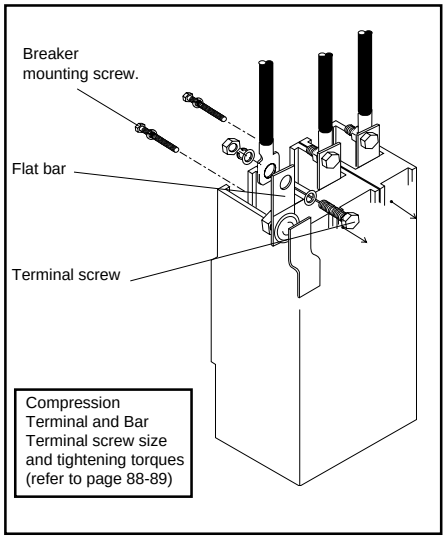


Front connected type (FC)

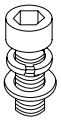
Compression terminals



Attached flat bar (BAR)

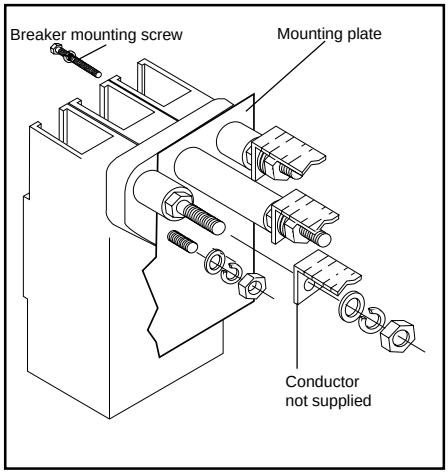


- **Types of terminal screws (Compression terminal and bar)**

Screw type	Breaker and Screw size					
	XE Series	Screw Ø	XS Series	Screw Ø	XH Series	Screw Ø
Self up screw 	XE100NS (10-50A)	M5	XS50NB	M5		
Pan head screw 	XE100NS (60-100A)	M8	XS125CJ XS125NJ XS125CS XS125NS	M8 M8 M8 M8	XH125NJ	M8
Hex. soc. head bolt 	XE225NS XE400NS	M8 M10	XS160NJ XS250NJ XS250PJ XS400CJ XS400NJ XS400CE XS400NE	M8 M8 M8 M10 M10 M10 M10	XH160NJ XH250NJ XH250PE XH400NE	M8 M8 M10 M10

Rear connected type (RC)

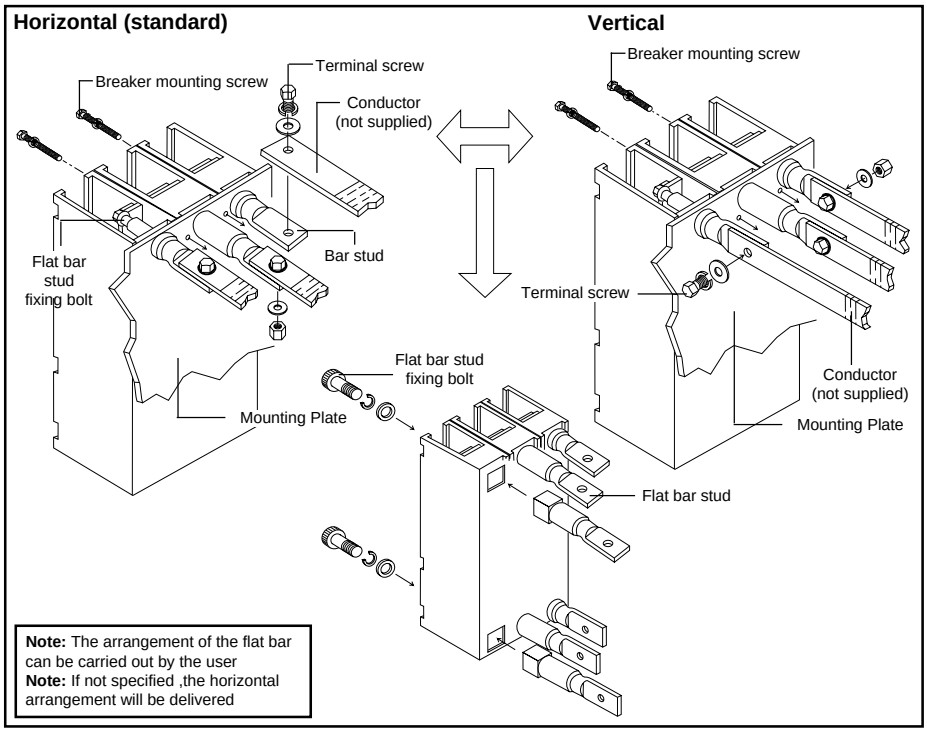
Bolt stud (REB)



Applicable breakers

- **XE Series**
  XE100NS
- **XS Series**
  XS50NB
  XS125CJ, XS125NJ
- **XH Series**
  XH125NJ

Flat bar stud (90° rotation) (REF)

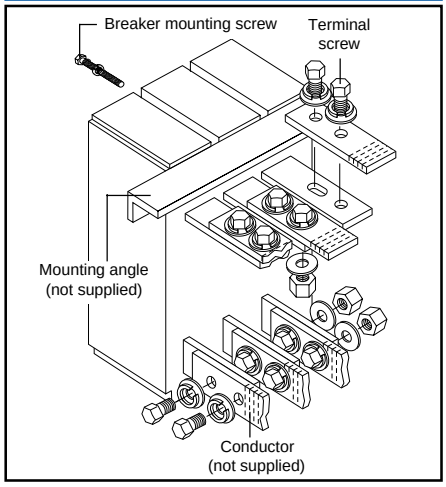


Note: The arrangement of the flat bar can be carried out by the user
Note: If not specified ,the horizontal arrangement will be delivered

Applicable breakers

- **XE Series**
  XE225NS, XE400NS, XE600NS
- **XS Series**
  XS160NJ, XS250PJ, XS250NJ, XS400CJ, XS400NJ, XS400CE, XS400NE, XS630CJ, XS630NJ, XS630CE, XS630NE, XS800NJ
- **XS Series (cont.)**
  XS800NE
- **XH Series**
  XH160NJ, XH250NJ, XH250PE, XH400NE, XH630NE, XH800PS,XH800NE

Flat bar stud (REF)



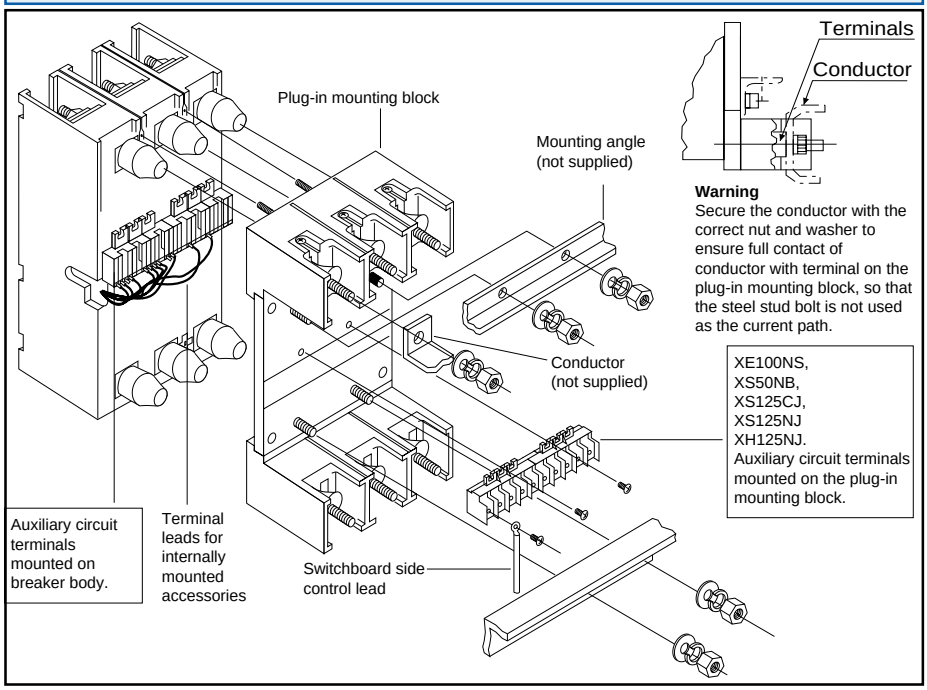
Applicable breakers

Horizontal: * XS1250NE
Vertical : XS1600NE, XS2000NE, XS2500NE

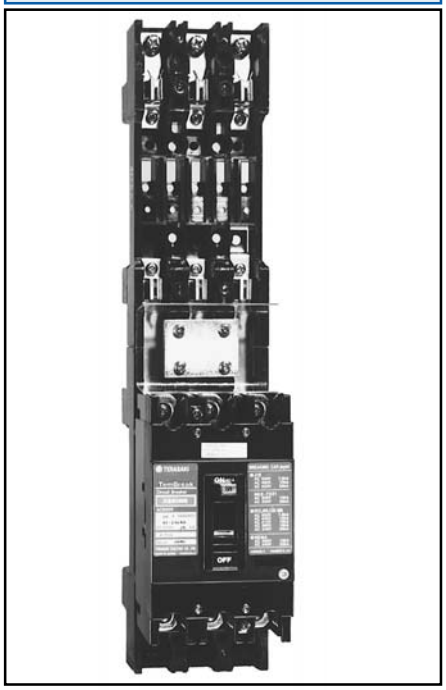
Note: *Vertical arrangements also available on request, contact Terasaki for details.

Plug-in type

Switchboard use



Distribution board use



Types of plug-in mounting blocks (PMB), for switchboard use

Series	Breaker	Pole	Type
XE	XE100NS	2,3	XDM1
XS	XS50NB	2,3	XDM1
	XS125CJ	3,4	XMD2
	XS125NJ		
	XS160NJ	3,4	XDM3
	XS250PJ	3,4	XDM4
	XS400CJ		
	XS400NJ		
	XS400CE		
	XS400NE		
	XS630CJ	3,4	XDM6
	XS630NJ		
	XS630CE		
	XS630NE		
	XS800NJ		
	XS800NE		
	XS1250NE	3,4	XDM8

Series	Breaker	Pole	Type
XH	XH125NJ	3,4	XDM2
	XH160NJ	3,4	XDM3
	XH250NJ		
	XH400NE	3,4	XDM4
	XH630NE	3,4	XDM6
	XH800NE		
	XH800PS,		

(Distribution board use)

Series	Breaker	Pole	Type
XE	XE100NS	2,3	XDA1
XS	XS50NB	2,3	XDA1
	XS125CJ	3,4	XDA2
	XS125NJ		
XH	XH125NJ	3	XDA2

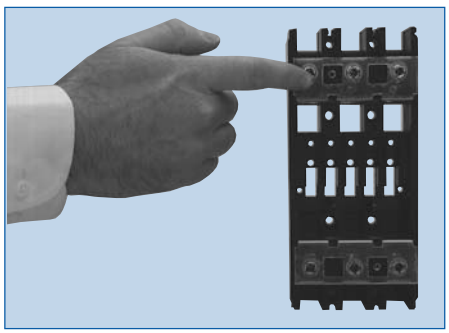
Note: Plug-in mounting block for distribution board (Refer to Section 5, Pages: 78-79)

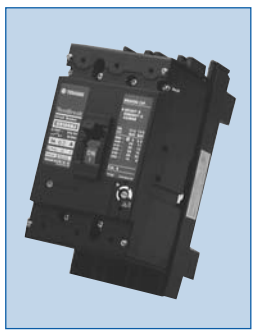
IP20 Protection (Optional)

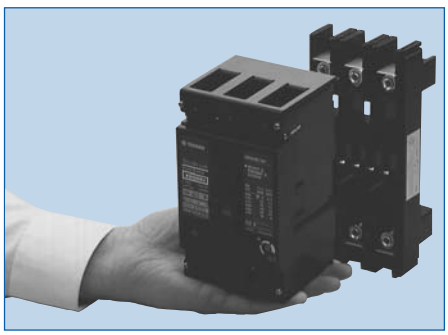
IP-20 degree of protection and safety trip are available for plug-in type breakers, for switchboard and distribution board use. IP-20 as defined in IEC Pub. 529.

Safety Trip (standard)

(Trip first, plug-in mechanism)
The breaker will trip automatically, if it is withdrawn while still in the ‘ ON’ position. It is not possible to “plug-in” the breaker when it is in the ‘ ON’ position.
Note: This is applicable to the XS and XH series of breakers of 125 Amp frame and larger.

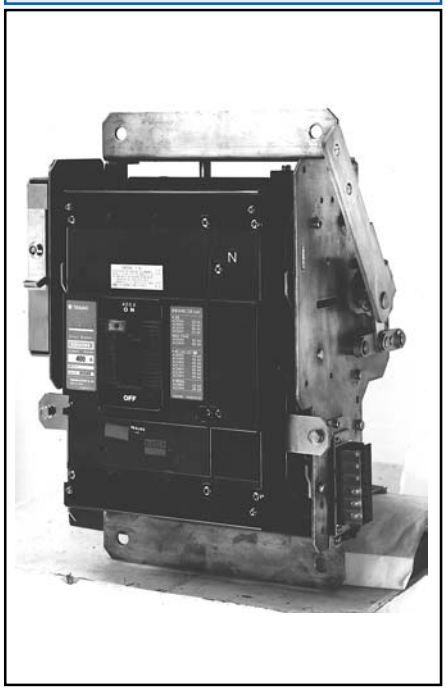






Draw-out type (DO)

Two-position type



Applicable breakers

- **XS Series**
  XS250PJ, XS400CJ, XS400NJ, XS400CE XS400NE, XS630CJ, XS630NJ, XS630CE, XS630NE, XS800NJ, XS800NE, XS1250NE.

- **XH Series**
  XH160NJ, XH250NJ, XH250PE, XH400NE, XH630NE, XH800PS, XH800NE.

- The plug-in type breaker is housed in the draw-out cradle.

- The draw out cradle has two positions “Connected” and “Isolated”.

- The auxiliary circuits are automatically connected or isolated by the auxiliary circuit terminals on the plug-in breaker. Manual connector type is available on request.When a motor operator is fitted, the circuits are manually connected (manual connector type).

- Safety Trip (first trip draw out mechanism). The breaker will trip automatically if it is drawn out while still in the “on” position.

- Position keylock in isolated position (optional) available on request.

- Position switch (1ab) in Connected position (optional) available on request.

- IP-20 degree of protection (Standard)

Three-position type

Applicable breakers

- **XS Series**
  XS1600NE, XS2000NE.

- The draw out cradle has three positions “Connected”, " Test" and “Isolated”.

- The auxiliary circuits are automatically connected and isolated by the disconnect contacts.
  The auxiliary circuits are as follows:
  Connected in “Connected” and “Test” positions and isolated in the “Isolated” position.

- Safety shutters are available (optional) which automatically cover the live parts on the cradle side in the isolated position.

- Safety trip (trip first, draw-out mechanism)
  The breaker will trip automatically if it is drawn out while still in the “ON” position.

Front connected type (without attached flat bar)

Frame (A)	Breaker	Nominal wire size (mm^2) 1.5	2.5	4	6	10	16	25	35	50	70	95	120	150
50	XS50NB	YAV14-M5 2-5 41005 A06-M5	YAV14-M5 2-5 41015 A06-M5	YAV10-M5 5.5-5 41025 A1-M5	YAV10-M5 5.5-5 41035 A1-M5	YAV8C-M5 8-L5/8-5 41065 A2-M5	YAV6C-M5 14-5/14-NK5 41085 A3-M5							
100/ 125	XE100NS (10-50A)	YAV14-M5 2-5 41005 A06-M5	YAV14-M5 2-5 41015 A06-M5	YAV10-M5 5.5-5 41025 A1-M5	YAV10-M5 5.5-5 41035 A1-M5	YAV8C-M5 8-L5/8-5 41065 A2-M5	YAV6C-M5 14-5/14-NK5 41085 A3-M5	YAV4C-M5 22-5 A5-M5	38-S5 A6-M6/15	A12-M6/15				
	XE100NS (60-100A)	YAV14-M8 2-8 41008 A06-8	YAV14-M8 2-8 A06-8	YAV10-M8 5.5-8 41028 A1-M8	YAV10-M8 5.5-8 41038 A1-M8	YAV8C-M8 8-8 41068 A2-M8	YAV6C-M8 14-8 41088 A3-M8	YAV4C-M8 22-8 41108 A5-M8	38-S8 41128	60-2BA 41138	60-2BA			
	XS125CJ XS125CS XS125NJ XS125NS XH125NJ	YAV14-M8 2-8 41008 A06-8	YAV14-M8 2-8 A06-8	YAV10-M8 5.5-8 41028 A1-M8	YAV10-M8 5.5-8 41038 A1-M8	YAV8C-M8 8-8 41068 A2-M8	YAV6C-M8 14-8 41088 A3-M8	YAV4C-M8 22-8 41108 A5-M8	YAV2C-M8 38-S8 41128 A7-M8	60-2BA 41138	60-2BA			
160/ 225/ 250	XS160NJ XE225NS XS250NJ XS250PJ XH160NJ XH250NJ								YAV2C-M8 38-S8 41128 A7-M8	YAV1C-M8 60-8 41138 A10-M8	41158 A14-M8	80-3BA A19-M8/19	100-3BA A24B- M8/19	A30B- M8/19
	XH250PE								YAV2C-M10	YAV1C-M10	YAV26-M10	YAV27-M10		
400	XE400NS XS400CJ XS400NJ XS400CE XS400NE XH400NE								38-10 41129 A7-M10	60-10 41139 A10-M10	70-10 41159 A14-M10	80-10 41179 A19-M10	41199 A24B- M10/19	41209 A30B- M10/19

*** (EXAMPLE)**

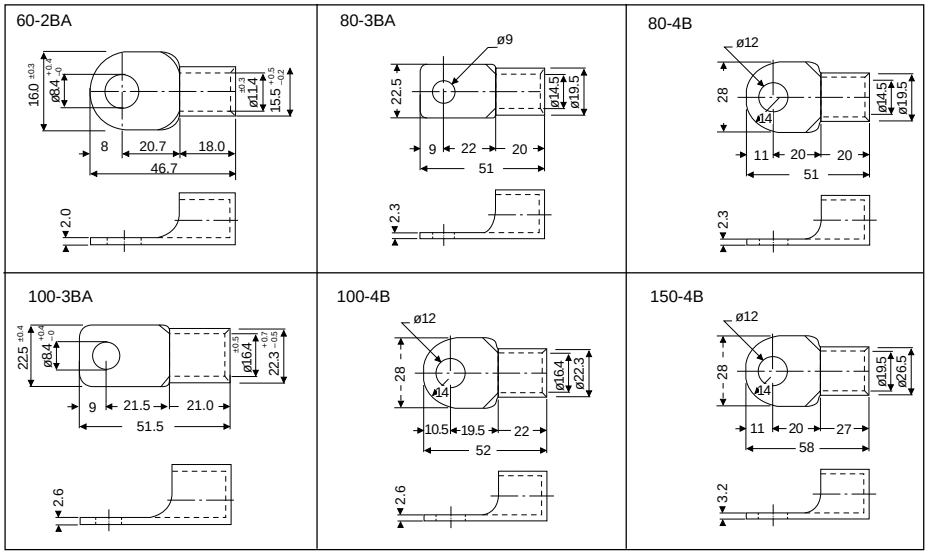
Bicc	YAV2C-M10
Takbro	38-10
Erma (Sunleigh)	41129
Cembre	A7-M10
Terasaki	60-2BA

***** Codes correct at time of printing

Note: On 160A to 400A frame sizes, two Terasaki type terminals can be fitted

Note: Commercially made compression terminals (refer to coloured boxes).

Note: Terasaki made compression terminals (refer to white boxes). Available on request.



Front connected type (with attached flat bar)

Frame (A)	Breaker	Conductor size (mm^2) 35	50	70	95	120	150	185	240	300
160/225/250	XE225NS XS160NJ XS250PJ XH160NJ XH250NJ	YAV2C-M10 38-10 41129 A7-M10	YAV1C-M10 60-10 41139 A10-M10	YAV26-M10* 70-10* 41159 A14-M10	YAV27-M10* 80-10* 41179 A19-M10*	YAV28-M10* 100-10* 41199 A24-M10*	41209 A30B-M10/19			
	XH250PE	YAV2C-M12	YAV1C-M12	YAV26-M12	YAV27-M12	YAV28-M12				
400	XE400NS XS400CJ XS400NJ XS400CE XS400NE XH400NE	38-12 41124 A7-M12	60-12 41134 A10-M12	70-12 41154 A14-M12	80-12 41174 A19-M12	100-12 41194 A24-M12	150-12 41204 A30-M12	180-12 41414 A37-M12	A48-M12	
600/630	XE600NS XS630CJ XS630NJ XS630CE XS630NE XH630NE	YAV2C-M12 38-12 41124 A7-M12	YAV1C-M12 60-12 41134 A10-M12	YAV26-M12 70-12 41154 A14-M12	YAV27-M12 80-12 41174 A19-M12	YAV28-M12 100-12 41194 A24-M12	150-12 41204 A30-M12	180-12 41414 A37-M12	200-12 41724 A48-M12	41734 A60-M12
800	XS800NJ XS800NE XH800PS XH800NE	YAV2C-M12 38-12 41124 A7-M12	YAV1C-M12 60-12 41134 A10-M12	YAV26-M12 70-12 41154 A14-M12	YAV27-M12 80-12 41174 A19-M12	YAV28-M12 100-12 41194 A24-M12	150-12 41204 A30-M12	180-12 41414 A37-M12	200-12 41724 A48-M12	41734 A60-M12
1250	XS1250NE			YAV26-M12 70-12 41154 A14-M12	YAV27-M12 80-12 41174 A19-M12	YAV28-M12 100-12 41194 A24-M12	150-12 41204 A30-M12	180-12 41414 A37-M12	200-12 41724 A48-M12	41734 A60-M12

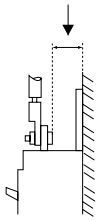
Note: * Use interpole barriers

Commercially made compression terminals
Terasaki compression terminals (dimensions on previous page) available on request.

Connections

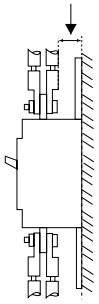
One conductor

If the clearance to earth is too small, insulate the live parts or fit a suitable barrier



Two conductors

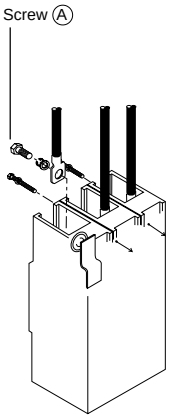
If the clearance to earth is too small, insulate the live parts or fit a suitable barrier



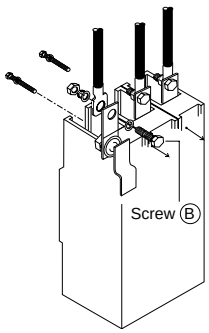
Types

Front connection (FCS)

Compression terminal bar

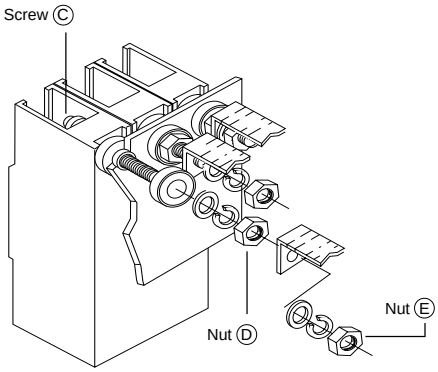


Terminal bar



Rear connection bolt stud (REB)

Breakers up to 100A frame.

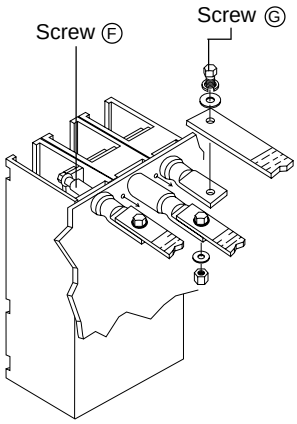


Frame (A)	Breaker	Screw size (A)	Torque N/m	Screw Size (B)	Torque N/m	Screw size (C)	Torque N/m	Nut dia. (D)	Torque N/m	Nut dia. (E)	Torque N/m
50	XS50NB	(i)M5x12*	2.34-3.57	–	–	(i) M4x12	1.12-1.73	–	–	(ii)M6	2.85-4.69
100/125	XE100NS 10-50A	(i)M5x12 *	2.34-3.57			(i) M4x14	1.12-1.73			(ii)M6	3.77-6.22
	60-100A	(i)M8x14	7.14-9.69			(ii) M6 nut	3.77-6.22			(ii)M8	7.14-11.22
	XS125CJ XS125CS XS125NJ XS125NS XH125NJ	(i)M8x14	7.14-9.69			(iii)M6x16	2.34-4.08			(ii)M8	7.14-11.22
160/225 250	XE225NS XS160NJ XS250NJ XS250PJ XH160NJ XH250NJ	(iii)M8x20	9.18-15.3	(ii)M10x25	23.46-38.76	–	–	–	–	–	–
	XH250PE	(iii)M10x30	14.28-23.46	(ii)M12x35	41.82-68.34	–	–	–	–	–	–
400	XE400NS XS400CJ XS400NJ XS400CE XS400NE XH400NE	(iii)M10x30	14.28-23.46	(ii)M12x35	41.82-68.34	–	–	–	–	–	–
600/630	XE600NS XS630CJ XS630NJ XS630CE XS630NE XH630NE	–	–	(ii)M12x40	41.82-68.34	–	–	–	–	–	–
800	XS800NJ XS800NE,XH800PS XH800NE	–	–	(ii)M12x40	41.82-68.34	–	–	–	–	–	–
1250	XS1250NE	–	–	(ii)M12x55	41.82-68.34	–	–	–	–	–	–
1600	XS1600NE	–	–	(ii)M12x60	41.82-68.34	–	–	–	–	–	–
2000	XS2000NE	–	–	(ii)M10x60	23.46-38.76	–	–	–	–	–	–
2500	XS2500NE	–	–	–	–	–	–	–	–	–	–

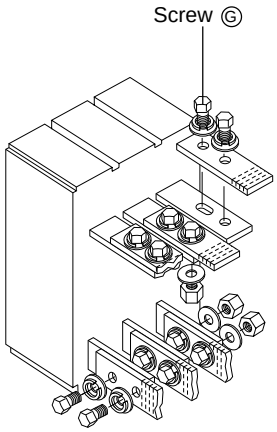
Note: Connecting bolts are not attached to breakers of 1600A and larger frame sizes
***** Self-up screw
(i) Pan head
(ii) Hex. bolt
(iii) Hex. socket head bolt

Note: Units: mm for screws
N/m for torque

Rear connection flat bar stud (REF)

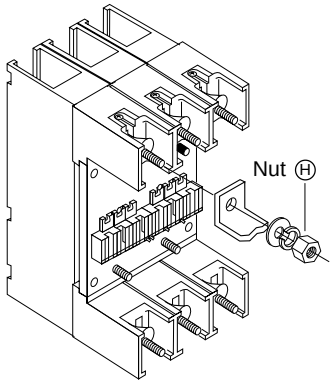


• Breakers up to 800A frame

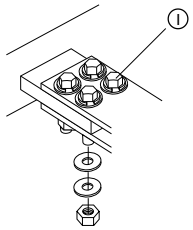


• Breakers of 1250A and larger

Plug-in type



Draw-out type



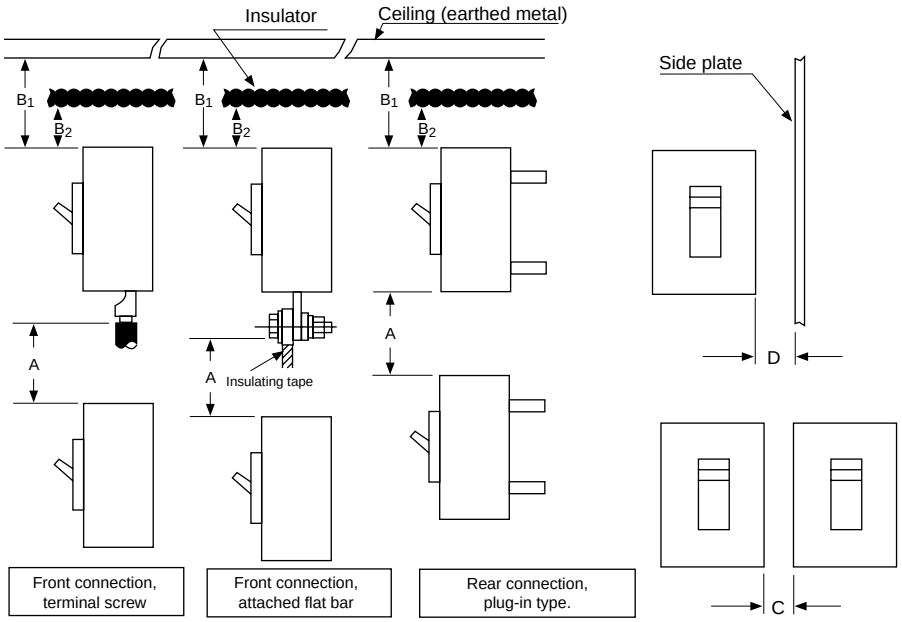
Screw (F)	Torque N/m	Screw (G)	Torque N/m	Nut (H)	Torque N/m	Screw (I)	Torque N/m
–	–	–	–	(ii)M6	3.77-6.22		
–	–	–	–	(ii)M6	3.77-6.22		
–	–	–	–	(ii)M6	3.77-6.22		
–	–	–	–	(ii)M6	3.77-6.22		
(iii) M6x20	3.774-6.222	(ii) M8x25	12.24-9.18	(ii)M8	9.18-15.3	–	–
(iii) M10x40	19.38-30.6	(ii) M12x35	41.82-68.34	(ii)M10	19.38-30.6	* *	* *
(iii) M10x40	19.38-30.6	(ii) M12x35	41.82-68.34	(ii)M10	19.38-30.6	* *	* *
(iii) M10x27 (Special)	19.38-30.6	(ii) M12x40	41.82-68.34	(ii) M16	53.55-87.72	* *	* *
(iii) M 10x27 (Special)	19.38-30.6	(ii) M12x40	41.82-68.34	(ii) M16	53.55-87.72	* *	* *
–	–	(ii) M12x50	41.82-68.34	(ii) M12x50	41.82-68.34	* *	* *
–	–	(ii) M10x45	23.46-38.76	–	–	(ii) M10x45	23.46-38.76
–	–	(ii) M10x60	23.46-38.76	–	–	(ii) M10x60	23.46-38.76
–	–	(ii) M10x60	23.46-38.76	–	–	–	–

Note: * * Breakers from 400A to 1250A frame are the same as those for Plug-in types
(i) Pan head
(ii) Hex. bolt
(iii) Hex. socket head bolt

Insulating Distance from Line-end

When earthed metal is installed within the proximity of the breakers the correct insulating distance must be maintained (refer to Table 1). This distance is necessary to allow the exhausted arc gases to disperse.

WARNING: EXPOSED CONDUCTORS MUST BE INSULATED TO AVOID POSSIBLE SHORT CIRCUITING OR EARTHING DUE TO FOREIGN MATTER COMING INTO CONTACT WITH THE CONDUCTORS.



A : Distance (refer to Table 1) from lower breaker to open charging part of terminal on upper breaker (front connection) or the distance from lower breaker to upper breaker end (rear connection and plug-in type).
B_1 : Distance from breaker end to ceiling (earthed metal)
B_2 : Distance from breaker end to insulator
C : Clearance between breakers
D : Distance from breaker side to side plate (earthed metal)

This table is valid for 380/415V

Table 1

Series	Breaker	A	B_1	B_2	C	D
XE	XE100NS	75	45	25	Possible to set close	25
	XE225NS	80	50	30	* Possible to set close	* 25
	XE400NS	100	70	40	* Possible to set close	30
	XE600NS	120	70	40	Possible to set close	30
XS	XS50NB XS125CS, XS125NS XS125CJ, XS125NJ	75	45	25	Possible to set close	25
	XS160NJ XS250NJ	80	60	30	* Possible to set close	25
	XS250PJ XS400CJ XS400NJ, XS400CE XS400NE	100	70	40	* Possible to set close	30
	XS630CJ, XS630NJ XS630CE, XS630NE XS800NJ, XS800NE	120	70	40	Possible to set close	30
	XS1250NE	150	70	40	Possible to set close	30
	XS1600NE XS2000NE XS2500NE	150	150	100	Possible to set close	100
XH	XH125NJ	75	45	25	Possible to set close	25
	XH160NJ, XH250NJ	100	60	30	* Possible to set close	25
	XH250PE, XH400NE	120	70	40	* Possible to set close	30
	XH630NE, XH800NE	150	80	50	Possible to set close	40
	XH800PS	150	150	100	Possible to set close	20

Note: *When using the terminal bar (optional), the specified insulating distance must be maintained.

Breaker Mounting Screws and Solderless Terminals

Breaker Mounting Screws

Series	Breaker	Pole	Front connection		Rear connection		Plug-in	
			* Screw size	Qty	Screw size	Qty	Screw size	Qty
XE	XE100NS	2,3	(i)M4x65	2	(i)M4x65	2	(i)M4x65	2
	XE225NS	3	(i)M4x40	4	(i)M4x40	4	–	–
	XE400NS	3	(i)M6x45	4	(i)M6x45	4	* *	4
	XE600NS	3	(i)M8x45	4	(i)M8x45	4	* *	4
XS	XS50NB	2,3	(i)M4x65	2	(i)M4x65	2	(i)M4x65	2
	XS125CJ	3,4	(i)M4x35	2	(i)M4x35	2	(i)M4x35	2
	XS125NJ	3,4	(i)M4x35	4	(i)M4x35	4	(i)M4x35	4
	XS125CS, XS125NS	1	(i)M4x80	2	(i)M4x80	2	(i)M4x80	2
	XS160NJ,XS250NJ	3,4	(i)M4x40	4	(i)M4x40	4	(i)M4x40	4
	XS250PJ	3,4	(i)M4x60	4	(i)M4x60	4	(i)M4x60	4
	XS400NJ XS400CE, XS400NE	3,4	(i)M6x45	4	(i)M6x45	4	* *	4
	XS630CJ, XS630NJ XS630CE, XS630NE XS800NJ, XS800NE	3,4	(i)M8x45	4	(i)M8x45	4	* *	4
	XS1250NE	3,4	(i)M8x50	4	(i)M8x50	4	* *	4
	XS1600NE	3,4	(i)M8x50	4	(i)M8x50	4	–	–
	XS2000NE	3,4	(iii)M10x160	4	(iii)M10x120	4	–	–
	XS2500NE	3,4	–	–	(iii)M10x120	4	–	–
XH	XH125NJ	3	(i)M4x35	2	(i)M4x35	2	(i)M4x35	2
		4	(i)M4x35	4	(i)M4x35	4	(i)M4x35	4
	XH160NJ, XH250NJ	3,4	(i)M4x60	4	(i)M4x60	4	(i)M4x60	4
	XH250PE, XH400NE	3,4	(i)M6x45	4	(i)M6x45	4	* *	4
	XH630NE, XH800PS XH800NE	3,4	(i)M8x45	4	(i)M8x45	4	* *	4

Note: *Screw size is for tapped hole
* *Captive nuts
(i) Pan head
(iii) Hex. socket head

Solderless Terminals

Series	Breaker	Pole	Cable size	Torque N/m cable connection	Torque N/m solderless terminal
XE	XE100NS (60-100A)	2, 3	50mm²	5.64	2.35 ~ 3.43
	XE225NS	3 4	150mm²	28.22	6.86 ~ 9.31
	XE400NS	3 4	240mm² or 2x 120mm²	28.22	6.86 ~ 9.31
XS	XS50NB	2, 3	25mm²	5.64	2.35 ~ 3.43
	XS125CJ/XS125NJ	3 4	70mm²	5.64	2.35 ~ 3.43
	XS160NJ/XS250NJ XS250PJ XS160NJ/XS250NJ XS250PJ	3 4	150mm²	28.22	6.86 ~ 9.31
	XS400CJ/XS400NJ XS400CE/XS400NE XS400CJ/XS400NJ XS400CE/XS400NE	3 4	240mm² or 2x 120mm²	28.22	6.86 ~ 9.31
XH	XH125NJ	3 4	70mm²	5.64	2.35 ~ 3.43
	XH160NJ/XH250NJ	3 4	150mm²	28.22	6.86 ~ 9.31
	XH250PE/XH400NE	3 4	240mm² or 2x 120mm²	28.22	6.86 ~ 9.31

Connections and Mountings

Standard Arrangement for Plug-in Type Auxiliary Circuit Terminals (LTP)

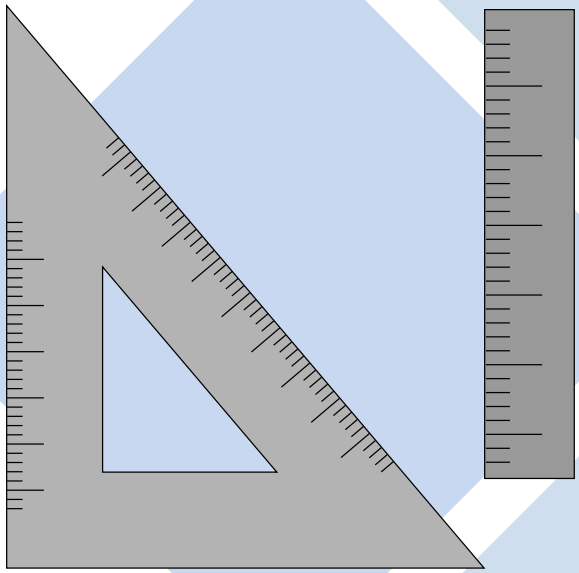
The arrangements shown below represent the view from the rear of the breaker. Refer to figure 1, page 93.

Frame (A)		30-250A Frame	400A Frame	600-1250A Frame
Number of auxiliary terminals to be installed (maximum)				
SHT	LINE	S1 S2	S1 S2	S1 S2
	LOAD			
UVT	LINE	P1 P2	P1 P2	P1 P2
	LOAD			
1AB	LINE	AXc1 AXa1 AXb1	AXc1 AXa1 AXb1	AXc1 AXa1 AXb1
	LOAD			
2AB	LINE	AXc1/AXc2 AXa1 AXb1 AXa2 AXb2	AXc1 AXa1 AXb1 AXc2 AXa2 AXb2	AXc1 AXa1 AXb1
	LOAD			AXc2 AXa2 AXb2
3AB	LINE		AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 AXc3 AXa3 AXb3	AXc1 AXa1 AXb1 AXc3
	LOAD			AXc2 AXa2 AXb2 AXa3 AXb3
SHT & 1AB	LINE	AXc1 AXa1 AXb1 S1 S2	AXc1 AXa1 AXb1 S1 S2	AXc1 AXa1 AXb1 S1 S2
	LOAD			
SHT & 2AB	LINE	* AXc1/AXc2 AXa1 AXb1 AXa2 AXb2	AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 S1 S2	AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 S1 S2
	LOAD			
SHT & 3AB	LINE		AXc1/AXc2 AXa1 AXb1 AXa2 AXb2 AXc3 AXa3 AXb3 S1 S2	AXc1 AXa1 AXb1 AXc3 S1 S2
	LOAD			AXc2 AXa2 AXb2 AXa3 AXb3
UVT & 1AB	LINE	AXc1 AXa1 AXb1 P1 P2	AXc1 AXa1 AXb1 P1 P2	AXc1 AXa1 AXb1 P1 P2
	LOAD			
UVT & 2AB	LINE	* AXc1/AXc2 AXa1 AXb1 AXa2 AXb2	AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 P1 P2	AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 P1 P2
	LOAD			
UVT & 3AB	LINE		AXc1/AXc2 AXa1 AXb1 AXa2 AXb2 AXc3 AXa3 AXb3 P1 P2	AXc1 AXa1 AXb1 AXc3 P1 P2
	LOAD			AXc2 AXa2 AXb2 AXa3 AXb3
ALT & 1AB	LINE	† AXc1 AXa1 AXb1 ALc1 ALa1	AXc1 AXa1 AXb1 ALc1 ALa2 ALb1	AXc1 AXa1 AXb1 ALc1 ALa1 ALb1
	LOAD			
ALT & 2AB	LINE	* AXc1/AXc2 AXa1 AXb1 AXa2 AXb2	AXc1 AXa1 AXb1 AXc1 AXa2 AXb2 ALc1 ALa2 ALb1	AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 ALc1 ALa2 ALb1
	LOAD			
UVT & ALT & 1AB	LINE	* † AXc1 AXa1 AXb1 ALc1 ALa2	AXc1 AXa1 AXb1 ALc1 ALa2 ALb2 P1 P2	AXc1 AXa1 AXb1 ALc1 ALa2 ALb2 P1 P2
	LOAD			
UVT & ALT & 2AB	LINE		† AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 ALc1 ALa2 P1 P2	† AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 ALc1 ALa2 P1 P2
	LOAD			
SHT & ALT & 1AB	LINE	* † AXc1 AXa1 AXb1 ALc1 ALa2	AXc1 AXa1 AXb1 ALc1 ALa ALb1 S1 S2	AXc1 AXa1 AXb1 ALc1 ALa1 ALb1 S1 S2
	LOAD			
SHT & ALT & 2AB	LINE		† AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 ALc1 ALa2 S1 S2	† AXc1 AXa1 AXb1 AXc2 AXa2 AXb2 ALc1 ALa1 S1 S2
	LOAD			
ALT	LINE	ALc1 ALa1 ALb1	ALc1 ALa1 ALb1	ALc1 ALa1 ALb1
	LOAD			
SHT & ALT	LINE	ALc1 ALa1 ALb1 S1 S2	ALc1 ALa1 ALb1 S1 S2	ALc1 ALa1 ALb1 S1 S2
	LOAD			
UVT & ALT	LINE	ALc1 ALa1 ALb1 P1 P2	ALc1 ALa1 ALb1 P1 P2	ALc1 ALa1 ALb1 P1 P2
	LOAD			

*: Connections not terminated on plug-in aux.circuit terminal, will be terminated either on UVT controller or Auxiliary Lead Terminal Block (breaker mounted, refer to page 154)
†: Alarm switch is an 'a' contact only
Note 1 : DC UVT without controller will have terminals U_1 and U_2
Note 2 : AXc1 / AXc2 Due to restricted space, these terminals are common

Outline Dimensions 99-112

Note: Please refer to catalogue '98-T20E for outline dimensions of MCCBs & XMC type motor operators



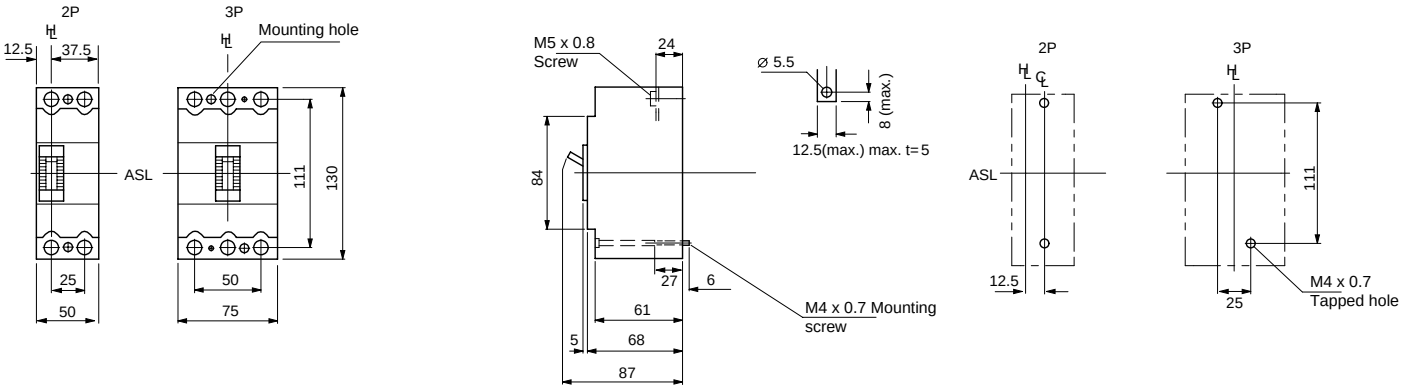
7 Outline dimensions (mm)

TemBreak

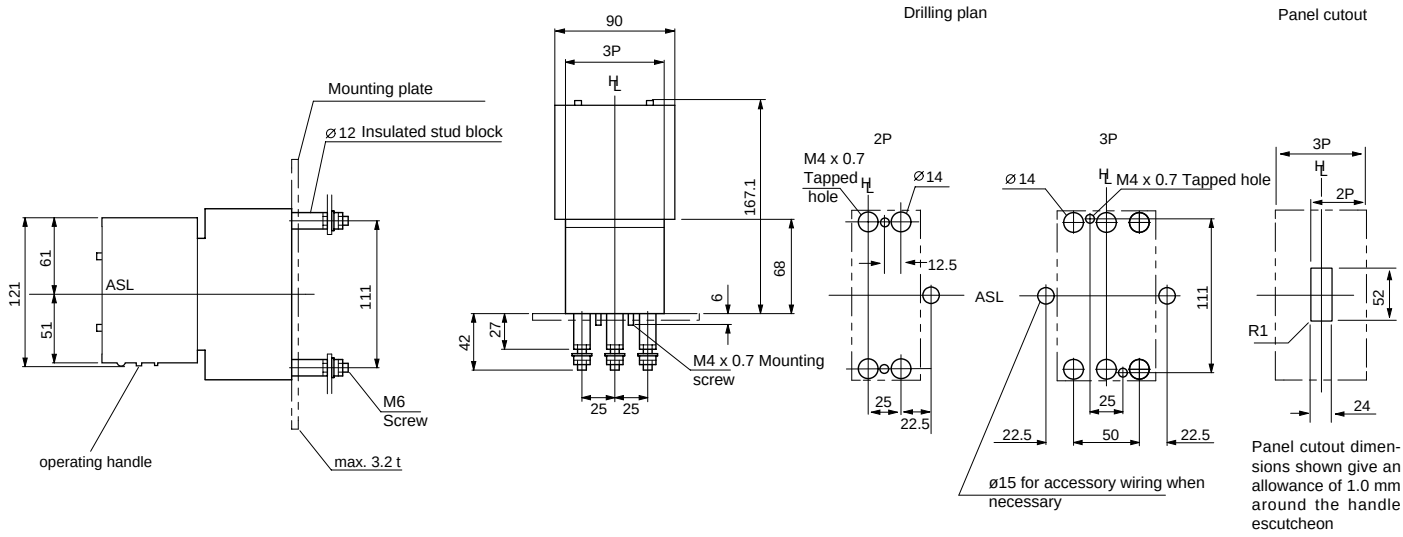
XS50NB

ASL: Arrangement Standard Line
℄ : Handle Frame Centre Line

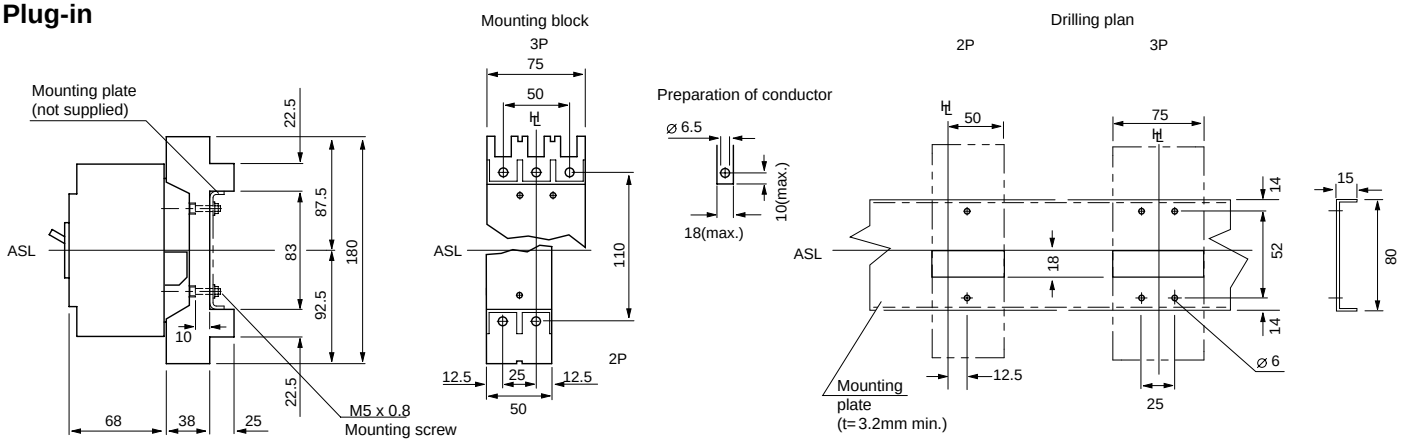
Front connected



Rear connected with motor operator

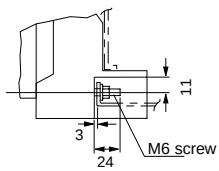


Plug-in



Note: Allow a space of 5mm from adjacent breaker when the breaker is fitted with internal accessories.

Details for connection



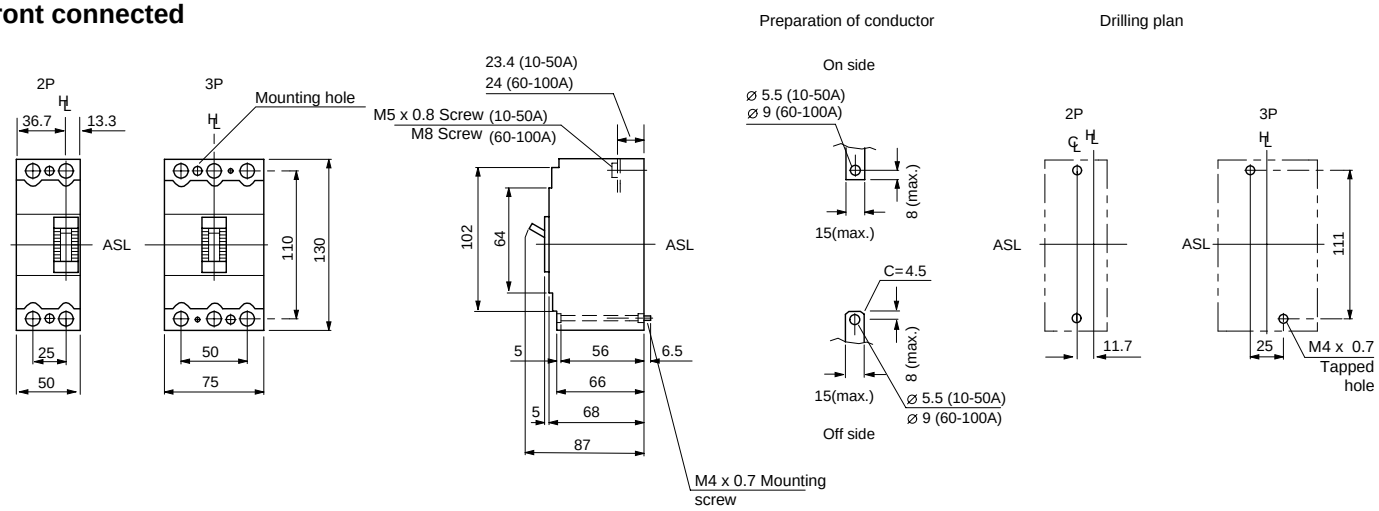
7 Outline dimensions (mm)

TemBreak

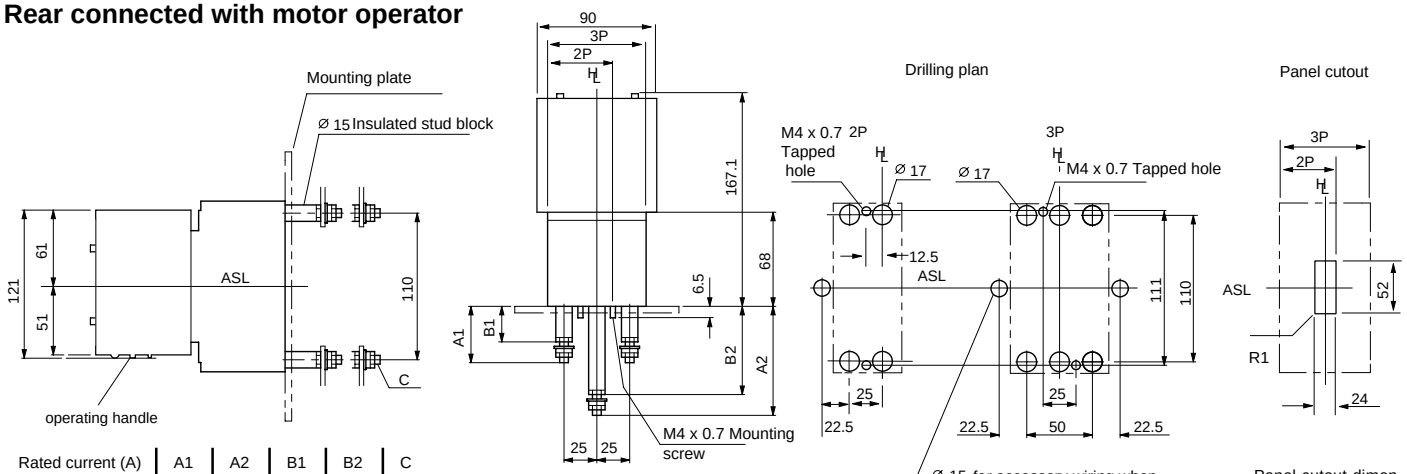
XE100NS

ASL: Arrangement Standard Line
℄ : Handle Frame Centre Line

Front connected

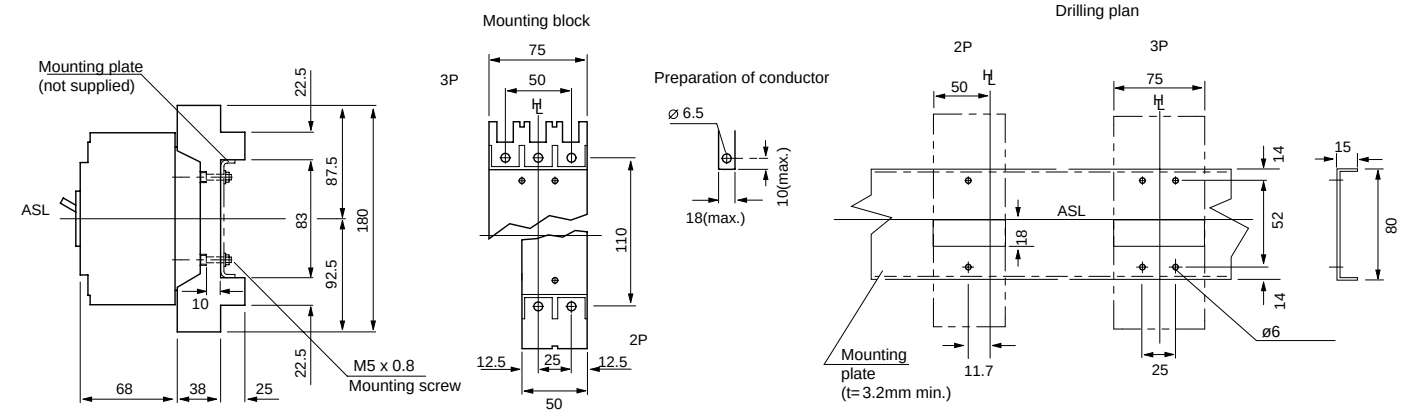


Rear connected with motor operator

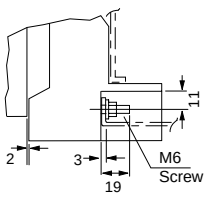


Rated current (A)	A1	A2	B1	B2	C
10-50	45	80	30	65	M6
60-100	52.1	87.1	32.1	67.1	M8

Plug-in



Details of connection



Note: Allow a space of 5mm from adjacent breaker when the breaker is fitted with internal accessories.

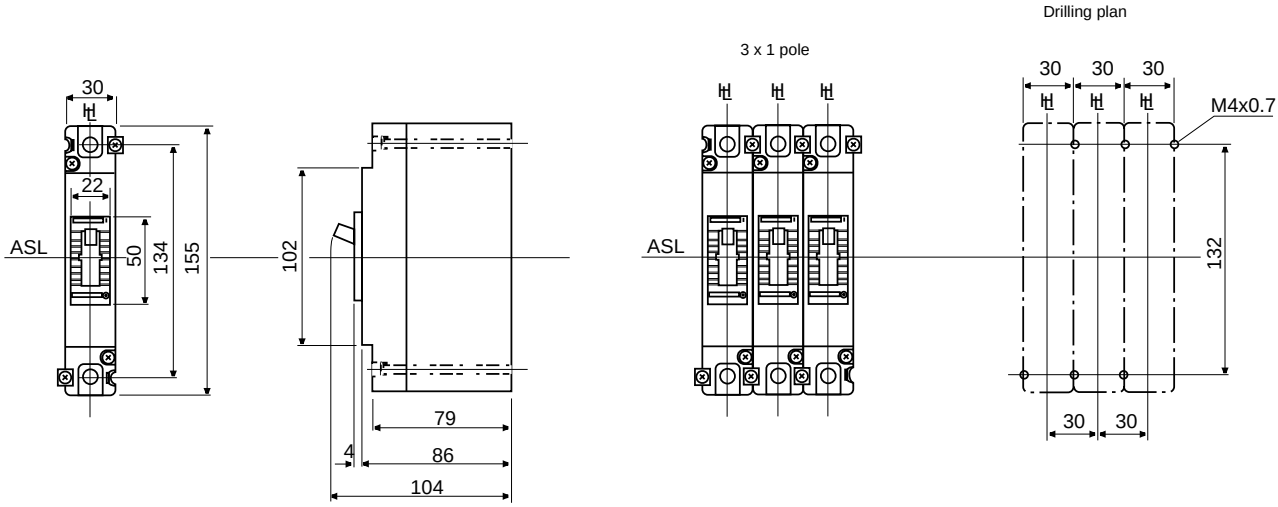
Outline dimensions (mm)

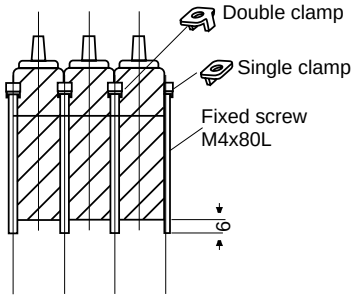
TemBreak

XS125CS, XS125NS

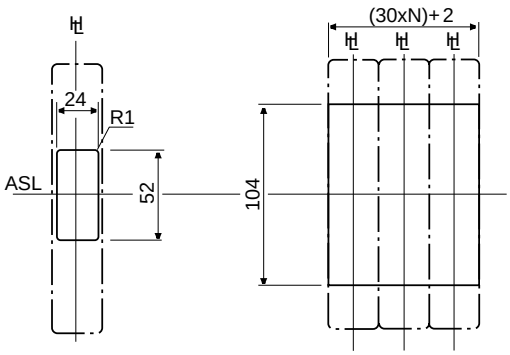
ASL: Arrangement Standard Line
卌 : Handle Frame Centre Line

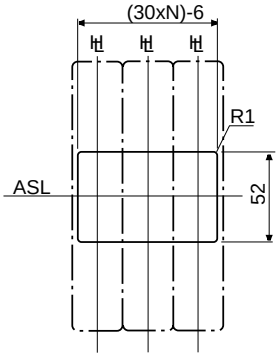
Front connected





Panel cut-out





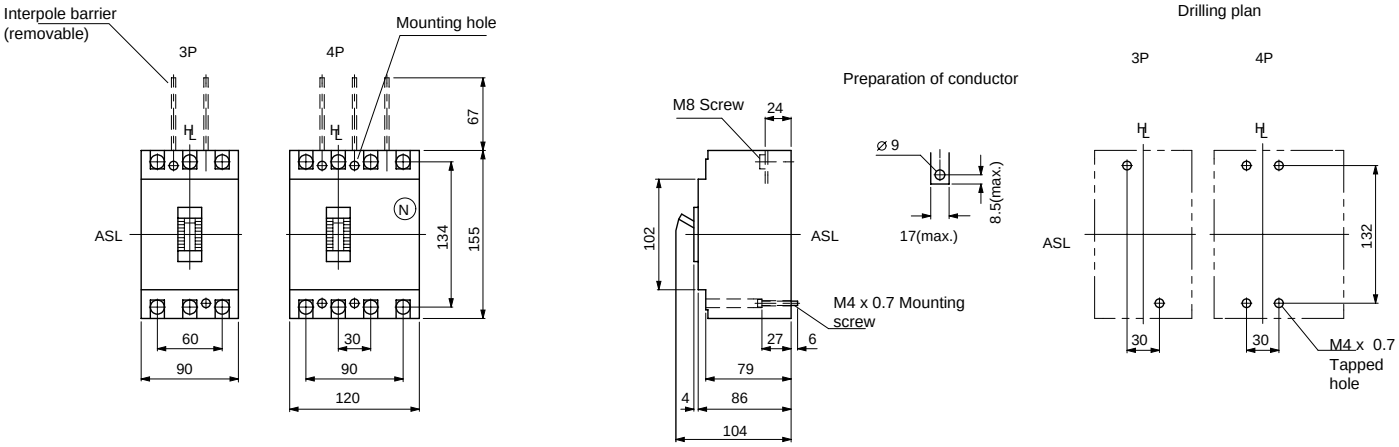
Outline dimensions (mm)

TemBreak

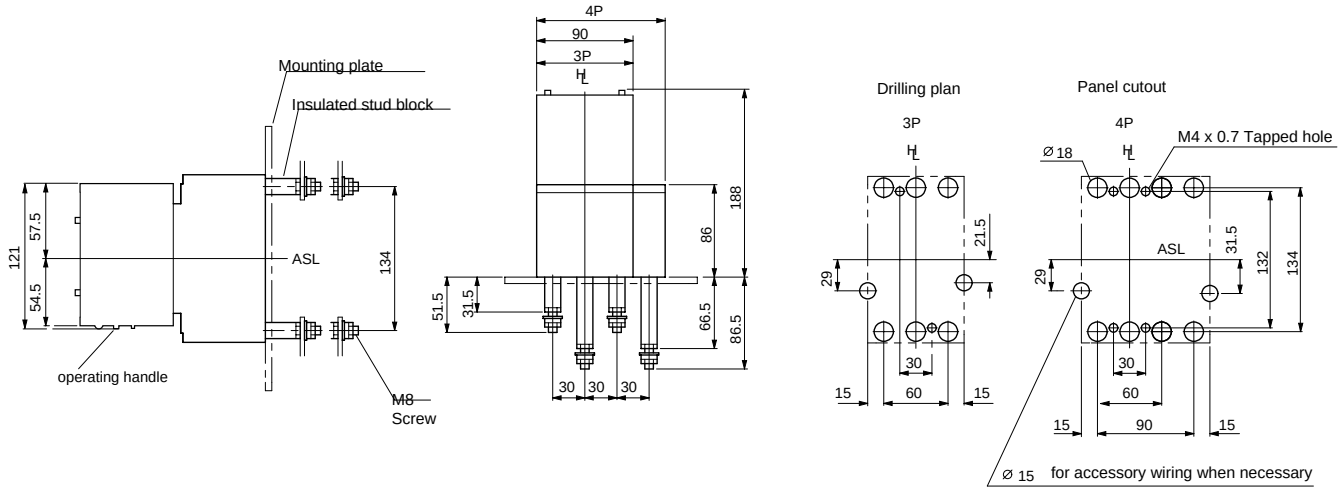
XS125CJ, XS125NJ, XH125NJ, XS125NN

ASL: Arrangement Standard Line
HL : Handle Frame Centre Line

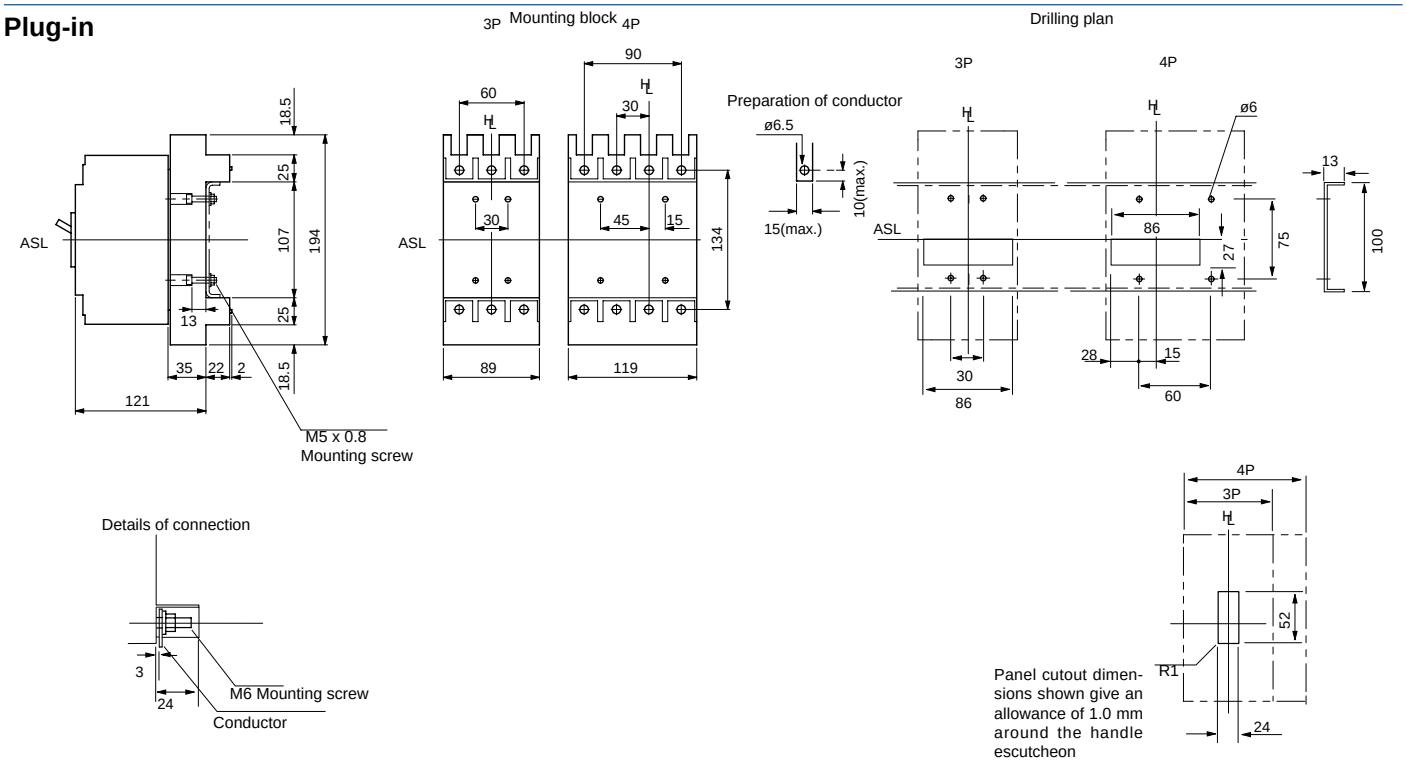
Front connected



Rear connected with motor operator



Plug-in



Outline dimensions (mm)

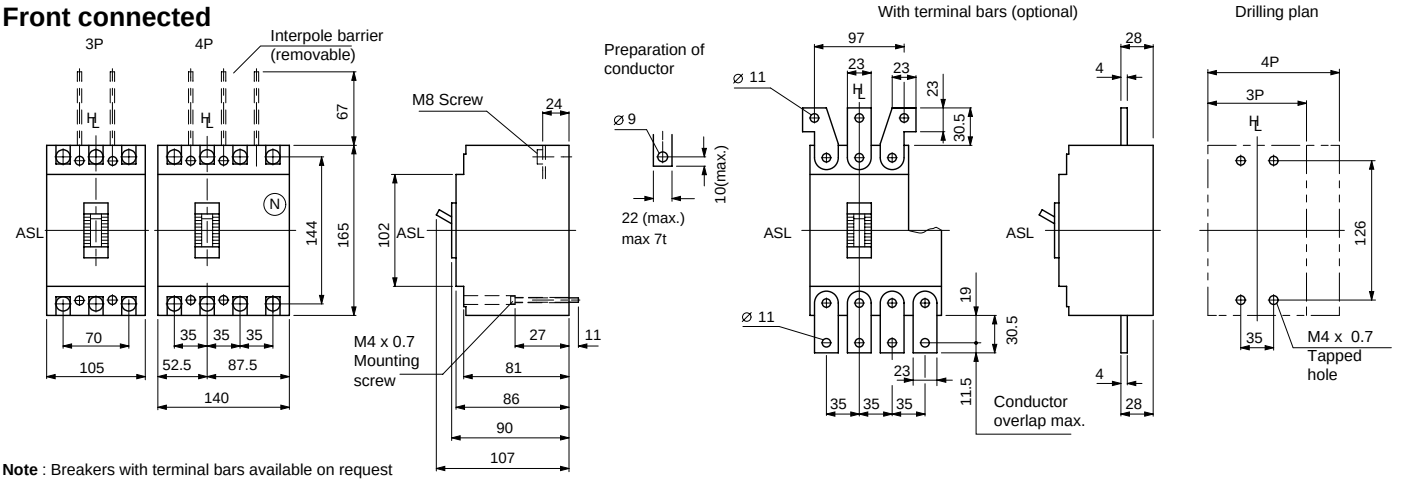
TemBreak

XS160NJ, XS160NN, XE225NS, XS250NJ, XS250NN

Note: XE225NS Available in three pole versions only

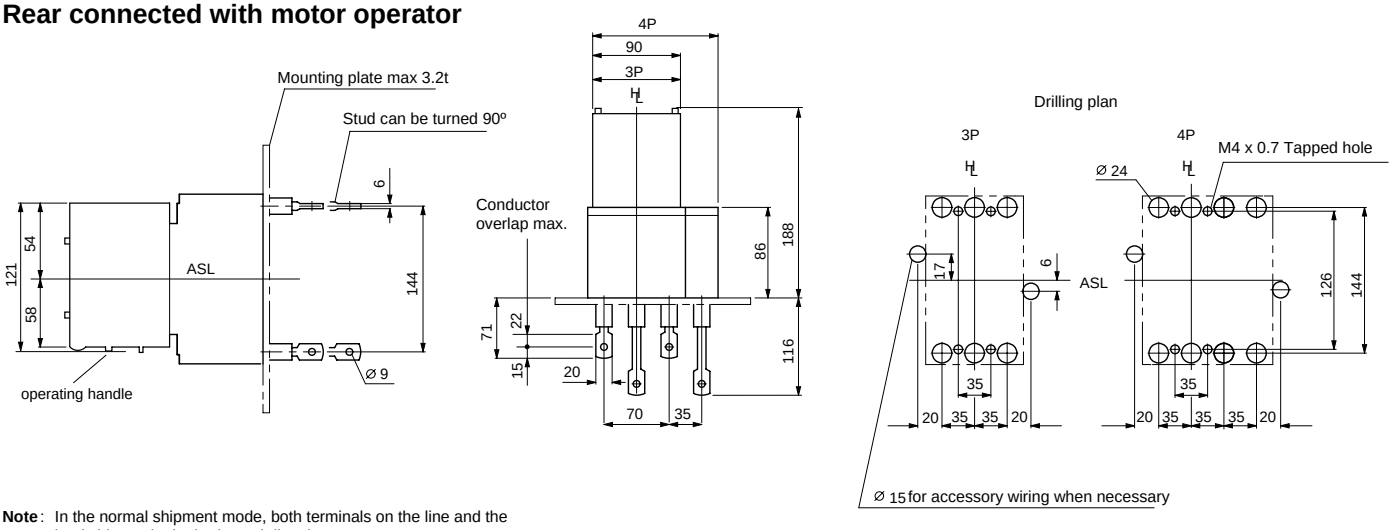
ASL: Arrangement Standard Line
HL : Handle Frame Centre Line

Front connected



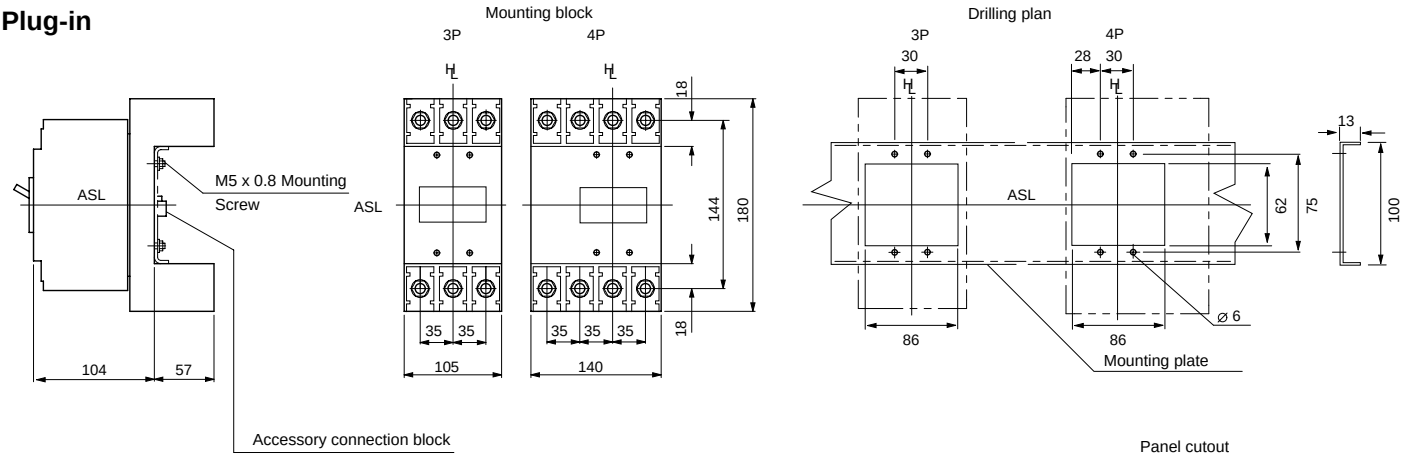
Note : Breakers with terminal bars available on request

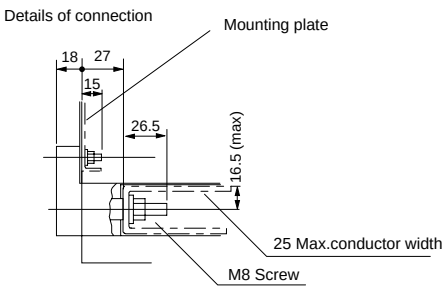
Rear connected with motor operator

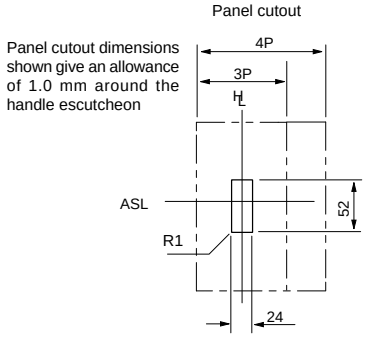


Note: In the normal shipment mode, both terminals on the line and the load side are in the horizontal direction

Plug-in







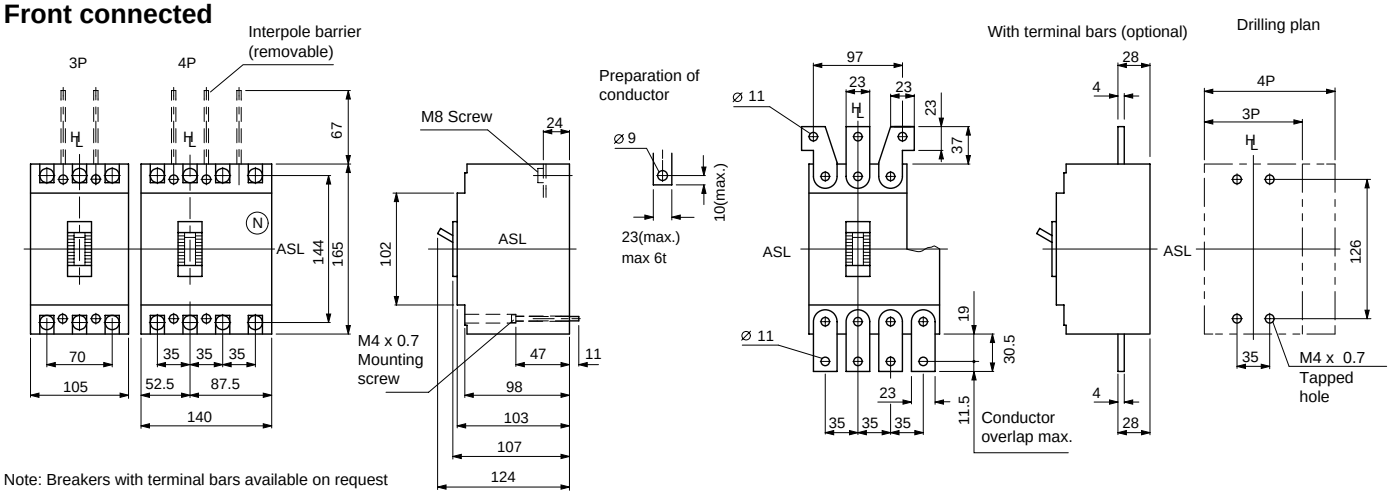
7 Outline dimensions (mm)

TemBreak

XH160NJ, XS250PJ, XH250NJ

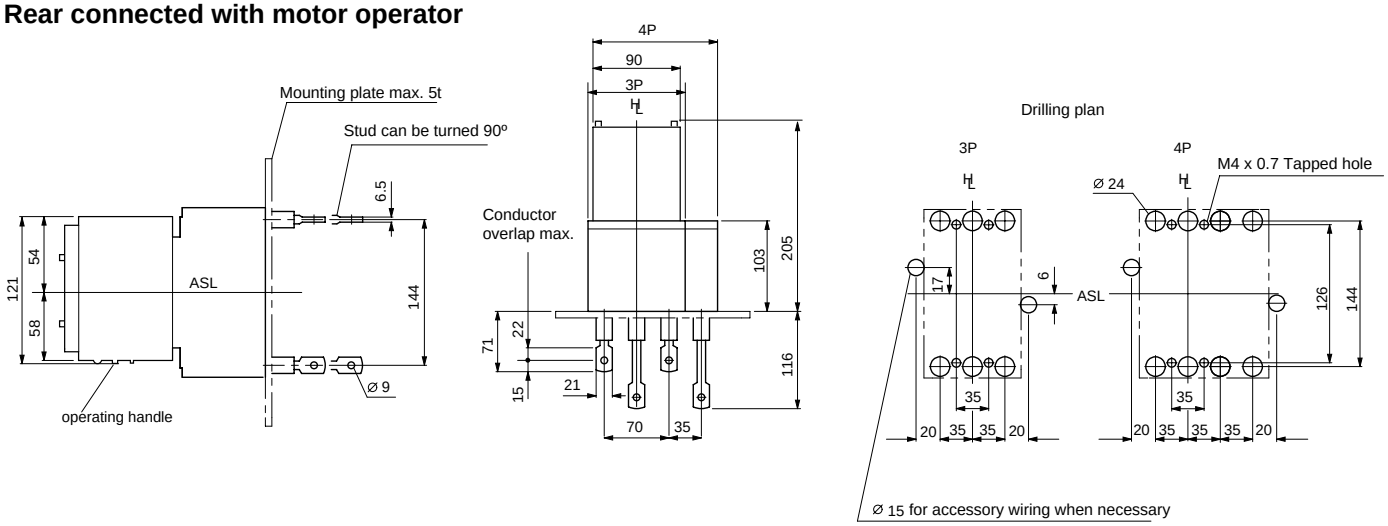
ASL: Arrangement Standard Line
HL : Handle Frame Centre Line

Front connected

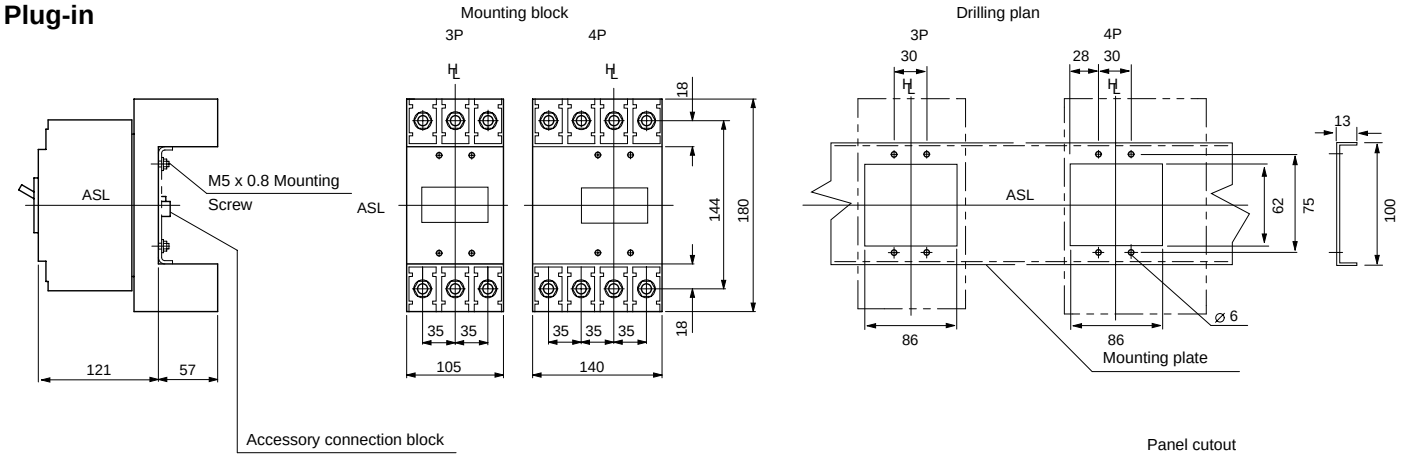


Note: Breakers with terminal bars available on request

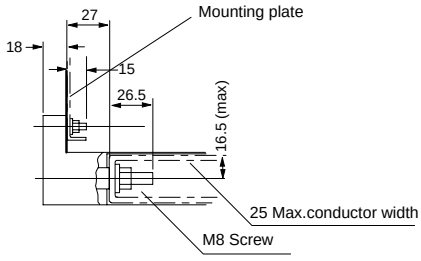
Rear connected with motor operator



Plug-in

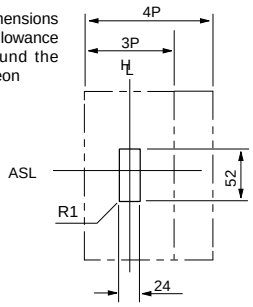


Details of connection



Panel cutout

Panel cutout dimensions shown give an allowance of 1.0 mm around the handle escutcheon



7 Outline dimensions (mm)

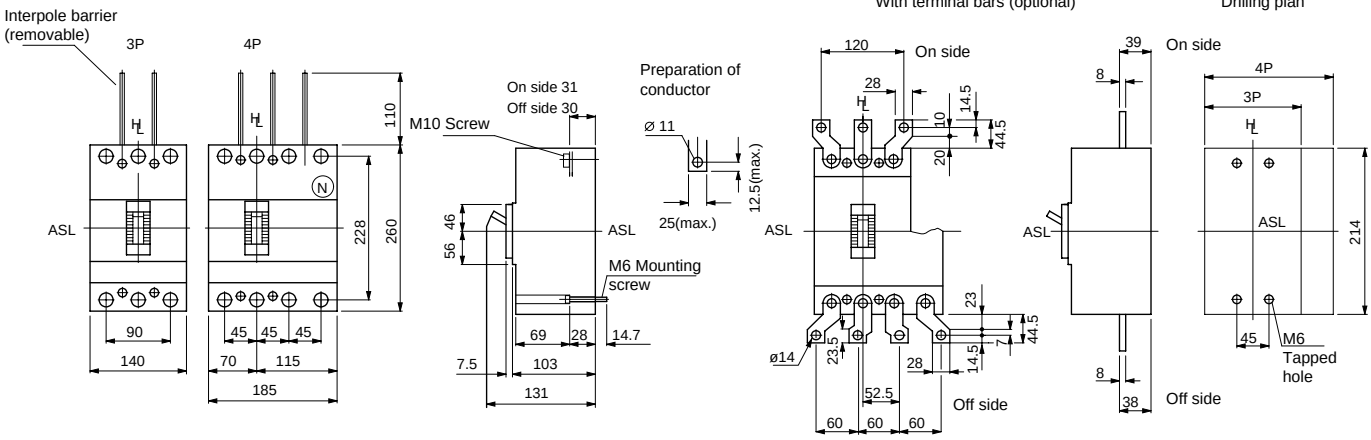
TemBreak

XH250PE, XE400NS, XS400CJ, XS400NJ, XS400CE, XS400NE, XH400NE, XS400NN

Note: XE400NS Available in three pole versions only

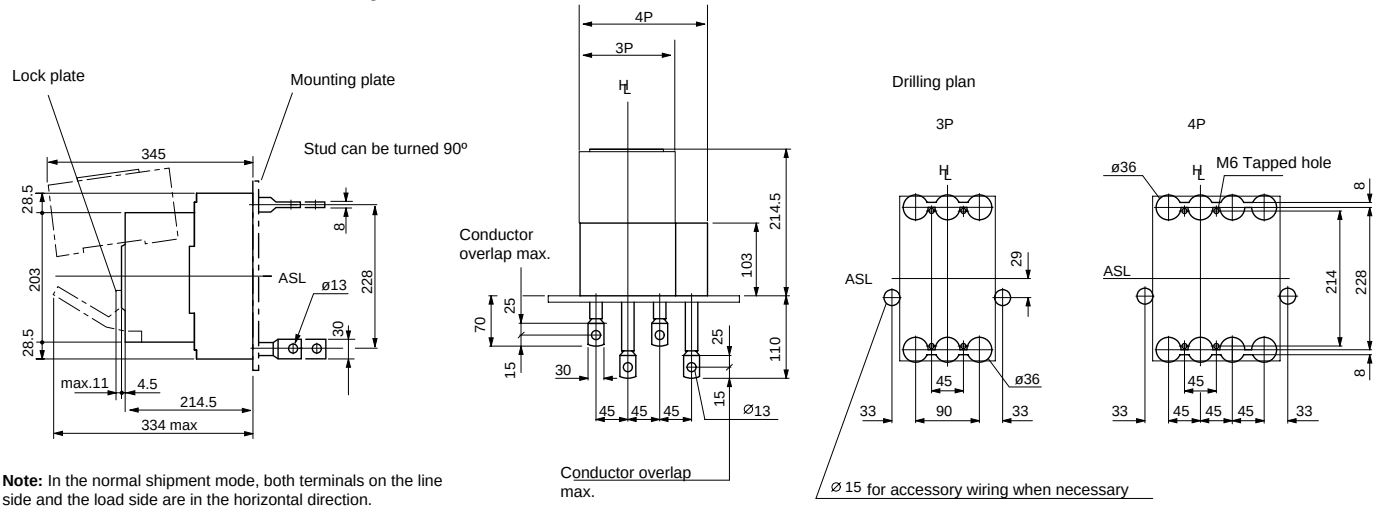
ASL: Arrangement Standard Line
HL : Handle Frame Centre Line

Front connected



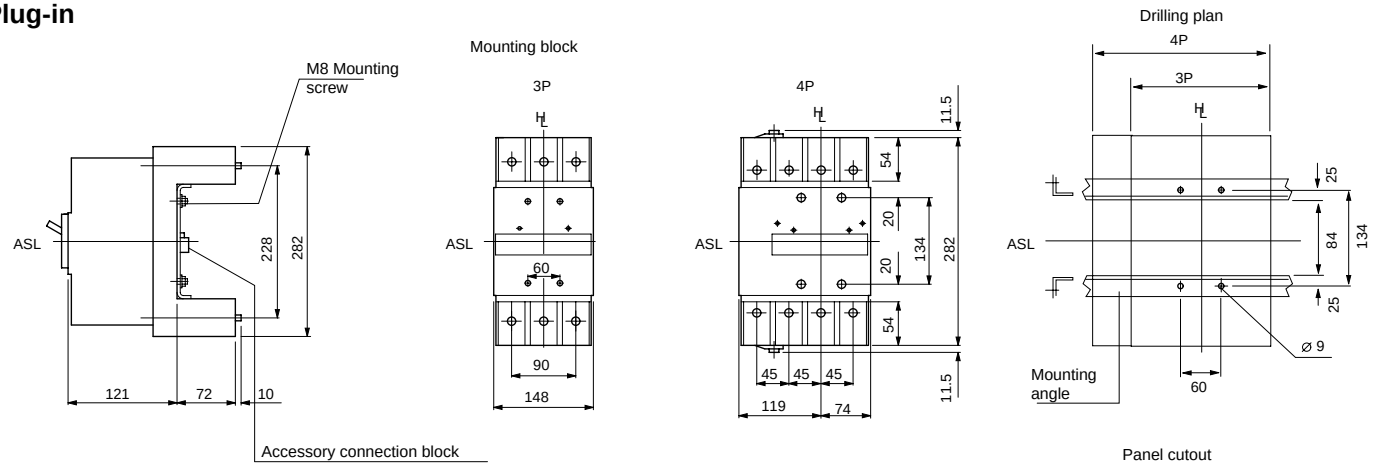
Note: Breakers with terminal bars available on request

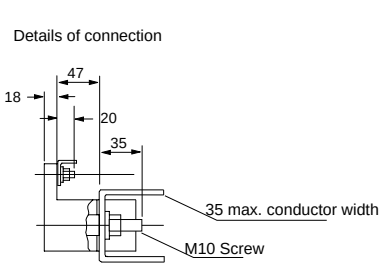
Rear connected with motor operator

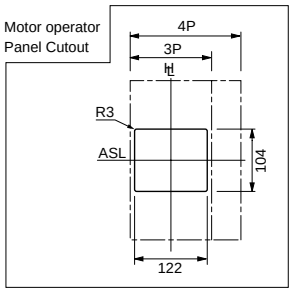


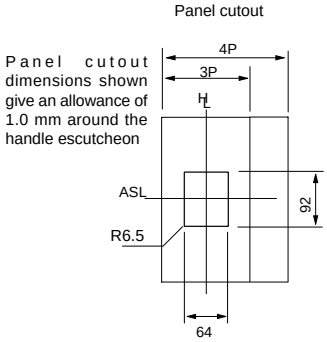
Note: In the normal shipment mode, both terminals on the line side and the load side are in the horizontal direction.

Plug-in









7 Outline dimensions (mm)

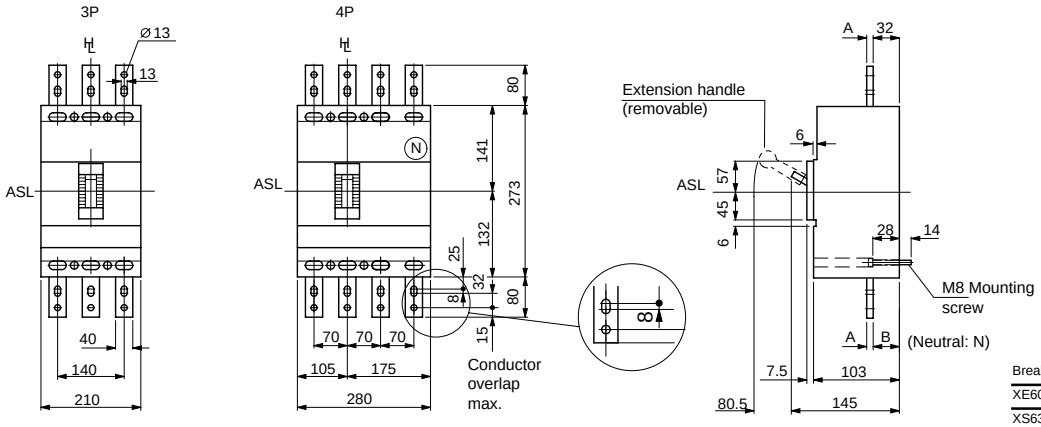
TemBreak

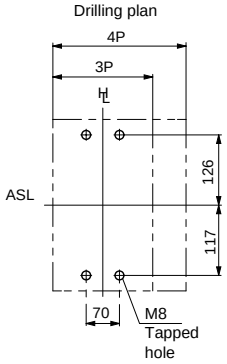
XE600NS, XS630CJ, XS630NJ, XS630CE, XS630NE, XH630NE, XS630NN, XS800NJ, XS800NE, XH800PS, XH800NE, XS800NN.

Note: XE600NS Available in three pole versions only

ASL: Arrangement Standard Line
HL : Handle Frame Centre Line

Front connected

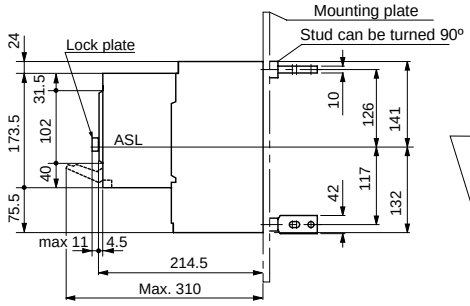


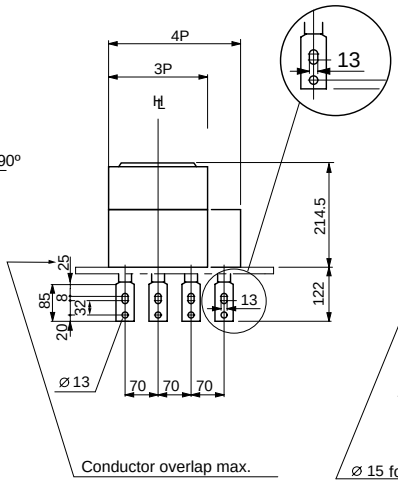


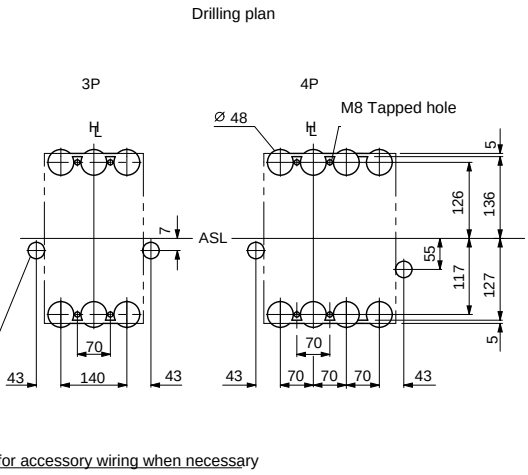
Breaker type	A	B	N
XE600NS	8	34	–
XS630CJ, XS630NJ	8	34	36
XS630CE, XS630NE, XH630NE	8	36	36
XS800NJ, XH800PS	10	35	36
XS800NE, XH800NE	10	36	36

Note: Breakers with terminal bars available on request

Rear connected with motor operator



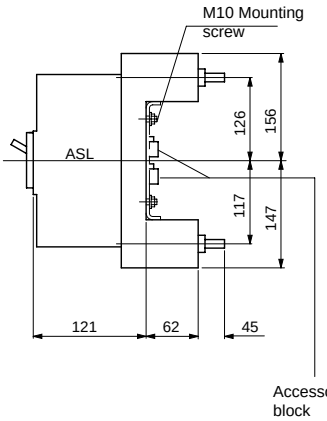


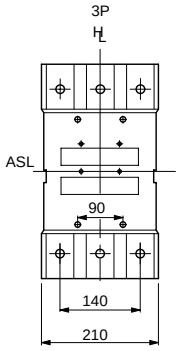


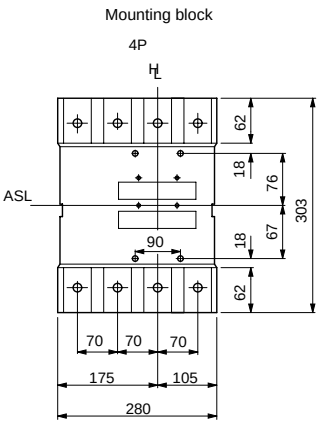
Note:In the normal shipment mode, both terminals on the line side and the load side are in the horizontal direction.

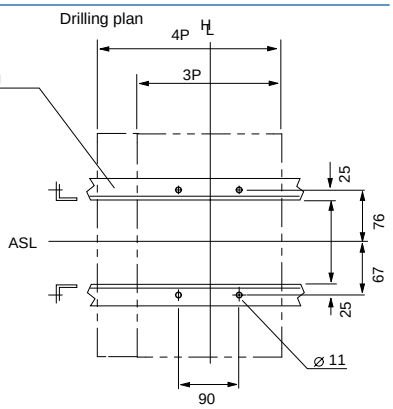
Ø 15 for accessory wiring when necessary

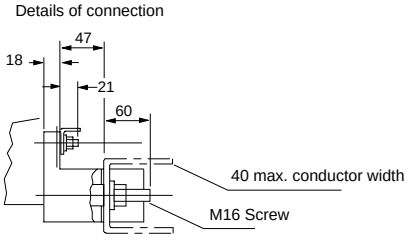
Plug-in

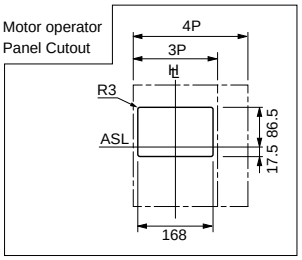




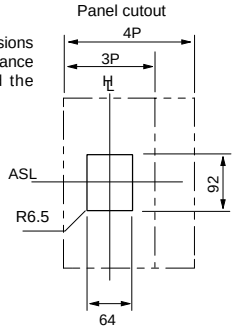








Panel cutout dimensions shown give an allowance of 1.0 mm around the handle escutcheon



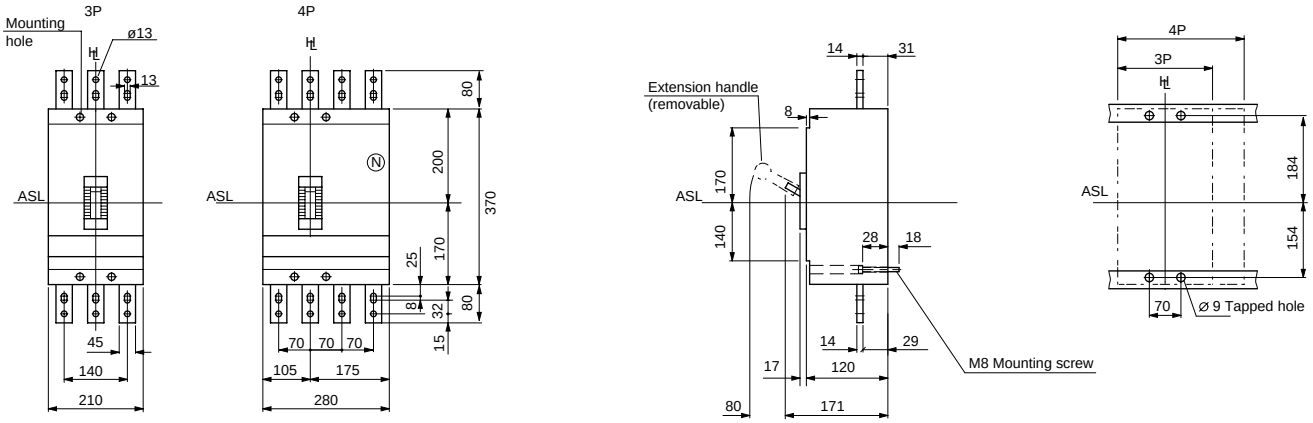
7 Outline dimensions (mm)

TemBreak

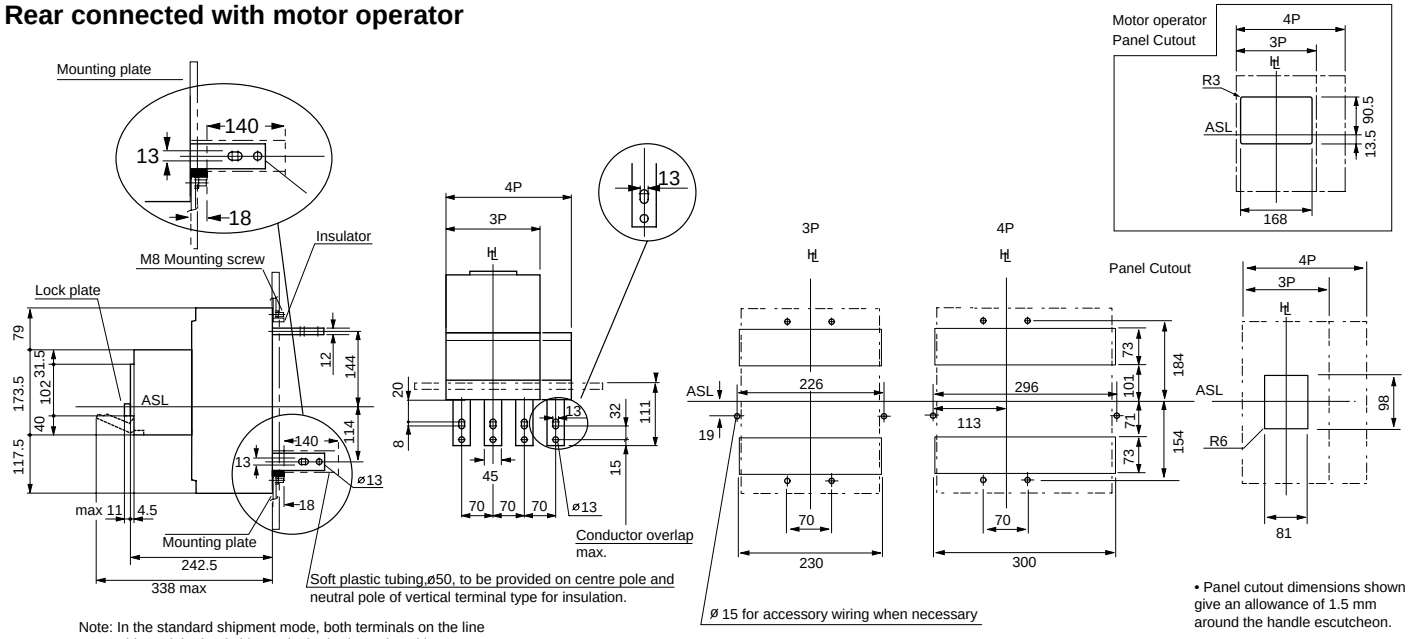
XS1250NE, XS1250NN

ASL: Arrangement Standard Line
HL : Handle Frame Centre Line

Front connected

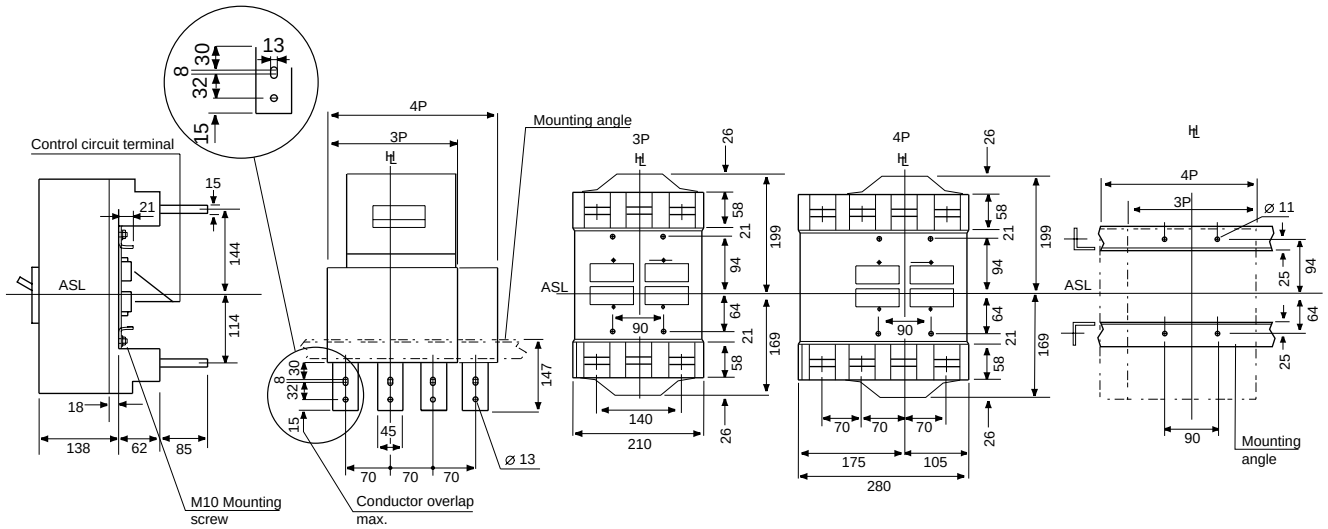


Rear connected with motor operator



Note: In the standard shipment mode, both terminals on the line side and the load side are in the horizontal position.

Plug-in



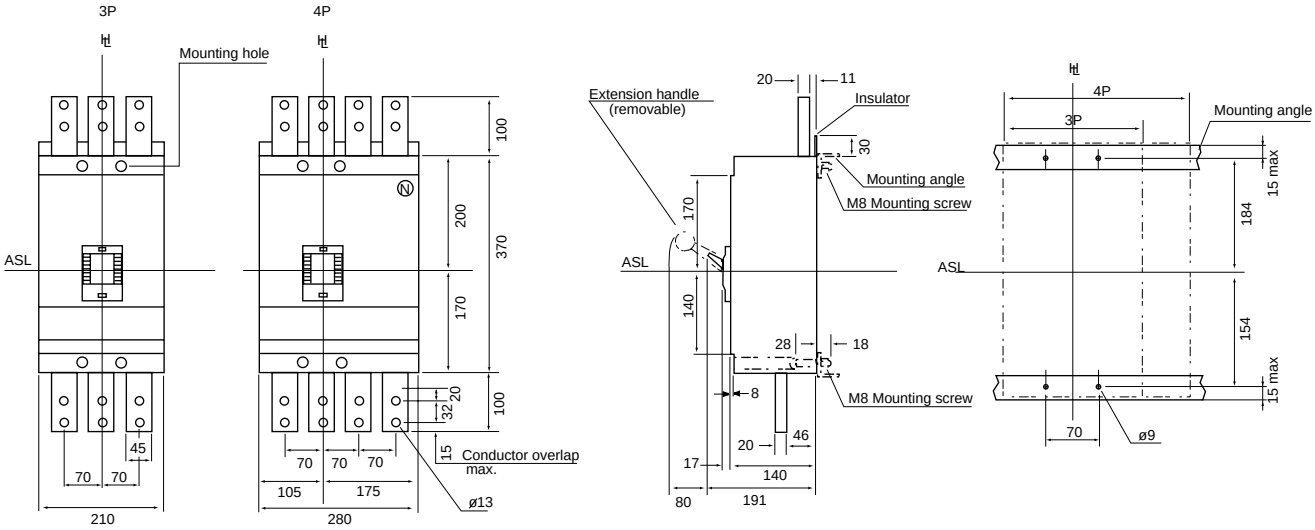
Outline dimensions (mm)

TemBreak

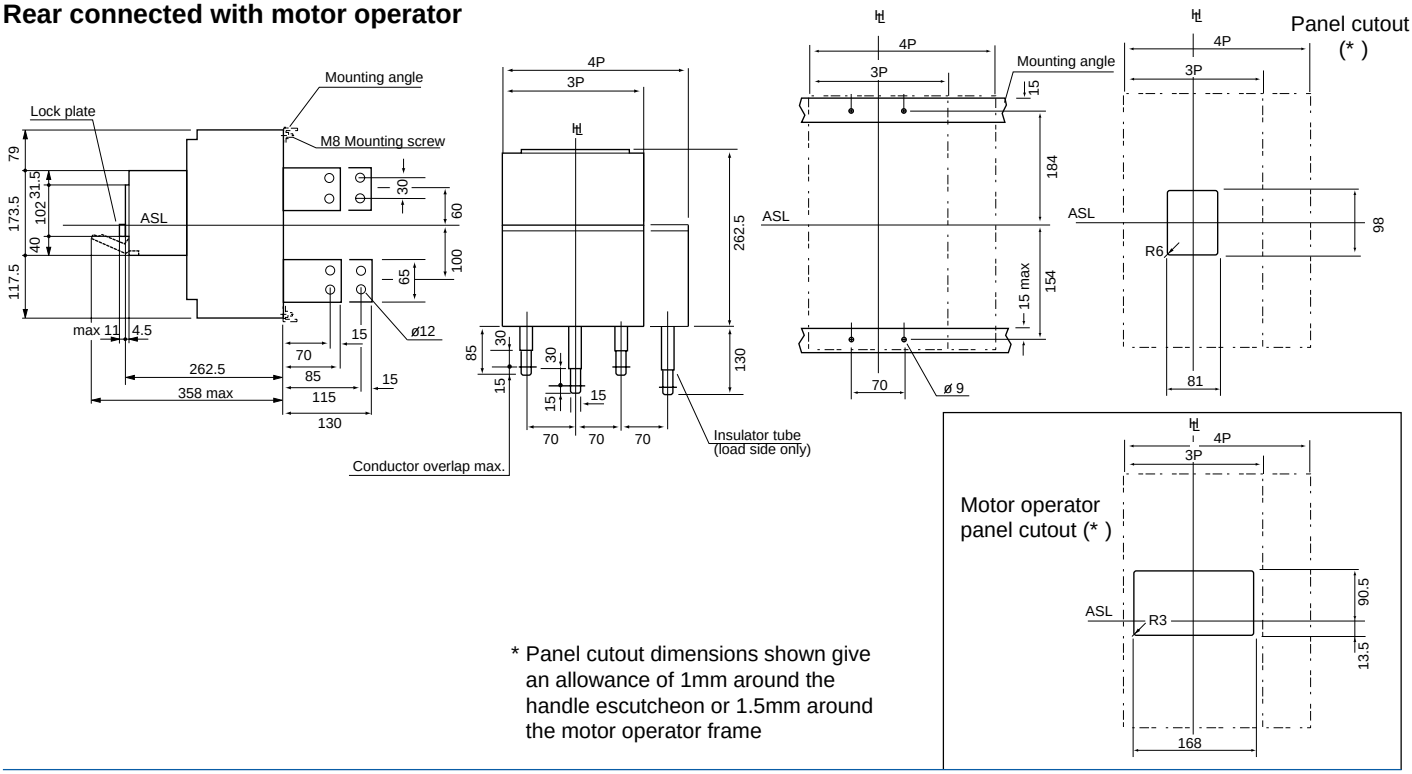
XS1600NE, XS1600NN

ASL: Arrangement Standard Line
⊬ : Handle Frame Centre Line

Front connected

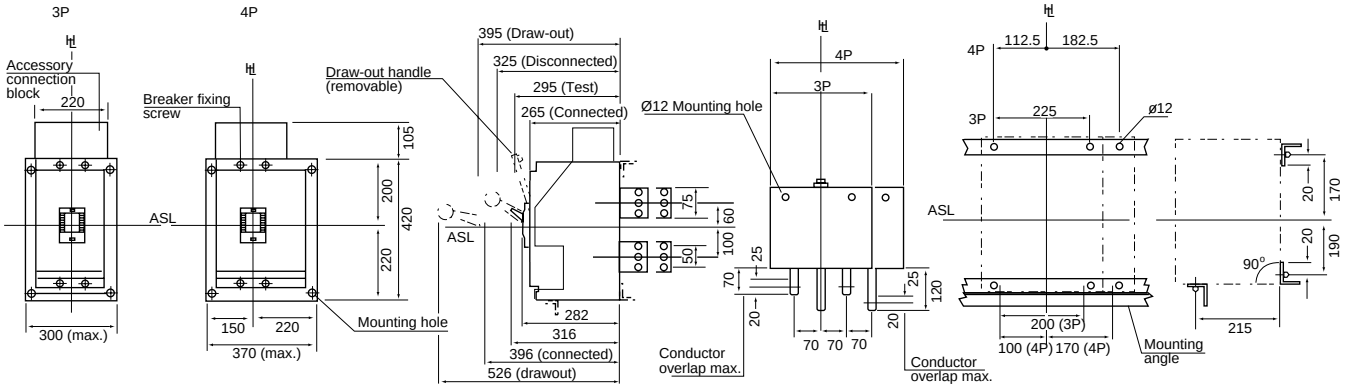


Rear connected with motor operator



* Panel cutout dimensions shown give an allowance of 1mm around the handle escutcheon or 1.5mm around the motor operator frame

Draw-out



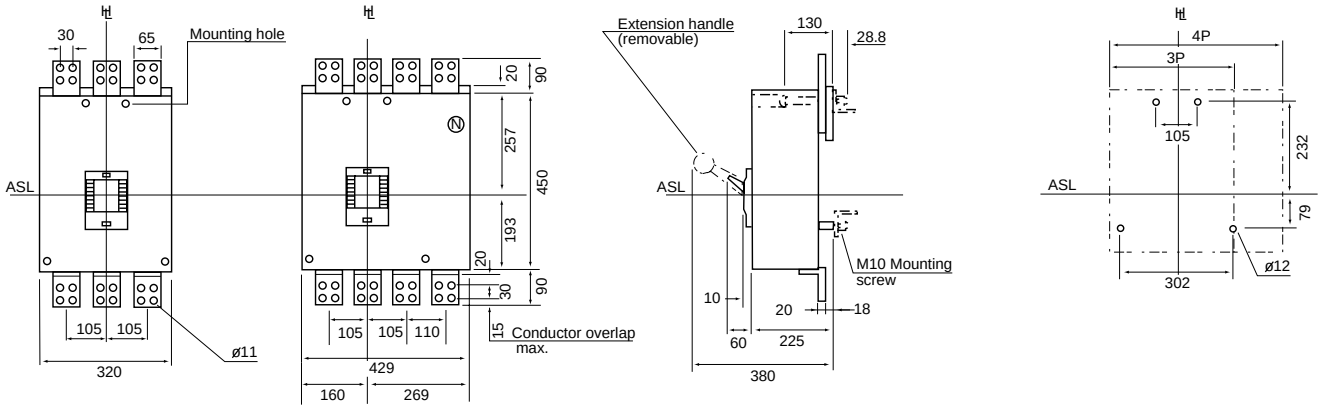
Outline dimensions (mm)

TemBreak

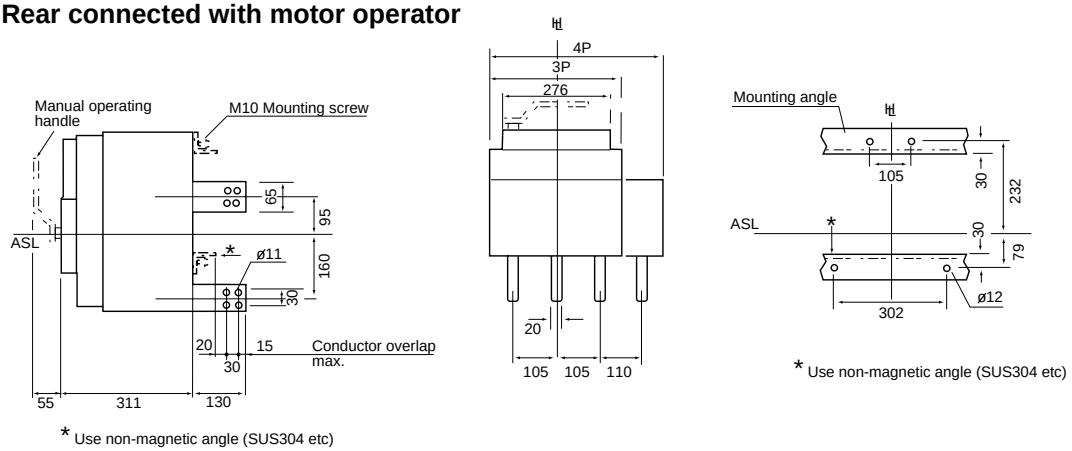
XS2000NE

ASL: Arrangement Standard Line
: Handle Frame Centre Line

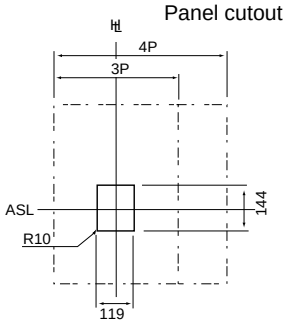
Front connected



Rear connected with motor operator

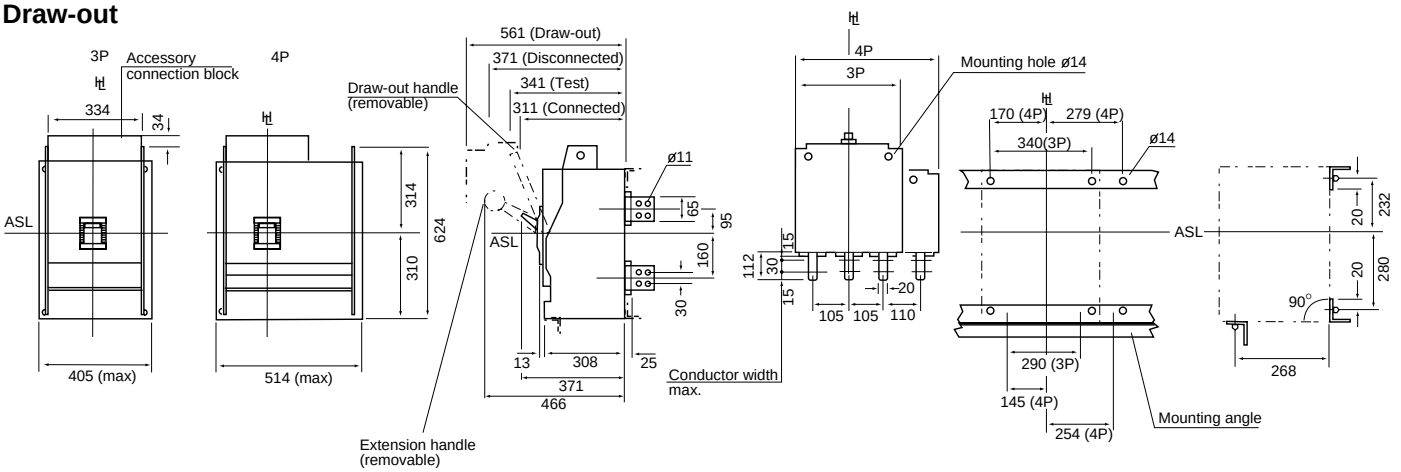


Panel cutout



• Panel cutout dimensions shown give an allowance of 2 mm around the handle escutcheon.

Draw-out



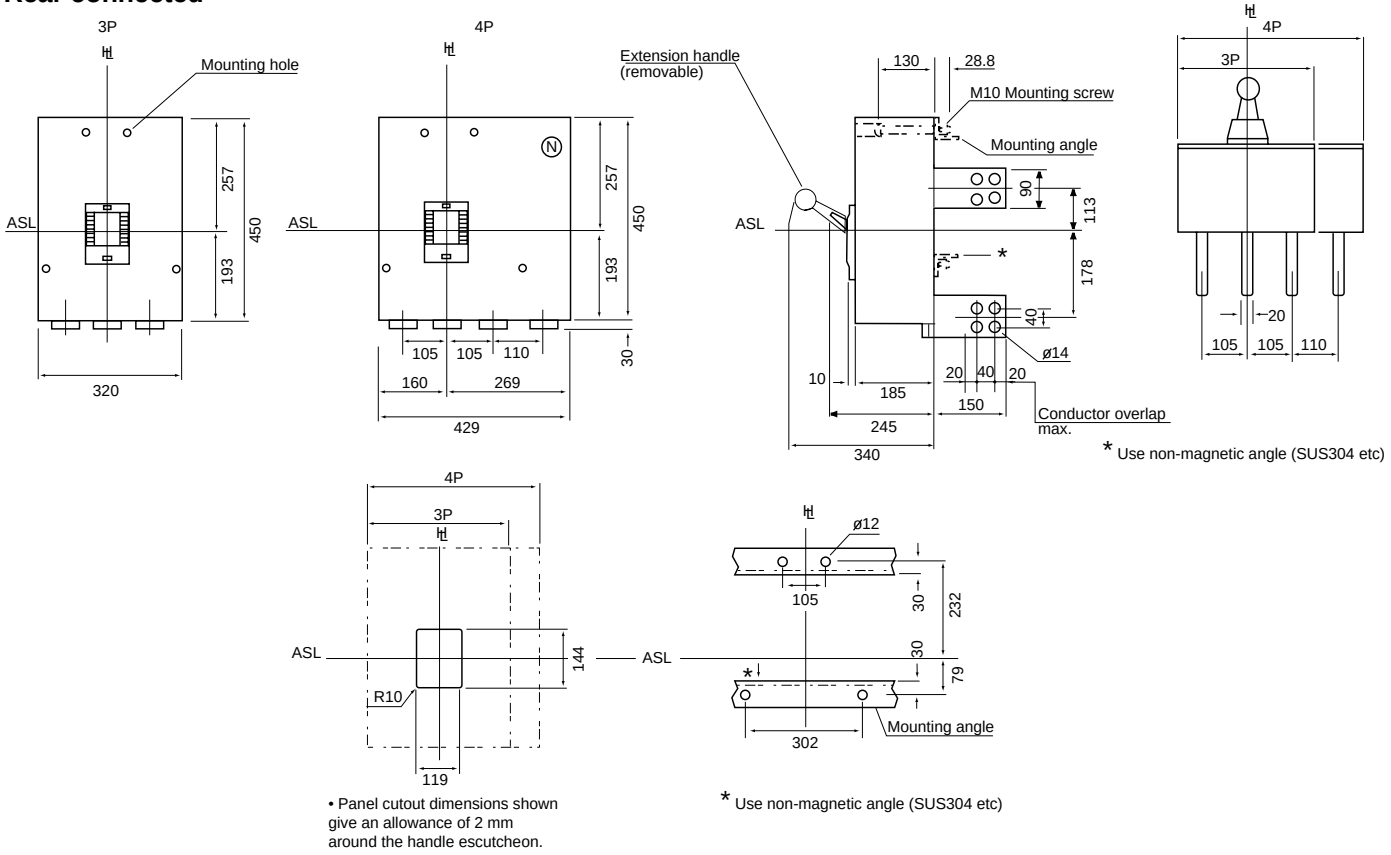
Outline dimensions (mm)

TemBreak

XS2500NE

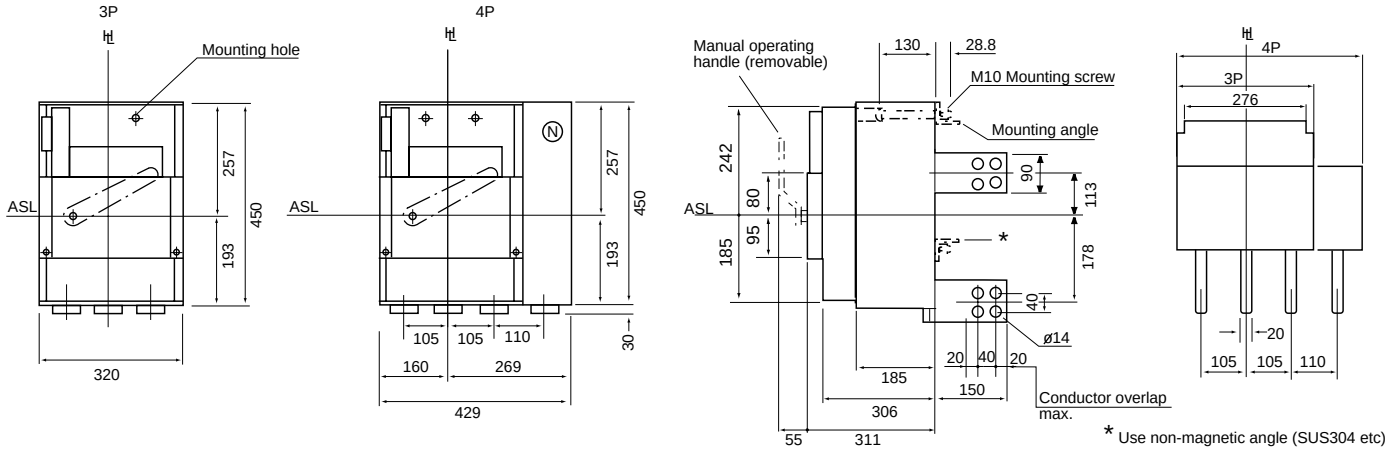
ASL: Arrangement Standard Line
⊬ : Handle Frame Centre Line

Rear connected



• Panel cutout dimensions shown give an allowance of 2 mm around the handle escutcheon.

Rear connected with motor operator



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