



TemBreak

The Ultimate Safety Breaker

OUR CUSTOMER CARE COMMITMENTS

Quality is Guaranteed

All products supplied from this catalogue carry a guarantee against defects in materials and workmanship for a period of 12 months from date of purchase as standard.

Quality is Accredited

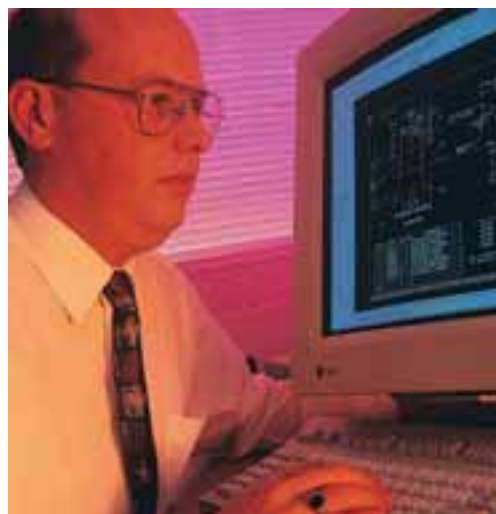
Terasaki has ISO 9001 accreditation for the manufacture, sale and distribution of all products featured in this catalogue.

Ordering is Easy

We have made ordering easy for you by colour coding the sections of this catalogue and including order codes. If you need help with ordering or selection, please call one of the telephone numbers shown below.

Technical Support is Free

We offer free technical support and application software to all customers. This could range from selecting a product for an unusual application through to carrying out a protection study. Please call one of the telephone numbers shown below.



CUSTOMER SERVICE CONTACT DETAILS

Italy:	+39 02 92278300	Australia and New Zealand:	+61 3 9429 2999
Spain & Latin America:	+34 93 8796050	Brazil:	+55 21 33019898
Sweden:	+46 8 55628230	Malaysia:	+60 3 55493820
Denmark:	+45 70 260057	Singapore:	+65 6744 9752
UK and all other countries in Europe, Middle East and Africa:	+44 141 9411940	China:	+86 20 8270 8556
		Japan and all other countries in Asia:	+81 6 67919323

Safety and protection are the prime purposes of Terasaki products. You care about safety and protection. The people who depend on products you specify care about safety and protection. We call TemBreak 2 the Ultimate Safety Breaker. Throughout this catalogue you will see our Safety+ mark. This is designed to draw your attention to safety features which exceed international standards.

Please read further to discover the benefits of TemBreak 2.



THE TEMBREAK 2 PRODUCT LINES

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS

Rated current (I_n) from 20A to 630A. Breaking Capacity (I_{cu}) from 25kA to 200kA at 415V AC.



TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS

Rated current (I_n) from 10A to 100A.
Breaking Capacity (I_{cu}) of 10kA at 415V AC.



TEMBREAK

MOULDED CASE CIRCUIT BREAKERS

Rated current (I_n) from 630A to 1600A. Breaking Capacity (I_{cu}) from 50kA to 125kA at 415V AC.



WELCOME TO TEMBREAK 2

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS 16A TO 630A

1. Welcome to TemBreak 2

- Easy Selection Guide 5
- 10 Reasons to use TemBreak 2 7
- Safety Plus 9
- Exceeding Standards 11
- Reducing Environmental Impact 12

2. Ratings and Specifications

3. Operating Characteristics

4. Application Data

5. Accessories

6. Installation

7. Dimensions



TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS 10A TO 100A

8. TemBreak 2 MINI Moulded Case Circuit Breakers



TEMBREAK

MOULDED CASE CIRCUIT BREAKERS 630A TO 1600A

9. TemBreak Moulded Case Circuit Breakers



10. Order Codes

WELCOME TO TEMBREAK 2

EASY SELECTION GUIDE

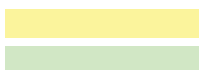
The TemBreak 2 range of products includes:

- Moulded Case Circuit Breakers (MCCBs)
- Switch-Disconnectors in the same compact moulded case frame sizes as MCCBs
- A comprehensive range of accessories which are common to MCCBs and Switch-Disconnectors. All internal accessories are common to all frame sizes.



Key to Model and Type Designations

Model Denoted by

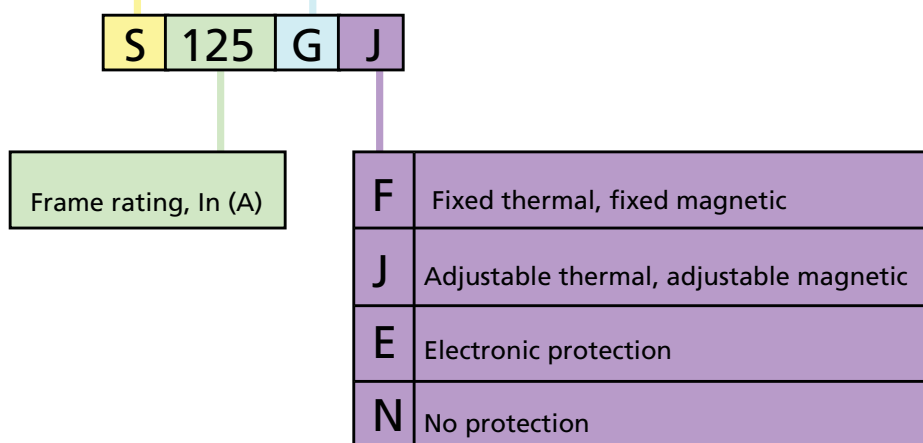


Type Denoted by



E	Economical
S	Standard
H	High
L	Limiting*

C	Low breaking capacity
N	Medium breaking capacity
G	High breaking capacity
P	Extra High breaking capacity



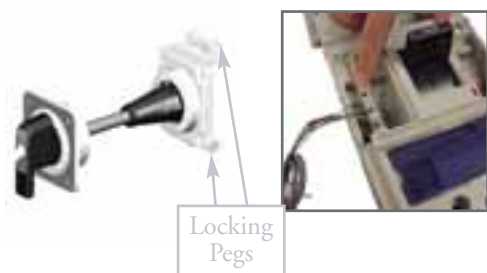
EASY SELECTION GUIDE

Frame Rating (A)																
50/100		125			160/250			400/630			800/1250/1600					
E S H L	TemBreak 2 Mini Moulded Case Circuit Breakers. Refer to Section 8	MCCBs											TemBreak Moulded Case Circuit Breakers. Refer to Section 9			
		Model	Type	Icu (kA)	Model	Type	Icu (kA)	Model	Type	Icu (kA)						
		E125	NJ	25	E250	NJ	25	E400	NJ	25						
								E630	NE	36						
		S125	NF	25	S160	NF	25	S400	CJ	36						
		S125	NJ	36	S160	NJ	36	S400	NJ	50						
		S125	GJ	65	S160	GJ	65	S400	GJ	70						
					S250	NJ	36	S400	NE	50						
					S250	GJ	65	S400	GE	70						
					S250	PE	70	S630	CE	50						
								S630	GE	70						
		H125*	NJ	125	H160	NJ	125	H400	NJ	125						
					H250	NJ	125	H400	NE	125						
		L125*	NJ	200	L160	NJ	200	L400	NJ	200						
					L250	NJ	200	L400	NE	200						
		I_n (A)														
		125 ↕ 16			250 ↕ 16			630 ↕ 250			1600 ↕ 630					
100 ↕ 10																
		Switch-Disconnectors														
		Model	Type		Model	Type		Model	Type							
		S125	NN		S160	NN		S400	NN							
					S250	NN		S630	NN							

Note: All breaking capacities are r.m.s. symmetrical at 415V AC

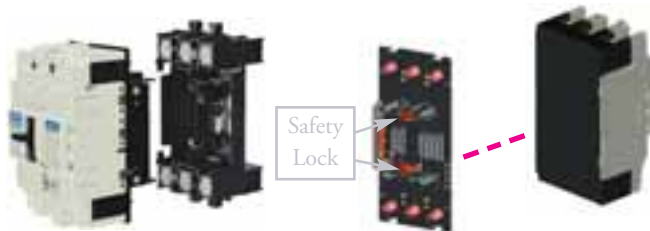
10 REASONS TO USE TEMBREAK 2

1. FIELD-INSTALLABLE ACCESSORIES



- Accessories can be fitted by the switchboard builder or added by the end-user. All internal accessories are common for TemBreak 2 MCCBs.
- Handles and motor operators can be rapidly fitted using the locking pegs. It takes **less than 10 seconds to secure a handle or motor** to the MCCB – a great time saving compared to alternative products.
- All accessories are endurance tested to the same level as the host MCCB.

2. SAFETY LOCK FOR PLUG-IN VERSIONS

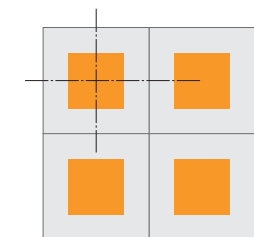


Plug-in MCCB and base

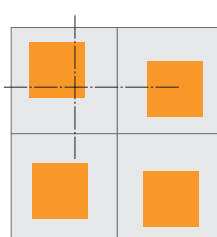
Plug-in connection kit, including safety lock

The plug-in MCCB is locked to the base when the toggle is ON. It cannot be removed unless the toggle is OFF or TRIPPED. The safety lock prevents a trip occurring as the MCCB is being removed from the base.

3. SYMMETRICAL DOOR CUTOUT PATTERNS



Using TemBreak 2 Operating Handles



Using other MCCB Operating Handles

Door cutout patterns for handles are symmetrical, even when breakers are mounted in opposite directions.

4. MODULAR SIZES



All current ratings up to 630A can be supplied in 2 sizes: the 250A and 630A sizes.



The compact 125A size offers the same features and performance but with reduced dimensions and cost.

10 REASONS TO USE TEMBREAK 2

5. COMPACT CHANGEOVERS



Changeover Pair with Link Interlock and Motor Operators



Viewed from Below (250A frame)

The mechanical interlock is installed on the front of the MCCB, and is compatible with motor operators and handles. An automatic changeover system can be assembled in a few minutes by a switchboard builder or end-user.

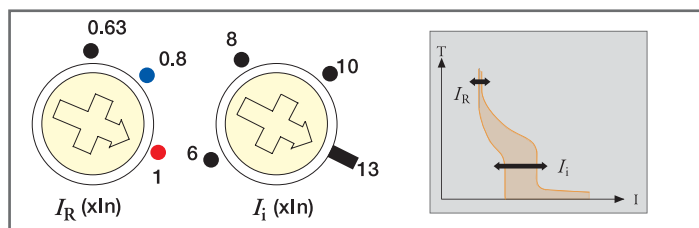
6. DIRECT OPENING



Under the heading “Measures to minimise the risk in the event of failure”, IEC 60204-1 Safety of Machinery-Electrical Equipment of Machinery includes the following recommendation:

“-the use of switching devices having positive (or direct) opening operation.”

7. UNSURPASSED FLEXIBILITY



Overload protection is adjustable between 63% and 100% of the rating.

Short-circuit protection is adjustable on all thermal magnetic models.

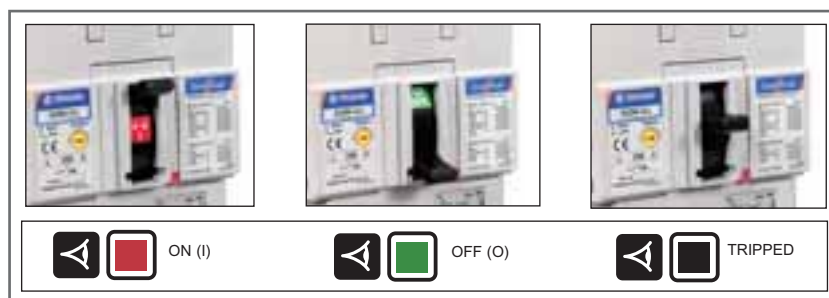
Short-circuit protection settings are suitable for motor starting on all models, including the compact 125A frame.

8. CUSTOMISED TRIPPING TIMES



If you require a characteristic which is not available as a preset on our electronic protection unit, send us the details and we will program a customised characteristic to suit your application. (Within certain limits - contact us for details).

9. VISUAL SAFETY



Coloured indicators display the ON or OFF status. The indicators are fully covered if the breaker trips, and black is the only visible colour.



WELCOME TO TEMBREAK 2

SAFETY PLUS

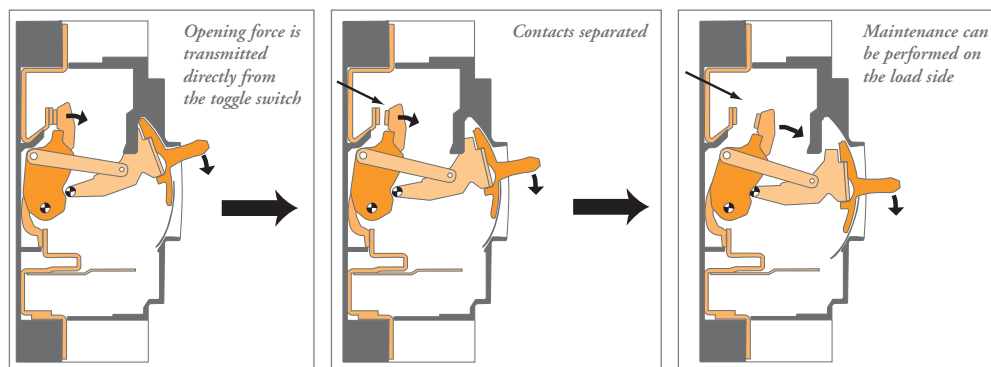
Terasaki have an innovative approach to product design. Our goal is to develop products which not only meet, but exceed recognised standards.

We use our knowledge of related applications to improve circuit breaker designs. For instance, when developing the Direct Opening Action, we applied ideas from a machinery safety standard to the design of the TemBreak 2 switching mechanism.

This proactive development policy confirms our reputation as Innovators in Protection Technology.



Machine Safety



TemBreak 2 MCCBs are marked with IEC symbol indicating Direct Opening Action. (→)

The robust mechanism ensures that the force you apply to the toggle is transmitted directly to the contacts.

Under the heading “Measures to minimise risk in the event of failure”, IEC 60204-1 Safety of Machinery - Electrical Equipment of Machines includes the following recommendation:

“ - the use of switching devices having positive (or direct) opening operation.”

TemBreak 2 MCCBs help you to comply with the world's most stringent safety standards. It is one of the safest switching devices for machinery.



WELCOME TO TEMBREAK 2

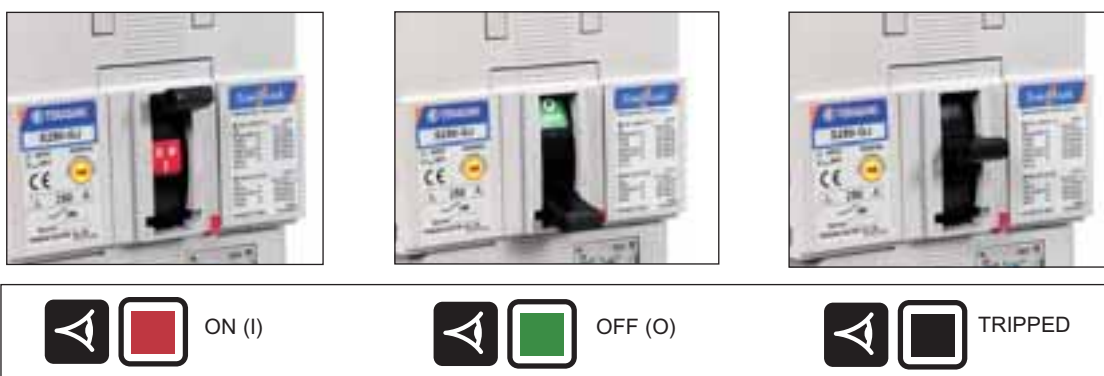
SAFETY PLUS

Visual Safety

You can easily see if a breaker is open, closed or tripped. **SAFETY+** coloured indicators boldly display the ON or OFF status. The indicators are fully covered if a breaker trips, and black is the only visible colour.

This is a *unique* safety feature. You can identify faulty circuits at a glance.

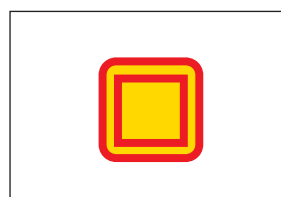
The toggle position always matches the position of the main contacts.



Touch Safety

The risk of touching live parts has been minimised by design. These features reduce the risk of touching live parts:

- There are no exposed metal screws on the front face
- IP20 protection at the terminals
- IP30 protection at the toggle
- If the toggle is broken by accident or misuse, no live part is exposed
- No live parts are exposed when fitting accessories
- Double Insulation



WELCOME TO TEMBREAK 2

EXCEEDING STANDARDS

Safety Plus

TemBreak 2 MCCBs exceed the requirements of recognised standards.

International Compliance

- The TemBreak 2 MCCB complies with the international standard IEC 60947-2
- TemBreak 2 Switch Disconnectors comply with IEC 60947-3
- Accessories comply with IEC 60947-5-1 or IEC 61058-1
- The entire range conforms to the IEC general rules for switchgear, IEC 60947-1
- TemBreak 2 MCCBs comply with JIS C 8201-2-1 Ann.1
- The TemBreak 2 range complies with the EC Low Voltage Directive and all models are CE marked
- TemBreak 2 MCCBs carry the IEC symbol indicating Direct Opening Action as defined by IEC 60947-5-1. IEC 60204-1, Safety of Machinery - Electrical Equipment of Machines recommends that switches used for machinery have Direct Opening Action to minimise risk in the event of failure



Independent Tests

TemBreak 2 circuit breakers have been tested at independent laboratories as well as in Terasaki's own laboratory in Osaka, Japan. Copies of independent test reports are available on request.

Marine Approvals

TemBreak 2 MCCBs are approved by the leading marine approval organisations.

Visit www.terasaki.com for current marine approvals and performance ratings.



WELCOME TO TEMBREAK 2

REDUCING ENVIRONMENTAL IMPACT

Longer Life Cycle

It makes good environmental sense to install a product with a long life expectancy. If you install a TemBreak 2 MCCB, you can expect it to stay in service for at least 30,000 mechanical operations (250A Frame). This is 22,000 more operations than recommended by IEC 60947-2, the international standard for circuit breakers.

If a system must be upgraded in future, we have made the following provisions for recycling:

- ① The modular design of TemBreak 2 allows component parts and accessories to be easily disassembled and separately disposed of. Moulded parts do not contain any embedded metal parts.
- ② Materials are clearly marked to allow future identification for easy recycling.



Uses Eco-friendly Materials

The following materials are used in most TemBreak 2 circuit breakers:

- Thermoplastic resin not containing PBBs or PBDEs
- Lead-free solder
- Cadmium-free contacts

Lighter and Smaller

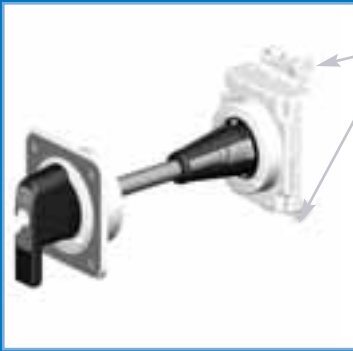
Components with low weight and volume make life easy for users, but high performance from smaller products also means less material used and less waste produced.

ISO 14001

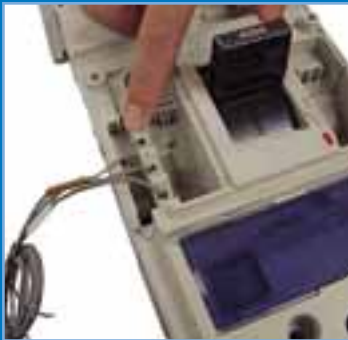
Terasaki operate an Environmental Management System accredited to ISO 14001:1999. This requires us to monitor and measure the environmental performance of our activities, products and services in order to continually improve such performance.

Further information about this standard can be found on the internet at: www.tc207.org

FIELD-INSTALLABLE ACCESSORIES



Locking
Pegs



- Accessories can be fitted by the switchboard builder or added by the end-user. All internal accessories are common for TemBreak 2 MCCBs.
- Handles and motor operators can be rapidly fitted using the locking pegs. It takes **less than 10 seconds** to secure a handle or motor to the MCCB – a great time saving compared to alternative products.
- All accessories are endurance tested to the same level as the host MCCB.

RATINGS AND SPECIFICATIONS

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS

16A TO 630A

1. Welcome to TemBreak 2

2. Ratings and Specifications

- MCCBs 15
- Switch-Disconnectors 19

3. Operating Characteristics

4. Application Data

5. Accessories

6. Installation

7. Dimensions



TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS

10A TO 100A

8. TemBreak 2 MINI Moulded Case
Circuit Breakers

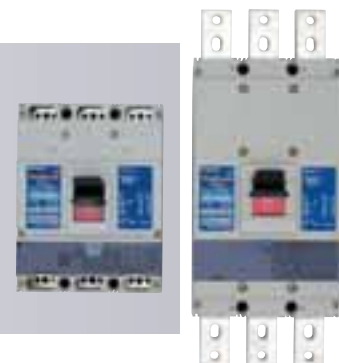


TEMBREAK

MOULDED CASE CIRCUIT BREAKERS

630A TO 1600A

9. TemBreak Moulded Case Circuit Breakers



10. Order Codes

RATINGS AND SPECIFICATIONS

MCCB ELECTRICAL CHARACTERISTICS TO IEC 60947-2, EN 60947-2, JIS C 8201-2-1 ANN.1, AS/NZS 3947-2, NEMA AB-1

Frame	Quantity	Unit	Condition	125						160				
Model				E125	S125	S125	S125	H125	L125	S160	S160	S160	H160	L160
Number of Poles				3, 4	1	3, 4	3,4	3, 4	3, 4	1	3, 4	3, 4	3, 4	3, 4
Type				NJ	NF	NJ	GJ	NJ	NJ	NF	NJ	GJ	NJ	NJ
Nominal current ratings														
	I_n	(A)	45°C	20,32,50, 63,100,125	16,20,25, 32,40,50, 63, 80, 100,125	20,32,50, 63,100,125	20,32,50, 63,100,125	20,32,50, 63,100,125	20,32,50, 63,100,125	16,20,25,32, 40,50,63,80, 100,125,160	20,32,50,63, 100,125,160	50,63,100, 125,160	160	160
Electrical characteristics														
Rated operational voltage	U_c	(V)	AC 50/60 Hz DC	500 500	240 -	690 600	690 600	690 600	690 600	415 125	690 600	690 600	690 600	690
Rated insulation voltage	U_i	(V)		800	800	800	800	800	800	800	800	800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8	8	8	8	8	8	8
Ultimate breaking capacity (IEC, JIS, AS/NZS)	I_{cu}	(kA)	690V AC	-	-	6	6	20	25	-	7.5 (5*)	7.5	20	25
			525V AC	8	-	22	25	45	65	-	25 (18*)	25	45	65
			440V AC	15	-	25	50	120	180	-	25 (18*)	50	120	180
			400/415V AC	25	-	36	65	125	200	-	36 (30*)	65	125	200
			220/240V AC	35	25	50	85	150	200	25	65 (42*)	85	150	200
			250V DC	25	-	25	40	40	40	-	40 (30*)	40	40	40
Service breaking capacity (IEC, JIS, AS/NZS)	I_{cs}	(kA)	690V AC	-	-	6	6	15	20	-	7.5 (5*)	7.5	15	20
			525V AC	6	-	22	22	45	65	-	25 (18*)	25	45	65
			440V AC	12	-	25	25	80	135	-	25 (18*)	25	80	135
			400/415V AC	19	-	36/30	36/33	85	150	-	36 (25*)	36	85	150
			220/240V AC	27	13	50	85	150	150	19	65 (35*)	85	150	150
			250V DC	19	-	19	40	40	40	-	40 (25*)	40	40	40
Rated breaking capacity (NEMA)		(kA)	480V AC 240VAC	8 35	- 25	22 50	25 85	45 150	65 200	- 25	22 (18*) 65 (42*)	25 85	45 150	65 200
Protection														
Adjustable thermal, adjustable magnetic				■		■	■	■	■		■	■	■	■
Fixed thermal, fixed magnetic					■					■				
Microprocessor														
Utilisation category				A	A	A	A	A	A	A	A	A	A	A
Installation														
Front connection (FC)				■	■	■	■	■	■	■	■	■	■	■
Attached flat bar (FB)				•	•	•	•	•	•	•	•	•	•	•
Solderless terminal (cable clamp) (FW)				•	•	•	•	•	•	•	•	•	•	•
Rear connection (RC)				•	-	•	•	•	•	-	•	•	•	•
Plug-in (PM)				•	-	•	•	•	•	-	•	•	•	•
Draw- out (DR)				-	-	-	-	-	-	-	-	-	-	-
DIN rail mounting (DA)				•	•	•	•	-	-	-	-	-	-	-
Dimensions	h	(mm)		155	155	155	155	165	165	165	165	165	165	165
	w	(mm)	3 pole, (1 pole)	90	(30)	90	90	105	105	(35)	105	105	105	105
	d	(mm)	4 pole	120		120	120	140	140	-	140	140	140	140
				68	68	68	68	103	103	68	68	68	103	103
Weight	W	(kg)	3 pole, (1 pole)	1.1	(0.45)	1.1	1.1	2.4	2.4	(0.5)	1.5	1.5	2.5	2.5
			4 pole	1.4		1.4	1.4	3.2	3.2		1.9	1.9	3.3	3.3
Operation														
Direct Opening Action				■	■	■	■	■	■	■	■	■	■	■
Toggle operation				■	■	■	■	■	■	■	■	■	■	■
Variable depth (HP) / direct mount operating handle (HB)				•	-	•	•	•	•	-	•	•	•	•
Motor operator (MC)				•	-	•	•	•	•	-	•	•	•	•
Endurance	Electrical	cycles	440V AC	30,000						20,000			20,000	
	Mechanical	cycles		30 000						30 000			30 000	

RATINGS AND SPECIFICATIONS

SECTION 2

TURN TO PAGE 143, SECTION 9, FOR RATINGS AND SPECIFICATIONS OF MCCBs FROM 630A TO 1600A

RATINGS AND SPECIFICATIONS

SWITCH-DISCONNECTOR ELECTRICAL CHARACTERISTICS
TO IEC 60947-3, EN 60947-3, AS/NZS 3947-3

Frame	Quantity	Unit	Condition	125	160	250	400	630
Model				S125	S160	S250	S400	S630
Number of Poles				3,4	3,4	3,4	3,4	3,4
Type				NN	NN	NN	NN	NN
Nominal current ratings								
	I_c	(A)		125	160	250	400	630
Electrical characteristics								
Rated operational voltage	U_c	(V)	AC 50/60 Hz DC	690 600	690 600	690 600	690 600	690 600
Rated insulation voltage	U_i	(V)		800	800	800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8
Rated short -circuit making capacity	I_{cm}	(kA peak)	0.3 Seconds AC DC	3.6	6	6	9	9
Rated short-time withstand current	I_{cw}	(kA rms)		2	3	3	5	5
Utilisation category to IEC 60947-3				AC-23A DC-22A	AC-23A DC-22A	AC-23A DC-22A	AC-23A DC-22A	AC-23A DC-22A
Installation								
Front connection (FC)	h w d W	(mm) (mm) (mm) (kg)	3 pole 4 pole	■	■	■	■	■
Attached flat bar (FB)				•	•	•	•	•
Solderless terminal				•	•	•	•	•
Rear connection (RC)				•	•	•	•	•
Plug-in (PM)				•	•	•	•	✚
Draw- out (DR)				-	-	-	-	-
DIN rail mounting (DA)				•	-	-	-	-
Dimensions				155	165	165	260	260
				90	105	105	140	140
				120	140	140	185	185
Weight				68	68	68	103	103
				1.1	1.5	1.5	4.2	4.4
				1.4	1.9	1.9	5.6	5.8
Operation								
Direct Opening Action	Electrical Mechanical	cycles cycles	415V AC	■	■	■	■	■
Toggle operation				■	■	■	■	■
Variable depth (HP) / direct mount operating handle (HB)				•	•	•	•	•
Motor operator (MC)				•	•	•	•	•
Endurance				30,000 30,000	20,000 30,000	10,000 30,000	4,500 15,000	4,500 15,000

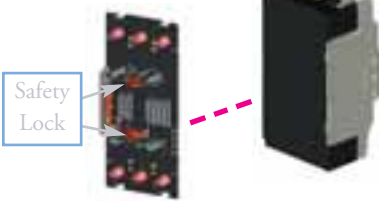
RATINGS AND SPECIFICATIONS

SAFETY LOCK FOR PLUG-IN VERSIONS



Plug-in MCCB and base

The plug-in MCCB is locked to the base when the toggle is ON. It cannot be removed unless the toggle is OFF or TRIPPED. The safety lock prevents a trip occurring as the MCCB is being removed from the base.



Plug-in connection kit, including safety lock



2

OPERATING CHARACTERISTICS

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS 16A TO 630A

1. Welcome to TemBreak 2
2. Ratings and Specifications
3. **Operating Characteristics**
 - Thermal Magnetic Protection 23
 - Thermal Magnetic Time / Current Characteristics 25
 - Electronic Protection 29
 - Electronic Time / Current Characteristics 32
 - Let-through Peak Current Characteristics 35
 - Let-through Energy Characteristics 39
4. Application Data
5. Accessories
6. Installation
7. Dimensions



TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS 10A TO 100A

8. TemBreak 2 MINI Moulded Case Circuit Breakers

TEMBREAK

MOULDED CASE CIRCUIT BREAKERS 630A TO 1600A

9. TemBreak Moulded Case Circuit Breakers

10. Order Codes

OPERATING CHARACTERISTICS

THERMAL MAGNETIC PROTECTION

TemBreak 2 MCCBs from 125A frame to 400A frame are available with thermal magnetic protection units. Refer to page 143, Section 9, for details of TemBreak thermal magnetic MCCBs up to 800A.

All 3 pole and 4 pole models have adjustable thermal and adjustable magnetic characteristics.



3 Pole MCCB with Adjustable Thermal and Adjustable Magnetic Characteristics Single Pole MCCB with Fixed Characteristics

An adjustable magnetic characteristic allows short-circuit protection to be matched to the load and supply characteristics, for example motor inrush current or generator short-circuit current.

Lowering the short-circuit tripping threshold can allow a higher earth-loop impedance in an installation and provide end-of-cable protection with correct disconnection times.

Single pole MCCBs have fixed thermal and fixed magnetic characteristics.

MCCBs feeding motor circuits are often required to provide only short circuit protection, with overload protection provided by a separate thermal or electronic overload relay. TemBreak 2 MCCBs without thermal protection elements, but including magnetic protection elements are available for this application.

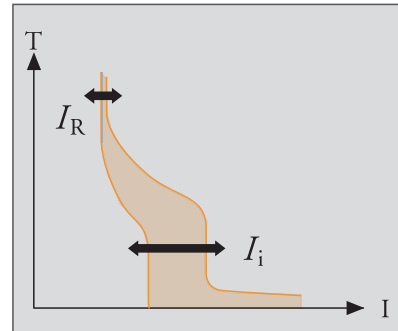
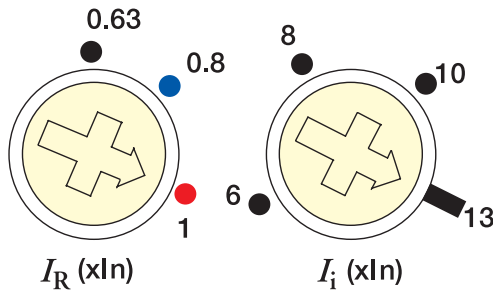
Thermal magnetic protection units are especially suited to the following applications:

- Installations where harmonic distortion of current waveforms is likely. They inherently act on the r.m.s heating effect of current.
- DC circuits. They provide both DC overload and DC short-circuit protection. Magnetic trip currents, (I_i), quoted in this catalogue are expressed in AC r.m.s. Amperes. The instantaneous magnitudes of current required to operate the magnetic elements are higher than the AC r.m.s. values by a factor of $\sqrt{2}$. When protecting DC circuits, it is therefore recommended that the I_i setting is reduced accordingly.

OPERATING CHARACTERISTICS

THERMAL MAGNETIC PROTECTION

Adjustment Dials



1. I_R is the thermal element adjustment dial and is used to set the rated current to match the conductor rating.

I_R can be set between 0.63 and 1.0 times I_n .

2. I_i is the magnetic element adjustment dial and is used to set the short circuit tripping threshold to suit the application.

I_i can be set between 6 and 12 times I_n on 125A and 400A frame models.

I_i can be set between 6 and 13 times I_n on 250A frame models with ratings of 160A, 200A and 250A.

I_i can be set between 6 and 12 times I_n on 250A frame models with ratings of 125A and less.

Models, Types and Rated Currents of Thermal Elements

Model	Type	Current Rating I_n (A)
S125	-NF	16, 20, 25, 32, 40, 50, 63, 80, 100, 125
E125	-NJ	20, 32, 50, 63, 100, 125
S125	-NJ	20, 32, 50, 63, 100, 125
S125	-GJ	20, 32, 50, 63, 100, 125
H125	-NJ	20, 32, 50, 63, 100, 125
L125	-NJ	20, 32, 50, 63, 100, 125
S160	-NF	16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160
S160	-NJ	20, 32, 50, 63, 100, 125, 160
S160	-GJ	50, 63, 100, 125, 160
H160	-NJ	160
L160	-NJ	160
E250	-NJ	20, 32, 50, 63, 100, 125, 160, 200, 250
S250	-NJ	160, 200, 250
S250	-GJ	160, 200, 250
H250	-NJ	160, 250
L250	-NJ	160, 250
E400	-NJ	250, 400
S400	-CJ	250, 400
S400	-NJ	250, 400
S400	-GJ	250, 400
H400	-NJ	250, 400
L400	-NJ	250, 400

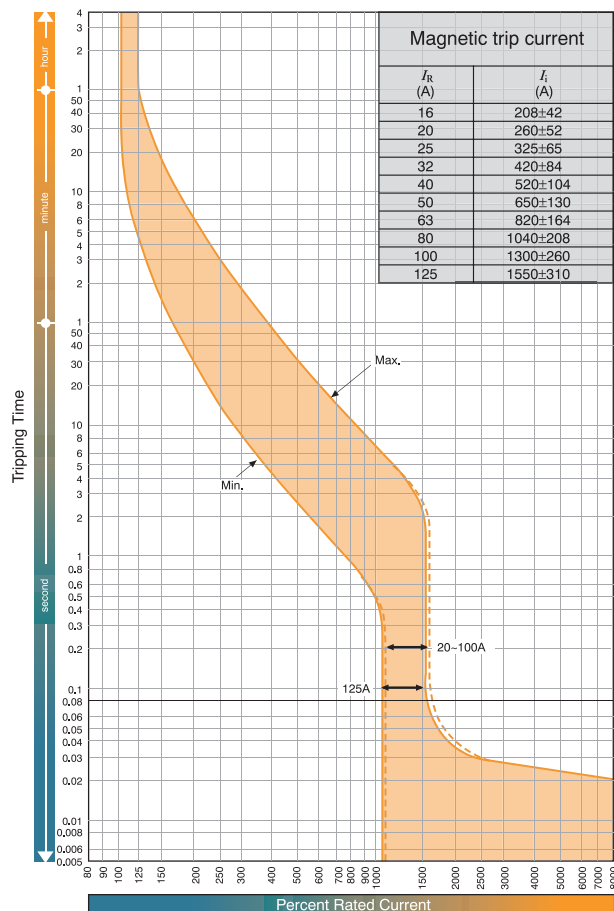
OPERATING CHARACTERISTICS

THERMAL MAGNETIC CHARACTERISTICS

Single Pole MCCBs

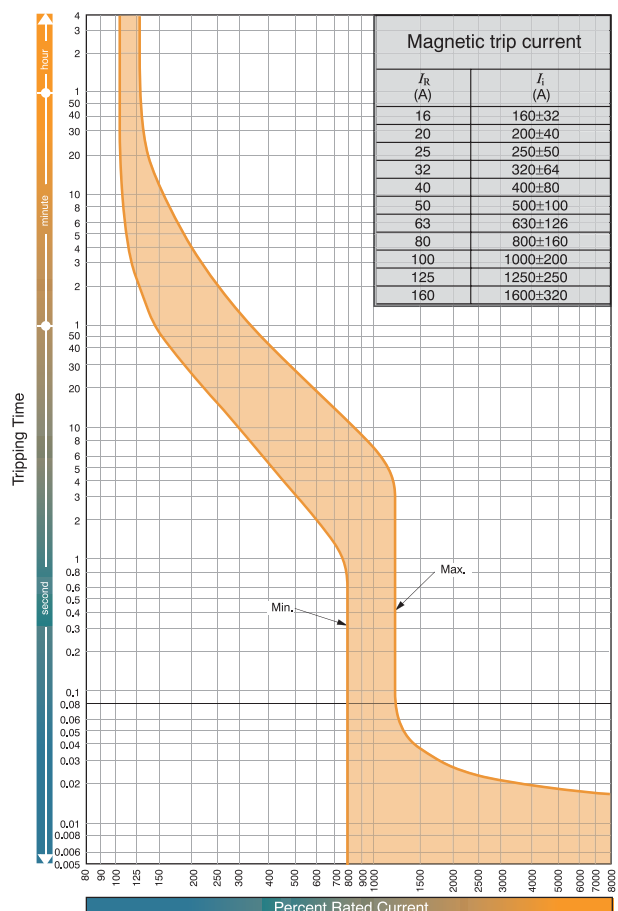
Time/current characteristic curves

S125-NF



Time/current characteristic curves

S160-NF



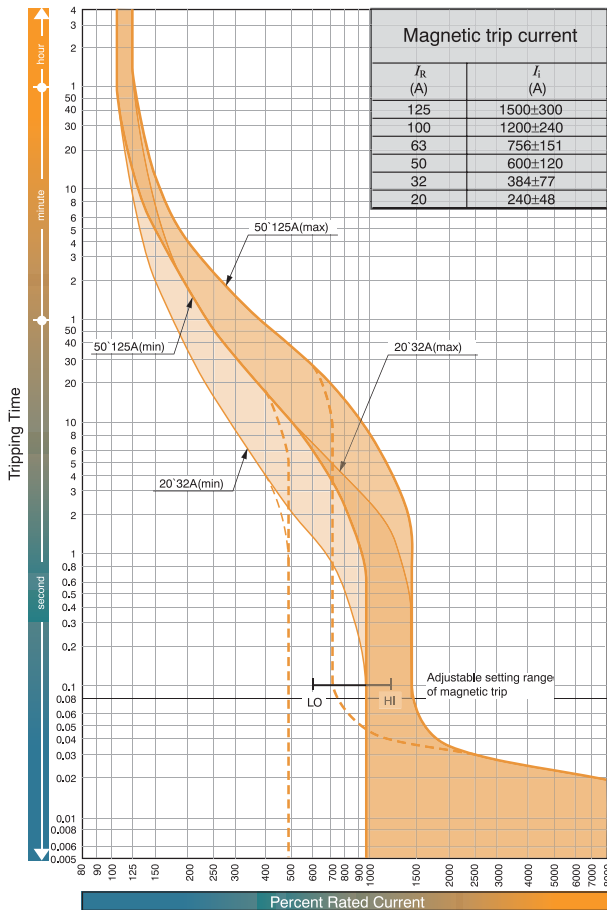
OPERATING CHARACTERISTICS

THERMAL MAGNETIC CHARACTERISTICS

125A Frame MCCBs

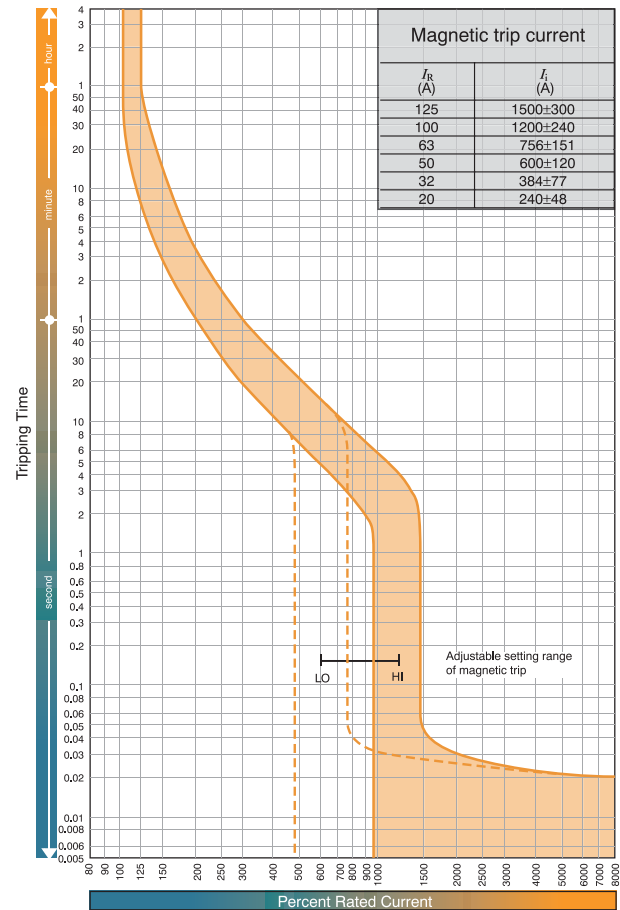
Time/current characteristic curves

E125-NJ, S125-NJ, S125-GJ



Time/current characteristic curves

H125-NJ, L125-NJ



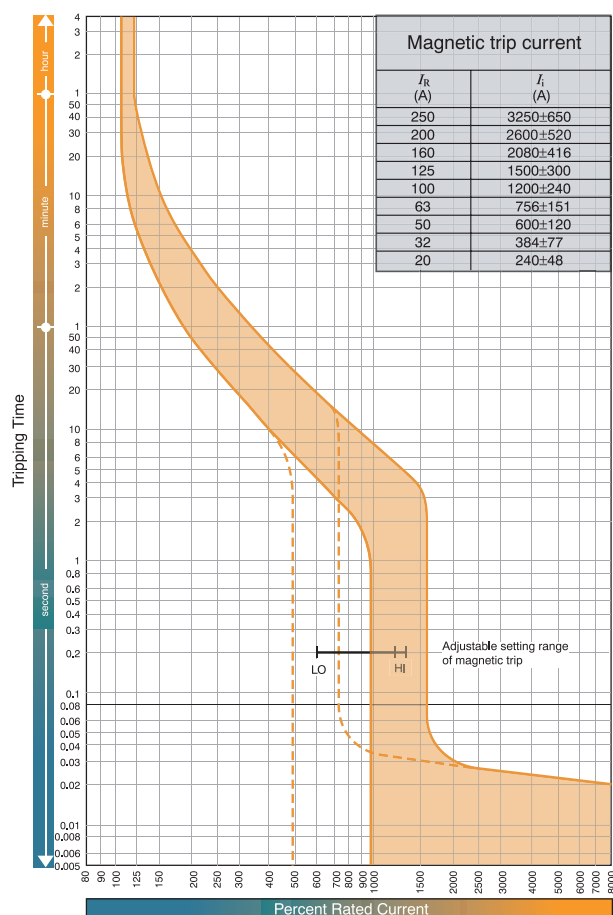
OPERATING CHARACTERISTICS

THERMAL MAGNETIC CHARACTERISTICS

160A and 250A Frames

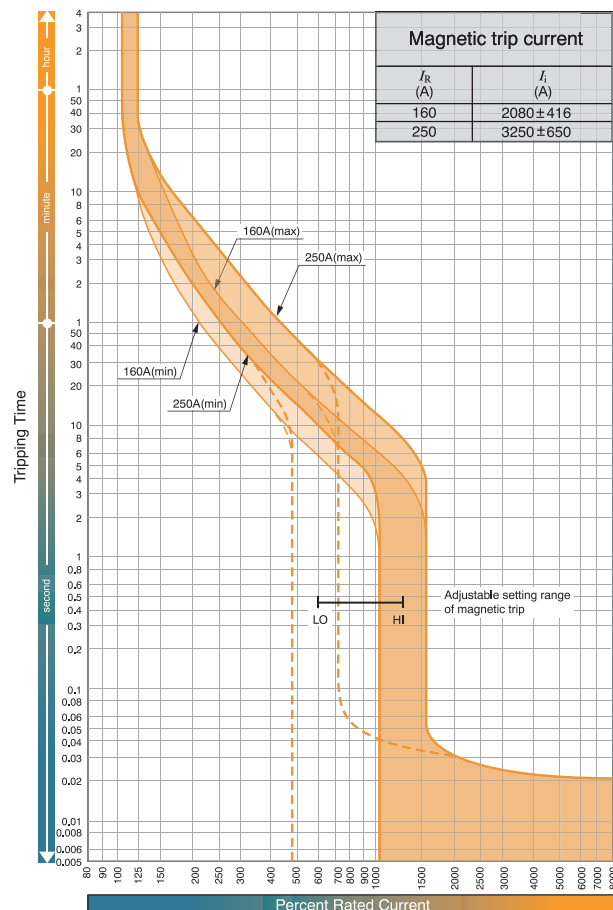
Time/current characteristic curves

S160-NJ, S160-GJ, E250-NJ, S250-NJ, S250-GJ



Time/current characteristic curves

H160-NJ, H250-NJ, L160-NJ, L250-NJ



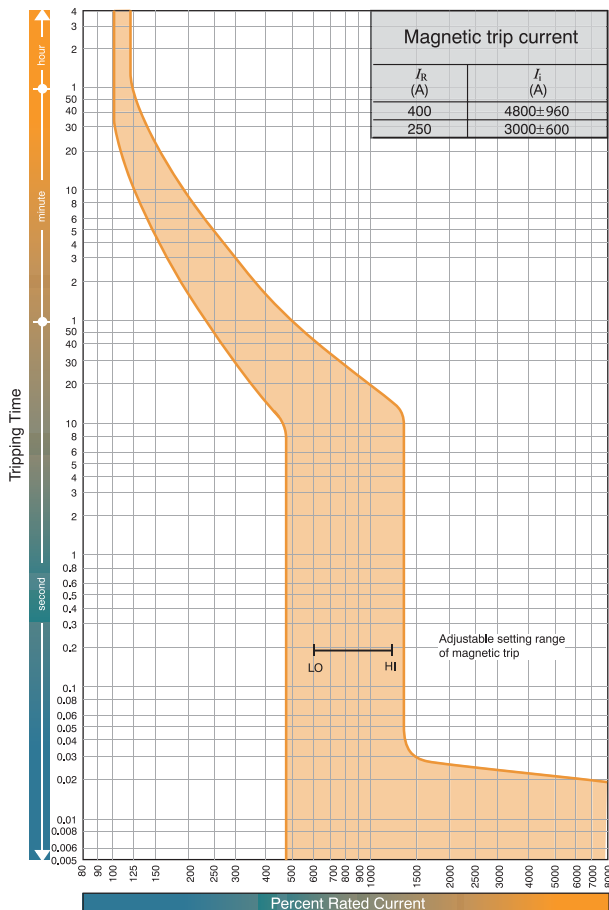
OPERATING CHARACTERISTICS

THERMAL MAGNETIC CHARACTERISTICS

400A Frame

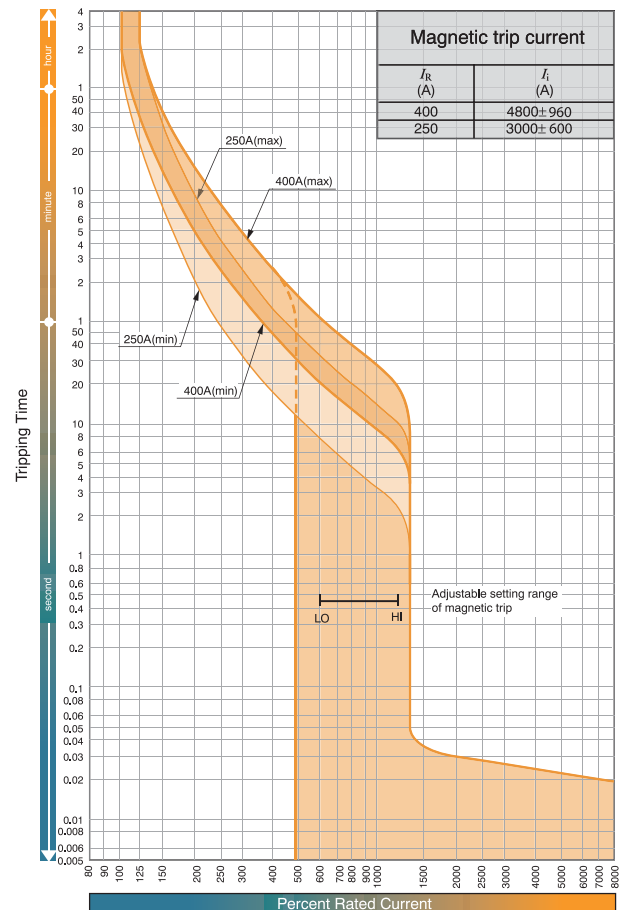
Time/current characteristic curves

E400-NJ, S400-CJ, S400-NJ, S400-GJ



Time/current characteristic curves

H400-NJ, L400-NJ



OPERATING CHARACTERISTICS

ELECTRONIC PROTECTION

TemBreak 2 MCCBs from 250A frame to 630A frame are available with electronic protection units. Current ratings, I_n , of 40A, 125A, 160A, 250A, 400A and 630A are available. These offer great flexibility as their characteristics can be set to suit a wide range of application conditions. Overload protection can be set between 0.4 and 1.0 times I_n .

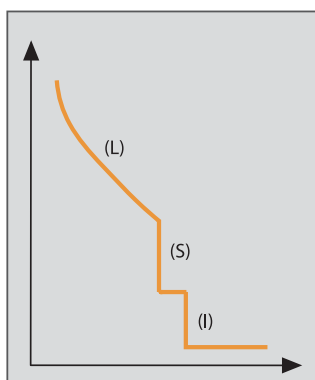
Terasaki offer one of the most adaptable protection units on the market:

If you require a characteristic which is not available as a preset on our standard electronic protection unit, send us the details and we will program a customised characteristic to your specification.*



Selecting a Preset Characteristic for a 400A TemBreak 2 MCCB with Electronic Protection

Every TemBreak 2 electronic protection unit includes overload protection (L), delayed short-circuit protection (S) and instantaneous protection (I) as standard.



Electronic Protection Characteristic

OPERATING CHARACTERISTICS

ELECTRONIC PROTECTION

Optional Functions

Three optional functions are available:

Ground Fault Trip (G)

This function trips the MCCB after time delay, t_g , if the ground fault current exceeds the preset threshold, I_g . Ground fault protection can be enabled and disabled by operating a DIP switch on the electronic protection unit. An external current transformer is available if the ground fault trip function is required on a 3 pole MCCB for 3 phases 4 wires.

Neutral Protection (N)

Neutral protection trips the MCCB after time delay, t_N , if current in the neutral conductor exceeds the rated current, I_n , of the MCCB. The time delay characteristic is identical to that of the overload characteristic (L).

Preferential Trip Alarm (P)

An LED and volt-free output contact are activated after a time delay, t_p , if the load current exceeds the preset threshold, I_p .

How to Specify Optional Functions

Optional functions must be specified at the time of order. Descriptions for electronic MCCBs include a 1-4 digit alphabetic code after the type designation which details the combination of optional functions. For example:

S400-GE **APG** 3P 400A FC - includes preferential trip and ground fault trip.

The table below lists codes for all the optional functions currently available:

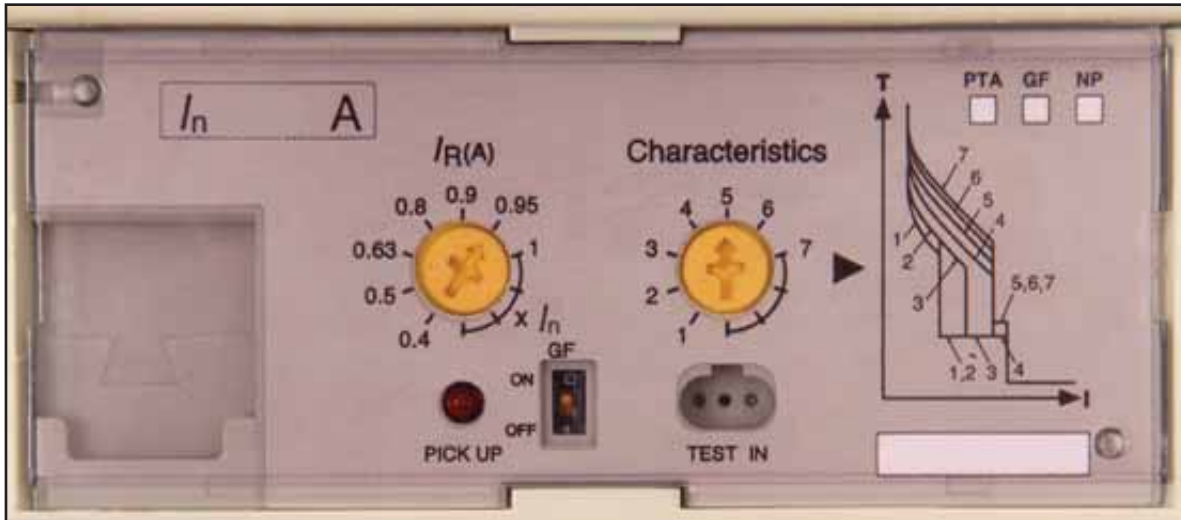
Optional Function					
<i>I_n</i>	Poles	Code	Ground Fault (G)	Neutral Protection (N)	Preferential Trip Alarm (P)
250	3	AP	-	-	■
	4	AP	-	-	■
		AN	-	■	-
		APN	-	■	■
400	3	AP	-	-	■
		AG	■	-	-
		APG	■	-	■
	4	AP	-	-	■
		AN	-	■	-
		APN	-	■	■
		AGN	■	■	-
		APGN	■	■	■
630	3	AP	-	-	■
		AG	■	-	-
		APG	■	-	■
	4	AP	-	-	■
		AN	-	■	-
		APN	-	■	■
		AGN	■	■	-
		APGN	■	■	■

■ Available - Not Available

OPERATING CHARACTERISTICS

ELECTRONIC PROTECTION

Adjustment Dials



The left adjustment dial sets the rated current to match the conductor rating. The right adjustment dials select one of six on 630A models preset characteristics. The effects of the left adjustment dial (labelled $I_R(A)$), and the right adjustment dial (labelled Characteristics) are detailed in the tables shown underneath each time/current graph.

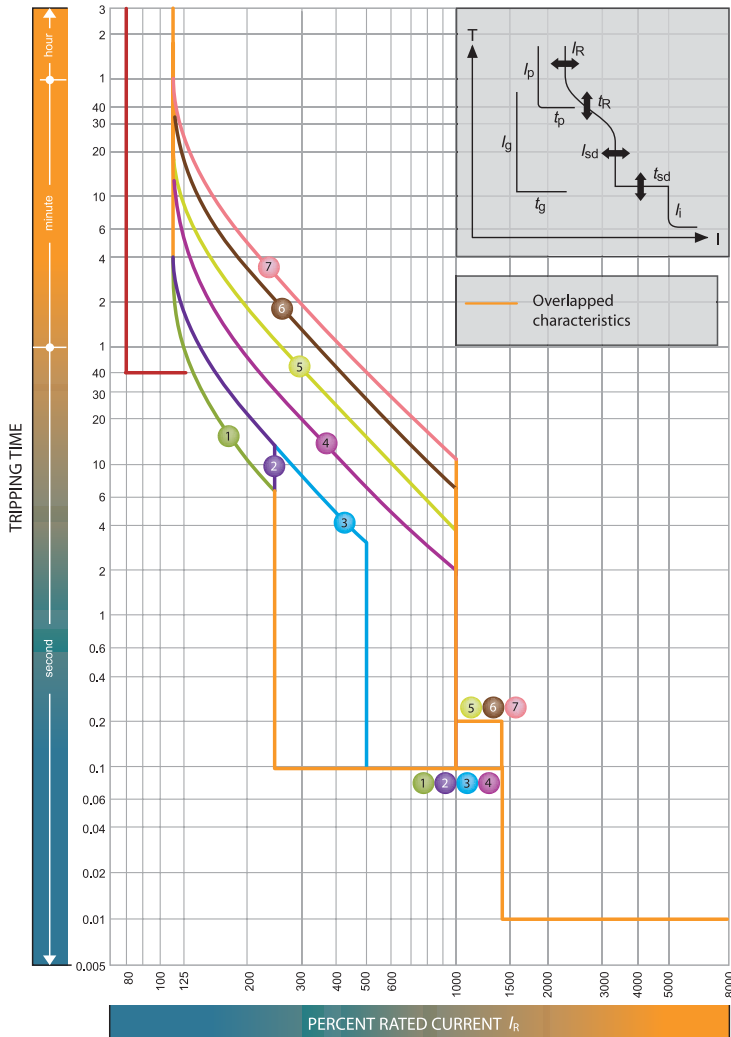
Tolerances of Characteristics

Characteristics		Tolerance
Long Time Delay	t_R	+/- 20%
Short Time Delay	I_{sd}	+/- 15%
	t_{sd}	Total clearing time +50ms, resettable time -20ms
Instantaneous	I_i	+/- 20%
Preferential trip Alarm	I_p	+/- 10%
	t_p	+/- 10%
Ground Fault Trip	I_g	+/- 15%
	t_g	Total clearing time +50ms, resettable time -20ms
Neutral Protection	I_N	+/- 15%

OPERATING CHARACTERISTICS

ELECTRONIC CHARACTERISTICS

S250-PE, H250-NE



$I_n = 250A; 160A; 125A; 40A$

		I_R (A)									
		LTD Pick-up current	I_R	x/n	0.4	0.5	0.63	0.8	0.9	0.95	1.0
		Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	t_R	(s)	11	21	21	5	10	19	29	
				at 200% x I_R			at 600% x I_R				
	STD	I_{sd}	x/ I_R	2.5		5	10				
		t_{sd}	(s)	0.1						0.2	
	INST	I_i	x/ I_R	14(Max: 13 x I_n) Note (1)							
Option	PTA	I_p	x/ I_R	0.8							
		t_p	(s)	40							
	N	I_N	x/ I_n	1.0							
		t_N	(s)	$t_N=t_R$ Note(2)							

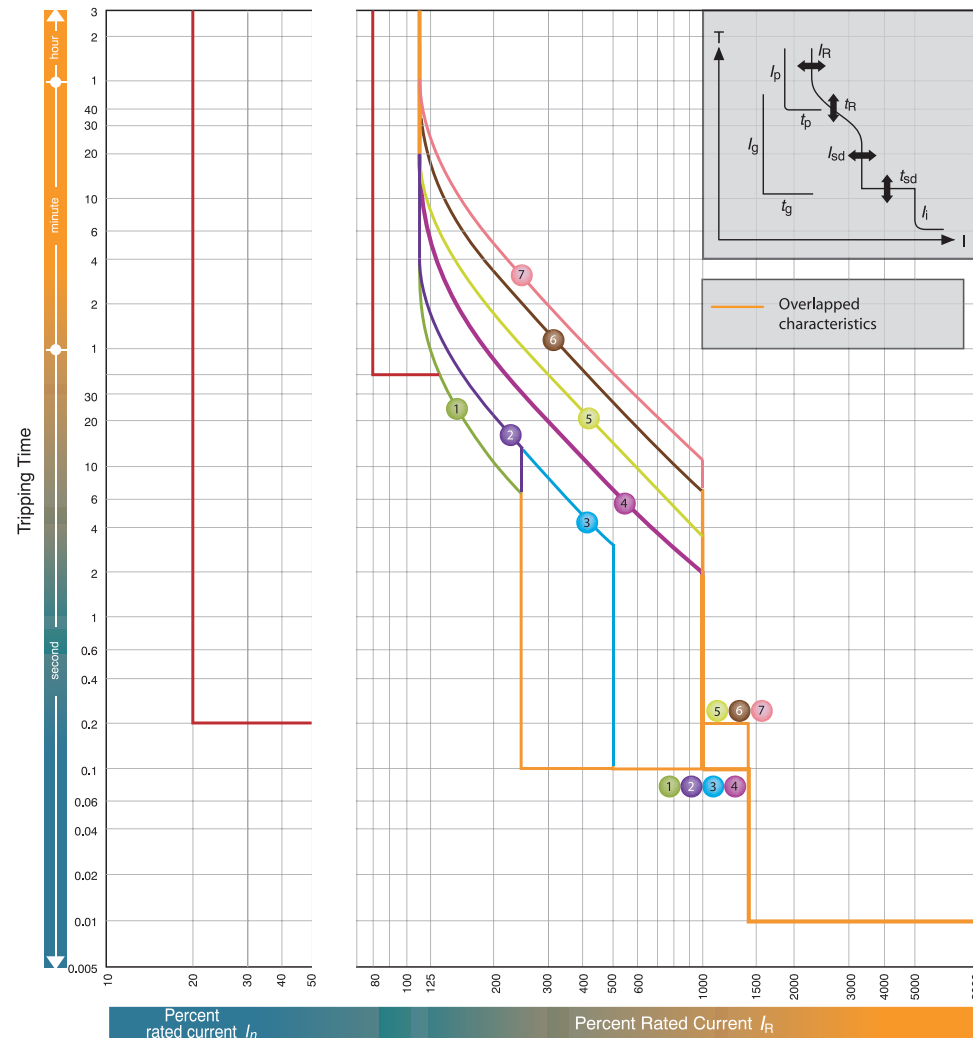
Note

(1) I_i max. = 13 x I_n . (2) Standard setting of I_N is 100% of I_n . For any other setting please specify when ordering.

OPERATING CHARACTERISTICS

ELECTRONIC CHARACTERISTICS

S400-NE, S400-GE, H400-NE, L400-NE



$I_n = 400A; 250A$

		I_R (A)									
		LTD Pick-up current	I_R	x/I_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0
		Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	t_R	(s)		11	21	21	5	10	19	29
					at 200% x I_R			at 600% x I_R			
	STD	I_{sd}	x/I_R		2.5		5	10			
		t_{sd}	(s)		0.1				0.2		
	INST	I_i	x/I_R		14(Max: 13 x I_n) Note (1)						
Option	PTA	I_p	x/I_R		0.8						
		t_p	(s)		40						
	GFT	I_g	x/I_n		0.2						
		t_g	(s)		0.2						
	N	I_N	x/I_n		1.0						
		t_N	(s)		$t_N=t_R$ Note(2)						

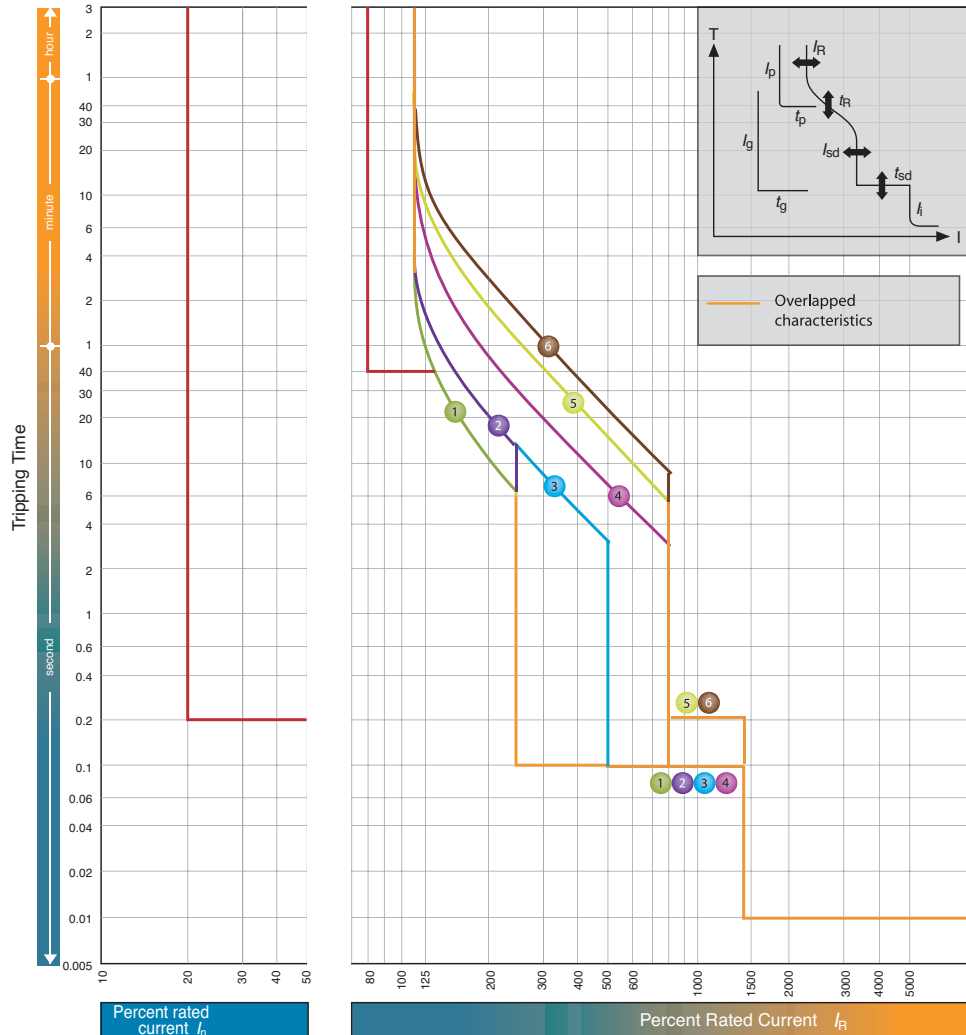
Note

(1) I_i max. = 13 $x I_n$. (2) Standard setting of I_N is 100% of I_n . For any other setting please specify when ordering.

OPERATING CHARACTERISTICS

ELECTRONIC CHARACTERISTICS

E630-NE, S630-CE, S630-GE



$I_n = 630A$

		I_R (A)											
		LTD Pick-up current	I_R	x/I_n	0.4	0.5	0.63	0.8	0.85	0.9	0.95	1.0	
		Characteristics		No.	1	2	3	4	5	6			
Standard	LTD	t_R	(s)		11	21	21	5	10	16			
					at 200% x I_R			at 600% x I_R					
	STD	I_{sd}	x/I_R		2.5		5	8					
		t_{sd}	(s)		0.1			0.2					
	INST	I_i	x/I_R	14(Max: 10 x I_n) Note (1)									
Option	PTA	I_p	x/I_R	0.8									
		t_p	(s)	40									
	GFT	I_g	x/I_n	0.2									
		t_g	(s)	0.2									
	N	I_N	x/I_n	1.0									
		t_N	(s)	$t_N=t_R$ Note(2)									

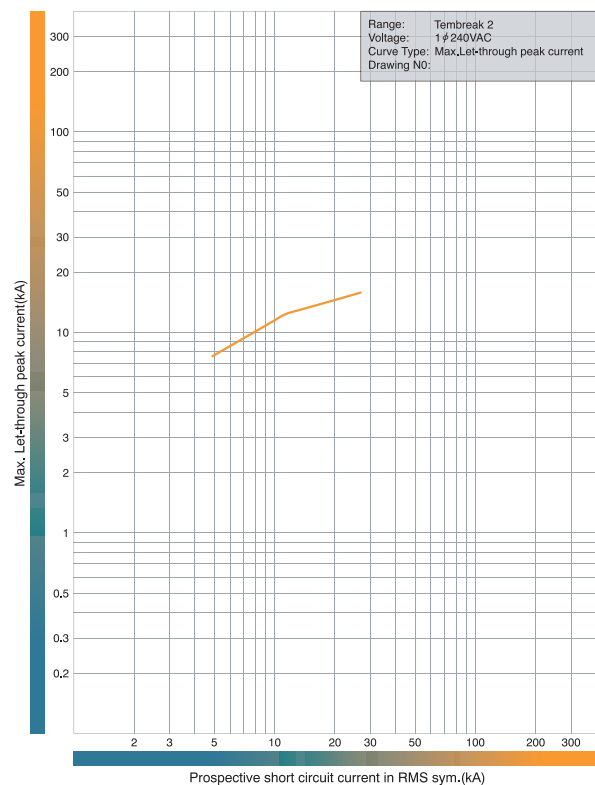
Note

(1) I_i max. = 10 x I_n . (2) Standard setting of I_N is 100% of I_n . For any other setting please specify when ordering.

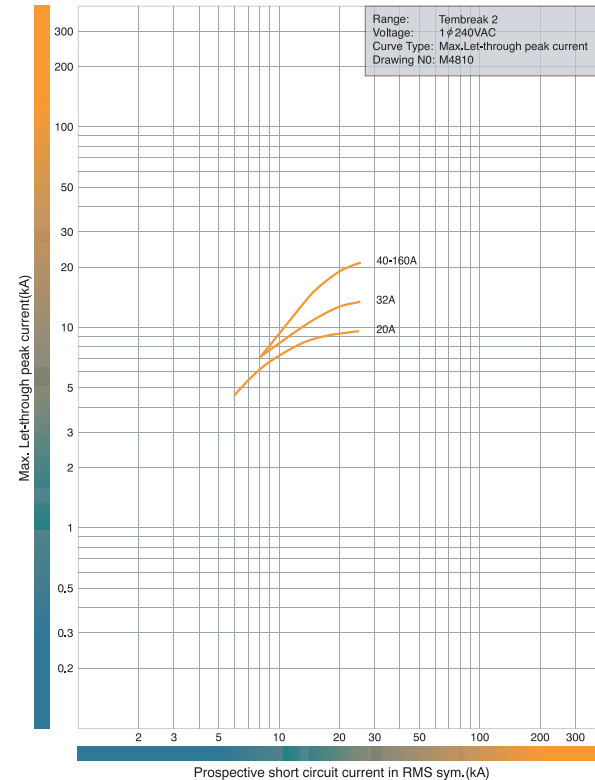
OPERATING CHARACTERISTICS

LET-THROUGH PEAK CURRENT CHARACTERISTICS

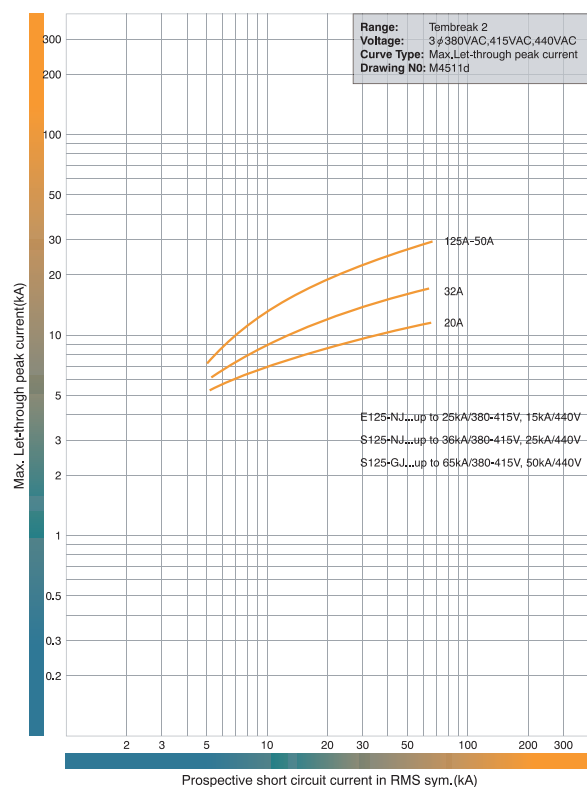
S125-NF, 240V AC



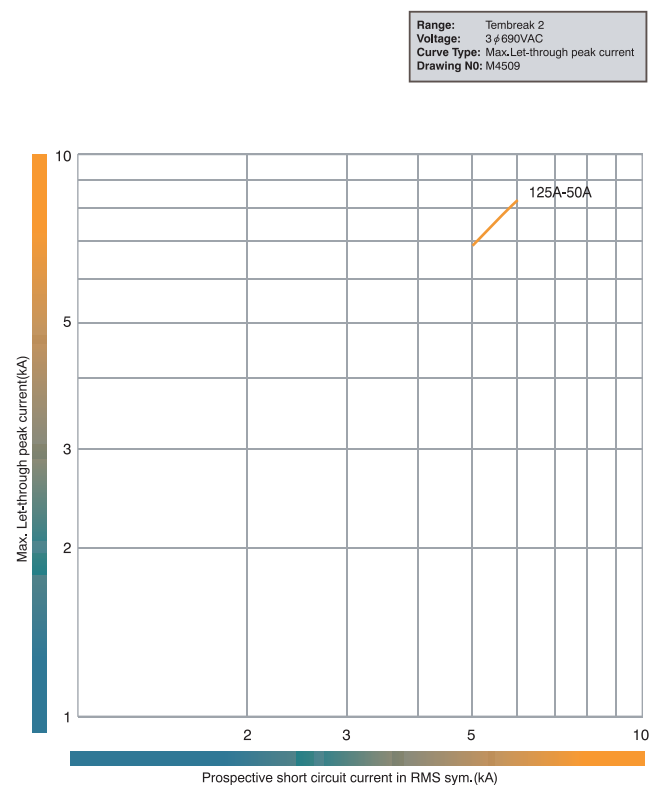
S160-NF, 240V AC.



E125-NJ, S125-NJ, S125-GJ. 440V AC.



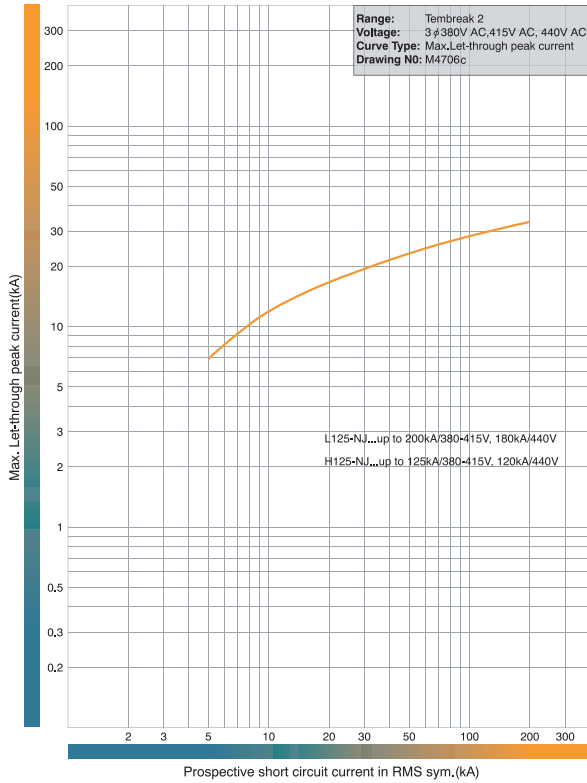
S125-NJ, S125-GJ. 690V AC.



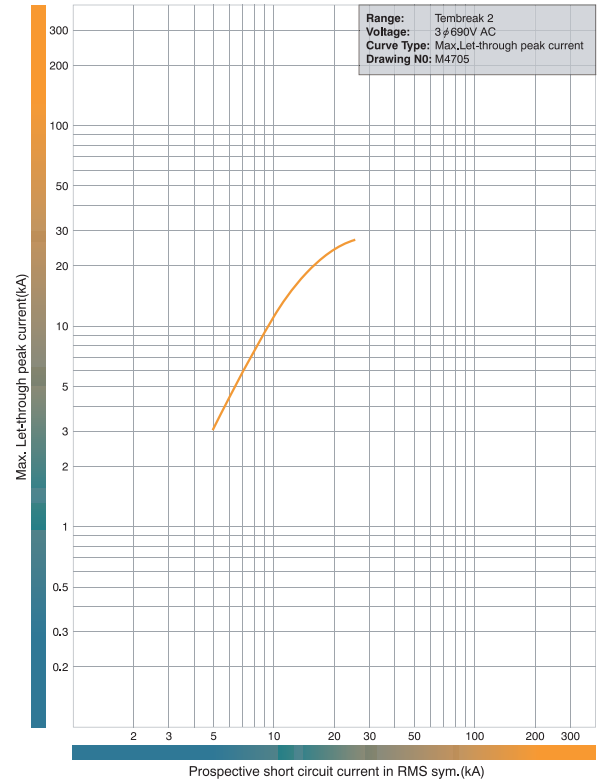
OPERATING CHARACTERISTICS

LET-THROUGH PEAK CURRENT CHARACTERISTICS

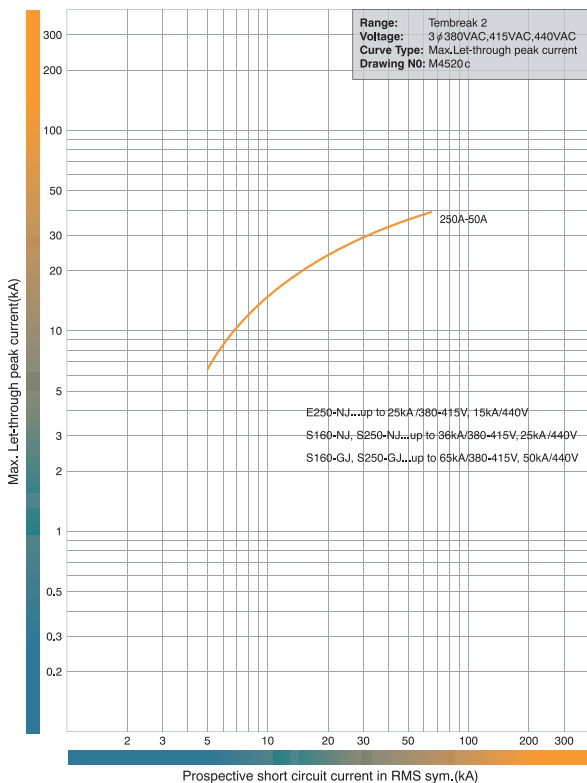
H125-NJ, L125-NJ. 440V AC.



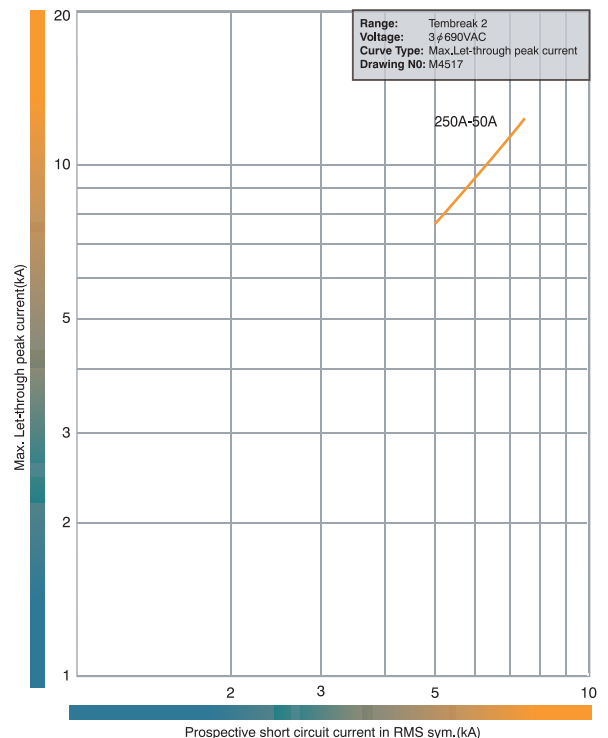
H125-NJ, L125-NJ. 690V AC



S160-NJ, S160-GJ, E250-NJ, S250-NJ, S250-GJ. 440V AC.



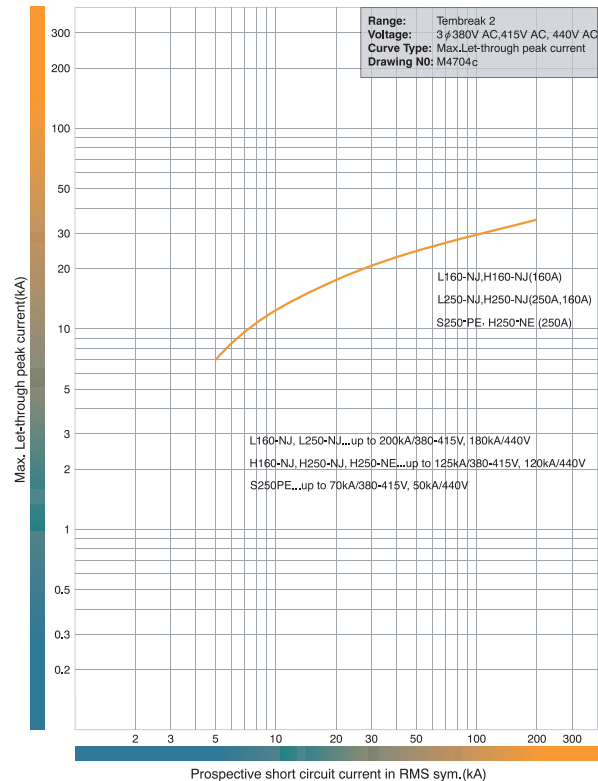
S160-NJ, S160-GJ, S250-NJ, S250-GJ. 690V AC.



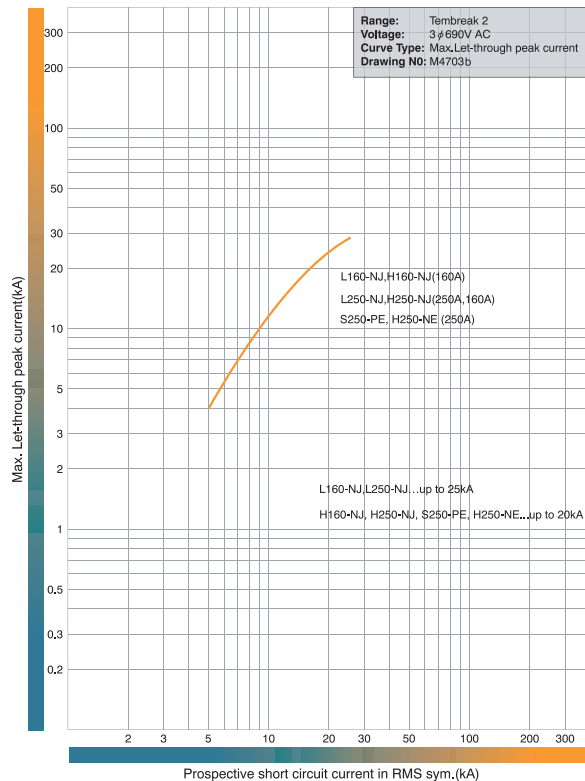
OPERATING CHARACTERISTICS

LET-THROUGH PEAK CURRENT CHARACTERISTICS

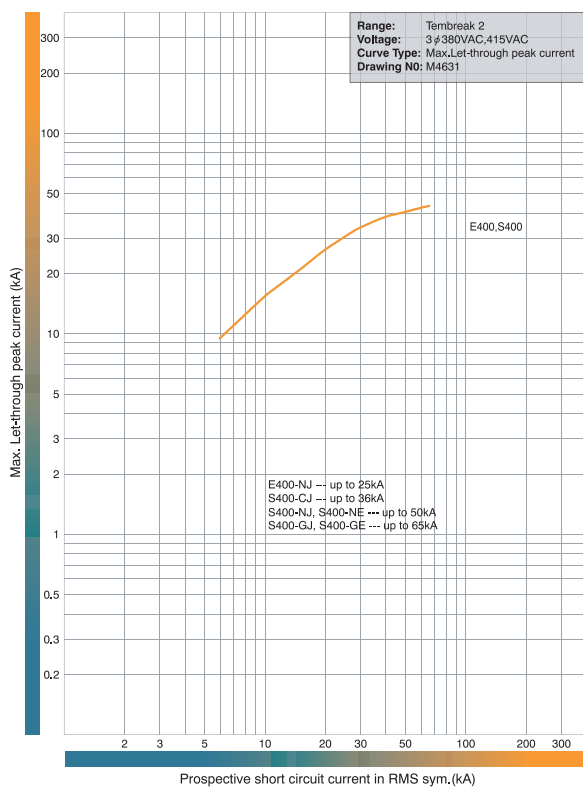
H160-NJ, L160-NJ, S250-PE, H250-NJ, H250-NE, L250-NJ. 440V AC.



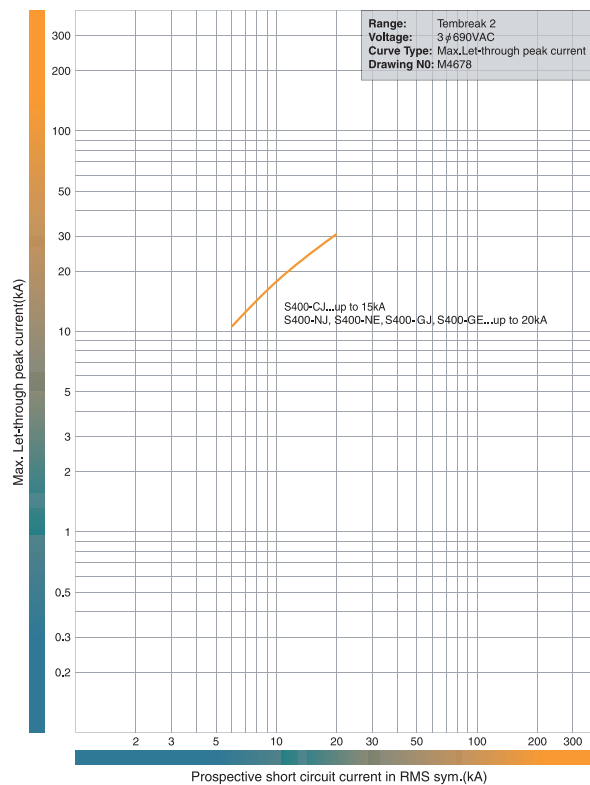
H160-NJ, L160-NJ, S250-PE, H250-NJ, H250-NE, L250-NJ. 690V AC.



E400-NJ, S400-CJ, S400-NJ, S400-NE, S400-GJ, S400-GE, 415V AC.



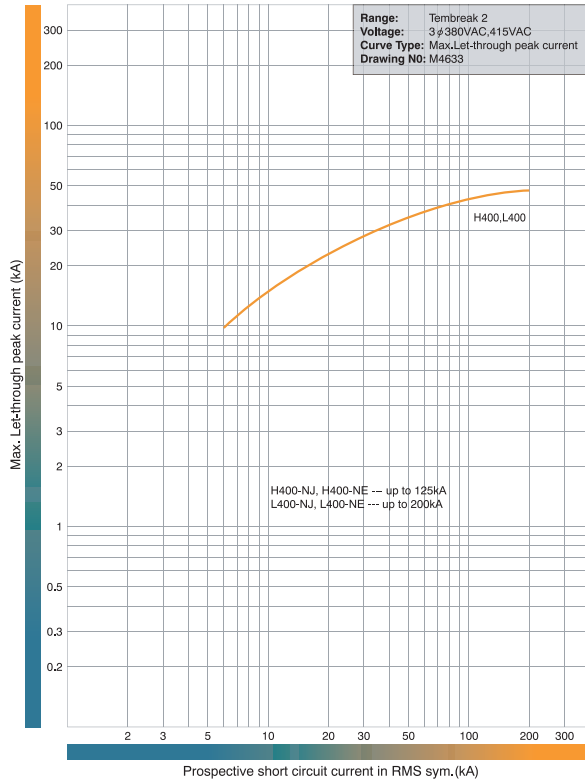
S400-CJ, S400-NJ, S400-NE, S400-GJ, S400-GE, 690V AC.



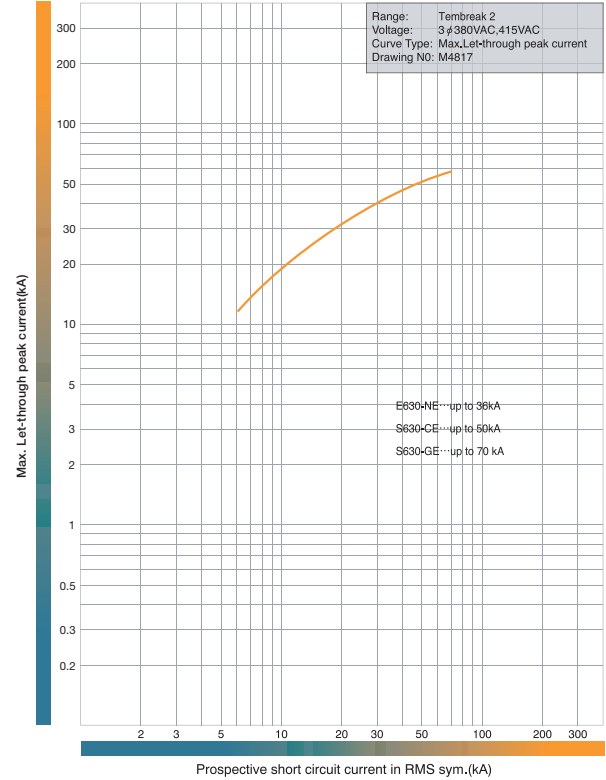
OPERATING CHARACTERISTICS

LET-THROUGH PEAK CURRENT CHARACTERISTICS

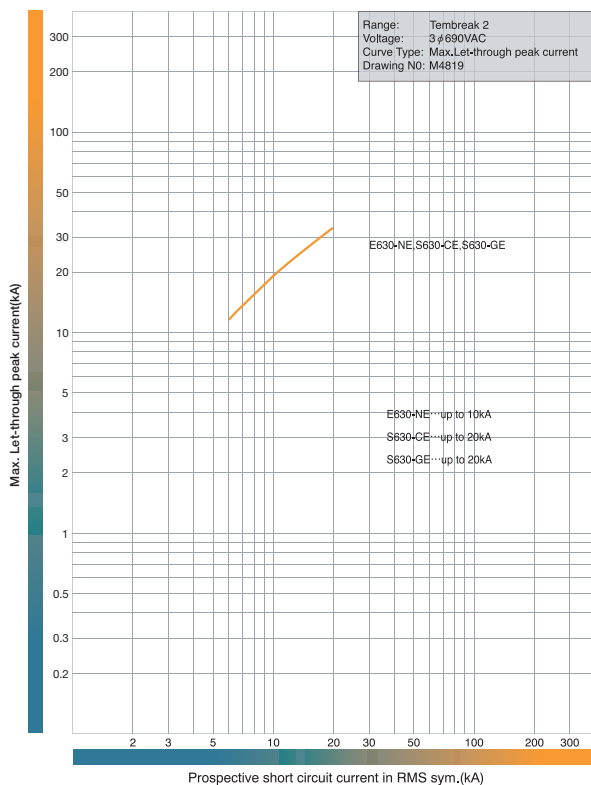
H400-NJ, H400-NE, L400-NJ, L400-NE. 415V AC.



E630-NE, S630-CE, S630-GE. 415V AC.



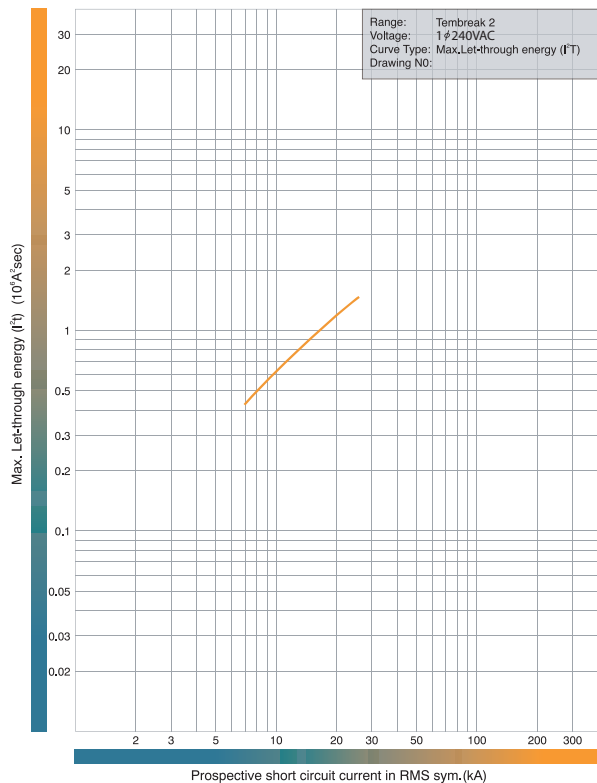
E630-NE, S630-CE, S630-GE. 690V AC.



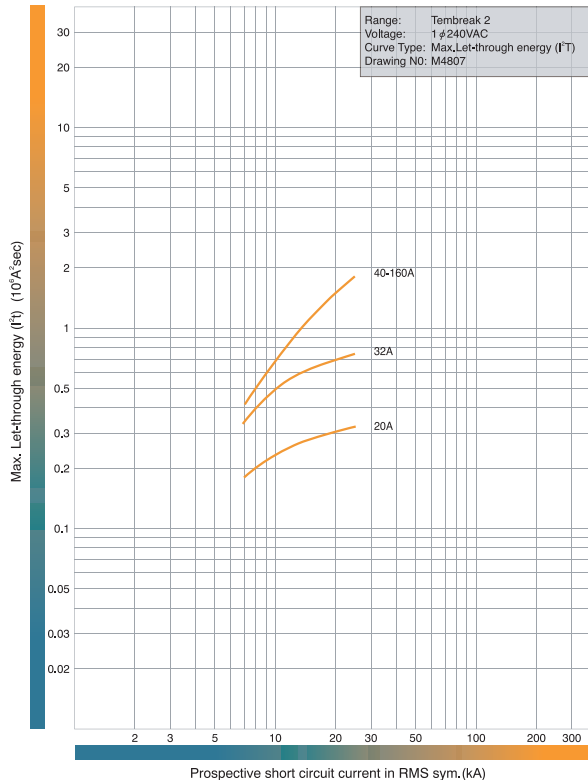
OPERATING CHARACTERISTICS

LET-THROUGH ENERGY CHARACTERISTICS

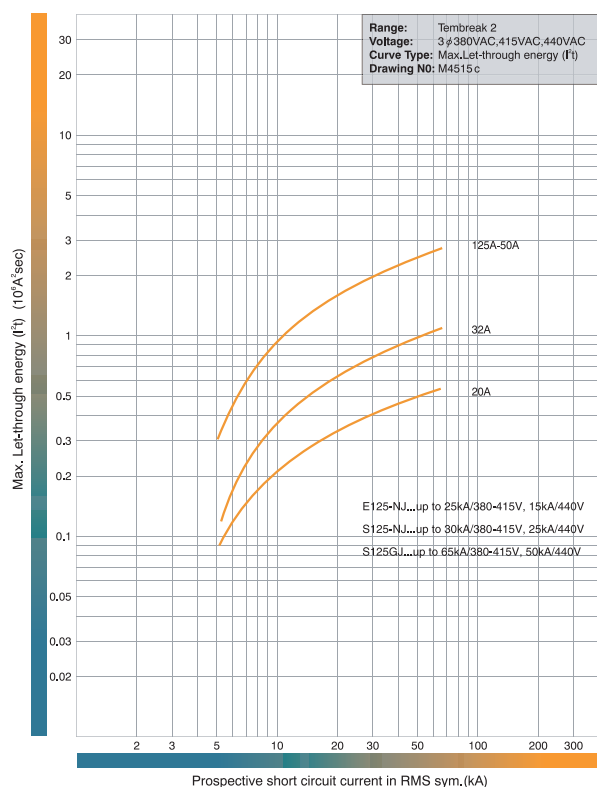
S125-NF, 240V AC



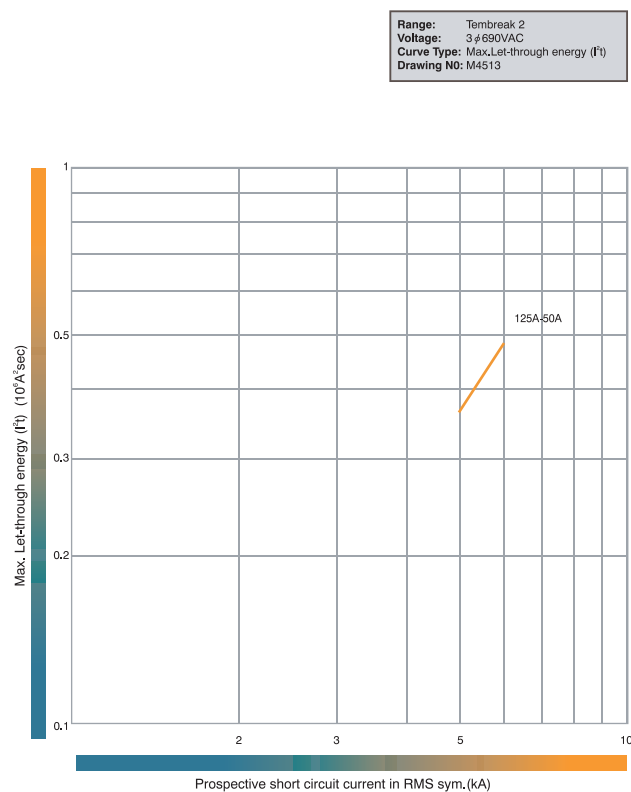
S160-NF, 240V AC



E125-NJ, S125-NJ, S125-GJ, 440V AC.



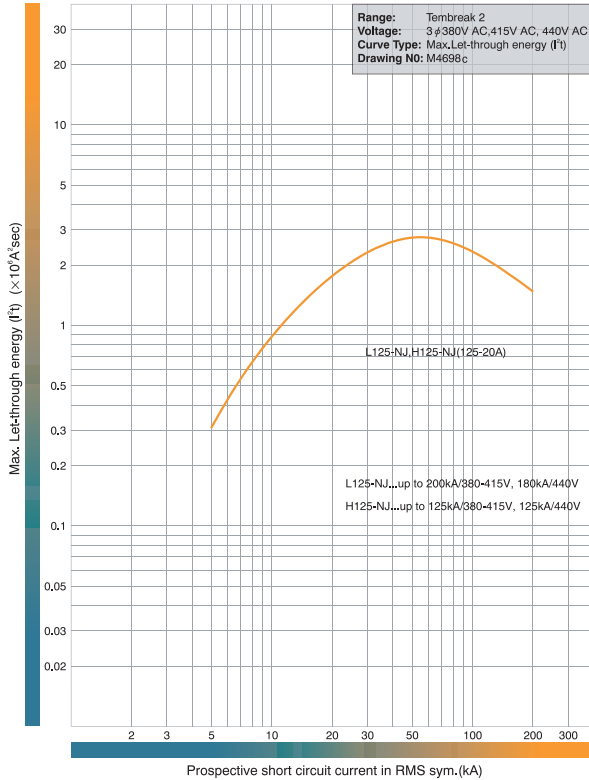
S125-NJ, S125-GJ, 690V AC.



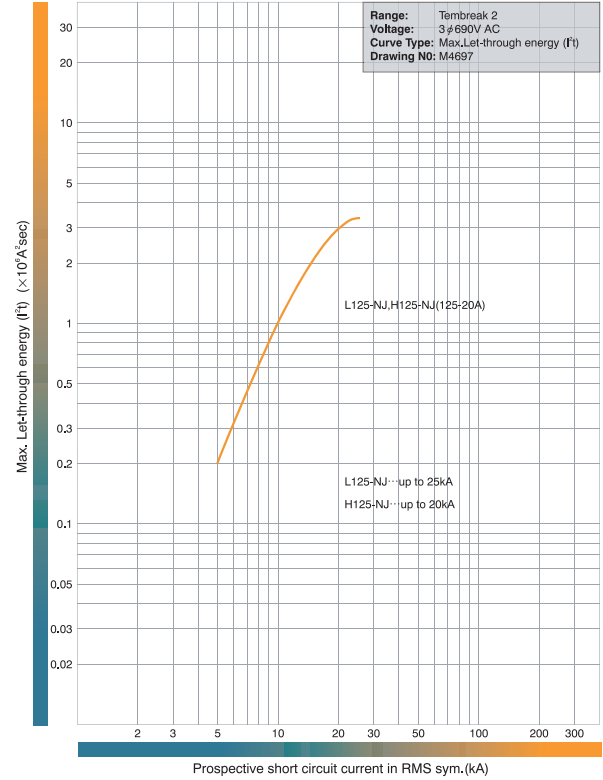
OPERATING CHARACTERISTICS

LET-THROUGH ENERGY CHARACTERISTICS

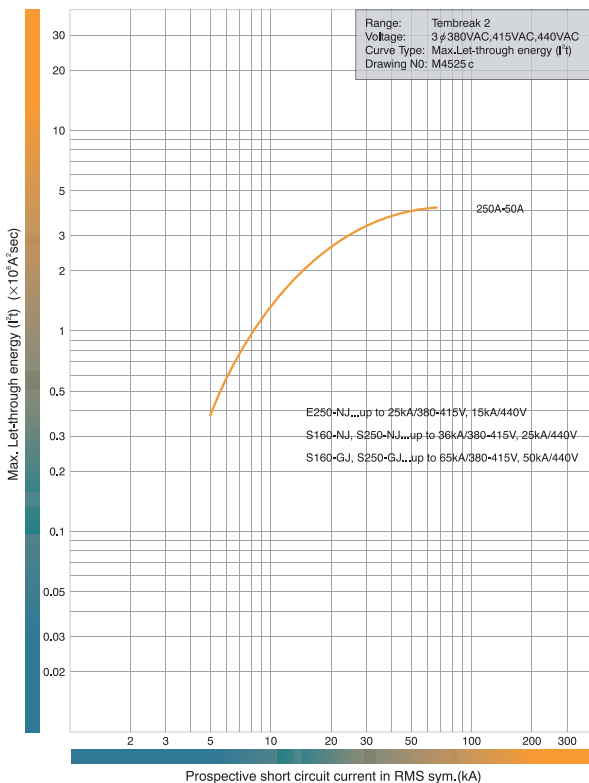
H125-NJ, L125-NJ. 440V AC.



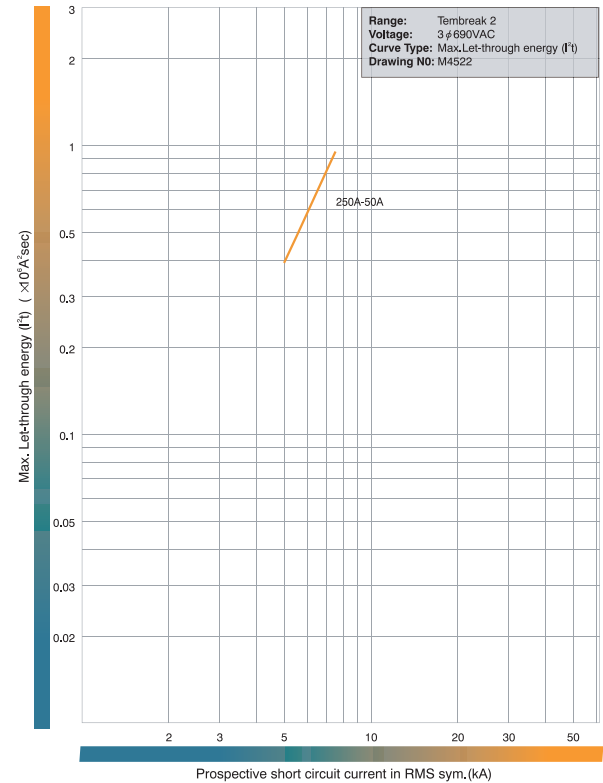
H125-NJ, L125-NJ. 690V AC



S160-NJ, S160-GJ, E250-NJ, S250-NJ, S250-GJ. 440V AC.



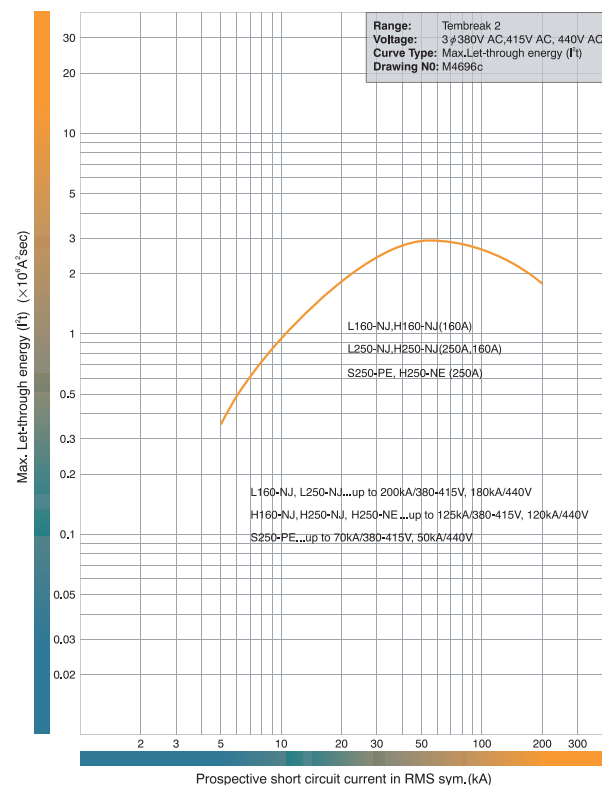
S160-NJ, S160-GJ, S250-NJ, S250-GJ. 690V AC.



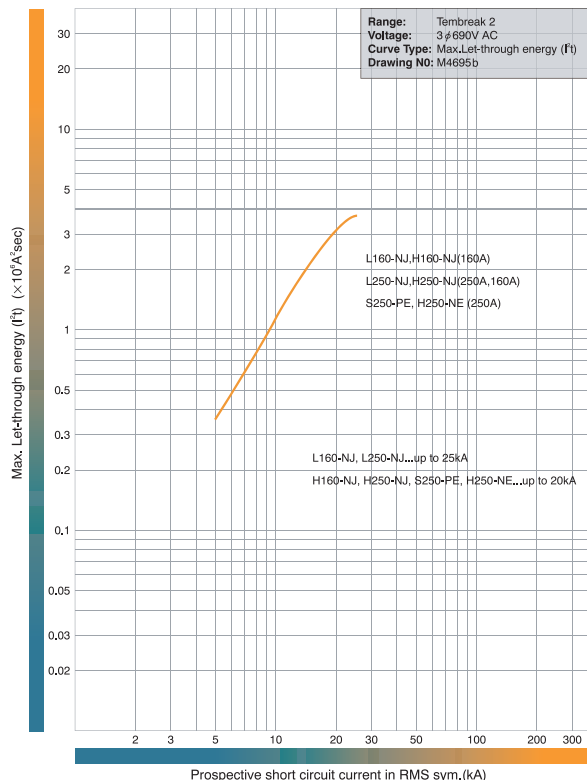
OPERATING CHARACTERISTICS

LET-THROUGH ENERGY CHARACTERISTICS

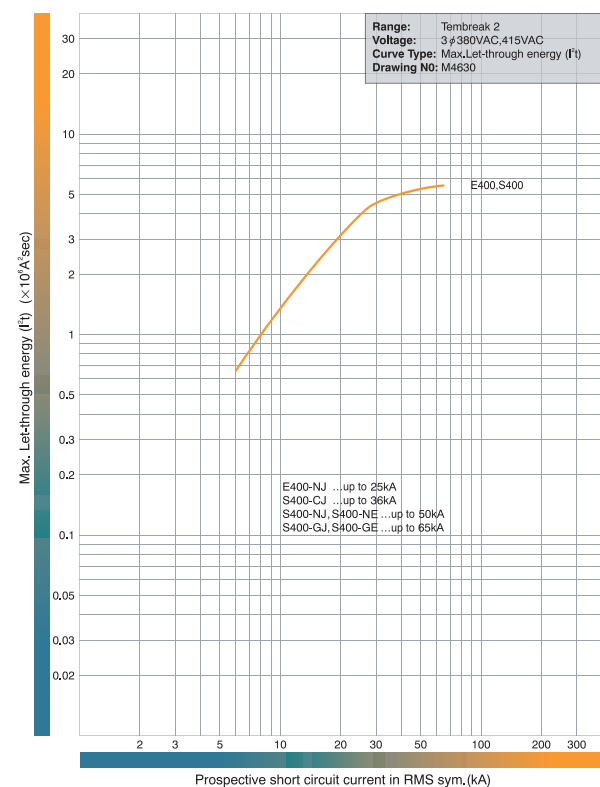
H160-NJ, L160-NJ, S250-PE, H250-NE, H250-NJ, L250-NJ. 440V AC.



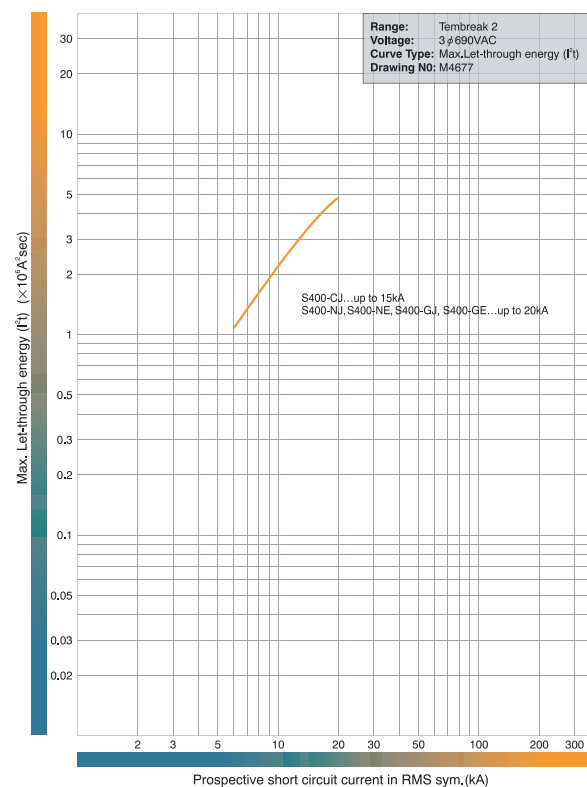
H160-NJ, L160-NJ, S250-PE, H250-NE, H250-NJ, L250-NJ. 690V AC.



E400-NJ, S400-CJ, S400-NJ, S400-NE, S400-GJ, S400-GE. 415V AC.



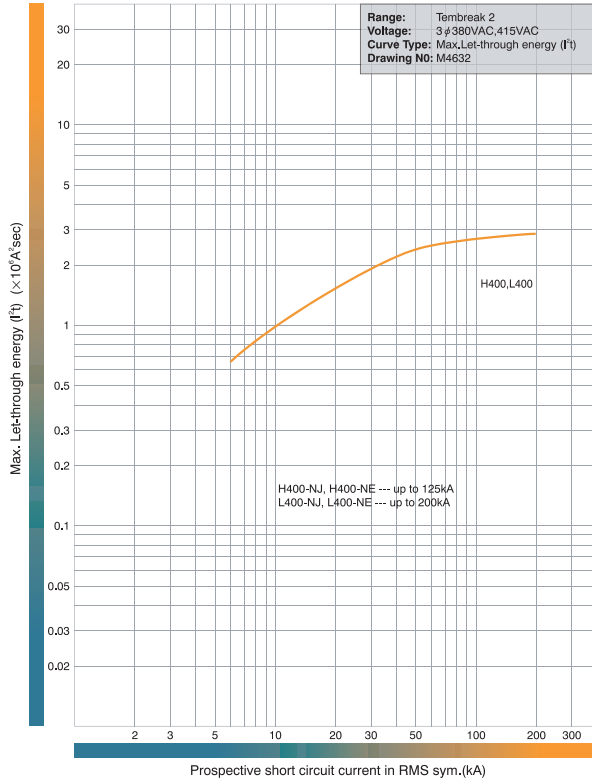
S400-CJ, S400-NJ, S400-NE, S400-GJ, S400-GE. 690V AC.



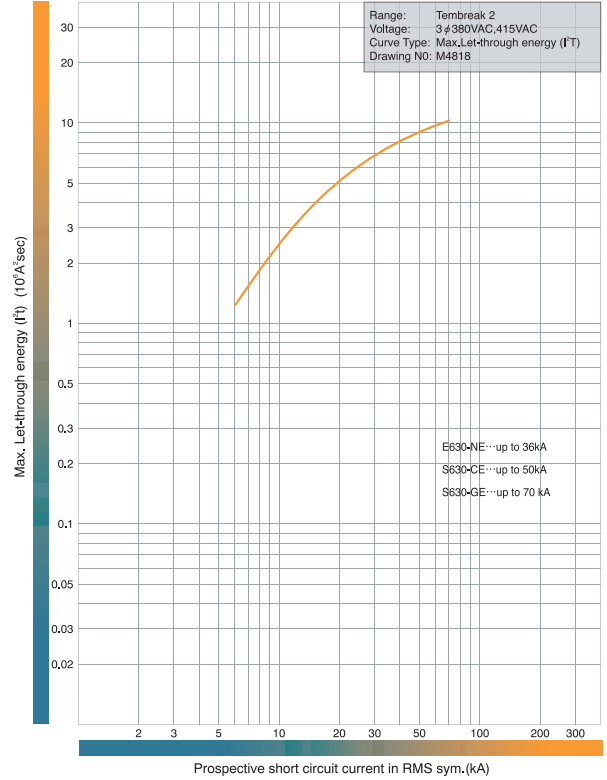
OPERATING CHARACTERISTICS

LET-THROUGH ENERGY CHARACTERISTICS

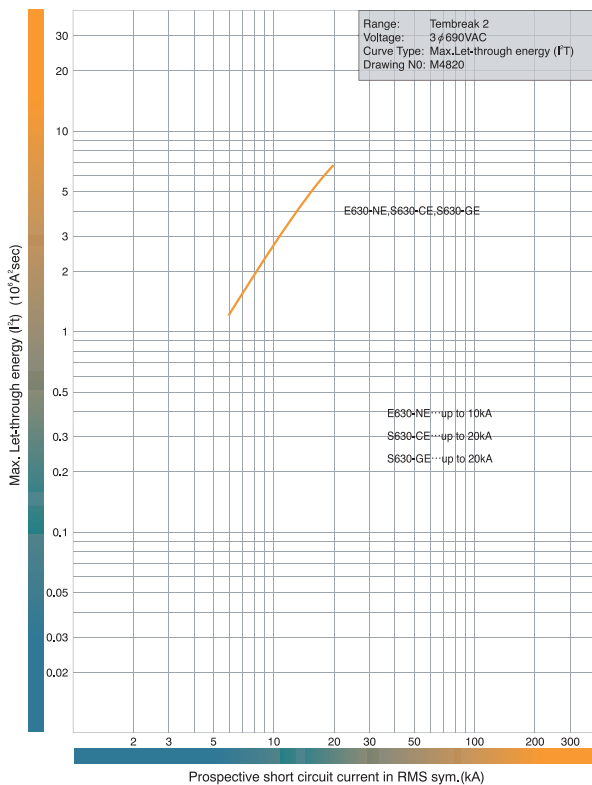
H400-NJ, H400-NE, L400-NJ, L400-NE. 415V AC.



E630-NE, S630-CE, S630-GE. 415V AC.



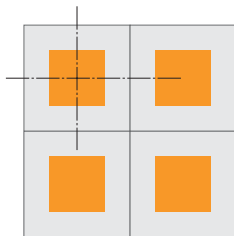
E630-NE, S630-CE, S630-GE. 690V AC.



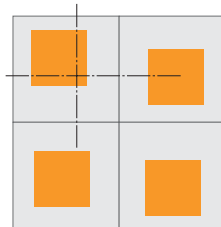
SYMMETRICAL DOOR CUTOUT PATTERNS



Door cutout patterns for handles are symmetrical, even when breakers are mounted in opposite directions.



Using TemBreak 2 Operating Handles



Using other MCCB Operating Handles

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS

16A TO 630A

1. Welcome to TemBreak 2
2. Ratings and Specifications
3. Operating Characteristics
4. **Application Data**
 - What is Discrimination? 45
 - How to Read the Discrimination Tables 45
 - Discrimination Tables 47
 - What is Cascading? 50
 - How to Read the Cascade Tables 51
 - Cascade Tables 52
5. Accessories
6. Installation
7. Dimensions

TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS

10A TO 100A

8. TemBreak 2 MINI Moulded Case Circuit Breakers

TEMBREAK

MOULDED CASE CIRCUIT BREAKERS

630A TO 1600A

9. TemBreak Moulded Case Circuit Breakers

10. Order Codes

APPLICATION DATA

DISCRIMINATION

WHAT IS DISCRIMINATION?

Discrimination, also called selectivity, is the co-ordination of protective devices such that a fault is cleared by the protective device installed immediately upstream of the fault, and by that device alone.

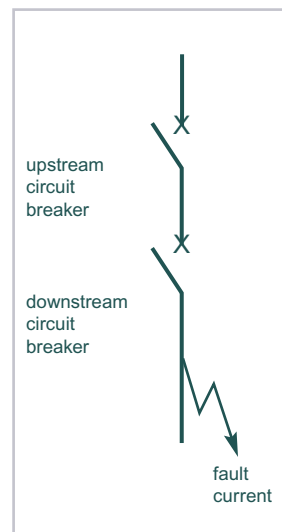
Total discrimination

Discrimination is said to be total if the downstream circuit breaker opens and the upstream circuit breaker remains closed. This ensures maximum availability of the system.

Partial discrimination

Discrimination is partial if the above condition is not fulfilled up to the prospective short-circuit current, but to a lesser value, termed the selectivity limit current (I_s).

Above this value both circuit breakers could open, resulting in loss of selectivity.



HOW TO READ THE DISCRIMINATION TABLES

Boxes containing the letter “T” indicate total discrimination between the relevant upstream and downstream circuit-breakers. Total discrimination applies for all fault levels up to the breaking capacity of the upstream or the downstream circuit breaker, whichever is the lesser.

For the other boxes, discrimination is either partial or there is no discrimination.

If discrimination is partial then the value of the selectivity limit current, I_s , is shown in the box.

Worked Examples

Q (1) A main switchboard requires a 1600A ACB feeding a 400A MCCB. The fault level is 65kA. What combination of protective devices would provide total discrimination?

A (1) A TemPower2 ACB AR216S feeding a TemBreak2 S400-GJ would provide total discrimination up to 65kA. See page 47

Note: Discrimination would be total whether the TemPower 2 ACB had an integral or external protection relay because $I_{cw} (I_s) = I_{cs}$.

Most other ACBs have $I_{cw} (I_s) < I_{cs}$.

HOW TO READ THE DISCRIMINATION TABLES

Q (2) A Sub distribution board requires a 630A MCCB feeding a 250A MCCB.
The fault level is 65kA. What combination of protective devices would provide total discrimination?

A (2) Using a TemBreak 2 S630-GE MCCB feeding a TemBreak 2 S250-GJ would provide total discrimination up to 65kA. See page 49

Q (3) A final distribution board contains a 125A MCCB incomer feeding a 32A Type B MCB. Is discrimination between these devices possible?

A (3) A TemBreak 2 MCCB type S160-NJ/125A feeding a TemDin 2 MCB would provide total discrimination. See page 48

Alternatively **ANY OTHER** MCB can be used provided it has energy limiting ability of class 3 in accordance with EN 60898.

APPLICATION DATA

DISCRIMINATION TABLES

Upstream: TemPower 2 ACB with or without Integral Protection Relay.
Downstream: TemBreak 2 MCCB.

SECTION 4

			Upstream ACB															
Frame			800A		1250A		1600A		2000A		2500A		3200A		4000A	5000A	6300A	
	Model		AR208S	AR208H	AR212S	AR212H	AR216S	AR216H	AR220S	AR220H	AR325S	AR325H	AR332S	AR332H	AR440S	AH50C	AH60C	
		Breaking Capacity	65kA	80kA	65kA	80kA	65kA	80kA	65kA	80kA	85kA	100kA	85kA	100kA	100kA	100kA	120kA	
Downstream MCCB	125A	E125NJ	25kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S125NJ	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S125GJ	65kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		H125NJ	125kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		L125NJ	200kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	160A/ 250A	S160NJ	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S160GJ	65kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		E250NJ	25kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S250NJ	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S250GJ	65kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S250PE	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		H250NJ	125kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		L250NJ	200KA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	400A/ 630A	E400NJ	25kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S400CJ	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S400NJ	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S400NE	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S400GJ	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S400GE	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		H400NJ	125kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		H400NE	125kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		E630NE	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S630CE	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		S630GE	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	800A	XS800NJ	65kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		XH800SE	65kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		XH800PJ	100kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		XS800SE	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1250A/ 1600A	XS1250SE	65kA	-	-	T	T	T	T	T	T	T	T	T	T	T	T	T
		XS1600SE	85kA	-	-	-	-	T	T	T	T	T	T	T	T	T	T	T

- Notes: 1. All ACB's have I_n set at NON, MCR ON.
2. Assuming ACB time settings are greater than MCCB.
3. The above table is in accordance with IEC 60947-2, Annex A.

4. External relay can be used - Contact Terasaki for further details.
5. All values shown at 400V AC.

T= Total Selectivity

APPLICATION DATA

DISCRIMINATION TABLES

Upstream: TemBreak 2 MCCB (thermal-magnetic)

Downstream: MCB

Downstream MCB		Upstream MCCB																								
		S125NJ (36kA) E125NJ (25kA)						S160NJ (36kA)						S250NJ (36kA) E250NJ (25kA)								S400NJ				
		In	20A	32A	50A	63A	100A	125A	20A	32A	50A	63A	100A	125A	160A	20A	32A	50A	63A	100A	125A	160A	200A	250A	250A	400A
6A	260	T	T	T	T	T	260	T	T	T	T	T	T	T	260	T	T	T	T	T	T	T	T	T	T	T
10A	260	420	T	T	T	T	260	420	T	T	T	T	T	T	260	420	T	T	T	T	T	T	T	T	T	T
16A	260	420	650	T	T	T	260	420	650	T	T	T	T	T	260	420	650	T	T	T	T	T	T	T	T	T
20A	260	420	650	1000	T	T	260	420	650	1000	T	T	T	T	260	420	650	1000	T	T	T	T	T	T	T	T
25A	260	420	650	1000	T	T	260	420	650	1000	T	T	T	T	260	420	650	1000	T	T	T	T	T	T	T	T
32A	260	420	650	1000	1500	T	260	420	650	1000	1500	T	T	T	260	420	650	1000	1500	T	T	T	T	T	T	T
40A	260	420	650	1000	1500	2000	260	420	650	1000	1500	2000	T	T	260	420	650	1000	1500	2000	T	T	T	T	T	T
50A	260	420	650	1000	1500	2000	260	420	650	1000	1500	2000	3000	260	420	650	1000	1500	2000	3000	T	T	T	T	T	T
63A	260	420	650	1000	1500	2000	260	420	650	1000	1500	2000	3000	260	420	650	1000	1500	2000	3000	2600	T	T	T	T	T

Notes: 1. MCBs can be of any manufacture provided they are Energy class three as defined in EN 60898.
2. Table based on type B MCBs
3. MCBs can be 6kA or 10kA at 400V

4. The above table is in accordance with IEC 60947-2, Annex A.
5. All values shown at 400V AC.
6. I_s expressed in A.

T= Total Selectivity

APPLICATION DATA

DISCRIMINATION TABLES

Upstream: TemBreak 2 MCCB (electronic).

Downstream: TemBreak 2 MCCB.

			Upstream MCCB													
Frame			250A		400A				630A			800A		1250A	1600A	
	Model		S250PE	H250NE	S400NE	S400GE	H400NE	L400NE	E630NE	S630NE	S630GE	XS800SE	XH800SE	XS1250SE	XS1250SE	
		Breaking Capacity	70kA	125kA	50kA	70kA	125kA	200kA	36kA	50kA	70kA	50kA	65kA	85kA	100kA	
Downstream MCCB	50A	S50NF	T	T	T	T	T	T	T	T	T	T	T	T	T	
	100A	E100NF	T	T	T	T	T	T	T	T	T	T	T	T	T	
	125A	E125NJ	T	T	T	T	T	T	T	T	T	T	T	T	T	
		S125NJ	T	T	T	T	T	T	T	T	T	T	T	T	T	
		S125GJ	T	T	T	T	T	T	T	T	T	T	T	T	T	
		H125NJ	T	T	T	T	T	T	T	T	T	T	T	T	T	
	160A/ 250A	S160NJ	-	-	T	T	T	T	T	T	T	T	T	T	T	T
		S160GJ	-	-	T	T	T	T	T	T	T	T	T	50	T	T
		H160NJ	-	-	-	-	T	T	T	T	T	T	T	T	T	T
		E250NJ	-	-	T	T	T	T	T	T	T	T	T	T	T	T
		S250NJ	-	-	T	T	T	T	T	T	T	T	T	T	T	T
		S250GJ	-	-	T	T	T	T	T	T	T	T	T	50	T	T
		H250NJ	-	-	-	-	T	T	T	T	T	T	T	50	T	T
		S250PE	-	-	-	-	T	T	T	T	T	T	T	T	T	T
		H250NE	-	-	-	-	T	T	T	T	T	T	T	T	T	T
	400A/ 630A	E400NJ	-	-	-	-	-	-	-	10	10	10	T	T	T	T
		S400CJ	-	-	-	-	-	-	-	10	10	10	25	25	T	T
		S400NJ	-	-	-	-	-	-	-	10	10	10	25	25	T	T
		S400NE	-	-	-	-	-	-	-	10	10	10	25	25	T	T
		S400GJ	-	-	-	-	-	-	-	10	10	10	25	25	T	T
		S400GE	-	-	-	-	-	-	-	10	10	10	25	25	T	T
		H400NJ	-	-	-	-	-	-	-	10	10	10	25	25	T	T
		H400NE	-	-	-	-	-	-	-	10	10	10	25	25	T	T
		E630NE	-	-	-	-	-	-	-	-	-	-	25	25	T	T
		S630CE	-	-	-	-	-	-	-	-	-	-	25	25	T	T
		S630GE	-	-	-	-	-	-	-	-	-	-	-	-	T	T

- Notes: 1. All pick-up current and time delay settings are to be set at maximum for upstream MCCBs.
 2. The above table is in accordance with IEC 60947-2, Annex A.
 3. All values shown at 400V AC.
 4. I_s expressed in kA.

T= Total Selectivity

WHAT IS CASCADING?

Cascading is a technique where the current limiting capability of upstream circuit breakers is used to permit the installation of lower rated and therefore lower cost circuit breakers downstream.

The upstream TemBreak 2 circuit breaker acts as a resistance against short-circuit currents. With this assistance, downstream circuit breakers with breaking capacities lower than the prospective short-circuit at their point of installation can interrupt the reduced short-circuit current.

Since the current is limited downstream of the limiting circuit breaker, cascading applies to all switchgear in the downstream circuit. It is not restricted to two consecutive devices.

Cascading is recognised by the following standards related to electrical installations:

IEC 60364

BS 7671

AS/NZS 3000

The Advantages

Installation of a single limiting circuit-breaker results in considerable simplifications and savings for the entire downstream installation:

- Simplification of selection of devices using the cascading tables
- Savings on downstream devices. Cascading allows circuit-breakers with lower ratings to be used.

In addition the application of cascading will reduce both electrodynamic and thermal stress within the installation.

APPLICATION DATA

HOW TO READ THE CASCADE TABLES

The value shown in the table is the increased breaking capacity, expressed in kA, that can be achieved if the downstream MCCB is backed up by the appropriate upstream MCCB.

Worked Examples:

Q (1) A 36kA panelboard is required with a 400A incomer and 125A outgoing MCCBs. Can cascading be applied?

A (1) A cost effective solution would be to use an S400-CJ incomer rated at 36kA and E125-NJ MCCBs rated at 25kA downstream.

The upstream S400-CJ MCCB would back up the downstream E125-NJ to 36kA. If this was an 8 Way panelboard you have managed to save cost by installing eight 25kA MCCBs rather than eight 36kA MCCBs.

Q (2) If the same 8 way panelboard was to be used in an 80kA installation, what MCCBs could be used?

A (2) You could still use the E125-NJ provided it was backed up by an L400-NJ. The Current limiting capacity of the 400A MCCB would back up the E125A from 25kA to 85kA.

CASCADE TABLES

Upstream: TemBreak 2 MCCB.

Downstream: TemDin 2 MCB.

		Upstream MCCB							
Downstream MCB	Model	E125NJ (25kA)	S125NJ (36kA)	S125GJ (65kA)	S160NJ (36kA)	S160GJ (65kA)	E250NJ (25kA)	S250NJ (36kA)	S250GJ (65kA)
	In	125A	125A	125A	160A	160	250A	250A	250A
	DS (6kA)								
	6A	14	14	14	12	12	12	12	12
	10A	14	14	14	12	12	12	12	12
	16A	14	14	14	12	12	12	12	12
	20A	14	14	14	12	12	12	12	12
	25A	14	14	14	12	12	12	12	12
	32A	14	14	14	12	12	12	12	12
	40A	12	12	12	10	10	10	10	10
	50A	12	12	12	10	10	10	10	10
	63A	12	12	12	10	10	10	10	10

Notes: 1. All values shown at 400V AC.
2. Cascade fault level limit is expressed in kA.

		Upstream MCCB							
Downstream MCB	Model	E125NJ (25kA)	E125NJ (25kA)	E125NJ (25kA)	E125NJ (25kA)	E125NJ (25kA)	E125NJ (25kA)	E125NJ (25kA)	E125NJ (25kA)
	In	125A	125A	125A	160A	160	250A	250A	250A
	DH (10kA)								
	6A	25	30	30	25	25	25	25	25
	10A	25	30	30	25	25	25	25	25
	16A	25	30	30	25	25	25	25	25
	20A	25	30	30	25	25	25	25	25
	25A	25	30	30	25	25	25	25	25
	32A	25	30	30	25	25	25	25	25
	40A	25	30	30	23	23	23	20	23
	50A	25	30	30	23	23	23	23	23
	63A	25	30	30	23	23	23	23	23

Notes: 1. All values shown at 400V AC.
2. Cascade fault level limit is expressed in kA.

APPLICATION DATA

CASCADE TABLES

Upstream: TemBreak 2 MCCB.

Downstream: TemBreak 2 MCCB.

			Upstream MCCB															
Downstream MCCB	Frame		125A					160A/250A										
	Model		E125NJ	S125NJ	S125GJ	H125NJ	L125NJ	S160NJ	S160GJ	H160NJ	L160NJ	E250NJ	S250NJ	S250GJ	S250PE	H250NJ	H250NE	L250NJ
		Breaking Capacity	25kA	36kA	65kA	125kA	200kA	36kA	65kA	125kA	200kA	25kA	36kA	65kA	70kA	125kA	200kA	
50A	S50NF	10kA	25	25	25	25	25	15	15	25	25	15	15	15	15	25	25	
	E100NF	10kA	25	25	25	25	25	15	15	25	25	15	15	15	15	25	25	
	E125NJ	25kA	-	36	50	65	85	36	50	65	85	-	36	50	50	65	85	
	S125NJ	36kA	-	-	65	85	125	-	65	85	125	-	-	65	65	85	125	
125A	S125GJ	65kA	-	-	-	125	150	-	-	125	150	-	-	-	70	125	150	
	H125NJ	125kA	-	-	-	-	200	-	-	-	200	-	-	-	-	-	200	
	S160NJ	36kA	-	-	-	-	-	-	65	85	125	-	-	65	65	85	125	
	S160GJ	65kA	-	-	-	-	-	-	-	125	150	-	-	-	70	125	150	
160A/ 250A	H160NJ	125kA	-	-	-	-	-	-	-	-	200	-	-	-	-	-	200	
	E250NJ	25kA	-	-	-	-	-	-	-	-	-	-	36	50	50	65	85	
	S250NJ	36kA	-	-	-	-	-	-	-	-	-	-	-	65	65	85	125	
	S250GJ	65kA	-	-	-	-	-	-	-	-	-	-	-	-	70	125	150	
	S250PE	70kA	-	-	-	-	-	-	-	-	-	-	-	-	-	125	150	
	H250NJ	125kA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	
	S160NJ	36kA	-	-	-	-	-	-	65	85	125	-	-	65	65	85	125	
	S160GJ	65kA	-	-	-	-	-	-	-	125	150	-	-	-	70	125	150	
	H160NJ	125kA	-	-	-	-	-	-	-	-	200	-	-	-	-	-	200	
	E250NJ	25kA	-	-	-	-	-	-	-	-	-	-	36	50	50	65	85	

Notes: 1. All values shown at 400V AC.
2. Cascade fault level limit is expressed in kA.

		Upstream MCCB																			
Frame			400A						630A				800A				1250A/1600A				
Downstream MCCB	Model		S400CJ	S400NJ	S400NE	S400GJ	S400GE	H400NJ	H400NE	L400NJ	L400NE	E630NE	S630CE	S630GE	TL630NE	XS800SE	XS800NJ	XH800SE	TL800NE	XS1250SE	XS1600SE
		Breaking Capacity	36kA	50kA	70kA	125kA	200kA	36kA	50kA	70kA	125kA	50kA	65kA	65kA	125kA	85kA	100kA				
	125A	E125NJ S125NJ S125GJ H125NJ	25kA 36kA 65kA 125kA	36	36	50	65	85	36	36	50	-	-	36	36	-	-	36	36	-	-
160A/ 250A	S160NJ	36kA	-	50	65	85	125	-	50	65	-	50	65	65	-	50	65	65	-	-	-
	S160GJ	65kA	-	-	70	125	150	-	-	70	-	-	70	-	-	-	-	-	-	-	-
	H160NJ	125kA	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	E250NJ	25kA	36	36	50	65	85	36	36	50	-	36	50	50	-	36	50	50	-	-	-
	S250NJ	36kA	-	50	65	85	125	-	50	65	-	50	65	65	-	50	65	65	-	-	-
	S250GJ	65kA	-	-	70	125	150	-	-	70	-	-	70	-	-	-	-	-	-	-	-
	S250PE	70kA	-	-	-	125	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	H250NJ	125kA	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	400A	E400NJ	25kA	36	36	50	65	85	36	36	50	36	36	50	36	36	50	50	50	36	36
S400CJ		36kA	-	50	65	70	100	-	50	65	-	50	65	50	50	65	65	50	50	50	50
S400NJ		50kA	-	-	70	85	125	-	-	70	65	-	70	65	-	-	65	65	65	65	65
S400GJ		70kA	-	-	-	125	150	-	-	-	-	-	-	-	-	-	-	-	-	-	85
H400NJ		125kA	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes: 1. All values shown at 400V AC.
2. Cascade fault level limit is expressed in kA.

TEMBREAK 2
MOULDED CASE CIRCUIT BREAKERS
16A TO 630A

1.	Welcome to TemBreak 2	
2.	Ratings and Specifications	
3.	Operating Characteristics	
4.	Application Data	
5.	Accessories	
	• Electrical Control (Internal Accessories)	55
	• Termination of Control Wiring	60
	• Electrical Control (Motorised Operation)	61
	• Operating Handles & Locking Devices	64
	• Insulation Accessories	66
	• Dual Supply Changeover Systems	69
6.	Installation	
7.	Dimensions	



TEMBREAK 2
MINI MOULDED CASE CIRCUIT BREAKERS
10A TO 100A

8.	TemBreak 2 MINI Moulded Case Circuit Breakers	
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TEMBREAK
MOULDED CASE CIRCUIT BREAKERS
630A TO 1600A

9.	TemBreak Moulded Case Circuit Breakers	
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10.	Order Codes	
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ACCESSORIES

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Electrical control accessories for TemBreak 2 are designed with the installer in mind. Status and alarm contacts, remote tripping coils and undervoltage protection coils are of modular design and convenient to use.



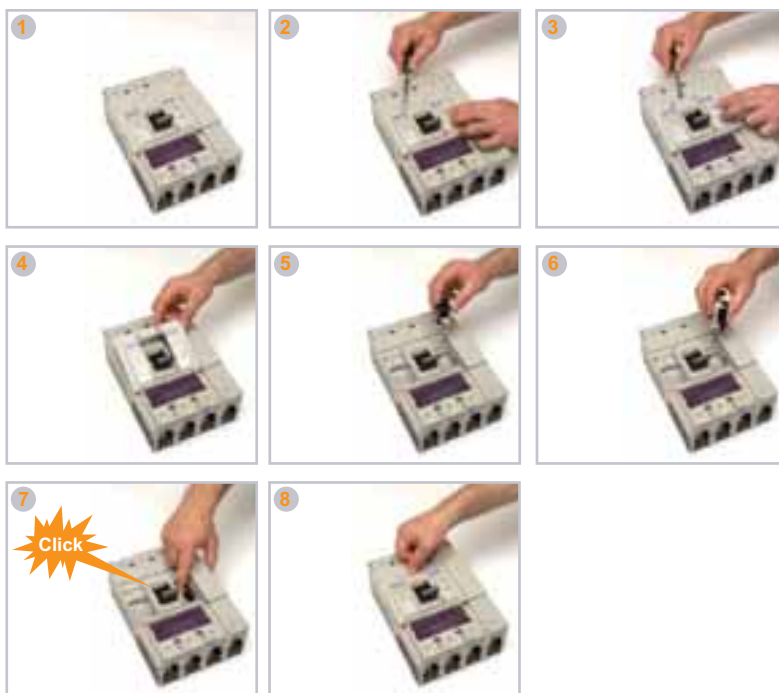
- 1) Heavy-duty auxiliary switch
- 2) Heavy-duty alarm switch
- 3) General-purpose auxiliary switch
- 4) General-purpose alarm switch
- 5) Shunt trip
- 6) Undervoltage trip

- Every accessory fits every MCCB and Switch-Disconnecter in the range.
- All accessories are endurance tested to the same level as MCCBs.
- TemBreak 2 internal accessories are easily field-installable.
- All accessories are individually packaged and are supplied with fitting instructions.
- Control wiring is terminated on the accessory screw terminal. Alternatively a terminal block which clips to the side of the MCCB is available.



Installing Accessories in a 4 pole S400 model

The internal accessories can be easily installed in the field without special tools or product training.



Easy field-Installation of Accessories

- Internal accessory can be simply plugged into position
- No tools are required for this, except a screwdriver to lift the MCCB front cover clips.
- Accessories fit with a firm click when installed correctly.
- Colour coding of accessories helps identification and installation

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Valid Maximum Accessory Combinations

Frame size (A): 125	160 and 250	400 and 630

- Status indication switches mount in the left side of the MCCB.
General purpose and heavy duty status indication switches cannot be mixed in the same MCCB.
Only one alarm switch can be fitted to an MCCB.
- Shunt trips and undervoltage trips mount in the right side of the MCCB.

- It is not possible to install a shunt trip and an undervoltage trip in an MCCB as they occupy the same location. Undervoltage trips can provide remote tripping if necessary by wiring a normally closed contact or pushbutton in series with the protected supply.
- Undervoltage trips with time delays require an external time delay controller which clips to the side of the MCCB.

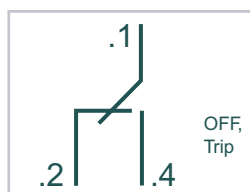
ACCESSORIES

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Status Indication Switches



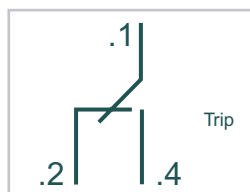
General Purpose Auxiliary Switch



Terminal Designations and Function of General Purpose Auxiliary Switch



General Purpose Alarm Switch



Terminal Designations and Function of General Purpose Alarm Switch

General Purpose Auxiliary Switch (AX)

An auxiliary switch electrically indicates the ON or OFF status of the MCCB. The general purpose type is a changeover switch with 3 terminals.

A microcurrent version is available for switching currents as low as 1mA.

Auxiliary switches are colour coded grey. The cable capacity of the terminals is 0.5 to 1.25mm².

The general purpose auxiliary switch meets the requirements of IEC 61058-1.

General Purpose Alarm Switch (AL)

An alarm switch electrically indicates the TRIP status of the MCCB. The general purpose type is a changeover switch with 3 terminals.

A microcurrent version is available for switching currents as low as 1mA.

Alarm switches are colour coded grey and black. The cable capacity of the terminals is 0.5 to 1.25mm².

The general purpose alarm switch meets the requirements of IEC 61058-1.

General purpose auxiliaries and alarm switch ratings						
Volts (V)	AC		Volts (V)	DC		Minimum Load
	Amperes (A)			Amperes (A)		
	Resistive Load	Inductive Load		Resistive Load	Inductive Load	
440	-	-	250	-	-	100mA at 15V DC.
240	3	2	125	0.4	0.05	
110	3	2	30	3	2	

Microcurrent versions		
Volts (V)	DC	
	Amperes (A)	
	Resistive Load	Minimum Load
30	0.1	1mA at 5V DC and 30V DC.

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

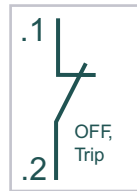
Status Indication Switches



Heavy Duty Auxiliary Switch



Terminal Designations and Function of Heavy Duty Auxiliary Switch, a contact



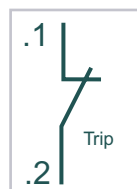
Terminal Designations and Function of Heavy Duty Auxiliary Switch, b contact



Heavy Duty Alarm Switch



Terminal Designations and Function of Heavy Duty Alarm Switch, a contact



Terminal Designations and Function of Heavy Duty Alarm Switch, b contact

Heavy Duty Auxiliary Switch (AX)

The heavy duty auxiliary switch has an impulse withstand voltage (Uimp) of 6kV and is suitable for isolating safety circuits. The auxiliary switch electrically indicates the ON or OFF status of the MCCB. The heavy duty type is a bridge switch with two terminals. It is available in either normally open or normally closed configurations.

Heavy duty auxiliary switches are colour coded grey. The cable capacity of the terminals is 1.25 to 2.5mm².

The heavy duty auxiliary switch meets the requirements of IEC 60947-5-1.

It has direct opening action, recommended by IEC 60204-1 Safety of Machinery - Electrical Equipment for Machines.



Heavy Duty Alarm Switch (AL)

The heavy duty alarm switch has an impulse withstand voltage (Uimp) of 6kV and is suitable for isolating control circuits. The alarm switch electrically indicates the TRIP status of the MCCB. The heavy duty type is a bridge switch with two terminals. It is available in either normally open or normally closed configurations.

Heavy duty auxiliary switches are colour coded grey and black. The cable capacity of the terminals is 1.25 to 2.5mm².

The heavy duty alarm switch meets the requirements of IEC 60947-5-1.

It has direct opening action, recommended by IEC 60204-1 Safety of Machinery - Electrical Equipment for Machines.



Ratings of Heavy Duty Auxiliary and Alarm Switches					
AC			DC		
Volts (V)	Amperes (A)		Volts (V)	Amperes (A)	
	Resistive Load	Inductive Load		Resistive Load	Inductive Load
500	1	1	-		
440	3	3	250	0.5	0.5
240	4	4	125	1	1
110	5	5	48	3	2.5
48	6	6	24	6	2.5

ACCESSORIES

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Remote Tripping Devices

Shunt Trip (SHT)

A shunt trip allows an MCCB to be tripped remotely on the application of the rated coil voltage across the shunt trip terminals. TemBreak 2 shunt trips have **continuously rated coils** and are suitable for use in electrical interlocking applications.

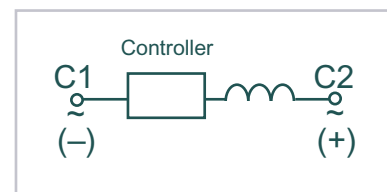
The MCCB contacts and toggle will move to the tripped position when the shunt trip is operated.

The permissible voltage range is 85% to 110% for AC or 75% to 125% for DC.

The cable capacity of the terminals is 0.5 to 1.25mm². Shunt trips are colour coded grey.



Shunt Trips



Terminal Designations of Shunt Trips

Ratings of Shunt Trips							
Rated Voltage	Voltage AC			Voltage DC			
	100-120	200-240	380-450	24	48	100-120	200-240
Excitation Current (A)	0.014	0.014	0.0065	0.03	0.03	0.011	0.011

Under Voltage Trip (UVT)

An undervoltage trip will trip the breaker automatically when the voltage applied to the terminals of the undervoltage coil drops to between 70% and 35% of its voltage rating. The undervoltage trip prevents the circuit breaker being closed unless a voltage corresponding to at least 85% of its voltage rating is applied across the terminals of the undervoltage coil.

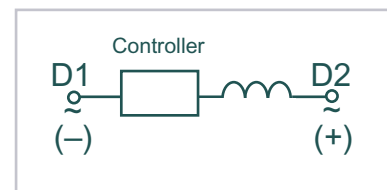
The MCCB contacts and toggle will move to the tripped position when the under-voltage trip operates.

Undervoltage trips with AC operating voltages are available with 500ms time delays. Time-delay units are fitted to the outside of MCCBs.

The cable capacity of the terminals is 0.5 to 1.25mm². Undervoltage trips are colour coded grey and black.



Undervoltage Trips



Terminal Designations of Undervoltage Trips

Ratings of Undervoltage Trips						
Rated Voltage	Power supply capacity (VA)			Excitation current (mA)		
	Voltage AC			Voltage DC		
	100-120	200-240	380-450	24	100-120	200-240
Power Supply Capacity (VA)	1.4	1.4	2.28	23	10	10

TERMINATION OF CONTROL WIRING

Terminal blocks are for optional use with all types of internally mounted accessory.



Terminal Block for Plug-in MCCBs

The terminal block for a plug-in MCCB consists of:

- a male section pre-fitted with 3 cables with which clips easily to the back of the MCCB
- a female section with 3 user terminals which clips easily into the plug-in base.

Up to 4 terminal blocks can be installed on a 125A, 160A or 250A frame MCCB. Up to 5 terminal blocks can be installed on a 400A or 630A frame MCCB.



Terminal Block for Plug-in MCCBs

Terminal Block for Front-Connected and Rear-Connected MCCBs (TF)

A terminal block facilitates convenient and accessible control wiring to internally mounted accessories. It allows the use of control wiring cables with larger cross-sectional area than permitted by the internal accessories themselves.

This terminal block can be clipped to either side of the MCCB. If mounted on the left incoming wiring will be fed vertically up to the terminals. If mounted on the right, the incoming wiring will be fed vertically down to the terminals. Terminal blocks are pre-fitted with outgoing wiring which can be terminated directly on each internal accessory.

The maximum incoming cable size to the terminal block is 2.0mm². Terminal blocks have 11 terminals.

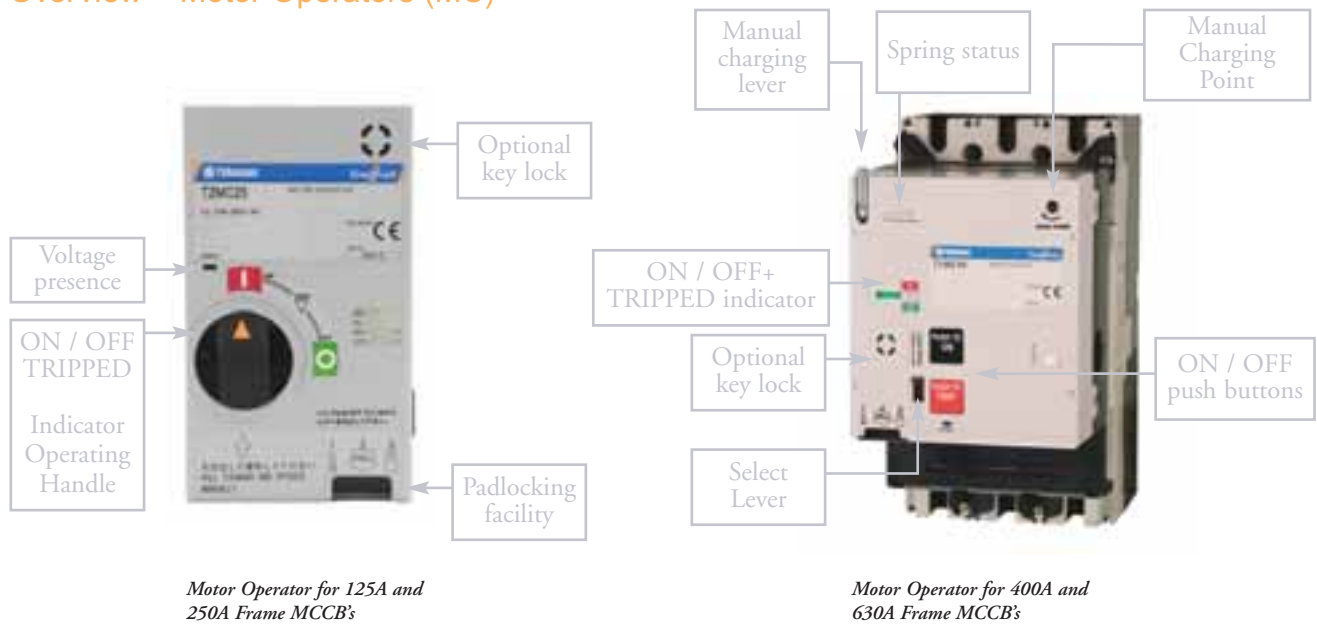


Terminal Block for Front-Connected and Rear-Connected MCCBs

ACCESSORIES

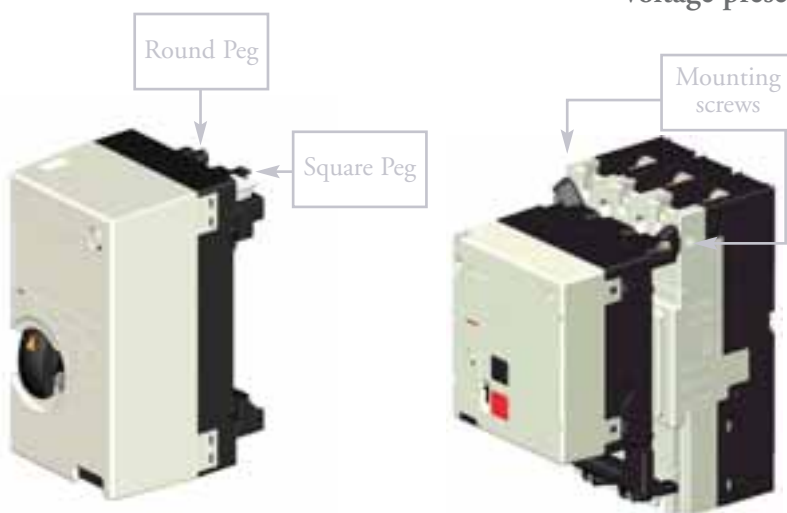
ELECTRICAL CONTROL USING MOTORISED OPERATION

Overview – Motor Operators (MC)



Motor operators provide the possibility of opening and closing an MCCB on application of electrical control signals. TemBreak 2 motor operators are extremely reliable, having been designed to endure the same switching duty as the host MCCB.

- Easy field-installation.
- Fast operation ($\leq 100\text{ms}$).
- Positive contact indication.
- Padlocking facility as standard (Maximum 3, hasp diameter 8mm).
- Optional keylock.
- Versions available with automatic reset function.
- Voltage presence indication.



Motor Operator for 125A and 250A frame MCCB's

Motor Operator for 400A and 630A frame MCCB's

Motor operators for 125A and 250A frame are mounted on the front of the breaker. They can be rapidly fitted by locating the round pegs and square pegs on the motor into corresponding round and square holes on the breaker. It takes less than 10 seconds to secure the motor to the MCCB. Two levers securely lock the motor into position. No tools are needed to fit the motor operator.

400A frame and 630A frame motor operators are held in place with mounting screws. They can be installed easily in the field.

ELECTRICAL CONTROL USING MOTORISED OPERATION

Indication of ON, OFF or TRIPPED Status

The handle of 125A and 250A frame motor operators has dual functions:

1. Indication of ON, OFF or TRIPPED status as shown in the photographs below;
2. Manual operation when handle is pulled out. The supply to electrical control circuits inside the motor operator is cut when the handle is pulled out.



MCCB on



MCCB off



MCCB tripped



Motor operators for 400A and 630A frame MCCBs incorporate a mechanical flag which indicates the ON, OFF and TRIPPED status of the MCCB. They can be manually charged using the lever provided.

Ratings and Specifications

Frame size of host MCCB (A)		125, 160, 250	400, 630
Rated operating voltage	100-110 V AC	■	■
	200-220 V AC	■	■
	230-240 V AC	■	■
	24 V DC	■	■
	48 V DC	■	■
	100-110 V DC	■	■
Operating current/ Starting current Peak value (A)	100-110 V AC	3 / 7.8	ON ---/1.9; OFF, RESET 1.4/4.6
	200-220 V AC	1.5 / 4.8	ON ---/3.3; OFF, RESET 1.0/3.8
	230-240 V AC	1.3 / 4.3	ON ---/3.3; OFF, RESET 1.0/3.8
	24 V DC	TBA	TBA
	48 V DC	TBA	TBA
	100-110 V DC	1.3 / 4.3	ON ---/1.3; OFF/RESET 1.2/2.9
Operating method		Direct drive	Spring charging
Operating time (s)	ON	0.1	0.1
	OFF	0.09	1.5
	RESET	0.09	1.5
Operating switch rating	100V, 0.1 A, Opening voltage: 44V, current 4mA		
Power supply required	300 VA minimum		300VA minimum
Dielectric properties (1 min)	1500 V AC (1000V AC for 24V DC and 48V DC motors)		
Weight	1.4 kg		3.5kg

■ = Available

Note: Operating times shown in the above table apply only when the rated operational voltage is supplied to the motor operator. The voltage supplied to the motor operator must be within the range of 85% and 110% of the rated operating voltage.

ACCESSORIES

ELECTRICAL CONTROL USING MOTORISED OPERATION

Motor Operator Control Circuits

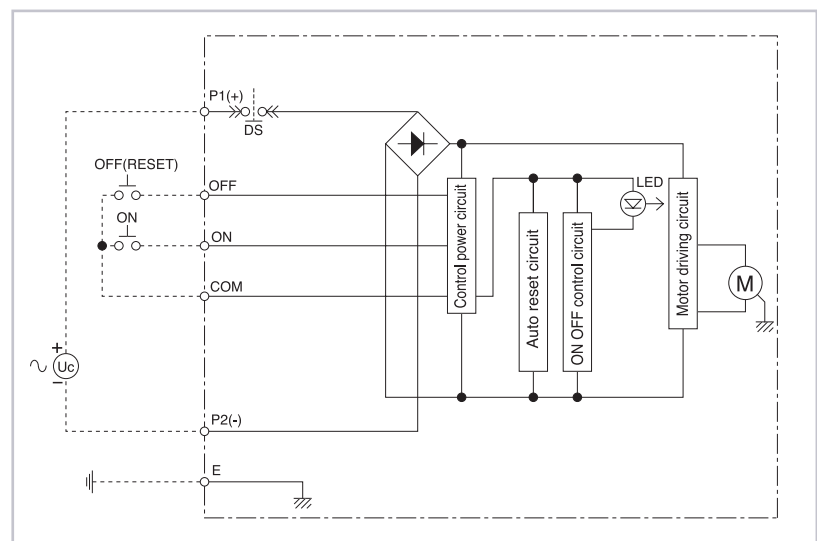


MCCB and Motor Operator Showing Control Wiring Socket



Control Wiring Plug

The Control circuits for Motor Operators are connected using a simple plug and socket system.



Control circuit for Motor Operators

Operation

The motor operator incorporates a self-hold circuit for the closing and opening signals. Therefore a momentary open or close signal will ensure a complete operation.

When the breaker trips, the breaker is reset by applying a signal to the OFF terminals of the motor.

When a UVT is used with a motor operator, design the control circuit so that the UVT is energised **before** a reset or close signal is sent to the motor operator. A 40ms time delay in the reset and close signals is sufficient to allow the UVT to energise.

When a shunt trip is used with a motor operator, design the control circuit so that the shunt trip is de-energised before a reset or close signal is sent to the motor operator.

When a mechanical interlock is used with motor operators, design the control circuit to provide electrical interlocking between the motor operators. The electrical interlocking should prevent a close signal being sent to a motor operator unless the other motor operator and circuit breaker are in the OFF position.

Auto- reset

Two types of motor operator are available: motor operators without auto-reset and motor operators with auto-reset. The correct type of motor operator should be selected for the application. MCCB auxiliary and alarm switches do not have to be used in the control circuits for motor operators whether they have auto-reset or not, saving cost and space.

OPERATING HANDLES & LOCKING DEVICES

TemBreak 2 handles are extremely reliable, having been designed to endure the same switching duty as the host MCCB.

It is easy to fit the operating unit to the MCCB. Fitting involves three easy steps:

1. Align breaker toggle with operating mechanism
2. Push handle into position (the handle's round pegs locate securely in the breaker's round holes and the handle's* square pegs in the breaker's square holes).
3. Twist locking screws through 45 degrees.*

Safety Features

- Door interlock mechanism with override facility included as standard
- IP54 as standard (door mounted version), IP3X as standard (breaker mounted version)
- IP65 optional (door mounted version), IP5X optional (breaker mounted version)
- Locks OFF with up to 3 padlocks (8mm hasps)
- Optional keylock in OFF position
- Available in black or red and yellow
- A trip test can be performed with the handle fitted to the MCCB

Orientation

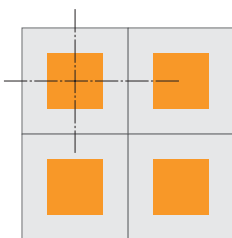
To switch the breaker from OFF to ON the handle is rotated through 90 degrees in a clockwise direction.

The ON (I) and OFF (O) indication of the handle can be re-oriented in steps of 90 degrees with respect to the operating mechanism. This allows the indication position to remain the same whether the breaker is mounted vertically (right side up or upside down) or horizontally (on its left side or on its right side). The hole cut-out dimensions for a panel or door will remain unchanged if the handle is re-oriented. The handle's axis of rotation is on the intersection of the centre lines of a 3P MCCB.

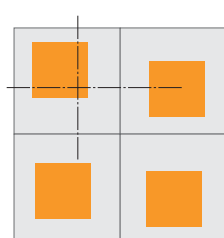
This means that the positioning of the door cutouts is symmetrical for breakers mounted horizontally on either side of a vertical busbar system.



Cubicle Door Cutouts



Using TemBreak 2 Operating Handles



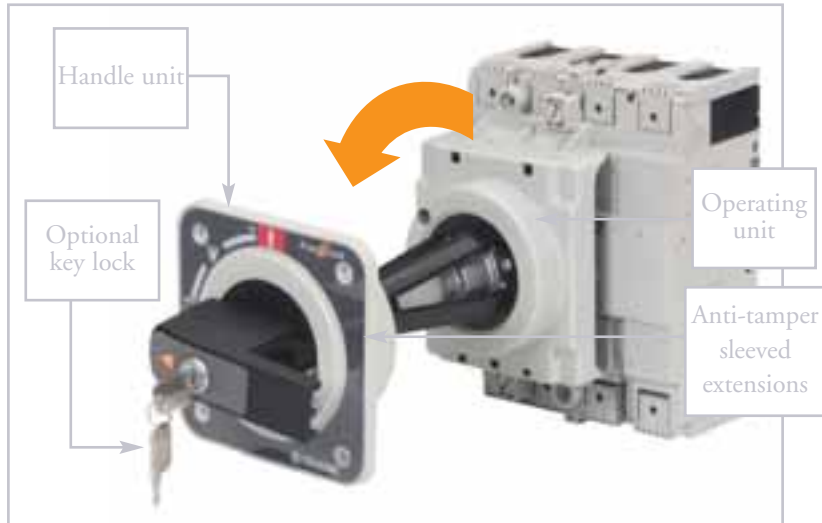
Using other MCCB Operating Handles

*handles for 400A and 630A Frame models are secured with four screws.

ACCESSORIES

OPERATING HANDLES & LOCKING DEVICES

Door Mounted Handle (HP)



Door Mounted Handle with Optional Keylock

The door mounted operating handle is used to operate a circuit breaker mounted inside a cubicle from outside the door. It consists of an operating mechanism that is mounted on the breaker, an operating handle that is mounted on the door, and a shaft that transmits the turning force from the handle to the operating unit. The shaft can be cut to the required length.

Breaker Mounted Handle (HB)



Breaker Mounted Handle Padlocked in the OFF Position

This handle is used to operate a circuit breaker mounted just behind a compartment door with the door closed. The operating unit and the handle itself are mounted directly onto the circuit breaker. The handle protrudes through a cutout in the door. A moulded door flange is supplied with the handle which covers the cutout from the front.

Padlocking and keylocking is possible in the OFF position or both the ON and OFF position depending on the mounting direction.

Locking Devices

Toggle locking devices allow MCCBs to be locked ON or OFF using up to three padlocks. Locking devices for 125A, 160A and 250A frame models accept padlocks with 5mm hasp diameter. Locking devices for 400A and 630A frame models accept padlocks with 8mm hasp diameter.



S250 Locked OFF



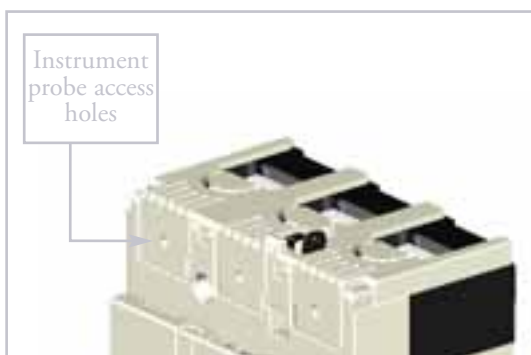
S400 Locked OFF

Fittings for Castell and Fortress locks are available. They are suitable for use on toggle-operated MCCBs, or on door mounted handles (HP) for MCCBs.

INSULATION ACCESSORIES

Terminal Covers

Terminal covers are used to prevent direct contact with live MCCB terminations. They also provide additional insulation to reduce the possibility of a short circuit between phases or to earth when large conductors are used.



General features

- Terminal covers require no tools for installation
- All terminal covers have an IP20 ingress protection rating
- Terminal covers are ordered individually. Two terminal covers are required to cover both the line and load terminals of an MCCB. Each cover can either be fitted to the top or bottom of the MCCB
- Terminal covers have an instrument probe access hole of 4mm diameter on each phase.



Terminal Cover Lock with Lead Seal

Options

- A terminal cover lock allows an anti-tampering seal to be added.
- An earth barrier can be added to terminal covers for front connection. The earth barrier provides insulation at the rear of the terminations.



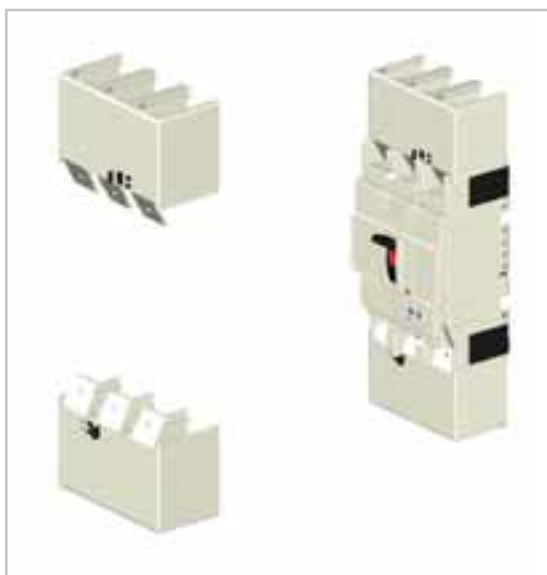
Earth Barrier Fitted to Rear of Terminal Cover

ACCESSORIES

INSULATION ACCESSORIES

Terminal Covers for Front Connection (CF)

Terminal covers for front connection are suitable for covering the exposed live parts of conductors terminated on the MCCB.



Terminal Covers for Front Connection



Flush Terminal Covers

Flush Terminal Covers (CS)

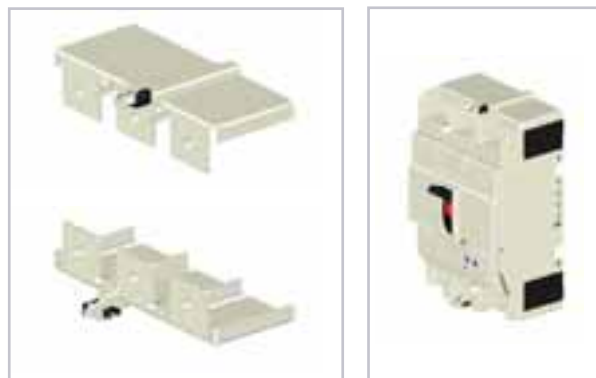
Flush terminal covers are useful for increasing the ingress protection rating at the terminals without increasing the overall length. They can be used with busbar and for direct entry of stranded cable (with solderless cable clamp terminals (FW), refer to Section 6, Installation).

Flush terminal covers are identical to rear terminal covers for 400A and 630A frame models.

The user can remove a section of the rear terminal cover using a tool to allow entry of the conductor.

Terminal covers for Rear Connection (CR)

Terminal covers for rear connection may be used on MCCBs fitted with rear connections (RP) or plug-in connections (PM). They prevent access to the terminals from the front and top.



Terminal Covers for Rear Connection

INSULATION ACCESSORIES

Interpole Barriers (BA)

Interpole barriers provide maximum insulation between phases at the terminals of the MCCB. They cannot be fitted at the same time as any of the terminal covers.

Interpole barriers for use on one end of the MCCB are supplied as standard. Additional interpole barriers can be ordered individually. All interpole barriers can easily be fitted to either end of an MCCB.

MCCB moulds have been designed to accept an additional interpole barrier between two adjacent MCCBs.



MCCB Fitted with Interpole Barriers on Both Ends



Interpole Barriers between Adjacent MCCBs

ACCESSORIES

ACCESSORIES FOR DUAL SUPPLY CHANGEOVER SYSTEMS

Where more than one AC voltage source is available to a distribution system it is often necessary to prevent multiple sources supplying the system at one time. Interlocking accessories are used together with two MCCBs to prevent both being in the ON state simultaneously. This provides a secure mechanical means of preventing the connection of two supply sources.

An automatic changeover controller can monitor the status of two supplies and control the switching of two MCCBs according to pre-programmed parameters. When an automatic changeover controller is interfaced to a pair of interlocked MCCBs fitted with remote control accessories, a secure, fully automatic changeover system is achieved.



Link Interlock



Changeover Pair with Link Interlock and Motor Operators



Viewed from Below

Link Interlock (ML)

Link interlocks consist of a mechanism mounted to each MCCB in an adjacently mounted pair. The link between each mechanism inhibits the closure of one MCCB unless the other is in the OFF position.

Link interlocks can be used on a mixture of 3 and 4 pole breakers of the same frame size.

The TemBreak 2 link interlock is an innovative design breakthrough which will save space, time and money for switchboard builders in that:

- Installation is extremely simple. Link interlocks are field-installable and only require a screwdriver to fit.
- Link interlocks replace the accessory cover on the front of the breaker
- Motor operators and operating handles are compatible with link interlocks
- The interlock is installed on the front of the MCCB and does not therefore interfere with copperwork or cables
- No need to buy factory-built backplates with MCCBs and interlocks pre-fitted
- An automatic changeover pair consisting of an interlocked pair of MCCBs with internal control accessories and motor operators can be assembled in a few minutes!

ACCESSORIES FOR DUAL SUPPLY CHANGEOVER SYSTEMS

Wire Interlock (MW)

Wire interlocks consist of two mechanisms connected by a cable. The mechanisms are mounted on two MCCBs located at a distance from each other which is limited by the length and bend radius of the cable. The mechanisms and cable inhibit the closure of one MCCB unless the other is in the OFF position. Each mechanism is ordered separately. Cables of 1.0m or 1.5m length are also ordered as separate items.

Wire interlocks can be used on a mixture of 3 and 4 pole MCCBs of different frame sizes. This allows potential cost savings by using lower rated MCCBs for the alternative power supply. MCCBs can be mounted in different switchboard compartment or on different planes.



Changeover Pair with Wire Interlock and Motor Operators



View from above

The TemBreak 2 wire interlock is an innovative design breakthrough which will save space, time and money for switchboard builders in that:

- Installation is extremely simple. Wire interlocks are field-installable.
- Wire interlocks replace the accessory cover on the front of the breaker
- Motor operators and operating handles are compatible with wire interlocks
- Interlocking of MCCBs mounted in different compartments is possible
- No need to buy factory-built backplates with MCCBs and interlocks pre-fitted
- An automatic changeover pair consisting of an interlocked pair of MCCBs with internal control accessories and motor operators can be assembled in a few minutes!

Slide Interlock (MS)

Slide interlocks are manually operated toggle locking devices which can be installed between two adjacent MCCBs. Depending on the position of the slide, one or other of the MCCBs on either side of a slide interlock is inhibited from being in the ON position.

Slide interlocks can be used between MCCBs of the same number of poles and of the same frame size.

Slide interlocks can be installed in the field and are padlockable in both positions.



Slide Interlock Installed Between two MCCBs

ACCESSORIES

ACCESSORIES FOR DUAL SUPPLY CHANGEOVER SYSTEMS

TemTransfer Automatic Changeover Controller

The TemTransfer is a fully configurable **Automatic Changeover Controller (ACC)**. It is designed to monitor the incoming AC mains supply (1 or 3 phases) for under/over voltage and under/over frequency. Should these fall out of limits, the module will issue a start command to the generating set controller. Once the set is available and producing an output within limits the ACC will control the transfer devices and switch the load from the mains to the generating set. Should the mains supply return to within limits the module will command a return to the mains supply and shut down the generator after a suitable cooling run. Various timing sequences are used to prevent nuisance starting and supply breaks.

TemTransfer is compatible with TemPower 2 ACBs, TemBreak 2 MCCBs and TemContact contactors.

When TemTransfer is used with a pair of TemBreak 2 MCCBs, additional control wiring and components may be necessary for some control schemes. Contact us for details.

Terasaki can supply TemTransfer pre-configured to specification, or unconfigured with an optional interface kit.

Configuration is by PC based software and the interface kit using an FCC68 socket on the rear of the module. This allows rapid and secure configuration of the module. The FCC68 socket also provides full real-time diagnostics on the status of the ACC, its inputs and outputs.

Configuration and connection options allow for a wide range of **higher functions** such as *'Auto start inhibit'*, *'Manual restore to mains'*, *'Load inhibit'* (both mains and gen-set), *'Lamp test'*, *Push-button transfer control*, *External mains or Gen-set failure inputs*, etc.

The four position key-switch allows for mode selection:-

- Auto Mode
- Auto mode with manual return to Mains
- Run generator off load
- Run generator on load

A clear mimic diagram with 'International' symbols and LEDs provide clear indication of supply availability and load switching status. Further LED indication is provided for *'Start delay in progress'* and *'Mains return timer active'*. Two **user configurable LED's** are provided to allow the user to display specific states (defaulted to indicate that the closing procedure of the Mains or Generator circuit breaker has been started).

Five **user configurable relays** are provided to allow control of contactors, different circuit breaker types and engine control modules and alarm systems.

The controller features a self seeking power supply which will utilise power from the Mains AC supply or the Generator AC supply. A DC supply to the module is not essential for basic operation, though some 'higher' functions require it (such as system diagnostics).

The module is mounted in a robust plastic case, connection to the module is via plug and socket connectors.



TemTransfer Automatic Changeover Controller

ACCESSORIES FOR DUAL SUPPLY CHANGEOVER SYSTEMS

Specifications

DC Supply

The TemTransfer is normally powered from the AC sensing supplies. It will only draw power from the DC supply if both AC supplies are not present.

DC power should be supplied from a low voltage supply between 8 to 35V continuous. It is able to operate at 0V for 50ms during cranking, providing supply was at least 10V before dropout and supply recovers to 5V. This is achieved without the need for internal batteries.

Maximum operating current:

150mA @ 12V, 95mA @ 24V.

Maximum standby current (AC powered supply)

34.7 mA @ 115V. 16.1mA @ 230V.

3 Low voltage auxiliary relay contacts:

8Amp DC rated 1 each: NO+NC C/O (a and b C/O contacts)

2 Mains rated relay contacts:

8Amp RMS rated 1 each NO+NC. (a and b contacts)

Dimensions:

96 x 144 x 155 DIN STANDARD.

Operating temperature range:

-15 to +55°C

Indication LED's:

Mains Available/On Load, Generator Available/On load, Start Delay, Mains Return Delay and 2 User Configurable.

Operating voltage: - Specify on ordering.

AC Voltage Input Range (for AC Powered Operation):

115V Version:- 88 - 160 V ac RMS

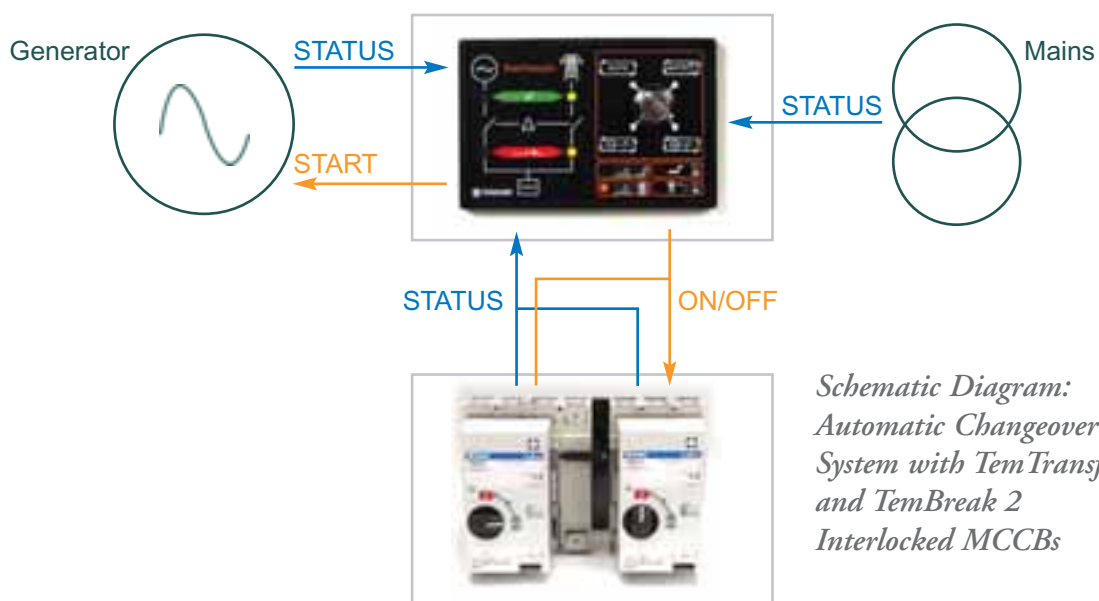
230V Version:- 176 - 305 V ac RMS

AC Voltage Input/Adjustment Range (Sensing Operation):

115V Version:- 55 - 152 V ac RMS

230V Version:- 110 - 304 V ac RMS

AC Frequency Input/Adjustment Range: 10 - 75 Hz



*Schematic Diagram:
Automatic Changeover
System with TemTransfer
and TemBreak 2
Interlocked MCCBs*

MODULAR SIZES



All current ratings up to 630A can be supplied in 2 sizes: the 250A and 630A sizes.



The compact 125A size offers the same features and performance but with reduced dimensions and cost.



TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS 16A TO 630A

1. Welcome to TemBreak 2
2. Ratings and Specifications
3. Operating Characteristics
4. Application Data
5. Accessories
6. **Installation**
 - Connection and Mounting Options and Accessories 75
 - Insulation Distances 80
 - Mounting Angle 82
 - Direction of Power Supply 82
 - Standard Installation Environment and Special Treatments 83
 - Temperature Ratings 84
7. Dimensions



TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS 10A TO 100A

8. TemBreak 2 MINI Moulded Case Circuit Breakers

TEMBREAK

MOULDED CASE CIRCUIT BREAKERS 630A TO 1600A

9. TemBreak Moulded Case Circuit Breakers

10. Order Codes

INSTALLATION

CONNECTION AND MOUNTING OPTIONS AND ACCESSORIES

TemBreak 2 MCCBs connection and mounting accessories facilitate easy installation in any arrangement. Breakers and accessories are easy to fit. They are designed to provide safe and secure termination and mounting points. 125A and 160A/250A frame models have a choice of 45mm front cutout patterns



Optional 45mm Cutout Patterns

Connection and mounting options overview diagram



Overview of Connection and Mounting Accessories

Please refer to Section 2, Ratings and Specifications, for details of the connection and mounting options which are available for each model.

Please refer to Section 7, Dimensions, for detailed dimensions of connection and mounting options and accessories.

Note that one set of mounting screws is supplied as standard with every circuit breaker or switch disconnecter purchased.

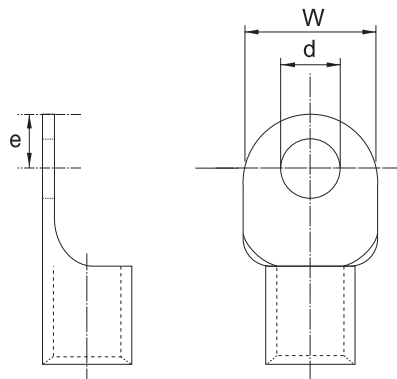
CONNECTION AND MOUNTING OPTIONS AND ACCESSORIES

Connection of Busbars and Terminated Cables

This connection method is standard for all **front connected (FC)** MCCB models. Solid conductors or cables terminated with crimp lug terminals can be used.

Serrated Terminal Surface

Each terminal on 160A and 250A models has a serrated surface. This provides excellent grip for heavy cables terminated with crimp lug terminals, thereby preventing sideways rotation of the lug.



Maximum Dimensions of Compression Terminals			
Frame Size (A)	125*	160 & 250	400 & 630
Width, W (mm)	17	25	25
Diameter, d (mm)	9	9	11
Maximum from centre to tip, e(mm)	8.5	10	12

Connection of Large Conductors and Multiple Conductors

Flat bars (FB) are terminal extensions which can be fitted to line or load side terminals and are used to connect large conductors and multiple conductors. Available for field fitting in sets of 3 or 4 bars.



*H125 and L125 are 250A frame size

INSTALLATION

CONNECTION AND MOUNTING OPTIONS AND ACCESSORIES

Direct Entry of Stranded Cable

Solderless clamp terminals (FW) can be used to secure stranded cable directly to the MCCB. Available for field fitting in sets of 3 or 4.



MCCB Model	Cable Capacity (mm ²)
E125, S125, S125-NF	1.5 to 50 (1 cable)
H125, L125, S160-NF	1.5 to 70 (1 cable)
S160, E250, S250, H250, L250	35 to 120 (1 cable)
E400, S400, H400, L400	80 to 240 (1 cable)
	60 to 120 (2 cables)

Termination in Separate Compartment

Rear connections (RC) allow termination of conductors in a different switchboard compartment to the MCCB body.

The terminal bar can be rotated in steps of 45 degrees in the field.



CONNECTION AND MOUNTING OPTIONS AND ACCESSORIES

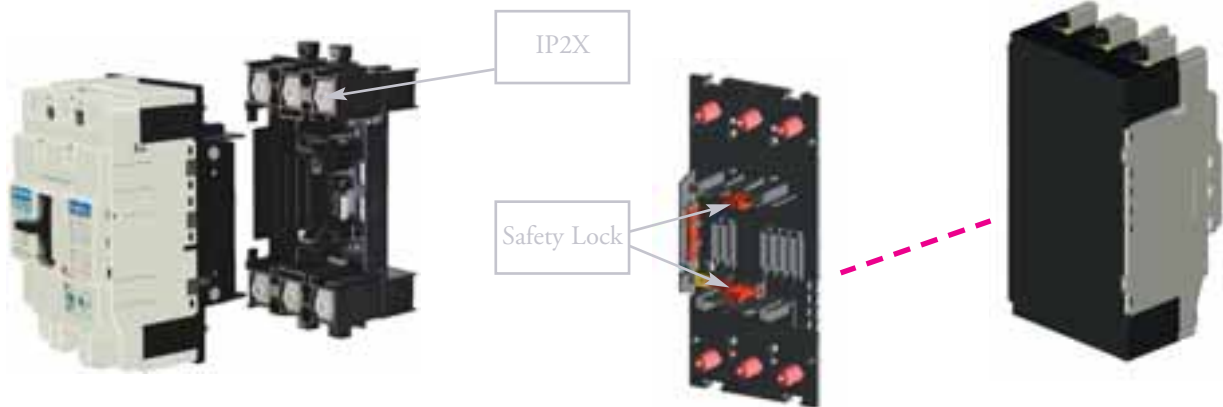
Plug-in Mounting

The plug in mounting system allows fast replacement of the MCCB body without the need to disturb the terminations. Solid conductors or cables terminated with compression terminals can be used.

Plug-In Safety Lock



The plug-in MCCB body is **automatically locked to the base** when the contacts are closed (toggle ON). It cannot be removed unless the contacts are in the isolated position (toggle OFF or TRIPPED). This system ensures safe removal of the MCCB from the base.



Plug-in MCCB and base

Plug-in connections and safety lock are fitted to the back of the MCCB

The connection bars for plug-in bases are optional and can be configured in the field either for front or rear access. The illustrations below show possible mounting and connection options for plug in bases.



1. Mounted on base plate with connection bars mounted for front access. Insulation plates are supplied as standard and must be fitted.
2. Terminations in separate compartment. Connection bars are mounted for top access at the top and rear access at the bottom.
3. Mounted on angle bars. Connection bars are mounted for rear access.

INSTALLATION

CONNECTION AND MOUNTING OPTIONS AND ACCESSORIES

Mounting on 35mm DIN Rail

The DIN rail adaptor is easily fitted to the rear of 3 pole E125 and S125 models to allow clip mounting of the MCCB to 35mm DIN rail.

The 45mm cutout of TemBreak 2 devices makes them suitable for mounting alongside modular devices in distribution boards.

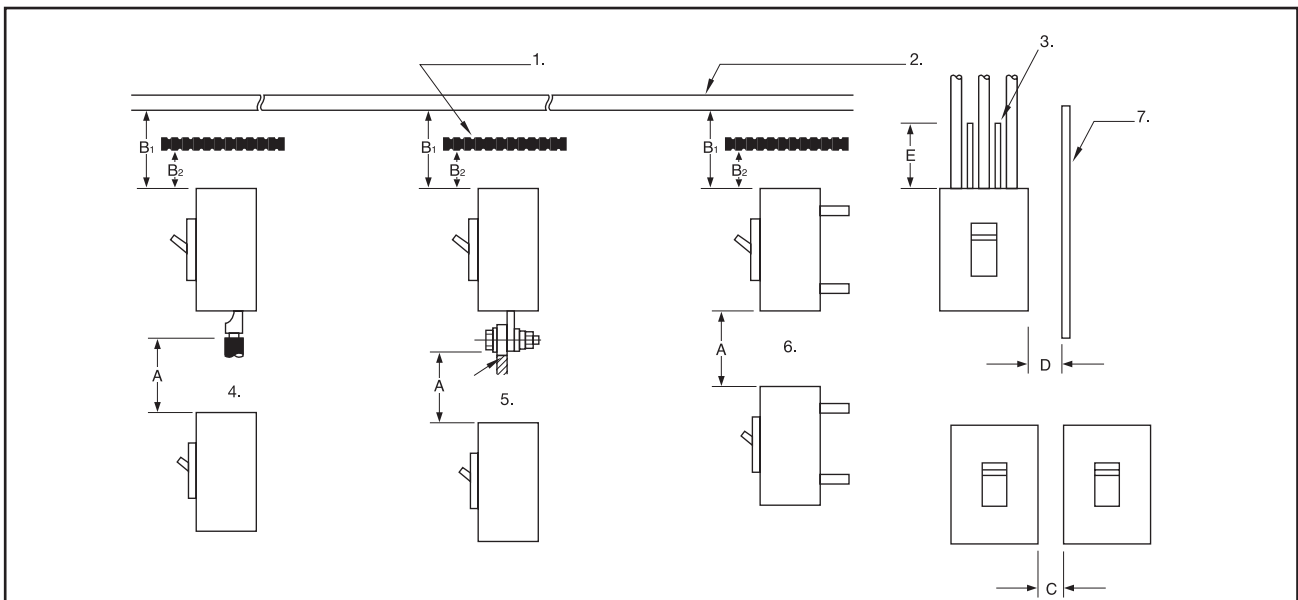


INSULATION DISTANCES

The insulation distances between the MCCB and earthed metal parts and insulators shown in this section must be maintained to prevent arcing faults occurring due to conductive ionised gas. In cases where other specifications require different insulation distances to those shown here, the greater distance must be maintained. In cases where two different models are installed one above the other, the insulation distance between the two models should be as for the lower model.

ATTENTION

Exposed conductors must be insulated up to the breaker terminals. Interpole barriers or optional terminal covers are recommended. If optional terminal covers are used, insulate the exposed conductor until it overlaps the terminal cover.



1. Insulation plate
2. Top plate (earthed metal)
3. Insulation tube or tape
4. Front-connected type
5. Front-connected type with terminal bar
6. Rear-connected type, plug-in type
7. Side panel
8. A. Distance from lower breaker to exposed live part of upper breaker terminal (front-connected type)
or distance from lower breaker to end face of upper breaker (rear-connected type or plug-in type)
- B1. Distance from end face of breaker to top plate
- B2. Distance from end face of breaker to insulation plate
- C. Gap between breakers
- D. Distance from side of breaker to side panel (earthed metal)
- E. Dimensions of insulation over exposed conductors

INSTALLATION

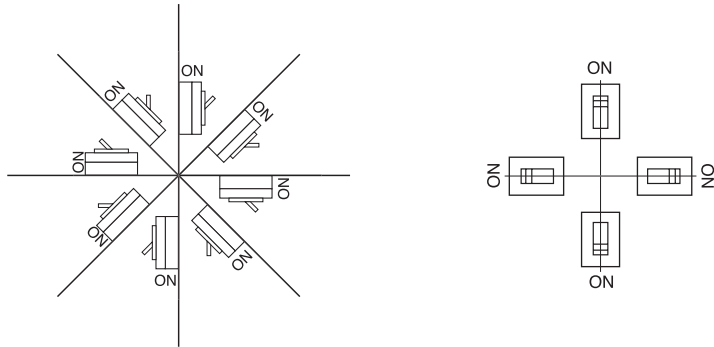
INSULATION DISTANCE IN mm (AT 440V AC MAXIMUM)

Model	Type	A	B1	B2	C	D	E
E125	NJ	50	10	10	0	25	*(1)
S125	NF	50	10	10	0	25	*(1)
S125	NJ	50	10	10	0	25	*(1)
S125	GJ	75	45	25	0	25	*(1)
H125	NJ	100	80	60	0	50	*(1)
L125	NJ	100	80	60	0	50	*(1)
S160	NF	50	40	40	0	50	*(1)
S160	NJ	50	40	40	0	50	*(1)
S160	GJ	100	80	60	0	50	*(1)
H160	NJ	100	80	60	0	50	*(1)
L160	NJ	100	80	60	0	50	*(1)
E250	NJ	50	40	40	0	50	*(1)
S250	NJ	50	40	40	0	50	*(1)
S250	GJ	100	80	60	0	50	*(1)
S250	PE	100	80	60	0	50	*(1)
H250	NJ	100	80	60	0	50	*(1)
H250	NE	100	80	60	0	50	*(1)
L250	NJ	100	80	60	0	50	*(1)
E400	NJ	100	80	60	0	80	*(1)
S400	CJ	100	80	60	0	80	*(1)
S400	NJ	100	80	60	0	80	*(1)
S400	GJ	100	80	60	0	80	*(1)
S400	GE	100	80	60	0	80	*(1)
H400	NJ	120	120	80	0	80	*(1)
H400	NE	120	120	80	0	80	*(1)
L400	NJ	120	120	80	0	80	*(1)
L400	NE	120	120	80	0	80	*(1)
E630	NE	120	100	80	0	80	*(1)
S630	CE	120	100	80	0	80	*(1)
S630	GE	120	100	80	0	80	*(1)

***Note:** (1) Insulate the exposed conductor until it overlaps the moulded case at the terminal, or the terminal cover.

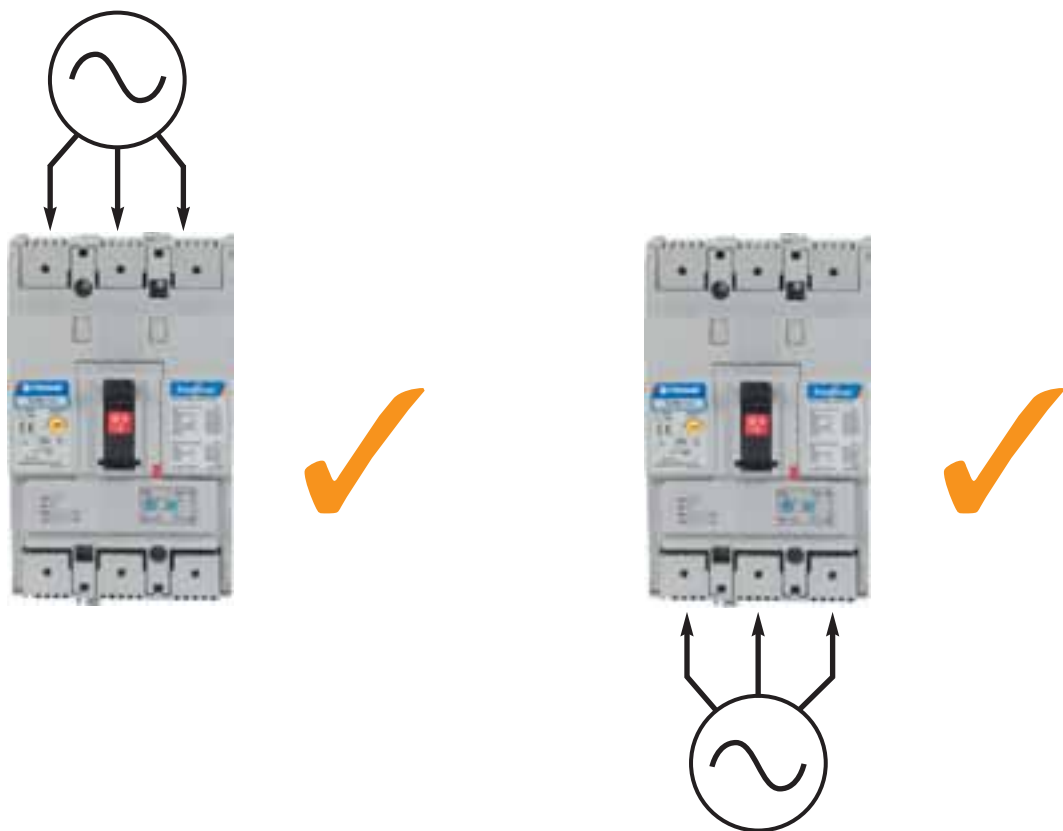
MOUNTING ANGLE

TemBreak 2 MCCBs may be mounted at any angle without affecting performance.



Mounting angle does not affect performance.

DIRECTION OF POWER SUPPLY



Power can be supplied through TemBreak 2 MCCBs in either direction without loss of performance.

INSTALLATION

STANDARD INSTALLATION ENVIRONMENT AND SPECIAL TREATMENTS

TemBreak 2 MCCBs are intended for installation in the following conditions as standard:

- Operating ambient temperature -5 degrees C to 45 degrees C. Refer to page 84 for thermal derating information above this temperature.
- Relative humidity of up to 85%.
- Altitude up to 2000m.
- Atmospheres free from dust, smoke, corrosive gases, inflammable gases, moisture and salt.

For installation in conditions more onerous than those described above, contact Terasaki for details.

The following special treatments have been developed for installation in specific environmental conditions:



- **Low temperature treatment.** For installation at temperatures down to -40 degrees C for storage and -20 degrees C for operation. The environment must be free from rapid changes in temperature that result in the formation of condensation.



- **Fungus-moisture proofing.** For installation at temperatures up to 60 degrees C and relative humidity of up to 95%. The environment must be free from rapid changes in temperature.



- **Anti-corrosion treatment.** MCCB is surface treated to increase resistance to corrosion. If the MCCB is to be installed in atmosphere that contains excessive volumes of corrosive gases or moisture, it should be house in an airtight enclosure.

TEMPERATURE RATINGS

Calibration Temperature: 45°C

MCCB Type	Connection Type	Rating at calibration temperature (50°C)	Rated Current (A)			
			50°C	55°C	60°C	65°C
E125-NJ S125-NJ S125-GJ	Front Rear Plug-in	20A	19	18.5	18	17.5
		32A	31	30.5	30	29
		50A	48	45	43	41
		63A	60	57	55	52
		100A	97	94	90	87
		125A	121	117	113	109
H125-NJ L125-NJ	Front Rear Plug-in	20A	19	18.5	18	17.5
		32A	31	30	29	28
		50A	48	47	45	44
		63A	61	59	57	55
		100A	97	95	92	89
		125A	121	118	114	111
S160-NJ S160-GJ	Front Rear Plug-in	20A	19	18.5	18	17.5
		32A	31	30	29	28
		50A	48	46	44	42
		63A	61	59	57	55
		100A	97	94	91	88
		125A	121	117	113	109
H160-NJ L160-NJ	Front Rear Plug-in	160A	156	151	146	141
E250-NJ	Front Rear Plug-in	20A	19	18.5	18	17.5
		32A	31	30	29	28
		50A	48	46	44	42
		63A	61	59	57	55
		100A	97	94	91	88
		125A	121	117	113	109
E250-NJ S250-NJ S250-GJ	Front Rear Plug-in	160A	156	151	146	141
		250A	243	235	227	219
H250-NJ L250-NJ	Front Rear Plug-in	160A	156	151	147	143
E400-NJ S400-CJ S400-NJ S400-GJ	Front Rear Plug-in	250A	244	237	230	223
		400A	390	380	369	358
H400-NJ L400-NJ	Front Rear Plug-in	250A	243	237	230	223
		400A	390	381	371	361
		250A	243	237	231	224
		400A	392	384	376	368

Calibration Temperature: 30°C

MCCB Type	Connection Type	Rating at calibration temperature (30°C)	Rated Current (A)					
			35°C	40°C	45°C	50°C	55°C	60°C
H250-NJ L250-NJ	Plug-in Conn.	250A	244	236	225	219	209	200
								190

MCCB Type	Connection Type	Rating	Rated Current (A)							
			30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C
S250-PE H250-NE	Front Rear	250A	250	250	250	250	237.5	225	200	200
S400-NE S400-GE	Front Rear	250A	250	250	250	250	250	250	225	200
		400A	400	400	400	400	400	380	360	320
H400-NE L400-NE	Front Rear Plug-in	250A	250	250	250	250	250	250	225	200
		400A	400	400	400	400	400	380	360	320
		250A	250	250	250	250	250	250	225	200
		400A	400	400	400	400	400	380	360	320
E630-NE S630-CE S630-GE	Front Rear*	630A	630	630	630	630	598.5	598.5	567	504

*Contact us for details of plug-in versions

COMPACT CHANGEOVERS



*Changeover Pair with Link Interlock
and Motor Operators*



Viewed from Below (250A frame)

The mechanical interlock is installed on the front of the MCCB, and is compatible with motor operators and handles. An automatic changeover system can be assembled in a few minutes by a switchboard builder or end-user.



TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS 16A TO 630A

1.	Welcome to TemBreak 2	
2.	Ratings and Specifications	
3.	Operating Characteristics	
4.	Application Data	
5.	Accessories	
6.	Installation	
7.	Dimensions	
	• S125-NE, S160-NF	87
	• E125-NJ, S125-NJ, S125-GJ	88
	• S160-NJ, S160-GJ, E250-NJ, S250-NJ, S250-GJ	90
	• H125-NJ, L125-NJ, H160-NJ, L160-NJ, S250-NE, H250-NJ, H250-NE, L250-NJ	92
	• E400-NJ, S400-CJ, S400-NJ, S400-GJ, S400-NE, S400-GE	94
	• H400-NJ, H400-NE, L400-NJ, L400-NE	96
	• E630-NE, S630-CE, S630-GE	98
	• Operating Handles	100
	• Terminal Covers	105
	• Interpole Barriers	107
	• Terminal Blocks for Front-Connected and Rear-Connected MCCBs	108
	• Slide Interlocks	109
	• Link Interlocks	112
	• Wire Interlocks	114
	• Position of Trip Button	116



TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS 10A TO 100A

8.	TemBreak 2 MINI Moulded Case Circuit Breakers
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TEMBREAK

MOULDED CASE CIRCUIT BREAKERS 630A TO 160A

9.	TemBreak Moulded Case Circuit Breakers
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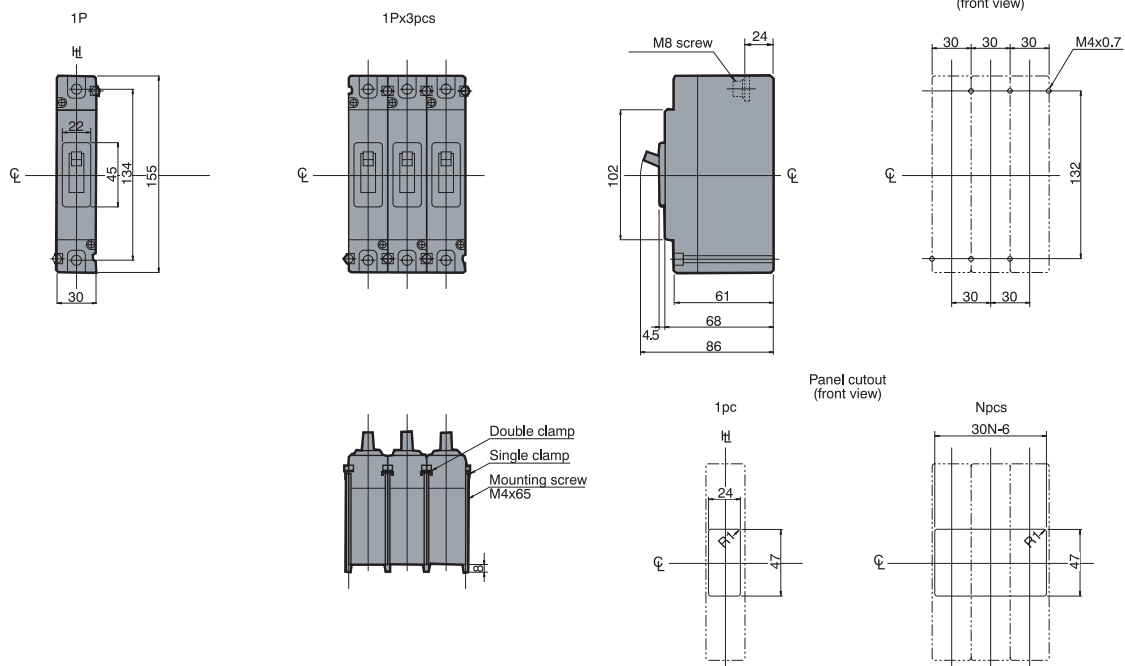
10.	Order Codes
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DIMENSIONS

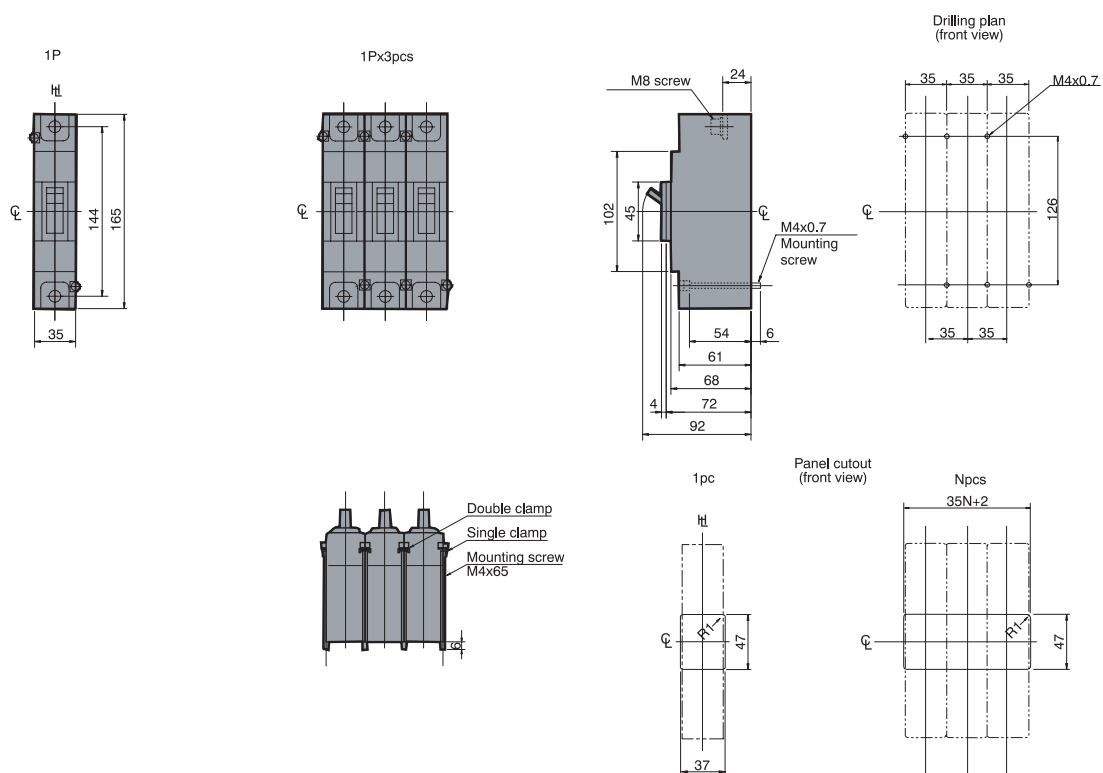
S125-NF, S160-NF

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line

S125-NF Front connected



S160-NF Front connected



E125-NJ, S125-NJ, S125-GJ

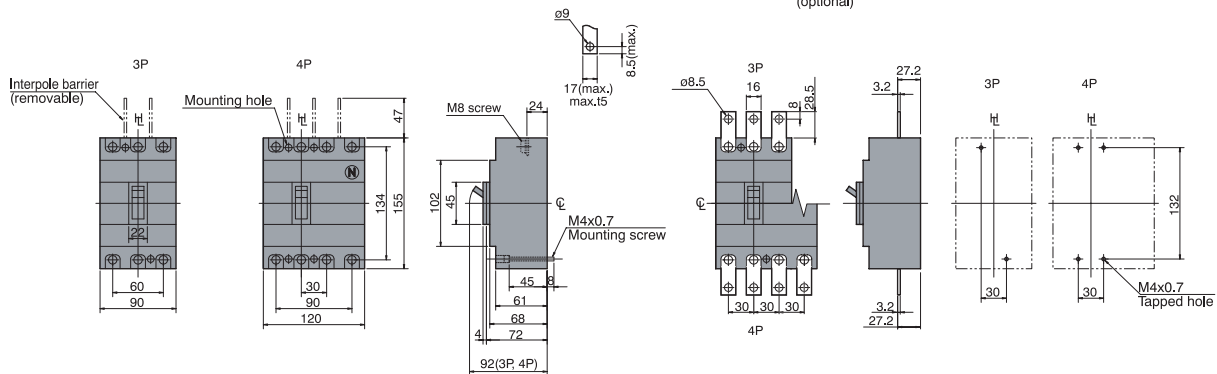
ASL: Arrangement Standard Line
H_L: Handle Frame Centre Line

Front connected

Preparation of conductor

With terminal bars
(optional)

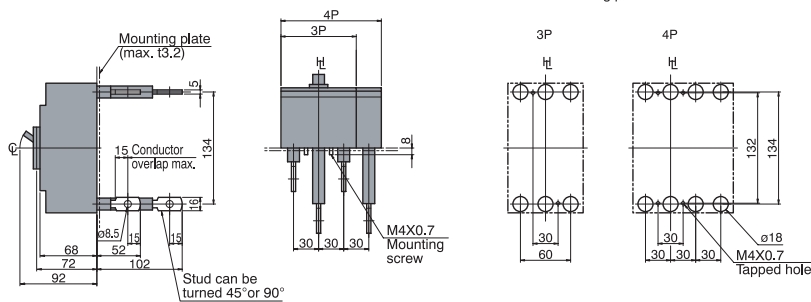
Drilling plan



Rear connected

Drilling plan

Panel cutout
(Front view)



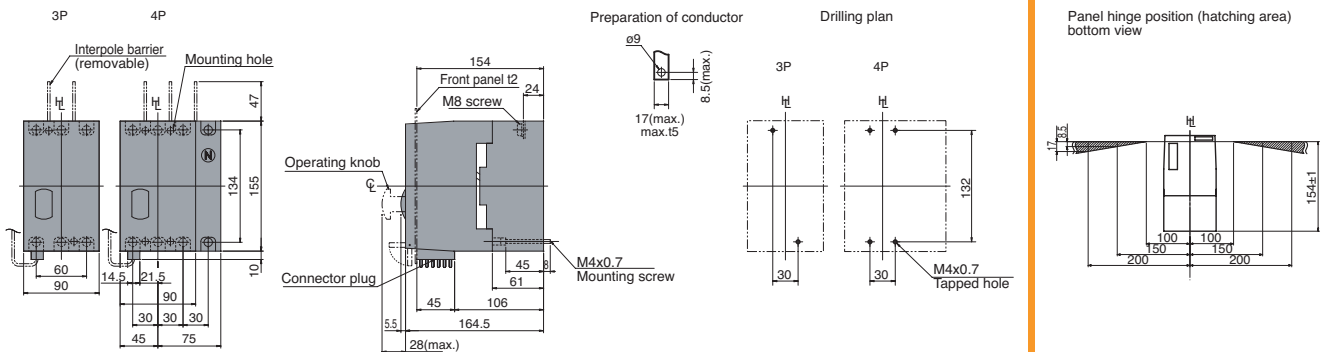
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Front connected with Motor Operator

Preparation of conductor

Drilling plan

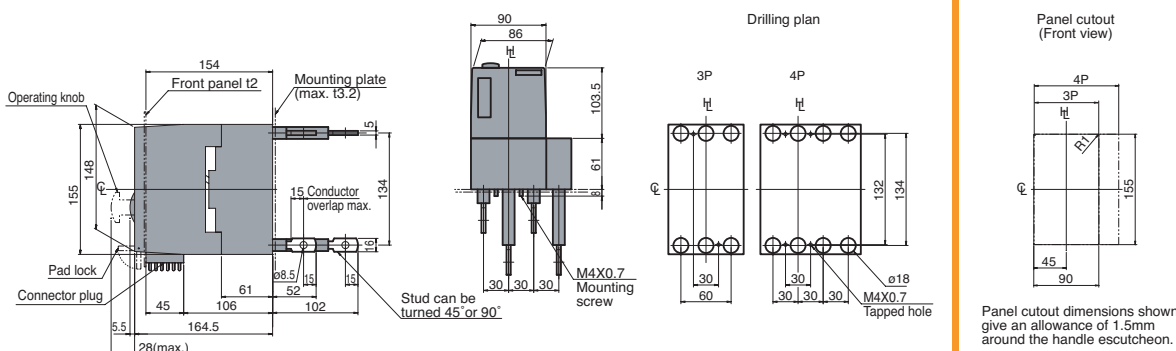
Panel hinge position (hatching area)
bottom view



Rear connected with Motor Operator

Drilling plan

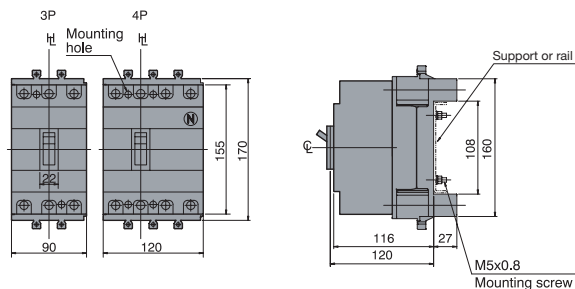
Panel cutout
(Front view)



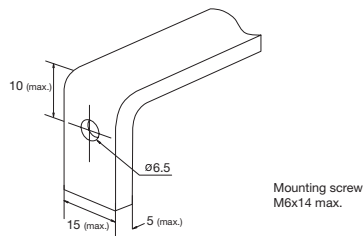
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

E125-NJ, S125-NJ, S125-GJ. Plug-in Versions

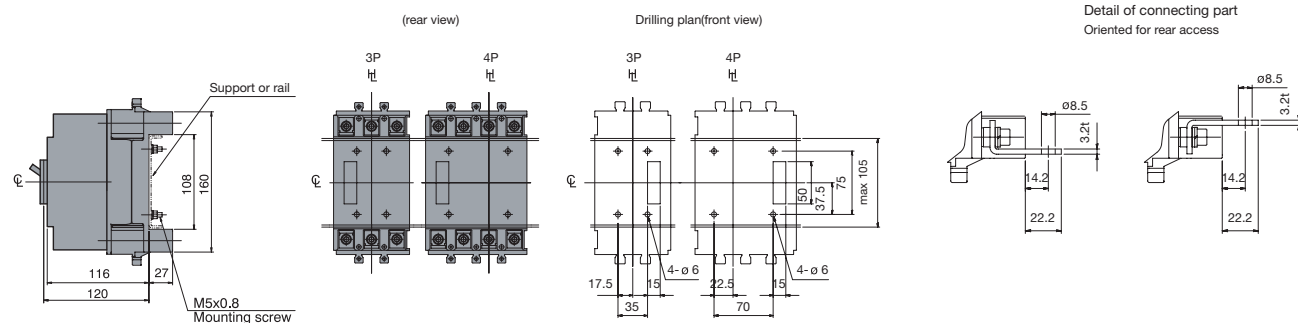
Outline Dimensions



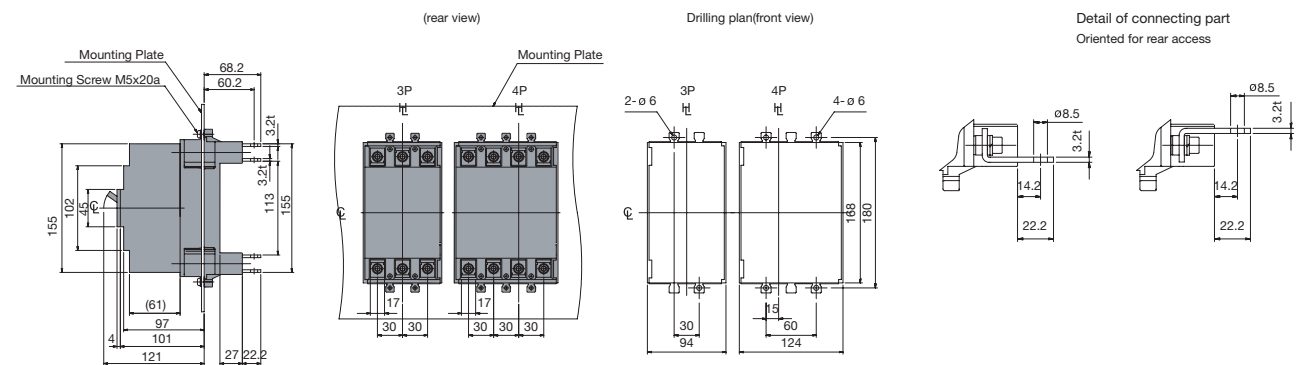
Preparation of conductor



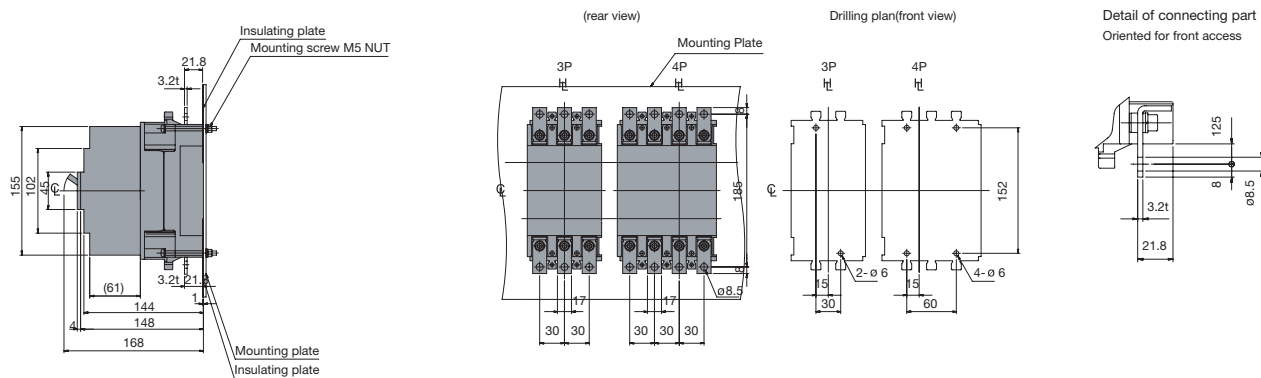
Mounting on a support or rails (shown with optional connection bars oriented for rear access)



Mounting through the backplate (shown with optional connection bars oriented for rear access)



Mounting on the backplate (optional connection bars must be oriented for front access)



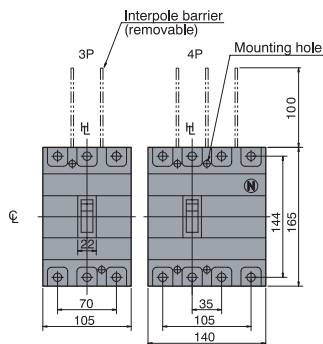
Note that the insulation plate (supplied as standard) must be fitted between the base and the backplate.

S160-NJ, S160-GJ, E250-NJ, S250-NJ, S250-GJ

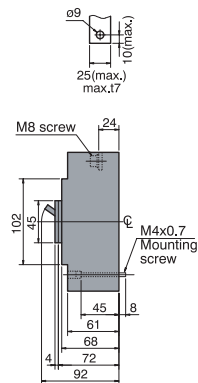
ASL: Arrangement Standard Line

H_L: Handle Frame Centre Line

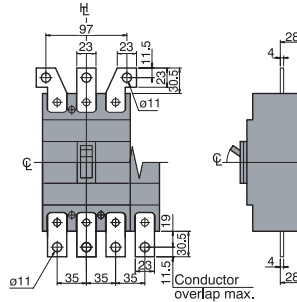
Front connected



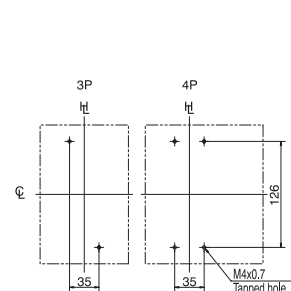
Preparation of conductor



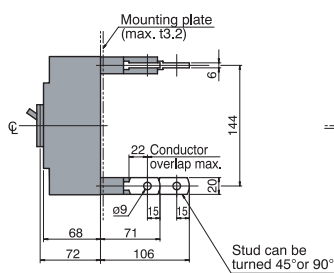
With terminal bars
(optional)



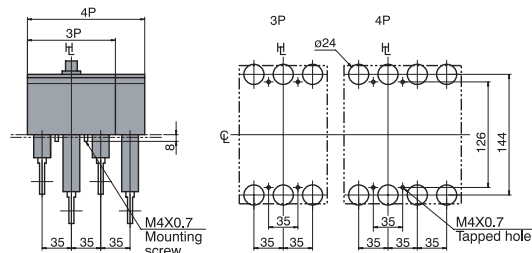
Drilling plan



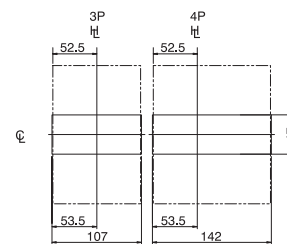
Rear connected



Drilling plan

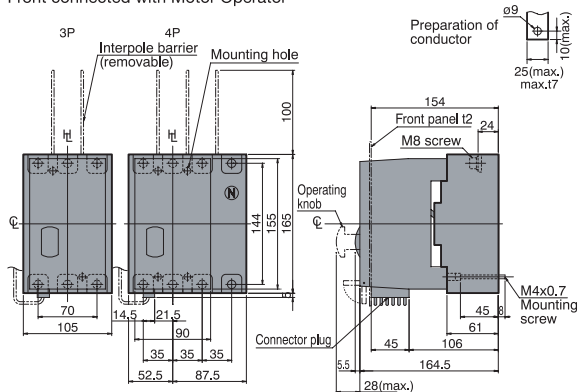


Panel cutout
(Front view)

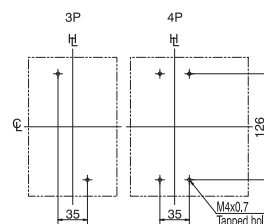


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

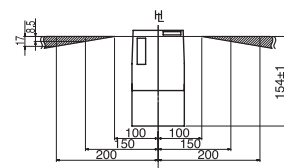
Front connected with Motor Operator



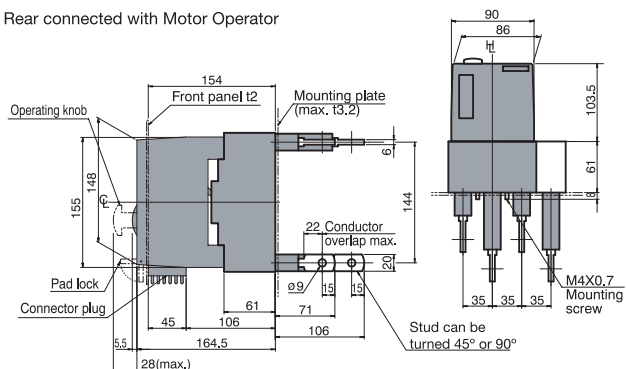
Drilling plan



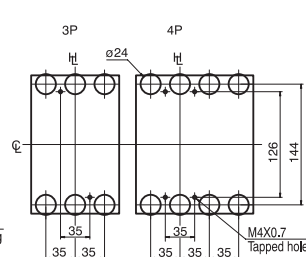
Panel hinge position (hatching area)
bottom view



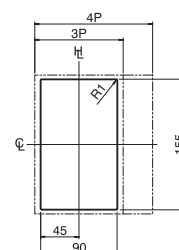
Rear connected with Motor Operator



Drilling plan



Panel cutout
(Front view)



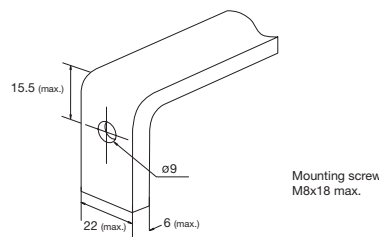
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

SECTION 7

ASL: Arrangement Standard Line
H: Handle Frame Centre Line

[illegible]

Preparation of conductor



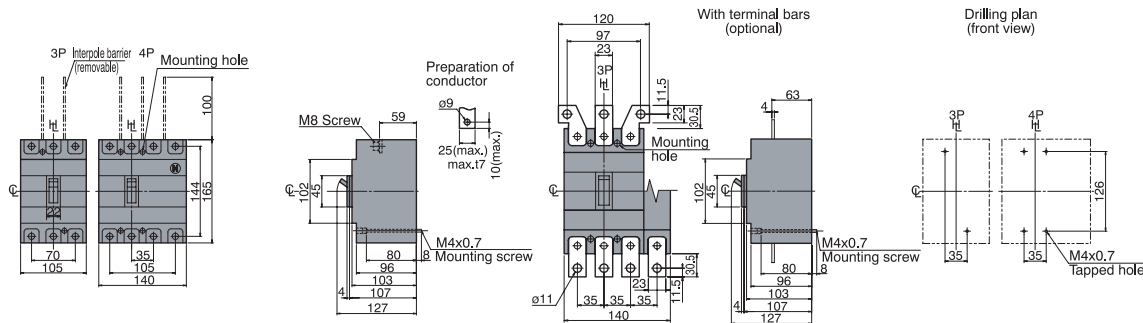
Terminal bars should be connected alternately on adjacent poles.

Terminal bars should be connected alternately on adjacent poles.

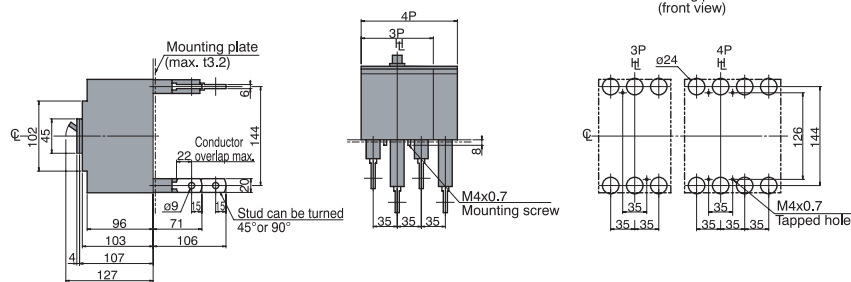
Technical drawing of a mechanical part with dimensions: 4t, 22, 11.5, 19.5, and 21.

ASL: Arrangement Standard Line
H_L: Handle Frame Centre Line

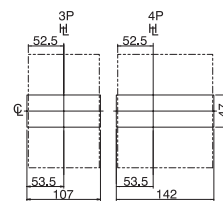
Front connected



Rear connected

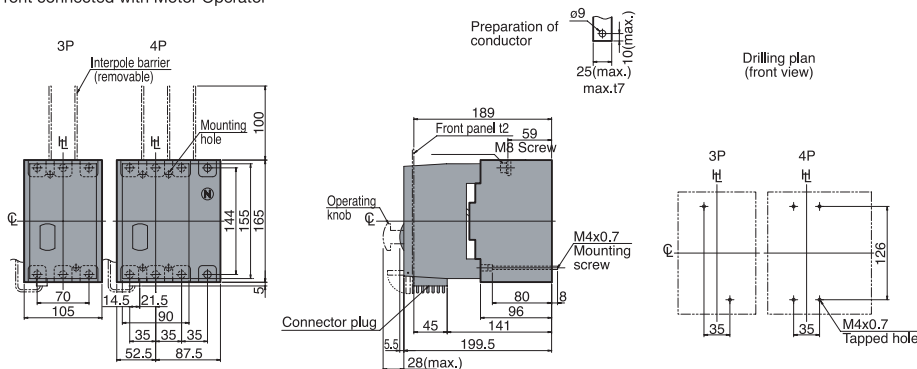


Panel cutout

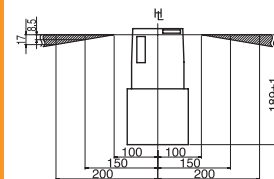


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

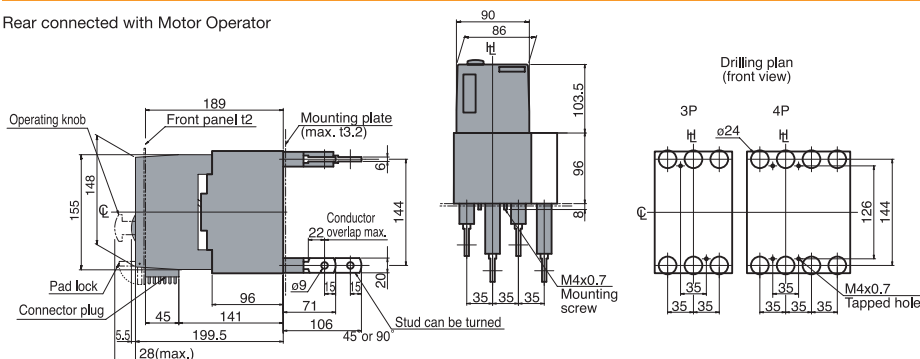
Front connected with Motor Operator



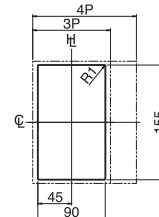
Panel hinge position (hatching area)
bottom view



Rear connected with Motor Operator



Panel cutout
(front view)



Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

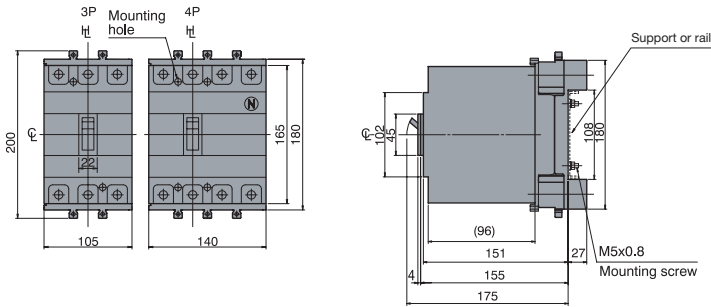
DIMENSIONS

H125-NJ, L125-NJ, H160-NJ, L160-NJ, S250-PE, H250-NJ, H250-NE, L250-NJ. Plug-in Versions

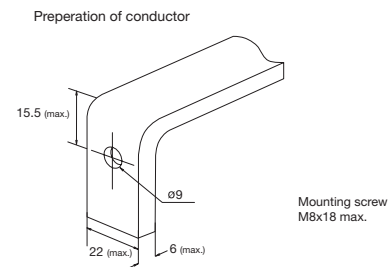
ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

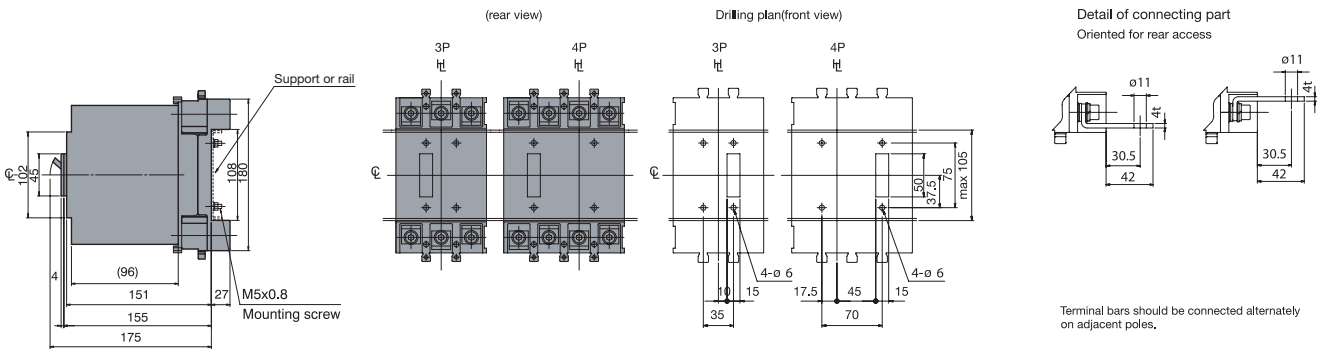
Outline Dimensions



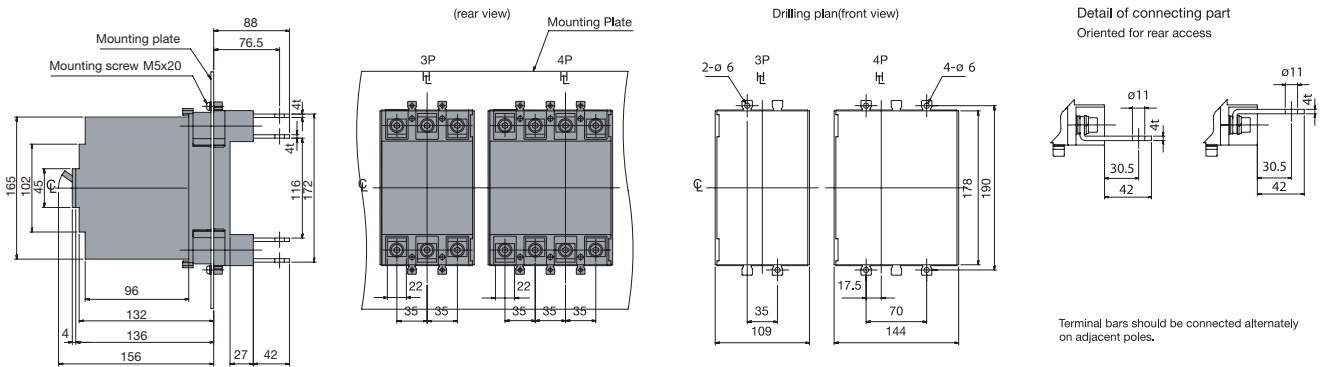
Termination of Busbar



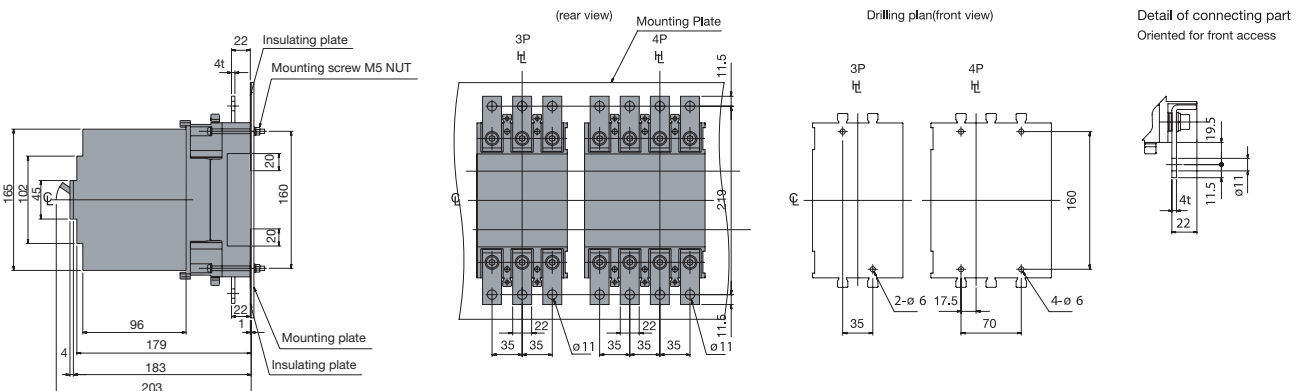
Mounting on a support or rails (shown with optional connection bars oriented for rear access)



Mounting through the backplate (shown with optional connection bars oriented for rear access)



Mounting on the backplate (optional connection bars must be oriented for front access)

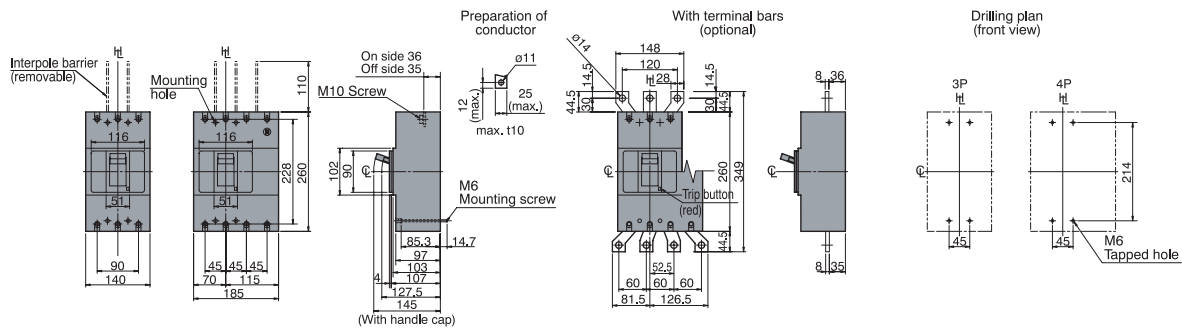


E400-NJ, S400-CJ, S400-NJ, S400-NE, S400-GJ, S400-GE

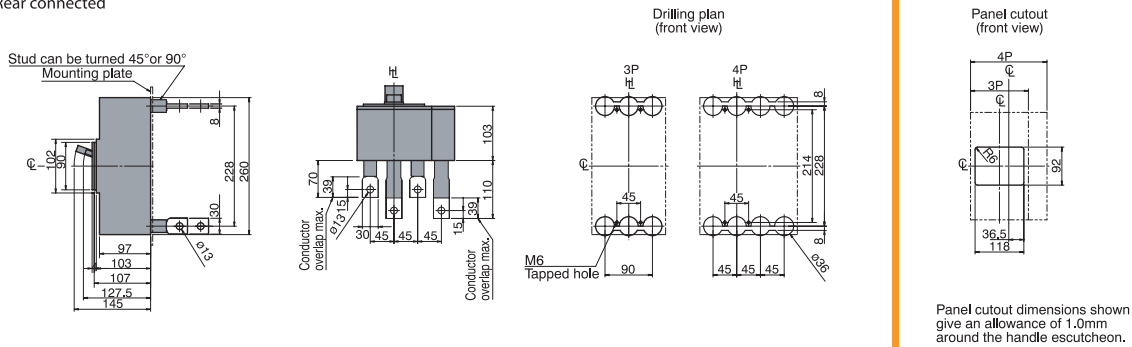
ASL: Arrangement Standard Line

Ht: Handle Frame Centre Line

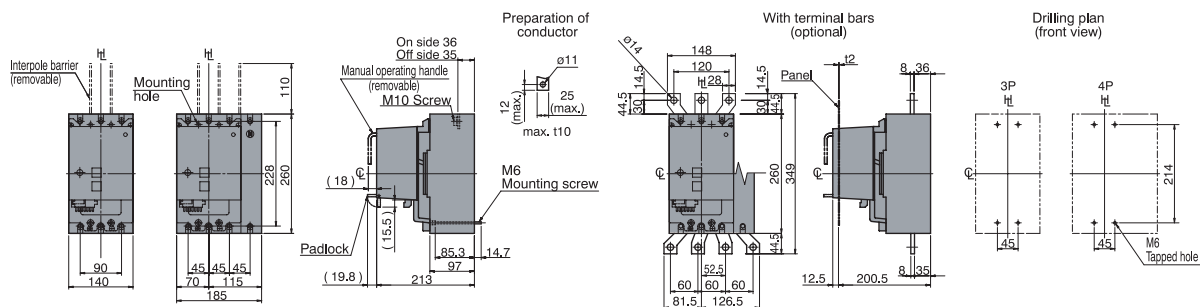
Front connected



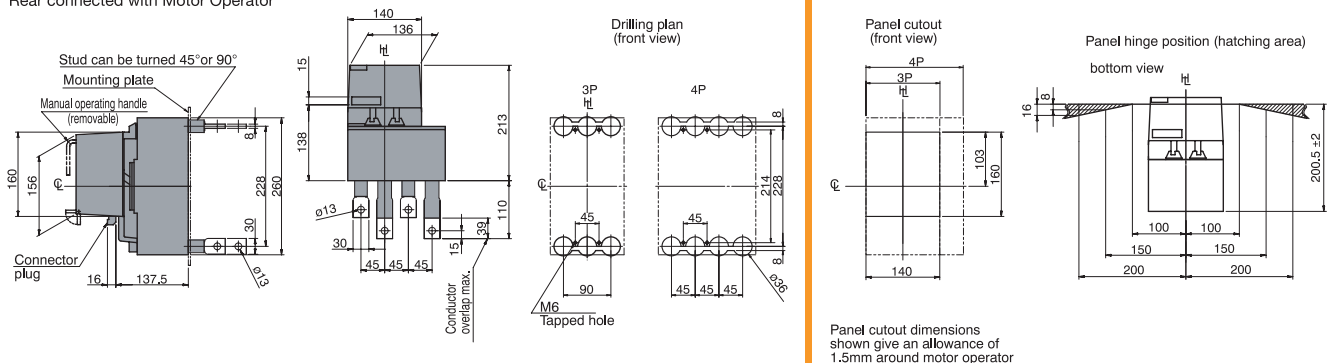
Rear connected



Front connected with Motor Operator



Rear connected with Motor Operator



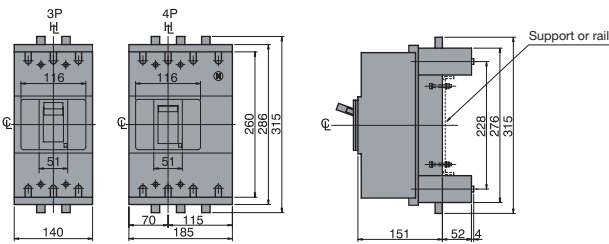
DIMENSIONS

E400-NJ, S400-CJ, S400-NJ, S400-NE, S400-GJ, S400-GE. Plug-in Versions

ASL: Arrangement Standard Line

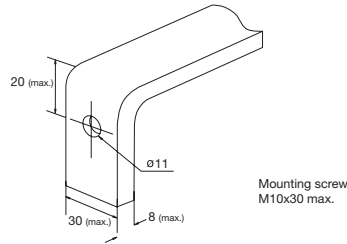
HL: Handle Frame Centre Line

Outline Dimensions

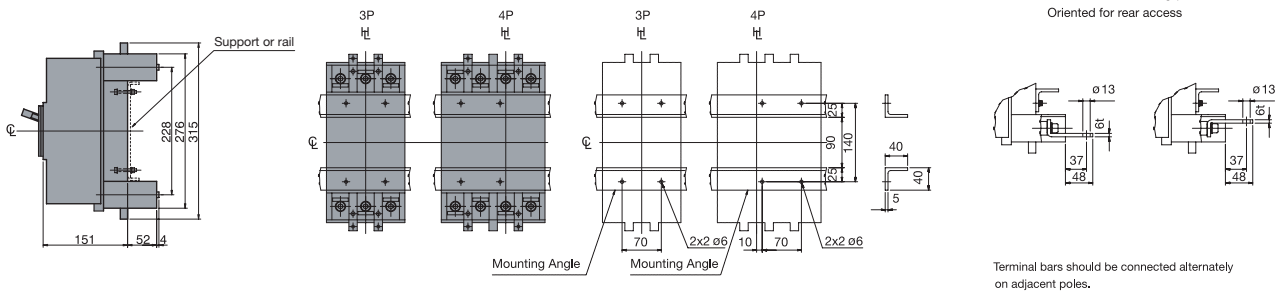


Termination of Busbar

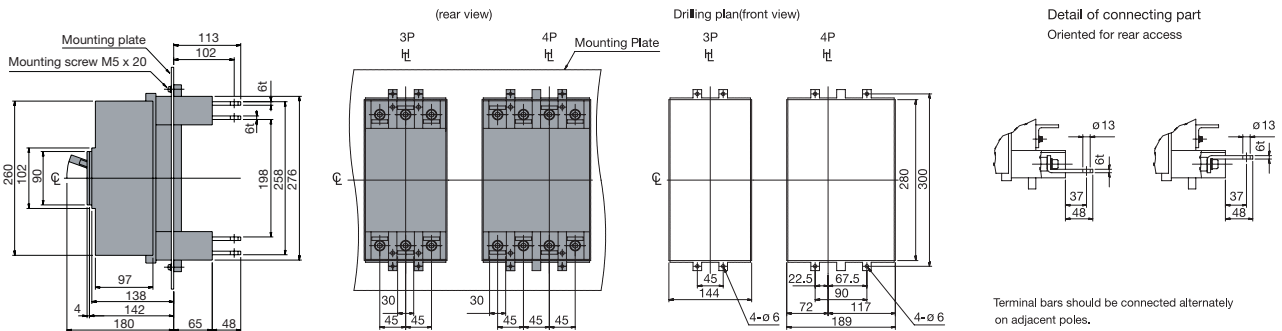
Preparation of conductor



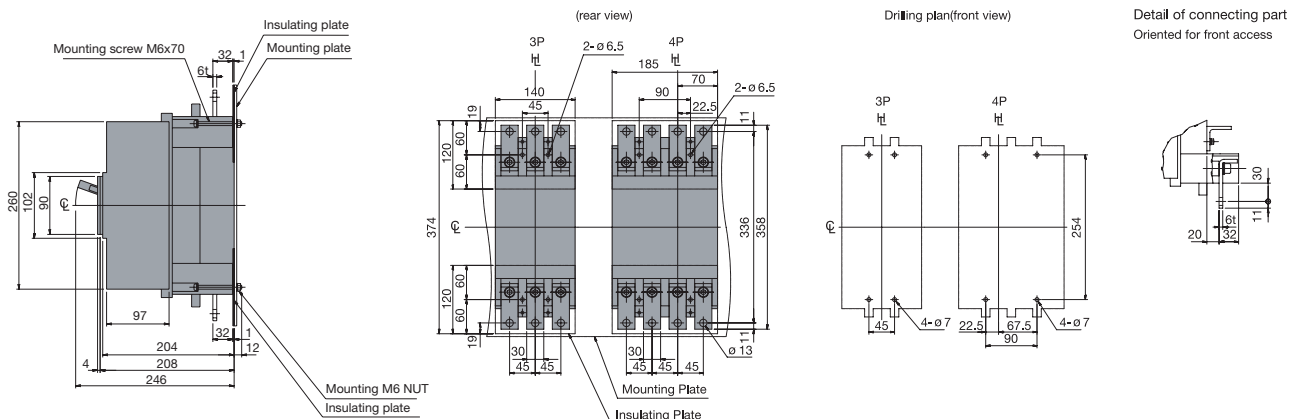
Mounting on a support or rails (shown with optional connection bars oriented for rear access)



Mounting through the backplate (shown with optional connection bars oriented for rear access)



Mounting on the backplate (optional connection bars must be oriented for front access)

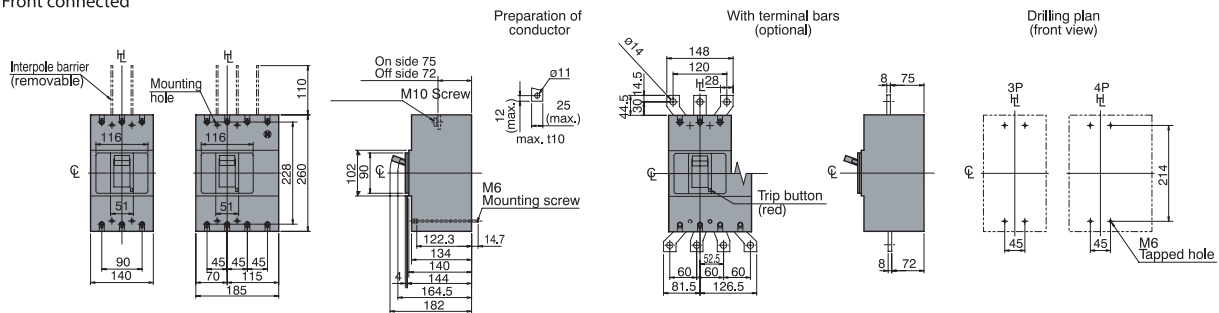


H400-NJ, H400-NE, L400-NJ, L400-NE

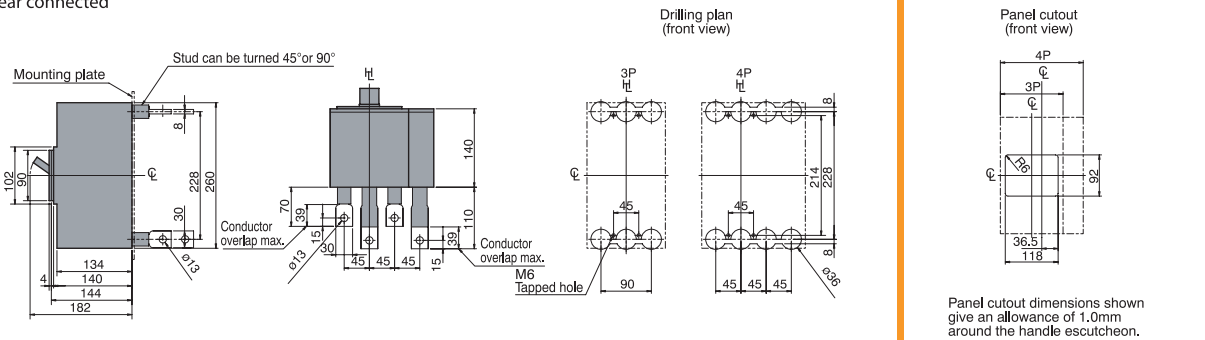
ASL: Arrangement Standard Line

H_L : Handle Frame Centre Line

Front connected

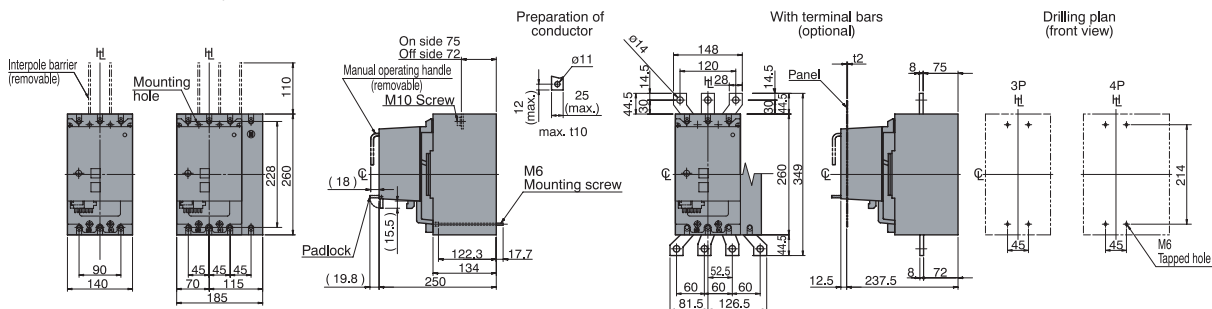


Rear connected

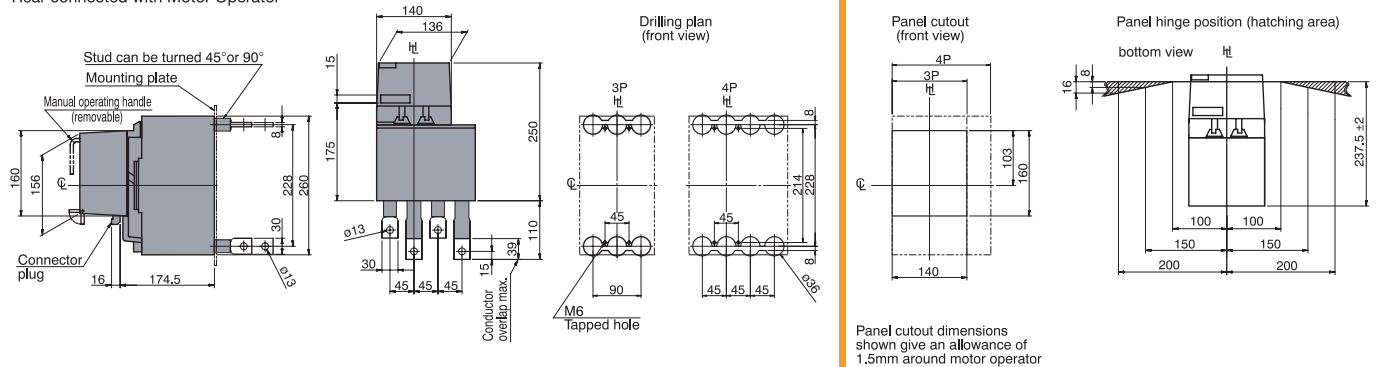


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Front connected with Motor Operator



Rear connected with Motor Operator



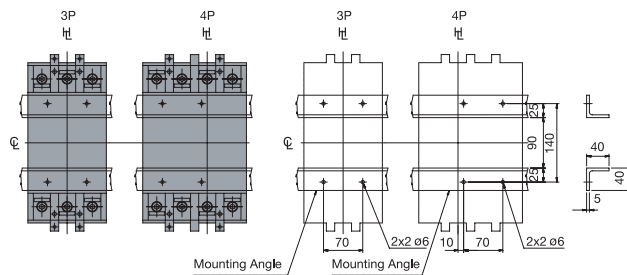
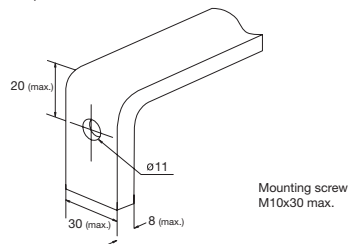
Panel cutout dimensions shown give an allowance of 1.5mm around motor operator

H400-NJ, H400-NE, L400-NJ, L400-NE. Plug-in Versions

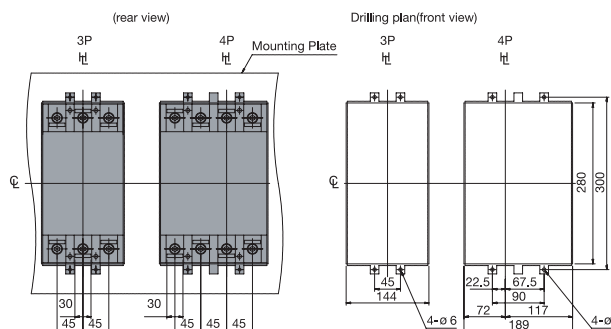
H_L: Handle Frame Centre Line

[illegible]

Preparation of conductor



Terminal bars should be connected alternately on adjacent poles.

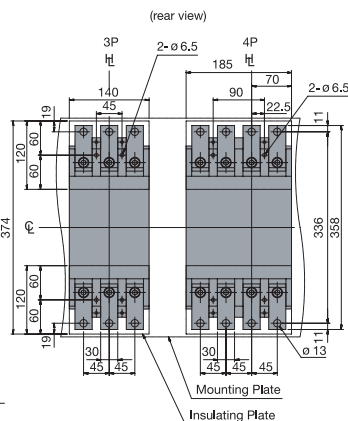
[illegible]

Terminal bars should be connected alternately on adjacent poles.

Technical drawing of the rear view of the device. Dimensions are provided in millimeters (mm). Labels indicate components: Mounting screw M6x70, Insulating plate, and Mounting plate.

Dimensions:

- Overall height: 260
- Height of the mounting plate: 90
- Distance from the mounting plate to the center of the mounting screw: 134
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 241
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 245
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 283
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 32
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 1
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 12
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 6t
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 33
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 32
- Distance from the mounting plate to the center of the mounting screw (alternative measurement): 1



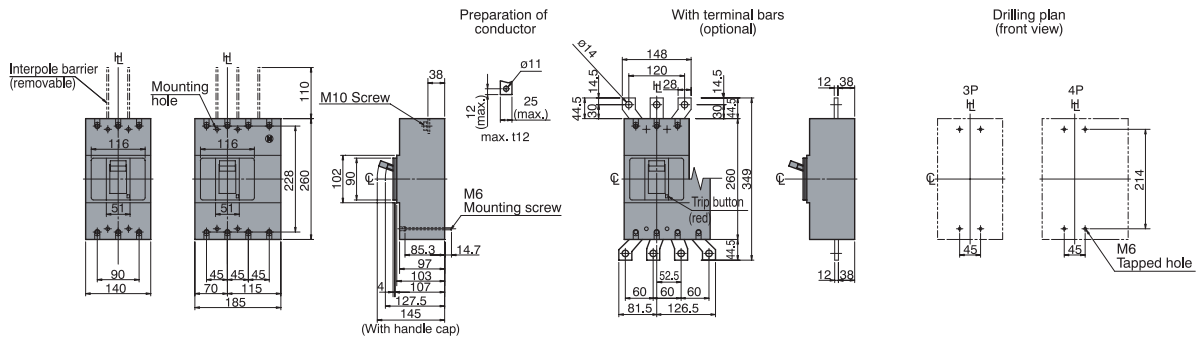
Technical drawing of a mechanical part, showing a cross-section with dimensions: 20, 6t, 32, 11, and 30.

E630-NE, S630-CE, S630-GE

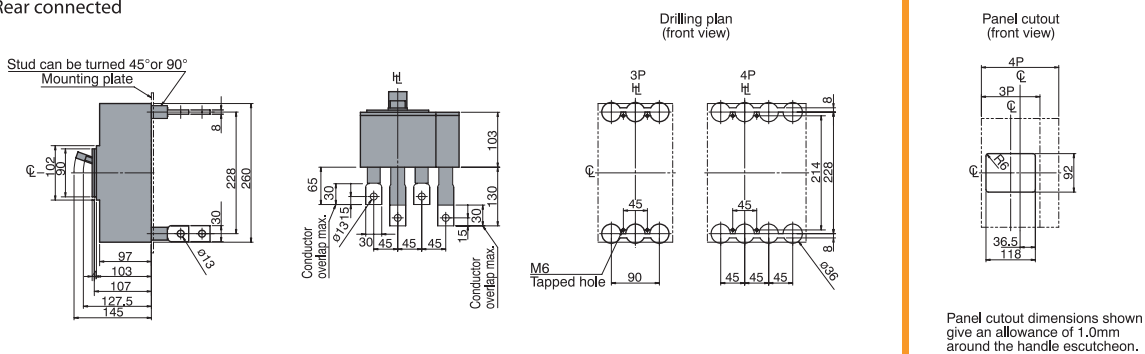
ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

Front connected



Rear connected



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

E630-NE, S630-CE, S630-GE with Motor Operators

H : Handle Frame Centre Line

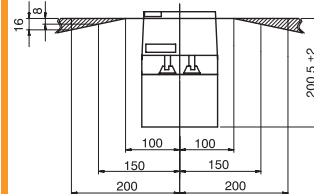
[illegible]

The technical drawing illustrates the dimensions and features of the M6-2000 terminal block. It includes three views:

- Side View (Left):** Shows the profile of the terminal block with dimensions: total height 160, mounting plate thickness 156, connector plug width 16, and overall width 137.5. The mounting plate has a manual operating handle (removable) and a stud that can be turned 45° or 90°. The bottom flange has a width of 280 and a mounting hole offset of 228 from the center.
- Front View (Middle):** Shows the top-down view of the terminal block with dimensions: total width 140, mounting plate width 136, and overall height 213. The mounting plate has a manual operating handle (removable) and a stud that can be turned 45° or 90°. The bottom flange has a width of 130 and a mounting hole offset of 130 from the center. The conductor overlay max. is indicated as 15.
- Drilling Plan (Right):** Shows the front view of the terminal block with dimensions: total width 140, mounting plate width 136, and overall height 213. The mounting plate has a manual operating handle (removable) and a stud that can be turned 45° or 90°. The bottom flange has a width of 130 and a mounting hole offset of 130 from the center. The conductor overlay max. is indicated as 15.

Panel cutout dimensions shown give an allowance of 1.5mm around motor operator

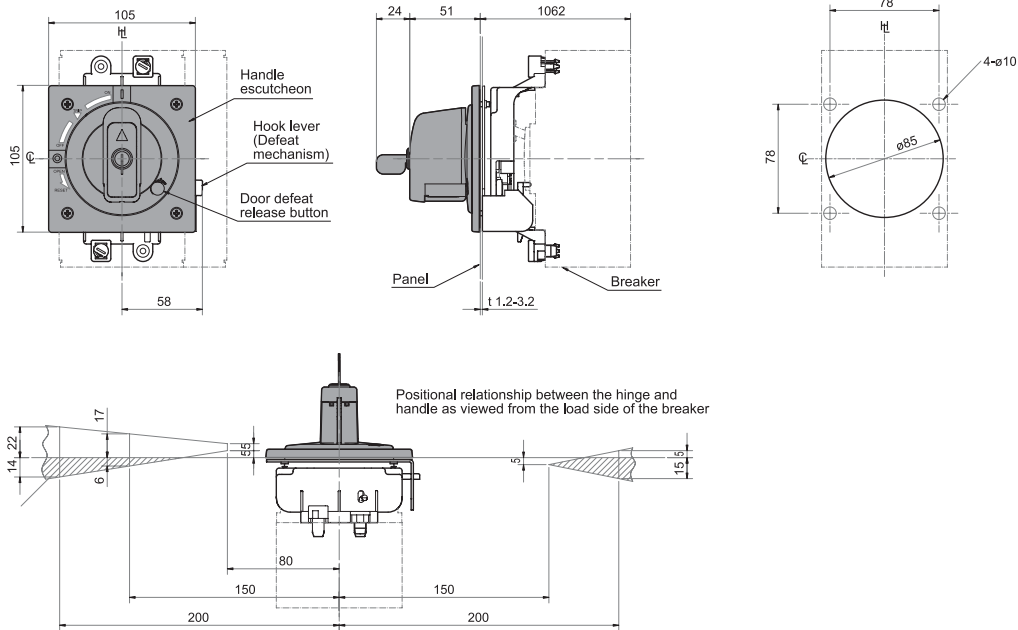
Panel hinge position (hatching area)
bottom view



Breaker Mounted Handle

Applicable MCCB

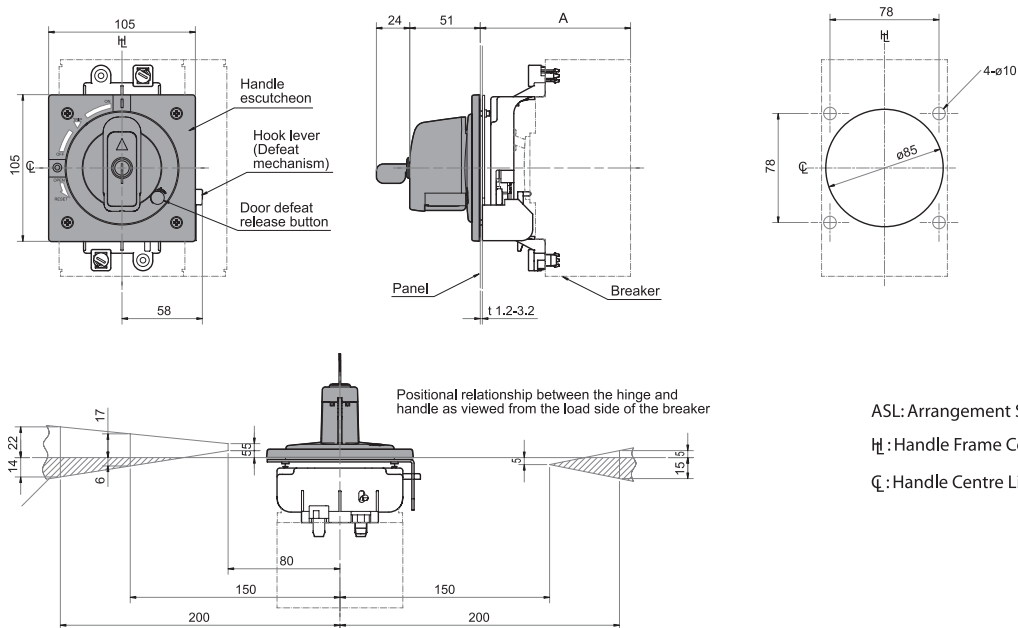
E125, S125



Applicable MCCB

A

S250 (except S250-PE)	106±2
H125 L125 H250 L250	141±2
S250-PE	141±2



ASL: Arrangement Standard Line

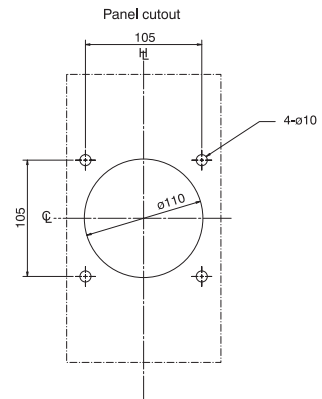
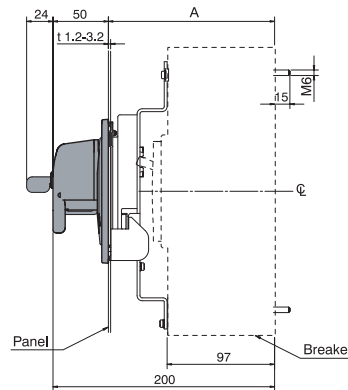
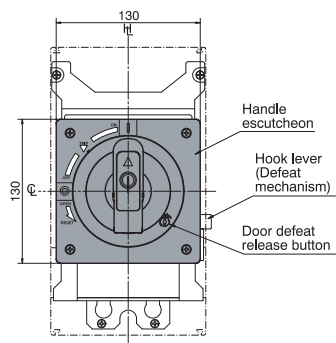
HL: Handle Frame Centre Line

CL: Handle Centre Line

DIMENSIONS

Breaker Mounted Handle

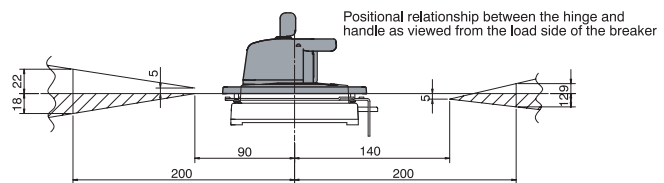
Applicable MCCB	A
E400 S400 E630 S630	150±2
H400 L400	187±2



ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

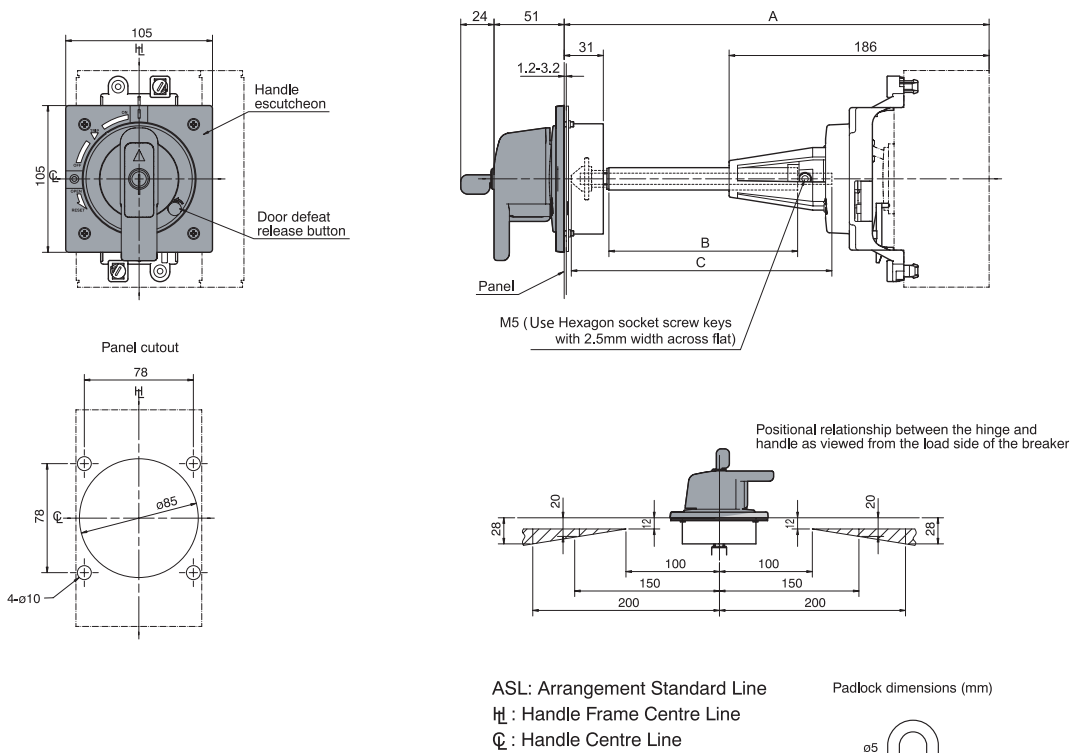
CL: Handle Centre Line



Door Mounted Handle

Applicable MCCB	A ★1	B	C	Shaft support
E125 S125	540 max.	370	421	With +

★1: Max. means the maximum length for A without cutting the shaft.
 + The shaft can be cut to the required length. If it is necessary to cut the shaft so short that it does not protrude beyond the shaft support, the shaft support may be removed.



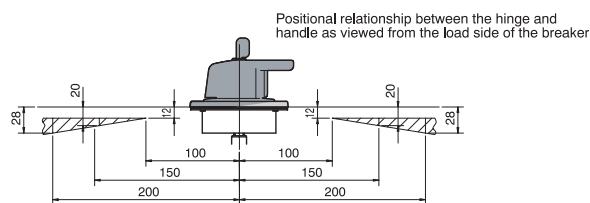
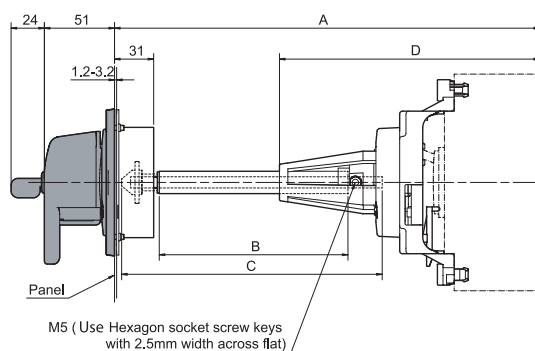
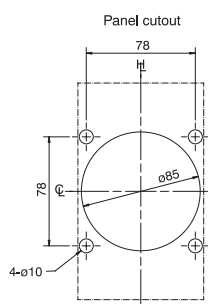
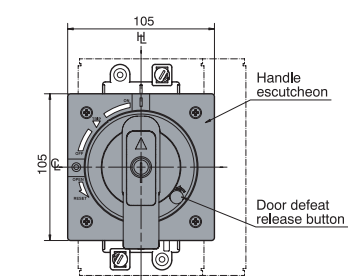
DIMENSIONS

Door Mounted Handle

Applicable MCCB	A *1	B	C	D	Shaft support
E250 S250 (except S250-PE)	540 max.	370	421	186	With +
S250-PE H125 L125 H160 L160 H250 L250	575 max.	370	421	221	With +

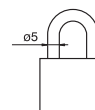
*1: Max. means the maximum length for A without cutting the shaft.

+ The shaft can be cut to the required length. If it is necessary to cut the shaft so short that it does not protrude beyond the shaft support, the shaft support may be removed.



ASL: Arrangement Standard Line
H: Handle Frame Centre Line
C: Handle Centre Line

Padlock dimensions (mm)



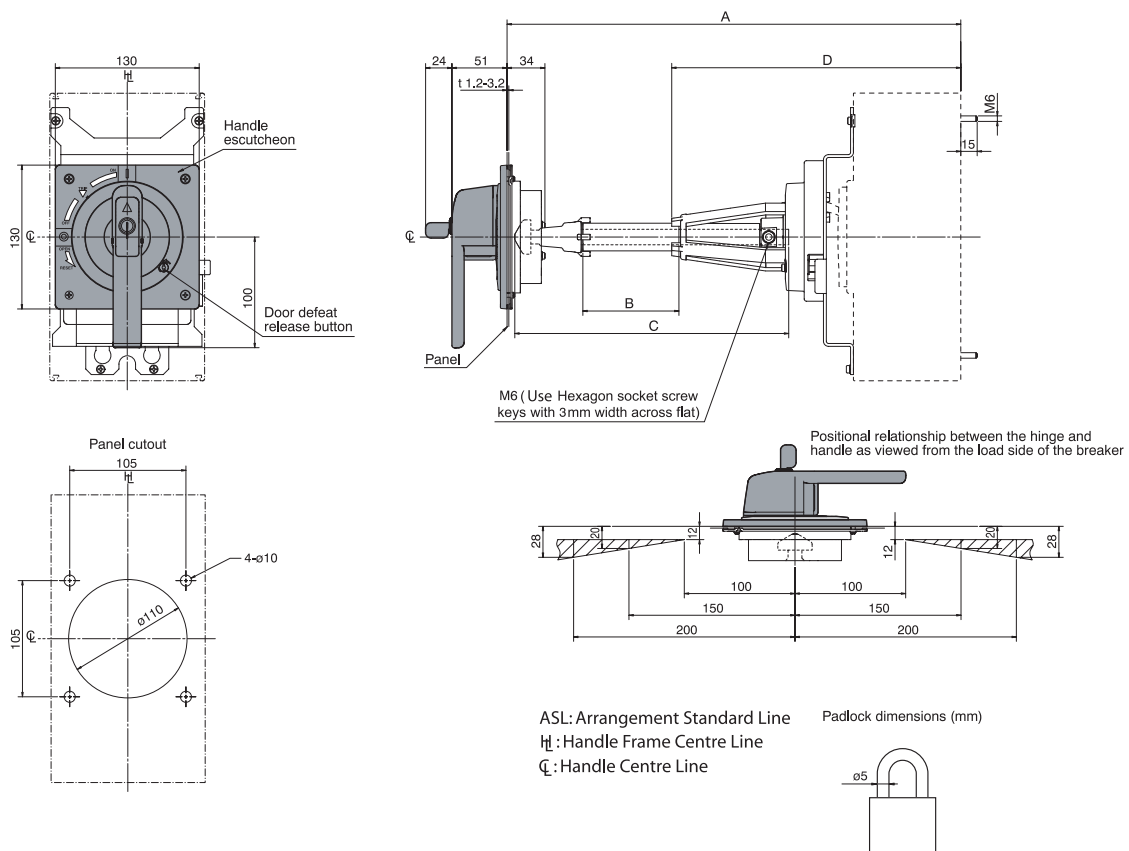
Door Mounted Handle

Applicable MCCB	A *1	B	C	D	Shaft support
E400 E630	270 min.	12	107.5	—	Without
S400 S630	610 max.	280	447.5	261	With +
H400	307 min.	12	107.5	—	Without
L400	647 max.	280	447.5	298	With +

*1: Min. means the minimum length for A by cutting the shaft.

Max. means the maximum length for A without cutting the shaft.

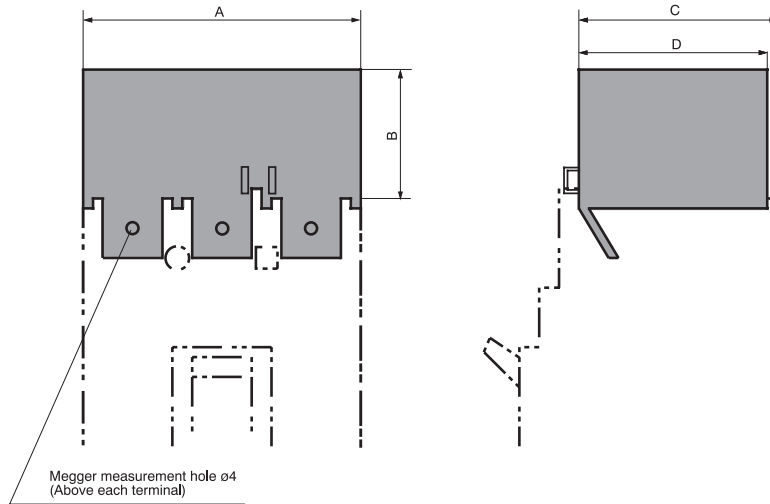
+ The shaft can be cut to the required length. If it is necessary to cut the shaft so short that it does not protrude beyond the shaft support, the shaft support may be removed.



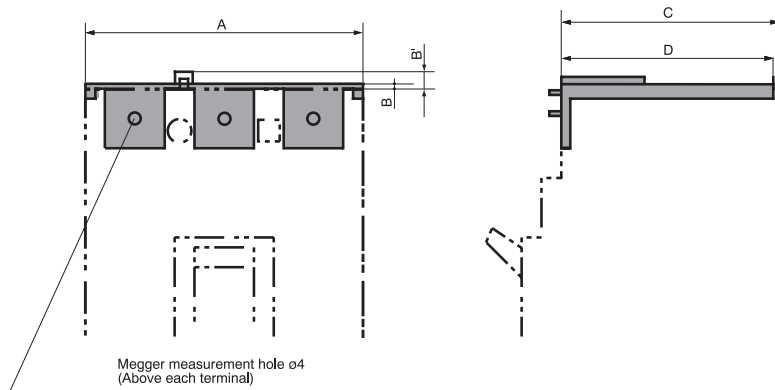
DIMENSIONS

Terminal Covers

Terminal covers for Front connected MCCB's (CF)



Terminal covers for Solderless terminal type MCCB's (CS)



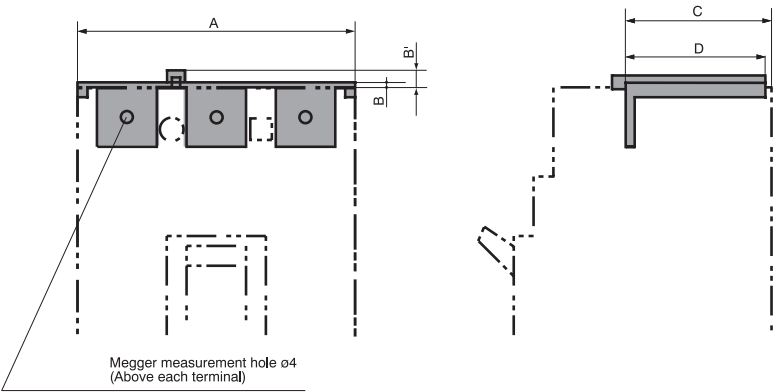
MCCB type	Connection	A			B			B'	C			D		
		1P	3P	4P	1P	3P	4P	3P, 4P	1P	3P	4P	1P	3P	4P
E125, S125	Front conn.	30	90	120	40	40	40	—	48	48	48	46	46	46
	Solderless Terminal	30	90	120	2.5	2.5	2.5	6	62.5	61	61	60	59.5	59.5
S160	Front conn. (1)	35	105	140	55	55	55	—	54	54	54	52	52	52
	Solderless Terminal	35	105	140	2.5	2.5	2.5	6	63	61	61	49.5	59.5	59.5
H125, L125, H160, L160	Front conn. (1)	—	105	140	—	55	55	—	—	89	89	—	87	87
	Solderless Terminal	—	105	140	—	2.5	2.5	4.5	—	96	96	—	59.5	59.5
E400, S400	Front conn.	—	180	240	—	110	114	—	—	97	99	—	96	98
	Solderless Terminal	—	140	185	—	3	3	4.5	—	97	97	—	93	93
E630-NE, S630-CE, S630-GE	Front conn.	—	180	240	—	110	114	—	—	134	136	—	96	98
	Solderless Terminal	—	140	185	—	3	3	4.5	—	134	134	—	93	93

Notes:

(1): Not applicable when flat bars (FB) are fitted.

Terminal Covers

Terminal covers for Rear connected and Plug-in MCCB's (CR)

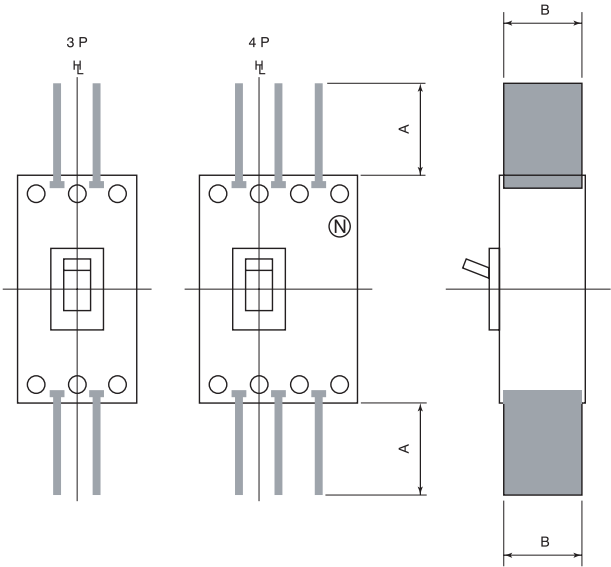


MCCB type	A		B	B'	C	D
	3 poles	4 poles				
E125, S125	90	120	2	6	41.5	40.5
S160	105	140	2	6	41.5	39.5
E250, S250 (except S250-PE)	105	140	2	6	41.5	39.5
H125, L125, H160, L160	105	140	2	6	77.5	39.5
H250, L250, S250-PE	140	185	3	4.5	97	93
E400, S400						
H400, L400						

DIMENSIONS

Interpole Barriers

Terminal Interpole Barriers (BA)



MCCB type	A	B
E125, S125	47	53
S160	100	53
E250, S250 (except S250-PE)	100	88
H125, L125, H160, L160	110	95
H250, L250, S250-PE	110	95
H400, L400	110	95

ASL: Arrangement Standard Line
H_L: Handle Frame Centre Line
C_L: Handle Centre Line

Terminal Blocks for Front-Connected and Rear-Connected MCCBs

Left terminal designations

Example

AXc1	AXc1
AXb1	AXb1
AXa1	AXa1
AXc2	AXc2
AXb2	AXb2
AXa2	AXa2
ALc1	ALc1
ALb1	ALb1
ALa1	ALa1
C1	D1
C2	D2

With
SHT

With
UVT

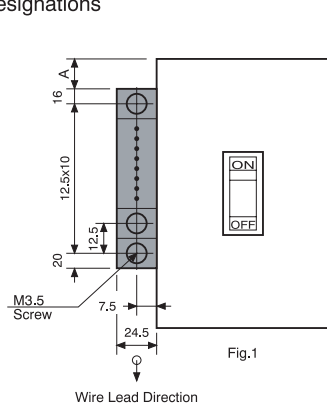


Fig.1

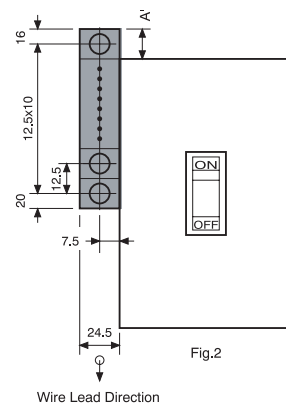
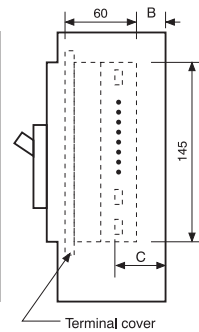


Fig.2



MCCB type	A	A'	B	C	Fig.
S125	—	3	0.5	40	2
S160	2	—	0.5	40	1
E250, S250 (except S250-PE)	2	—	35.5	75	1
H125, L125, H160, L160	2	—	35.5	75	1
H250, L250, S250-PE	2	—	35.5	75	1

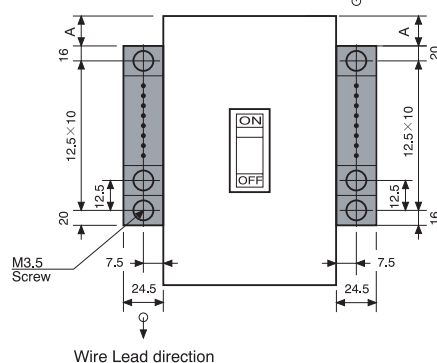
Comments:

1. The tightening torque for the M3.5 terminal screw is 0.9 to 1.2 Nm.
2. Connection wire size is 2.5 mm² (max).

Left terminal designations

Wire Lead direction

AXc1
AXb1
AXa1
AXc2
AXb2
AXa2
ALc1
ALb1
ALa1
AXc3
AXb3



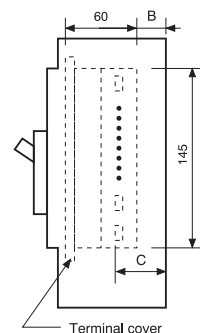
Wire Lead direction

Right terminal designations

PALc
PALa
k
l
C1
C2

With
SHT

With
UVT



MCCB type	A	B	C
E400, S400	39.5	30.5	70
H400, L400	39.5	67.5	107

Comments:

1. The tightening torque for the M3.5 terminal screw is 0.9 to 1.2 Nm.
2. Connection wire size is 2.5 mm² (max).

DIMENSIONS

Slide Interlocks

ASL: Arrangement Standard Line

H_L: Handle Frame Centre Line

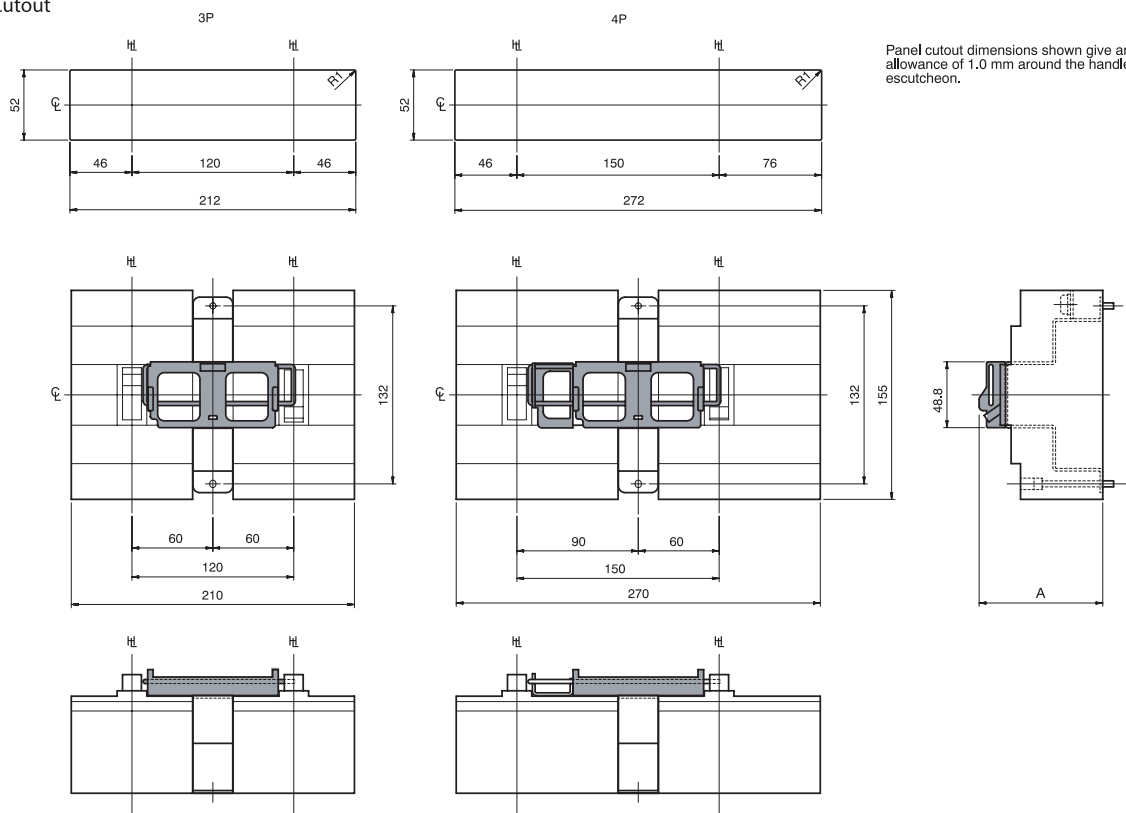
C_L: Handle Centre Line

Mechanical Interlocks slide type (MS)

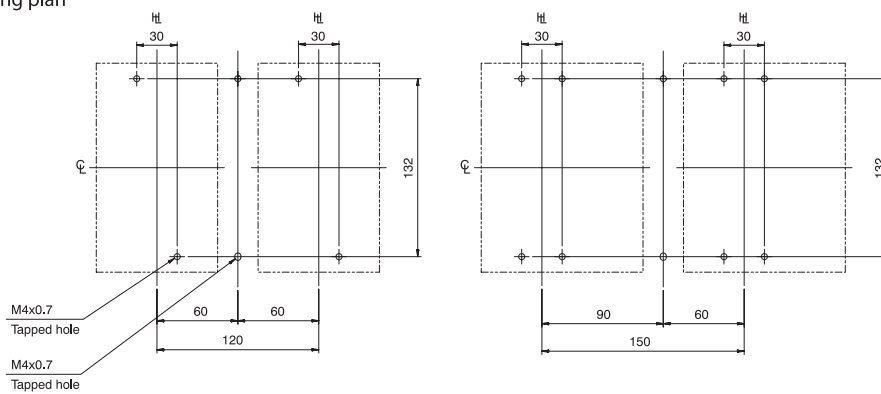
For 125A frame size

MCCB type	A
E125, S125	91.7

Panel Cutout



Drilling plan



M4x0.7
Tapped hole

M4x0.7
Tapped hole

Slide Interlocks

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

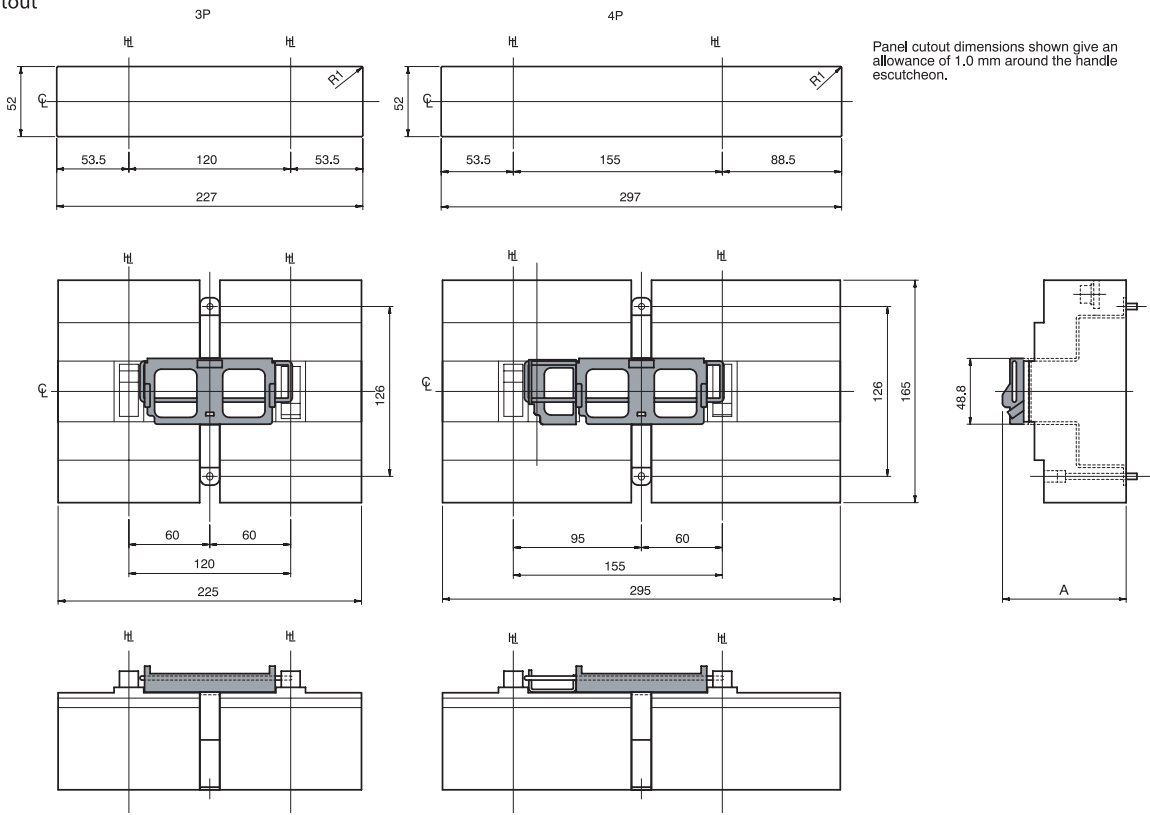
CL: Handle Centre Line

Mechanical Interlocks slide type (MS)

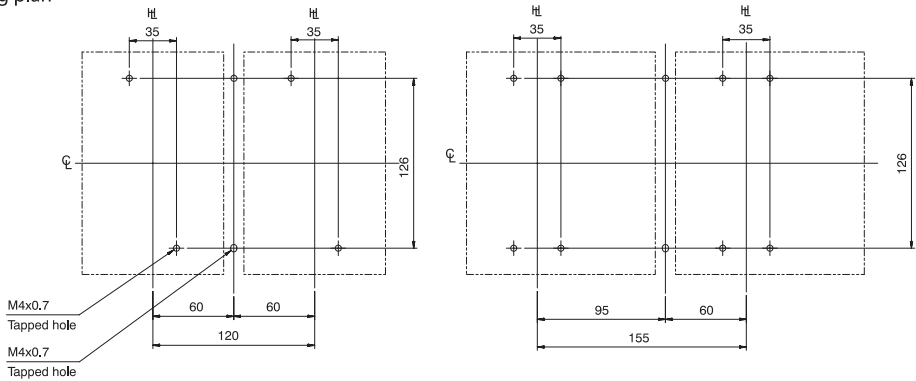
For 125A, 160A, 250A frame size

MCCB type	A
S160, E250, S250 (Except S250-PE.)	91.7
H125, L125, H160, L160 H250, L250, S250-PE	126.7

Panel Cutout



Drilling plan



DIMENSIONS

Slide Interlocks

ASL: Arrangement Standard Line

H_L: Handle Frame Centre Line

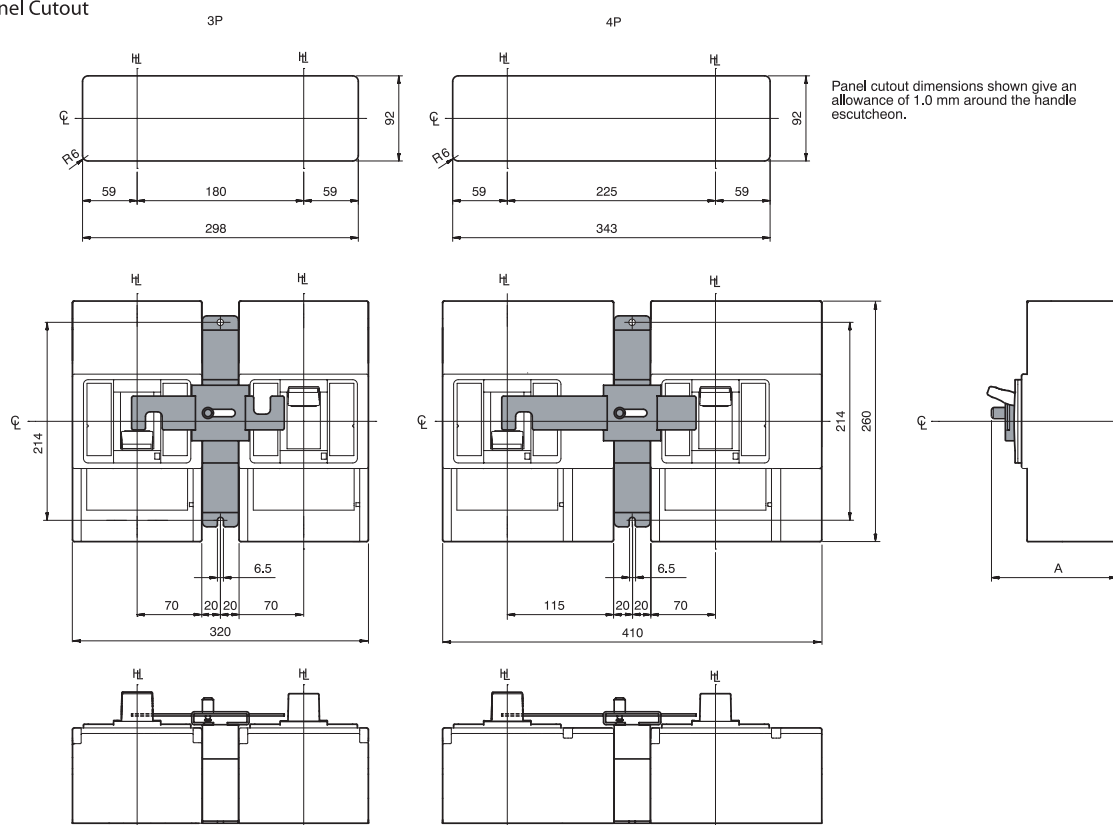
C_L: Handle Centre Line

Mechanical Interlocks slide type (MS)

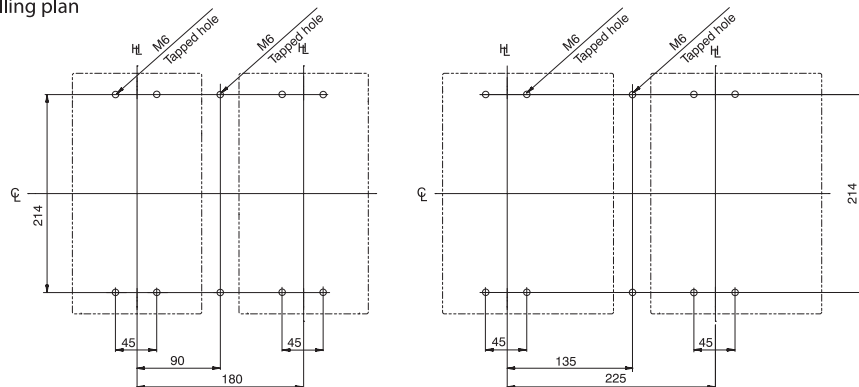
For 400A, 630A frame size

MCCB type	A
E400, S400	135.5
H400, L400	172.5
E630, S630	135.5

Panel Cutout



Drilling plan



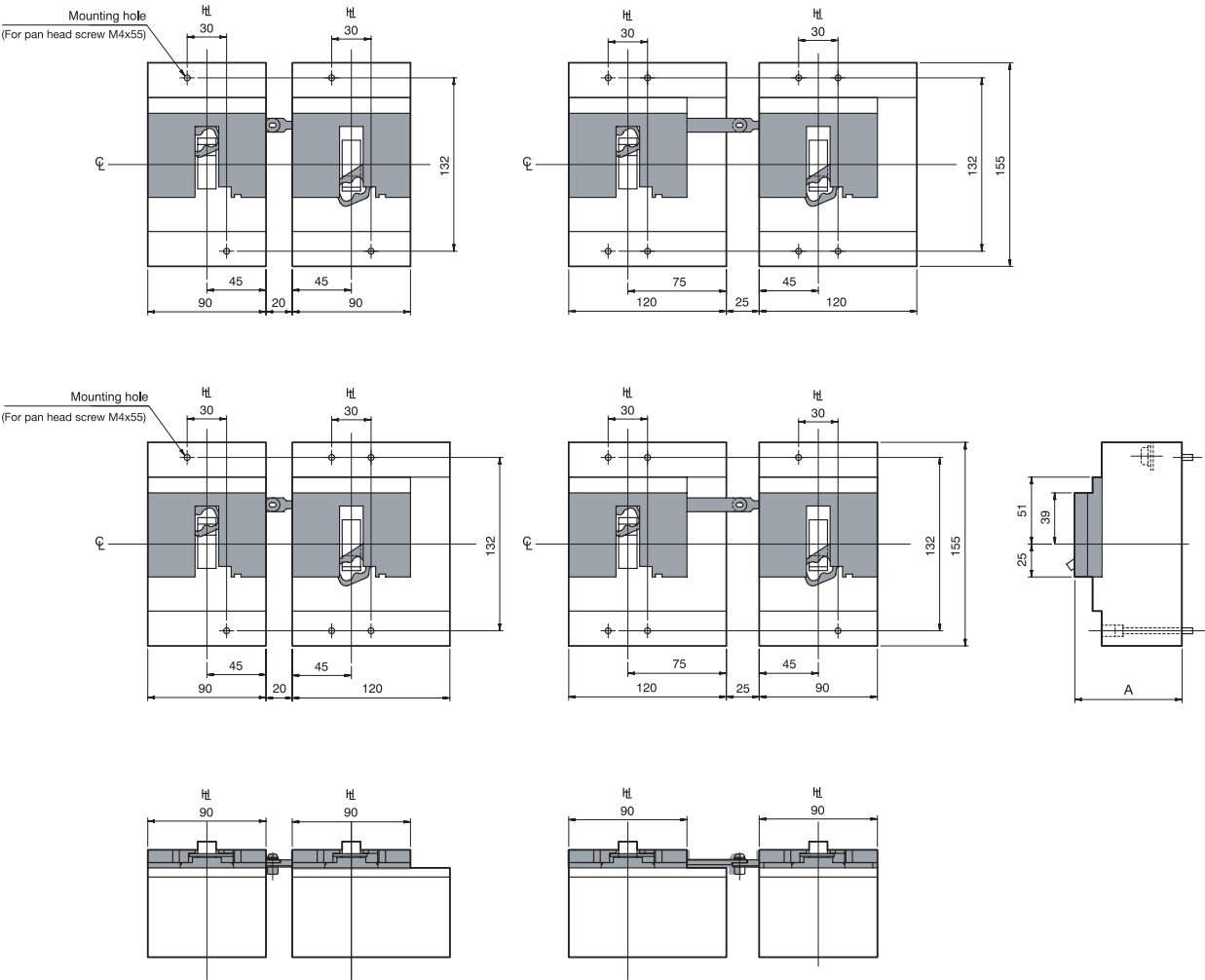
Link Interlocks

ASL: Arrangement Standard Line HL: Handle Frame Centre Line CL: Handle Centre Line

Mechanical Interlocks link type (ML)

For 125A frame size

MCCB type	A
E125, S125	81.7



DIMENSIONS

Link Interlocks

ASL: Arrangement Standard Line

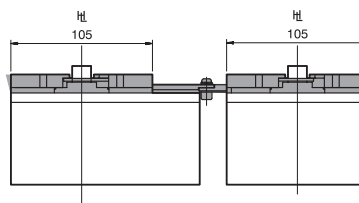
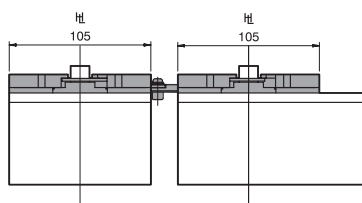
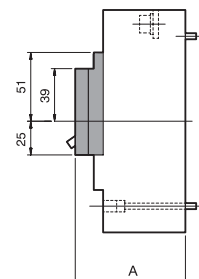
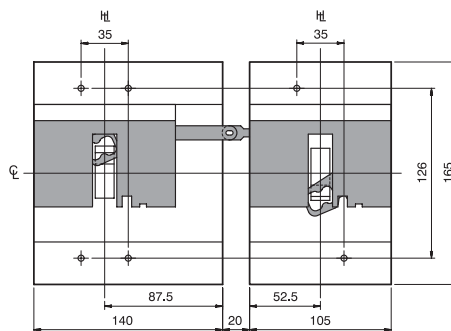
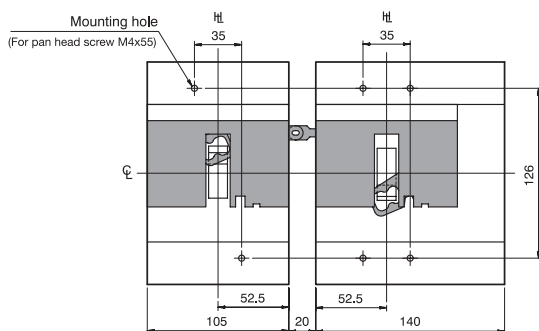
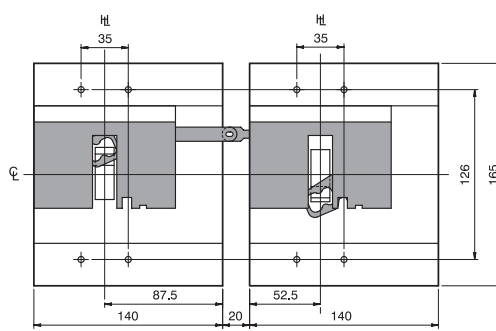
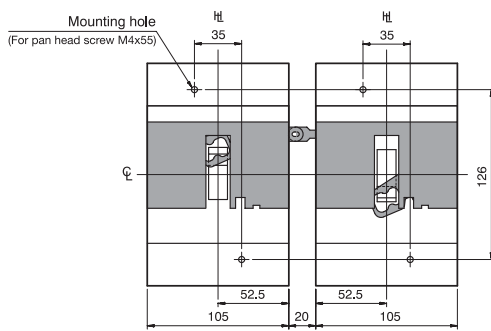
H_L : Handle Frame Centre Line

CL : Handle Centre Line

Mechanical Interlocks link type (ML)

For 125A, 160A, 250A frame size

MCCB type	A
S160, E250, S250 (Except S250-PE.)	81.7
H125, L125, H160, L160 H250, L250, S250-PE	116.7



Wire Interlocks

ASL: Arrangement Standard Line

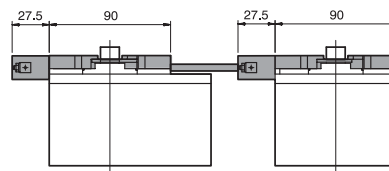
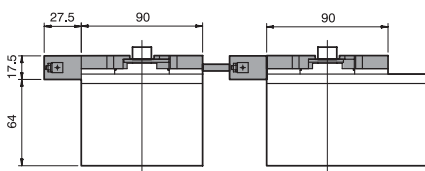
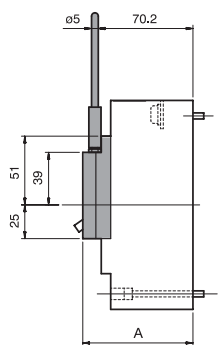
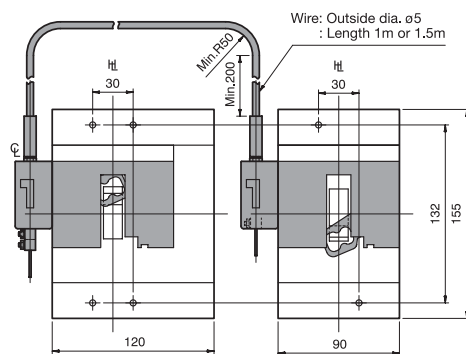
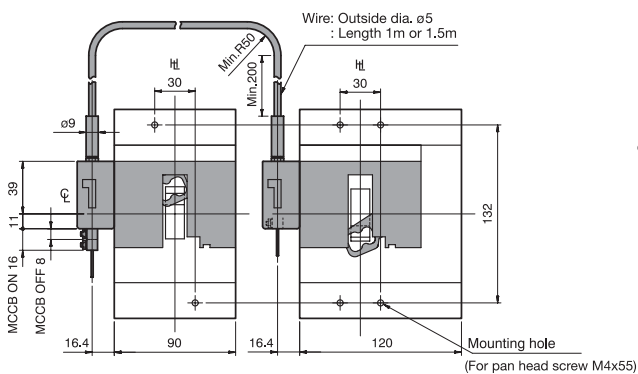
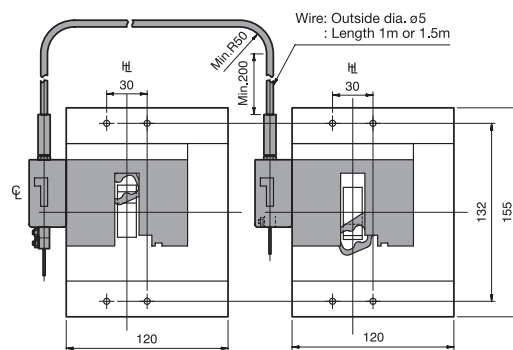
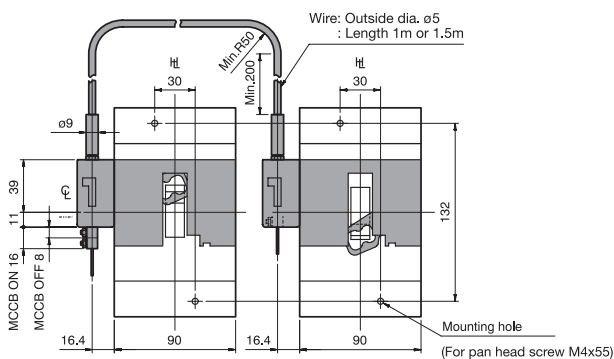
H_L: Handle Frame Centre Line

CL: Handle Centre Line

Mechanical Interlocks wire type (MW)

MCCB type	A
E125, S125	81.7

For 125A frame size



DIMENSIONS

Wire Interlocks

ASL: Arrangement Standard Line

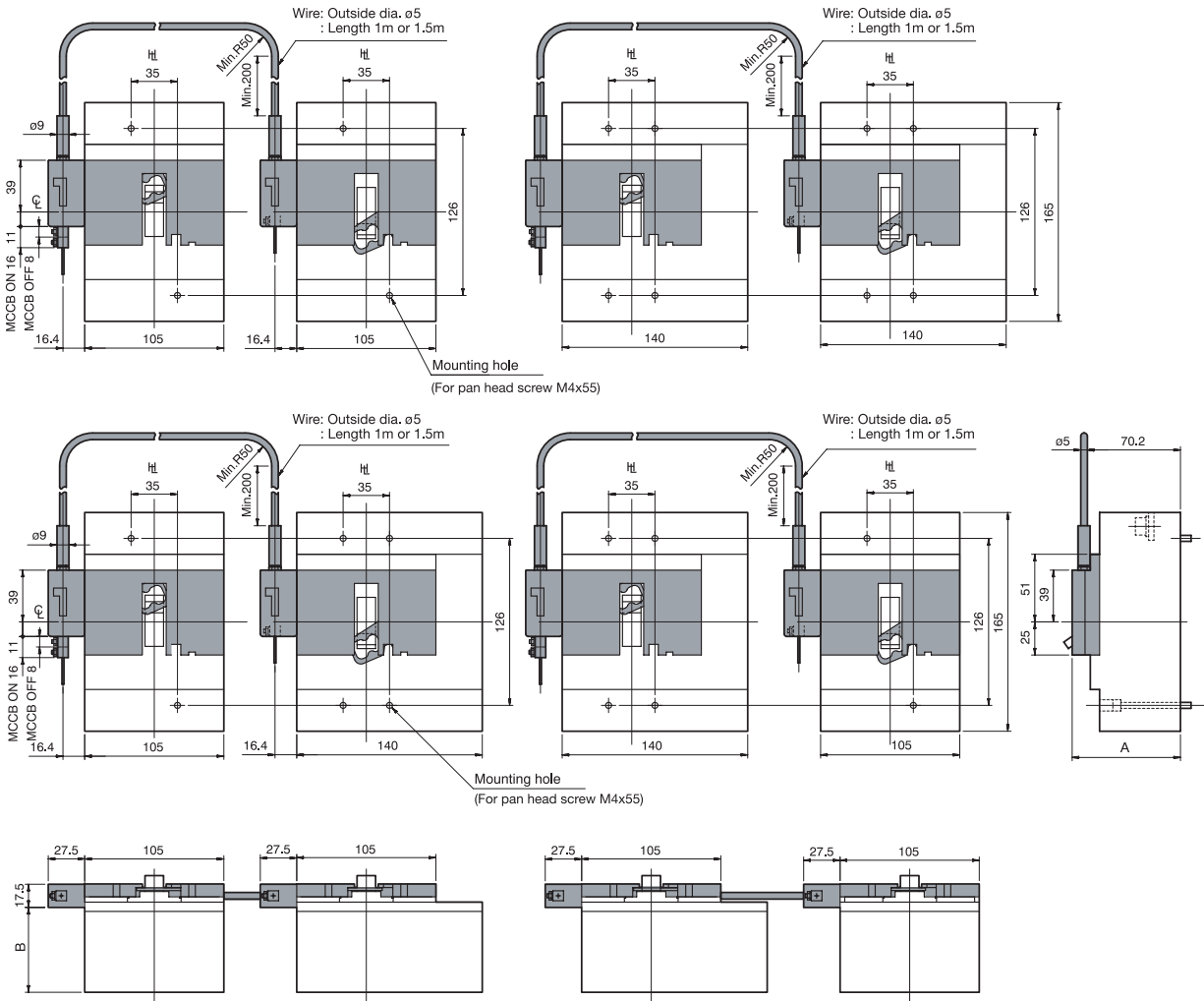
HL: Handle Frame Centre Line

CL: Handle Centre Line

Mechanical Interlocks wire type (MW)

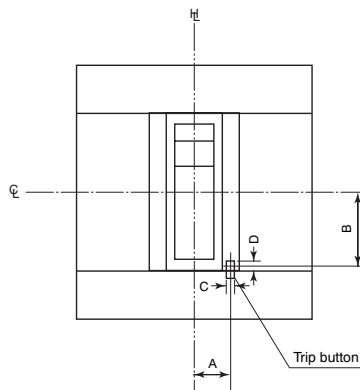
For 125A, 160A, 250A frame size

MCCB type	A	B
S160, E250, S250 (Except S250-PE.)	81.7	64
H125, L125, H160, L160 H250, L250, S250-PE	116.7	99



Position of Trip Button

Positions of Trip Button



MCCB type	Poles	A	B	C	D
S125	3, 4	13.8	20.4	3.3	4.3
S160 E250, S250 (except S250-PE)	3, 4	17.2	20.4	3.3	4.3
H125, L125, H160, L160 H250, L250, S250-PE	3, 4	17.2	20.4	3.3	4.3
E400, S400 H400, L400 E630 S630	3, 4	21.6	37.2	5.3	6.6

DIRECT OPENING



Under the heading “Measures to minimise the risk in the event of failure”, IEC 60204-1 Safety of Machinery-Electrical Equipment Machinery includes the following recommendation:

“-the use of switching devices having positive (or direct) opening operation.”

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS 16A TO 630A

1. Welcome to TemBreak 2
2. Ratings and Specifications
3. Operating Characteristics
4. Application Data
5. Accessories
6. Installation
7. Dimensions

TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS 10A TO 100A

8. TemBreak 2 MINI Moulded Case Circuit Breakers

• Easy Selection Guide	119
• Ratings and Specifications	121
• Operating Characteristics	123
• Electrical Control Accessories	124
• Termination of Control Wiring	126
• Handle Lock	126
• Insulation Accessories	127
• Mechanical Interlocks	128
• Installation	128
• Dimensions	134



TEMBREAK

MOULDED CASE CIRCUIT BREAKERS 630A TO 1600A

9. TemBreak Moulded Case Circuit Breakers

10. Item Numbers

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

MINI MOULDED CASE CIRCUIT BREAKERS EASY SELECTION GUIDE

You can save space and money with Terasaki's new compact and economical Mini Moulded Case Circuit Breakers.

The range of products includes:

- Moulded Case Circuit Breakers (MCCBs)
- Switch Disconnectors in the same compact moulded case frame sizes as MCCBs
- A comprehensive range of accessories.



KEY TO MODEL AND TYPE DESIGNATIONS

Model Denoted by

Type Denoted by

E	Economical
S	Standard

N	Medium breaking capacity
---	--------------------------

E	100	N	F
---	-----	---	---

Frame rating, In (A)

F	Fixed thermal, fixed magnetic
N	No protection

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

EASY SELECTION GUIDE

Frame Ratings (A)  50				 100				 125/250/400/630				 800/1250/1600																			
MCCBs								TemBreak 2 Moulded Case Circuit Breakers. Refer to Sections 1 to 7				TemBreak 2 Moulded Case Circuit Breakers. Refer to Section 9																			
<table><tr><td>Model</td><td>Type</td><td colspan="2">/cu (kA)</td></tr><tr><td colspan="4">E S50 NF 10</td></tr></table>				Model	Type	/cu (kA)										E S50 NF 10				<table><tr><td>Model</td><td>Type</td><td colspan="2">/cu (kA)</td></tr><tr><td colspan="4">E100 NF 10</td></tr></table>				Model	Type	/cu (kA)		E100 NF 10			
Model	Type	/cu (kA)																													
E S50 NF 10																															
Model	Type	/cu (kA)																													
E100 NF 10																															

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

RATINGS AND SPECIFICATIONS

Mini MCCB Electrical Characteristics to IEC 60947-2, EN 60947-2, JIS C 8201-2-1 Ann.1, AS/NZS 3947-2, NEMA-AB1

Frame	Quantity	Unit	Condition	50	100
Model				S50	E100
Number of Poles				2, 3	2, 3
Type				NF	NF
Nominal current ratings					
	I_n	(A)	40°C	10, 15, 20, 30 40, 50	60, 75, 100
Electrical characteristics					
Rated operational voltage	U_e	(V)	AC 50/60 Hz DC	600 250	600 250
Rated insulation voltage	U_i	(V)		690	690
Rated impulse withstand voltage	U_{imp}	(kV)		6	6
Ultimate breaking capacity (IEC, JIS, AS/NZS)	I_{cu}	(kA)	600V AC	5	5
			500V AC	7.5	7.5
			380/440V AC	10	10
			220/240V AC	25	25
			250V DC	5	5
Service breaking capacity (IEC, JIS, AS/NZS)	I_{cs}	(kA)	600V AC	3	3
			500V AC	4	4
			380/440V AC	5	5
			220/240V AC	13	13
			250V DC	3	3
Rated breaking capacity (NEMA)		(kA)	480V AC 240VAC	- -	- -
Protection					
Adjustable thermal, adjustable magnetic				■	■
Fixed thermal, fixed magnetic					
Microprocessor					
Utilisation category				A	A
Installation					
Front connection (FC)				■	■
Attached flat bar (FB)				-	-
Solderless terminal (cable clamp) (FW)				-	-
Rear connection (RC)				●	●
Plug-in (PM)				-	-
Draw- out (DR)				-	-
DIN rail mounting (DA)				■	■
Dimensions	h	(mm)		100	100
	w	(mm)	2 pole	50	50
			3 pole	75	75
	d	(mm)		60	60
Operation					
Direct Opening Action				-	-
Toggle operation				■	■
Variable depth (HP) / direct mount operating handle (HB)				-	-
Motor operator (MC)				-	-

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

RATINGS AND SPECIFICATIONS

Mini Switch Disconnectors Electrical Characteristics to IEC 60947-3, EN 60947-3, AS/NZS 3947-3

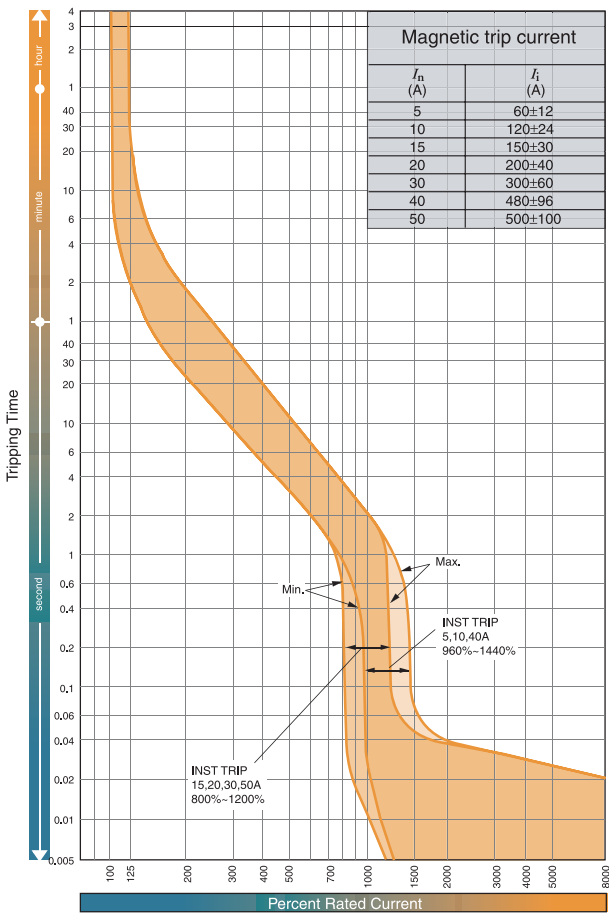
Frame	Quantity	Unit	Condition	50	100
Model				E50	E100
Number of Poles				2, 3	2, 3
Type				NN	NN
Nominal current ratings					
	I_n	(A)		50	100
Electrical characteristics					
Rated operational voltage	U_c	(V)	AC 50/60 Hz DC	550 250	600 250
Rated insulation voltage	U_i	(V)		690	690
Rated impulse withstand voltage	U_{imp}	(kV)		6	6
Rated Short-circuit making capacity	I_{cm}	(kA peak)		1.5	1.5
Rated Short-time withstand current	I_{cw}	(kA rms)	1 Second	1	1.2
Utilisation category			AC DC	AC-22A DC-22A	AC-22A DC22-A
Installation					
Front connection (FC)				■	■
Attached flat bar (FB)				•	•
Solderless terminal (cable clamp) (FW)				-	-
Rear connection (RC)				•	•
Plug-in (PM)				-	-
Draw- out (DR)				-	-
DIN rail mounting (DA)				■	■
Dimensions					
h		(mm)		100	100
w		(mm)	2 pole	50	50
			3 pole	75	75
d		(mm)		60	60
Operation					
Direct Opening Action				-	-
Toggle operation				■	■
Variable depth (HP) / direct mount operating handle (HB)				-	-
Motor operator (MC)				-	-

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

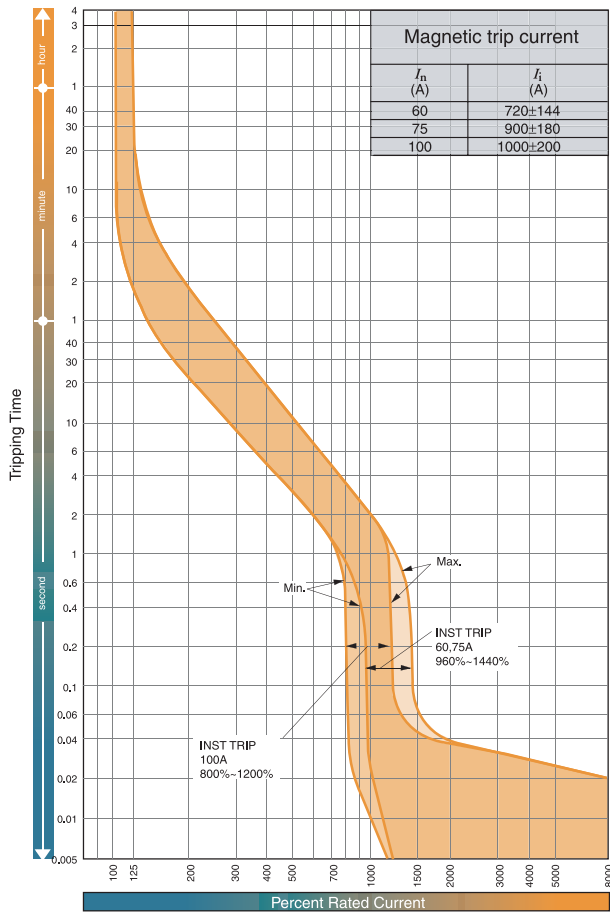
OPERATING CHARACTERISTICS

50A and 100A Frame

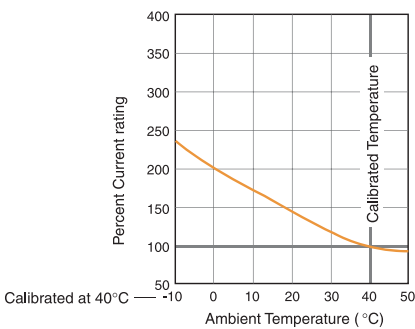
Time/current characteristic curves
S50-NF



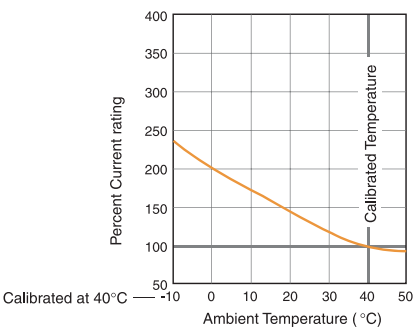
Time/current characteristic curves
E100-NF



Ambient compensating curves

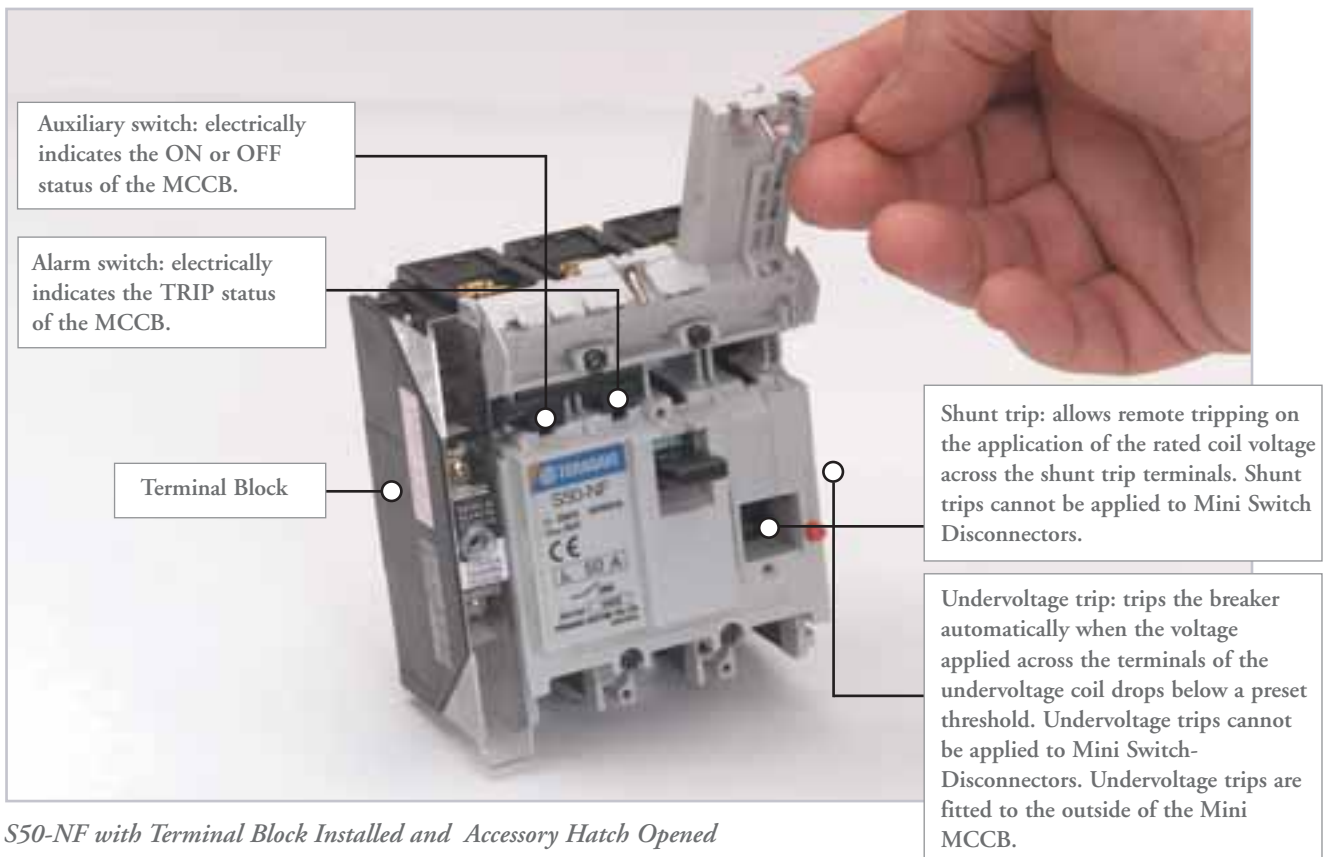


Ambient compensating curves



TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

ELECTRICAL CONTROL ACCESSORIES

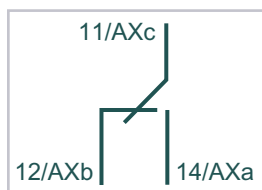


Maximum Permitted Combinations of Electrical Control Accessories

1. Left-hand side internal accessory location: 1 auxiliary switch AND 1 alarm switch.
2. Right-hand side internal accessory location: (1 auxiliary switch AND 1 alarm switch) OR 1 shunt trip.
3. Right-hand side external accessory location: 1 undervoltage trip. The undervoltage trip cannot be used in the same Mini MCCB as a shunt trip. The undervoltage trip is compatible with 1 auxiliary and 1 alarm switch installed in the right-hand side internal accessory location.

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

ELECTRICAL CONTROL ACCESSORIES

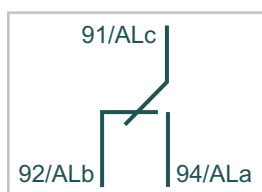


Terminal Designations and Function of Mini Auxiliary Switch

Mini Auxiliary Switch (AX)

An auxiliary switch electrically indicates the ON or OFF status of the MCCB. The Mini type is a changeover switch with 3 terminals.

A microcurrent version is available for switching currents as low as 1mA.



Terminal Designations and Function of Mini Alarm Switch

Mini Alarm Switch (AL)

An alarm switch electrically indicates the TRIP status of the MCCB. The Mini type is a changeover switch with 3 terminals.

A microcurrent version is available for switching currents as low as 1mA.

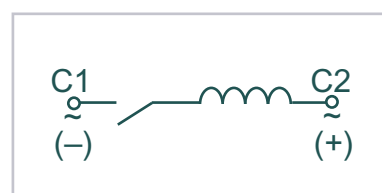
Ratings of Auxiliary and Alarm Switches

Auxiliaries and Alarm Switch ratings						
AC			DC			Minimum Load
Volts (V)	Amperes (A)		Volts (V)	Amperes (A)		
	Resistive Load	Inductive Load		Resistive Load	Inductive Load	
480	-	-	250	0.3	0.3	160mA at 5V DC. 30mA at 30V DC.
250	5	5	125	0.6	0.6	
125	5	5	30	3	3	

Microcurrent versions		
DC		Minimum Load
Volts (V)	Amperes (A)	
	Resistive Load	
30	0.1	1mA at 5V DC to 30V DC.

Ratings of Shunt Trip

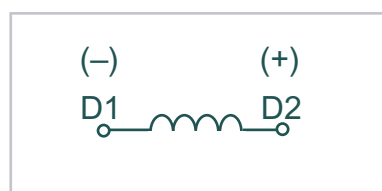
Excitation current (A) peak value (value at maximum voltage)				
Rated Voltage (V)	Voltage (AC)			Voltage (DC)
	100-120	200-240	380-450	100-110
Excitation Current (A)	1.5	0.75	0.53	1.5



Terminal Designations of Shunt Trips

Ratings of Undervoltage Trip

Power supply capacity (VA)				Excitation current (mA)
Rated Voltage (V)	Voltage (AC)			Voltage (DC)
	100	200	400	100-110
Power supply capacity (VA)	2.8	3.4	4.4	28.6



Terminal Designations of Undervoltage Trips

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

TERMINATION OF CONTROL WIRING



Terminal Block

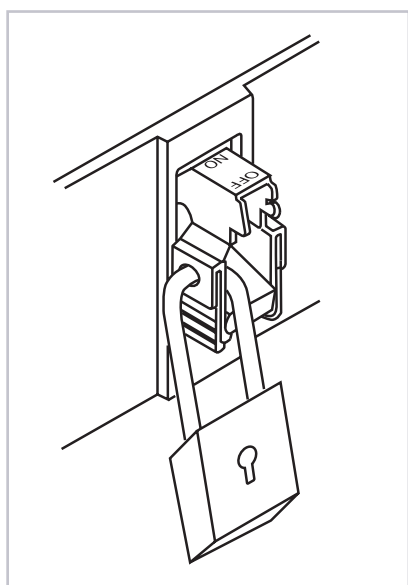


Mini MCCB with Terminal Block Installed

A terminal block facilitates convenient and accessible control wiring to electrical accessories. The terminal block allows the use of control cables with cross-sectional area of up to 2mm². Tightening torque for the terminal screws is 0.9 to 1.2Nm.

HANDLE LOCK

A handle lock is an optional accessory which enables the user to padlock the handle of the Mini MCCB in either the OFF or ON position. The Mini MCCB has a trip-free mechanism meaning that the contacts will open to clear an overcurrent even if the handle is locked ON.



Handle Lock

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

INSULATION ACCESSORIES



Terminal Covers for S50 and E100

Terminal Covers are used to prevent direct contact with live Mini MCCB terminations. They also provide additional insulation that reduces the possibility of a short circuit between phases or to earth.

Terminal covers are available for Mini MCCBs with front and rear connection terminals.

Earth barriers are available which insulate the rear of the MCCB from the surface on which it is mounted.



Interpole Barriers for S50 and E100

Interpole barriers provide maximum insulation between phases at the terminals of the Mini MCCB.

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

MECHANICAL INTERLOCKS

Interlocks for TemBreak 2 Mini MCCBs are manually operated toggle locking devices which can be installed between two adjacent MCCBs. Depending on the position of the slide, one or other of the MCCBs is prevented from being switched ON.

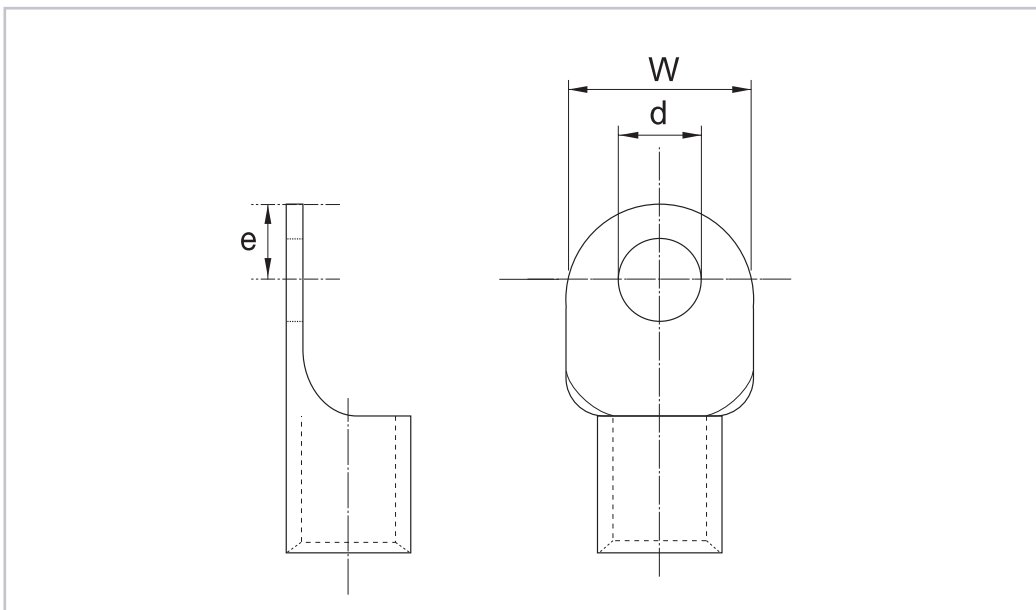
Mechanical interlocks can be used between any two Mini MCCBs.

Mechanical interlocks can be installed in the field and are padlockable in both positions.

INSTALLATION

Connection of Busbars and Terminated Cables

This connection method is standard for all front connected (FC) Mini MCCBs. Solid conductors or cables terminated with compression terminals can be used.



Maximum Dimensions of Compression Terminals		
Frame Size (A)	50	100
Width, w (mm)	15	15
Diameter, d (mm)	5.5	9
Hole distance, h (mm)	7	7

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

INSTALLATION

Mounting on DIN Rail



S50 and E100 Mounted on 35mm DIN Rail

TemBreak 2 Mini MCCBs can be clip mounted to 35mm DIN rail. The DIN rail clips are built-in to the MCCB as standard.

Termination in a Separate Compartment



S50 Fitted with Rear Connections



Rear Connections for Field Installation

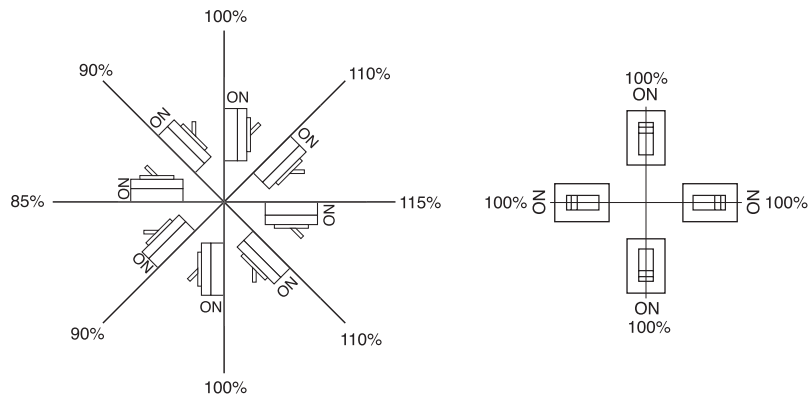
Rear connections allow termination of conductors in a different switchboard compartment to the MCCB body.

The terminal bars can be rotated in steps of 90 degrees in the field.

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

INSTALLATION

Mounting Angle

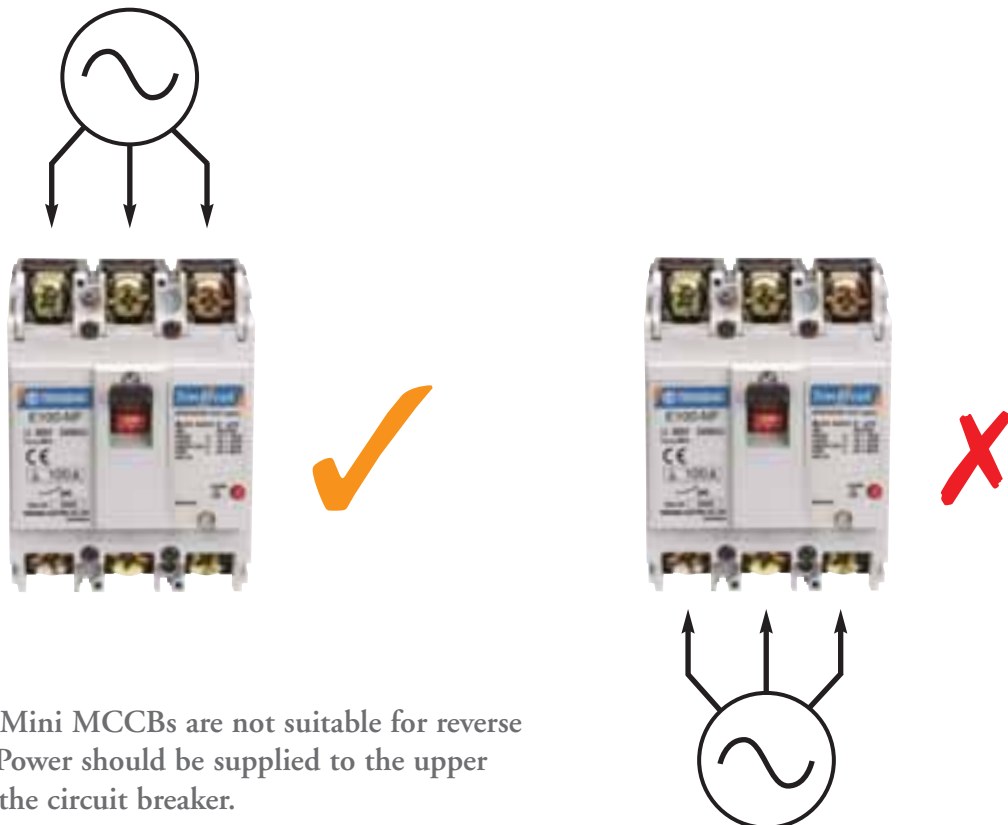


Percentage Change in Rated Current, I_R , According to Mounting Angle

Overload protection of TemBreak 2 Mini MCCBs is provided by magnetic-hydraulic elements. The overload tripping characteristics vary depending upon the mounting angle due to the effect of gravitational force that the iron core in the oil dashpot receives.

It is recommended that the breakers be oriented vertically where possible.

Direction of Power Supply



TemBreak 2 Mini MCCBs are not suitable for reverse connection. Power should be supplied to the upper terminals of the circuit breaker.

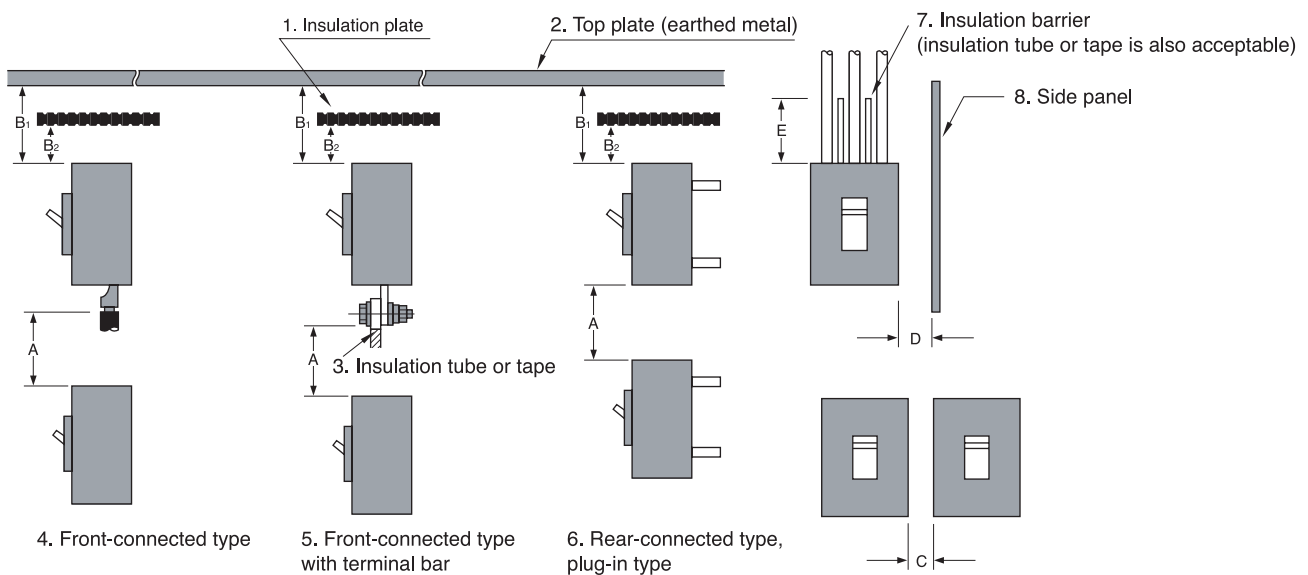
TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

INSULATION DISTANCES

The insulation distances between the MCCB and earthed metal parts and insulators shown in this section must be maintained to prevent arcing faults occurring due to conductive ionised gas. In cases where other specifications require different insulation distances to those shown here, the greater distance must be maintained. In cases where two different models are installed one above the other, the insulation distance between the two models should be as for the lower model.

ATTENTION

Exposed conductors must be insulated up to the breaker terminals. Interpole barriers or optional terminal covers are recommended. If optional terminal covers are used, insulate the exposed conductor until it overlaps the terminal cover.



A. Distance from lower breaker to exposed live part of upper breaker terminal (front-connected type) or distance from lower breaker to end face of upper breaker (rear-connected type or plug-in type).

B1. Distance from end face of breaker to top plate.

B2. Distance from end face of breaker to insulation plate.

C. Gap between breakers.

D. Distance from side of breaker to side panel (earthed metal).

E. Dimensions of insulation over exposed conductors.

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

INSULATION DISTANCE IN mm (AT 440V AC MAXIMUM)

Model	Type	A	B1	B2	C	D	E
S50	NF	50	50	50	0	25	*(1)
E100	NF	50	50	50	0	25	*(1)

1. Insulate the exposed conductor until it overlaps the moulded case at the terminal, or the terminal cover.

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

STANDARD INSTALLATION ENVIRONMENT AND SPECIAL TREATMENTS

TemBreak 2 Mini MCCBs are intended for installation in the following conditions as standard:

- Operating ambient temperature -5 degrees C to 40 degrees C.
- Relative humidity of up to 85%.
- Altitude up to 2000m.
- Atmospheres free from dust, smoke, corrosive gases, inflammable gases, moisture and salt.

For installation in conditions more onerous than those described above, contact Terasaki for details.

The following special treatments have been developed for installation in specific environmental conditions:



- **Low temperature treatment.**
For installation at temperatures down to -40 degrees C for storage and -20 degrees C for operation. The environment must be free from rapid changes in temperature that result in the formation of condensation.



- **Fungus-moisture proofing.**
For installation at temperatures up to 60 degrees C and relative humidity of up to 95%. The environment must be free from rapid changes in temperature.



- **Anti-corrosion treatment.**
MCCB is surface treated to increase resistance to corrosion. If the MCCB is to be installed in atmosphere that contains excessive volumes of corrosive gases or moisture, it should be house in an airtight enclosure.

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

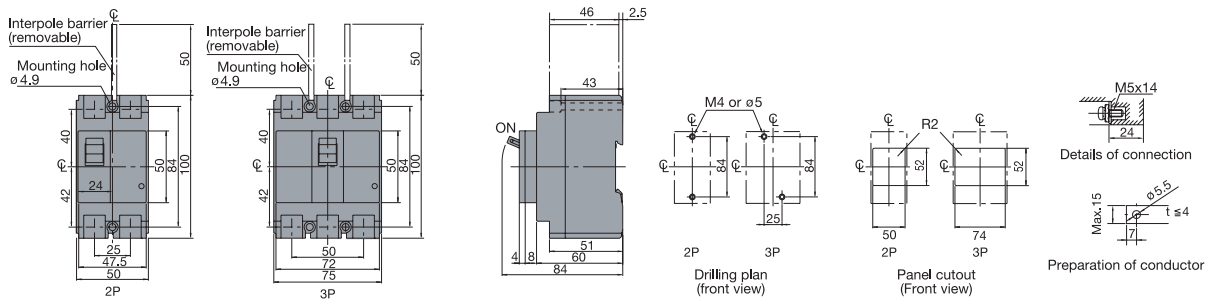
DIMENSIONS

S50-NF

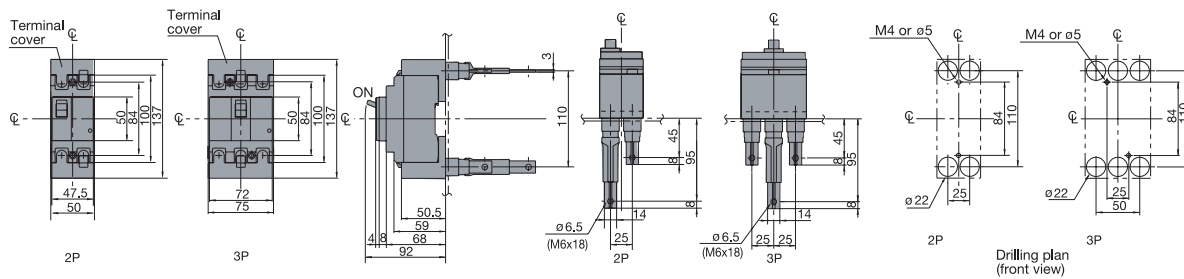
ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

Front Connected



Rear Connected

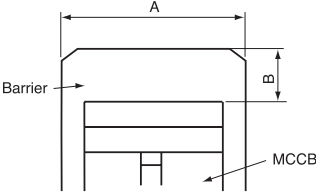


Note: In the normal shipment mode, both terminals on the line side and the load side are in the horizontal direction.

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

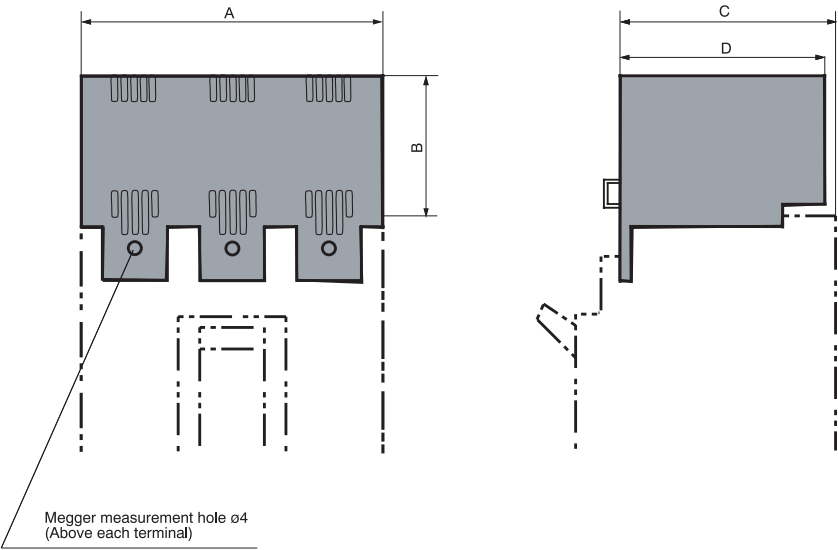
Earth Barriers



MCCB type	Connection	A (1)	B (2)
S50, E100	Front conn.	125	43

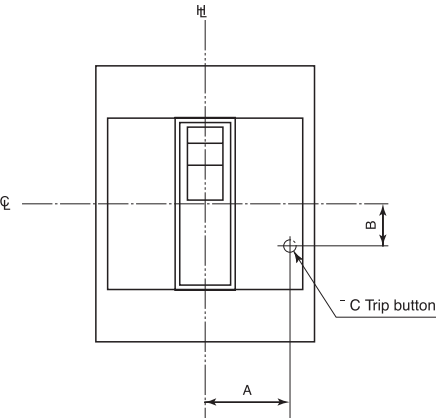
Notes:
 (1): Possible to cut to 75mm or 100mm
 (2): Possible to cut to 35mm

Terminal Covers



MCCB type	Connection	A(2P)	A(3P)	B	C	D	colour
S50, E100	Front conn.	50	75	40	53	53	Black

Position of Trip Button

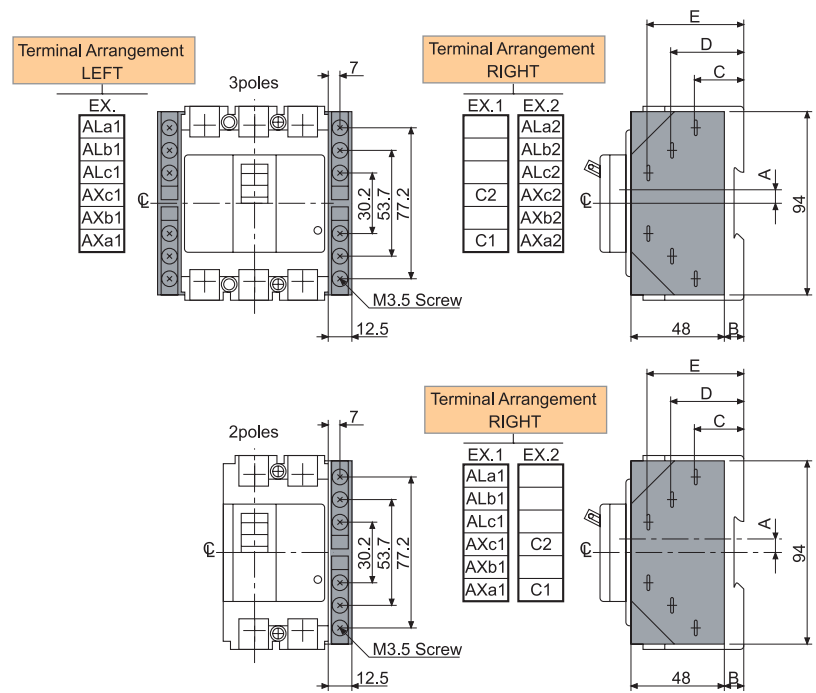


MCCB type	A	B	C
S50, E100, 2P	20.2	13.5	4
S50, E100, 3P	32.7	13.5	4

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

Terminal Block



MCCB type	A	B	C	D	E
S50, E100	0	10.5	23.6	36	48.3

TEMBREAK 2 MINI MOULDED CASE CIRCUIT BREAKERS

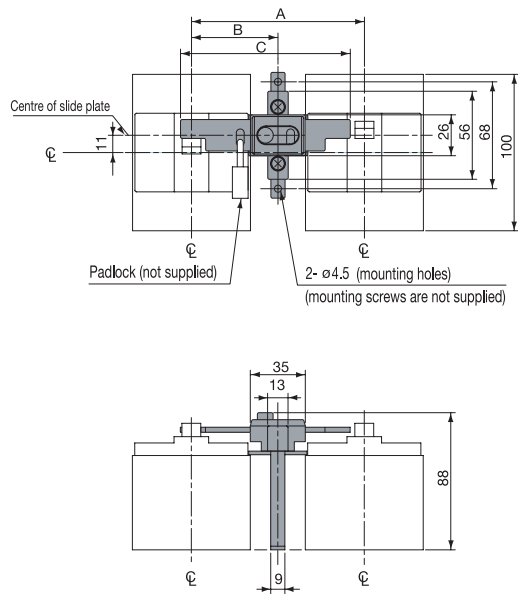
DIMENSIONS

Mechanical Interlock

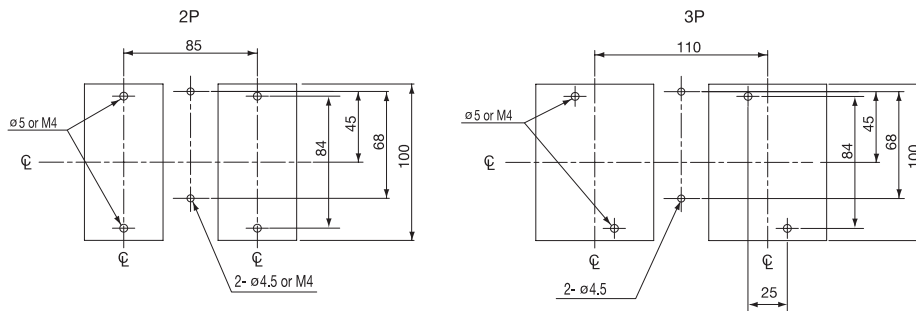
ASL: Arrangement Standard Line
H: Handle Frame Centre Line

Mechanical Interlocks slide type (MS)

For 50A, 100A frame size



Drilling plan



MCCB type	Pole	A	B	C	Colour
S50, E100	2	85	42.5	83	Black
	3	110	55	108	Black

MINI MOULDED CASE CIRCUIT BREAKERS

You can save space and money with Terasaki's new compact and economical Mini Moulded Case Circuit Breakers.

The range of products includes:

- Moulded Case Circuit Breakers (MCCBs)
- Switch Disconnectors in the same compact moulded case frame sizes as MCCBs
- A comprehensive range of accessories.



TEMBREAK MOULDED CASE CIRCUIT BREAKERS

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS

16A TO 630A

- 1. Welcome to TemBreak 2
- 2. Ratings and Specifications
- 3. Operating Characteristics
- 4. Application Data
- 5. Accessories
- 6. Installation
- 7. Dimensions

TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS

10A TO 100A

- 8. TemBreak 2 MINI Moulded Case Circuit Breakers

TEMBREAK

MOULDED CASE CIRCUIT BREAKERS

630A TO 1600A

9. TemBreak Moulded Case Circuit Breakers	
• Easy Selection Guide	141
• Ratings and Specifications	143
• Operating Characteristics	147
• Electrical Control Using Internally Mounted Accessories	149
• Electrical Control Using Motor Operation	153
• Operating Handles	155
• Insulation Accessories	157
• Toggle Accessories	158
• Mechanical Interlocks	159
• Installation	160
• Dimensions	167



SECTION 9

- 10. Order Codes

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

EASY SELECTION GUIDE

The TemBreak range of products includes:

- Moulded Case Circuit Breakers
- Switch-Disconnectors
- A comprehensive range of accessories.

EXCEPTIONAL CURRENT LIMITING

Terasaki's ingenuity in current breaking is exemplified by the Fast Break Mechanism (FBM) of the TemBreak range.

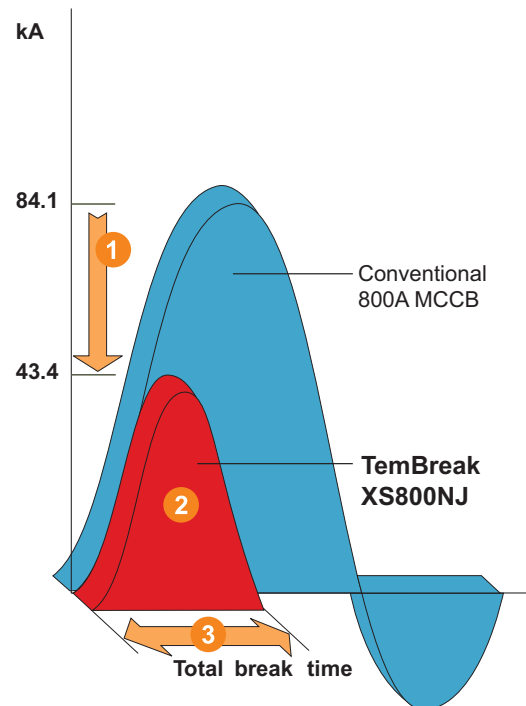
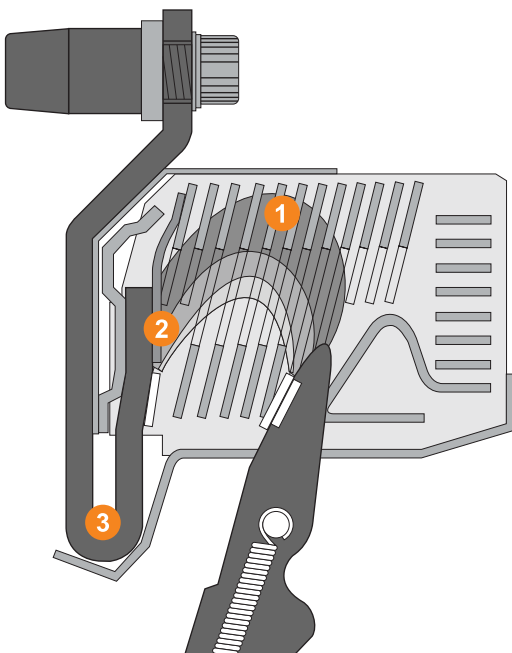
The quick breaking performance of TemBreak provides exceptional current limiting characteristics.



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 i^2t energy let through minimises thermal stress on conductors
- 3 Reduced tripping time minimises damage after fault to both system and MCCB

EASY SELECTION GUIDE

SECTION 9

Terasaki produce MCCBs up to 2500A. Contact us for details.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

RATINGS AND SPECIFICATIONS

TemBreak MCCB Electrical Characteristics to IEC 60947-2, EN 60947-2, JIS C 8201-2-1 Ann. 1, AS/NZS 3947-3, NEMA-AB1

Frame	Quantity	Unit	Condition	800	800	800	800	800	1600	1250	1250	1600	1600	1600	
Model				XS800NJ	XS800SE	XH800SE	XH800PJ	XH800PE	TL800NE	XS1250CE	XS1250SE	TL1250NE	XS1600CE	XS1600SE	>1600
Number of Poles				3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	
Nominal current ratings															
	I_n	(A)	45°C	630, 800	800	800	630, 800	800	630, 800	1000, 1250	1000, 1250	1000, 1250	1600	1600	
Electrical characteristics															
Rated operational voltage	U_c	(V)	AC 50/60 Hz DC	690 250	690 -	690 -	690 250	690 -	690 -	690 -	690 -	690 -	690 -	690 -	
Rated insulation voltage	U_i	(V)		690	690	690	690	690	690	690	690	690	690	690	
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8	8	8	8	8	8	8	
Ultimate breaking capacity (IEC, JIS, AS/NZS)	I_{cu}	(kA)	690V AC*	20	20	20	45	20	45	20	25	45	20	45	
			525V AC	35	35	42	65	42	75	35	45	75	35	65	
			440V AC	50	50	65	85	65	125	50	65	125	50	85	
			415V AC	50	50	65	85	65	125	50	65	125	50	85	
			380/400V AC	65	50	65	100	65	125	50	85	125	50	100	
			220/240V AC	85	85	100	125	100	150	85	100	150	85	125	
			250V DC	50	-	-	50	-	-	-	-	-	-	-	
	I_{cs}	(kA)	690V AC*	10	10	10	23	10	34	10	19	34	10	34	
			525V AC	18	18	21	33	21	57	18	34	57	18	50	
			440V AC	25	25	33	43	50	70	25	50	65	25	65	
			415V AC	25	25	33	50	50	70	25	50	65	25	65	
			380/400V AC	33	25	33	50	50	70	25	65	65	25	75	
Service breaking capacity (IEC, JIS, AS/NZS)	I_{cw}	(kA _{rms}) (kA)	220/240V AC	43	43	50	63	50	113	43	75	113	43	94	
			250V DC	25	-	-	25	-	-	-	-	-	-	-	
			0.3 Seconds	-	10	10	-	10	15	15	15	15	20	20	
Rated short-time withstand current			480V AC	50	50	65	50	65	75	50	65	75	50	85	
Rated breaking capacity (NEMA)			240V AC	85	85	85	85	85	150	85	85	150	85	125	
Protection															
Adjustable thermal, adjustable magnetic				■			■								
Fixed hydraulic, fixed magnetic															
Microprocessor					■	■		■	■	■	■	■	■	■	
Utilisation category				A	B	B	A	B	B	B	B	B	B	B	
Installation															
Front connection (FC)				-	-	-	-	-	-	-	-	-	-	-	
Attached flat bar (FB)				■	■	■	■	■	■	■	■	■	■	■	
Solderless terminal (cable clamp)				•	•	•	•	•	-	•	•	-	•	-	
Rear connection (RC)				•	•	•	•	•	•	•	•	•	•	•	
Plug-in (PM)				•	•	•	•	•	•	•	•	•	•	-	
Draw-out (DR)				•	•	•	•	•	•	•	•	•	•	•	
DIN rail mounting (DA)				-	-	-	-	-	-	-	-	-	-	-	
Dimensions															
h		(mm)		273	273	273	273	273	370	370	370	370	370	370	
w		(mm)	3 pole	210	210	210	210	210	210	210	210	210	210	210	
			4 pole	280	280	280	280	280	280	280	280	280	280	280	
d		(mm)		103	103	103	103	103	140	120	120	140	140	140	
Weight		(kg)	3 pole	9.4	9.7	9.7	9.4	9.7	25.8	22.0	22.0	26.0	27.0	27.0	
			4 pole	12.2	12.5	12.5	12.2	12.5	33.5	28.0	28.0	33.7	35.0	35.0	
Operation															
Toggle operation				■	■	■	■	■	■	■	■	■	■	■	
Variable depth (HP) /direct mount operating handle (HB)				•	•	•	•	•	•	•	•	•	•	•	
Motor operator (MC)				•	•	•	•	•	•	•	•	•	•	•	

Visit www.terasaki.com for details of MCCBs up to 2500A

■ Standard • Optional - Not Available

*MCCBs cannot be used in IT earthed systems at this voltage.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

RATINGS AND SPECIFICATIONS

TemBreak Switch-Disconnectors Electrical Characteristics to IEC 60947-3, EN 60947-3, AS/NZS 3947-3

Frame	Quantity	Unit	Condition	800	1250	1600
Model				XS800NN	XS1250NN	XS1600NN
Number of Poles				3, 4	3, 4	3, 4
Nominal current ratings						
	I_c	(A)		800	1250	1600
Electrical characteristics						
Rated operational voltage	U_c	(V)	AC 50/60 Hz	690	690	690
Rated insulation voltage	U_i	(V)	DC	250	250	250
Rated impulse withstand voltage	U_{imp}	(kV)		690	690	690
				8	8	8
Rated short-circuit making capacity	I_{cm}	(kA peak)	0.3 Seconds	15	32	45
Rated short-time withstand current	I_{cw}	(kA rms)	AC	9.6	15	20
Utilisation category			DC	AC-23A	AC-23A	AC-23A
				DC-22A	DC-22A	DC-22A
Installation						
Front connection (FC)				-	-	-
Attached flat bar (FB)				■	■	■
Solderless terminal (cable clamp)				•	-	-
Rear connection (RC)				•	•	•
Plug-in (PM)				•	•	-
Draw-out (DR)				•	•	•
DIN rail mounting (DA)				-	-	-
Dimensions						
h	(mm)			273	370	370
w	(mm)	3 pole		210	210	210
		4 pole		280	280	280
d	(mm)			103	120	140
Weight	(kg)	3 pole		9.4	20.4	24.9
		4 pole		12.2	26.4	32.9
Operation						
Toggle operation				■	■	■
Variable depth (HP) / direct mount operating handle (HB)				•	•	•
Motor operator (MC)				•	•	•

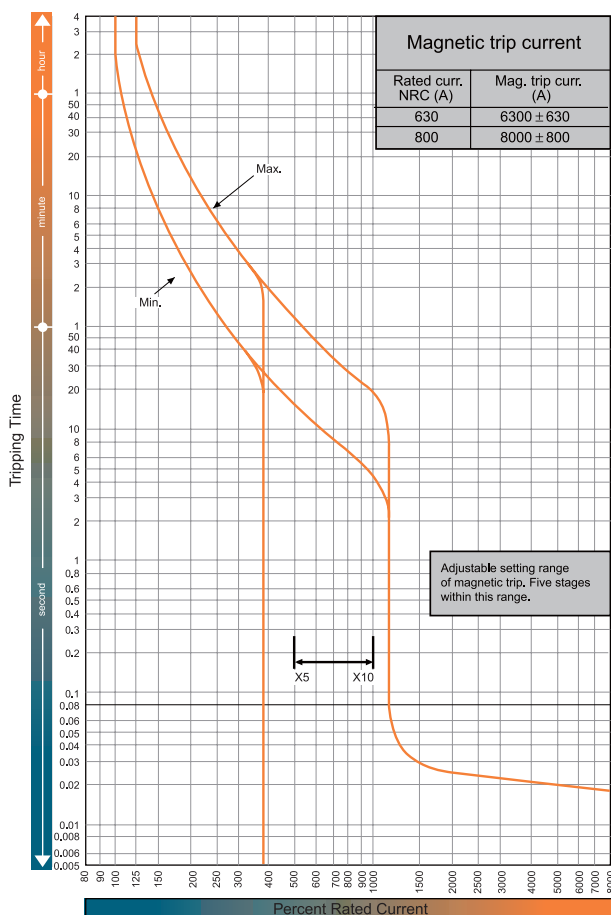
TEMBREAK MOULDED CASE CIRCUIT BREAKERS

OPERATING CHARACTERISTICS

800A Frame MCCBs

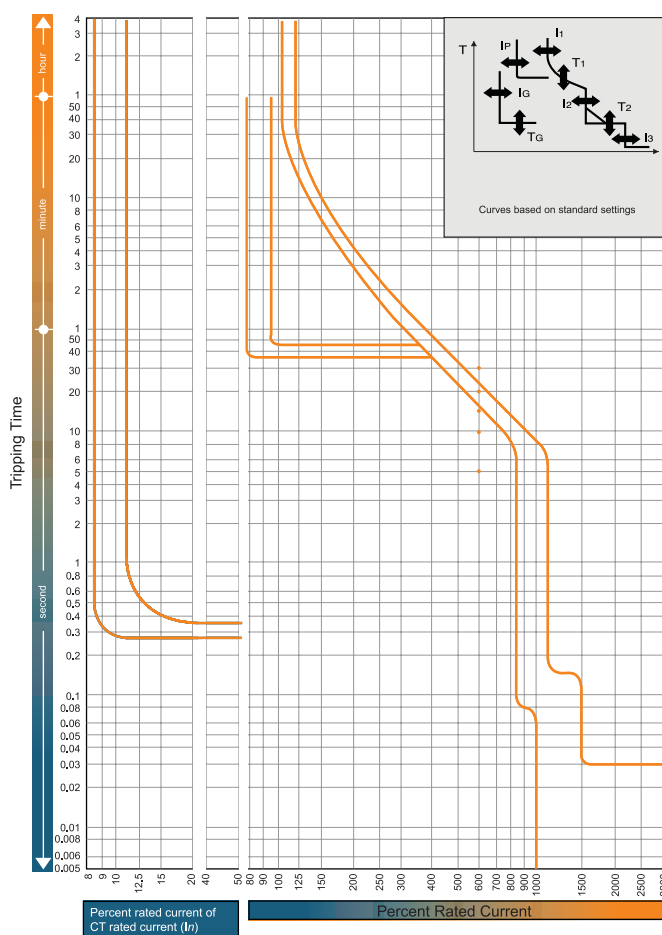
Time/current characteristic curves

XS800NJ, XH800PJ

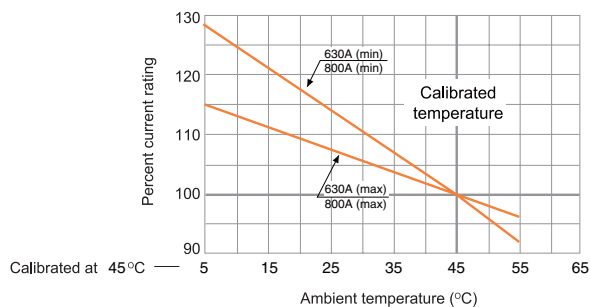


Time/current characteristic curves

XS800SE, XH800SE, XH800PE



Ambient compensating curves



Over current tripping characteristics

CT rated current (A) (I_n)	630, 800
Base current setting (A): (I_0)	$(I_n) \times (0.63-0.8-1.0)$
Long time-delay pick-up current (A): (I_1)	$(I_0) \times (0.8-0.85-0.9-0.95-1.0)$ Non-tripping at (I_1) setting $\times 105\%$ and below. Tripping at 125% & above.
Long time-delay time settings (S) (T_1)	(5–10–15–20–30) at (I_1) $\times 600\%$ current. Setting tolerance $\pm 20\%$
Short time-delay pick-up current (A): (I_2)	$(I_1) \times (2-4-6-8-10)$ Setting tolerance $\pm 15\%$
Short time-delay time settings (S) (T_2)	40 fixed definite time-delay. Setting tolerance $\pm 10\%$
Instantaneous trip pick-up current (A) (I_3)	Continuously adjustable from (I_0) $\times (3$ to $12)$ Setting tolerance $\pm 20\%$
* Pre-trip alarm pick-up current (A) (I_P)	$(I_1) \times (0.7, 0.8, 0.9, 1.0)$ Setting tolerance $\pm 10\%$
* Pre-trip alarm time setting (S) (T_P)	40 fixed definite time-delay. Setting tolerance $\pm 10\%$
* Ground fault trip pick-up current (A): (I_G)	Continuously adjustable from (I_n) $\times (0.1$ to $0.4)$ Setting tolerance $\pm 15\%$
* 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 $+ 50$ ms and resettable time is $- 20$ ms for the time-delay settings

Note: * Optional

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

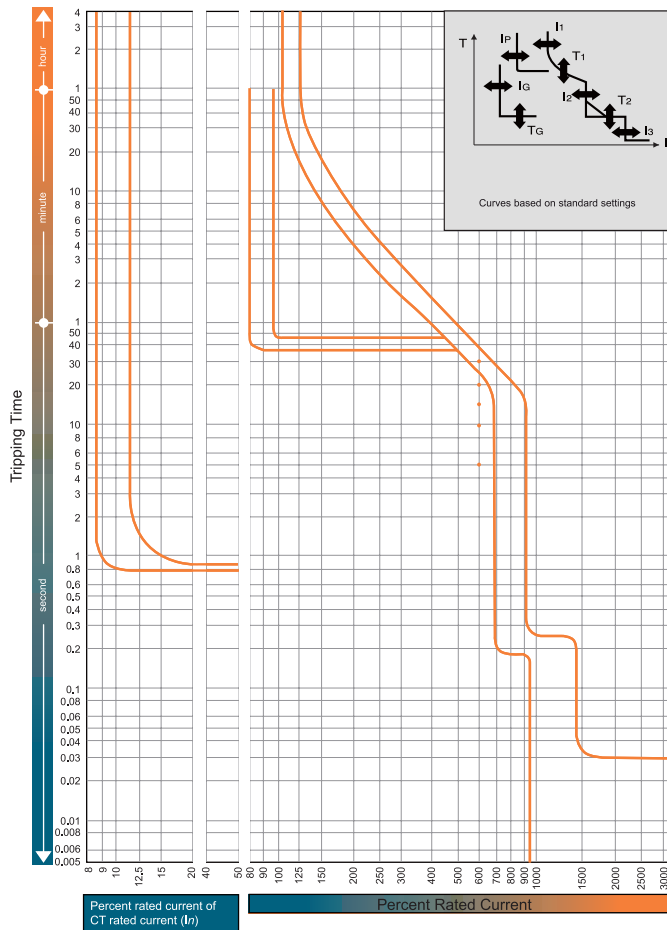
TEMBREAK MOULDED CASE CIRCUIT BREAKERS

OPERATING CHARACTERISTICS

1250A and 1600A Frame MCCBs

Time/current characteristic curves

TL800NE, XS1250CE, XS1250SE, TL1250NE, XS1600CE, XS1600SE



Over current tripping characteristics

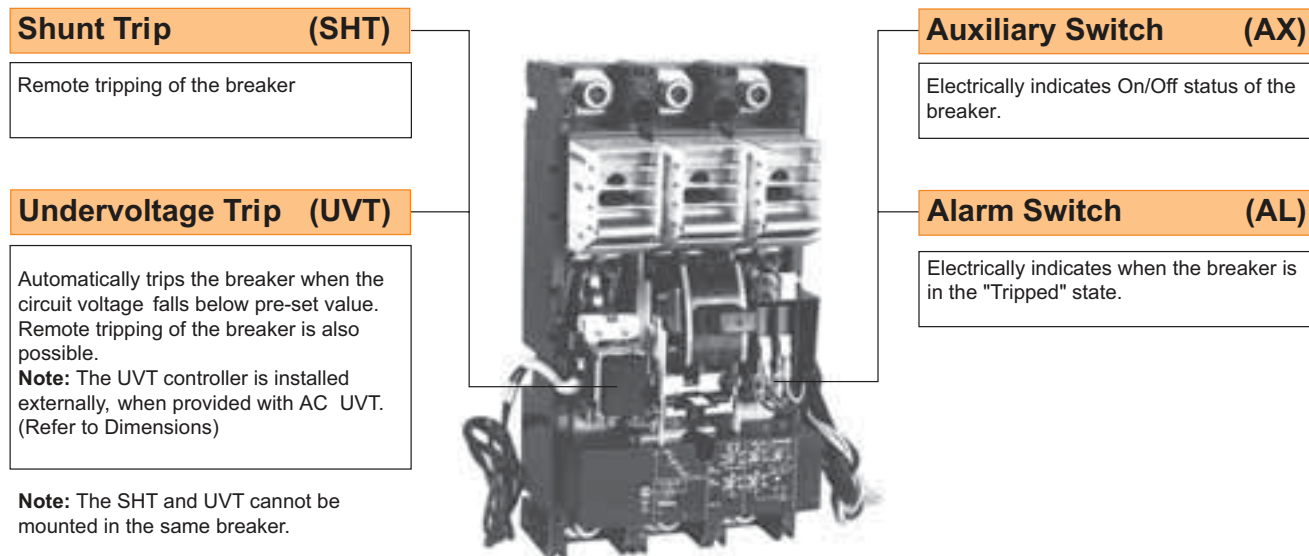
CT rated current (A) (I_n)	630, 800, 1000, 1250, 1600, 2000, 2500
Base current setting (A): (I_0)	$(I_n) \times (0.63-0.8-1.0)$
Long time-delay pick-up current (A): (I_1)	$(I_0) \times (0.8-0.85-0.9-0.95-1.0)$ Non-tripping at (I_1) setting $\times 105\%$ and below. Tripping at 125% & above. (5-10-15-20-30) at (I_1) $\times 600\%$ current. Setting tolerance $\pm 20\%$
Long time-delay time settings (S) (T_1)	
Short time-delay pick-up current (A): (I_2)	$(I_0) \times (2-4-6-8-10)$ Setting tolerance $\pm 15\%$
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 $(I_0) \times (3 \text{ to } 12)$ Setting tolerance $\pm 20\%$
* Pre-trip alarm pick-up current (A) (I_P)	$(I_1) \times (0.7, 0.8, 0.9, 1.0)$ Setting tolerance $\pm 10\%$
* Pre-trip alarm time setting (S) (T_P)	40 fixed definite time-delay. Setting tolerance $\pm 10\%$
* Ground fault trip pick-up current (A): (I_G)	Continuously adjustable from $(I_n) \times (0.1 \text{ to } 0.4)$ Setting tolerance $\pm 15\%$
* 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.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES



Overview of Internally Mounted Accessories

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Valid Combinations of Internally Mounted Accessories

Accessory Combinations

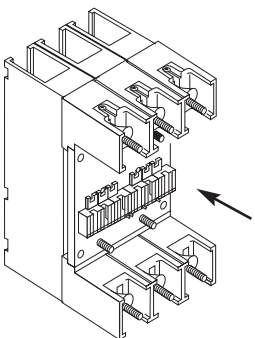
Breaker type

XS800NJ
XS800SE
XH800SE
XH800PJ
XH800PE
TL800NE
XS1250CE
XS1250SE
TL1250NE
XS1600CE
XS1600SE

Internally mounted accessories

AX, AXE	
AL, ALE	
SHT	
UVT	
AX	
AL	
AX	
SHT	
AX	
UVT	
AL	
SHT	
AL	
UVT	
AX	
AL	
SHT	
AX	
AL	
UVT	

Key:	AX	Auxiliary switch		AX
	AL	Alarm switch		AL
	SHT	Shunt trip		
	UVT	Undervoltage trip		
		Handle	Left pole	Right pole



Accessory Combinations for Plug-in MCCBs

Frame (A)		800-1250A Frame
Number of auxiliary terminals to be installed (maximum)		
SHT	LINE	
	LOAD	
UVT	LINE	
	LOAD	
1AB	LINE	
	LOAD	
2AB	LINE	
	LOAD	
3AB	LINE	
	LOAD	
SHT & 1AB	LINE	
	LOAD	
SHT & 2AB	LINE	
	LOAD	
SHT & 3AB	LINE	
	LOAD	
UVT & 1AB	LINE	
	LOAD	
UVT & 2AB	LINE	
	LOAD	
UVT & 3AB	LINE	
	LOAD	
ALT & 1AB	LINE	
	LOAD	
ALT & 2AB	LINE	
	LOAD	
UVT & ALT & 1AB	LINE	
	LOAD	
UVT & ALT & 2AB	LINE	
	LOAD	
SHT & ALT & 1AB	LINE	
	LOAD	
SHT & ALT & 2AB	LINE	
	LOAD	
ALT	LINE	
	LOAD	
SHT & ALT	LINE	
	LOAD	
UVT & ALT	LINE	
	LOAD	

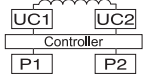
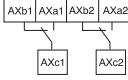
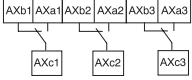
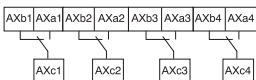
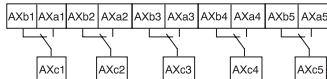
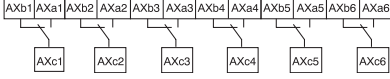
† : Alarm switch is an 'a' contact only
Note 1 : DC UVT without controller will have terminals U1 and U2
Note 2 : Due to restricted space, these terminals are common

The arrangements shown above represent the view on the arrow, that is, looking at the MCCB body from the rear.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Connection Diagrams and Terminal Numbers

Shunt trip (SHT)	3, 4P Provided with anti-burn switch		
Undervoltage trip (UVT)	3, 4P AC rated voltage		
	DC rated voltage		
Auxiliary switch (AX)	3, 4P	No. of mountings 1 unit	
		2 units	
		3 units	
		4 units	
		5 units	
		6 units	
Alarm switch (AL)	3, 4P		

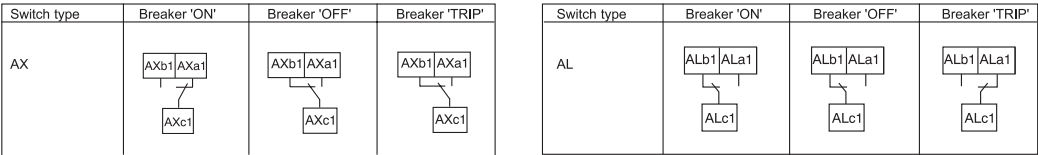
Ratings of Auxiliary Switches (AX) and Alarm Switches (AL)

AC	Voltage (V)		480	250	125
	Current (A)	Resistive load	3	5	5
		Lamp load	0.3	1.5	2
		Inductive load	2	5	5
		Motor load	0.4	2	3
DC	Voltage (V)		250	125	30
	Current (A)	Resistive load	0.3	0.6	5
		Lamp load	0.05	0.1	3
		Inductive load	0.3	0.6	4
		Motor load	0.05	0.1	3

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Operation of Auxiliary and Alarm Switches



Ratings of Shunt Trips

Rate 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
	1.1	0.93	2.52	1.55	0.67	0.35

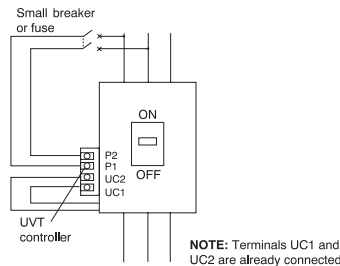
Note: AC rated, permissible operating voltage range is 85 to 110%. DC 75 to 125%.
Note: Special voltages available on request. Contact Terasaki for details.

Ratings of Undervoltage Trips

Rated voltage:	Power supply, VA (with UVT controller)			Exciting coil current (mA)	
	100-120VAC	200-240VAC	300-450VAC	24VDC	100-115VDC
	5VA	5VA	5VA	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: Special voltages available on request. Contact Terasaki for details

If the UVT is for AC use, an external controller will be installed. The controller is fitted to the left side of the breaker as standard. The controller may be installed separately if required (please specify location). Separate installation is necessary when mechanical interlocks are fitted. UVT controllers incorporating time delay units are also available (contact us for details). Refer to dimensions of terminal blocks for the mounting positions of UVT controllers.



Connection of UVT Controller

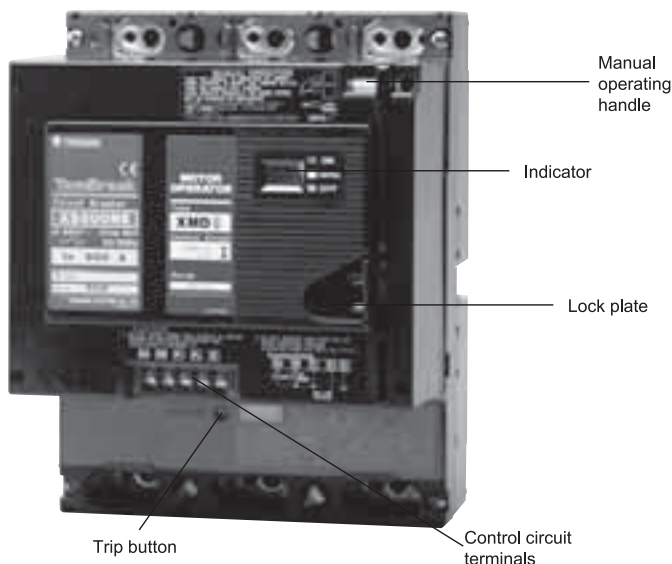
Termination of Control Wiring

Leads for internally mounted accessories can be connected to the terminal block. Each terminal block has six terminals. Terminal arrangements are standardised. Refer to dimensions for standard terminal arrangements.



TEMBREAK MOULDED CASE CIRCUIT BREAKERS

ELECTRICAL CONTROL USING MOTORISED OPERATION



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.

Manual ON/OFF operation with one stroke

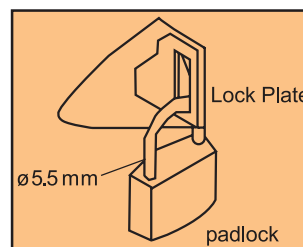
Fast closing operation

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

Ratings and Specifications

Type of Motor Operators		XMD6	XMD9
Applicable Breakers		XS800NJ XS800SE XH800SE XH800PJ XH800PE	TL800NE XS1250CE XS1250NE TL1250NE XS1600CE XS1600NE
Rated Operating Voltage (V)	AC 100-115V 50/60Hz	•	•
	200-230V 50/60Hz	•	•
DC 100-110V	24V	•	•
	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
	-115V OFF, RESET ①	1.8/6.0	1.8/6.0
	AC200 ON ②	~1.2	~1.2
	-230V OFF, RESET ②	1.0/3.2	1.0/3.2
	DC100 ON ③	~0.8	~0.8
	-110V OFF, RESET ③	1.1/4.2	1.1/4.2
	DC24V ON	~4.5	~4.5
	OFF, RESET	4.0/12.0	4.0/12.0
Type of operation		Spring Charged	Spring Charged
Operating Time(s)	ON (Maximum values)	0.06	0.06
	OFF, RESET ④	3	3
Control Switch Ratings		250V, 5A	250V, 5A
Power Source Capacity (VA)		300VA	300VA
Dielectric withstand voltage		AC1500V (AC500V)	AC1500V (AC500V)
The value in brackets for 24V DC			
Weight (kg)		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

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

ELECTRICAL CONTROL USING MOTORISED OPERATION

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.

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 reset

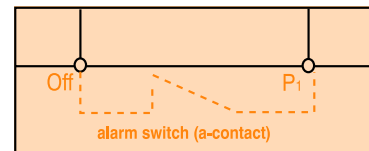
An alarm switch (a-contact) fitted in the breaker, can be used to induce recharging of the closing spring and automatically reset the MCCB. Connect the automatic reset circuit as shown below.

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, use a 2 alarm switch combination.

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.



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.

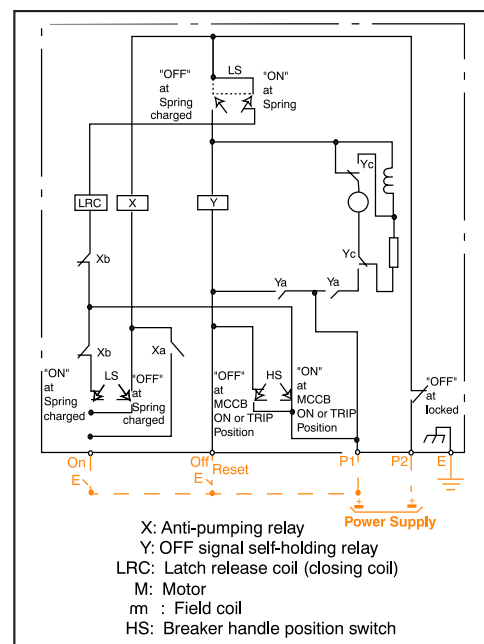
Emergency Trip

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: 75-110% of rated voltage
AC: 85-110% of rated voltage
Operation at low voltage may burn out the motor.

Control circuit AC and DC

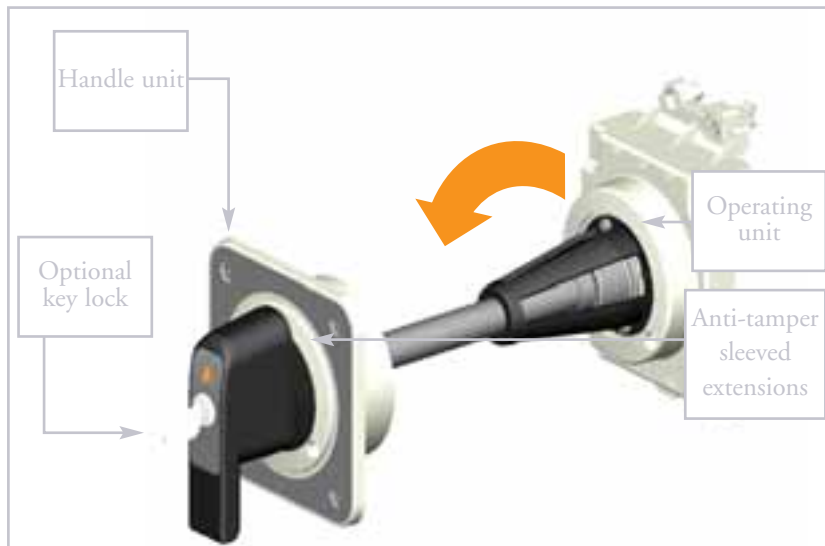


Note: Customer wiring shown in orange

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

OPERATING HANDLES

Door Mounted Handle



Door Mounted Handle with Optional Keylock

The door mounted operating handle is used to operate a circuit breaker mounted inside a cubicle from outside the door. It consists of an operating mechanism that is mounted on the breaker, an operating handle that is mounted on the door, and a shaft that transmits the turning force from the handle to the operating unit. The shaft can be cut to the required length.

The appearance and operation of this handle match those of the door mounted handle for Tembreak 2 MCCBs (details in Section 5).

This means that a switchboard containing a combination of TemBreak and TemBreak 2 MCCBs from this catalogue can be operated with handles which all look the same, and work the same way.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

OPERATING HANDLES

Breaker Mounted Handle

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

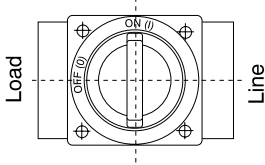
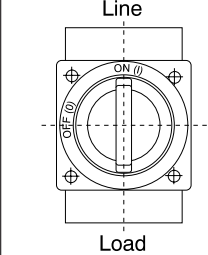
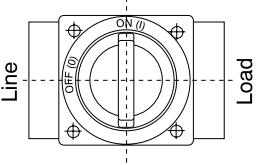
Please specify the correct type code when ordering

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

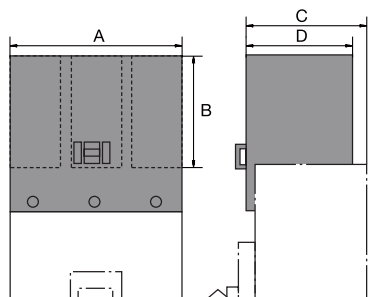
R:Right power supply type	U: Upper power supply type	L: Left power supply type
		

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

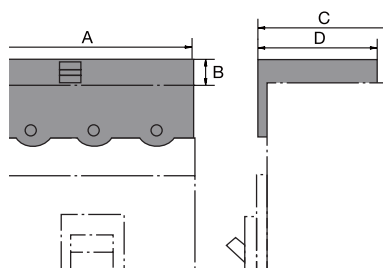
INSULATION ACCESSORIES

Terminal Covers

Terminal covers prevent exposure of terminals and other live parts.



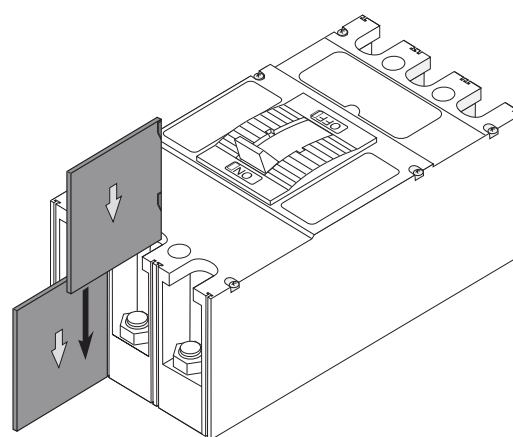
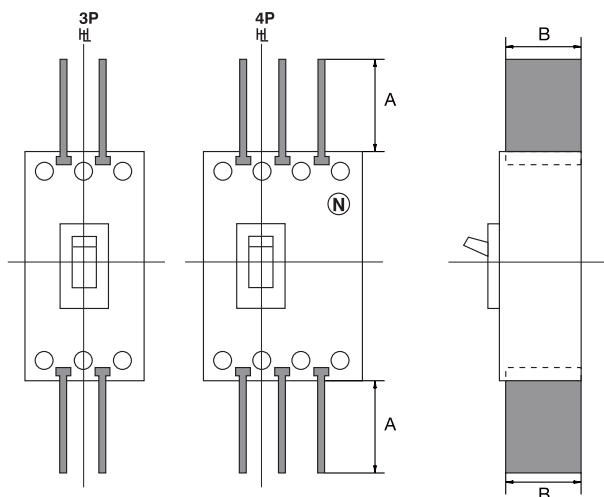
Terminal Covers for Front Connection.



Terminal Covers for Rear Connection and Plug-in.

Interpole Barriers

Interpole barriers provide maximum insulation between phases at the terminals of the MCCB. They can not be fitted at the same time as any of the terminal covers. Interpole barriers can easily be fitted to either end of an MCCB.



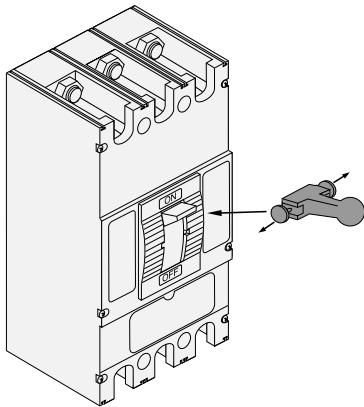
Interpole Barriers

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

TOGGLE ACCESSORIES

Toggle Extension

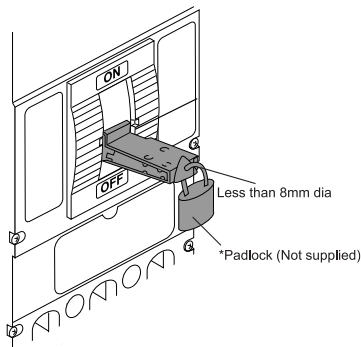
The toggle extension provides extra leverage for the operator when performing manual ON, OFF and RESET operations.



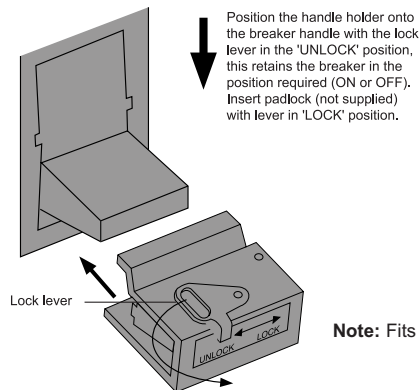
Toggle Extension

Toggle Lock

The toggle lock enables padlocking of the MCCB in either the ON or OFF position. Padlocks are not supplied.



Toggle Lock



Key Lock

MCCBs, including those fitted with door mounted handles and some motor operators can be supplied with Castell locking systems. Contact us for details.

Door Flange

A door flange provides a neat finish for the toggle cutout on the outside of the panel door.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

MECHANICAL INTERLOCKS

Rear Mechanical Interlocks

Rear interlocks consist of a mechanism mounted at the back of each MCCB of an adjacently mounted pair. The interlock inhibits the closure of one MCCB if the other is already in the ON position. MCCBs cannot be mounted directly to a flat plate, but are installed on a frame to ensure space for the interlock mechanism.

Two MCCBs or switch-disconnectors of the same frame size may be rear interlocked.

An operating handle or motor operator can be fitted to an MCCB with rear interlock.

Wire Mechanical Interlock

Wire interlocks consist of two mechanisms connected by a cable. The mechanisms are mounted on the back of two MCCBs located at a distance from each other which is limited by the length and bend radius of the cable. The mechanisms inhibit the closure of one MCCB if the other is already in the ON position. MCCBs cannot be mounted directly to a flat plate, but are installed on a frame to ensure space for the interlock mechanism.

Any two of the TemBreak MCCBs or switch disconnectors featured in this catalogue may be wire interlocked.

An operating handle or motor operator can be fitted to an MCCB with rear interlock.

TemTransfer Automatic Changeover Controller

TemBreak MCCBs can be configured to provide automatic supply changeover. They are compatible with the TemTransfer changeover controller. Refer to section 5 for details.

Front Mechanical Interlock

Front interlocks are manually operated toggle locking devices which can be installed between two adjacent MCCBs. Depending on the position of the interlock, one or other of the MCCBs is inhibited from being in the ON position.

Two MCCBs or switch-disconnectors of the same frame size may be front interlocked.

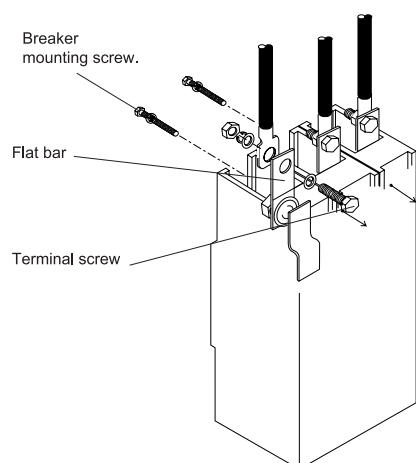
Operating handles and motor operators cannot be fitted to MCCBs with front mechanical interlocks.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

INSTALLATION

Connection of Large Conductors and Multiple Conductors

Flat bars are terminal extensions which can be fitted to line or load side terminals and are used to connect large conductors and multiple conductors.



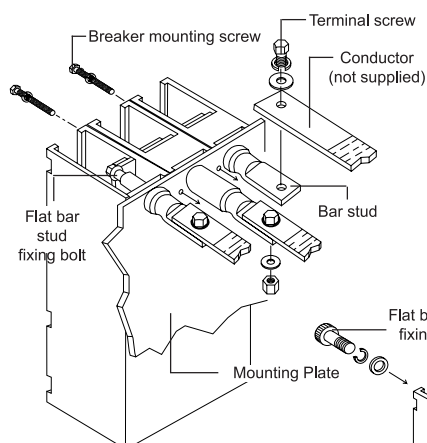
TEMBREAK MOULDED CASE CIRCUIT BREAKERS

INSTALLATION

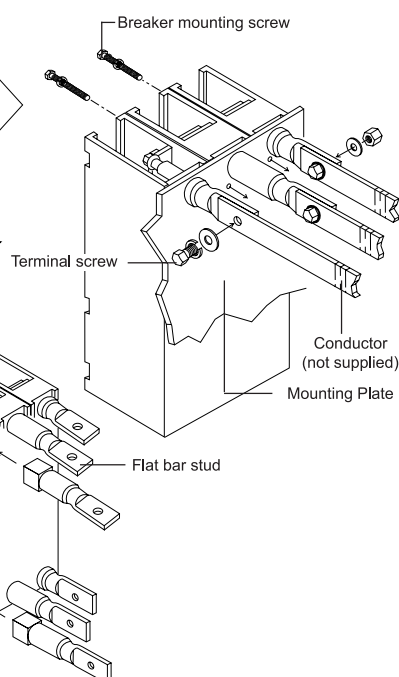
Termination in a Separate Compartment

Rear connections allow termination of conductors in a different switchboard compartment to the MCCB body. Optional.

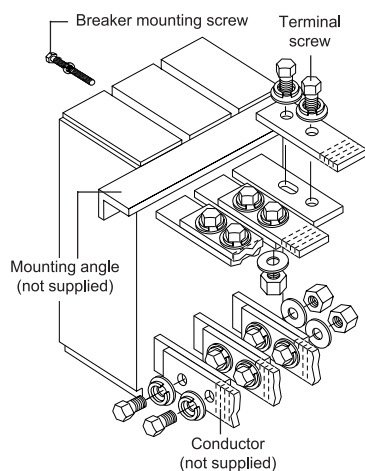
Horizontal (standard)



Vertical



Rear Connections for 800A Frame MCCBs

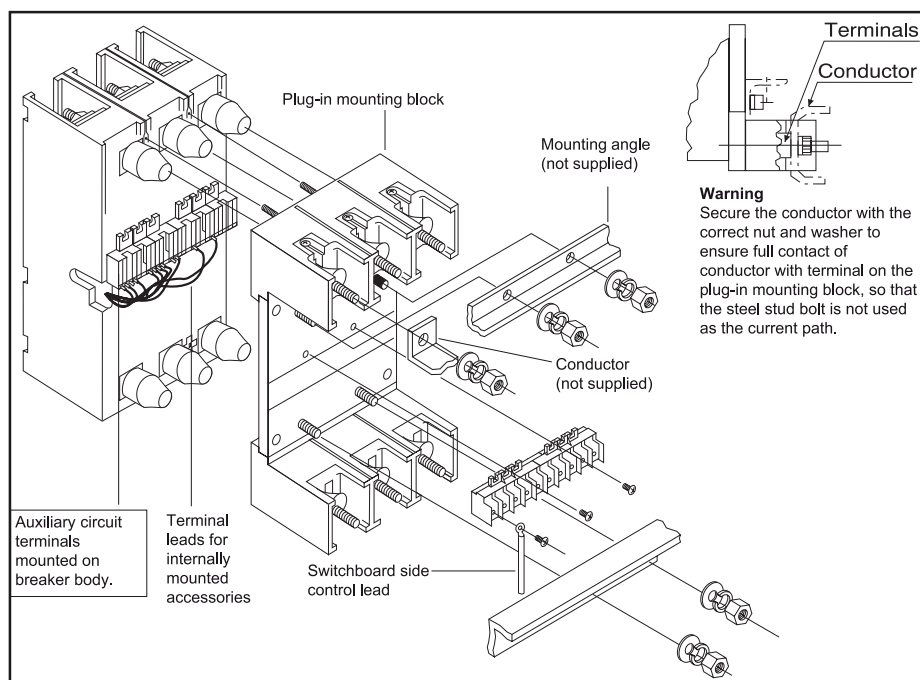


Rear Connections for 1250A and 1600A frame MCCBs

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

Plug-in Mounting

The plug-in mounting system allows fast replacement of the MCCB body without the need to disturb the terminations. Solid conductors or cables terminated with compression terminals can be used. Plug-in mounting is available for 800A and 1250A frame MCCBs.



IP20 Protection (Optional)

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

Safety Trip (Optional)

(Trip first, plug-in mechanism)

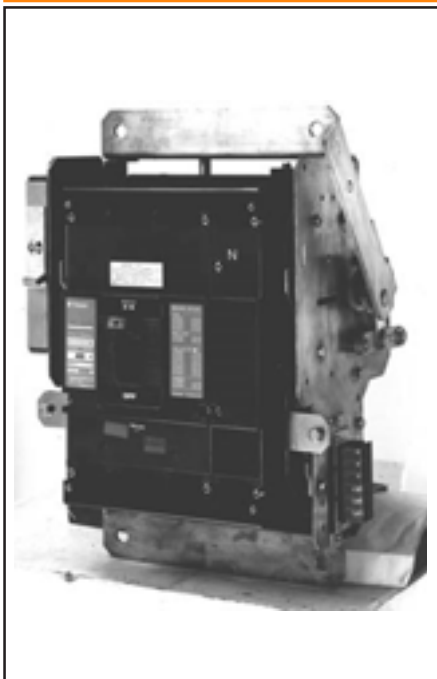
The breaker will trip automatically, if it is withdrawn while still in the 'ON' position. It is not possible to "plug-in" the breaker when it is in the 'ON' position.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

Drawout Mounting

Two types of drawout mounting system are used, depending on the frame size of the MCCB.

Two-position type



800A frame and 1250A frame

- 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



1600A frame

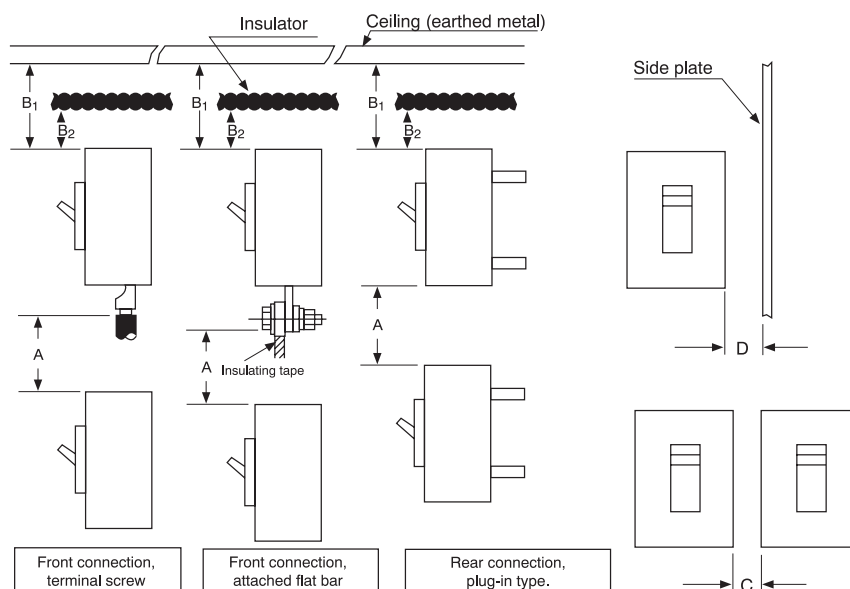
- The draw out cradle has three positions "Connected", "Test" and "Isolated".
- The auxiliary circuits are automatically connected and isolated by the disconnect contacts.
The auxiliary circuits are as follows:
Connected in "Connected" and "Test" positions and isolated in the "Isolated" position.
- Safety 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.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

Insulation Distances

Attention

Exposed conductors must be insulated up to the breaker terminals. Interpole barriers or optional terminal covers are recommended. If optional terminal covers are used, insulate the exposed conductor until it overlaps the terminal cover.



- 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).
 B1 : Distance from breaker end to ceiling (earthed metal)
 B2 : 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

Breaker	A	B1	B2	C	D
XS800NJ XS800SE	120	70	40	0	30
XH800SE XH800PE	150	80	50	0	40
XH800PJ	150	150	100	0	100
XS1250CE XS1250SE	150	70	40	0	30
TL800NE TL1250NE	150	150	100	0	100
XS1600CE XS1600SE					

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

Standard Installation Environments and Special Treatments

Tembreak Circuit Breakers are designed and built to be used under standard operating conditions. Breakers required for conditions other than standard are available on request. Please specify when ordering.

Standard operating conditions are in accordance with IEC 60947-2
Operating ambient temperature - 5° C to 40° C
When a thermal magnetic breaker is used at a temperature exceeding its calibrated temperature of 40°c, 45°c or 50°c, the operating current should be reduced in accordance with ambient compensation curves, section 3. Please contact Terasaki for temperature performance details of microprocessor protected breakers.
Relative humidity 85% max
Altitude 2,000m max
Note:*Atmosphere should not contain dust, smoke, corrosive gases, inflammable gases, moisture or salt.

Special environment	Specification	Nameplate indication
Low Temperature Breaker	This is specially treated for storage and use at low temperature. The lowest limit is -40° C for storage and -20° C for use. The breaker is calibrated at 40° C or, 45° C for marine use and requires an appropriate adjustment of the specified characteristics. At low temperatures the environment must be free from rapid temperature changes that result in condensation forming or freezing of the breaker.	PROOFED FOR LOW TEMPERATURE Storage -40° C or higher Operation -20° C or higher
Tropicalization (fungus moisture proof) Breaker	The dielectric strength and other electrical properties of insulating materials that are likely to deteriorate at high temperature and high humidity. The tropicalised breaker uses specially selected materials and special surface treatment for such conditions. Note: The maximum conditions for use are 60° C ambient and 95% relative humidity provided that there are no rapid changes in temperature likely to occur. Contact Terasaki for details.	FUNGUS MOISTURE PROOF
Corrosive Resistant Breaker	The corrosive resistant breaker is specially surface treated for increased corrosion resistance. Note: If the breaker is to be used in an atmosphere that has an excess of corrosive gases or moisture and salt then the breaker must be housed in an air tight box, container or cabinet.	CORROSIVE RESISTANT

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

Power Consumption

Breaker	Rated current (A)	Internal resistance (DC mΩ) Value per pole		Power consumption (DC W) Value per pole	
		FC	Plug-in	FC	Plug-in
XS800NJ	800	0.07	0.11	44.8	70.4
XS800SE	400	0.07	0.11	11.2	17.6
XH800SE	450	0.07	0.11	14.2	22.3
XH800PJ	500	0.07	0.11	17.5	27.5
XH800PE	600	0.07	0.11	25.2	39.6
	700	0.07	0.11	34.3	53.9
	800	0.07	0.11	44.8	70.4
XS1250CE	600	0.04	0.053	14.4	19.1
XS1250SE	700	0.04	0.053	19.6	26.0
	800	0.04	0.053	25.6	33.9
	1000	0.04	0.053	40.0	53.0
	1250	0.04	0.053	57.6	76.3
XS1600CE	800	0.022	** 0.039	14.1	25.0
XS1600SE	900	0.022	** 0.039	17.8	31.6
TL800NE	1000	0.022	** 0.039	22.0	39.0
TL1250NE	1200	0.022	** 0.039	31.7	56.2
	1400	0.022	** 0.039	43.1	76.4
	1600	0.022	** 0.039	56.3	99.8

Note: * Value of rear connected type breaker. ** Value of draw-out type breaker.

Note: All values are intended as a guide only

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

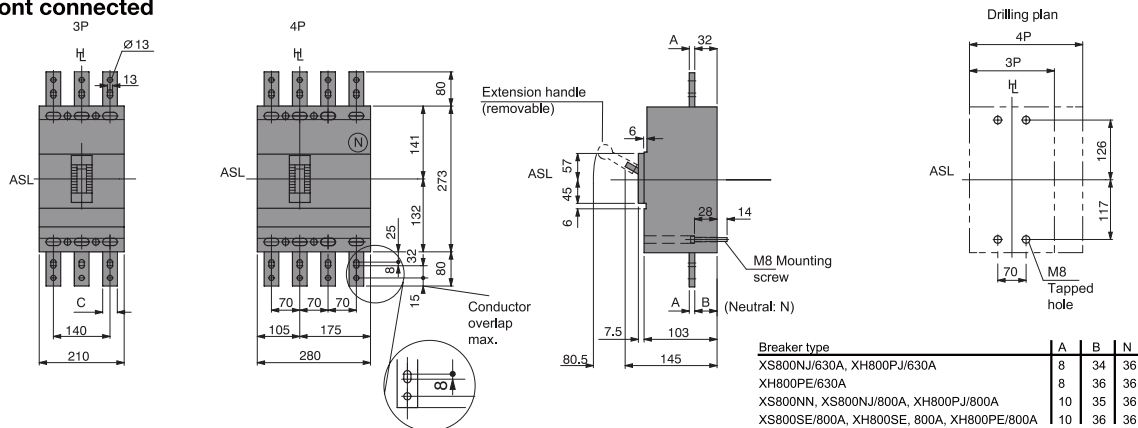
DIMENSIONS

XS800NN, XS800NJ, XS800SE, XH800SE, XH800PJ, XH800PE

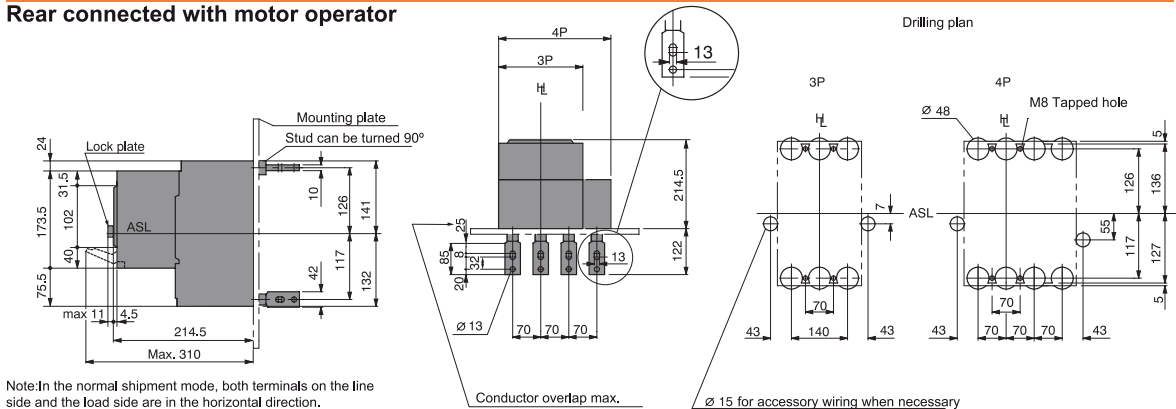
ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

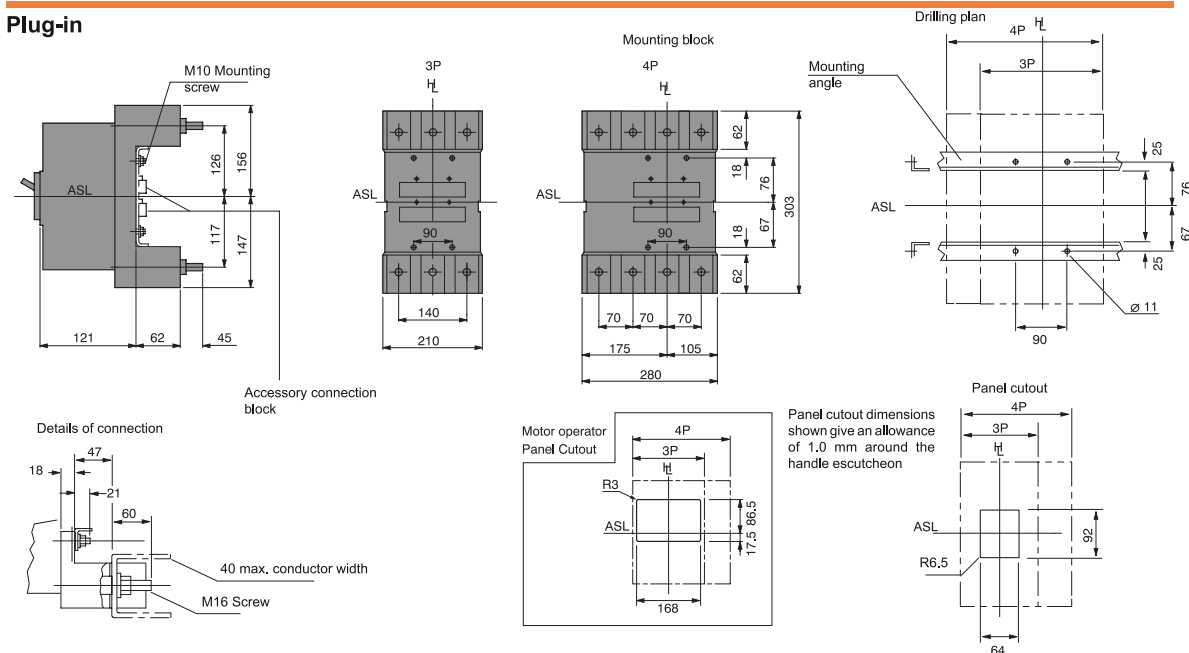
Front connected



Rear connected with motor operator



Plug-in



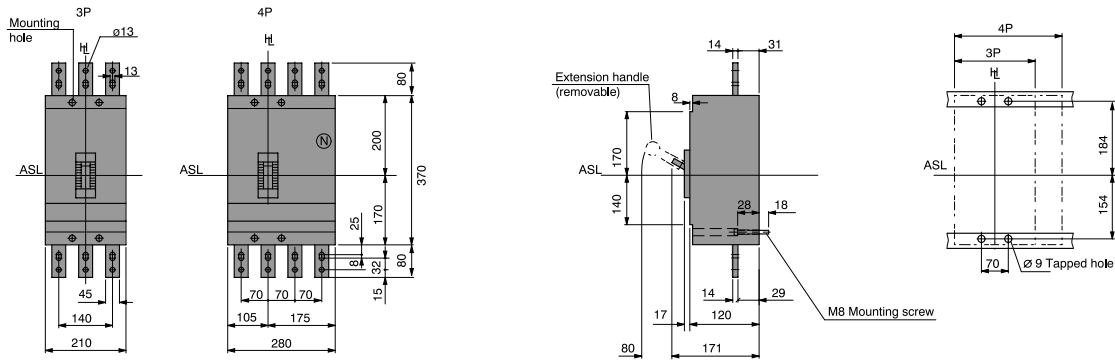
TEMBREAK MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

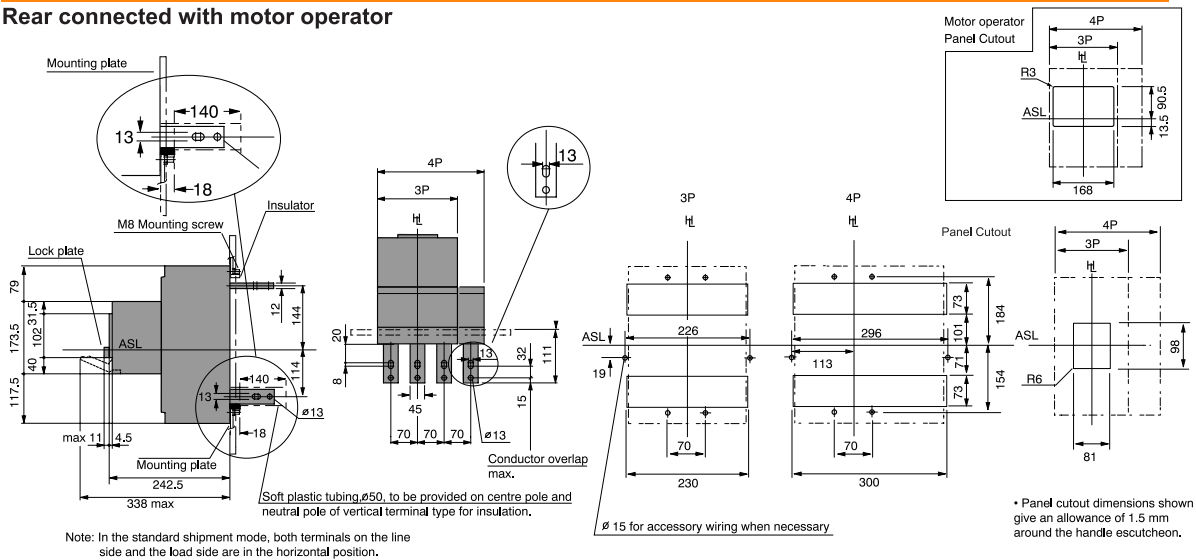
XS1250NN, XS1250CE, XS1250SE

ASL: Arrangement Standard Line
H_L: Handle Frame Centre Line

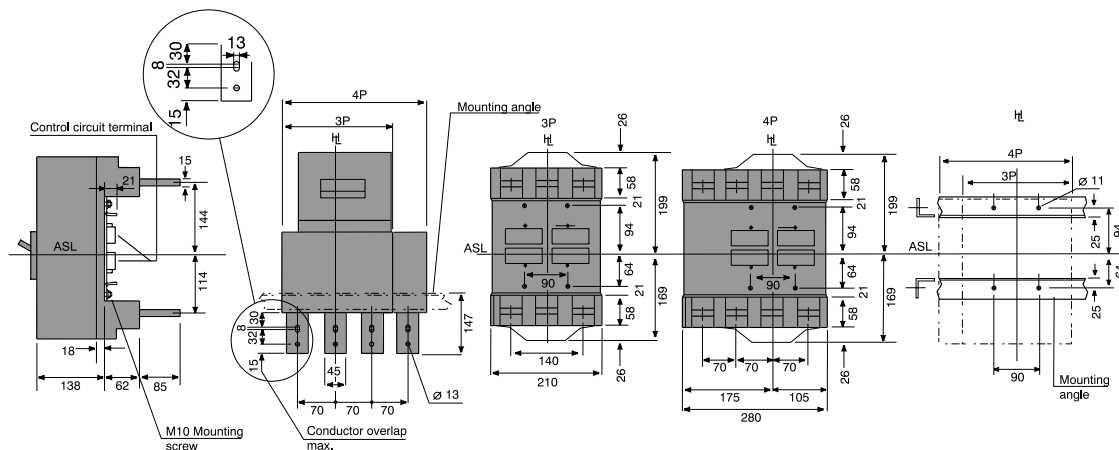
Front connected



Rear connected with motor operator



Plug-in



TEMBREAK MOULDED CASE CIRCUIT BREAKERS

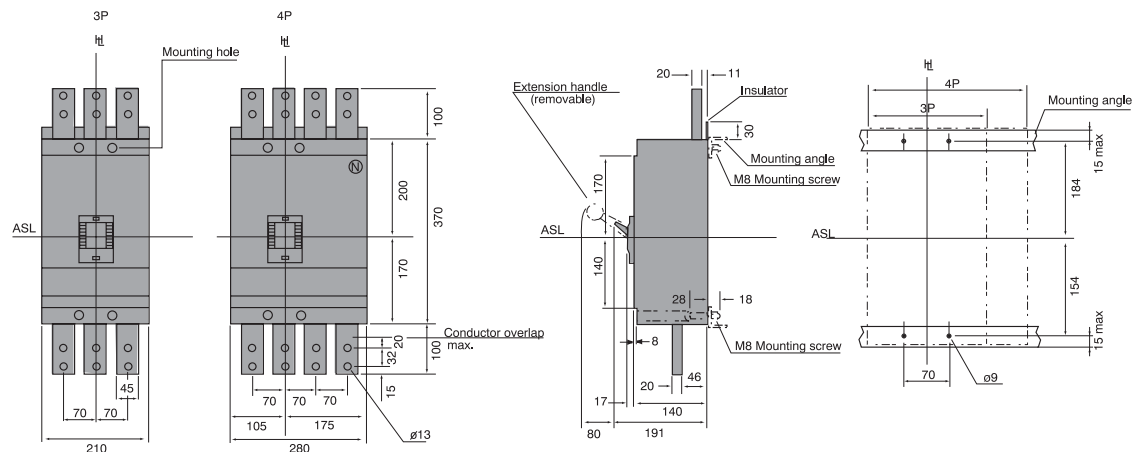
DIMENSIONS

TL800NE, TL1250NE, XS1600NN, XS1600CE, XS1600SE

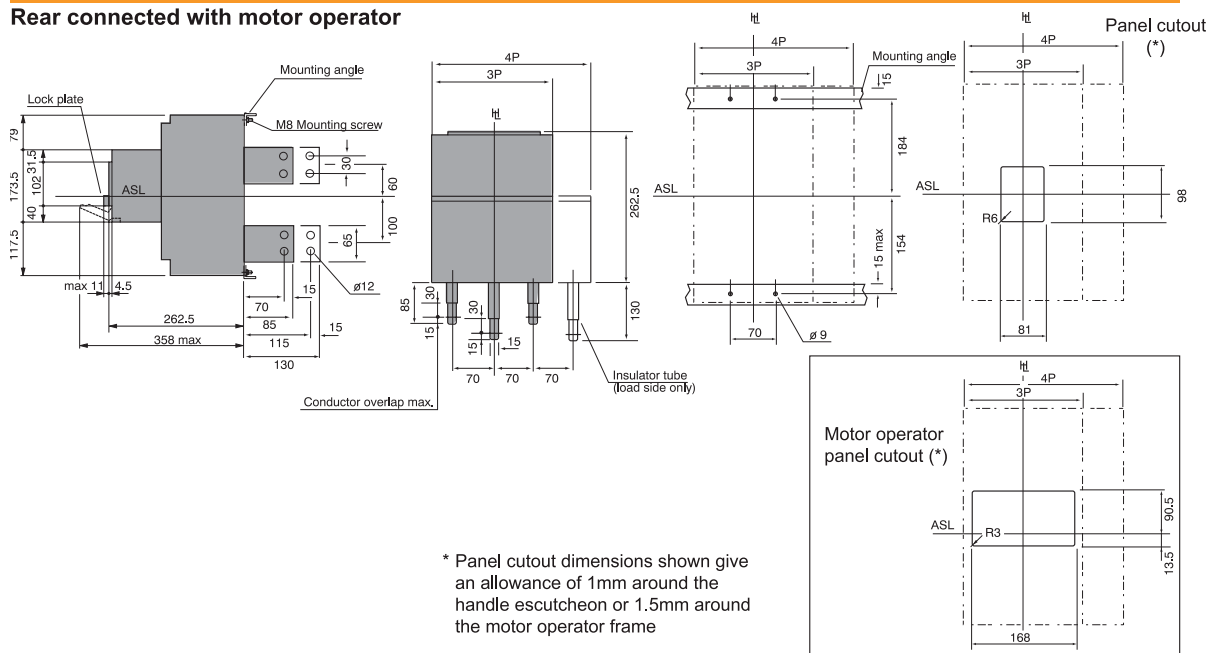
ASL: Arrangement Standard Line

Ht: Handle Frame Centre Line

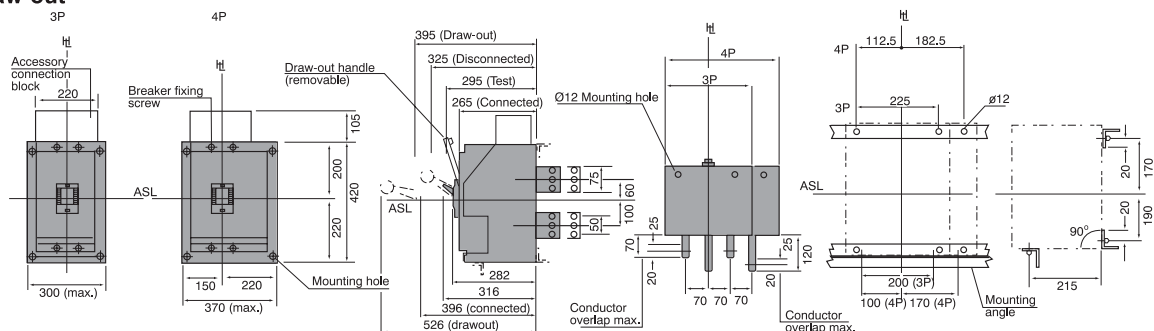
Front connected



Rear connected with motor operator



Draw-out



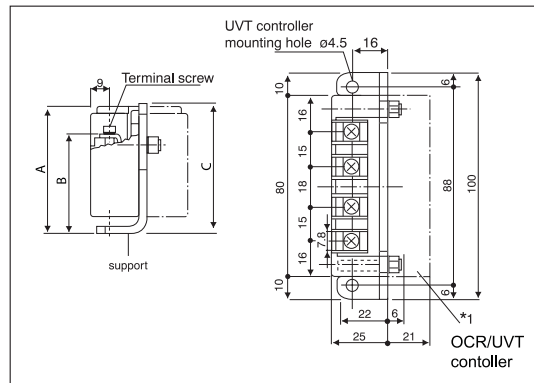


TEMBREAK MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

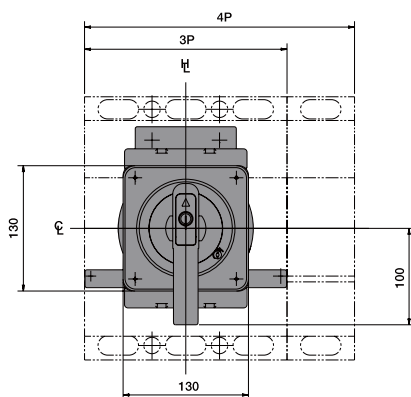
UVT Controller/ OCR Controller

UVT controller, outside configuration

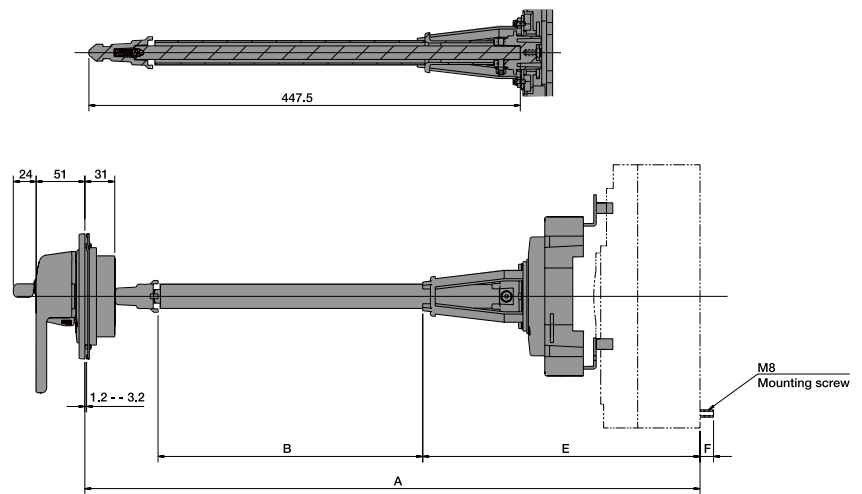


	A	B	C
OCR controller	57.5	45	59
UVT controller	81.5	69	83

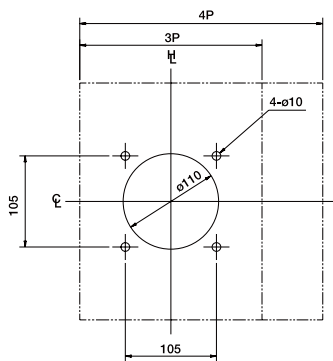
Door Mounted Handle



*The Handle shows "ON" position

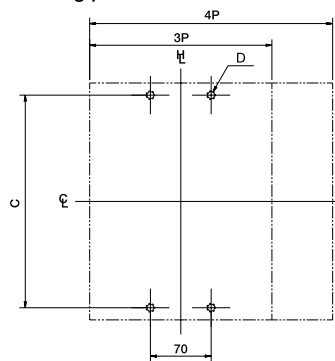


Panel cutout



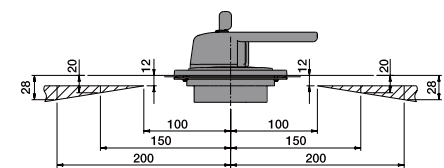
ℓ : Handle Frame Centre Line

Drilling plan



Positional relationship between the hinge and handle as viewed from the OFF side the breaker.

The hinge must be positioned in the hatched area.



*The handle shows "OFF" position

Dimensions table (mm)

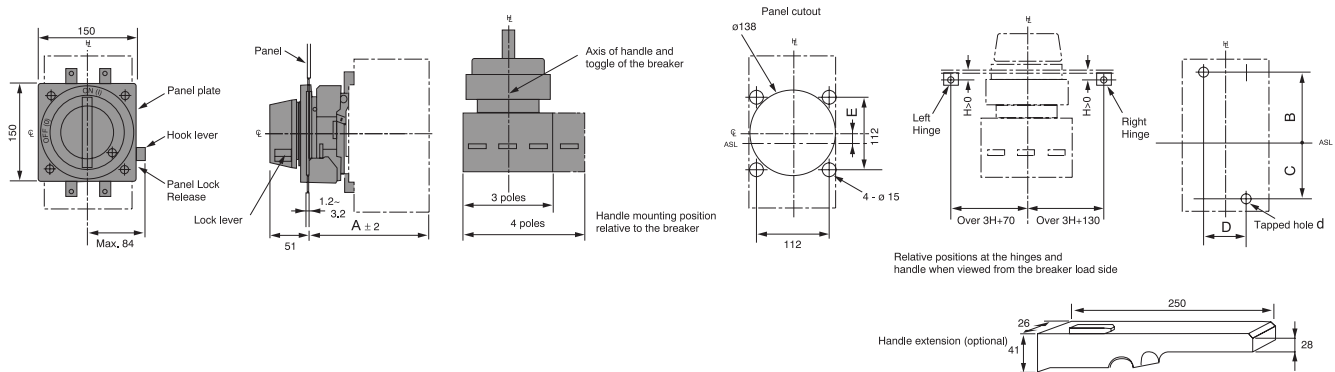
Frame (A)	Breaker	A	B	C	D	E	F	Shaft Support
800	XS800NJ XS800SE XH800SE XH800PJ XH800PE	638	280	243	M8	288	14	Included
1250	XS1250CE XS1250SE	667	280	338	ø9	317	18	Included
1600	XS1600CE XS1600SE TL800NE TL1250NE	687	280	338	ø9	337	18	Included

1. Dimension A is the maximum dimension without the shaft being cut.
2. The shaft can be cut to the required length. If it is necessary to cut the shaft so short that it does not protrude beyond the shaft support, the shaft support may be removed.

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

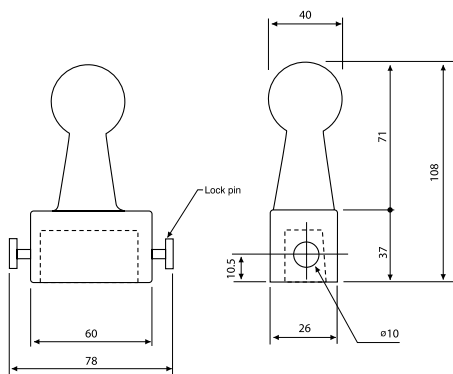
Breaker Mounted Handle



Dimensions table (mm)

Frame (A)	Breaker	A	B	C	D	d	E
800	XS800PJ	168	126	117	70	M8	+4.5
	XS800NJ						
	XS800SE						
	XH800PE						
	XH800SE						
1250	XS1250CE	197	184	154	70	$\phi 9$	+15
	XS1250SE						
1600	XS1600CE	217	184	154	70	$\phi 9$	+15
	XS1600SE						
	TL800NE						
	TL1250NE						

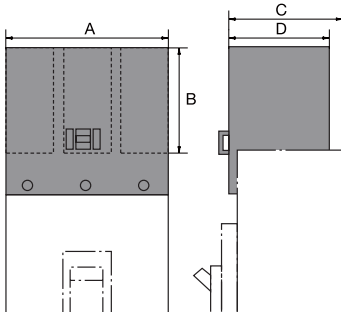
Toggle Extension



TEMBREAK MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

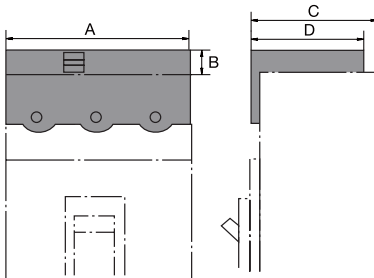
Terminal Covers for Front-Connections



Dimensions table (mm)

Frame (A)	Breaker	Pole	A	B	C	D
800	XS800NJ, XH800PJ XS800SE, XH800SE, XH800PE	3	215	130	99.5 ('ON' side)	99
		4	285		102.5 ('OFF' side)	
1250	XS1250SE, XS1250CE	3	215	130	115	99
		4	285			

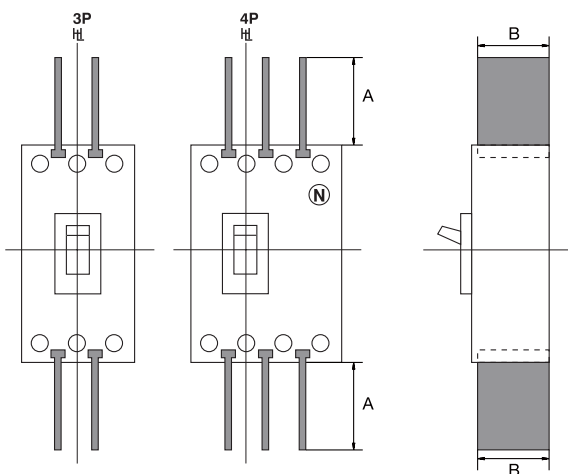
Terminal Covers for Rear Connections and Plug-in Connections



Dimensions table (mm)

Frame (A)	Breaker	Pole	A	B	C	D
800	XS800NJ, XH800PJ XS800SE, XH800SE, XH800PE	3	206	14	102 ('ON' side)	100.5
		4	280	18	102 ('OFF' side)	98

Interpole Barriers



Dimensions table (mm)

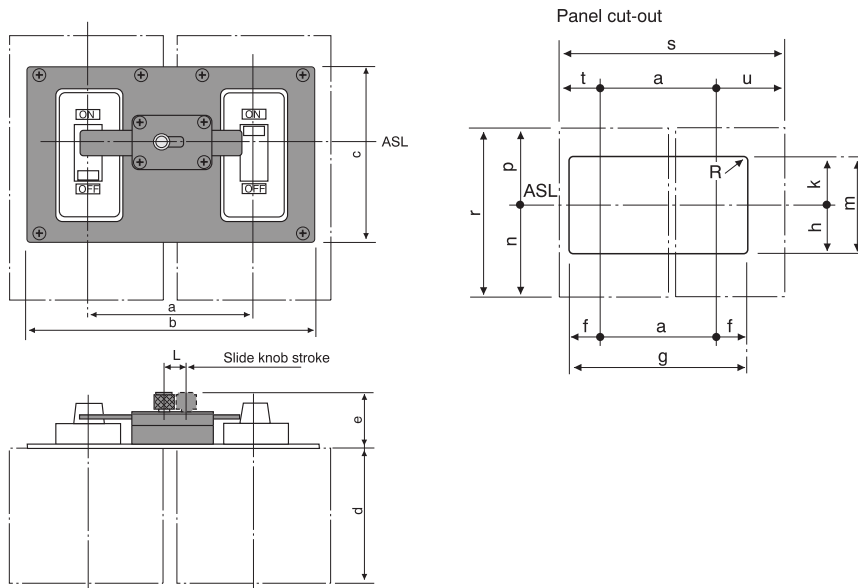
Frame (A)	Breaker	A	B
800	XS800NJ, XH800PJ, XS800SE, XH800SE, XH800PE, TL800NE	110	95
1250	XS1250SE, XS1250CE, TL1250NE	110	95
1600	XS1600CE, XS1600SE	110	95

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

Front Mechanical Interlock

ASL: Arrangement Standard Line



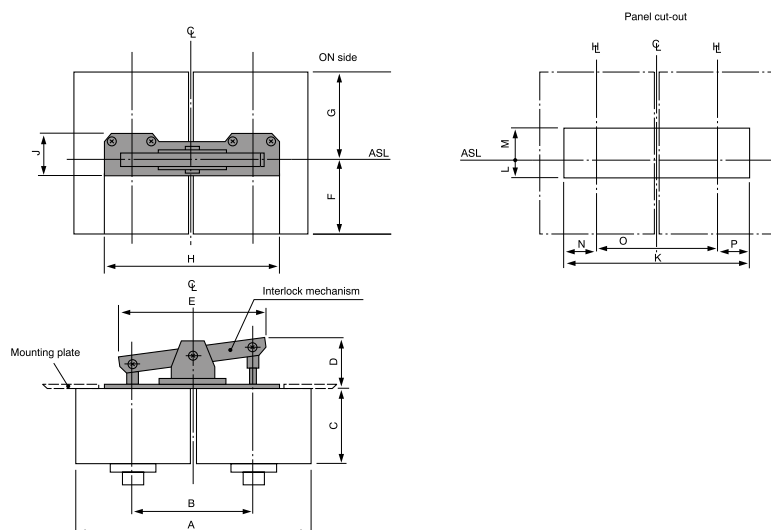
Dimensions table (mm)

Frame (A)	Breaker	Pole	a	b	c	d	e	f	g	h	k	m	n	p	r	s	t	u	L	R
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
	XS800SE	4	290	420	136	103	31.6	66.5	423	57.5	81.5	139	132	141	273	570	105	175	30	
	XH800PJ																			
	XH800SE																			
	XH800PE																			
1250	XS1250SE	3	220	340	129	120	39.6	61.5	343	58	74	132	170	200	370	430	105	105	30	8.5
	XS1250CE	4	290	410	129	120	39.6	61.5	413	58	74	132	170	200	370	570	105	175	30	8.5
1600	XS1600SE	3	220	340	129	140	39.6	61.5	343	58	74	132	170	200	370	430	105	105	30	8.5
	TL800NE																			
	TL1250NE																			
	XS1600CE	4	290	410	129	140	39.6	61.5	413	58	74	132	170	200	370	570	105	175	30	8.5

Rear Mechanical Interlock

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line



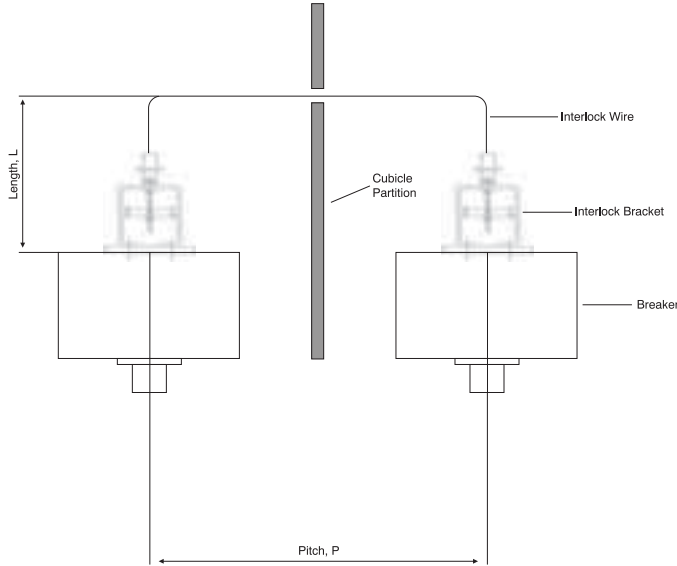
Dimensions table (mm)

Frame (A)	Breaker	Pole	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
800	XS800NJ	3	430	220	103	74	250	132	141	430	83	440	41	52	110	220	110
	XS800SE	4	570	290	103	74	320	132	141	500	83	510	41	52	110	290	110
	XH800PJ																
	XH800SE																
	XH800PE																

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

Wire Mechanical Interlock

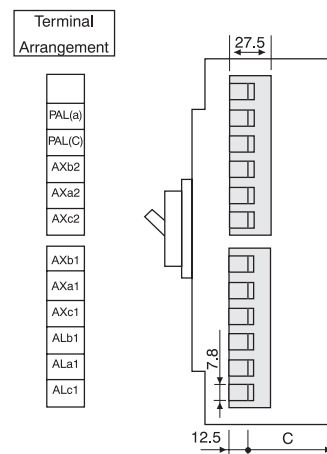
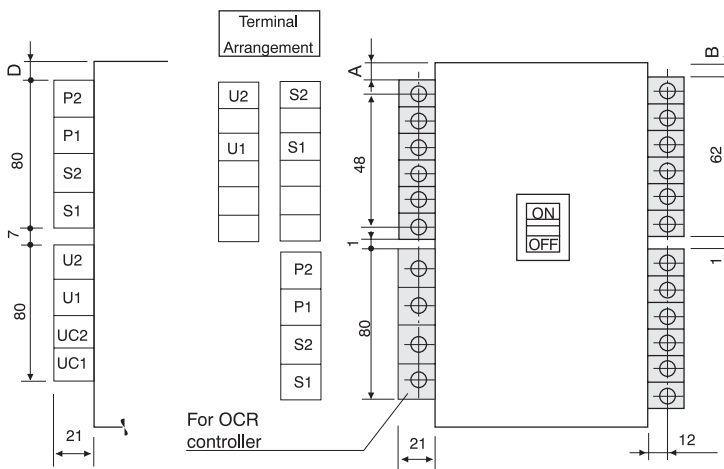


Installation of wire mechanical interlock

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.

Terminal Blocks



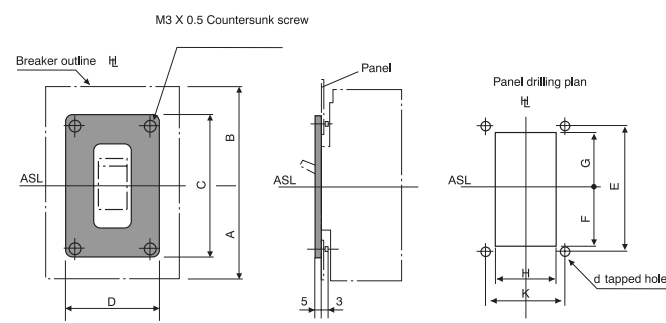
Dimensions table (mm)

Frame (A)	Breaker	A	B	C	D
800	XS800NJ XS800SE XH800PJ XH800SE XH800PE	88	88	60	64
1250	XS1250SE XS1250CE	51	51	72	51
1600	XS1600CE XS1600SE TL1250NE TL800NE	51	51	92	51

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

DIMENSIONS

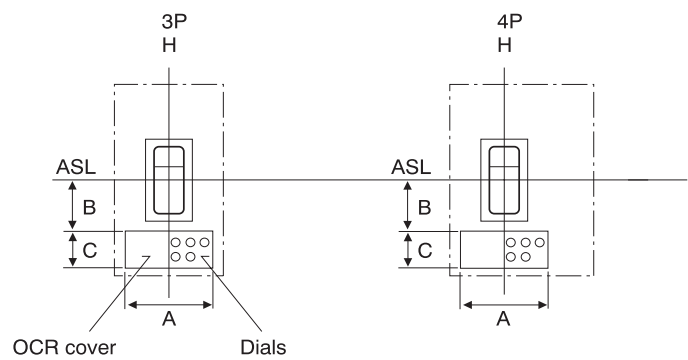
Door Flange



Dimensions table (mm)

Frame (A)	Breaker	A	B	C	D	E	F Min	Max	G Min	Max	H Min	Max	K	d
800	XS800NJ XS800SE XH800PJ XH800SE XH800PE	132	141	135	95	120	48	56	48	56	70	90	80	M3x0.5
1250	XS1250SE XS1250CE	170	200	150	120	135	51	63.5	51	63.5	85	115	80	M3x0.5
1600	XS1600SE XS1600CE TL800NE TL1250NE	170	200	150	120	135	51	63.5	51	63.5	85	115	80	M3x0.5

Panel Cutout for Adjustment Dials



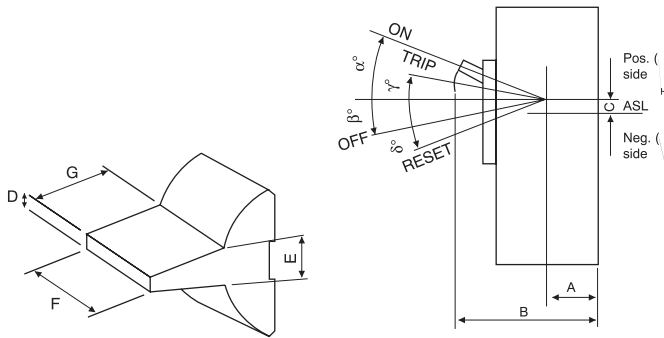
Dimension table (mm)

Frame size (A)	MCCB type	Dimensions		
		A	B	C
800	XS800NJ XS800SE XH800PJ XH800SE XH800PE	210	57	48.5
1250	XS1250CE XS1250SE	210	57.5	58
1600	XS1600CE XS1600SE TL800NE TL1250NE	210	57.5	58

TEMBREAK MOULDED CASE CIRCUIT BREAKERS

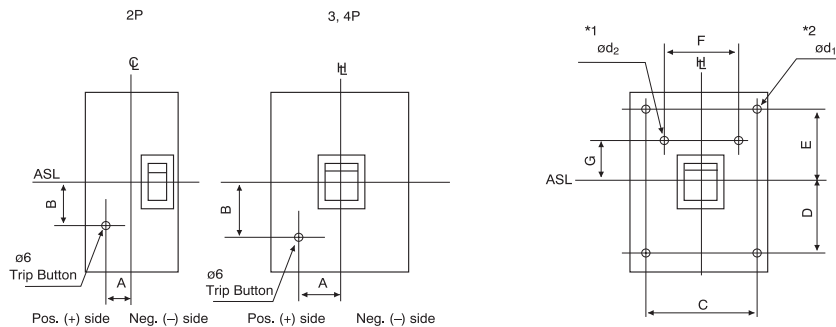
DIMENSIONS

Toggle Operation and Dimensions



Frame (A)	Breaker	Operation angles				Dimensions (mm)								Operation effort (kgf.)			
800	XS800NJ XS800SE XH800PJ XH800PE XH800SE	20	8.5	11	10.5	43.2	144	-6.8	11	12.5	40	33	12.3	15	24	100.8	
1250	XS1250CE XS1250SE	22	4	12	9	73.5	171.8	-2.8	11	12.5	40	30	16	30	35	98.3	
1600	XS1600CE XS1600SE TL800NE TL1250NE	22	4	12	9	93.5	191.8	-2.8	11	12.5	40	30	16	30	35	98.3	

Position of Trip Button and Externally Mounted Accessories



Frame (A)	Breaker	Poles	Trip button		Diameter					Lower hole			
			A	B	C	D	E	F	G	ød ₁	Depth	ød ₂	Depth
800	XS800NJ	3	+15	74	90	125.5	134.5	105	73	4.65	5.1	5.65	6
	XS800SE	4			160								
	XH800PJ												
	XH800PE												
	XH800SE												
1250	XS1250CE	3	0	72.5	100	155	185	-	-	4.65	5	-	-
	XS1250SE	4			170								
1600	XS1600CE	3	0	72.5	100	155	185	-	-	4.65	5	-	-
	XS1600SE	4			170								
	TL800NE												
	TL1250NE												

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS 16A TO 630

1. Welcome to TemBreak 2
2. Ratings and Specifications
3. Operating Characteristics
4. Co-ordination Characteristics
5. Accessories
6. Installation
7. Dimensions

TEMBREAK 2

MINI MOULDED CASE CIRCUIT BREAKERS 10A TO 100A

8. TemBreak 2 MINI Moulded Case Circuit Breakers

TEMBREAK 2

MOULDED CASE CIRCUIT BREAKERS 630A TO 1600A

9. TemBreak Moulded Case Circuit Breakers

10. Order Codes

• 1P MCCBs	179
• Accessories for 1P MCCBs	180
• 125A Frame MCCBs	181
• Accessories for 125A Frame MCCBs	182
• 250A Frame MCCBs	189
• Accessories for 250A Frame MCCBs	192
• 400A and 630A Frame MCCBs	198
• Accessories for 400A & 630A Frame MCCBs	204
• TemBreak 800A Frame MCCBs	211
• Internal Accessories for TemBreak 800A Frame MCCBs	213
• External Accessories for TemBreak 800A Frame MCCBs	215
• TemBreak 1250A & 1600A Frame MCCBs	219
• Internal Accessories for 1250A & 1600A Frame MCCBs	221
• External Accessories for 1250A & 1600A Frame MCCBs	223
• TemBreak 2 Mini MCCBs	228
• Accessories for Tembreak 2 Mini MCCBs	229
• Switch-Disconnectors, All Frame Sizes	232
• TemTransfer	233

A note on item codes:

13-digit EAN codes are shown in full against applicable items. These correspond to the barcode on the product packaging and facilitate inventory management using barcode scanning.

Only the last 6 digits of the code are required to identify an item from the TemBreak 2 range of products. The preceding 7 digits may be omitted from orders and enquiries.

ORDER CODES

1P MCCBS



Dimensions		
h	(mm)	155
w	(mm)	30
d	(mm)	68

Model	I_n (A)	1P FC
S125-NF $I_{cu}=25$ kA Thermal Magnetic	16	4547560 251108
	20	4547560 251115
	25	4547560 251122
	32	4547560 251139
	40	4547560 251146
	50	4547560 251153
	63	4547560 251160
	80	4547560 251177
	100	4547560 251184
	125	4547560 251191



Dimensions		
h	(mm)	165
w	(mm)	35
d	(mm)	68

Model	I_n (A)	1P FC
S160-NF $I_{cu}=25$ kA Thermal Magnetic	16	4547560 311390
	20	4547560 311383
	25	4547560 311376
	32	4547560 311369
	40	4547560 311352
	50	4547560 311345
	63	4547560 311338
	80	4547560 323508
	100	4547560 311321
	125	4547560 311314
	160	4547560 311307

FC: Front Connection

ACCESSORIES FOR 1P MCCBS

Shunt Trips (SHT)

Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
AC 100-120V for S160-NF	NA	NA	4547560 701009	T2SH16A10WA
AC 200-240V for S160-NF	NA	NA	4547560 701016	T2SH16A20WA
AC 380-450V for S160-NF	NA	NA	4547560 701023	T2SH16A40WA
DC 24V for S160-NF	NA	NA	4547560 701030	T2SH16D02WA
DC 48V for S160-NF	NA	NA	4547560 701047	T2SH16D04WA
DC 100-120V for S160-NF	NA	NA	4547560 701054	T2SH16D10WA
DC 200-240V for S160-NF	NA	NA	4547560 701061	T2SH16D20WA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 3mmø, length 500mm

Extension Bars (FB)

Flat Bars Field Fit Accessory	Order Code	Parts No.
2 bars for S125-NF	4547560 710070	T2FB121BA
2 bars for S160-NF	4547560 710117	T2FB251BA

Solderless Terminals (FW)

Solderless Terminals Field Fit Accessory	Order Code	Parts No.
2 clamps for S125-NF	4547560 714573	T2FW12S1A
2 clamps for S160-NF	4547560 714566	T2FW12L1A

Terminal Covers For Front Connections (CF)

Field Fit Accessory	Order Code	Parts No.
2 covers for S125-NF	4547560 739705	T2CF121SLNGA
2 covers for S160-NF	4547560 739804	T2CF161SLNGA
Terminal cover lock	4547560 738029	T2CF16LA

Terminal Covers For Solderless Terminals (CS)

Field Fit Accessory	Order Code	Parts No.
2 covers for S125-NF	4547560 745508	T2CS121SGA
2 covers for S160-NF	4547560 745607	T2CS161SGA
Terminal cover lock	4547560 738029	T2CF16LA

Handle Locks (HL)



Field Fit Accessory	Order Code	Parts No.
For S125-NF	TBA	XKC2
For S160-NF	4547560 737015	T2HL25B

ORDER CODES

125A FRAME MCCBS



Dimensions		E125	H125
		S125	L125
h (mm)		155	165
w (mm)	3 pole	90	105
	4 pole	120	140
d (mm)		68	103

Model	I _R (A)	3P FC	4P FC
E125-NJ I _{cu} = 25 kA Thermal Magnetic	12.5-20	4547560 241208	4547560 241307
	20-32	4547560 241215	4547560 241314
	32-50	4547560 241222	4547560 241321
	40-63	4547560 241239	4547560 241338
	63-100	4547560 241246	4547560 241345
	80-125	4547560 241253	4547560 241352
S125-NJ I _{cu} = 36kA Thermal Magnetic	12.5-20	4547560 241406	4547560 241505
	20-32	4547560 241413	4547560 241512
	32-50	4547560 241420	4547560 241529
	40-63	4547560 241437	4547560 241536
	63-100	4547560 241444	4547560 241543
	80-125	4547560 241451	4547560 241550
S125-GJ I _{cu} = 65kA Thermal Magnetic	12.5-20	4547560 241604	4547560 241703
	20-32	4547560 241611	4547560 241710
	32-50	4547560 241628	4547560 241727
	40-63	4547560 241635	4547560 241734
	63-100	4547560 241642	4547560 241741
	80-125	4547560 241659	4547560 241758
H125-NJ* I _{cu} = 125kA Thermal Magnetic	12.5-20	4547560 241802	4547560 241901
	20-32	4547560 241819	4547560 241918
	32-50	4547560 241826	4547560 241925
	40-63	4547560 241833	4547560 241932
	63-100	4547560 241840	4547560 241949
	80-125	4547560 241857	4547560 241956
L125-NJ* I _{cu} = 200kA Thermal Magnetic	12.5-20	4547560 242007	4547560 242106
	20-32	4547560 242014	4547560 242113
	32-50	4547560 242021	4547560 242120
	40-63	4547560 242038	4547560 242137
	63-100	4547560 242045	4547560 242144
	80-125	4547560 242052	4547560 242151

FC: Front Connection

ACCESSORIES FOR 125A FRAME MCCBS

Auxiliary Switches (AX) General Purpose



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Changeover	4547560 700347	T2AX00M3STA	4547560 700002	T2AX00M3SWA
Changeover for low currents (mA)	4547560 700323	T2AX00M3RTA	4547560 700101	T2AX00M3RWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 1.8mmø, length 700mm

Auxiliary Switches (AX) Heavy Duty



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Normally open	4547560 700309	T2AX00B1STA	NA	NA
Normally closed	4547560 700316	T2AX00B2STA	NA	NA

*: with terminal **: with lead wire

Alarm Switches (AL) General Purpose



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Changeover	4547560 700743	T2AL00M3STA	4547560 700408	T2AL00M3SWA
Changeover for low currents (mA)	4547560 700729	T2AL00M3RTA	4547560 700507	T2AL00M3RWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 1.8mmø, length 700mm

Alarm Switches (AL) Heavy Duty



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Normally open	4547560 700705	T2AL00B1STA	NA	NA
Normally closed	4547560 700712	T2AL00B2STA	NA	NA

*: with terminal **: with lead wire

Shunt Trips (SHT)



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
AC 100-120V	4547560 700903	T2SH00A10TA	4547560 700804	T2SH00A10WA
AC 200-240V	4547560 700910	T2SH00A20TA	4547560 700811	T2SH00A20WA
AC 380-450V	4547560 700927	T2SH00A40TA	4547560 700828	T2SH00A40WA
DC 24V	4547560 700934	T2SH00D02TA	4547560 700835	T2SH00D02WA
DC 48V	4547560 700941	T2SH00D04TA	4547560 700842	T2SH00D04WA
DC 100-120V	4547560 700958	T2SH00D10TA	4547560 700859	T2SH00D10WA
DC 200-240V	4547560 700965	T2SH00D20TA	4547560 700866	T2SH00D20WA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 3mmø, length 500mm

ORDER CODES

ACCESSORIES FOR 125A FRAME MCCBS

Instantaneous Undervoltage Trips (UVT)



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
AC 100-120V	4547560 701207	T2UV00A10NTA	4547560 701108	T2UV00A10NWA
AC 200-240V	4547560 701214	T2UV00A20NTA	4547560 701115	T2UV00A20NWA
AC 380-450V	4547560 701221	T2UV00A40NTA	4547560 701122	T2UV00A40NWA
DC 24V	4547560 701238	T2UV00D02NTA	4547560 701139	T2UV00D02NWA
DC 100-120V	4547560 701245	T2UV00D10NTA	4547560 701146	T2UV00D10NWA
DC 200-240V	4547560 701252	T2UV00D20NTA	4547560 701153	T2UV00D20NWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 3mmø, length 500mm

Extension Bars (FB)



Flat Bars Field Fit Accessory	Order Code	Parts No.
6 bars for E, S type	4547560 710032	T2FB123BA
8 bars for E, S type	4547560 710056	T2FB124BA
6 bars for H, L type	4547560 710155	T2FB253BA
8 bars for H, L type	4547560 710179	T2FB254BA

Rear Connections (RC)



Flat Bar Studs Field Fit Accessory	Order Code	Parts No.
6 studs for E, S type	4547560 711015	T2RP123SA
8 studs for E, S type	4547560 711022	T2RP124SA
6 studs for H, L type	4547560 711152	T2RP253LA
8 studs for H, L type	4547560 711169	T2RP254LA

Fixed Part of Plug-in MCCB (PM)



Plug-in Mount Blocks Field Fit Accessory	Order Code	Parts No.
3P for E, S type	4547560 712104	T2PM12B3A
4P for E, S type	4547560 712203	T2PM12B4A
3P for H, L type	4547560 712302	T2PM25B3A
4P for H, L type	4547560 712401	T2PM25B4A

ACCESSORIES FOR 125A FRAME MCCBS

Extension Terminal for Fixed Part of Plug-in MCCB (PF)



Flat Bar for PIB Field Fit Accessory	Order Code	Parts No.
6 bars for E, S type	4547560 745812	T2PF123BA
8 bars for E, S type	4547560 745829	T2PF124BA
6 bars for H, L type	4547560 745836	T2PF253BA
8 bars for H, L type	4547560 745843	T2PF254BA

Control Wiring Terminals for Plug-in MCCBs



Plug for Removable Part of MCCB, 3 terminals Field Fit Accessory	Order Code	Parts No.
Plug for auxiliary switches and alarm switches	4547560 800108	2H6959CAA1
Plug for shunt trips and undervoltage trips	4547560 800115	2H6959CBA1

Order one plug for each internal accessory

Control Wiring Terminals for Plug-in MCCBs



Socket for Fixed Part of MCCB, 3 terminals Field Fit Accessory	Order Code	Parts No.
Socket	4547560 745003	T2TP003A

Order one socket for each electrical accessory

Solderless Terminals (FW)



Field Fit Accessory	Order Code	Parts No.
6 clamps for E, S type	4547560 714511	T2FW12S3A
8 clamps for E, S type	4547560 714528	T2FW12S4A
6 clamps for H, L type	4547560 714542	T2FW12L3A
8 clamps for H, L type	4547560 714559	T2FW12L4A

Motor Operation (MC)



Field Fit Accessory	Order Code	Parts No.
E, S type for 100V to 110V AC	4547560 755606	T2MC12A10NB
E, S type for 200V to 220V AC	4547560 755613	T2MC12A20NB
E, S type for 230V to 240V AC	4547560 755620	T2MC12A24NB
E, S type for 24V DC	4547560 755637	T2MC12D02NB
E, S type for 48V DC	4547560 755644	T2MC12D04NB
E, S type for 100V DC	4547560 755651	T2MC12D10NB
H, L type for 100V to 110V AC	4547560 755705	T2MC25A10NB
H, L type for 200V to 220V AC	4547560 755712	T2MC25A20NB
H, L type for 230V to 240V AC	4547560 755729	T2MC25A24NB
H, L type for 24V DC	4547560 755736	T2MC25D02NB
H, L type for 48V DC	4547560 755743	T2MC25D04NB
H, L type for 100V DC	4547560 755750	T2MC25D10NB

ORDER CODES

ACCESSORIES FOR 125A FRAME MCCBS

Motor Operation (MC) with Automatic Reset



Field Fit Accessory	Order Code	Parts No.
E, S type for 100V to 110V AC	4547560 755873	T2MC12A10AB
E, S type for 200V to 220V AC	4547560 755880	T2MC12A20AB
E, S type for 230V to 240V AC	4547560 755897	T2MC12A24AB
E, S type for 24V DC	4547560 755675	T2MC12D02AB
E, S type for 48V DC	4547560 755682	T2MC12D04AB
E, S type for 100V DC	4547560 755699	T2MC12D10AB
H, L type for 100V to 110V AC	4547560 755972	T2MC25A10AB
H, L type for 200V to 220V AC	4547560 755989	T2MC25A20AB
H, L type for 230V to 240V AC	4547560 755996	T2MC25A24AB
H, L type for 24V DC	4547560 755774	T2MC25D02AB
H, L type for 48V DC	4547560 755781	T2MC25D04AB
H, L type for 100V DC	4547560 755798	T2MC25D10AB

Motor plus keylock available on request

Door Flanges

Field Fit Accessory	Order Code	Parts No.
For toggle operation	4547560 744907	T2DF25A
For motorised operation	4547560 744914	T2DM25A

External Operating Handles (Breaker Mounted Type) (HB)



OCR accessible type

Field Fit Accessory	Order Code	Parts No.
E, S type for Black handle IP3X	4547560 756528	T2HB12UR3BNB
E, S type for Black handle IP3X with keylock	4547560 756504	T2HB12UR3BKB
E, S type for Red handle IP3X	4547560 757006	T2HB12UR3RNB
E, S type for Red handle IP3X with keylock	4547560 756986	T2HB12UR3RKB
E, S type for Black handle IP5X	4547560 756535	T2HB12UR5BNB
E, S type for Black handle IP5X with keylock	4547560 756511	T2HB12UR5BKB
E, S type for Red handle IP5X	4547560 757013	T2HB12UR5RNB
E, S type for Red handle IP5X with keylock	4547560 756993	T2HB12UR5RKB
H, L type for Black handle IP3X	4547560 757327	T2HB25UR3BNB
H, L type for Black handle IP3X with keylock	4547560 757303	T2HB25UR3BKB
H, L type for Red handle IP3X	4547560 757808	T2HB25UR3RNB
H, L type for Red handle IP3X with keylock	4547560 757785	T2HB25UR3RKB
H, L type for Black handle IP5X	4547560 757334	T2HB25UR5BNB
H, L type for Black handle IP5X with keylock	4547560 757310	T2HB25UR5BKB
H, L type for Red handle IP5X	4547560 757815	T2HB25UR5RNB
H, L type for Red handle IP5X with keylock	4547560 757792	T2HB25UR5RKB

ACCESSORIES FOR 125A FRAME MCCBS

External Operating Handles (Door Mounted Type) (HP)



OCR accessible type

Field Fit Accessory	Order Code	Parts No.
E, S type for Black handle IP54	4547560 758294	T2HP12R5BNAPS4BPS4A
E, S type for Black handle IP54 with keylock	4547560 758133	T2HP12R5BKAPS4BPS4A
E, S type for Red handle IP54	4547560 758935	T2HP12R5RNAPS4BPS4A
E, S type for Red handle IP54 with keylock	4547560 758775	T2HP12R5RKAPS4BPS4A
E, S type for Black Handle IP65	4547560 758331	T2HP12R6BNAPS4BPS4A
E, S type for Black Handle IP65 with keylock	4547560 758171	T2HP12R6BKAPS4BPS4A
E, S type for Red Handle IP65	4547560 758973	T2HP12R6RNAPS4BPS4A
E, S type for Red Handle IP65 with keylock	4547560 758812	T2HP12R6RKAPS4BPS4A
H, L type for Black handle IP54	4547560 759291	T2HP25R5BNAPS4BPS4A
H, L type for Black handle IP54 with keylock	4547560 759130	T2HP25R5BKAPS4BPS4A
H, L type for Red handle IP54	4547560 759932	T2HP25R5RNAPS4BPS4A
H, L type for Red handle IP54 with keylock	4547560 759772	T2HP25R5RKAPS4BPS4A
H, L type for Black Handle IP65	4547560 759338	T2HP25R6BNAPS4BPS4A
H, L type for Black Handle IP65 with keylock	4547560 759178	T2HP25R6BKAPS4BPS4A
H, L type for Red Handle IP65	4547560 759970	T2HP25R6RNAPS4BPS4A
H, L type for Red Handle IP65 with keylock	4547560 759819	T2HP25R6RKAPS4BPS4A

Slide Type Mechanical Interlocks (MS)



Field Fit Accessory	Order Code	Parts No.
E,S type for front / rear connection 125AF 3P	4547560 733512	T2MS123SFA
E,S type for front / rear connection 125AF 4P	4547560 733529	T2MS124SFA
E,S type for plug-in type 125AF 3P	4547560 733543	T2MS123SPA
E,S type for plug-in type 125AF 4P	4547560 733550	T2MS124SPA
H,L type for front / rear connection 125AF 3P	4547560 733642	T2MS253LFA
H,L type for front / rear connection 125AF 4P	4547560 733659	T2MS254LFA
H,L type for plug-in type 125AF 3P	4547560 733666	T2MS253LPA
H,L type for plug-in type 125AF 4P	4547560 733673	T2MS254LPA

Order one part between two MCCBs

Link Type Mechanical Interlocks (ML)



Field Fit Accessory	Order Code	Parts No.
Right side for E, S type	4547560 735004	T2ML12RA
Left side 3P for E, S type	4547560 735011	T2ML12L3A
Left side 4P for E, S type	4547560 735028	T2ML12L4A
Right side for H, L type	4547560 735103	T2ML25RA
Left side 3P for H, L type	4547560 735110	T2ML25L3A
Left side 4P for H, L type	4547560 735127	T2ML25L4A

Order one interlock part for each MCCB

ORDER CODES

ACCESSORIES FOR 125A FRAME MCCBS

Wire Type Mechanical Interlocks (MW)



Field Fit Accessory	Order Code	Parts No.
Interlock for E, S type	4547560 736025	T2MW12CA
Interlock for H, L type	4547560 736124	T2MW25CA
1m length interlock cable	4547560 736063	T2MW00SA
1.5m length interlock cable	4547560 736056	T2MW00LA

Order one interlock part for each MCCB and one cable between two MCCBs

Handle Locks (HL)



Field Fit Accessory	Order Code	Parts No.
For 125 / 250AF	4547560 737015	T2HL25B

Castell Lock

Field Fit Accessory	Order Code	Parts No.
Fittings for panel mounted type handle (lock and key not included)	4547560 737053	T2KL25PA
Fittings for toggle operated MCCB (lock and key not included) for E, S type	4547560 737022	T2KL12BA
Fittings for toggle operated MCCB (lock and key not included) for H, L type	4547560 737046	T2KL25BA

Terminal Covers for Front Connection (CF)



Field Fit Accessory	Order Code	Parts No.
3P, 2 covers for E, S type	4547560 738326	T2CF123SLNGA
4P, 2 covers for E, S type	4547560 738340	T2CF124SLNGA
3P, 2 covers for H, L type	4547560 738906	T2CF253LLNGA
4P, 2 covers for H, L type	4547560 738920	T2CF254LLNGA
2 earth barriers for 3P barrier for E, S type	4547560 708633	T2BE123A
2 earth barriers for 4P barrier for E, S type	4547560 708640	T2BE124A
Terminal cover lock 1 piece	4547560 738005	T2CF00LA

ACCESSORIES FOR 125A FRAME MCCBS

Terminal Covers for Rear Connection and Plug-In (CR)



Field Fit Accessory	Order Code	Parts No.
3P, 2 covers for E, S type	4547560 741517	T2CR123SGA
4P, 2 covers for E, S type	4547560 741524	T2CR124SGA
4P, 2 covers for H, L type	4547560 741715	T2CR253SGA
3P, 2 covers for H, L type	4547560 741722	T2CR254SGA
Terminal cover lock 1 piece	4547560 738005	T2CF00LA

Terminal Covers for Solderless Terminals (CS)



Field Fit Accessory	Order Code	Parts No.
3P, 2 covers for E, S type	4547560 745522	T2CS123SGA
4P, 2 covers for E, S type	4547560 745539	T2CS124SGA
3P, 2 covers for H, L type	4547560 745614	T2CS253SGA
4P, 2 covers for H, L type	4547560 745621	T2CS254SGA
Terminal cover lock 1 piece	4547560 738005	T2CF00LA

Interpole Barriers (BA)



Field Fit Accessory	Order Code	Parts No.
3P, 2 barriers for E, S type	4547560 743016	T2BA123SHA
4P, 3 barriers for E, S type	4547560 743023	T2BA124SHA
3P, 2 barriers for H, L type	4547560 743214	T2BA253LHA
4P, 3 barriers for H, L type	4547560 743221	T2BA254LHA

Interpole barriers are supplied as standard: 2 pieces per 3P MCCB, 3 pieces per 4P MCCB. For additional barriers please order individually

Lead Terminal Block



Field Fit Accessory	Order Code	Parts No.
Left side	TBA	TBA
Right side	TBA	TBA

DIN Rail Adapter



Field Fit Accessory	Order Code	Parts No.
DIN rail adapter for 125AF	4547560 745102	T2DA12A

ORDER CODES

250A FRAME MCCBS



Dimensions		H160	
		S160	L160
		E250	H250
		S250	L250
h (mm)		165	165
w (mm)	3 pole	105	105
	4 pole	140	140
d (mm)		68	103

Model	I_R (A)	3P FC	4P FC
S160-NJ $I_{cu} = 36$ kA * $I_{cu} = 30$ kA Thermal Magnetic	12.5-20*	4547560 311413	4547560 311512
	20-32*	4547560 311420	4547560 311529
	32-50	4547560 311437	4547560 311536
	40-63	4547560 311444	4547560 311543
	63-100	4547560 311451	4547560 311550
	80-125	4547560 311468	4547560 311567
	100-160	4547560 311406	4547560 311505
S160-GJ $I_{cu} = 65$ kA Thermal Magnetic	32-50	4547560 311635	4547560 311734
	40-63	4547560 311642	4547560 311741
	63-100	4547560 311659	4547560 311758
	80-125	4547560 311666	4547560 311765
	100-160	4547560 311604	4547560 311703
H160-NJ $I_{cu} = 125$ kA Thermal Magnetic	100-160	4547560 318467	4547560 318566
L160-NJ $I_{cu} = 200$ kA Thermal Magnetic	100-160	4547560 318665	4547560 318764

FC: Front Connection

250A FRAME MCCBS

Model	I_R (A)	3P FC	4P FC
E250-NJ $I_{cu} = 25\text{kA}$ Thermal Magnetic	12.5-20	4547560 311833	4547560 311932
	20-32	4547560 311840	4547560 311949
	32-50	4547560 311857	4547560 311956
	40-63	4547560 311864	4547560 311963
	63-100	4547560 311871	4547560 311970
	80-125	4547560 311888	4547560 311987
	100-160	4547560 311802	4547560 311901
	125-200	4547560 311895	4547560 311994
	160-250	4547560 311819	4547560 311918
S250-NJ $I_{cu} = 36\text{ kA}$ Thermal Magnetic	100-160	4547560 312007	4547560 312106
	125-200	4547560 312045	4547560 312144
	160-250	4547560 312014	4547560 312113
S250-GJ $I_{cu} = 65\text{ kA}$ Thermal Magnetic	100-160	4547560 312205	4547560 312304
	125-200	4547560 312243	4547560 312342
	160-250	4547560 312212	4547560 312311
H250-NJ $I_{cu} = 125\text{ kA}$ Thermal Magnetic	100-160	4547560 312403	4547560 312502
	160-250	4547560 312410	4547560 312519
L250-NJ $I_{cu} = 200\text{ kA}$ Thermal Magnetic	100-160	4547560 312601	4547560 312700
	160-250	4547560 312618	4547560 312717

FC: Front Connection

ORDER CODES

250A FRAME MCCBS

Model		I_R (A)	3P FC	4P FC
S250-PE $I_{cu} = 70$ kA Electronic Electronic Protection Codes: A - LSI; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	16-40	4547560 327704	4547560 327728
	AN	16-40	NA	4547560 327742
	AP	16-40	4547560 327711	4547560 327735
	APN	16-40	NA	4547560 327759
	A	50-125	4547560 327803	4547560 327827
	AN	50-125	NA	4547560 327841
	AP	50-125	4547560 327810	4547560 327834
	APN	50-125	NA	4547560 327858
	A	100-250	4547560 319006	4547560 319013
	AN	100-250	NA	4547560 319044
	AP	100-250	4547560 319020	4547560 319037
	APN	100-250	NA	4547560 319051
	A	16-40	4547560 328008	4547560 328022
	AN	16-40	NA	4547560 328046
H250-NE $I_{cu} = 125$ kA Electronic Electronic Protection Codes: A - LSI; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	AP	16-40	4547560 328015	4547560 328039
	APN	16-40	NA	4547560 328053
	A	50-125	4547560 328107	4547560 328121
	AN	50-125	NA	4547560 328145
	AP	50-125	4547560 328114	4547560 328138
	APN	50-125	NA	4547560 328152
	A	100-250	4547560 319105	4547560 319112
	AN	100-250	NA	4547560 319143
	AP	100-250	4547560 319129	4547560 319136
	APN	100-250	NA	4547560 319150

FC: Front Connection

ACCESSORIES FOR 250A FRAME MCCBS

Auxiliary Switches (AX) General Purpose



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Changeover	4547560 700347	T2AX00M3STA	4547560 700002	T2AX00M3SWA
Changeover for low currents (mA)	4547560 700323	T2AX00M3RTA	4547560 700101	T2AX00M3RWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 1.8mmø, length 700mm

Auxiliary Switches (AX) Heavy Duty



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Normally open	4547560 700309	T2AX00B1STA	NA	NA
Normally closed	4547560 700316	T2AX00B2STA	NA	NA

*: with terminal **: with lead wire

Alarm Switches (AL) General Purpose



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Changeover	4547560 700743	T2AL00M3STA	4547560 700408	T2AL00M3SWA
Changeover for low currents (mA)	4547560 700729	T2AL00M3RTA	4547560 700507	T2AL00M3RWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 1.8mmø, length 700mm

Alarm Switches (AL) Heavy Duty



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Normally open	4547560 700705	T2AL00B1STA	NA	NA
Normally closed	4547560 700712	T2AL00B2STA	NA	NA

*: with terminal **: with lead wire

Shunt Trips (SHT)



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
AC 100-120V	4547560 700903	T2SH00A10TA	4547560 700804	T2SH00A10WA
AC 200-240V	4547560 700910	T2SH00A20TA	4547560 700811	T2SH00A20WA
AC 380-450V	4547560 700927	T2SH00A40TA	4547560 700828	T2SH00A40WA
DC 24V	4547560 700934	T2SH00D02TA	4547560 700835	T2SH00D02WA
DC 48V	4547560 700941	T2SH00D04TA	4547560 700842	T2SH00D04WA
DC 100-120V	4547560 700958	T2SH00D10TA	4547560 700859	T2SH00D10WA
DC 200-240V	4547560 700965	T2SH00D20TA	4547560 700866	T2SH00D20WA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 3mmø, length 500mm

ORDER CODES

ACCESSORIES FOR 250A FRAME MCCBS

Instantaneous Undervoltage Trips (UVT)



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
AC 100-120V	4547560 701207	T2UV00A10NTA	4547560 701108	T2UV00A10NWA
AC 200-240V	4547560 701214	T2UV00A20NTA	4547560 701115	T2UV00A20NWA
AC 380-450V	4547560 701221	T2UV00A40NTA	4547560 701122	T2UV00A40NWA
DC 24V	4547560 701238	T2UV00D02NTA	4547560 701139	T2UV00D02NWA
DC 100-120V	4547560 701245	T2UV00D10NTA	4547560 701146	T2UV00D10NWA
DC 200-240V	4547560 701252	T2UV00D20NTA	4547560 701153	T2UV00D20NWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 3mmø, length 500mm

Extension Bars (FB)

Flat Bars Field Fit Accessory	Order Code	Parts No.
6 Bars	4547560 710155	T2FB253BA
8 Bars	4547560 710179	T2FB254BA

Rear Connections (RC)



Flat Bar Studs Field Fit Accessory	Order Code	Parts No.
6 studs for E, S type	4547560 711121	T2RP253SA
8 studs for E, S type	4547560 711138	T2RP254SA
6 studs for H, L type	4547560 711152	T2RP253LA
8 studs for H, L type	4547560 711169	T2RP254LA

Fixed Part of Plug-in MCCB (PM)



Plug-in Mount Blocks Field Fit Accessory	Order Code	Parts No.
3P	4547560 712302	T2PM25B3A
4P	4547560 712401	T2PM25B4A

ACCESSORIES FOR 250A FRAME MCCBS

Extension Terminal for Fixed Part of Plug-in MCCB (PF)



Flat Bar for PIB Field Fit Accessory	Order Code	Parts No.
6 Bars	4547560 745836	T2PF253BA
8 Bars	4547560 745843	T2PF254BA

Control Wiring Terminals for Plug-in MCCBs



Plug for Removable Part of MCCB, 3 terminals Field Fit Accessory	Order Code	Parts No.
Plug for auxiliary switches and alarm switches	4547560 800108	2H6959CAA1
Plug for shunt trips and undervoltage trips	4547560 800115	2H6959CBA1

Order one plug for each internal accessory

Control Wiring Terminals for Plug-in MCCBs



Socket for Fixed Part of MCCB, 3 terminal Field Fit Accessory	Order Code	Parts No.
Socket	4547560 745003	T2TP003A

Order one socket for each internal accessory

Solderless Terminals (FW)



Field Fit Accessory	Order Code	Parts No.
6 clamps	4547560 714627	T2FW25L3A
8 clamps	4547560 714634	T2FW25L4A

Motor Operation (MC)



Field Fit Accessory	Order Code	Parts No.
100V to 110V AC	4547560 755705	T2MC25A10NB
200V to 220V AC	4547560 755712	T2MC25A20NB
230V to 240V AC	4547560 755729	T2MC25A24NB
24V DC	4547560 755736	T2MC25D02NB
48V DC	4547560 755743	T2MC25D04NB
100V DC	4547560 755750	T2MC25D10NB

ORDER CODES

ACCESSORIES FOR 250A FRAME MCCBS

Motor Operation (MC) with Automatic Reset



Field Fit Accessory	Order Code	Parts No.
100V to 110V AC	4547560 755972	T2MC25A10AB
200V to 220V AC	4547560 755989	T2MC25A20AB
230V to 240V AC	4547560 755996	T2MC25A24AB
24V DC	4547560 755774	T2MC25D02AB
48V DC	4547560 755781	T2MC25D04AB
100V DC	4547560 755798	T2MC25D10AB

Motor plus keylock available on request

Door Flanges

Field Fit Accessory	Order Code	Parts No.
For toggle operation	4547560 744907	T2DF25A
For motorised operation	4547560 744914	T2DM25A

External Operating Handles (Breaker Mounted Type) (HB)



OCR accessible type

Field Fit Accessory	Order Code	Parts No.
Black handle IP3X	4547560 757327	T2HB25UR3BNB
Black handle IP3X with keylock	4547560 757303	T2HB25UR3BKB
Red handle IP3X	4547560 757808	T2HB25UR3RNB
Red handle IP3X with keylock	4547560 757785	T2HB25UR3RKB
Black handle IP5X	4547560 757334	T2HB25UR5BNB
Black handle IP5X with keylock	4547560 757310	T2HB25UR5BKB
Red handle IP5X	4547560 757815	T2HB25UR5RNB
Red handle IP5X with keylock	4547560 757792	T2HB25UR5RKB

External Operating Handles (Door Mounted Type) (HP)



OCR accessible type

Field Fit Accessory	Order Code	Parts No.
Black handle IP54	4547560 759291	T2HP25R5BNAPS4BPS4A
Black handle IP54 with keylock	4547560 759130	T2HP25R5BKAPS4BPS4A
Red handle IP54	4547560 759932	T2HP25R5RNAPS4BPS4A
Red handle IP54 with keylock	4547560 759772	T2HP25R5RKAPS4BPS4A
Black Handle IP65	4547560 759338	T2HP25R6BNAPS4BPS4A
Black Handle IP65 with keylock	4547560 759178	T2HP25R6BKAPS4BPS4A
Red Handle IP65	4547560 759970	T2HP25R6RNAPS4BPS4A
Red Handle IP65 with keylock	4547560 759819	T2HP25R6RKAPS4BPS4A

ACCESSORIES FOR 250A FRAME MCCBS

Slide Type Mechanical Interlocks (MS)



Field Fit Accessory	Order Code	Parts No.
E,S type for front, rear connection 250AF 3P	4547560 733604	T2MS253SFA
E,S type for front, rear connection type 250AF 4P	4547560 733611	T2MS254SFA
E,S type for plug-in type 250AF 3P	4547560 733628	T2MS253SPA
E,S type for plug-in type 250AF 4P	4547560 733635	T2MS254SPA
H,L type for front, rear connection type 250AF 3P	4547560 733642	T2MS253LFA
H,L type for front, rear connection type 250AF 4P	4547560 733659	T2MS254LFA
H,L type for plug-in type 250AF 3P	4547560 733666	T2MS253LPA
H,L type for plug-in type 250AF 4P	4547560 733673	T2MS254LPA

Order one part between two MCCBs

Link Type Mechanical Interlocks (ML)



Field Fit Accessory	Order Code	Parts No.
Right side	4547560 735103	T2ML25RA
Left side 3P	4547560 735110	T2ML25L3A
Left side 4P	4547560 735127	T2ML25L4A

Order one interlock part for each MCCB

Wire Type Mechanical Interlocks (MW)



Field Fit Accessory	Order Code	Parts No.
Interlock	4547560 736124	T2MW25CA
1m length interlock cable	4547560 736063	T2MW00SA
1.5m length interlock cable	4547560 736056	T2MW00LA

Order one interlock part for each MCCB and one cable between two MCCBs

Handle Locks (HL)



Field Fit Accessory	Order Code	Parts No.
For 125 / 250AF	4547560 737015	T2HL25B

Castell Lock

Field Fit Accessory	Order Code	Parts No.
Fittings for panel mounted type handle (lock and key not included)	4547560 737053	T2KL25PA
Fittings for toggle operated MCCB (lock and key not included)	4547560 737046	T2KL25BA

ORDER CODES

ACCESSORIES FOR 250A FRAME MCCBS

Terminal Covers for Front Connection (CF)



Field Fit Accessory	Order Code	Parts No.
3P, 2 covers for E, S type	4547560 738500	T2CF253SLNGA
4P, 2 covers for E, S type	4547560 738524	T2CF254SLNGA
3P, 2 covers for H, L type	4547560 738906	T2CF253LLNGA
4P, 2 covers for H, L type	4547560 738920	T2CF254LLNGA
2 earth barriers for 3P barrier for E, S type	4547560 708657	T2BE253A
2 earth barriers for 4P barrier for E, S type	4547560 708664	T2BE254A
Terminal cover lock 1 piece	4547560 738005	T2CF00LA

Terminal Covers for Rear Connection and Plug-In (CR)



Field Fit Accessory	Order Code	Parts No.
3P, 2 covers	4547560 741715	T2CR253SGA
4P, 2 covers	4547560 741722	T2CR254SGA
Terminal cover lock 1 piece	4547560 738005	T2CF00LA

Terminal Covers for Solderless Terminals (CS)



Field Fit Accessory	Order Code	Parts No.
3P, 2 covers	4547560 745614	T2CS253SGA
4P, 2 covers	4547560 745621	T2CS254SGA
Terminal cover lock 1 piece	4547560 738005	T2CF00LA

Interpole Barriers (BA)



Field Fit Accessory	Order Code	Parts No.
3P, 2 barriers for E, S type	4547560 743115	T2BA253SHA
4P, 3 barriers for E, S type	4547560 743122	T2BA254SHA
3P, 2 barriers for H, L type	4547560 743214	T2BA253LHA
4P, 3 barriers for H, L type	4547560 743221	T2BA254LHA

Interpole barriers are supplied as standard: 2 pieces per 3P MCCB, 3 pieces per 4P MCCB.
For additional barriers please order individually

Lead Terminal Block



Field Fit Accessory	Order Code	Parts No.
Left side	TBA	TBA
Right side	TBA	TBA

400A & 630A FRAME MCCBS

400A Frame MCCBs with Front Connections



Dimensions		E400	H400
		S400	L400
h (mm)		260	260
w (mm)	3 pole	140	140
	4 pole	185	185
d (mm)		103	140

Model	I_R (A)		3P FC	4P FC
E400-NJ $I_{cu} = 25\text{kA}$ Thermal Magnetic	160-250		4547560 361302	4547560 361401
	250-400		4547560 361319	4547560 361418
S400-CJ $I_{cu} = 36\text{ kA}$ Thermal Magnetic	160-250		4547560 368301	4547560 368509
	250-400		4547560 368318	4547560 368516
S400-NJ $I_{cu} = 50\text{ kA}$ Thermal Magnetic	160-250		4547560 361500	4547560 361609
	250-400		4547560 361517	4547560 361616
S400-NE $I_{cu} = 50\text{ kA}$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristics; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 374005	4547560 374067
	AN	100-250	NA	4547560 374081
	AP	100-250	4547560 374012	4547560 374074
	APN	100-250	NA	4547560 374098
	A	160-400	4547560 374029	4547560 374104
	AG	160-400	4547560 374043*	NA
	AN	160-400	NA	4547560 374128
	AP	160-400	4547560 374036	4547560 374111
	AGN	160-400	NA	4547560 374142
	APG	160-400	4547560 374050*	NA
	APN	160-400	NA	4547560 374135
	APGN	160-400	NA	4547560 374159
S400-GJ $I_{cu} = 70\text{ kA}$ Thermal Magnetic	160-250		4547560 361708	4547560 361807
	250-400		4547560 361715	4547560 361814

FC: Front Connection

*An external neutral CT must be ordered. Refer to External Accessories.

ORDER CODES

400A & 630A FRAME MCCBS

400A Frame MCCBs with Front Connections

Model		I_R (A)	3P FC	4P FC
S400-GE $I_{cu} = 70$ kA Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 364808	4547560 364822
	AN	100-250	NA	4547560 372513
	AP	100-250	4547560 364846	4547560 372506
	APN	100-250	NA	4547560 372520
	A	160-400	4547560 364815	4547560 364839
	AG	160-400	4547560 364884*	NA
	AN	160-400	NA	4547560 372568
	AP	160-400	4547560 364877	4547560 372551
	AGN	160-400	NA	4547560 372582
	APG	160-400	4547560 364891*	NA
	APN	160-400	NA	4547560 372575
	APGN	160-400	NA	4547560 372599
H400-NJ $I_{cu} = 125$ kA Thermal Magnetic		160-250	4547560 361906	4547560 362002
		250-400	4547560 361913	4547560 362019
H400-NE $I_{cu} = 125$ kA Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 364907	4547560 364921
	AN	100-250	NA	4547560 372810
	AP	100-250	4547560 364945	4547560 372803
	APN	100-250	NA	4547560 372827
	A	160-400	4547560 364914	4547560 364938
	AG	160-400	4547560 364983*	NA
	AN	160-400	NA	4547560 372865
	AP	160-400	4547560 364976	4547560 372858
	AGN	160-400	NA	4547560 372889
	APG	160-400	4547560 364990*	NA
	APN	160-400	NA	4547560 372872
	APGN	160-400	NA	4547560 372896
L400-NJ $I_{cu} = 200$ kA Thermal Magnetic		160-250	4547560 362101	4547560 362200
		250-400	4547560 362118	4547560 362217
L400-NE $I_{cu} = 200$ kA Electronic	A	100-250	4547560 365003	4547560 365027
	AN	100-250	NA	4547560 372919
	AP	100-250	4547560 365041	4547560 372902
	APN	100-250	NA	4547560 372926
	A	160-400	4547560 365010	4547560 365034
	AG	160-400	4547560 365089*	NA
	AN	160-400	NA	4547560 372964
	AP	160-400	4547560 365072	4547560 372957
	AGN	160-400	NA	4547560 372988
	APG	160-400	4547560 365096*	NA
	APN	160-400	NA	4547560 372971
	APGN	160-400	NA	4547560 372995

FC: Front Connection

*An external neutral CT must be ordered for 3 phase 4 wire system. Refer to External Accessories.

400A & 630A FRAME MCCBS

400A Frame MCCBs with Rear Connections Fitted



Model	I_R (A)		3P RC	4P RC
H400-NJ $I_{cu} = 125kA$ Thermal Magnetic	160-250		4547560 361944	4547560 362040
	250-400		4547560 361951	4547560 362057
H400-NE $I_{cu} = 125kA$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 373008	4547560 373206
	AN	100-250	NA	4547560 373220
	AP	100-250	4547560 373015	4547560 373213
	APN	100-250	NA	4547560 373237
	A	160-400	4547560 373107	4547560 373305
	AG	160-400	4547560 373121*	NA
	AN	160-400	NA	4547560 373329
	AP	160-400	4547560 373114	4547560 373312
	AGN	160-400	NA	4547560 373343
	APG	160-400	4547560 373138*	NA
	APN	160-400	NA	4547560 373336
	APGN	160-400	NA	4547560 373350
L400-NJ $I_{cu} = 200 kA$ Thermal Magnetic	160-250		4547560 362149	4547560 362248
	250-400		4547560 362156	4547560 362255
L400-NE $I_{cu} = 200 kA$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 373503	4547560 373701
	AN	160-250	NA	4547560 373725
	AP	100-250	4547560 373510	4547560 373718
	APN	100-250	NA	4547560 373732
	A	160-400	4547560 373602	4547560 373800
	AG	160-400	4547560 373626*	NA
	AN	160-400	NA	4547560 373824
	AP	160-400	4547560 373619	4547560 373817
	AGN	160-400	NA	4547560 373848
	APG	160-400	4547560 373633*	NA
	APN	160-400	NA	4547560 373831
	APGN	160-400	NA	4547560 373855

RC: Rear Connection

*An external neutral CT must be ordered for 3 phase 4 wire system. Refer to External Accessories.

ORDER CODES

400A & 630A FRAME MCCBS

400A Frame MCCBs with Plug-in Connections Fitted*

*Plug-in base and auxiliary connectors must be ordered separately



Model		I_R (A)	3P PM	4P PM
H400-NJ $I_{cu} = 125kA$ Thermal Magnetic		160-250	4547560 367304	4547560 367403
		250-400	4547560 367311	4547560 367410
H400-NE $I_{cu} = 125kA$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 373022	4547560 373244
	AN	100-250	NA	4547560 373268
	AP	100-250	4547560 373039	4547560 373251
	APN	100-250	NA	4547560 373275
	A	160-400	4547560 373145	4547560 373367
	AG	160-400	4547560 373169*	NA
	AN	160-400	NA	4547560 373381
	AP	160-400	4547560 373152	4547560 373374
	AGN	160-400	NA	4547560 373404
	APG	160-400	4547560 373176*	NA
	APN	160-400	NA	4547560 373398
	APGN	160-400	NA	4547560 373411
L400-NJ $I_{cu} = 200 kA$ Thermal Magnetic		160-250	4547560 367502	4547560 367601
		250-400	4547560 367519	4547560 367618
L400-NE $I_{cu} = 200 kA$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 373527	4547560 373749
	AN	100-250	NA	4547560 373763
	AP	100-250	4547560 373534	4547560 373756
	APN	100-250	NA	4547560 373770
	A	160-400	4547560 373640	4547560 373862
	AG	160-400	4547560 373664*	NA
	AN	160-400	NA	4547560 373886
	AP	160-400	4547560 373657	4547560 373879
	AGN	160-400	NA	4547560 373909
	APG	160-400	4547560 373671*	NA
	APN	160-400	NA	4547560 373893
	APGN	160-400	NA	4547560 373916

PM: Plug-in

*An external neutral CT must be ordered for 3 phase 4 wire system. Refer to External Accessories.

400A & 630A FRAME MCCBS

400A Frame MCCBs with Solderless Terminals (Cable Clamps) Fitted



Model	I_R (A)		3P FW	4P FW
H400-NJ $I_{cu} = 125kA$ Thermal Magnetic	160-250		4547560 367342	4547560 367441
	250-400		4547560 367359	4547560 367458
H400-NE $I_{cu} = 125kA$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 373046	4547560 373282
	AN	100-250	NA	4547560 373084
	AP	100-250	4547560 373053	4547560 373299
	APN	100-250	NA	4547560 373091
	A	160-400	4547560 373183	4547560 373428
	AG	160-400	4547560 373060*	NA
	AN	160-400	NA	4547560 373442
	AP	160-400	4547560 373190	4547560 373435
	AGN	160-400	NA	4547560 373466
	APG	160-400	4547560 373077*	NA
	APN	160-400	NA	4547560 373459
	APGN	160-400	NA	4547560 373473
L400-NJ $I_{cu} = 200 kA$ Thermal Magnetic	160-250		4547560 367540	4547560 367649
	250-400		4547560 367557	4547560 367656
L400-NE $I_{cu} = 200 kA$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	100-250	4547560 373541	4547560 373787
	AN	100-250	NA	4547560 373565
	AP	100-250	4547560 373558	4547560 373794
	APN	100-250	NA	4547560 373572
	A	160-400	4547560 373688	4547560 373923
	AG	160-400	4547560 373480*	NA
	AN	160-400	NA	4547560 373947
	AP	160-400	4547560 373695	4547560 373930
	AGN	160-400	NA	4547560 373961
	APG	160-400	4547560 373497*	NA
	APN	160-400	NA	4547560 373954
	APGN	160-400	NA	4547560 373978

FW: Solderless Terminal

*An external neutral CT must be ordered for 3 phase 4 wire system. Refer to External Accessories.

ORDER CODES

400A & 630A FRAME MCCBS

630A Frame MCCBs with Front Connections



Dimensions		E630
		S630
h (mm)		260
w (mm)	3 pole	140
	4 pole	185
d (mm)		103

Model	I_R (A)		3P FC	4P FC
E630-NE $I_{cu} = 36 \text{ kA}$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	250-630	4547560 365102	4547560 365119
	AG	250-630	4547560 365133*	NA
	AN	250-630	NA	4547560 365164
	AP	250-630	4547560 365126	4547560 365157
	AGN	250-630	NA	4547560 365188
	APG	250-630	4547560 365140*	NA
	APN	250-630	NA	4547560 365171
	APGN	250-630	NA	4547560 365195
S630-CE $I_{cu} = 50 \text{ kA}$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	250-630	4547560 365201	4547560 365218
	AG	250-630	4547560 365232*	NA
	AN	250-630	NA	4547560 365263
	AP	250-630	4547560 365225	4547560 365256
	AGN	250-630	NA	4547560 365287
	APG	250-630	4547560 365249*	NA
	APN	250-630	NA	4547560 365270
	APGN	250-630	NA	4547560 365294
S630-GE $I_{cu} = 70 \text{ kA}$ Electronic Electronic Protection Codes: A - Standard relay with LSI characteristic; P - Preferential Trip Alarm; G - Ground Fault; N - Neutral Protection	A	250-630	4547560 365300	4547560 365317
	AG	250-630	4547560 365331*	NA
	AN	250-630	NA	4547560 365362
	AP	250-630	4547560 365324	4547560 365355
	AGN	250-630	NA	4547560 365386
	APG	250-630	4547560 365348*	NA
	APN	250-630	NA	4547560 365379
	APGN	250-630	NA	4547560 365393

FC: Front Connection

*An external neutral CT must be ordered for 3 phase 4 wire system. Refer to External Accessories.

ACCESSORIES FOR 400A & 630A FRAME MCCBS

Auxiliary Switches (AX) General Purpose



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Changeover	4547560 700347	T2AX00M3STA	4547560 700002	T2AX00M3SWA
Changeover for low currents (mA)	4547560 700323	T2AX00M3RTA	4547560 700101	T2AX00M3RWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 1.8mmø, length 700mm

Auxiliary Switches (AX) Heavy Duty



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Normally open	4547560 700309	T2AX00B1STA	NA	NA
Normally closed	4547560 700316	T2AX00B2STA	NA	NA

*: with terminal **: with lead wire

Alarm Switches (AL) General Purpose



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Changeover	4547560 700743	T2AL00M3STA	4547560 700408	T2AL00M3SWA
Changeover for low currents (mA)	4547560 700729	T2AL00M3RTA	4547560 700507	T2AL00M3RWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 1.8mmø, length 700mm

Alarm Switches (AL) Heavy Duty



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
Normally open	4547560 700705	T2AL00B1STA	NA	NA
Normally closed	4547560 700712	T2AL00B2STA	NA	NA

*: with terminal **: with lead wire

Shunt Trips (SHT)



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
AC 100-120V	4547560 700903	T2SH00A10TA	4547560 700804	T2SH00A10WA
AC 200-240V	4547560 700910	T2SH00A20TA	4547560 700811	T2SH00A20WA
AC 380-450V	4547560 700927	T2SH00A40TA	4547560 700828	T2SH00A40WA
DC 24V	4547560 700934	T2SH00D02TA	4547560 700835	T2SH00D02WA
DC 48V	4547560 700941	T2SH00D04TA	4547560 700842	T2SH00D04WA
DC 100-120V	4547560 700958	T2SH00D10TA	4547560 700859	T2SH00D10WA
DC 200-240V	4547560 700965	T2SH00D20TA	4547560 700866	T2SH00D20WA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 3mmø, length 500mm

ORDER CODES

ACCESSORIES FOR 400A & 630A FRAME MCCBS

Instantaneous Undervoltage Trips (UVT)



Field Fit Accessory	Order Code *	Parts No. *	Order Code **	Parts No. **
AC 100-120V	4547560 701207	T2UV00A10NTA	4547560 701108	T2UV00A10NWA
AC 200-240V	4547560 701214	T2UV00A20NTA	4547560 701115	T2UV00A20NWA
AC 380-450V	4547560 701221	T2UV00A40NTA	4547560 701122	T2UV00A40NWA
DC 24V	4547560 701238	T2UV00D02NTA	4547560 701139	T2UV00D02NWA
DC 100-120V	4547560 701245	T2UV00D10NTA	4547560 701146	T2UV00D10NWA
DC 200-240V	4547560 701252	T2UV00D20NTA	4547560 701153	T2UV00D20NWA

*: with terminal **: with lead wire (heat resistant): size 0.5mm², finished O.D. 3mmø, length 500mm

Extension Bars (FB)

Flat Bars Field Fit Accessory	Order Code	Parts No.
6 bars, 400A	4547560 710308	T2FB403BB
8 bars, 400A	4547560 710315	T2FB404BB
6 bars, 630A	4547560 710261	T2FB463BA
8 bars, 630A	4547560 710278	T2FB464BA

Rear Connections (RC)



Flat Bars Field Fit Accessory	Order Code	Parts No.
6 studs, 400A	4547560 711213	T2RP403SA
8 studs, 400A	4547560 711220	T2RP404SA
6 studs, 630A	4547560 711268	T2RP463SA
8 studs, 630A	4547560 711275	T2RP464SA

Rear connections for H400 and L400 models are factory fitted. Item numbers for MCCBs complete with rear connections can be found under "400A Frame MCCBs with Rear Connections Fitted"

Fixed Part of Plug-in MCCB (PM)



Plug-in Mount Blocks Field Fit Accessory	Order Code	Parts No.
3P	4547560 712500	T2PM40B3A
4P	4547560 712609	T2PM40B4A

ACCESSORIES FOR 400A & 630A FRAME MCCBS

Extension Terminal for Fixed Part of Plug-in MCCB (PF)



Flat Bar for PIB Field Fit Accessory	Order Code	Parts No.
6 bars, 400A	4547560 745850	T2PF403BA
8 bars, 400A	4547560 745867	T2PF404BA

Control Wiring Terminals for Plug-in MCCBs



Plug for Removable Part of MCCB, 3 terminals Field Fit Accessory	Order Code	Parts No.
Plug for auxiliary switches and alarm switches	4547560 800108	2H6959CAA1
Plug for shunt trips and undervoltage trips	4547560 800115	2H6959CBA1

Order one plug for each internal accessory

Control Wiring Terminals for Plug-in MCCBs



Socket for Fixed Part of MCCB, 3 terminal Field Fit Accessory	Order Code	Parts No.
Socket	4547560 745003	T2TP003A

Order one socket for each internal accessory

Solderless Terminals (FW)



Field Fit Accessory	Order Code	Parts No.
6 clamps, 400A	4547560 714719	T2FW40L3A
8 clamps, 400A	4547560 714726	T2FW40L4A

Cable clamps for H400 and L400 models are factory fitted. Item numbers for MCCBs complete with cable clamps can be found under "400A Frame MCCBs with Cable Clamps Fitted"

Motor Operation (MC)



Field Fit Accessory	Order Code	Parts No.
100V to 240V AC	4547560 756009	T2MC40A10NB
24V DC	4547560 756016	T2MC40D02NB
100V to 120V DC	4547560 756023	T2MC40D10NB

Motor plus keylock available on request

ORDER CODES

ACCESSORIES FOR 400A & 630A FRAME MCCBS

Motor Operation (MC) with Automatic Reset



Field Fit Accessory	Order Code	Parts No.
AC 100V to 240V	4547560 756092	T2MC40A10AB
DC 24V to 48V	4547560 756108	T2MC40D02AB
DC 100V to 120V	4547560 756115	T2MC40D10AB

Motor plus keylock available on request

Door Flanges

Field Fit Accessory	Order Code	Parts No.
For toggle operation	4547560 745409	T2DF40A
For motorised operation	4547560 745416	T2DM40A

External Operating Handles (Breaker Mounted Type) (HB)



Field Fit Accessory	Order Code	Parts No.
Black handle IP3X	4547560 724428	T2HB40UR3BNA
Black handle IP3X with keylock	4547560 724404	T2HB40UR3BKA
Red handle IP3X	4547560 725029	T2HB40UR3RNA
Red handle IP3X with keylock	4547560 725005	T2HB40UR3RKA
Black handle IP5X	4547560 724435	T2HB40UR5BNA
Black handle IP5X with keylock	4547560 724411	T2HB40UR5BKA
Red handle IP5X	4547560 725036	T2HB40UR5RNA
Red handle IP5X with keylock	4547560 725012	T2HB40UR5RKA

External Operating Handles (Door Mounted Type) (HP)



Field Fit Accessory	Order Code	Parts No.
Black handle IP54	4547560 754197	T2HP40R5BNAPS4A
Black handle IP54 with keylock	4547560 754036	T2HP40R5BKAPS4A
Red handle IP54	4547560 754838	T2HP40R5RNAPS4A
Red handle IP54 with keylock	4547560 754678	T2HP40R5RKAPS4A
Black Handle IP65	4547560 754234	T2HP40R6BNAPS4A
Black Handle IP65 with keylock	4547560 754074	T2HP40R6BKAPS4A
Red Handle IP65	4547560 754876	T2HP40R6RNAPS4A
Red Handle IP65 with keylock	4547560 754715	T2HP40R6RKAPS4A

ACCESSORIES FOR 400A & 630A FRAME MCCBS

Slide Type Mechanical Interlocks (MS)



Field Fit Accessory	Order Code	Parts No.
E,S type for front, rear connection type 400-630AF 3P	4547560 733703	T2MS403SFA
E,S type for front, rear connection type 400-630AF 4P	4547560 733710	T2MS404SFA
E,S type for plug-in type 400-630AF 3P	4547560 733727	T2MS403SPA
E,S type for plug-in type 400-630AF 4P	4547560 733734	T2MS404SPA
H,L type for front, rear connection type 400-630AF 3P	4547560 733741	T2MS403LFA
H,L type for front, rear connection type 400-630AF 4P	4547560 733758	T2MS404LFA
H,L type for plug-in type 400-630AF 3P	4547560 733765	T2MS403LPA
H,L type for plug-in type 400-630AF 4P	4547560 733772	T2MS404LPA

Order one part between two MCCBs

Link Type Mechanical Interlocks (ML)



Field Fit Accessory	Order Code	Parts No.
Right side	4547560 735264	T2ML40RB
Left side 3P	4547560 735271	T2ML40L3B
Left side 4P	4547560 735288	T2ML40L4B

Order one interlock part for each MCCB

Wire Type Mechanical Interlocks (MW)



Field Fit Accessory	Order Code	Parts No.
Interlock	4547560 736247	T2MW40CB
1m length interlock cable	4547560 736063	T2MW00SA
1.5m length interlock cable	4547560 736056	T2MW00LA

Order one interlock part for each MCCB and one cable between two MCCBs

Handle Locks (HL)



Field Fit Accessory	Order Code	Parts No.
For 400-630AF	4547560 737206	T2HL40A

ORDER CODES

ACCESSORIES FOR 400A & 630A FRAME MCCBS

Castell Lock

Field Fit Accessory	Order Code	Parts No.
Fittings for panel mounted type handle (lock and key not included)	4547560 737220	T2KL40PA
Fittings for toggle operated MCCB (lock and key not included)	4547560 737213	T2KL40BA

Terminal Covers for Front Connection (CF)



Field Fit Accessory	Order Code	Parts No.
3P, 2 covers	4547560 739903	T2CF403SWNGA
4P, 2 covers	4547560 740046	T2CF404SWNGA
Terminal cover lock 1 piece	4547560 738005	T2CF00LA

Terminal Covers for Rear Connection, Solderless Terminals and Plug-In (CR)



Field Fit Accessory	Order Code	Parts No.
3P, 2 covers	4547560 742101	T2CR403SGA
4P, 2 covers	4547560 742118	T2CR404SGA
Terminal cover lock 1 piece	4547560 738012	T2CF40LA

Interpole Barriers (BA)



Field Fit Accessory	Order Code	Parts No.
3P, 2 barriers for E, S, H and L types	4547560 743313	T2BA403SHA
4P, 3 barriers for E, S, H and L types	4547560 743320	T2BA404SHA

Interpole barriers are supplied as standard: 2 pieces per 3P MCCB, 3 pieces per 4P MCCB.
For additional barriers please order individually

ACCESSORIES FOR 400A & 630A FRAME MCCBS

Lead Terminal Block

Field Fit Accessory	Order Code	Parts No.
Left side	TAB	TAB
Right side	TAB	TAB

External Neutral CT

Field Fit Accessory	Order Code	Parts No.
400A	4547560 745911	T2GB40N04A
630A	4547560 745928	T2GB40N06A

TEMBREAK 800A FRAME MCCBS

800A MCCBs with Various Terminal Types



Dimensions		XS	
		XH	TL
h (mm)		273	370
w (mm)	3 pole	210	210
	4 pole	280	280
d (mm)		103	140

Model	$I_R(A)$	3P					4P				
		FB	FW	RC	PM	DR	FB	FW	RC	PM	DR
XS800NJ $I_{cu}=65kA$ Thermal Magnetic	400-630	■	●	●	●	●	■	●	●	●	●
	500-800	■	●	●	●	●	■	●	●	●	●
XS800SE $I_{cu}=50kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 315-630	■	●	●	●	●	■	●	●	●	●
	AG 315-630	■ *	● *	● *	● *	● *	■	●	●	●	●
	AI 315-630	■	●	●	●	●	■	●	●	●	●
	AP 315-630	■	●	●	●	●	■	●	●	●	●
	A 400-800	■	●	●	●	●	■	●	●	●	●
	AG 400-800	■ *	● *	● *	● *	● *	■	●	●	●	●
	AI 400-800	■	●	●	●	●	■	●	●	●	●
	AP 400-800	■	●	●	●	●	■	●	●	●	●
XH800SE $I_{cu}=65kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 315-630	■	●	●	●	●	■	●	●	●	●
	AG 315-630	■ *	● *	● *	● *	● *	■	●	●	●	●
	AI 315-630	■	●	●	●	●	■	●	●	●	●
	AP 315-630	■	●	●	●	●	■	●	●	●	●
	A 400-800	■	●	●	●	●	■	●	●	●	●
	AG 400-800	■ *	● *	● *	● *	● *	■	●	●	●	●
	AI 400-800	■	●	●	●	●	■	●	●	●	●
	AP 400-800	■	●	●	●	●	■	●	●	●	●
XH800PJ $I_{cu}=100kA$ Thermal Magnetic	400-630	■	●	●	●	●	■	●	●	●	●
	500-800	■	●	●	●	●	■	●	●	●	●

FB: Front Connection with attached flat bars.

FW: Solderless terminal

RC: Rear Connection

PM: Plug-in

DR: Draw-out

* An external neutral CT must be ordered for 3phase 4wire system. See External Accessories.

TEMBREAK 800A FRAME MCCBS

Model	$I_R(A)$	3P					4P				
		FB	FW	RC	PM	DR	FB	FW	RC	PM	DR
XH800PE $I_{cu}=65kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 315-630	■	●	●	●	●	■	●	●	●	●
	AG 315-630	■ *	● *	● *	● *	● *	■	●	●	●	●
	AI 315-630	■	●	●	●	●	■	●	●	●	●
	AP 315-630	■	●	●	●	●	■	●	●	●	●
	A 400-800	■	●	●	●	●	■	●	●	●	●
	AG 400-800	■ *	● *	● *	● *	● *	■	●	●	●	●
	AI 400-800	■	●	●	●	●	■	●	●	●	●
	AP 400-800	■	●	●	●	●	■	●	●	●	●
TL800NE (1600A Frame) $I_{cu}=125kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 315-630	■	-	●	●	●	■	-	●	●	●
	AG 315-630	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 315-630	■	-	●	●	●	■	-	●	●	●
	AP 315-630	■	-	●	●	●	■	-	●	●	●
	A 400-800	■	-	●	●	●	■	-	●	●	●
	AG 400-800	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 400-800	■	-	●	●	●	■	-	●	●	●
	AP 400-800	■	-	●	●	●	■	-	●	●	●

FB: Front Connection with attached flat bars.

FW: Solderless terminal

RC: Rear Connection

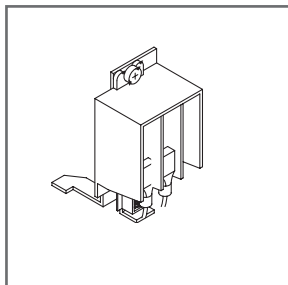
PM: Plug-in

DR: Draw-out

* An external neutral CT must be ordered for 3phase 4wire system. See External Accessories.

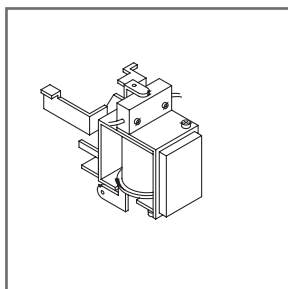
INTERNAL ACCESSORIES FOR 800A FRAME TEMBREAK MCCBS (XS800NJ, XS800SE, XH800SE, XH800PJ, XH800PE)

Auxiliary/Alarm Switches



Factory-fitted	
1 Alarm	•
1 Auxiliary	•
1 Auxiliary, 1 Alarm	•
2 Auxiliaries	•
2 Auxiliaries, 1 Alarm	•
2 Auxiliaries, 2 Alarms	•
3 Auxiliaries	•
3 Auxiliaries, 1 Alarm	•

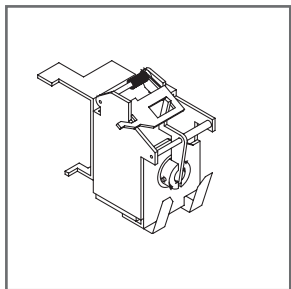
Shunt Trips



Factory-fitted	
AC 100-115V	•
AC 200-480V	•
AC 24V	•
AC 48V	•
DC 12V	•
DC 24V	•
DC 48V	•
DC 100-115V	•
DC 200-230V	•
DC 60V	•
DC 125V	•
DC 30V	•

INTERNAL ACCESSORIES FOR 800A FRAME TEMBREAK MCCBS
(XS800NJ, XS800SE, XH800SE, XH800PJ, XH800PE)

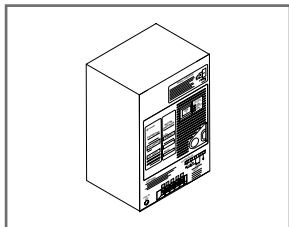
UnderVoltage Trips



Factory-fitted	
AC 100-120V	•
AC 100-120V TIME DELAY	•
AC 200-240V	•
AC 200-240V TIME DELAY	•
AC 380-450V	•
AC 380-450V TIME DELAY	•
DC 100-115V	•
DC 200-230V	•
DC 24V	•
DC 48V	•
DC 60V	•

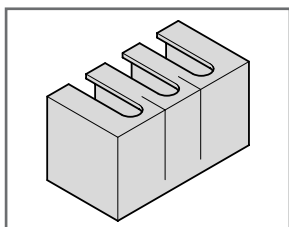
EXTERNAL ACCESSORIES FOR 800A FRAME TEMBREAK MCCBS

Motor Operators

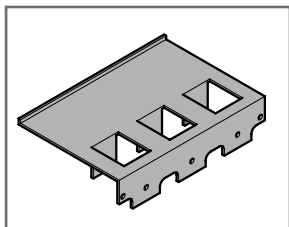


Factory-fitted		
AC 100-115V		•
AC 200-230V		•
AC 240V		•
DC 24V		•
DC 100-110V		•

Terminal Covers



3 Pole	2 covers for front connection	•
	2 interpole barriers (4pcs)	•
	2 covers for rear connection and plug in	•



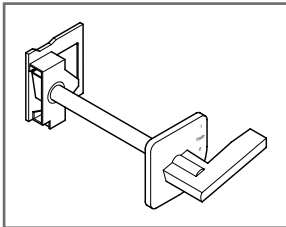
4 Pole	2 covers for front connection	•
	2 interpole barriers (6pcs)	•
	2 covers for rear connection and plug in	•

Door Flanges

Field fit Accessory	Order Code	Parts No.
For toggle operation	TBA	TAA-4

EXTERNAL ACCESSORIES FOR 800A FRAME TEMBREAK MCCBS

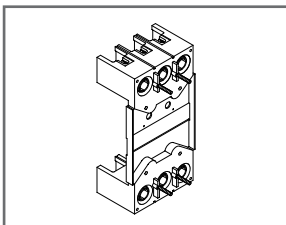
External Operating Handles



Field fit Accessory	Order Code	Parts No.
Door Mounted Black handle IP54 (TemBreak 2)	TBA	T1HP80R5BNA
Door Mounted Black handle IP65 (TemBreak 2)	TBA	T1HP80R6BNA
Door Mounted Red handle IP54 (TemBreak 2)	TBA	T1HP80R5RNA
Door Mounted Red handle IP65 (TemBreak 2)	TBA	T1HP80R6RNA
Door Mounted Black handle IP54 with keylock (TemBreak 2)	TBA	T1HP80R5BKA
Door Mounted Black handle IP65 with keylock (TemBreak 2)	TBA	T1HP80R6BKA
Door Mounted Red handle IP54 with keylock (TemBreak 2)	TBA	T1HP80R5RKA
Door Mounted Red handle IP65 with keylock (TemBreak 2)	TBA	T1HP80R6RKA
LEFT:BLACK Breaker mounted handle IP3X	TBA	TFJ36X0L2
LEFT:BLACK Breaker mounted handle IP55	TBA	TFJ36X0L2B
LEFT:RED/YEL Breaker mounted handle IP3X	TBA	TFJ36X0L2C
LEFT:RED/YEL Breaker mounted handle IP55	TBA	TFJ36X0L25
RIGHT:BLACK Breaker mounted handle IP3X	TBA	TFJ36X0R2
RIGHT:BLACK Breaker mounted handle IP55	TBA	TFJ36X0R2B
RIGHT:RED/YEL Breaker mounted handle IP3X	TBA	TFJ36X0R2C
RIGHT:RED/YEL Breaker mounted handle IP55	TBA	TFJ36X0R25
UPPER:BLACK Breaker mounted handle IP3X	TBA	TFJ36X0U2
UPPER:BLACK Breaker mounted handle IP55	TBA	TFJ36X0U2B
UPPER:RED/YEL Breaker mounted handle IP3X	TBA	TFJ36X0U2C
UPPER:RED/YEL Breaker mounted handle IP55	TBA	TFJ36X0U25

LEFT, RIGHT and UPPER refer to the direction of incoming power supply

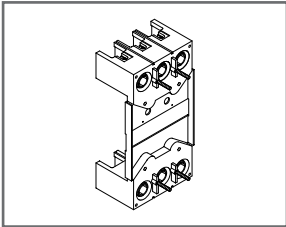
Plug-in Bases



3 Pole	Plug In Base	•
	IP20 Plug in base	•

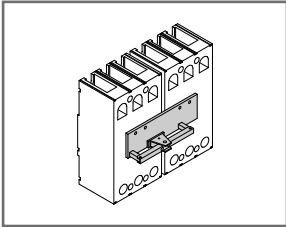
EXTERNAL ACCESSORIES FOR 800A FRAME TEMBREAK MCCBS

Plug-in Bases



Factory-fitted except front mechanical interlock		
4 Pole	Plug In Base	●
	IP20 Plug in base	●

Mechanical Interlocks



Factory-fitted except front mechanical interlock		
3 Pole	Front Mechanical Interlock	●
	Rear Mechanical Interlock	●
	1m Wire Mechanical Interlock	●
	1.5m Wire mechanical interlock	●

Factory-fitted except front mechanical interlock		
4 Pole	Front Mechanical Interlock	●
	Rear Mechanical Interlock	●
	1m Wire Mechanical Interlock	●
	1.5m Wire mechanical interlock	●

EXTERNAL ACCESSORIES FOR 800A FRAME TEMBREAK MCCBS

Handle Locks

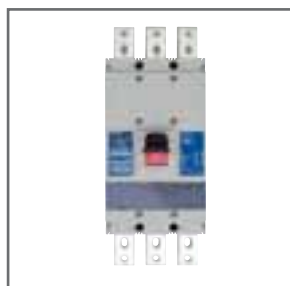
Handle Lock	•
Handle Extension	•

External Neutral CTs

630A	•
800A	•

TEMBREAK 1250A & 1600A FRAME MCCBS

1250A MCCBs with Extension Bars



Dimensions		XS	TL
h (mm)		370	370
w (mm)	3 pole	210	210
	4 pole	280	280
d (mm)		120	140

Model	$I_R(A)$	3P					4P				
		FB	FW	RC	PM	DR	FB	FW	RC	PM	DR
XS1250CE $I_{cu}=50kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 500-1000	■	-	●	●	●	■	-	●	●	●
	AG 500-1000	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 500-1000	■	-	●	●	●	■	-	●	●	●
	AP 500-1000	■	-	●	●	●	■	-	●	●	●
	A 630-1250	■	-	●	●	●	■	-	●	●	●
	AG 630-1250	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 630-1250	■	-	●	●	●	■	-	●	●	●
	AP 630-1250	■	-	●	●	●	■	-	●	●	●
XS1250SE $I_{cu}=85kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 500-1000	■	-	●	●	●	■	-	●	●	●
	AG 500-1000	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 500-1000	■	-	●	●	●	■	-	●	●	●
	AP 500-1000	■	-	●	●	●	■	-	●	●	●
	A 630-1250	■	-	●	●	●	■	-	●	●	●
	AG 630-1250	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 630-1250	■	-	●	●	●	■	-	●	●	●
	AP 630-1250	■	-	●	●	●	■	-	●	●	●
TL1250NE (1600A Frame) $I_{cu}=125kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 500-1000	■	-	●	●	●	■	-	●	●	●
	AG 500-1000	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 500-1000	■	-	●	●	●	■	-	●	●	●
	AP 500-1000	■	-	●	●	●	■	-	●	●	●
	A 630-1250	■	-	●	●	●	■	-	●	●	●
	AG 630-1250	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 630-1250	■	-	●	●	●	■	-	●	●	●
	AP 630-1250	■	-	●	●	●	■	-	●	●	●

FB: Front Connection with attached flat bars.

FW: Solderless terminal

RC: Rear Connection

PM: Plug-in

DR: Draw-out

* An external neutral CT must be ordered for 3phase 4wire system. See External Accessories.

TEMBREAK 1250A & 1600A FRAME MCCBS

1600A MCCBs with Various Terminal Types



Dimensions		
h (mm)		370
w (mm)	3 pole	210
	4 pole	280
d (mm)		120

Model	$I_R(A)$	3P					4P				
		FB	FW	RC	PM	DR	FB	FW	RC	PM	DR
XS1600CE $I_{cu}=50kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 800-1600	■	-	●	●	●	■	-	●	●	●
	AG 800-1600	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 800-1600	■	-	●	●	●	■	-	●	●	●
	AP 800-1600	■	-	●	●	●	■	-	●	●	●
	A 800-1600	■	-	●	●	●	■	-	●	●	●
	AG 800-1600	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 800-1600	■	-	●	●	●	■	-	●	●	●
	AP 800-1600	■	-	●	●	●	■	-	●	●	●
XS1600SE $I_{cu}=100kA$ Electronic protection codes: A - Standard relay with LSI characteristic ; P - Preferential trip alarm; G - Ground fault; I - Fault indication LEDs	A 800-1600	■	-	●	●	●	■	-	●	●	●
	AG 800-1600	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 800-1600	■	-	●	●	●	■	-	●	●	●
	AP 800-1600	■	-	●	●	●	■	-	●	●	●
	A 800-1600	■	-	●	●	●	■	-	●	●	●
	AG 800-1600	■ *	-	● *	● *	● *	■	-	●	●	●
	AI 800-1600	■	-	●	●	●	■	-	●	●	●
	AP 800-1600	■	-	●	●	●	■	-	●	●	●

FB: Front Connection with attached flat bars.

FW: Solderless terminal

RC: Rear Connection

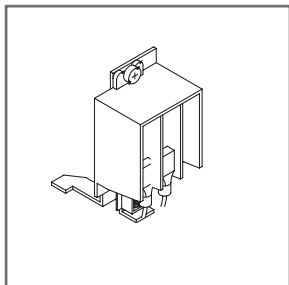
PM: Plug-in

DR: Draw-out

* An external neutral CT must be ordered for 3phase 4wire system. See External Accessories.

INTERNAL ACCESSORIES FOR 1250A & 1600A FRAME TEMBREAK MCCBS (TL800NE, XS1250CE, XS1250SE, TL1250NE, XS1600CE, XS1600SE)

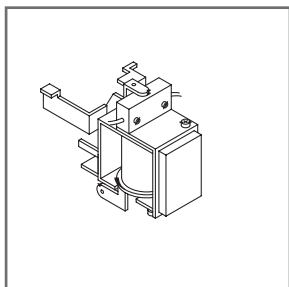
Auxiliary/Alarm Switches



Factory-fitted		
3 Pole	1 Alarm	•
	1 Auxiliary	•
	1 Auxiliary, 1 Alarm	•
	2 Auxiliaries	•
	2 Auxiliaries, 1 Alarm	•
	2 Auxiliaries, 2 Alarms	•
	3 Auxiliaries	•
	3 Auxiliaries, 1 Alarm	•

Factory-fitted		
4 Pole	1 Alarm	•
	1 Auxiliary	•
	1 Auxiliary, 1 Alarm	•
	2 Auxiliaries	•
	2 Auxiliaries, 1 Alarm	•
	2 Auxiliaries, 2 Alarms	•
	3 Auxiliaries	•
	3 Auxiliaries, 1 Alarm	•

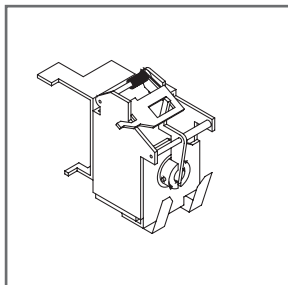
Shunt Trips



Factory-fitted		
AC 100-115V		•
AC 200-480V		•
AC 24V		•
AC 48V		•
DC 100-115V		•
DC 12V		•
DC 125V		•
DC 200-230V		•
DC 24V		•
DC 30V		•
DC 48V		•
DC 60V		•

INTERNAL ACCESSORIES FOR 1250A & 1600A FRAME TEMBREAK MCCBS

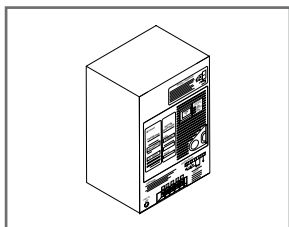
UnderVoltage Trips



Field Fit Accessory	
AC 100-120V	•
AC 100-120V Time Delay	•
AC 200-240V	•
AC 200-240V Time Delay	•
AC 380-450V	•
AC 380-450V Time Delay	•
DC 100-115V	•
DC 200-230V	•
DC 24V	•
DC 48V	•
DC 60V	•

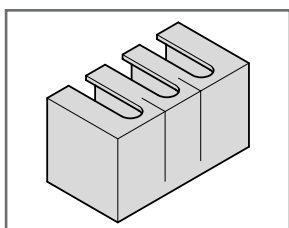
EXTERNAL ACCESSORIES FOR 1250A & 1600A FRAME TEMBREAK MCCBS

Motor Operators

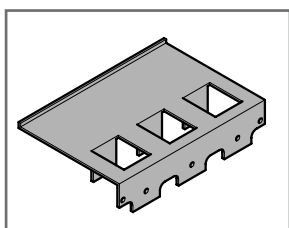


Factory-fitted		
AC100-115V		•
AC200-230V		•
AC 240V		•
DC 24V		•
DC100-110V		•

Terminal Covers



1250A		
3 Pole	2 covers for front connection	•



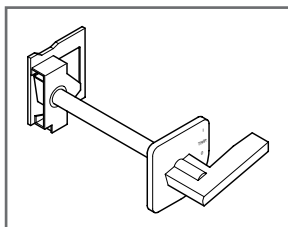
1250A		
4 Pole	2 covers for front connection	•

Door Flanges

Field fit Accessory	Order Code	Parts No.
For toggle operation	TBA	TAA-5

EXTERNAL ACCESSORIES FOR 1250A & 1600A FRAME TEMBREAK MCCBS

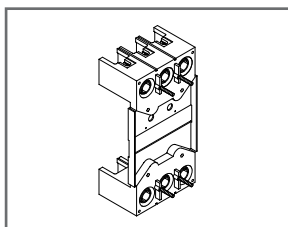
External Operating Handles



Field fit Accessory	Order Code	Parts No.
Door Mounted Black handle IP54 (TemBreak 2)	TBA	T1HPX6R5BNA
Door Mounted Black handle IP65 (TemBreak 2)	TBA	T1HPX6R6BNA
Door Mounted Red handle IP54 (TemBreak 2)	TBA	T1HPX6R5RNA
Door Mounted Red handle IP65 (TemBreak 2)	TBA	T1HPX6R6RNA
Door Mounted Black handle IP54 with keylock (TemBreak 2)	TBA	T1HPX6R5BKA
Door Mounted Black handle IP65 with keylock (TemBreak 2)	TBA	T1HPX6R6BKA
Door Mounted Red handle IP54 with keylock (TemBreak 2)	TBA	T1HPX6R5RKA
Door Mounted Red handle IP65 with keylock (TemBreak 2)	TBA	T1HPX6R6RKA
LEFT:BLACK Breaker mounted handle IP3X	TBA	TFJ38X0L2
LEFT:BLACK Breaker mounted handle IP55	TBA	TFJ38X0L2B
LEFT:RED/YEL Breaker mounted handle IP3X	TBA	TFJ38X0L2C
LEFT:RED/YEL Breaker mounted handle IP55	TBA	TFJ38X0L25
RIGHT:BLACK Breaker mounted handle IP3X	TBA	TFJ38X0R2
RIGHT:BLACK Breaker mounted handle IP55	TBA	TFJ38X0R2B
RIGHT:RED/YEL Breaker mounted handle IP3X	TBA	TFJ38X0R2C
RIGHT:RED/YEL Breaker mounted handle IP55	TBA	TFJ38X0R25
UPPER:BLACK Breaker mounted handle IP3X	TBA	TFJ38X0U2
UPPER:BLACK Breaker mounted handle IP55	TBA	TFJ38X0U2B
UPPER:RED/YEL Breaker mounted handle IP3X	TBA	TFJ38X0U2C
UPPER:RED/YEL Breaker mounted handle IP55	TBA	TFJ38X0U25

LEFT, RIGHT and UPPER refer to the direction of incoming power supply

Plug-in Bases

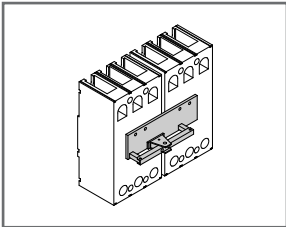


1250A		
3 Pole	Plug In Base	•
	IP20 Plug In Base	•

1250A		
4 Pole	Plug In Base	•
	IP20 Plug In Base	•

EXTERNAL ACCESSORIES FOR 1250A & 1600A FRAME TEMBREAK MCCBS

Mechanical Interlocks

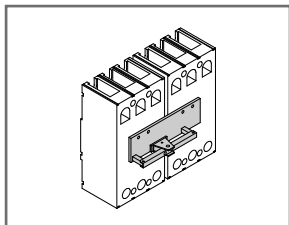


1250A Factory-fitted except front mechanical interlock		
3 Pole	Front Mechanical Interlock	●
	Rear Mechanical Interlock	●
	1M Wire mechanical interlock	●
	1.5M Wire mechanical interlock	●

1250A Factory-fitted except front mechanical interlock		
4 Pole	Front Mechanical Interlock	●
	Rear Mechanical Interlock	●
	1M Wire mechanical interlock	●
	1.5M Wire mechanical interlock	●

EXTERNAL ACCESSORIES FOR 1250A & 1600A FRAME TEMBREAK MCCBS

Mechanical Interlocks



1600A Factory-fitted except front mechanical interlock		
3 Pole	Front Mechanical Interlock	•
	Rear Mechanical Interlock	•
	1M Wire mechanical interlock	•
	1.5M Wire mechanical interlock	•

1600A Factory-fitted except front mechanical interlock		
4 Pole	Front Mechanical Interlock	•
	Rear Mechanical Interlock	•
	1M Wire mechanical interlock	•
	1.5M Wire mechanical interlock	•

EXTERNAL ACCESSORIES FOR 1250A & 1600A FRAME TEMBREAK MCCBS

Handle Locks

Handle Lock	•
Handle Extension	•

External Neutral CTs

1000A	•
1250A	•
1600A	•

TEMBREAK 2 MINI MCCBS

Mini MCCBs with Front Connections



Dimensions		
h	(mm)	100
w	(mm)	2 pole
		3 pole
d	(mm)	60

Model	I_n (A)	2P	3P
S50-NF $I_{cu} = 10$ kA Thermal Magnetic	10	4547560 203008	4547560 203107
	15	4547560 203015	4547560 203114
	20	4547560 203022	4547560 203121
	30	4547560 203039	4547560 203138
	40	4547560 203046	4547560 203145
	50	4547560 203053	4547560 203152
E100-NF $I_{cu} = 10$ kA Thermal Magnetic	50	4547560 251207	4547560 251306
	60	4547560 251214	4547560 251313
	75	4547560 251221	4547560 251320
	100	4547560 251238	4547560 251337

ORDER CODES

ACCESSORIES FOR TEMBREAK 2 MINI MCCBS

Auxiliary Switches (AX)



Field Fit Accessory	Order Code	Parts No.
Left Pole	4547560 705007	T2AX05WL3SWA
Right Pole	4547560 705014	T2AX05WR3SWA
Low current (mA), left pole	4547560 705038	T2AX05WL3RWA
Low current (mA), right pole	4547560 705045	T2AX05WR3RWA
Left Pole with terminal block	4547560 705205	T2AX05WL3STA
Right Pole with terminal block	4547560 705212	T2AX05WR3STA
Low current (mA), left pole with terminal block	4547560 705236	T2AX05WL3RTA
Low current (mA), right pole with terminal block	4547560 705243	T2AX05WR3RTA

Combined Auxiliary and Alarm Switches



Field Fit Accessory	Order Code	Parts No.
Left Pole	4547560 705106	T2AX05CL4SWA
Right Pole	4547560 705120	T2AX05CR4SWA
Low current (mA), left pole	4547560 705113	T2AX05CL4RWA
Low current (mA), right pole	4547560 705137	T2AX05CR4RWA
Left Pole with terminal block	4547560 705304	T2AX05CL4STA
Right Pole with terminal block	4547560 705328	T2AX05CR4STA
Low current (mA), left pole with terminal block	4547560 705311	T2AX05CL4RTA
Low current (mA), right pole with terminal block	4547560 705335	T2AX05CR4RTA

Alarm Switches (AL)



Field Fit Accessory	Order Code	Parts No.
Left Pole	4547560 705403	T2AL05KL3SWA
Right Pole	4547560 705410	T2AL05KR3SWA
Low current (mA), left pole	4547560 705434	T2AL05KL3RWA
Low current (mA), right pole	4547560 705441	T2AL05KR3RWA
Left Pole with terminal block	4547560 705502	T2AL05KL3STA
Right Pole with terminal block	4547560 705519	T2AL05KR3STA
Low current (mA), left pole with terminal block	4547560 705533	T2AL05KL3RTA
Low current (mA), right pole with terminal block	4547560 705540	T2AL05KR3RTA

ACCESSORIES FOR TEMBREAK 2 MINI MCCBS

Shunt Trips (SHT)



Field Fit Accessory	Order Code	Parts No.
AC 100-120V	4547560 705601	T2SH05A10WA
AC 200-240V	4547560 705618	T2SH05A20WA
AC 380-450V	4547560 705625	T2SH05A40WA
AC 100-120V with Terminal Block	4547560 705700	T2SH05A10TA
AC 200-240V with Terminal Block	4547560 705717	T2SH05A20TA
AC 380-450V with Terminal Block	4547560 705724	T2SH05A40TA

Extension Bars *Flat Bars* (FB)

Field Fit Accessory 3 Pole only	Order Code	Parts No.
both sides for 50AF	4547560 706516	T2FB053BA
both sides for 100AF	4547560 706530	T2FB063BA

Rear Connections *Flat Bar Studs* (RP)



Field Fit Accessory 3 Pole only	Order Code	Parts No.
for 50AF (vertical-horizon)	4547560 706615	T2RP053AA
for 50AF (horizon-vertical)	4547560 706776	T2RP053BA
for 50AF (vertical-vertical)	4547560 706660	T2RP053CA
for 50AF (horizon-horizon)	4547560 706677	T2RP053DA
for 100AF (vertical-horizon)	4547560 706639	T2RP063AA
for 100AF (horizon-vertical)	4547560 706790	T2RP063BA
for 100AF (vertical-vertical)	4547560 706745	T2RP063CA
for 100AF (horizon-horizon)	4547560 706752	T2RP063DA

Mechanical Interlock, Slide Type (MS)

Field Fit Accessory	Order Code	Parts No.
Breaker mounted type for 50 to 100AF,3P,FC	4547560 707919	T2MS053NFA

ORDER CODES

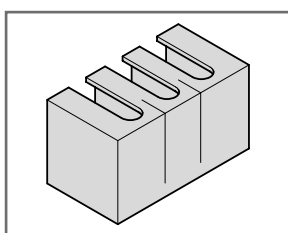
ACCESSORIES FOR TEMBREAK 2 MINI MCCBS

TB2 Mini MCCB Accessories

Handle Lock (HL)

Field Fit Accessory	Order Code	Parts No.
for 50AF and 100AF	4547560 708909	T2HL05A

Terminal Cover



Field Fit Accessory 3 Pole only	Order Code	Parts No.
short type	4547560 708305	T2CF053NSNBA
long type	4547560 708503	T2CF053NLNBA
earth barrier	4547560 708619	T2BE053A

Interpole Barrier

Field Fit Accessory	Order Code	Parts No.
	4547560 708817	T2BA053NHA

Earth Barrier

Field Fit Accessory	Order Code	Parts No.
For 50Af and 100AF, 2P	4547560 708602	T2BE052A
For 50AF and 100AF, 3P	4547560 708619	T2BE053A

SWITCH-DISCONNECTORS ALL FRAME SIZES

Model	2P							3P						
	FC	FB	FW	RC	PM	DR	DA	FC	FB	FW	RC	PM	DR	DA
E50-NN	■	●	-	●	-	-	■	■	●	-	●	-	-	■
E100-NN	■	●	-	●	-	-	■	■	●	-	●	-	-	■

Model	3P							4P						
	FC	FB	FW	RC	PM	DR	DA	FC	FB	FW	RC	PM	DR	DA
S125-NN	■	●	●	●	●	-	●	■	●	●	●	●	-	-
S160-NN	■	●	●	●	●	-	-	■	●	●	●	●	-	-
S250-NN	■	●	●	●	●	-	-	■	●	●	●	●	-	-
S400-NN	■	●	●	●	●	-	-	■	●	●	●	●	-	-
S630-NN	■	●	●	●	●	-	-	■	●	●	●	●	-	-
XS800NN	-	■	●	●	●	●	-	-	■	●	●	●	●	-
XS1250NN	-	■	-	●	●	●	-	-	■	-	●	●	●	-
XS1600NN	-	■	-	●	-	●	-	-	■	-	●	-	●	-

FC: Front Connection
 FB: Front Connection with attached flat bars.
 FW: Solderless terminal
 RC: Rear Connection
 PM: Plug-in
 DR: Draw-out
 DA: DIN rail mounting

ORDER CODES

TEMTRANSFER

TemTransfer Automatic Changeover Controller



302001000	TemTransfer 115V
302001001	TemTransfer (230V)
302001002	TemTransfer Interface Kit
215009159	TemTransfer wiring kit/FC/630/800
211009160	TemTransfer wiring kit/FC/1250/1600

ORDER FORM

TEMBREAK2

When you require the breaker fitted with internally mounted accessories please place the order using this order form. If the breaker is Plug-in or Draw-out connection and with or without accessories please use this order form.

TemBreak2 (Thermal-magnetic type)		TemBreak2 (Electronic type)																																											
Type	<table border="1"> <tr><td>E</td><td>Economical</td></tr> <tr><td>S</td><td>Standard</td></tr> <tr><td>H</td><td>High</td></tr> <tr><td>L</td><td>Limiting</td></tr> </table>	E	Economical	S	Standard	H	High	L	Limiting	Type	<table border="1"> <tr><td>S400-NE</td></tr> </table>	S400-NE																																	
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Connection and Mounting	<table border="1"> <tr><td>FC</td><td>Front Connection</td></tr> <tr><td>FB</td><td>Front Connection with attached flat bars</td></tr> <tr><td>FW</td><td>Solderless terminal (cable clamp)</td></tr> <tr><td>RC</td><td>Rear Connection</td></tr> <tr><td>PM</td><td>Plug-in (Order Plug-in bases separately.)</td></tr> <tr><td>DR</td><td>Draw-out</td></tr> </table>	FC	Front Connection	FB	Front Connection with attached flat bars	FW	Solderless terminal (cable clamp)	RC	Rear Connection	PM	Plug-in (Order Plug-in bases separately.)	DR	Draw-out	Connection and Mounting	<table border="1"> <tr><td>PM</td></tr> </table>	PM																													
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ORDER FORM

TEMBREAK

TemBreak (Thermal-magnetic type)		TemBreak (Electronic type)																																																					
Type	XS Standard XH High TL Limiting	Type	XS1250SE																																																				
Number of poles	3P 4P	Number of poles	3																																																				
Connection and Mounting	FB Front Connection with attached flat bars FW Solderless terminal (cable clamp) RC Rear Connection PM Plug-in (Order Plug-in bases separately.) DR Draw-out	Connection and Mounting	FB																																																				
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TERASAKI ELECTRIC CO., LTD.

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Osaka, Japan

Circuit Breaker Division: 7-2-10 Kamihigashi, Hiranoku Osaka, Japan

Telephone: 81-6-6791-9323
Fax: 81-6-6791-9274
Email: int-sales@terasaki.co.jp
<http://www.terasaki.co.jp/>

Ratings and specifications are subject to change without notice.

CAT REF. '06-I61E

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Telephone: 44-141-941-1940
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Email: marketing@terasaki.co.uk
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TERASAKI ITALIA s.r.l.

Via Ambrosoli, 4A-20090 Rodano, Milano, Italy

Telephone: 39-02-92278300
Fax: 39-02-92278320
Email: info@terasaki.it
<http://www.terasaki.it/>

TERASAKI ESPAÑA S.A.U.

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Telephone: 34-93-879-60-50
Fax: 34-93-870-39-05
Email: terasaki@terasaki.es
<http://www.terasaki.es/>

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