

TemBreak & **TemBreak**

The Ultimate Safety Breaker

Molded Case Circuit Breaker



 Safety Notice

Carefully read instruction manual to ensure proper installation, connection, operation, handling and maintenance of the product.

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Product Warranty for Molded Case Circuit Breakers/Earth Leakage Circuit Breakers

Warranty Period

Products are warranted for a period of one (1) year from the date of purchase. However, if the date of purchase is unknown, products are warranted for a period of eighteen (18) months from the date of manufacture.

Warranty Scope

- (1) Terasaki shall service products that incur trouble within the warranty period or shall replace them with new products free-of-charge, provided the products were properly used in a state, method and environment compliant with conditions and precautions specified in our catalogs, manuals and product warning plates.
- (2) Servicing shall be subject to billing even within the warranty period in the following cases:
 - Trouble caused by improper or careless storage or handling;
 - Trouble caused by improper installation;
 - Trouble caused by improper use or unauthorized remodeling;
 - Trouble caused by external factors including fire and abnormal voltage, or force majeure including earthquakes, storms, flooding or other natural disaster; or
 - Trouble caused by technically or scientifically unforeseeable events at the time of delivery.
- (3) "Warranty" as it used here applies strictly to the delivered product itself and excludes from compensation any and all damages induced by trouble with the delivered product.

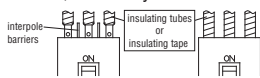
Safety Notices

Before installing, using, or servicing products, read these "Safety Notices" and familiarize yourself with all aspects of products, safety information and precautions.

■ Mounting Precautions

⚠ Caution

- Electrical work should only be undertaken by suitably qualified persons.
- Do not place the product in an area that is subject to high temperature, high humidity, excessive dusty air, corrosive gas, strong vibration and shock, or other unusual conditions. Mounting in such areas could cause a fire or malfunction.
- Be careful to prevent foreign objects (debris, concrete powder, iron powder, etc.) and rainwater from entering product. These materials inside the product could cause a fire or malfunction.
- Prior to commencing any work on the product, open an upstream circuit breaker or isolator to ensure that no voltage is applied to the product. Otherwise, electrical shock may result.
- Observe proper connection; do not confuse line and load end for the circuit exceeding 240V. Reverse connection may cause a fire or malfunction.
- For 4-pole breakers, be sure to connect a neutral conductor to the N pole. Otherwise, an over-current may hinder the product from tripping, thus resulting in a fire.
- When connecting cable or busbar to the product, tighten terminal screws to the torque specified in this manual. Otherwise, a fire could result.
- Even when tightening the terminal screws and after conductor connection, do not apply excessive force to the terminals. Otherwise, a fire may result.
- For front-connected breakers, insulate all bare conductors of the line side until the breaker end. If interpole barriers are packed, be sure to use the barriers; moreover, insulate all bare conductors by insulating tape or the like so that the tape overlaps with the barriers. Insufficient insulation may result in short-circuit.
- Do not block the arc gas vents of the product to ensure adequate arc space. Blocking these vents could result in failure of circuit interruption.



[Earth Leakage Circuit Breaker]

- When using a 3-pole circuit breaker in a single-phase 2-wire circuit, connect the power source to the right and left poles. Do not connect it to the central pole. Otherwise, the earth leakage tripping function will be inoperative.
- Using the test button, check the breaker for normal operation. Proceed as follows: After proper connection, move the handle to the I(ON) position and then (while applying voltage to the breaker) press the test button. The breaker will trip open. If pressing the test button for 2 or 3 seconds does not cause the breaker to trip open, the breaker is out of order. Please contact your local agent or our branch office immediately.

⚠ Warning

A warning notice with this symbol indicates that neglecting the suggested procedure or practice could result in lethal or serious personal injury.

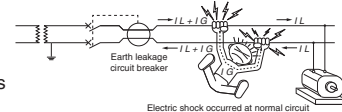
⚠ Caution

A caution notice with this symbol indicates that neglecting the suggested procedure or practice could result in moderate or slight personal injury and/or property damage.

■ Handling Precautions

⚠ Warning

- Never touch terminals. Otherwise, electric shock may result.
- The earth leakage circuit breaker trips open just when the difference between outgoing current and incoming current exceeds a specified value. Never touch two or more bare live parts simultaneously. The breaker does not respond to electric shock.



⚠ Caution

- When the breaker trips open automatically, remove the cause, then return the handle to the I(ON) position. Should a fault be interrupted, the breaker must be inspected. Otherwise, a fire may result.

[Earth Leakage Circuit Breaker]

- Be sure to connect the earth terminal of a load device to ground.
- Check the breaker for normal operation by pressing the test button once per month. If pressing the test button for 2 or 3 seconds does not cause the breaker to trip open, the breaker is out of order. Replace it by new one.

■ Maintenance Precautions

⚠ Caution

- Service and/or inspection of the product must be done by persons having expert knowledge.
- Before servicing or inspecting the product, open an upstream circuit breaker or the like to isolate all sources of power. Otherwise, electric shock may result.
- Regularly check that the breaker terminal screws are tightened to torque values shown within this manual, failure to do so may result in fire.

When placing orders

- (1) Products and specifications appearing in this catalog are subject to change (including discontinued sales) due to product improvements and other reasons, therefore contact us or your local dealer prior to using, considering or ordering the shown products to confirm that the information in this catalog is the up-to-date.
- (2) If considering the shown products for applications where they may be used outside of the scope of specifications and conditions of use listed in this catalog, applications under conditions or environments not specifically described in this catalog, applications that especially require safety and high reliability such as safety devices or control systems for nuclear power plants, railroads, aircrafts, automobiles and medical equipment, or other applications that can potentially have a serious impact on human life or property, contact us and determine the adequacy of products for the intended application via specifications, etc.

1

General

1

General

Features		1-2
Selection Chart		1-4

Approvals by ship classification societies

NK	NIPPON KAIJI KYOKAI
LR	Lloyd's Register of Shipping
ABS	The American Bureau of Shipping
GL	Germanischer Lloyd
BV	Bureau Veritas
CCS	China Classification Society
KR	Korean Register of Shipping
RINA	Registro Italiano Navale

Based Standards

IEC 60947-2	International Electrotechnical Commission
EN 60947-2	European Standard

Safety Breaker

Tem Isolation capability

The isolation capability means that, as long as the main contact is closed, the toggle is not in the OFF position and cannot be locked at the OFF position.

The toggle being in the OFF position hence shows the main contact is open and personnel are not exposed to electrical shock hazard when working in the load side.

Tem Direct Opening Action

Under the heading “Measures to minimize 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.”

Tem Safety lock for Plug-in versions

There are three plug-in types available according to applications,

[For switchboards]

■Standard type

Suitable for angle-mounted or rear-connected application

■High-performance type

Suitable for angle-mounted, front panel-mounted or rear panel-mounted application. 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.

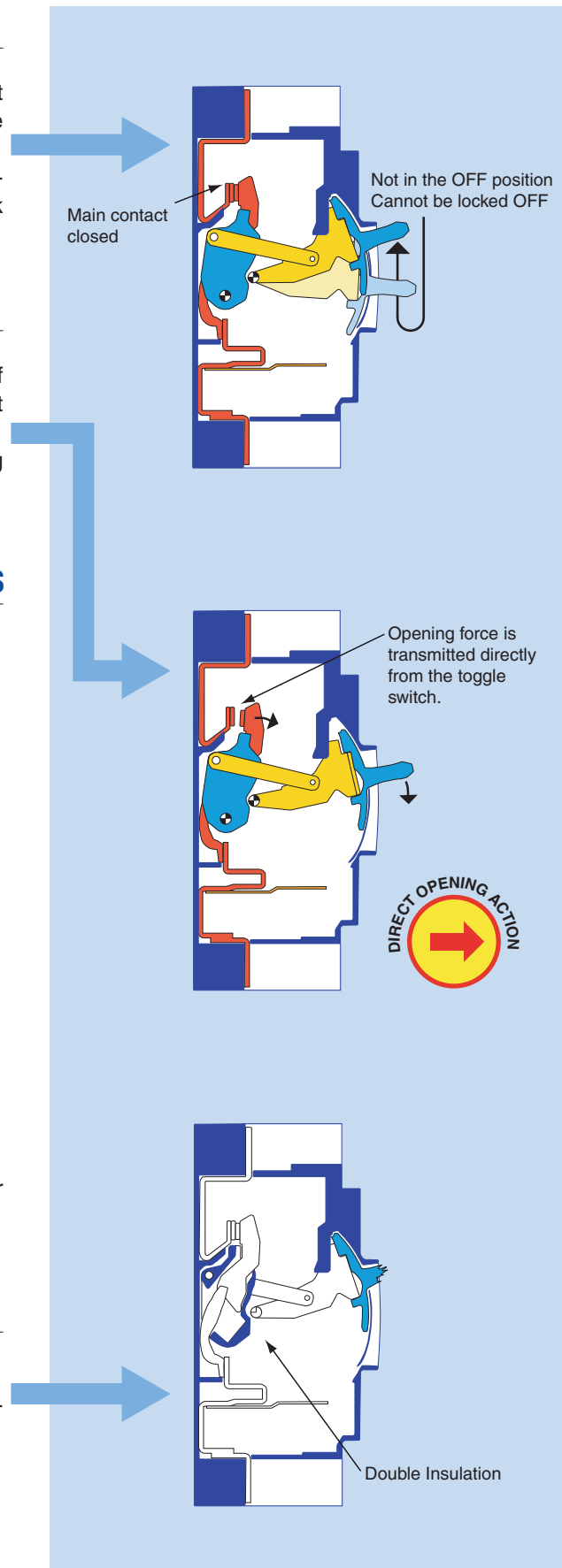


[For distribution boards]

Suitable for front-connected application where the breaker depth is smaller than for switchboards

Tem Enhanced Insulation

The risk of touching live parts has been minimized by design. If the toggle is broken by accident or misuse, no live part is exposed.



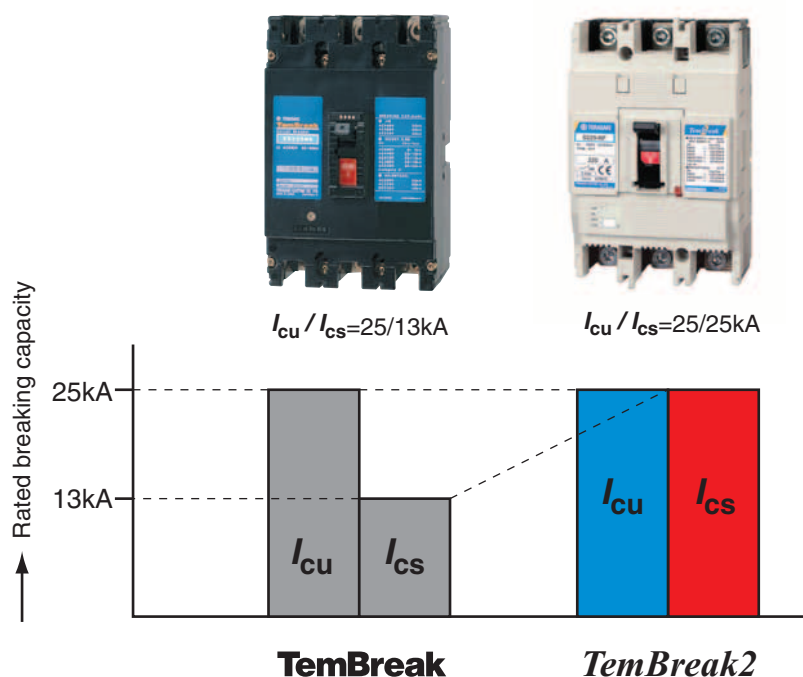


Rated service short-circuit breaking capacity (I_{cs})

The rated service short-circuit breaking capacity (I_{cs}) is the maximum short-circuit current defined by IEC 60947-2 which a circuit breaker can break in accordance with a sequence of opening and closing operations (O-CO-CO).

TemBreak2 has greatly been improved in its rated service short-circuit capacity, thereby providing more safety.

[225AF Standard series]



Smaller size and higher breaking capacity, allowing a downsizing of switchboards

TemBreak2 current limiting breakers are reduced in size to at least one-half and enhanced in breaking capacity.

- Smaller in size than existing models

50%



TL-100C



L100-NF

(100A frame)

30%



TL-225B



L225-NF

(225A frame)

50%



TL-400



L400-NE

(400A frame)

Selection Chart

Molded Case Circuit Breakers		Frame size (A)						
		30	50	100	125	225	250	400
Economical series			E50-SF 10kA/5kA	E100-SF 10kA/5kA			E250-SF 15kA/12kA	
Standard series								\$400-CF 30kA/30kA
			\$50-SF 25kA/13kA		\$125-SF 25kA/13kA		\$250-SF 30kA/15kA	\$400-NF 45kA/45kA
				\$100-NF 25kA/25kA	\$125-NF 25kA/25kA	\$225-NF 25kA/25kA	\$250-NF 25kA/25kA	Electronic \$400-NE 45kA/45kA
High-fault level series			\$50-GF 50kA/25kA	\$100-GF 50kA/25kA	\$125-GF 50kA/25kA	\$225-GF 50kA/25kA	\$250-GF 50kA/25kA	\$400-GF 65kA/50kA
						Electronic \$225-GE 50kA/25kA		Electronic \$400-GE 65kA/50kA
								\$400-PF 80kA/80kA
								Electronic \$400-PE 80kA/80kA
Current limiting series	Standard series			H100-NF 120kA/80kA	H125-NF 120kA/80kA	H225-NF 120kA/80kA		Electronic H400-NE 120kA/80kA
	High-fault level series			L100-NF 180kA/135kA	L125-NF 180kA/135kA	L225-NF 180kA/135kA		Electronic L400-NE 180kA/135kA
Motor protection series			E50-CM 2.5kA/1.3kA	\$100-NM 25kA/25kA		\$225-NM 25kA/25kA		
Non-automatic trip breakers								
Switch-disconnectors				\$100-NN	\$125-NN		\$250-NN	
								\$400-NN
TB series for distribution boards			④ TB-5S 5kA/-					
			④ TB-5P 5kA/-					
			④ TB-5D 5kA/-					

Notes: ① For breaking capacity, see pages 2-2 to 2-15
 ② For AC500V
 ③ For AC460V
 ④ For AC250V

AC450V I_{cu} I_{cs} AC450V

2

Ratings and Specifications

Molded Case Circuit Breakers

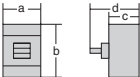
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Ratings and Specifications

Molded Case Circuit Breakers

1 Economical series

Frame size (A)		50	100	250					
Type		E50-SF	E100-SF	E250-SF					
Number of poles		23	23	2*3					
Ratings									
Rated current, A		1040	1040100	125250					
Calibrated at 45°C		1550	1550	150					
		20	2060	175					
		30	3075	200					
				225					
* 2 poles breakers use the terminals of both ends of 3 poles breakers.									
Rated insulation voltage [U _i] V		690	690	690	690				
Rated impulse withstand voltage [U _{imp}] kV		6	6	8	8				
Rated breaking capacity, kA									
NK	AC	690V	—	—	—				
		450V	10/— ⑬	10/— ⑬	15/12	15/12			
		240V	25/— ⑭	25/— ⑭	35/27	35/27			
		250V	7.5/— ⑰	7.5/— ⑰	—	—			
IEC60947-2	AC	690V	—	—	—				
		500V	7.5/3.8	7.5/3.8	10/7.5	10/7.5			
		440V	10/5	10/5	15/12	15/12			
		415V	10/5	10/5	25/19	25/19			
I _{cu} /I _{cs} (sym)	① DC	380V	16/8	16/8	25/19	25/19			
		240V	25/13	25/13	35/27	35/27			
		250V	7.5/3.8 ⑰	7.5/3.8 ⑰	15/12	15/12			
		125V	15/7.5 ⑰	15/7.5 ⑰	25/19	25/19			
		Rated short time withstand current, kA		—	—	—	—		
		External dimensions, mm							
		a	5075	5075	105105	105105			
		b	130	130	165	165			
		c	68	68	68	68			
		d	87	87	95	95			
Weight (● marked standard type) kg		0.480.74	0.480.74	1.51.5	1.51.5				
Connections and Mountings									
Front-connected (FC)	Terminal screws	●	●	●	●				
	With extension bars	—	—	○ ⑤③	○ ⑤③				
Rear-connected (RC)	Bolt studs	○	○	—	—				
	Flat bar studs	—	—	○	○				
Plug-in (PM)	For switchboards Standard (PMC)	○	○	—○	—○				
	High-performance (PMB)	—	—	—	—				
For distribution boards (PMC)	—	○	○	—	—				
	—	○	○	—	—				
Flush-mounted (FP)	Bolt studs	○	○	—	—				
	Flat bar studs	—	—	○	○				
Draw-out type (DR)		—	—	—	—				
TemPlug70 (PG)		—	—	—○	—○				
TemPlug45B (PG4)		—	—	—	—				
DIN rail mount		—	—	—	—				
Clip-in chassis mount		—	—	—	—				
Accessories (optional)		Symbol							
Internally mounted	Auxiliary switch	A X	●	●	●				
	Alarm switch	A L	●	●	●				
	Shunt trips	S H	●	●	●				
	Undervoltage trips	U V	● ⑥	● ⑥	●				
Motor operator		M C	—●	—●	●				
Externally mounted	External operating handle	Breaker-mounted H B	—●	—●	●				
	Door-mounted (variable depth) H P	—●	—●	●	●				
Toggle extension		H A	—	—	—				
Mechanical interlock Slide type M S		—●	—●	●	●				
Toggle holder		H H	●	●	●				
Toggle lock		H L	●	●	●				
Terminal cover	For front-connected C F	●	●	●	●				
	For rear-connected and plug-in C R	●	●	●	●				
Interpole barrier		B A	●	● ③	● ③				
Terminal block for lead		T F	●	●	●				
Door flange		D F	●	●	●				
Standard specifications									
Overcurrent trip mechanism		Thermal-magnetic ⑦	Thermal-magnetic ⑦	Thermal-magnetic	Thermal-magnetic				
Trip button (color)		Yes (Red)	Yes (Red)	Yes (Red)	Yes (Red)				
Handle position indication (ON: Red, OFF: Green)		Yes	Yes	Yes	Yes				
Suitability for isolation		Non	Non	Yes	Yes				
CE marking		Non	Non	Yes	Yes				
Page on which characteristics and outline dimensions are shown		7-2	7-4	7-16	7-16				
Operation									
Endurance	Electrical (cycles)	30,000	30,000	10,000	10,000				
	Mechanical (cycles)	30,000	30,000	30,000	30,000				

Notes:

● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ● : "yes" or "available". — : "no" or "not available".

① : DC rating available on request. ③ : Line side interpole barriers are supplied as standard. (Front connection only)

⑥ : The UVT controller is installed externally, when provided with AC UVT. ⑦ : Hydraulic-magnetic type for below 10A rating. ⑬ : at 500V AC. ⑭ : at 250V AC.

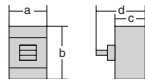
⑰ : Applicable to only 2 poles breakers. ⑤③ : For the extension bars, please palce the order separately in parts.

2

Ratings and Specifications

Molded Case Circuit Breakers

2 Standard series

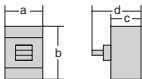
Frame size (A)			50			100			125			125			225			250															
Type			S50-SF			S100-NF			S125-SF			S125-NF			S225-NF			S250-SF															
Number of poles			2		3	2		3	4	2		3	4	2		3	4	2*		3	4	2*		3	4	2*		3	4				
Ratings																																	
Rated current, A			15			15			50	15		50	125		125		125		200	125		250											
Calibrated at 45°C			20			20			60	20		60					150		225	150													
			30			30			75	30		75					175		175														
			40			40			100	40		100							200														
			50																225														
* 2 poles breakers use the terminals of both ends of 3 poles breakers.																																	
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							
Rated breaking capacity, kA																																	
NK	AC	690V	—			6/6			—		—		6/6		7.5/7.5		—		—		—			—									
		450V	25/13			25/25			25/13		25/13		25/25		25/25		30/15		30/15			30/15											
		240V	50/25			50/50			50/25		50/25		50/50		65/65		85/43		85/43			85/43											
		250V	25/13 ⑦			25/19 ⑦			25/13 ⑦		25/13 ⑦		25/19 ⑦		40/40		25/13		25/13			25/13											
IEC60947-2	AC	690V	6/3			6/6			6/3		6/3		7.5/7.5		4/4		4/4			4/4													
		500V	12/6			22/22			12/6		12/6		25/25		25/13		25/13			25/13													
		440V	25/13			25/25			25/13		25/13		25/25		30/15		30/15			30/15													
		415V	30/15			30/30			30/15		30/15		35/35		40/20		40/20			40/20													
①	DC	380V	30/15			30/30			30/15		30/15		35/35		40/20		40/20			40/20													
		240V	50/25			50/50			50/25		50/25		65/65		85/43		85/43			85/43													
		250V	25/13 ⑦			25/19 ⑦			25/13 ⑦		25/13 ⑦		40/40		25/13		25/13			25/13													
		125V	40/20 ⑦			40/30 ⑦			40/20 ⑦		40/20 ⑦		40/30 ⑦		40/40		40/20			40/20													
Rated short time withstand current, kA			—			—			—		—		—		—		—			—													
External dimensions, mm																																	
	a	50			60			90	120	50		75	100	50		75	100	60		90	120	105		105	140	105		105	140				
	b	130			155			130		130		155		165		165		165		165		165			165								
	c	68			68			68		68		68		68		68		68		68		68			68								
	d	95			92			95		95		92		92		92		95		95		95			95								
Weight (● marked standard type) kg			0.6			0.8			0.7		1.1		1.4	0.6		0.8		1.0	0.7		1.1		1.4	1.5		1.5		1.9	1.5		1.5		1.9
Connections and Mountings																																	
Front-connected (FC)	Terminal screws	●			●			●		●		●		●		●		●		●			●										
	With extension bars	○ ⑤③			○ ⑤③			○ ⑤③		○ ⑤③		○ ⑤③		○ ⑤③		○ ⑤③		○ ⑤③		○ ⑤③			○ ⑤③										
Rear-connected (RC)	Bolt studs	—			—			—		—		—		—		—		—		—			—										
	Flat bar studs	○			○			○		○		○		○		○		○		○			○										
Plug-in (PM)	For switchboards	—			—			—		—		—		—		—		—		—			—										
	Standard (PMC)	—			—			—		—		—		—		—		—		—			—										
	High-performance (PMB)	—			—			—		—		—		—		—		—		—			—										
	For distribution boards (PMC)	○ ⑤⑧			—			○ ⑤⑧		—		○ ⑤⑧		—		—		—		—			—										
Flush-mounted (FP)	With flat bar studs	○			—			○		—		○		—		○		—		○			○										
Draw-out type (DR)		—			—			—		—		—		—		—		—		—			—										
TemPlug70 (PG)		—			○			○		—		—		—		○		○		—		—			—		○		—				
TemPlug45B (PG4)		—			—			—		—		—		—		—		—		—			—			—							
DIN rail mount		—			○ ①①			—		○ ①①		—		—		○ ①①		—		—			—			—							
Clip-in chassis mount		—			—			—		—		—		—		—		—		—			—			—							
Accessories (optional)			Symbol																														
Internally mounted	Auxiliary switch	A X			●			●		●		●		●		●		●		●			●										
	Alarm switch	A L			●			●		●		●		●		●		●		●			●										
	Shunt trips	S H			●			●		●		●		●		●		●		●			●										
	Undervoltage trips	U V			●			●		●		●		●		●		●		●			●										
Externally mounted	Motor operator	M C			—			—		●		—		—		—		●		—			—										
	External operating handle	B H			—			—		●		—		—		—		●		—			—										
	Door-mounted (variable depth)	H P			—			—		●		—		—		—		●		—			—										
	Toggle extension	H A			—			—		—		—		—		—		—		—			—										
	Mechanical interlock Slide type	M S			—			—		●		—		—		—		●		—			—										
	Toggle holder	H H			●			●		●		●		●		●		●		●			●										
	Toggle lock	H L			●			●		●		●		●		●		●		●			●										
	Terminal cover	For front-connected			C F			●			●		●		●		●		●			●											
		For rear-connected and plug-in			C R			●			●		●		●		●		●			●											
	Interpole barrier	B A			● ③			● ③		● ③		● ③		● ③		● ③		● ③		● ③			● ③										
Terminal block for lead	T F			●			●		●		●		●		●		●		●			●											
Door flange	D F			●			●		●		●		●		●		●		●			●											
Standard specifications																																	
Overcurrent trip mechanism			Thermal-magnetic			Thermal-magnetic			Thermal-magnetic		Thermal-magnetic		Thermal-magnetic		Thermal-magnetic		Thermal-magnetic		Thermal-magnetic			Thermal-magnetic											
Trip button (color)			Yes (Red)			Yes (Red)			Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)			Yes (Red)											
Handle position indication (ON: Red, OFF: Green)			Yes			Yes			Yes		Yes		Yes		Yes		Yes		Yes			Yes											
Suitability for isolation			Yes			Yes			Yes		Yes		Yes		Yes		Yes		Yes			Yes											
CE marking			Yes			Yes			Yes		Yes		Yes		Yes		Yes		Yes			Yes											
Page on which characteristics and outline dimensions are shown			7-6			7-10			7-8		7-8		7-12		7-14		7-16		7-16			7-16											
Operation																																	
Endurance	Electrical (cycles)	30,000			30,000			30,000		30,000		30,000		10,000		10,000		10,000			10,000												
	Mechanical (cycles)	30,000			30,000			30,000		30,000		30,000		30,000		30,000		30,000			30,000												

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Ratings and Specifications

Molded Case Circuit Breakers

2 Standard series

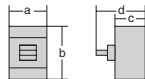
Frame size (A)		250			400		400		400		600		630		600		630		
Type		S250-NF			S400-CF		S400-NF		S400-NE		S630-CF		S630-NF		S630-NF		S630-NF		
Number of poles		2 * 3 4			3 4		3 4		3 4		3 4		3 4		3 4		3 4		
Ratings																			
Rated current, A		250			125 250		125 250		(Adjustable) / (Adjustable)		500 600		630		500 600		630		
Calibrated at 45°C					150 300		150 300		125 175		600				600				
					175 350		175 350		150 200										
					200 400		200 400		175 225										
					225		225		200 250										
									225 300										
									225 350										
									400										
* 2 poles breakers use the terminals of both ends of 3 poles breakers.																			
Rated insulation voltage {U _i } V		690			690		690		690		690		690		690		690		
Rated impulse withstand voltage {U _{imp} } kV		8			8		8		8		8		8		8		8		
Rated breaking capacity, kA																			
NK	AC	690V	7.5/7.5			15/15		20/15		20/15		10/10		10/10		20/20		20/20	
		450V	25/25			30/30		45/45		45/45		30/30		30/30		50/50		50/50	
		240V	65/65			50/50		85/85		85/85		50/50		50/50		85/85		85/85	
		① DC 250V	40/40			40/40		—		—		—		—		—		—	
IEC60947-2	AC	690V	7.5/7.5			15/15		20/15		20/15		10/10		10/10		20/20		20/20	
		500V	25/25			22/22		30/30		30/30		15/15		15/15		30/30		30/30	
		440V	25/25			30/30		45/45		45/45		30/30		30/30		50/50		50/50	
		415V	35/35			36/36		50/50		50/50		36/36		36/36		50/50		50/50	
I _{cu} /I _{cs} (sym)		380V	35/35			36/36		50/50		50/50		36/36		36/36		50/50		50/50	
		240V	65/65			50/50		85/85		85/85		50/50		50/50		85/85		85/85	
		① DC 250V	40/40			40/40		40/40		—		50/50		50/50		50/50		50/50	
		125V	40/40			40/40		40/40		—		50/50		50/50		50/50		50/50	
Rated short time withstand current, kA		—			—		—		5 (0.3sec)		—		—		—		—		
External dimensions, mm																			
		a	105 105 140			140 185		140 185		140 185		210 280		210 280		210 280		210 280	
		b	165			260		260		260		273		273		273		273	
		c	68			103		103		103		103		103		103		103	
		d	92			145		145		145		145		145		145		145	
Weight (● marked standard type) kg		1.5 1.5 1.9			4.2 5.6		4.2 5.6		4.3 5.7		8.0 11.0		8.0 11.0		8.0 11.0		8.0 11.0		
Connections and Mountings																			
Front-connected (FC)	Terminal screws	●			●		●		●		—		—		—		—		
	With extension bars	○ 53			○ (BAR)		○ (BAR)		○ (BAR)		●		●		●		●		
Rear-connected (RC)	Bolt studs	—			—		—		—		—		—		—		—		
	Flat bar studs	○			○		○		○		○		○		○		○		
Plug-in (PM)	For switchboards	— ○ —			○ —		○ —		○ —		○ —		○ —		○ —		○ —		
	Standard (PMC)	—			—		—		—		—		—		—		—		
	High-performance (PMB)	○			○		○		○		○		○		○		○		
	For distribution boards (PMC)	—			—		—		—		—		—		—		—		
Flush-mounted (FP)	With flat bar studs	○			○		○		○		○		○		○		○		
Draw-out type (DR)		—			▲		▲		▲		▲		▲		▲		▲		
TemPlug70 (PG)		— ○ —			○ —		○ —		○ —		○ —		○ —		○ —		○ —		
TemPlug45B (PG4)		—			—		—		—		—		—		—		—		
DIN rail mount		—			—		—		—		—		—		—		—		
Clip-in chassis mount		—			—		—		—		—		—		—		—		
Accessories (optional)		Symbol																	
Internally mounted	Auxiliary switch	A X			●		●		●		●		●		●		●		
	Alarm switch	A L			●		●		●		●		●		●		●		
	Shunt trips	S H			●		●		●		●		●		●		●		
	Undervoltage trips	U V			●		●		●		●		●		●		●		
Externally mounted	Motor operator	M C			●		●		●		●		●		●		●		
	External operating handle	B P			●		●		●		●		●		●		●		
	Breaker-mounted	H B			●		●		●		●		●		●		●		
	Door-mounted (variable depth)	H P			●		●		●		●		●		●		●		
	Toggle extension ⑨	H A			—		●		●		—		—		—		—		
	Mechanical interlock ⑨ Slide type	M S			●		●		●		●		●		●		●		
	Toggle holder ⑨	H H			●		●		●		●		●		●		●		
	Toggle lock ⑨	H L			●		●		●		●		●		●		●		
	Terminal cover For front-connected ⑨	C F			●		●		●		●		●		●		●		
	For rear-connected and plug-in	C R			●		●		●		●		●		●		●		
	Interpole barrier ⑨	B A			● ③		● ③		● ③		● ③		● ③		● ③		● ③		
	Terminal block for lead ⑨	T F			●		●		●		●		●		●		●		
Door flange ⑨	D F			●		●		●		●		●		●		●			
Standard specifications																			
Overcurrent trip mechanism		Thermal-magnetic			Thermal-magnetic		Thermal-magnetic		Electronic ⑩		Thermal-magnetic (adjustable)		Thermal-magnetic (adjustable)		Thermal-magnetic (adjustable)		Thermal-magnetic (adjustable)		
Trip button (color)		Yes (Red)			Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		
Handle position indication (ON: Red, OFF: Green)		Yes			Yes		Yes		Yes		Yes		Yes		Yes		Yes		
Suitability for isolation		Yes			Yes		Yes		Yes		Yes		Yes		Yes		Yes		
CE marking		Yes			Yes		Yes		Yes		Yes		Yes		Yes		Yes		
Page on which characteristics and outline dimensions are shown		7-18			7-20		7-20		7-30		7-34		7-34		7-34		7-34		
Operation																			
Endurance	Electrical (cycles)	10,000			4,500		4,500		4,500		4,500		4,500		4,500		4,500		
	Mechanical (cycles)	30,000			15,000		15,000		15,000		15,000		15,000		15,000		15,000		

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Ratings and Specifications

Molded Case Circuit Breakers

2 Standard series

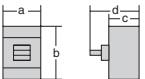
															TemBreak													
Frame size (A)			630			800			800			800			1250			1600			2000							
Type			S630-NE			S800-CF			S800-NF			S800-NE			S1250-NE			S1600-NE			XS2000NE							
Number of poles			3		4	3		4	3		4	3		4	3		4	3		4	3		4					
Ratings																												
Rated current, A			(Adjustable)			700			700			(Adjustable)			(Adjustable)			(Adjustable)			(Adjustable)							
Calibrated at 45°C			250		500	800		800		350		600	500		1000	700		1200	1000		1600							
			300		600					400		700	600		1200	800		1400	1200		1800							
			350		630							450		800	700		1250	900		1600	1400		2000					
			400										500			800			1000									
Rated insulation voltage [U _i] V			690			690			690			690			690			690			690							
Rated impulse withstand voltage [U _{imp}] kV			8			8			8			8			8			8			8							
Rated breaking capacity, kA																												
NK	AC	690V	20/20		10/10		20/20		20/20		25/20		—		—		—		—		—							
		450V	50/50		30/30		50/50		50/50		65/50		—		—		85/— ⑬		—									
		240V	85/85		50/50		85/85		85/85		100/75		—		—		—		—									
		250V	—		—		—		—		—		—		—		—		—									
IEC60947-2	AC	690V	20/20		10/10		20/20		20/20		25/20		45/34		45/42		—		—									
		500V	30/30		15/15		30/30		30/30		45/34		65/50		65/50		—		—									
		440V	50/50		30/30		50/50		50/50		65/50		85/65		85/65		—		—									
		415V	50/50		36/36		50/50		50/50		70/50		85/65		85/65		—		—									
I _{cu} /I _{cs} (sym)	① DC	380V	50/50		36/36		50/50		50/50		85/65		100/75		100/75		—		—									
		240V	85/85		50/50		85/85		85/85		100/75		125/94		125/94		—		—									
		250V	—		50/50		50/50		—		—		—		—		—		—									
		125V	—		50/50		50/50		—		—		—		—		—		—									
Rated short time withstand current, kA			10 (0.3sec)			—			—			10 (0.3sec)			15 (0.3sec)			20 (0.3sec)			42 (0.3sec)							
External dimensions, mm																												
			a	210	280	210	280	210	280	210	280	210	280	210	280	210	280	320	429									
			b	273		273		273		273		273		273		273		273		450								
			c	103		103		103		103		103		103		103		103		185								
			d	145		145		145		145		145		171		191		245		245								
Weight (● marked standard type) kg			8.7	11.9	8.5	11.5	8.5	11.5	9.1	12.3	19.8	25.0	27.0	35.0	54.0	67.0												
Connections and Mountings																												
Front-connected (FC)	Terminal screws																											
	With extension bars																											
Rear-connected (RC)	Bolt studs																											
	Flat bar studs																											
Plug-in (PM)	For switchboards Standard (PMC)																											
	High-performance (PMB)																											
For distribution boards (PMC)																												
Flush-mounted (FP)	With flat bar studs																											
Draw-out type (DR)																												
TemPlug70 (PG)																												
TemPlug45B (PG4)																												
DIN rail mount																												
Clip-in chassis mount																												
Accessories (optional)			Symbol																									
Internally mounted	Auxiliary switch	A X	●		●		●		●		●		●		●		●											
	Alarm switch	A L	●		●		●		●		●		●		●		●											
	Shunt trips	S H	●		●		●		●		●		●		●		●											
	Undervoltage trips	U V	●		●		●		●		●		●		●		● ⑥											
Externally mounted	Motor operator	M C	●		●		●		●		●		●		●		●											
	External operating handle	Breaker-mounted Door-mounted (variable depth)	H B H P	● ●		● ●		● ●		● ●		● ●		● ●		● ●		● ● ⑥③										
	Toggle extension ⑨	H A	●		●		●		●		● ②④		● ②④		● ②													
	Mechanical interlock ⑨ Slide type	M S	●		●		●		●		●		●		●													
	Toggle holder ⑨	H H	●		●		●		●		●		●		●													
	Toggle lock ⑨	H L	●		●		●		●		●		●		●													
	Terminal cover	For front-connected ⑨ For rear-connected and plug-in	C F C R	● ●		● ●		● ●		● ●		● —		— —		— —												
	Interpole barrier ⑨	B A	● ③		● ③		● ③		● ③		● ③		● ③		● ③													
	Terminal block for lead ⑨	T F	●		●		●		●		●		●		●		●											
	Door flange ⑨	D F	●		●		●		●		●		●		●		●											
	Standard specifications																											
	Overcurrent trip mechanism			Electronic ⑩			Thermal-magnetic(adjustable)			Thermal-magnetic(adjustable)			Electronic ⑩			Electronic ⑩			Electronic ⑩			Electronic ⑩						
Trip button (color)			Yes (Red)			Yes (Red)			Yes (Red)			Yes (Red)			Yes (Red)			Yes (Red)			Yes (Red)							
Handle position indication (ON: Red, OFF: Green)			Yes			Yes			Yes			Yes			Yes			Yes			Yes							
Suitability for isolation			Yes			Yes			Yes			Yes			Yes			Yes			Non							
CE marking			Yes			Yes			Yes			Yes			Yes			Yes			Non							
Page on which characteristics and outline dimensions are shown			7-36			7-40			7-40			7-42			7-46			7-48			7-76							
Operation																												
Endurance	Electrical (cycles)	4,500		4,000		4,000		4,000		4,000		4,000		2,000		500												
	Mechanical (cycles)	15,000		10,000		10,000		10,000		5,000		5,000		2,000														

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Ratings and Specifications

Molded Case Circuit Breakers

3 High-fault level series

Frame size (A)			50	100	125	225	250	225	400	400												
Type			\$50-GF	\$100-GF	\$125-GF	\$225-GF	\$250-GF	\$225-GE	\$400-GF	\$400-GE												
Number of poles			3	4	2	3	4	2*	3	4	3	4	3	4	3	4						
■ Ratings																						
Rated current, A			15	15	60	125	125	250	(Adjustable)		125	250	(Adjustable)		(Adjustable)	(Adjustable)						
Calibrated at 45°C			20	20	75		150			125	150	300	125	175		175						
			30	30	100		175			150	175	350	150	200		200						
			40	40			200			175	200	400	175	225		225						
			50	50			225			200	225		200	250		250						
										225			225	300		300						
														350		350						
														400		400						
* 2 poles breakers use the terminals of both ends of 3 poles breakers.																						
Rated insulation voltage [U _i] V			690	690	690	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	8	8	8						
■ Rated breaking capacity, kA																						
NK	AC	690V	6/6	6/6	6/6	7.5/7.5	7.5/7.5	—	20/15	20/15												
		450V	50/25	50/25	50/25	50/25	50/25	—	65/50	65/50												
		240V	85/85	85/85	85/85	85/85	85/85	—	100/85	100/85												
		250V	40/40	40/40 ⑦	40/40	40/40	40/40	—	—	—												
IEC60947-2	AC	690V	6/6	6/6	6/6	7.5/7.5	7.5/7.5	7.5/7.5	20/15	20/15												
		500V	25/22	25/22	25/25	25/25	25/25	25/25	30/30	30/30												
		440V	50/25	50/25	50/25	50/25	50/25	50/25	65/50	65/50												
		415V	65/33	65/33	65/33	65/35	65/35	65/35	70/50	70/50												
I _{cu} /I _{cs} (sym)	① DC	380V	65/33	65/33	65/33	65/35	65/35	65/35	70/50	70/50												
		240V	85/85	85/85	85/85	85/85	85/85	85/85	100/85	100/85												
		250V	40/40	40/40 ⑦	40/40 ⑦	40/40	40/40	—	40/40	—												
		125V	40/40	40/40 ⑦	40/40	40/40	—	40/40	—													
		—		—		—		—		5 (0.3sec)												
		—		—		—		—		—												
■ Rated short time withstand current, kA																						
■ External dimensions, mm																						
			a	90	120	60	90	120	105	105	140	105	105	140	105	140	140	185	140	185		
			b	155		155		155		165		165		165		260		260		260		
			c	68		68		68		68		68		103		103		103		103		
			d	92		92		92		92		92		127		145		145		145		
Weight (● marked standard type) kg			1.1	1.4	0.7	1.1	1.4	0.7	1.1	1.4	1.5	1.5	1.9	1.5	1.5	1.9	2.3	3.1	4.2	5.6	4.3	5.7
■ Connections and Mountings																						
Front-connected (FC)	Terminal screws	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	With extension bars	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③			
Rear-connected (RC)	Bolt studs	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
	Flat bar studs	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
Plug-in (PM)	For switchboards	○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —			
	Standard (PMC)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
	High-performance (PMB)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
	For distribution boards (PMC)	○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —			
Flush-mounted (FP)	With flat bar studs	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
Draw-out type (DR)		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
TemPlug70 (PG)		○ —	○ ○ —	○ ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —	— ○ —			
TemPlug45B (PG4)		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
DIN rail mount		○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪	— ○ ⑪			
Clip-in chassis mount		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
■ Accessories (optional)			Symbol																			
Internally mounted	Auxiliary switch	A X	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Alarm switch	A L	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Shunt trips	S H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Undervoltage trips	U V	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Externally mounted	Motor operator	M C	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●			
	External operating handle	H B	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●			
	Door-mounted (variable depth)	H P	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●			
	Toggle extension	H A	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
	Mechanical interlock⑨ Slide type	M S	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●			
	Toggle holder	H H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Toggle lock	H L	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Terminal cover For front-connected	C F	●	●	●	●	●	●	●	●	●	●	●	●	●							

Notes:
 ● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".
 ① : DC rating available on request. ③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : The mechanical interlock is not applicable to the draw-out type (DR).
 ⑪ : Provided with DIN rail adaptor. ①⑥ : Optional pretrip alarm or ground fault trip function available on request. ②⑩ : Optional pretrip alarm function available on request.
 ⑦ : Applicable to only 2 poles breakers. ⑤③ : For the extension bars, please place the order separately in parts.

3 High-fault level series

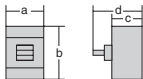
Notes:
 ● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".
 ① : DC rating available on request. ③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : Not applicable to the draw-out type (DR).
 ⑯ : Optional pretrip alarm or ground fault trip function available on request. ⑳ : One is supplied with every five breakers. Please specify if more are required.

2

Ratings and Specifications

Molded Case Circuit Breakers

3 High-fault level series

Frame size (A)		800		800		800		800		1250					
Type		\$800-RF		\$800-PF		\$800-RE		\$800-PE		\$1250-GE					
Number of poles		3	4	3	4	3	4	3	4	3	4				
■ Ratings															
Rated current, A		700		700		(Adjustable)		(Adjustable)		(Adjustable)					
Calibrated at 45°C		800		800		350 600 400 700 450 800 500		350 600 400 700 450 800 500		500 1000 600 1200 700 1250 800					
Rated insulation voltage (U_i) V		690		690		690		690		690					
Rated impulse withstand voltage (U_{imp}) kV		8		8		8		8		8					
■ Rated breaking capacity, kA															
NK	AC	690V	—	—	—	—	—	—	—	45/34	—				
		450V	—	—	—	—	—	—	—	85/65	—				
		240V	—	—	—	—	—	—	—	125/94	—				
		250V	—	—	—	—	—	—	—	—	—				
	① DC	250V	—	—	—	—	—	—	—	—	—				
IEC60947-2	AC	690V	25/20	25/20	25/20	25/20	25/20	25/20	25/20	45/34	—				
		500V	45/34	45/34	45/34	45/34	45/34	45/34	45/34	65/50	—				
		440V	65/50	85/50	65/50	65/50	85/50	85/50	85/50	85/65	—				
		415V	70/50	100/50	70/50	70/50	100/50	100/50	100/50	85/65	—				
		380V	70/50	100/50	70/50	70/50	100/50	100/50	100/50	100/75	—				
I_{cu}/I_{cs} (sym)	AC	240V	100/75	125/125	100/75	125/125	125/125	125/125	125/125	125/94	—				
		250V	50/50	50/50	—	—	—	—	—	—	—				
		125V	50/50	50/50	—	—	—	—	—	—	—				
		—	—	—	10 (0.3sec)	10 (0.3sec)	10 (0.3sec)	15 (0.3sec)	—	—	—				
	① DC	250V	—	—	—	—	—	—	—	—	—				
■ Rated short time withstand current, kA															
■ External dimensions, mm															
	a	210	280	210	280	210	280	210	280	210	280				
	b	273	—	273	—	273	—	273	—	370	—				
	c	103	—	103	—	103	—	103	—	120	—				
	d	145	—	145	—	145	—	145	—	171	—				
Weight (● marked standard type) kg		8.5	11.5	8.5	11.5	9.1	12.3	9.1	12.3	19.8	25.0				
■ Connections and Mountings															
Front-connected (FC)	Terminal screws	—	—	—	—	—	—	—	—	—	—				
	With extension bars	●	●	●	●	●	●	●	●	●	●				
Rear-connected (RC)	Bolt studs	—	—	—	—	—	—	—	—	—	—				
	Flat bar studs	○	○	○	○	○	○	○	○	○	○				
Plug-in (PM)	For switchboards Standard (PMC)	○	—	○	—	○	—	○	—	○	—				
	High-performance (PMB)	○	○	○	○	○	○	○	○	○	○				
For distribution boards (PMC)		—	—	—	—	—	—	—	—	—	—				
Flush-mounted (FP)	With flat bar studs	○	○	○	○	○	○	○	○	○	○				
Draw-out type (DR)		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲				
TemPlug70 (PG)		—	—	—	—	—	—	—	—	—	—				
TemPlug45B (PG4)		—	—	—	—	—	—	—	—	—	—				
DIN rail mount		—	—	—	—	—	—	—	—	—	—				
Clip-in chassis mount		—	—	—	—	—	—	—	—	—	—				
■ Accessories (optional)															
Internally mounted	Auxiliary switch	A X	●	●	●	●	●	●	●	●	●				
	Alarm switch	A L	●	●	●	●	●	●	●	●	●				
	Shunt trips	S H	●	●	●	●	●	●	●	●	●				
	Undervoltage trips	U V	●	●	●	●	●	●	●	●	●				
Externally mounted	Motor operator	M C	●	●	●	●	●	●	●	●	●				
	External operating handle	Breaker-mounted H B	●	●	●	●	●	●	●	●	●				
	Door-mounted (variable depth)	H P	●	●	●	●	●	●	●	●	●				
	Toggle extension ⑨	H A	●	●	●	●	●	●	●	● ②④	—				
	Mechanical interlock ⑨ Slide type	M S	●	●	●	●	●	●	●	●	●				
	Toggle holder ⑨	H H	●	●	●	●	●	●	●	●	●				
	Toggle lock ⑨	H L	●	●	●	●	●	●	●	●	●				
	Terminal cover For front-connected ⑨	C F	●	●	●	●	●	●	●	●	●				
	For rear-connected and plug-in	C R	●	●	●	●	●	●	●	—	—				
	Interpole barrier ⑨	B A	● ③	● ③	● ③	● ③	● ③	● ③	● ③	● ③	● ③				
	Terminal block for lead ⑨	T F	●	●	●	●	●	●	●	●	●				
	Door flange ⑨	D F	●	●	●	●	●	●	●	●	●				
■ Standard specifications															
Overcurrent trip mechanism		Thermal-magnetic		Thermal-magnetic		Electronic ⑩		Electronic ⑩		Electronic ⑩					
Trip button (color)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)					
Handle position indication (ON: Red, OFF: Green)		Yes		Yes		Yes		Yes		Yes					
Suitability for isolation		Yes		Yes		Yes		Yes		Yes					
CE marking		Yes		Yes		Yes		Yes		Yes					
Page on which characteristics and outline dimensions are shown		7-40		7-40		7-42		7-42		7-46					
■ Operation															
Endurance	Electrical (cycles)	4,000		4,000		4,000		4,000		4,000					
	Mechanical (cycles)	10,000		10,000		10,000		10,000		5,000					

Notes:
 ● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".
 ① : DC rating available on request. ③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : Not applicable to the draw-out type (DR).
 ⑩ : Optional pretrip alarm or ground fault trip function available on request. ②④ : One is supplied with every five breakers. Please specify if more are required.

4 Current limiting standard series

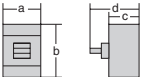
Ratings and Specifications

2

Ratings and Specifications

Molded Case Circuit Breakers

5 Current limiting High-fault level series

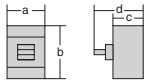
Frame size (A)			100		125		225		400		630		800					
Type			L100-NF		L125-NF		L225-NF		L400-NE		L630-NE		L800-NE					
Number of poles			3 4		3 4		3 4		3 4		3 4		3 4					
■ Ratings																		
Rated current, A			15 50		125		125		(Adjustable) (Adjustable)		(Adjustable)		(Adjustable)					
Calibrated at 45°C			20 60				150		125 175		250 500		350 600					
			30 75				175		150 200		300 600		400 700					
			40 100				200		175 225		350 630		450 800					
							225		200 250		400		500					
									225 300									
									225 350									
									225 400									
Rated insulation voltage [U _i] V			690		690		690		690		690		690					
Rated impulse withstand voltage [U _{imp}] kV			8		8		8		8		8		8					
■ Rated breaking capacity, kA																		
NK	AC	690V	25/20		25/20		25/20		50/50		25/20		25/20					
I _{cu} /I _{cs} (sym)		450V	180/135		180/135		180/135		180/135		180/135		180/135					
		240V	200/150 ③		200/150 ③		200/150 ③		200/150 ③		200/150		200/150					
	① DC	250V	—		—		—		—		—		—					
IEC60947-2	AC	690V	25/20		25/20		25/20		50/50		25/20		25/20					
I _{cu} /I _{cs} (sym)		500V	65/65		65/65		65/65		65/65		45/34		45/34					
		440V	180/135		180/135		180/135		180/135		180/135		180/135					
		415V	200/150		200/150		200/150		200/150		200/150		200/150					
		380V	200/150		200/150		200/150		200/150		200/150		200/150					
		240V	200/150		200/150		200/150		200/150		200/150		200/150					
	① DC	250V	40/40		40/40		40/40		—		—		—					
		125V	40/40		40/40		40/40		—		—		—					
■ Rated short time withstand current, kA			—		—		—		5 (0.3sec)		10 (0.3sec)		10 (0.3sec)					
■ External dimensions, mm																		
			a	105	140	105	140	105	140	140	185	210	280	210	280			
			b	165		165		165		260		273		273				
			c	103		103		103		140		140		140				
			d	127		127		127		182		182		182				
Weight (● marked standard type) kg			2.4	3.2	2.4	3.2	2.4	3.2	7.1	9.4	13.5	19.6	14.3	20.3				
■ Connections and Mountings																		
Front-connected (FC)			Terminal screws		●		●		●		—		—					
			With extension bars		○ ⑤③		○ ⑤③		○ (BAR)		●		●					
Rear-connected (RC)			Bolt studs		—		—		—		—		—					
			Flat bar studs		○		○		○		○		○					
Plug-in (PM)			For switchboards		○ —		○ —		○ —		○ —		○ —					
			Standard (PMC)		—		—		—		—		—					
			High-performance (PMB)		○		○		○		○		○					
			For distribution boards (PMC)		—		—		—		—		—					
Flush-mounted (FP)			With flat bar studs		○		○		○		○		○					
Draw-out type (DR)					—		—		—		—		—					
TemPlug70 (PG)					—		—		—		—		—					
TemPlug45B (PG4)					—		—		—		—		—					
DIN rail mount					—		—		—		—		—					
Clip-in chassis mount					—		—		—		—		—					
■ Accessories (optional)			Symbol															
Internally mounted	Auxiliary switch		A X		●		●		●		●		●					
	Alarm switch		A L		●		●		●		●		●					
	Shunt trips		S H		●		●		●		●		●					
	Undervoltage trips		U V		●		●		●		●		●					
Externally mounted	Motor operator		M C		●		●		●		●		●					
	External operating		Breaker-mounted		H B		●		●		●		●					
	handle		Door-mounted (variable depth)		H P		●		●		●		●					
	Toggle extension		H A		—		—		●		●		●					
	Mechanical interlock⑨		Slide type		M S		●		●		●		●					
	Toggle holder		H H		●		●		●		●		●					
	Toggle lock		H L		●		●		●		●		●					
	Terminal cover		For front-connected		C F		●		●		●		●					
			For rear-connected and plug-in		C R		●		●		●		●					
	Interpole barrier		B A		● ③		● ③		● ③		● ③		● ③					
	Terminal block for lead		T F		●		●		●		●		●					
	Door flange		D F		●		●		●		●		●					
■ Standard specifications																		
Overcurrent trip mechanism			Thermal-magnetic		Thermal-magnetic		Thermal-magnetic		Electronic ⑩		Electronic ⑩		Electronic ⑩					
Trip button (color)			Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)		Yes (Red)					
Handle position indication (ON: Red, OFF: Green)			Yes		Yes		Yes		Yes		Yes		Yes					
Suitability for isolation			Yes		Yes		Yes		Yes		Yes		Yes					
CE marking			Yes		Yes		Yes		Yes		Yes		Yes					
Page on which characteristics and outline dimensions are shown			7-22		7-24		7-26		7-32		7-38		7-44					
■ Operation																		
Endurance	Electrical (cycles)		30,000		30,000		10,000		4,500		4,500		4,000					
	Mechanical (cycles)		30,000		30,000		30,000		15,000		15,000		10,000					

2

Ratings and Specifications

Molded Case Circuit Breakers

6 Motor protection series

Frame size (A)		50	100	225					
Type		E50-CM	S100-NM	S225-NM					
Number of poles		3	3	3					
Ratings									
Motor rated capacity (kW) and breaker rated current (A)									
Calibrated at 45°C									
		(A)	(kW)	(A)	(kW)	(A)	(kW)		
		200/220V	400/440V	200/220V	400/440V	200/220V	400/440V		
Note: Select an appropriate one depending on the total load current of the motor operator.		0.7	—	0.2	16	3.7	7.5	125	30
		1.4	0.2	0.4	24	5.5	11	150	37
		2	—	0.75	32	7.5	15	175	45
		2.6	0.4	—	40	—	18.5	225	55
		4	0.75	1.5	45	11	22		
		5	—	2.2	60	15	30		
		8	1.5	3.7	75	18.5	37		
		10	2.2	—	90	22	45		
		12	—	5.5	100	—	55		
		16	3.7	7.5					
		25	5.5	11					
		32	7.5	15					
		40	—	18.5					
		45	11	22					
Rated insulation voltage [U_i] V		690	690	690					
Rated impulse withstand voltage [U_{imp}] kV		6	8	8					
Rated breaking capacity, kA									
NK	AC	690V	—	—					
		450V	2.5/— ⑬	25/25	25/25				
		240V	5/— ⑭	50/50	65/65				
	DC	250V	—	—	—				
IEC 60947-2	AC	440V	2.5/1.3	25/25	25/25				
		415V	2.5/1.3	30/30	35/35				
		380V	2.5/1.3	30/30	35/35				
	DC	240V	5/2.5	50/50	65/65				
External dimensions, mm									
	a	75	90	105					
	b	130	155	165					
	c	68	68	68					
	d	87	92	92					
Weight (● marked standard type) kg		0.74	1.1	1.5					
Connections and Mountings									
Front-connected (FC)	Terminal screws	●	●	●					
	With extension bars	—	○ ⑤③	○ ⑤③					
Rear-connected (RC)	Bolt studs	○	—	—					
	Flat bar studs	—	○	○					
Plug-in (PM)	For switchboards Standard (PMC)	○	—	—					
	High-performance (PMB)	—	—	—					
For distribution boards (PMC)		○	—	—					
Flush-mounted (FP)	Bolt studs	○	—	—					
	Flat bar studs	—	○	○					
Draw-out type (DR)		—	—	—					
TemPlug70 (PG)		—	○	○					
TemPlug45B (PG4)		—	—	—					
DIN rail mount		—	○ ①①	—					
Clip-in chassis mount		—	—	—					
Accessories (optional)		Symbol							
Internally mounted	Auxiliary switch	A X	●	●	●				
	Alarm switch	A L	●	●	●				
	Shunt trips	S H	●	●	●				
	Undervoltage trips	U V	—	●	●				
Externally mounted	Motor operator	M C	—	●	●				
	External operating handle	H B	●	●	●				
	Breaker-mounted	H P	●	●	●				
	Door-mounted (variable depth)		—	—	—				
	Toggle extension	H A	—	—	—				
	Mechanical interlock Slide type	M S	●	●	●				
	Toggle holder	H H	●	●	●				
	Toggle lock	H L	●	●	●				
	Terminal cover For front-connected	C F	●	●	●				
	For rear-connected and plug-in	C R	●	●	●				
Internally mounted	Interpole barrier	B A	●	● ③	● ③				
	Terminal block for lead	T F	●	●	●				
	Door flange	D F	●	●	●				
Standard specifications									
Overcurrent trip mechanism		Thermal-magnetic ②②	Thermal-magnetic	Thermal-magnetic					
Trip button (color)		Yes (Red)	Yes (Red)	Yes (Red)					
Handle position indication (ON: Red, OFF: Green)		Yes	Yes	Yes					
Suitability for isolation		Non	Yes	Yes					
CE marking		Non	Yes	Yes					
Page on which characteristics and outline dimensions are shown		7-50	7-52	7-54					

Notes:

● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ● : "yes" or "available". — : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only) ①① : Provided with DIN rail adaptor. ⑬ : at 500V AC. ⑭ : at 250V AC.

②② : Hydraulic-magnetic type for below 25A rating. ⑤③ : For the extension bars, please place the order separately in parts.

Caution

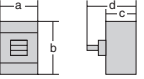
The breakers listed above are not always applicable to high efficiency motors because both startup current and rush current are generally higher than compared to general-purpose motors.

2

Ratings and Specifications

Molded Case Circuit Breakers

7 Switch-disconnectors

Frame size (A)		100	125	125	250	400	
Type		\$100-NN	\$125-SN	\$125-NN	\$250-SN	\$400-NN	
Number of poles		3 4	3 4	3 4	3 4 3 4	3 4	
■ Ratings							
Rated current, A		100	100	125	225	250	400
Rated insulation voltage [U_i] V		690	690	690	690	690	690
Rated operational voltage V	AC	690	690	690	690	690	690
	DC	250	250	250	250	250	250
Rated short circuit making capacity, kA peak		3.6	2.8	2.8	6	6	9
Rated short time withstand current, kA		2 (0.3sec)	2 (0.3sec)	2 (0.3sec)	3 (0.3sec)	3 (0.3sec)	5 (0.3sec)
Rated impulse withstand voltage [U_{imp}] kV		8	8	8	8	8	8
■ Performance							
Utilization category	AC 690V	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A
IEC 60947-3	DC 250V	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A
Upstream breaker (OCPD) ②		S100-NF	S125-SF	S125-SF	S250-SF	S250-SF	S400-NF
■ External dimensions, mm							
		a 90 120	75 100	75 100	90 120	105 140	105 140
	b	155	130	130	155	165	260
	c	68	68	68	68	68	103
	d	92	95	95	92	95	145
Weight (● marked standard type) kg		1.1 1.4	0.7 0.9	0.7 0.9	1.1 1.4	1.5 1.9	4.2 5.6
■ Connections and Mountings							
Front-connected (FC)	Terminal screws	●	●	●	●	●	●
	With extension bars	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ ⑤③	○ (BAR)
Rear-connected (RC)	Bolt studs	—	—	—	—	—	—
	Flat bar studs	○	○	○	○	○	○
Plug-in (PM)	For switchboards Standard (PMC)	○ —	○ —	○ —	○ —	○ —	○ —
	High-performance (PMB)	○	—	○	—	—	○
	For distribution boards (PMC)	○ —	○ ⑤③ —	○ ⑤③ —	○ —	—	—
Flush-mounted (FP)	With flat bar studs	○	○	○	○	○	○
Draw-out type (DR)		—	—	—	—	—	▲
TemPlug70 (PG)		○ —	—	—	○ —	○ —	○ —
TemPlug45B (PG4)		—	—	—	—	—	—
DIN rail mount		○ ①①	○ ①①	○ ①①	○ ①①	—	—
Clip-in chassis mount		—	—	—	—	—	—
■ Accessories (optional) Symbol							
Internally mounted	Auxiliary switch	A X ●	●	●	●	●	●
	Alarm switch	A L ●	●	●	●	●	●
	Shunt trips	S H ●	●	●	●	●	●
	Undervoltage trips	U V ●	●	●	●	●	●
	Motor operator	M C ●	—	—	●	●	●
Externally mounted	External operating handle	H B ●	●	●	●	●	●
	Door-mounted (variable depth)	H P ●	●	●	●	●	●
	Toggle extension	H A —	—	—	—	—	●
	Mechanical interlock ⑨ Slide type	M S ●	●	●	●	●	●
	Toggle holder	H H ●	●	●	●	●	●
	Toggle lock	H L ●	●	●	●	●	●
	Terminal cover For front-connected	C F ●	●	●	●	●	●
	For rear-connected and plug-in	C R ●	●	●	●	●	●
	Interpole barrier	B A ● ③	● ③	● ③	● ③	● ③	● ③
	Terminal block for lead	T F ●	●	●	●	●	●
	Door flange	D F ●	●	●	●	●	●
■ Standard specifications							
Trip button (color)		Yes (Red)	Yes (Red)	Yes (Red)	Yes (Red)	Yes (Red)	Yes (Red)
Handle position indication (ON: Red, OFF: Green)		Yes	Yes	Yes	Yes	Yes	Yes
Suitability for isolation		Yes	Yes	Yes	Yes	Yes	Yes
CE marking		Yes	Yes	Yes	Yes	Yes	Yes
Page on which characteristics and outline dimensions are shown		7-56	7-58	7-58	7-60	7-62	7-64

Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".
 ③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : The mechanical interlock is not applicable to the draw-out type (DR). ①① : Provided with DIN rail adaptor.
 ② : Required for overcurrent protection. Rated conditional short-circuit current [I_{sc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.
 ⑤③ : For the extension bars, please place the order separately in parts. ⑤③ : Specify PMD when the internal accessories are fitted.

2

Ratings and Specifications

Molded Case Circuit Breakers

7 Switch-disconnectors

Frame size (A)		600	630	800	1250	1600			
Type		S630-GN		S800-NN		S1250-NN		S1600-NN	
Number of poles		3	4	3	4	3	4	3	4
■ Ratings									
Rated current, A		600	630	800	1250	1600			
Rated insulation voltage [U_i] V		690	690	690	690	690			
Rated operational voltage V		690	690	690	690	690			
		AC							
		DC							
Rated short circuit making capacity, kA peak		17	17	17	32	45			
Rated short time withstand current, kA		10 (0.3sec)	10 (0.3sec)	10 (0.3sec)	15 (0.3sec)	20 (0.3sec)			
Rated impulse withstand voltage [U_{imp}] kV		8	8	8	8	8			
■ Performance									
Utilization category		AC 690V	AC-23A	AC-23A	AC-23A	AC-23A			
IEC 60947-3		DC 250V	DC-22A	DC-22A	DC-22A	DC-22A			
Upstream breaker (OCBP) 29			S630-NF	S630-NF	S800-NF	S1250-NE		S1600-NE	
■ External dimensions, mm									
		a	210	280	210	280	210	280	
		b	273	273	273	370	370		
		c	103	103	103	120	140		
		d	145	145	145	171	191		
			8.0	11.0	8.0	11.5	18.2	23.4	24.9
Weight (● marked standard type) kg									
■ Connections and Mountings									
Front-connected (FC)		Terminal screws	●	●	●	●	○		
		With extension bars	○	○	○	○	○		
Rear-connected (RC)		Bolt studs	○	○	○	○	○		
		Flat bar studs	○	○	○	○	○		
Plug-in (PM)		For switchboards Standard (PMC)	○	○	○	○	○		
		High-performance (PMB)	○	○	○	○	○		
		For distribution boards (PMC)	○	○	○	○	○		
Flush-mounted (FP)		With flat bar studs	○	○	○	○	○		
Draw-out type (DR)			▲	▲	▲	▲	○		
TemPlug70 (PG)			○	○	○	○	○		
TemPlug45B (PG4)			○	○	○	○	○		
DIN rail mount			○	○	○	○	○		
Clip-in chassis mount			○	○	○	○	○		
■ Accessories (optional)		Symbol							
Internally mounted	Auxiliary switch		●	●	●	●	●		
	Alarm switch		●	●	●	●	●		
	Shunt trips		●	●	●	●	●		
	Undervoltage trips		●	●	●	●	●		
	Motor operator		●	●	●	●	●		
Externally mounted	External operating handle		●	●	●	●	●		
	Breaker-mounted		●	●	●	●	●		
	Door-mounted (variable depth)		●	●	●	●	●		
	Toggle extension ⑨		●	●	●	● 24	● 24		
	Mechanical interlock ⑨ Slide type		●	●	●	●	●		
	Toggle holder ⑨		●	●	●	●	●		
	Toggle lock ⑨		●	●	●	●	●		
	Terminal cover For front-connected ⑨		●	●	●	●	●		
	For rear-connected and plug-in		●	●	●	●	●		
	Interpole barrier ⑨		● ③	● ③	● ③	● ③	● ③		
	Terminal block for lead ⑨		●	●	●	●	●		
	Door flange ⑨		●	●	●	●	●		
■ Standard specifications									
Trip button (color)		Yes (Red)	Yes (Red)	Yes (Red)	Yes (Red)	Yes (Red)			
Handle position indication (ON: Red, OFF: Green)		Yes	Yes	Yes	Yes	Yes			
Suitability for isolation		Yes	Yes	Yes	Yes	Yes			
CE marking		Yes	Yes	Yes	Yes	Yes			
Page on which characteristics and outline dimensions are shown		7-66	7-66	7-68	7-70	7-72			

Notes:

● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : Not applicable to the draw-out type (DR).

24 : One is supplied with every five breakers. Please specify if more are required.

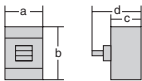
29 : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

2

Ratings and Specifications

Molded Case Circuit Breakers

8 Non-automatic trip breakers

		TemBreak							
Frame size (A)		2000							
Type		XS2000NN							
Number of poles		3 4							
Ratings									
Rated current, A		2000							
Rated insulation voltage [U_i] V		690							
Rated operational voltage V	AC	690							
	DC	250							
Rated short circuit making capacity, kA peak		90							
Rated short time withstand current, kA		35 (0.3sec)							
Rated impulse withstand voltage [U_{imp}] kV		8							
Performance									
Max switching current A	AC	12000							
	DC	5000							
Endurance Number of operating cycles with current		500							
Number of operating cycles without current		2500							
Upstream breaker (OCPD) 29		XS2000NE							
External dimensions, mm									
	a	320 429							
	b	450							
	c	185							
	d	245							
Weight (● marked standard type) kg		51.8 64.8							
Connections and Mountings									
Front-connected (FC)	Terminal screws	—							
	With extension bars	○							
Rear-connected (RC)	Bolt studs	—							
	Flat bar studs	●							
Plug-in (PM)	For switchboards Standard (PMC)	—							
	High-performance (PMB)	—							
For distribution boards (PMC)		—							
Flush-mounted (FP) With flat bar studs		○							
Draw-out type (DR)		○							
TemPlug70 (PG)		—							
TemPlug45B (PG4)		—							
DIN rail mount		—							
Clip-in chassis mount		—							
Accessories (optional)		Symbol							
Internally mounted	Auxiliary switch	A X ●							
	Alarm switch	A L ●							
	Shunt trips	S H ●							
	Undervoltage trips	U V ● ⑥							
Externally mounted	Motor operator	M C ●							
	External operating handle	H B —							
	Breaker-mounted	H B —							
	Door-mounted (variable depth)	H P ● ⑬							
	Toggle extension	H A ● ②							
	Mechanical interlock ⑨ Slide type	M S ●							
	Toggle holder	H H ●							
	Toggle lock	H L ●							
	Terminal cover	For front-connected	C F —						
		For rear-connected and plug-in	C R —						
Externally mounted	Interpole barrier	B A —							
	Terminal block for lead	T F ●							
	Door flange	D F ●							
Standard specifications									
Trip button (color)		Yes (Red)							
Handle position indication (ON: Red, OFF: Green)		Yes							
Suitability for isolation		Non							
CE marking		Non							
Page on which characteristics and outline dimensions are shown		7-78							

Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ● : "yes" or "available". — : "no" or "not available".
- ② : Supplied as standard. ⑥ : The UVT controller is installed externally, when provided with AC UVT. ⑨ : The mechanical interlock is not applicable to the draw-out type (DR).
- 29 : Required for overcurrent protection. Rated conditional short-circuit current [I_{cs}] will be the same as Rated short-circuit breaking capacity of upstream breaker.
- ⑬ : Fixed depth, not adjustable.

2

Ratings and Specifications

Molded Case Circuit Breakers

9 TB series for distribution boards

Frame size (A)	50	50	50						
Type	TB-5S	TB-5P	TB-5D						
Number of poles	2	2	2						
■ Ratings									
Rated current, A	10 30	10 30	10 30						
Calibrated at 45°C	15 40	15 40	15 40						
	20 50	20 50	20 50						
Rated voltage V	460	460	250						
AC	125	125	125						
DC									
■ Rated breaking capacity, kA									
NK	5 ④④	5 ④④	5 ④④						
(sym)	42	42	42						
DC	5	5	5						
125 V									
■ External dimensions, mm									
	50	50	50						
a	95	74.5	74.5						
b	60	60	60						
c	79	79	79						
d	0.34	0.28	0.28						
Weight kg									
■ Connecting scheme									
Front-connected both on the line and load sides	●	—	—						
Plug-in on the line side and front-connected on the load side	—	●	—						
Plug-in both on the line and load sides	—	—	●						
■ Mounting scheme (optional)									
Clip-in chassis	●	—	—						
Single mounting base	—	● ④⑦	● ④⑦						
Double mounting base	—	● ④⑦	● ④⑦						
■ Accessories (optional) Symbol									
Toggle holder	H H	●	●						
Toggle lock	H L	—	—						
Toggle cap	H C	—	—						
Interpole barrier	B A	●	●						
■ Standard specifications									
Overcurrent trip mechanism	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic						
Trip button (color)	Non	Non	Non						
Handle position indication (ON: Red, OFF: Green)	Non	Non	Non						
Suitability for isolation	Non	Non	Non						
CE marking	Non	Non	Non						
Page on which characteristics and outline dimensions are shown	7-80	7-82	7-84						

Notes:

● : "yes" or "available". — : "no" or "not available".

④④ : 2.5kA for 10A.

④⑦ : Specify the branch bars when ordering.

2

Ratings and Specifications

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					N K		L R		A B S		G L	
					<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>
50	E50-SF	10,15,20,30,40,50	2	AC450	10[18.5]13	—	10[18.5]13	—	10[18.5]13	—	10[18.5]	5[7.65]
			3	AC240	25[53.2]14	—	25[53.2]14	—	25[53.2]14	—	25[52.5]	13[26]
				AC115	42[95.6]15	—	42[95.6]15	—	42[95.6]15	—	42[95.6]3	21[44.1]3
				DC250	7.5[7.5]	—	7.5[7.5]	—	7.5[7.5]	—	7.5[7.5]	—
	E50-CM	0.7,1.4,2,2.6,4,5,8,10,12,16,25,32,40,45	3	AC450	2.5[3.8]13	—	2.5[3.8]13	—	2.5[3.8]13	—	—	—
				AC240	5[8.7]14	—	5[8.7]14	—	5[8.7]14	—	—	—
	S50-SF	15,20,30,40,50	2	AC690	—	—	—	—	—	—	—	—
			3	AC450	25[54.4]	13[29.6]	25[54.4]	13[29.6]	25[54.4]	13[29.6]	25[54.4]	13[29.6]
				AC240	50[117]	25[56.9]	50[117]	25[56.9]	50[117]	25[56.9]	50[117]	25[56.9]
				DC250	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]
	S50-GF	15,20,30,40,50	3	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
				AC500	—	—	25[52.5]	22[46.2]	25[52.5]	22[46.2]	25[52.5]	22[46.2]
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	33[69.3]	65[143]	33[69.3]	65[143]	33[69.3]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S50-GFL	15,20,30,40,50	3	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
				AC500	—	—	25[52.5]	22[46.2]	25[52.5]	22[46.2]	25[52.5]	22[46.2]
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	33[69.3]	65[143]	33[69.3]	65[143]	33[69.3]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S50-GFH	15,20,30,40,50	3	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
				AC500	—	—	25[52.5]	22[46.2]	25[52.5]	22[46.2]	25[52.5]	22[46.2]
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	33[69.3]	65[143]	33[69.3]	65[143]	33[69.3]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
100	E100-SF	10,15,20,30,40,50,60,75,100	2	AC450	10[18.5]13	—	10[17.2]	5[8.4]	10[18.5]13	—	10[18.5]	5[7.5]
			3	AC240	25[53.2]14	—	25[60.5]	13[26.1]	25[53.2]14	—	25[52.5]	13[26]
				AC115	42[95.6]15	—	42[97.9]3	—	42[95.6]15	—	42[95.6]3	21[44.1]3
				DC250	7.5[7.5]	—	—	—	7.5[7.5]	—	7.5[7.5]	—
	S100-NF	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
			3	AC500	—	—	22[46.2]	22[46.2]	22[46.2]	22[46.2]	22[46.2]	22[46.2]
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC240	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]
				DC250	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]
	S100-NFL	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
			3	AC500	—	—	22[46.2]	22[46.2]	22[46.2]	22[46.2]	22[46.2]	22[46.2]
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC240	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]
				DC250	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]
	S100-NFH	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
			3	AC500	—	—	22[46.2]	22[46.2]	22[46.2]	22[46.2]	22[46.2]	22[46.2]
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC240	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]
				DC250	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]
	S100-NM	16,24,32,40,45,60,75,90,100	3	AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	—	—	30[63]	30[63]	—	—
				AC240	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]
	S100-GF	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
			3	AC500	—	—	25[52.5]	22[46.2]	25[52.5]	22[46.2]	25[52.5]	22[46.2]
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	33[69.3]	65[143]	33[69.3]	65[143]	33[69.3]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S100-GFL	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
			3	AC500	—	—	25[52.5]	22[46.2]	25[52.5]	22[46.2]	25[52.5]	22[46.2]
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	33[69.3]	65[143]	33[69.3]	65[143]	33[69.3]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]

Notes: ① : at 450V AC. ② : at 240V AC. ③ : at 120V AC. ④ : at 660V AC. ⑤ : at 525V AC. ⑦ : at 220V AC.
⑧ : at 110V AC. ⑨ : at 225V AC. ⑩ : at 440V AC. ⑬ : at 500V AC. ⑭ : at 250V AC. ⑮ : at 125V AC.

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					B V		C C S		K R		R I N A	
					I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
50	E50-SF	10,15,20,30,40,50	2	AC450	10[17]	5[7.65]	10[18.5]	5[7.65]	10[18.5]13	—	—	—
			3	AC240	25[52.5]	13[26]	25[53.2]	13[26]	25[53.2]14	—	—	—
				AC115	—	—	42[95.6]15	—	42[95.6]15	—	—	—
				DC250	—	—	7.5[7.5]	—	7.5[7.5]	—	—	—
	E50-CM	0.7,1.4,2,2.6,4,5,8,10,12,16,25,32,40,45	3	AC450	—	—	—	—	2.5[3.8]13	—	—	—
				AC240	—	—	—	—	5[8.7]14	—	—	—
	S50-SF	15,20,30,40,50	2	AC690	—	—	—	—	—	—	—	—
			3	AC450	25[54.4]	13[29.6]	25[54.4]	13[29.6]	25[54.4]	13[29.6]	—	—
				AC240	50[117]	25[56.9]	50[117]	25[56.9]	50[117]	25[56.9]	—	—
				DC250	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]	—	—
	S50-GF	15,20,30,40,50	3	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	—	—
				AC500	25[52.5]	22[46.2]	—	—	25[52.5]	22[46.2]	—	—
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	—	—
				AC415	65[143]	33[69.3]	—	—	65[143]	33[69.3]	—	—
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	—	—
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	—	—
	S50-GFL	15,20,30,40,50	3	AC690	6[9.29]	6[9.29]	—	—	6[9.29]	6[9.29]	—	—
				AC500	25[52.5]	22[46.2]	—	—	25[52.5]	22[46.2]	—	—
				AC450	50[112]	25[54.4]	—	—	50[112]	25[54.4]	—	—
				AC415	65[143]	33[69.3]	—	—	65[143]	33[69.3]	—	—
				AC240	85[201]	85[201]	—	—	85[201]	85[201]	—	—
				DC250	40[40]	40[40]	—	—	40[40]	40[40]	—	—
	S50-GFH	15,20,30,40,50	3	AC690	6[9.29]	6[9.29]	—	—	6[9.29]	6[9.29]	—	—
				AC500	25[52.5]	22[46.2]	—	—	25[52.5]	22[46.2]	—	—
				AC450	50[112]	25[54.4]	—	—	50[112]	25[54.4]	—	—
				AC415	65[143]	33[69.3]	—	—	65[143]	33[69.3]	—	—
				AC240	85[201]	85[201]	—	—	85[201]	85[201]	—	—
				DC250	40[40]	40[40]	—	—	40[40]	40[40]	—	—
100	E100-SF	10,15,20,30,40,50,60,75,100	2	AC450	10[17.2]	5[7.86]	10[18.5]	5[7.65]	10[18.5]13	—	—	—
			3	AC240	25[59.0]	13[27.7]	25[53.2]	13[26]	25[53.2]14	—	—	—
				AC115	—	—	42[95.6]15	—	42[95.6]15	—	—	—
				DC250	—	—	7.5[7.5]	—	7.5[7.5]	—	—	—
	S100-NF	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9]	6[9]
			3	AC500	22[46.2]	22[46.2]	—	—	22[46.2]	22[46.2]	—	—
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[52.5]	25[52.5]
				AC415	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC240	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[105]	50[105]
				DC250	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]
	S100-NFL	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	—	—	6[9.29]	6[9.29]	—	—
			3	AC500	22[46.2]	22[46.2]	—	—	22[46.2]	22[46.2]	—	—
				AC450	25[54.4]	25[54.4]	—	—	25[54.4]	25[54.4]	—	—
				AC415	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC240	50[115]	50[115]	—	—	50[115]	50[115]	—	—
				DC250	25[25]	19[19]	—	—	25[25]	19[19]	—	—
	S100-NFH	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	—	—	6[9.29]	6[9.29]	—	—
			3	AC500	22[46.2]	22[46.2]	—	—	22[46.2]	22[46.2]	—	—
				AC450	25[54.4]	25[54.4]	—	—	25[54.4]	25[54.4]	—	—
				AC415	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC240	50[115]	50[115]	—	—	50[115]	50[115]	—	—
				DC250	25[25]	19[19]	—	—	25[25]	19[19]	—	—
	S100-NM	16,24,32,40,45,60,75,90,100	3	AC450	25[54.4]	25[54.4]	—	—	25[54.4]	25[54.4]	—	—
				AC415	—	—	—	—	30[63]	30[63]	—	—
				AC240	50[115]	50[115]	—	—	50[115]	50[115]	—	—
	S100-GF	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9]	6[9]
			3	AC500	25[52.5]	22[46.2]	—	—	25[52.5]	22[46.2]	—	—
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[105]	25[52.5]
				AC415	65[143]	33[69.3]	—	—	65[143]	33[69.3]	—	—
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[187]	85[187]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S100-GFL	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	—	—	6[9.29]	6[9.29]	—	—
			3	AC500	25[52.5]	22[46.2]	—	—	25[52.5]	22[46.2]	—	—
				AC450	50[112]	25[54.4]	—	—	50[112]	25[54.4]	—	—
				AC415	65[143]	33[69.3]	—	—	65[143]	33[69.3]	—	—
				AC240	85[201]	85[201]	—	—	85[201]	85[201]	—	—
				DC250	40[40]	40[40]	—	—	40[40]	40[40]	—	—

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					N K		L R		A B S		G L	
					<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>
100	S100-GFH	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
			3	AC500	—	—	25[52.5]	22[46.2]	25[52.5]	22[46.2]	25[52.5]	22[46.2]
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	33[69.3]	65[143]	33[69.3]	65[143]	33[69.3]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	H100-NF	15,20,30,40,50,60,75,100	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC500	—	—	45[94.5]⑤	45[94.5]⑤	45[94.5]	45[94.5]	45[94.5]	45[94.5]
				AC450	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]
				AC415	—	—	125[275]	85[187]	125[275]	85[187]	125[275]	85[187]
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]
				DC250	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
	L100-NF	15,20,30,40,50,60,75,100	3	AC500	—	—	65[143]⑤	65[143]⑤	65[143]	65[143]	65[143]	65[143]
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]
				AC415	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]
125	S125-SF	15,20,30,40,50,60,75,100,125	2	AC690	—	—	—	—	—	—	—	—
			3	AC450	25[54.4]	13[29.6]	25[54.4]	13[29.6]	25[54.4]	13[29.6]	25[54.4]	13[29.6]
				AC240	50[117]	25[56.9]	50[117]	25[56.9]	50[117]	25[56.9]	50[117]	25[56.9]
				DC250	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]
	S125-NF	125	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
			3	AC500	—	—	22[46.2]	22[46.2]	22[46.2]	22[46.2]	22[46.2]	22[46.2]
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC240	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]
				DC250	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]
	S125-GF	125	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]
			3	AC500	—	—	25[52.5]	22[46.2]	25[52.5]	22[46.2]	25[52.5]	22[46.2]
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	33[69.3]	65[143]	33[69.3]	65[143]	33[69.3]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	H125-NF	125	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC500	—	—	45[94.5]⑤	45[94.5]⑤	45[94.5]	45[94.5]	45[94.5]	45[94.5]
				AC450	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]
				AC415	—	—	125[275]	85[187]	125[275]	85[187]	125[275]	85[187]
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]
				DC250	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
	L125-NF	125	3	AC500	—	—	65[143]⑤	65[143]⑤	65[143]	65[143]	65[143]	65[143]
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]
				AC415	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]
225	S225-NF	125,150,175,200,225	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]
			3	AC500	—	—	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	35[73.5]	35[73.5]	35[73.5]	35[73.5]	35[73.5]	35[73.5]
				AC240	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S225-NFL	125,150,175,200,225	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]
			3	AC500	—	—	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	35[73.5]	35[73.5]	35[73.5]	35[73.5]	35[73.5]	35[73.5]
				AC240	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S225-NFH	125,150,175,200,225	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]
			3	AC500	—	—	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	35[73.5]	35[73.5]	35[73.5]	35[73.5]	35[73.5]	35[73.5]
				AC240	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S225-NM	125,150,175,225	3	AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	—	—	35[73.5]	35[73.5]	—	—
				AC240	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S225-GF	125,150,175,200,225	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]
			3	AC500	—	—	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	35[73.5]	65[143]	35[73.5]	65[143]	35[73.5]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]

Notes: ① : at 450V AC. ② : at 240V AC. ③ : at 120V AC. ④ : at 660V AC. ⑤ : at 525V AC. ⑦ : at 220V AC.
⑧ : at 110V AC. ⑨ : at 225V AC. ⑩ : at 440V AC. ⑬ : at 500V AC. ⑭ : at 250V AC. ⑮ : at 125V AC.

* 2 poles breakers use the terminals of both ends of 3 poles breakers.

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.								
					B V		C C S		K R		R I N A		
					<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	
100	S100-GFH	15,20,30,40,50,60,75,100	2	AC690	6[9.29]	6[9.29]	—	—	6[9.29]	6[9.29]	—	—	
				AC500	25[52.5]	22[46.2]	—	—	25[52.5]	22[46.2]	—	—	
			3	AC450	50[112]	25[54.4]	—	—	50[112]	25[54.4]	—	—	
				AC415	65[143]	33[69.3]	—	—	65[143]	33[69.3]	—	—	
				AC240	85[201]	85[201]	—	—	85[201]	85[201]	—	—	
				DC250	40[40]	40[40]	—	—	40[40]	40[40]	—	—	
	H100-NF	15,20,30,40,50,60,75,100	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[40]	15[30]	
				AC500	45[94.5]⑤	45[94.5]⑤	—	—	45[94.5]	45[94.5]	—	—	
				AC450	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]	120[264]	80[176]	
				AC415	125[275]	85[187]	—	—	125[275]	85[187]	—	—	
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[330]	150[330]	
	L100-NF	15,20,30,40,50,60,75,100	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[52.5]	19[38]	
				AC500	65[143]⑤	65[143]⑤	—	—	65[143]	65[143]	—	—	
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	180[396]	135[297]	
				AC415	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]	—	—	
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	200[440]	150[330]	
	125	S125-SF	15,20,30,40,50,60,75,100,125	2	AC690	—	—	—	—	—	—	—	—
					AC450	25[54.4]	13[29.6]	25[54.4]	13[29.6]	25[54.4]	13[29.6]	—	—
				3	AC240	50[117]	25[56.9]	50[117]	25[56.9]	50[117]	25[56.9]	—	—
					DC250	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]	—	—
S125-NF		125	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	—	—	
				AC500	22[46.2]	22[46.2]	—	—	22[46.2]	22[46.2]	—	—	
			3	AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	—	—	
				AC415	30[63]	30[63]	—	—	30[63]	30[63]	—	—	
				AC240	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	—	—	
				DC250	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]	—	—	
S125-GF		125	2	AC690	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	6[9.29]	—	—	
				AC500	25[52.5]	22[46.2]	—	—	25[52.5]	22[46.2]	—	—	
			3	AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	—	—	
				AC415	65[143]	33[69.3]	—	—	65[143]	33[69.3]	—	—	
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	—	—	
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	—	—	
H125-NF		125	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	—	—	
				AC500	45[94.5]⑤	45[94.5]⑤	—	—	45[94.5]	45[94.5]	—	—	
				AC450	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]	—	—	
				AC415	125[275]	85[187]	—	—	125[275]	85[187]	—	—	
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	—	—	
				DC250	25[25]	19[19]	25[25]	19[19]	25[25]	19[19]	—	—	
L125-NF		125	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	—	—	
				AC500	65[143]⑤	65[143]⑤	—	—	65[143]	65[143]	—	—	
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	—	—	
				AC415	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]	—	—	
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	—	—	
	DC250			—	—	—	—	—	—	—	—		
225	S225-NF	125,150,175,200,225	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[12.75]	7.5[12.75]	
				AC500	25[52.5]	25[52.5]	—	—	25[52.5]	25[52.5]	—	—	
			3	AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[52.5]	25[52.5]	
				AC415	35[73.5]	35[73.5]	—	—	35[73.5]	35[73.5]	—	—	
				AC240	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[143]	65[143]	
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	
	S225-NFL	125,150,175,200,225	2 *	AC690	7.5[13.1]	7.5[13.1]	—	—	7.5[13.1]	7.5[13.1]	—	—	
				AC500	25[52.5]	25[52.5]	—	—	25[52.5]	25[52.5]	—	—	
			3	AC450	25[54.4]	25[54.4]	—	—	25[54.4]	25[54.4]	—	—	
				AC415	35[73.5]	35[73.5]	—	—	35[73.5]	35[73.5]	—	—	
				AC240	65[148]	65[148]	—	—	65[148]	65[148]	—	—	
				DC250	40[40]	40[40]	—	—	40[40]	40[40]	—	—	
	S225-NFH	125,150,175,200,225	2 *	AC690	7.5[13.1]	7.5[13.1]	—	—	7.5[13.1]	7.5[13.1]	—	—	
				AC500	25[52.5]	25[52.5]	—	—	25[52.5]	25[52.5]	—	—	
			3	AC450	25[54.4]	25[54.4]	—	—	25[54.4]	25[54.4]	—	—	
				AC415	35[73.5]	35[73.5]	—	—	35[73.5]	35[73.5]	—	—	
				AC240	65[148]	65[148]	—	—	65[148]	65[148]	—	—	
				DC250	40[40]	40[40]	—	—	40[40]	40[40]	—	—	
	S225-NM	125,150,175,225	3	AC450	25[54.4]	25[54.4]	—	—	25[54.4]	25[54.4]	—	—	
				AC415	—	—	—	—	35[73.5]	35[73.5]	—	—	
				AC240	65[148]	65[148]	—	—	65[148]	65[148]	—	—	
	S225-GF	125,150,175,200,225	2 *	3	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[12.75]	7.5[12.75]
					AC500	25[52.5]	25[52.5]	—	—	25[52.5]	25[52.5]	—	—
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[105]	25[52.5]	
					AC415	65[143]	35[73.5]	—	—	65[143]	35[73.5]	—	—
					AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[187]	85[187]
	DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]				

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					N K		L R		A B S		G L	
					I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
225	S225-GFL	125,150, 175,200, 225	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]
				AC500	—	—	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]
			3	AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	35[73.5]	65[143]	35[73.5]	65[143]	35[73.5]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S225-GFH	125,150, 175,200, 225	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]
				AC500	—	—	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]
			3	AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	35[73.5]	65[143]	35[73.5]	65[143]	35[73.5]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S225-GE	125~225 (125,150, 175,200,225)	3	AC690	—	—	—	—	—	—	7.5[13.1]	7.5[13.1]
				AC450	—	—	—	—	—	—	50[121]	25[54.4]
				AC240	—	—	—	—	—	—	85[211]	85[211]
	H225-NF	125,150, 175,200, 225	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC500	—	—	45[94.5]⑤	45[94.5]⑤	45[94.5]	45[94.5]	45[94.5]	45[94.5]
				AC450	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]
				AC415	—	—	125[275]	85[187]	125[275]	85[187]	125[275]	85[187]
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]
	L225-NF	125,150, 175,200, 225	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
				AC500	—	—	65[143]⑤	65[143]⑤	65[143]	65[143]	65[143]	65[143]
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]
				AC415	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]
250	E250-SF	125,150, 175,200, 225,250	2 *	AC690	—	—	—	—	—	—	—	—
				AC450	15[32.6]	12[27.3]	15[32.6]	12[27.3]	15[32.6]	12[27.3]	15[32.6]	12[27.3]
			3	AC240	35[83.6]	27[62.2]	35[83.6]	27[62.2]	35[83.6]	27[62.2]	35[83.6]	27[62.2]
				DC250	—	—	—	—	—	—	—	—
				—	—	—	—	—	—	—	—	—
	S250-NF	250	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]
				AC500	—	—	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]
			3	AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]
				AC415	—	—	35[73.5]	35[73.5]	36[75.6]	36[75.6]	35[73.5]	35[73.5]
				AC240	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
	S250-SF	125,150, 175,200, 225,250	2 *	AC690	—	—	—	—	—	—	—	—
				AC450	30[70.8]	15[32.6]	30[70.8]	15[32.6]	30[70.8]	15[32.6]	30[70.8]	15[32.6]
			3	AC240	85[211]	43[103]	85[211]	43[103]	85[211]	43[103]	85[211]	43[103]
				DC250	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]
	S250-GF	250	2 *	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]
				AC500	—	—	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]	25[52.5]
			3	AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]
				AC415	—	—	65[143]	35[73.5]	65[143]	36[75.6]	65[143]	35[73.5]
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
400	S400-CF	125,150, 175,200, 225,250, 300,350, 400	3	AC690	15[32.6]	15[32.6]	15[32.6]	15[32.6]	15[32.6]	15[32.6]	15[32.6]	15[32.6]
				AC450	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]
				AC415	—	—	36[75.6]	36[75.6]	36[75.6]	36[75.6]	36[75.6]	36[75.6]
				AC240	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
				—	—	—	—	—	—	—	—	—
	S400-NF	125,150, 175,200, 225,250, 300,350, 400	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC450	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]
				DC250	—	—	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
				—	—	—	—	—	—	—	—	—
	S400-NE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]
				—	—	—	—	—	—	—	—	—
	S400-NEH	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]
				—	—	—	—	—	—	—	—	—

Notes: ① : at 450V AC. ② : at 240V AC. ③ : at 120V AC. ④ : at 660V AC. ⑤ : at 525V AC. ⑦ : at 220V AC.

⑧ : at 110V AC. ⑨ : at 225V AC. ⑩ : at 440V AC. ⑬ : at 500V AC. ⑭ : at 250V AC. ⑮ : at 125V AC.

* 2 poles breakers use the terminals of both ends of 3 poles breakers.

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					B V		C C S		K R		R I N A	
					I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
225	S225-GFL	125,150,175,200,225	2 * 3	AC690	7.5[13.1]	7.5[13.1]	—	—	7.5[13.1]	7.5[13.1]	—	—
				AC500	25[52.5]	25[52.5]	—	—	25[52.5]	25[52.5]	—	—
				AC450	50[112]	25[54.4]	—	—	50[112]	25[54.4]	—	—
				AC415	65[143]	35[73.5]	—	—	65[143]	35[73.5]	—	—
				AC240	85[201]	85[201]	—	—	85[201]	85[201]	—	—
				DC250	40[40]	40[40]	—	—	40[40]	40[40]	—	—
	S225-GFH	125,150,175,200,225	2 * 3	AC690	7.5[13.1]	7.5[13.1]	—	—	7.5[13.1]	7.5[13.1]	—	—
				AC500	25[52.5]	25[52.5]	—	—	25[52.5]	25[52.5]	—	—
				AC450	50[112]	25[54.4]	—	—	50[112]	25[54.4]	—	—
				AC415	65[143]	35[73.5]	—	—	65[143]	35[73.5]	—	—
				AC240	85[201]	85[201]	—	—	85[201]	85[201]	—	—
				DC250	40[40]	40[40]	—	—	40[40]	40[40]	—	—
	S225-GE	125~225 (125,150,175,200,225)	3	AC690	—	—	—	—	—	—	—	—
				AC450	—	—	—	—	—	—	—	—
				AC240	—	—	—	—	—	—	—	—
	H225-NF	125,150,175,200,225	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[40]	15[30]
				AC500	45[94.5]⑤	45[94.5]⑤	—	—	45[94.5]	45[94.5]	—	—
				AC450	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]	120[264]	80[176]
				AC415	125[275]	85[187]	—	—	125[275]	85[187]	—	—
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[330]	150[330]
				AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[52.5]	19[38]
	L225-NF	125,150,175,200,225	3	AC500	65[143]⑤	65[143]⑤	—	—	65[143]	65[143]	—	—
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	180[396]	135[297]
				AC415	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]	—	—
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	200[440]	150[330]
	E250-SF	125,150,175,200,225,250	2 * 3	AC690	—	—	—	—	—	—	—	—
				AC450	15[32.6]	12[27.3]	15[32.6]	12[27.3]	15[32.6]	12[27.3]	—	—
				AC240	35[83.6]	27[62.2]	35[83.6]	27[62.2]	35[83.6]	27[62.2]	—	—
				DC250	—	—	—	—	—	—	—	—
	S250-NF	250	2 * 3	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	—	—
				AC500	25[52.5]	25[52.5]	—	—	25[52.5]	25[52.5]	—	—
				AC450	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	25[54.4]	—	—
				AC415	35[73.5]	35[73.5]	—	—	36[75.6]	36[75.6]	—	—
				AC240	65[148]	65[148]	65[148]	65[148]	65[148]	65[148]	—	—
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	—	—
	S250-SF	125,150,175,200,225,250	2 * 3	AC690	—	—	—	—	—	—	—	—
				AC450	30[70.8]	15[32.6]	30[70.8]	15[32.6]	30[70.8]	15[32.6]	—	—
				AC240	85[211]	43[103]	85[211]	43[103]	85[211]	43[103]	—	—
				DC250	25[25]	13[13]	25[25]	13[13]	25[25]	13[13]	—	—
	S250-GF	250	2 * 3	AC690	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	7.5[13.1]	—	—
				AC500	25[52.5]	25[52.5]	—	—	25[52.5]	25[52.5]	—	—
				AC450	50[112]	25[54.4]	50[112]	25[54.4]	50[112]	25[54.4]	—	—
				AC415	65[143]	35[73.5]	—	—	65[143]	36[75.6]	—	—
				AC240	85[201]	85[201]	85[201]	85[201]	85[201]	85[201]	—	—
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	—	—
400	S400-CF	125,150,175,200,225,250,300,350,400	3	AC690	15[32.6]	15[32.6]	15[32.6]	15[32.6]	15[32.6]	15[32.6]	—	—
				AC450	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	—	—
				AC415	36[75.6]	36[75.6]	—	—	—	—	—	—
				AC240	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	—	—
				DC250	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]	—	—
	S400-NF	125,150,175,200,225,250,300,350,400	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[40]	15[30]
				AC450	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]	45[94.5]	45[94.5]
				AC415	50[105]	50[105]	—	—	—	—	—	—
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[187]	85[187]
				DC250	40[40]	40[40]	—	—	—	—	40[40]	40[40]
				AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	—	—
	S400-NE	100~400 (125,150,175,200,225,250,300,350,400)	3	AC525	30[63]	30[63]	—	—	—	—	—	—
				AC450	45[109]	45[109]	45[109]	45[109]	45[109]	45[109]	—	—
				AC415	50[105]	50[105]	—	—	—	—	—	—
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	—	—
				AC690	20[43.0]	15[32.6]	—	—	20[43.0]	15[32.6]	—	—
				AC525	30[63]	30[63]	—	—	—	—	—	—
	S400-NEH	100~400 (125,150,175,200,225,250,300,350,400)	3	AC450	45[109]	45[109]	—	—	45[109]	45[109]	—	—
				AC415	50[105]	50[105]	—	—	—	—	—	—
				AC240	85[211]	85[211]	—	—	85[211]	85[211]	—	—
				AC690	20[43.0]	15[32.6]	—	—	20[43.0]	15[32.6]	—	—
				AC525	30[63]	30[63]	—	—	—	—	—	—
				AC415	50[105]	50[105]	—	—	—	—	—	—

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					N K		L R		A B S		G L	
					<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>	<i>I_{cu}</i>	<i>I_{cs}</i>
400	S400-GF	125,150, 175,200, 225,250, 300,350, 400	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC450	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]
				AC415	—	—	70[154]	50[105]	70[154]	50[105]	70[154]	50[105]
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]
				DC250	—	—	40[40]	40[40]	40[40]	40[40]	40[40]	40[40]
				—	—	—	—	—	—	—	—	—
	S400-GE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]
				AC415	—	—	70[154]	50[105]	70[154]	50[105]	70[154]	50[105]
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]
				—	—	—	—	—	—	—	—	—
	S400-GEH	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]
				AC415	—	—	70[154]	50[105]	70[154]	50[105]	70[154]	50[105]
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]
				—	—	—	—	—	—	—	—	—
	S400-PF	250,300, 350,400	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	80[191]	80[191]	80[191]	80[191]	80[191]	80[191]	80[191]	80[191]
				AC415	—	—	85[187]	85[187]	85[187]	85[187]	85[187]	85[187]
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]
				DC250	—	—	—	—	—	—	—	—
	S400-PE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	80[191]	80[191]	80[191]	80[191]	80[191]	80[191]	80[191]	80[191]
				AC415	—	—	85[187]	85[187]	85[187]	85[187]	85[187]	85[187]
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]
				—	—	—	—	—	—	—	—	—
	H400-NE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	35[77.8]	35[77.8]	35[77.8]	35[77.8]	35[77.8]	35[77.8]	35[77.8]	35[77.8]
				AC525	—	—	45[94.5]	45[94.5]	45[94.5]	45[94.5]	45[94.5]	45[94.5]
				AC450	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]
				AC415	—	—	125[275]	85[187]	125[275]	85[187]	125[275]	85[187]
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]
				—	—	—	—	—	—	—	—	—
	L400-NE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]
				AC525	—	—	65[143]	65[143]	65[143]	65[143]	65[143]	65[143]
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]
				AC415	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]
				—	—	—	—	—	—	—	—	—
630	S630-CF	500,600, 630	3	AC690	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]
				AC525	—	—	15[30]	15[30]	15[30]	15[30]	15[30]	15[30]
				AC450	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]
				AC415	—	—	36[75.6]	36[75.6]	36[75.6]	36[75.6]	36[75.6]	36[75.6]
				AC240	50[117]	50[117]	50[117]	50[117]	50[117]	50[117]	50[117]	50[117]
				DC250	—	—	—	—	—	—	—	—
	S630-NF	500,600, 630	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]
				DC250	—	—	—	—	—	—	—	—
	S630-NE	250~630 (250,300, 350,400, 500,600,630)	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]
				—	—	—	—	—	—	—	—	—
	S630-NEH	250~630 (250,300, 350,400, 500,600,630)	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]
				—	—	—	—	—	—	—	—	—
	H630-NE	250~630 (250,300, 350,400, 500,600,630)	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
				AC525	—	—	45[94.5]	34[71.4]	45[94.5]	34[71.4]	45[94.5]	34[71.4]
				AC450	125[295]	94[225]	125[295]	94[225]	125[295]	94[225]	125[295]	94[225]
				AC415	—	—	125[275]	94[206.8]	125[275]	94[206.8]	125[275]	94[206.8]
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]
				—	—	—	—	—	—	—	—	—
	L630-NE	250~630 (250,300, 350,400, 500,600,630)	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
				AC525	—	—	45[94.5]	34[71.4]	45[94.5]	34[71.4]	45[94.5]	34[71.4]
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]
				AC415	—	—	200[440]	150[330]	200[440]	150[330]	200[440]	150[330]
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]
				—	—	—	—	—	—	—	—	—

Notes: ① : at 450V AC. ② : at 240V AC. ③ : at 120V AC. ④ : at 660V AC. ⑤ : at 525V AC. ⑦ : at 220V AC.
⑧ : at 110V AC. ⑨ : at 225V AC. ⑩ : at 440V AC. ⑬ : at 500V AC. ⑭ : at 250V AC. ⑮ : at 125V AC.

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					B V		C C S		K R		R I N A	
					I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
400	S400-GF	125,150, 175,200, 225,250, 300,350, 400	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[40]	15[30]
				AC450	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]	65[143]	49[102.9]
				AC415	70[154]	50[105]	—	—	—	—	—	—
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	100[220]	75[165]
				DC250	40[40]	40[40]	—	—	—	—	40[40]	40[40]
				—	—	—	—	—	—	—	—	—
	S400-GE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	—	—
				AC525	30[63]	30[63]	—	—	—	—	—	—
				AC450	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]	—	—
				AC415	70[154]	50[105]	—	—	—	—	—	—
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	—	—
				—	—	—	—	—	—	—	—	—
	S400-GEH	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	20[43.0]	15[32.6]	—	—	20[43.0]	15[32.6]	—	—
				AC525	30[63]	30[63]	—	—	—	—	—	—
				AC450	65[157]	50[121]	—	—	65[157]	50[121]	—	—
				AC415	70[154]	50[105]	—	—	—	—	—	—
				AC240	100[233]	85[211]	—	—	100[233]	85[211]	—	—
				—	—	—	—	—	—	—	—	—
	S400-PF	250,300, 350,400	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	—	—
				AC525	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC450	80[191]	80[191]	80[191]	80[191]	80[191]	80[191]	—	—
				AC415	85[187]	85[187]	—	—	85[187]	85[187]	—	—
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	—	—
				DC250	—	—	—	—	—	—	—	—
	S400-PE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	20[43.0]	15[32.6]	20[43.0]	15[32.6]	20[43.0]	15[32.6]	—	—
				AC525	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC450	80[191]	80[191]	80[191]	80[191]	80[191]	80[191]	—	—
				AC415	85[187]	85[187]	—	—	85[187]	85[187]	—	—
				AC240	100[233]	85[211]	100[233]	85[211]	100[233]	85[211]	—	—
				—	—	—	—	—	—	—	—	—
	H400-NE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	35[77.8]	35[77.8]	35[77.8]	35[77.8]	35[77.8]	35[77.8]	—	—
				AC525	45[94.5]	45[94.5]	—	—	—	—	—	—
				AC450	120[283]	80[191]	120[283]	80[191]	120[283]	80[191]	—	—
				AC415	125[275]	85[187]	—	—	—	—	—	—
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	—	—
				—	—	—	—	—	—	—	—	—
	L400-NE	100~400 (125,150, 175,200, 225,250, 300,350,400)	3	AC690	50[115]	50[115]	50[115]	50[115]	50[115]	50[115]	—	—
				AC525	65[143]	65[143]	—	—	—	—	—	—
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	—	—
				AC415	200[484]	150[345]	200[484]	150[345]	200[484]	150[345]	—	—
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	—	—
				—	—	—	—	—	—	—	—	—
630	S630-CF	500,600, 630	3	AC690	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	—	—
				AC525	15[30]	15[30]	—	—	15[30]	15[30]	—	—
				AC450	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	—	—
				AC415	36[75.6]	36[75.6]	—	—	36[75.6]	36[75.6]	—	—
				AC240	50[117]	50[117]	50[117]	50[117]	50[117]	50[117]	—	—
				DC250	—	—	—	—	—	—	—	—
	S630-NF	500,600, 630	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	—	—
				AC525	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	—	—
				AC415	50[105]	50[105]	—	—	50[105]	50[105]	—	—
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	—	—
				DC250	—	—	—	—	—	—	—	—
	S630-NE	250~630 (250,300, 350,400, 500,600,630)	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	—	—
				AC525	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	—	—
				AC415	50[105]	50[105]	—	—	50[105]	50[105]	—	—
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	—	—
				—	—	—	—	—	—	—	—	—
	S630-NEH	250~630 (250,300, 350,400, 500,600,630)	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	—	—
				AC525	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	—	—
				AC415	50[105]	50[105]	—	—	50[105]	50[105]	—	—
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	—	—
				—	—	—	—	—	—	—	—	—
	H630-NE	250~630 (250,300, 350,400, 500,600,630)	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	—	—
				AC525	45[94.5]	34[71.4]	—	—	45[94.5]	34[71.4]	—	—
				AC450	125[295]	94[225]	125[295]	94[225]	125[295]	94[225]	—	—
				AC415	125[275]	94[206.8]	—	—	125[275]	94[206.8]	—	—
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	—	—
				—	—	—	—	—	—	—	—	—
	L630-NE	250~630 (250,300, 350,400, 500,600,630)	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	—	—
				AC525	45[94.5]	34[71.4]	—	—	45[94.5]	34[71.4]	—	—
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	—	—
				AC415	200[440]	150[330]	—	—	200[440]	150[330]	—	—
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	—	—
				—	—	—	—	—	—	—	—	—

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					N K		L R		A B S		G L	
					I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
800	S800-CF	700,800	3	AC690	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]
				AC525	—	—	15[30]	15[30]	15[30]	15[30]	15[30]	15[30]
				AC450	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]
				AC415	—	—	36[75.6]	36[75.6]	36[75.6]	36[75.6]	36[75.6]	36[75.6]
				AC240	50[117]	50[117]	50[117]	50[117]	50[117]	50[117]	50[117]	50[117]
				DC250	—	—	—	—	—	—	—	—
	S800-NF	700,800	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]
				DC250	—	—	—	—	—	—	—	—
	S800-NE	350~800 (350,400, 450,500, 600,700,800)	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]
	S800-NEH	350~800 (350,400, 450,500, 600,700,800)	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]
				AC525	—	—	30[63]	30[63]	30[63]	30[63]	30[63]	30[63]
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]
				AC415	—	—	50[105]	50[105]	50[105]	50[105]	50[105]	50[105]
	H800-NE	350~800 (350,400, 450,500, 600,700,800)	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
				AC525	—	—	45[94.5]	34[71.4]	45[94.5]	34[71.4]	45[94.5]	34[71.4]
				AC450	125[295]	94[225]	125[295]	94[225]	125[295]	94[225]	125[295]	94[225]
				AC415	—	—	125[275]	94[206.8]	125[275]	94[206.8]	125[275]	94[206.8]
	L800-NE	350~800 (350,400, 450,500, 600,700,800)	3	AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]
				AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
				AC525	—	—	45[94.5]	34[71.4]	45[94.5]	34[71.4]	45[94.5]	34[71.4]
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]
				AC415	—	—	200[440]	150[330]	200[440]	150[330]	200[440]	150[330]
1250	S1250-NE	500~1250 (500,600,700,800, 1000,1200,1250)	3	AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]
				AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
				AC450	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]
	S1250-NEH	500~1250 (500,600,700,800, 1000,1200,1250)	3	AC240	100[233]	75[181]	100[233]	75[181]	100[233]	75[181]	100[233]	75[181]
				AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]
				AC450	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]	65[157]	50[121]
	S1250-GE	500~1250 (500,600,700,800, 1000,1200,1250)	3	AC240	100[233]	75[181]	100[233]	75[181]	100[233]	75[181]	100[233]	75[181]
				AC690	45[100]	34[75.6]	45[100]	34[75.6]	45[100]	34[75.6]	45[100]	34[75.6]
				AC450	85[203]	65[157]	85[203]	65[157]	85[203]	65[157]	85[203]	65[157]
				AC240	125[306]	94[227]	125[306]	94[227]	125[306]	94[227]	125[306]	94[227]

Notes: ① : at 450V AC. ② : at 240V AC. ③ : at 120V AC. ④ : at 660V AC. ⑤ : at 525V AC. ⑦ : at 220V AC.
⑧ : at 110V AC. ⑨ : at 225V AC. ⑩ : at 440V AC. ⑬ : at 500V AC. ⑭ : at 250V AC. ⑮ : at 125V AC.

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak2

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					B V		C C S		K R		R I N A	
					I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
800	S800-CF	700,800	3	AC690	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	10[21.1]	—	—
				AC525	15[30]	15[30]	—	—	15[30]	15[30]	—	—
				AC450	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	30[70.8]	—	—
				AC415	36[75.6]	36[75.6]	—	—	36[75.6]	36[75.6]	—	—
				AC240	50[117]	50[117]	50[117]	50[117]	50[117]	50[117]	—	—
				DC250	—	—	—	—	—	—	—	—
	S800-NF	700,800	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	—	—
				AC525	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	—	—
				AC415	50[105]	50[105]	—	—	50[105]	50[105]	—	—
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	—	—
				DC250	—	—	—	—	—	—	—	—
	S800-NE	350~800 (350,400, 450,500, 600,700,800)	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	—	—
				AC525	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	—	—
				AC415	50[105]	50[105]	—	—	50[105]	50[105]	—	—
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	—	—
				DC250	—	—	—	—	—	—	—	—
	S800-NEH	350~800 (350,400, 450,500, 600,700,800)	3	AC690	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	20[43.0]	—	—
				AC525	30[63]	30[63]	—	—	30[63]	30[63]	—	—
				AC450	50[121]	50[121]	50[121]	50[121]	50[121]	50[121]	—	—
				AC415	50[105]	50[105]	—	—	50[105]	50[105]	—	—
				AC240	85[211]	85[211]	85[211]	85[211]	85[211]	85[211]	—	—
				DC250	—	—	—	—	—	—	—	—
	H800-NE	350~800 (350,400, 450,500, 600,700,800)	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	—	—
				AC525	45[94.5]	34[71.4]	—	—	45[94.5]	34[71.4]	—	—
				AC450	125[295]	94[225]	125[295]	94[225]	125[295]	94[225]	—	—
				AC415	125[275]	94[206.8]	—	—	125[275]	94[206.8]	—	—
				AC240	150[350]	150[350]	150[350]	150[350]	150[350]	150[350]	—	—
				DC250	—	—	—	—	—	—	—	—
	L800-NE	350~800 (350,400, 450,500, 600,700,800)	3	AC690	25[53.8]	20[43.0]	25[53.8]	20[43.0]	25[53.8]	20[43.0]	—	—
				AC525	45[94.5]	34[71.4]	—	—	45[94.5]	34[71.4]	—	—
				AC450	180[430]	135[315]	180[430]	135[315]	180[430]	135[315]	—	—
				AC415	200[440]	150[330]	—	—	200[440]	150[330]	—	—
				AC240	200[484]	150[350]	200[484]	150[350]	200[484]	150[350]	—	—
				DC250	—	—	—	—	—	—	—	—
1250	S1250-NE	500~1250 (500,600,700,800, 1000,1200,1250)	3	AC690	—	—	—	—	—	—	—	—
				AC450	—	—	—	—	—	—	—	—
				AC240	—	—	—	—	—	—	—	—
	S1250-NEH	500~1250 (500,600,700,800, 1000,1200,1250)	3	AC690	—	—	—	—	—	—	—	—
				AC450	—	—	—	—	—	—	—	—
				AC240	—	—	—	—	—	—	—	—
	S1250-GE	500~1250 (500,600,700,800, 1000,1200,1250)	3	AC690	—	—	—	—	—	—	—	—
				AC450	—	—	—	—	—	—	—	—
				AC240	—	—	—	—	—	—	—	—
	S1250-GEH	500~1250 (500,600,700,800, 1000,1200,1250)	3	AC690	—	—	—	—	—	—	—	—
				AC450	—	—	—	—	—	—	—	—
				AC240	—	—	—	—	—	—	—	—

2

Ratings and Specifications

Molded Case Circuit Breakers

10 List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					N K		L R		A B S		G L	
					O-CO	O-CO-CO	O-CO	O-CO-CO	O-CO	O-CO-CO	O-CO	O-CO-CO
50	TB-5S	10	2	AC250	2.5[4.1]	—	2.5[4.1]	—	—	—	2.5[3.57]⑦	—
				AC125	42[99.3]	—	43.5[101.6]	—	—	—	42[102]⑧	—
				DC125	5.0[5.0]	—	5.0[5.0]	—	—	—	5.0[5.0]⑩	—
		15,20,30,40,50	2	AC250	5.0[8.0]	—	5.0[8.0]	—	—	—	5[7.98]⑦	—
				AC125	42[99.3]	—	43.5[101.6]	—	—	—	42[102]⑧	—
				DC125	5.0[5.0]	—	5.0[5.0]	—	—	—	5.0[5.0]⑩	—
	TB-5P	10	2	AC250	2.5[4.1]	—	2.5[4.1]	—	2.5[4.1]	—	2.5[3.57]⑦	—
				AC125	42[99.3]	—	43.5[101.6]	—	42[99.3]	—	42[102]⑧	—
				DC125	5.0[5.0]	—	5.0[5.0]	—	5.0[5.0]	—	5.0[5.0]⑩	—
		15,20,30,40,50	2	AC250	5.0[8.0]	—	5.0[8.0]	—	5.0[8.0]	—	5[7.98]⑦	—
				AC125	42[99.3]	—	43.5[101.6]	—	42[99.3]	—	42[102]⑧	—
				DC125	5.0[5.0]	—	5.0[5.0]	—	5.0[5.0]	—	5.0[5.0]⑩	—
	TB-5D	10	2	AC250	2.5[4.1]	—	2.5[4.1]	—	2.5[4.1]	—	2.5[3.57]⑦	—
				AC125	42[99.3]	—	43.5[101.6]	—	42[99.3]	—	42[102]⑧	—
				DC125	5.0[5.0]	—	5.0[5.0]	—	5.0[5.0]	—	5.0[5.0]⑩	—
		15,20,30,40,50	2	AC250	5.0[8.0]	—	5.0[8.0]	—	5.0[8.0]	—	5[7.98]⑦	—
				AC125	42[99.3]	—	43.5[101.6]	—	42[99.3]	—	42[102]⑧	—
				DC125	5.0[5.0]	—	5.0[5.0]	—	5.0[5.0]	—	5.0[5.0]⑩	—
1000	TL-1000NE	500~1000 (500,600,700,800,900,1000)	3	AC690	—	—	45[93.8]	34[71.6]	—	—	45[92]	34[71.4]
				AC500	—	—	75[163]	57[124]	—	—	75[165]	57[125.4]
				AC460	125[295]	—	125[295]①	65[153]①	125[295]	—	125[298]①	65[153]①
				AC240	—	—	150[345]	113[263]	—	—	150[347]	113[248.6]
1200	TL-1200NE	600~1200 (600,700,800,1000,1200)	3	AC690	—	—	45[93.8]	34[71.6]	—	—	45[92]	34[71.4]
				AC500	—	—	75[163]	57[124]	—	—	75[165]	57[125.4]
				AC460	125[295]	—	125[295]①	65[153]①	125[295]	—	125[298]①	65[153]①
				AC240	—	—	150[345]	113[263]	—	—	150[347]	113[248.6]
2000	XS2000NE	1000~2000 (1000,1200,1400,1600,1800,2000)	3	AC500	85[195]	—	87.1[194.9]	—	85[195]	—	85[187]①	64[140.8]①

Notes: ① : at 450V AC. ② : at 240V AC. ③ : at 120V AC. ④ : at 660V AC. ⑤ : at 525V AC. ⑦ : at 220V AC.
⑧ : at 110V AC. ⑨ : at 225V AC. ⑩ : at 440V AC. ⑬ : at 500V AC. ⑭ : at 250V AC. ⑮ : at 125V AC. ⑯ : at 110V DC.

Molded Case Circuit Breakers

⑩ List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

TemBreak

Frame size	Type	Rated current(A)	Poles	Rated voltage (V)	Rated breaking capacities, kA (sym.) Values enclosed in square brackets "[]" represent the making current, kA.							
					B V		C C S		K R		R I N A	
					O-CO	O-CO-CO	O-CO	O-CO-CO	O-CO	O-CO-CO	O-CO	O-CO-CO
50	TB-5S	10	2	AC250	—	—	—	—	2.5[4.1]	—	—	—
				AC125	—	—	—	—	42[99.3]	—	—	—
				DC125	—	—	—	—	5.0[5.0]	—	—	—
		15,20,30,40,50	2	AC250	—	—	—	—	5.0[8.0]	—	—	—
				AC125	—	—	—	—	42[99.3]	—	—	—
				DC125	—	—	—	—	5.0[5.0]	—	—	—
	TB-5P	10	2	AC250	2.5[3.57]⑨	—	2.5[4.1]	—	2.5[4.1]	—	—	—
				AC125	42[102]⑧	—	42[99.3]	—	42[99.3]	—	—	—
				DC125	—	—	5.0[5.0]	—	5.0[5.0]	—	—	—
		15,20,30,40,50	2	AC250	5[7.98]⑨	—	5.0[8.0]	—	5.0[8.0]	—	—	—
				AC125	42[102]⑧	—	42[99.3]	—	42[99.3]	—	—	—
				DC125	—	—	5.0[5.0]	—	5.0[5.0]	—	—	—
	TB-5D	10	2	AC250	2.5[3.57]⑨	—	—	—	2.5[4.1]	—	—	—
				AC125	42[102]⑧	—	—	—	42[99.3]	—	—	—
				DC125	—	—	—	—	5.0[5.0]	—	—	—
		15,20,30,40,50	2	AC250	5[7.98]⑨	—	—	—	5.0[8.0]	—	—	—
				AC125	42[102]⑧	—	—	—	42[99.3]	—	—	—
				DC125	—	—	—	—	5.0[5.0]	—	—	—
1000	TL-1000NE	500~1000 (500,600,700,800,900,1000)	3	AC690	45[93.8]	34[71.6]	—	—	—	—	45[94.5]	34[71.4]
				AC500	—	—	—	—	—	—	—	—
				AC460	125[295]①	65[153]①	—	—	—	—	125[275]①	63[138.6]①
				AC240	—	—	—	—	—	—	—	—
				—	—	—	—	—	—	—	—	—
1200	TL-1200NE	600~1200 (600,700,800,1000,1200)	3	AC690	45[93.8]	34[71.6]	—	—	—	—	45[94.5]	34[71.4]
				AC500	—	—	—	—	—	—	—	—
				AC460	125[295]①	65[153]①	—	—	—	—	125[275]①	63[138.6]①
				AC240	—	—	—	—	—	—	—	—
				—	—	—	—	—	—	—	—	—
2000	XS2000NE	1000~2000 (1000,1200,1400,1600,1800,2000)	3	AC500	—	—	—	—	85[195]	—	—	—
				—	—	—	—	—	—	—	—	—

3

Selection

- 1 Selection of breakers for protection of motor branch circuits 3-2
- 2 Combination of breakers for cascade breaking 3-4
- 3 Selection of breakers for selectivity coordination 3-6

3

Selection

Molded Case Circuit Breakers

1 Selection of breakers for protection of motor branch circuits

This table assumes that the motor branch circuit is protected against overcurrent by an electromagnetic relay and against short-circuit current by a molded case circuit breaker.

For protection of 200/220 VAC 3-phase induction motors

Rated breaking capacity (kA) AC230V I_{cu} (sym)			25		35		50		85		100		150	
Output (kW)	Full-load current (A)	Max. starting current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)
0.75	3.71	28.4	E50-SF	15			S50-SF	15	S50-GF	15			H100-NF	15
1.5	6.74	56	E50-SF	20			S50-SF	20	S50-GF	15			H100-NF	15
2.2	10.4	96	E50-SF	30			S50-SF	30	S50-GF	30			H100-NF	20
3.7	15.6	139	E50-SF	40			S50-SF	40	S50-GF	40			H100-NF	30
5.5	22.8	203	E100-SF	60※			S125-SF	60	S50-GF	40			H100-NF	50
7.5	30.2	264	E100-SF	100			S125-SF	75	S100-GF	60			H100-NF	60
11	44.9	380					S125-SF	100	S100-GF	100			H100-NF	100
15	60	540			E250-SF	125	S125-SF	125※	S125-GF	125⑩			H125-NF	125
18.5	72	668			E250-SF	150	S225-NF	150	S250-SF	150			H225-NF	150
22	81.9	744			E250-SF	175	S225-NF	175	S250-SF	175			H225-NF	175
30	112	1090			E250-SF	200	S225-NF	200	S250-SF	200			H225-NF	200
37	141	1500			E250-SFH	225※	S225-NFH	225	S250-SFH	225※	S400-GF	250	H400-NE	250
45	168	1780					S400-CF	300	S400-NF	300	S400-GF	300	H400-NE	300
55	211	1960					S400-CF	400	S400-NF	400	S400-GF	400	H400-NE	350
75	272	2080					S630-CF	630	S400-NEH	400	S400-GEH	400	H630-NE	500
90	332	2600					S800-CF	800	S800-NF	800	S800-RF	800	H630-NE	630
110	380	2980							S800-NE	700	S800-RE	700	H800-NE	700
132	450	3460							S800-NE	800⑪	S800-RE	800⑪	H800-NE	800⑪

For protection of 400/440 VAC 3-phase induction motors

Rated breaking capacity (kA) AC440V I_{cu} (sym)			10		15		25		30		30		45	
Output (kW)	Full-load current (A)	Max. starting current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)
0.75	1.9	14.2	E50-SF	15			S50-SF	15						
1.5	3.4	28	E50-SF	15			S50-SF	15						
2.2	5.2	48	E50-SF	20			S50-SF	15						
3.7	7.8	70	E50-SF	20			S50-SF	20						
5.5	11.4	102	E50-SF	30			S50-SF	30						
7.5	15.1	132	E50-SF	40			S50-SF	40						
11	22.5	190	E50-SF	50			S125-SF	50						
15	30	270	E100-SF	100			S125-SF	75						
18.5	36	334	E100-SF	100※			S125-SF	100						
22	41	372					S125-SF	125						
30	56	545			E250-SF	125	S125-SF	125※			S250-SF	125	S400-NF	125
37	70.5	750			E250-SF	150					S250-SF	150	S400-NF	150
45	84	890			E250-SF	175					S250-SF	175	S400-NF	175
55	105	980			E250-SF	200					S250-SF	200	S400-NF	200
75	136	1040			E250-SFH	225			S400-CF	300	S250-SFH	225	S400-NF	300
90	166	1300							S400-CF	350			S400-NF	350
110	190	1490							S400-CF	400			S400-NF	400
132	225	1730							S400-CF	400⑪			S400-NE	400
160	273	2170							S630-CF	630				

- Note 1:**
Motor starting conditions
The inrush current is assumed to be as follows:

Motor output	Inrush current
0.75 to 7.5 kW	Full-load current x 1600% max.
11 to 45 kW	Full-load current x 1700% max.
55 to 160 kW	Full-load current x 1800% max.

Exceptions:
⑩: Full-load x 1600% max.
⑪: Full-load x 1700% max.

When the inrush current exceeds the above values, the breaker may trip.

The starting time is assumed to be 6 seconds max. at the max. starting current.

Exceptions:
※: 5 seconds max. at the max. starting current
When the max. starting current flows through the breaker for a period of time exceeding the above max. starting time, the breaker may trip.
- Note 2:**
The full-load current and the max. starting current are determined with reference to those of highly efficient 3-phase induction motors (4 poles) from individual manufacturers. Please consult us if the full-load current or the max. starting current of your motor is different significantly from the values shown in the table.
- Note 3:**

 - In regard to electronic breakers, it is assumed that the protection characteristic setting dial is set so that the long time delay tripping time is the longest.
 - In regard to breakers with the instantaneous trip current being adjustable, it is assumed that the instantaneous trip current is set to the max. value.
 - Protective coordination with the motor is analyzed for on the basis of 40°C cold start characteristics of the breaker.

200		Rated breaking capacity (kA) AC230V I _{cu} (sym)		
Type	Rated current (A)	Output (kW)	Full-load current (A)	Max. starting current (A)
		0.75	3.71	28.4
		1.5	6.74	56
		2.2	10.4	96
		3.7	15.6	139
		5.5	22.8	203
		7.5	30.2	264
		11	44.9	380
		15	60	540
		18.5	72	668
		22	81.9	744
		30	112	1090
L400-NE	250	37	141	1500
L400-NE	300	45	168	1780
L400-NE	350	55	211	1960
L630-NE	500	75	272	2080
L630-NE	630	90	332	2600
L800-NE	700	110	380	2980
L800-NE	800 ¹⁷⁾	132	450	3460

50		65		80		120		125		180		Rated breaking capacity (kA) AC440V I _{cu} (sym)		
Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Type	Rated current (A)	Output (kW)	Full-load current (A)	Max. starting current (A)
S50-GF	15					H100-NF	15			L100-NF	15	0.75	1.9	14.2
S50-GF	15					H100-NF	15			L100-NF	15	1.5	3.4	28
S50-GF	15					H100-NF	15			L100-NF	15	2.2	5.2	48
S50-GF	15					H100-NF	15			L100-NF	15	3.7	7.8	70
S50-GF	30					H100-NF	30			L100-NF	30	5.5	11.4	102
S50-GF	40					H100-NF	30			L100-NF	30	7.5	15.1	132
S50-GFH	40					H100-NF	50			L100-NF	50	11	22.5	190
S50-GFH	50					H100-NF	60			L100-NF	60	15	30	270
S100-GFH	60					H100-NF	75			L100-NF	75	18.5	36	334
S100-GFH	75					H100-NF	100			L100-NF	100	22	41	372
S100-GFH	100					H100-NF	100			L100-NF	100	30	56	545
S225-GF	125					H225-NF	125			L225-NF	125	37	70.5	750
S225-GF	150					H225-NF	150			L225-NF	150	45	84	890
S225-GFH	175					H225-NF	175 ¹⁷⁾			L225-NF	175 ¹⁷⁾	55	105	980
S225-GFH	225					H225-NF	225 ¹⁷⁾			L225-NF	225 ¹⁷⁾	75	136	1040
		S400-GF	350	S400-PF	300	H400-NE	300			L400-NE	300	90	166	1300
		S400-GF	400	S400-PF	400	H400-NE	350			L400-NE	350	110	190	1490
		S400-GE	400	S400-PF	400 ¹⁷⁾	H400-NE	400			L400-NE	400	132	225	1730
S630-NF	630	S630-RF	630					H630-NE	500	L630-NE	500	160	273	2170

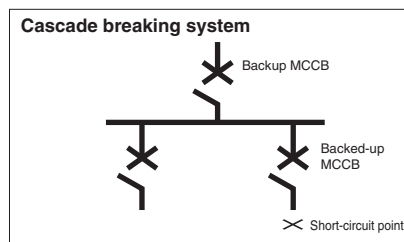
3

Selection

Molded Case Circuit Breakers

2 Combination of breakers for cascade breaking

The following table shows possible combinations of backup and backed-up breakers (conforming to Appendix A, IEC 60947-2) as well as the cascade breaking capacity (kA sym.) of each combination.



Breaker combination table for cascade breaking for 450V AC circuit (approved by NK, LR, AB)

Backup breaker		Backed-up breaker											
Rated breaking capacity sym.(kA)	Backed-up breaker	E250-SF	S100-NF S125-NF S100-NFL S100-NFH	S125-SF	S225-NF S250-NF S225-NFL S225-NFH	S250-SF	S400-CF	S630-CF	S800-CF	S400-NF S400-NE S400-NEH	S50-GF S100-GF S125-GF S50-GFL S50-GFH S100-GFL S100-GFH	S225-GF S250-GF S225-GFL S225-GFH	
		15	25	25	25	30	30	30	30	45	50	50	
E50-SF	10	15 [32.6]	22 [51.9]	22 [51.9]	15 [32.6]	15 [32.6]	—	—	—	—	22 [51.9]	15 [32.6]	
E100-SF	10	15 [32.6]	22 [51.9]	22 [51.9]	15 [32.6]	15 [32.6]	—	—	—	—	22 [51.9]	15 [32.6]	
E250-SF	15	—	—	—	25 [56.2]	25 [56.2]	30 [70.8]	30 [70.8]	30 [70.8]	30 [70.8]	—	30 [70.8]	
S50-SF S125-SF	25	—	—	—	—	—	30 [70.8]	30 [70.8]	30 [70.8]	30 [70.8]	42 [96.7]	42 [96.7]	
S100-NF S125-NF S100-NFL S100-NFH S100-NM	25	—	—	—	—	—	30 [70.8]	30 [70.8]	30 [70.8]	30 [70.8]	42 [96.7]	42 [96.7]	
S225-NF S250-NF S225-NFL S225-NFH S225-NM	25	—	—	—	—	—	30 [70.8]	30 [70.8]	30 [70.8]	42 [96.7]	—	42 [96.7]	
S250-SF	30	—	—	—	—	—	30 [70.8]	30 [70.8]	30 [70.8]	42 [96.7]	—	42 [96.7]	
S400-CF	30	—	—	—	—	—	—	—	—	45 [109]	—	—	
S630-CF	30	—	—	—	—	—	—	—	—	—	—	—	
S800-CF	30	—	—	—	—	—	—	—	—	—	—	—	
S400-NF S400-NE S400-NEH	45	—	—	—	—	—	—	—	—	—	—	—	
S50-GF S100-GF S125-GF S50-GFL S50-GFH S100-GFL S100-GFH	50	—	—	—	—	—	—	—	—	—	—	—	
S225-GF S250-GF S225-GFL S225-GFH	50	—	—	—	—	—	—	—	—	—	—	—	
S630-NF S630-NE S630-NEH	50	—	—	—	—	—	—	—	—	—	—	—	
S800-NF S800-NE S800-NEH	50	—	—	—	—	—	—	—	—	—	—	—	
S400-GF S400-GE S400-GEH	65	—	—	—	—	—	—	—	—	—	—	—	
S400-PF S400-PE	80	—	—	—	—	—	—	—	—	—	—	—	
H100-NF H125-NF	120	—	—	—	—	—	—	—	—	—	—	—	
H225-NF	120	—	—	—	—	—	—	—	—	—	—	—	
H400-NE	120	—	—	—	—	—	—	—	—	—	—	—	

Notes: ① Values enclosed in square brackets "[]" represent the making current.

Breaker combination table for cascade breaking for 240V AC circuit (approved by NK, LR, AB)

Backup breaker		E50-SF	E100-SF	S125-SF	S100-NF S125-NF S100-NFL S100-NFH	S225-NF S250-NF S225-NFL S225-NFH
Rated breaking capacity sym,kA	Backed-up breaker	25	25	50	50	65
5②	TB-5S	25 [58.3]	25 [58.3]	25 [55.6]	25 [55.6]	—
5②	TB-5D	25 [58.3]	25 [58.3]	25 [55.6]	25 [55.6]	—
5②	TB-5P	25 [58.3]	25 [58.3]	25 [55.6]	25 [55.6]	—
25	E50-SF	—	—	50 [115]	50 [115]	50 [115]
25	E100-SF	—	—	50 [115]	50 [115]	50 [115]

Notes:

① Values enclosed in square brackets
“[]” represent the making current.

② If the rated current is 10A, the rated
breaking capacity is 2.5 kA.

	S630-NF S630-NE S630-NEH	S800-NF S800-NE S800-NEH	S400-GF S400-GE S400-GEH	S400-PF S400-PE	H100-NF H125-NF	H225-NF	H400-NE	H630-NE	H800-NE	L100-NF L125-NF	L225-NF	L400-NE	L630-NE	L800-NE
	50	50	65	80	120	120	120	125	125	180	180	180	180	180
	—	—	—	—	22 [51.9]	—	—	—	—	180 [430]	—	—	—	—
	—	—	—	—	22 [51.9]	—	—	—	—	180 [430]	—	—	—	—
	30 [70.8]	30 [70.8]	30 [70.8]	30 [70.8]	—	50 [121]	50 [121]	30 [65.2]	30 [65.2]	—	70 [165]	70 [165]	30 [70.8]	30 [70.8]
	30 [70.8]	30 [70.8]	30 [70.8]	30 [70.8]	50 [121]	50 [121]	50 [121]	30 [70.8]	30 [70.8]	180 [430]	70 [165]	70 [165]	30 [70.8]	30 [70.8]
	30 [70.8]	30 [70.8]	30 [70.8]	30 [70.8]	50 [121]	50 [121]	50 [121]	30 [65.2]	30 [65.2]	180 [430]	70 [165]	70 [165]	30 [70.8]	30 [70.8]
	42 [96.7]	42 [96.7]	42 [96.7]	42 [96.7]	—	70 [165]	70 [165]	70 [165]	70 [165]	—	130 [311]	130 [311]	85 [203]	85 [203]
	42 [96.7]	42 [96.7]	42 [96.7]	42 [96.7]	—	70 [165]	70 [165]	70 [165]	70 [165]	—	130 [311]	130 [311]	85 [203]	85 [203]
	50 [117]	50 [117]	50 [121]	50 [121]	—	—	100 [230]	70 [165]	70 [165]	—	—	130 [311]	100 [230]	100 [230]
	50 [117]	50 [117]	—	—	—	—	—	100 [230]	100 [230]	—	—	—	130 [311]	130 [311]
	—	50 [117]	—	—	—	—	—	—	100 [230]	—	—	—	—	130 [311]
	—	—	—	—	—	—	100 [230]	100 [230]	100 [230]	—	—	130 [311]	130 [311]	130 [311]
	—	—	—	—	70 [165]	70 [165]	70 [165]	—	—	180 [430]	85 [203]	85 [203]	—	—
	—	—	—	—	—	70 [165]	70 [165]	—	—	—	130 [311]	130 [311]	85 [203]	85 [203]
	—	—	—	—	—	—	—	100 [230]	100 [230]	—	—	—	130 [311]	130 [311]
	—	—	—	—	—	—	—	—	100 [230]	—	—	—	—	130 [311]
	—	—	—	—	—	—	100 [230]	100 [230]	100 [230]	—	—	130 [311]	130 [311]	130 [311]
	—	—	—	—	—	—	100 [230]	100 [230]	100 [230]	—	—	130 [311]	130 [311]	130 [311]
	—	—	—	—	—	—	—	—	—	180 [430]	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	130 [311]	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	180 [396]	180 [396]	180 [396]

3

Selection

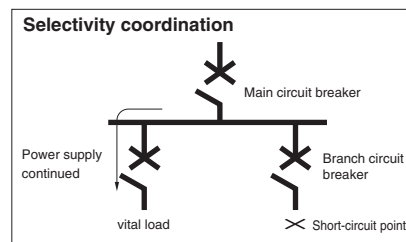
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Selection

Molded Case Circuit Breakers

3 Selection of breakers for selectivity coordination

The following table shows possible combinations of main circuit breakers and branch circuit breakers capable of selectivity coordination with the main circuit breakers as well as the breaking capacity (kA sym.) of each combination at the points where the branch circuit breaker is installed.



Breaker combination table for selectivity coordination for 450V AC circuit

Main circuit breaker Rated breaking capacity sym. (kA)	Branch circuit breaker															
	S400-NE	S400-NEH	S400-GE	S400-GEH	H400-NE	L400-NE	S630-NE	S630-NEH	H630-NE	S800-NE	S800-NEH	H800-NE	TL-1200NE	S1250-NEH	S1600-NEH	※XS2000NE
E50-SF E100-SF E250-SF	10	5	6	5	6	5	5	10	10	10	10	10	10	10	10	10
S50-SF S100-NF S100-NFH S100-NFL S125-NF S125-SF	25	5	6	5	6	5	5	22	25	25	22	25	25	25	25	25
S225-NF S225-NFH S225-NFL S250-NF	25	5	6	5	6	5	5	25	25	25	25	25	25	25	25	25
S250-SF	30	5	6	5	6	5	5	25	30	30	25	30	30	30	30	30
S400-CF	30	—	—	—	—	—	—	25	—	25	25	25	30	30	30	30
S630-CF	30	—	—	—	—	—	—	—	—	—	—	—	30	30	30	30
S800-CF	30	—	—	—	—	—	—	—	—	—	—	—	—	—	20	30
S50-GF S50-GFH S50-GFL	50	5	6	5	6	5	5	42	45	50	42	45	50	50	50	50
S100-GF S100-GFH S100-GFL S125-GF	50	5	6	5	6	5	5	42	45	50	42	45	50	50	50	50
S225-GF S225-GFH S225-GFL S250-GF	50	5	6	5	6	5	5	25	50	50	50	50	50	50	50	50
S400-PF	80	—	—	—	—	—	—	—	—	25	25	25	50	—	—	50
S400-NE S400-NEH S400-NF	45	—	—	—	—	—	—	25	—	25	25	25	45	45	45	45
S400-GE S400-GEH S400-GF	65	—	—	—	—	—	—	25	—	25	25	25	50	50	50	50
S400-PE	80	—	—	—	—	—	—	—	—	25	25	25	50	—	—	50
S630-NE S630-NEH S630-NF	50	—	—	—	—	—	—	—	—	—	—	—	30	30	30	35
S800-NE S800-NEH S800-NF	50	—	—	—	—	—	—	—	—	—	—	—	—	—	20	35
H100-NF H125-NF	120	—	—	—	—	—	—	—	30	—	—	50	120	—	—	85
H225-NF	120	—	—	—	—	—	—	—	15	—	—	15	25	—	—	75
H400-NE	120	—	—	—	—	—	—	—	—	—	—	—	25	—	—	35
L100-NF L125-NF	180	—	—	—	—	—	—	—	60	—	—	125	125	—	—	85
L225-NF	180	—	—	—	—	—	—	—	—	—	—	20	35	—	—	85
L400-NE	180	—	—	—	—	—	—	—	—	—	—	—	25	—	—	85
H630-NE	125	—	—	—	—	—	—	—	—	—	—	—	15	—	—	35
L630-NE	180	—	—	—	—	—	—	—	—	—	—	—	15	—	—	35
H800-NE	125	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35
L800-NE	180	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35

Note: The table assumes that:

The trip pickup current of the main circuit breakers is set to the maximum;

The main circuit breakers are provided with the long time delay and instantaneous trip functions;

The main circuit breakers marked with ※ are high instantaneous trip breakers.

4 Special Breakers

1	Instantaneous trip only breakers	4-2
2	Special instantaneous trip breakers	4-3
1.	High Instantaneous Trip	4-3
2.	Low Instantaneous Trip	4-4

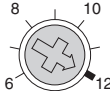
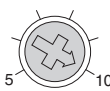
4

Special Breakers

Molded Case Circuit Breakers

1 Instantaneous trip only breakers

These are standard breakers without the thermal overload trip. They have the instantaneous tripping characteristic, normally used when short circuit protection only is required. Other ratings and specifications and outline dimensions of these breakers are the same as those of standard breakers of the same types.

Category	Type	For AC/DC	Rated current, A	Code number	Instantaneous trip current, A								
Fixed instantaneous trip ①	E50-SF	AC or DC If the DC version is required, please state so when ordering. The AC version is provided unless otherwise stated when ordering.	15I	I22	225±75								
			20I	I30	300±100								
			30I	I45	450±150								
			40I	I60	600±200								
			50I	I75	750±250								
	S50-GF		15I	I18	180±36								
			20I	I24	240±48								
			30I	I36	360±72								
			40I	I48	480±96								
			50I	I60	600±120								
	E100-SF		100I	I97	975±225								
				I130	1300±300								
			15I	I18	180±36								
			20I	I24	240±48								
			30I	I36	360±72								
	S100-NF S100-GF H100-NF L100-NF		40I	I48	480±96								
			50I	I60	600±120								
				I72	720±144								
			100I	I90	900±180								
				I120	1200±240								
	S125-SF		③	125I	I60	600±120							
					I100	1000±200							
					I160	1600±320							
	S225-NF S225-GF H225-NF L225-NF			225I	I162	1625±325							
					I195	1950±390							
		I227			2275±455								
		I260			2600±520								
		I292			2925±585								
	E250-SF S250-SF		250I	I162	1625±325								
				I195	1950±390								
				I227	2275±455								
				I260	2600±520								
				I292	2925±585								
Adjustable instantaneous trip ②	S400-CF S400-NF S400-GF S400-PF	AC or DC If the DC version is required, please state so when ordering. The AC version is provided unless otherwise stated when ordering.	400I	Dial position									
				Code number	12	11	10	9	8	7	6		
				V125	1500	1375	1250	1125	1000	875	750		
				V150	1800	1650	1500	1350	1200	1050	900		
				V175	2100	1925	1750	1575	1400	1225	1050		
				V200	2400	2200	2000	1800	1600	1400	1200		
				V225	2700	2475	2250	2025	1800	1575	1350		
				V250	3000	2750	2500	2250	2000	1750	1500		
				V300	3600	3300	3000	2700	2400	2100	1800		
				V350	4200	3850	3500	3150	2800	2450	2100		
				V400	4800	4400	4000	3600	3200	2800	2400		
	S630-CF S630-NF S630-RF S630-PF		630I	Dial position									
				Code number	10	9	8	7	6	5			
				V500	5000	4500	4000	3500	3000	2500			
				V600	6000	5400	4800	4200	3600	3000			
	S800-CF S800-NF S800-RF S800-PF		800I	V630	6300	5670	5040	4410	3780	3150			
				V700	7000	6300	5600	4900	4200	3500			
					V800	8000	7200	6400	5600	4800	4000		

• The instantaneous trip current values shown in the table above are standard settings. Contact us if you require other settings.

Notes:

① Setting tolerance: ±20% (Please specify the code number).

② For AC:

The selector dial is factory set to position "12" unless the instantaneous trip current is specified. Setting tolerance: ±20% (Please specify the code number).

For DC:

The instantaneous trip current cannot be adjusted by the customer. The instantaneous trip current is factory set to the value specified by the customer.

Setting tolerance: ±20% (State the version (DC), code number and instantaneous trip current you require).

③ Common for AC use and DC use. In case of DC use the instantaneous trip current will be about 1.4 times that of the figures in the table. Setting tolerance ±20%.

INST TRIP ONLY

INST * * * * A

Nameplate installed on the magnetic breakers only

1. High Instantaneous Trip

High instantaneous trip breakers are the breakers having a high instantaneous trip pickup current. Use these breakers in order to achieve selective coordination or to provide protection on the primary side of transformer.

Category	Type (Reference type ③)	Rated current, A		Instantaneous trip pickup current, A
Thermal - Magnetic type ①	S50-GFH (S50-GF)	15		300
		20		400
		30		600
		40		800
		50		1000
		15		300
	S100-NFH (S100-NF) S100-GFH (S100-GF)	20		400
		30		600
		40		800
		50		1000
		60		1200
		75		1500
	S225-NFH (S225-NF) S225-GFH (S225-GF) E250-SF S250-SF	100		1800
		125		2250
		150		2700
		175		3150
		200		3600
		225		4050
Electronic type ②	S400-NEH (S400-NE) S400-GEH (S400-GE)	CT rated current (I_{CT}), A	Rated current (I_R), A	6300
		400	175	
			200	
			225	
			250	
			300	
	S630-NEH (S630-NE)	CT rated current (I_{CT}), A	Rated current (I_R), A	10000
		630	250	
			300	
			350	
			400	
			500	
	S800-NEH (S800-NE)	CT rated current (I_{CT}), A	Rated current (I_R), A	10000
		800	600	
			700	
			800	
			500	
			600	
	S1250-NEH (S1250-NE)	CT rated current (I_{CT}), A	Rated current (I_R), A	15000
		1250	800	
			1000	
			1200	
			1250	
			1000	
	XS2000NE④	CT rated current (I_{CT}), A	Rated current (I_R), A	35000
		2000	1200	
			1400	
			1600	
			1800	
			2000	

Notes:

① Setting tolerance: $\pm 10\%$. ② Setting tolerance: $\pm 20\%$. ③ Ratings and specifications, except for the instantaneous trip pickup current, and outline dimensions of the High-Inst breakers are the same as those of the reference breakers enclosed in parentheses.

④ An optional trip indicator cannot be added.



4

Special Breakers

Molded Case Circuit Breakers

2 Special instantaneous trip breakers

2. Low Instantaneous Trip

Low instantaneous trip breakers are the breakers having a low instantaneous trip pickup current. Use these breakers in order to achieve selective coordination with a high-voltage fuse located on the primary side of the breakers.

Category	Type (Reference type ②)	Rated current, A	Instantaneous trip pickup current, A
Thermal - Magnetic ①	S50-GFL (S50-GF)	15	90
		20	120
		30	180
		40	240
		50	300
	S100-NFL (S100-NF) S100-GFL (S100-GF)	15	90
		20	120
		30	180
		40	240
		50	300
		60	360
		75	450
		100	600
		125	750
		150	900
	S225-NFL (S225-NF) S225-GFL (S225-GF)	175	1050
		200	1200
		225	1350

Notes:

① Setting tolerance: $\pm 10\%$.

② Ratings and specifications, except for the instantaneous trip pickup current, and outline dimensions of the Low-Inst breakers are the same as those of the reference breakers enclosed in parentheses.



5

Mounting and Connection

1	Type of connections and mountings	5-2
	List of connecting type	5-2
	Connecting parts	5-6
	Plug-in type (PM)	5-8
	1. For switchboards	5-8
	2. For distribution boards	5-9
2	Compression terminals	5-14
3	Terminal screw sizes and standard torques	5-16
4	Insulation distance from the line side	5-20
5	Reverse connection	5-22
6	Lists of breaker mounting screws	5-23

5

Mounting and Connection

Molded Case Circuit Breakers

1 Type of connections and mountings

List of Connecting Types

Connecting types (Abbreviation)	Front-connected (FC)			Rear-connected (RC)																				
	For compression terminals/flat bars	With extension bars	With cable clamps	Flat bar studs																				
				Stud can be turned 45° or 90°	Stud can be tured 90°																			
Outer view Breaker																								
S50-SF, S125-SF, S125-SN	●	○	—	○ *	—																			
S50-GF, S100-NF, S100-GF, S100-NN S125-NF, S125-GF, S125-NN S100-NM	●	○	△	○	—																			
H100-NF, H125-NF, H225-NF, H225-GE	●	○	△	○	—																			
L100-NF, L125-NF, L225-NF	●	○	△	○	—																			
S225-NF, S225-GF S250-NF, S250-GF S225-NM	●	○	△	○	—																			
E250-SF, S250-SF, S250-SN	●	○	△	○	—																			
S400-CF, S400-NF, S400-NE S400-GF, S400-GE, S400-PF S400-PE, S400-NN	●	○	△	○	—																			
H400-NE, L400-NE	●	○	△	○	—																			
S630-CF, S630-NF, S630-NE, S630-RF S630-PF, S630-RE, S630-PE, S630-GN	—	●	△	—	○																			
H630-NE, L630-NE	—	●	△	—	○																			
S800-CF, S800-NF, S800-NE, S800-RF S800-PF, S800-RE, S800-PE, S800-NN	—	●	—	—	○																			
H800-NE, L800-NE	—	●	—	—	○																			
Remarks	Connect compression terminals or flat bars directly to breaker terminals.	Extension bars are attached to breaker terminals. Connect compression terminals or flat bars to the extension bars.	- Cable clamps are attached to breaker terminals. Connect wires directly to cable clamps. - Exclusive terminal covers for cable clamps are available.	- Flat bar studs will be factory installed in the horizontal position unless otherwise specified. - Flat bar studs in the vertical position are available on request. Please select a position code from those shown in the table below: <table><tr><th rowspan="2">Position code</th><th colspan="2">Position of flat bar studs</th></tr><tr><th>Line side</th><th>Load side</th></tr><tr><td>RC-A</td><td>Vertical</td><td>Horizontal</td></tr><tr><td>RC-B</td><td>Horizontal</td><td>Vertical</td></tr><tr><td>RC-C</td><td>Vertical</td><td>Vertical</td></tr><tr><td>RC-D</td><td>Horizontal</td><td>Horizontal</td></tr></table> *: The studs are horizontal direction only.			Position code	Position of flat bar studs		Line side	Load side	RC-A	Vertical	Horizontal	RC-B	Horizontal	Vertical	RC-C	Vertical	Vertical	RC-D	Horizontal	Horizontal	
Position code	Position of flat bar studs																							
	Line side	Load side																						
RC-A	Vertical	Horizontal																						
RC-B	Horizontal	Vertical																						
RC-C	Vertical	Vertical																						
RC-D	Horizontal	Horizontal																						

See pages 5-16 and 5-17 for dimensions and tightening torques of terminal screws.

Notes:

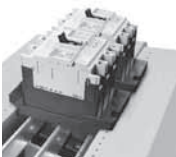
①. Except 4-pole breakers.

②. May not be applied to 2 or 4-pole breakers of some types.

③. See page 5-8 for details.

④. See page 5-9 to 5-13 for details.

⑤. TemPlug 45B (PG4) is not applicable.

	Plug-in (PM)		Plug-in (PM)	Flush Plate (FP)	Draw-out type (DR)	<i>TemPlug</i> (PG)(PG4) ^②
	For switchboards ^③		For distribution boards ^{①④}	Flat bar studs		
	Standard	High-performance				
						
	○	—	○	○	—	—
	○	○	○	○	—	○
	○	○	—	○	—	▲
	○	○	—	○	—	—
	○	○	—	○	—	○
	○	—	—	○	—	○ ⑤
	○	○	—	○	▲	○
	○	○	—	○	—	—
	○	○	—	○	▲	○
	○	○	—	○	—	—
	○	○	—	○	▲	—
	○	○	—	○	—	—
	• To make connection, push the breaker into the mounting base already wired to the main and control circuits. The breaker can be fixed by the mounting screws. • High-performance models have a safety mechanism that prevents them from being mounted or removed as long as they are in the ON state. • Models meeting protection grade IP20 are available as options. IEC 60529 specifies that IP20-compliant devices be designed and constructed so that live parts of the devices cannot be touched by hand. When ordering the products, please specify as "IP20 applied products".		• Plug-in type with front connection suitable for the small depth.	• Install the mounting frame directly to a panel. • Use the flat bar studs in the same manner as for rear-connected breakers. • The plate is painted in Munsell 5Y 7/1.	• To make connection, push the breaker into the draw-out cradle already wired to the main and control circuits. The draw-out cradle has two positions "Connected" and "Isolated". • The breakers have a safety mechanism that prevents them from being mounted or removed as long as they are in the ON state. • Models meeting protection grade IP20 are available as options. IEC 60529 specifies that IP20-compliant devices be designed and constructed so that live parts of the devices cannot be touched by hand. When ordering the products, please specify as "IP20 applied products".	• Simply plugging <i>TemPlug</i> onto the main busbars in a switchboard completes the connection of the breaker to a power distribution line. Use plug-in base mounting screws to secure the breaker. Direct coupling of the plug-in base to the main busbars reduces the lead time involved in completing a power distribution system. • If the frame size or rated current of the breakers is changed, all you have to do is to replace the <i>TemPlug</i>.

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

▲ : Semi-standard.

△ : Custom-built. Contact us for details.

— : "no" or "not available".

List of Connecting Types

Breaker	Connecting types (Abbreviation)	Front-connected (FC)		Rear-connected (RC)			
		For compression terminals/flat bars	With extension bars	Flat bar studs			Bolt studs
				Stud can be turned 90°	Fixed ①		
TB-5S		●	—	—	—	—	
TB-5P		● (Load side)	—	—	—	—	
TB-5D		—	—	—	—	—	
E50-SF, E100-SF, E50-CM		●	—	—	—	○	
S1250-NE, S1250-GE, S1250-NN		—	●	—	○ ②	—	
TL-1000NE, TL-1200NE		—	●	—	○ ②	—	
S1600-NE, S1600-NN		—	○	—	● ③	—	
XS2000NE, XS2000NN		—	○	—	● ③	—	
Remarks		• Connect compression terminals directly to breaker terminals.	• Extension bars are attached to breaker terminals. Connect compression terminals or flat bars to the extension bars.				

See pages 5-18 and 5-19 for dimensions and tightening torques of terminal screws.

Notes:

①. Breakers are mounted on angles.

②. Flat bar studs will be factory installed in the horizontal position unless otherwise specified.

If vertical installation is required, please state when ordering.

③. Vertical installation only

④. The breakers can be installed on the panel door using mounting frame supplied as standard.

⑤. The breakers can be installed on the mounting angle as well as Rear-connected breakers.

⑥. See page 5-8 for details.

Position code	Position of flat bar studs	
	Line side	Load side
RC-A	Vertical	Horizontal
RC-B	Horizontal	Vertical
RC-C	Vertical	Vertical
RC-D	Horizontal	Horizontal

	Plug-in (PM)		Draw-out type (DR)		Flush Plate (FP)
	For switchboards ⑥ Standard	For distribution boards	Two-position type	Three-position type	Flat bar studs
	—	—	—	—	—
	—	● (Line side)	—	—	—
	—	●	—	—	—
	○	○	—	—	—
	○	—	▲	—	○ ② ④
	○	—	▲	—	○ ② ④
	—	—	—	—	○ ③ ④
	—	—	—	○	○ ③ ⑤
	• To make connection, push the breaker into the plug-in base cradle already wired to the main and control circuits. Use breaker mounting screws to secure the breaker. • Models meeting protection grade IP20 are available as options. IEC 60529/JIS C 0920 specify that IP20-compliant devices be designed and constructed so that live parts of the devices cannot be touched by hand.	• Plug-in type with front connection suitable for the small depth.	• To make connection, push the breaker into the draw-out cradle already wired to the main and control circuits. The draw-out cradle has two positions "Connected" and "Isolated". • The breakers are fitted with a safety trip. If an attempt is made to remove the breakers while ON position it will automatically trip. • Models meeting protection grade IP20 are available as options. IEC 60529/JIS C 0920 specify that IP20-compliant devices be designed and constructed so that live parts of the devices cannot be touched by hand. When ordering the products, please specify as "IP20 applied products". • The auxiliary circuit is connected or isolated automatically through the auxiliary circuit terminals of a plug-in breaker. (When the motor operator is mounted, the auxiliary circuit is connected or isolated manually.)	• To make connection, push the breaker into the draw-out cradle already wired to the main and control circuits. The draw-out cradle has three positions "Connected", "Test" and "Isolated". • The breakers are fitted with a safety trip. If an attempt is made to remove the breakers while ON position it will automatically trip. • Safety shutters are available as option which automatically cover the live parts on the cradle side in the isolated position. • The auxiliary circuit is connected or isolated automatically by the disconnecter. Connected on "CONN" and "TEST" position. Isolated on "ISOLATED" position.	• The plate is painted in Munsell 5Y 7/1.

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

▲ : Semi-standard.

△ : Custom-built. Contact us for details.

— : "no" or "not available".

5

Mounting and Connection

Molded Case Circuit Breakers

1 Type of connections and mountings

Connecting parts

There are the following connecting/mounting hardware available as options:

1. Extension bars for front conection

Type	Number of poles	Applicable breakers		Min order qty	Constituent parts			Remarks
					Extension bar	Screw B	Screw C	
T2FB12L2SH	2	S50-SF	Straight extension bars	1/2 ①	2	2	2	
T2FB12L3SH	3				3	3	3	
T2FB12L2SB	2				4	4	4	
T2FB12L3SB	3	S50-SF	Straight extension bars	1	6	6	6	
T2FB12L2SH	2				2	2	2	
T2FB12L3SH	3				3	3	3	
T2FB12L4SH	4	S125-SF, S125-SN	Straight extension bars	1/2 ①	4	4	4	
T2FB12L2SB	2				4	4	4	
T2FB12L3SB	3				6	6	6	
T2FB12L4SB	4	S125-SF, S125-SN	Straight extension bars	1	8	8	8	
T2FB12L2H	2				2	2	2	
T2FB12H	3				3	3	3	
T2FB12H	4	S100-NM, S100-NN	Straight extension bars	1/2 ①	4	4	4	
T2FB12H	4				4	4	4	
T2FB12H	4				4	4	4	
T2FB12B	2	S50-GF, S100-NF, S100-GF	Straight extension bars	1	4	4	4	
T2FB12B	3				6	6	6	
T2FB12B	4				8	8	8	
T2FB12B	4	S100-NM, S100-NN	Straight extension bars	1	6	6	6	
T2FB12B	3				6	6	6	
T2FB12B	4				8	8	8	
T2FB25L3WH	3	H100-NF, L100-NF H125-NF, L125-NF	Spread extension bars	1/2 ①	3	3	3	
T2FB25L4WH	4				4	4	4	
T2FB25L4WH	4				4	4	4	
T2FB25L3WB	3	H100-NF, L100-NF H125-NF, L125-NF	Spread extension bars	1	6	6	6	
T2FB25L4WB	4				8	8	8	
T2FB25L4WB	4				8	8	8	
T2FB25L2SH	2	H100-NF, L100-NF H125-NF, L125-NF	Straight extension bars	1/2 ①	2	2	2	
T2FB25L3SH	3				3	3	3	
T2FB25L4SH	4				4	4	4	
T2FB25L2SB	2	H100-NF, L100-NF H125-NF, L125-NF	Straight extension bars	1	4	4	4	
T2FB25L3SB	3				6	6	6	
T2FB25L4SB	4				8	8	8	
T2FB402H	2	S400-CF, S400-NF, S400-PF, S400-NN	Spread extension bars	1/2 ①	2	2	2	
T2FB403H	3				3	3	3	
T2FB404H	4				4	4	4	
T2FB402B	2	S400-NE, S400-GF, S400-GE, S400-PE	Spread extension bars	1	4	4	4	
T2FB403B	3				6	6	6	
T2FB404B	4				8	8	8	

● See page 5-16 for screws B and C.

Note ①: Two sets, one for the line side and one for the load side, are required per breaker.

2. Flat bar stud for rear connection

Type	Number of poles	Applicable breakers		Min order qty	Constituent parts			Remarks
					Stud bar	Screw D	Screw E	
T2RP05L2S	2	S50-SF, S125-SF (15-50A)		1	4	4	4	
T2RP05L3S	3				6	6	6	
T2RP12L2S	2				4	4	4	
T2RP12L3S	3	S125-SF, S125-SN (60-125A)		1	6	6	6	
T2RP12L4S	4				8	8	8	
T2RP12L4S	4				8	8	8	
T2RP122S	2	S50-GF, S100-NF, S100-GF		1	4	4	4	
T2RP123S	3				6	6	6	
T2RP124S	4				8	8	8	
T2RP124S	4	S125-NF, S125-GF, S125-NN		①	8	8	8	
T2RP252S	2				4	4	4	
T2RP253S	3				6	6	6	
T2RP254S	4	S225-NF, S225-GF, S225-GE, S225-NM H225-NF, L225-NF		1	8	8	8	
T2RP254S	4				8	8	8	
T2RP254S	4				8	8	8	
T2RP25L2S	2	E250-SF, S250-SF, S250-SN		1	4	4	4	
T2RP25L3S	3				6	6	6	
T2RP25L4S	4				8	8	8	
T2RP25L4S	4	H100-NF, L100-NF H125-NF, L125-NF		①	6	6	6	
T2RP253L	3				6	6	6	
T2RP254L	4				8	8	8	
T2RP254L	4	H225-NF, L225-NF		①	8	8	8	
T2RP403S	3				8	8	8	
T2RP404S	4				8	8	8	
T2RP403L	3	S400-CF, S400-NF, S400-PF, S400-NN S400-NE, S400-GF, S400-GE, S400-PE		1	6	6	6	
T2RP404L	4				8	8	8	

● See page 5-16 for screws D and E.

Note ①: The studs can be rotated to four angular positions: 0 (horizontal), 45, 90 (vertical) and 135 degrees.

3. Plug-in base for switchboards

Type	Number of poles	IP20	Applicable breakers	Min order qty	Constituent parts		Remarks
					Plug-in base	Nut J	
Standard	XDM1-2	2	E50-SF,E100-SF	1	1	4	It is recommended to order plug-in base along with breakers. Separately available plug-in base are for the convenience of customers who want to make wiring of the mounts in advance.
	XDM1-3	3	E50-SF,E100-SF,E50-CM	1	1	6	
	T2PM12E3	3	S50-GF,S100-NF,S100-GF,S100-NN,S125-NF,S125-GF,S125-NN	1	1	6	
	T2PM12LT3	3	S50-SF,S125-SF,S125-SN	1	1	6	
	T2PM25E3	3	S225-NF,S225-GF,S225-GE S250-NF,S250-GF H100-NF,L100-NF,H125-NF,L125-NF,H225-NF,L225-NF	1	1	6	
	T2PM25LE3	3	E250-SF,S250-SF,S250-SN	1	1	6	
	T2PM40E3	3	S400-CF,S400-NF,S400-NE,S400-NN,S400-GF S400-GE,S400-PF,S400-PE,H400-NE,L400-NE	1	1	6	
	T2PM80E3	3	S630-CF,S630-NF,S630-NE,S630-RF,S630-PF,S630-RE,S630-PE,S630-GN S800-CF,S800-NF,S800-NE,S800-RF,S800-PF,S800-RE,S800-PE,S800-NN	1	1	6	
	T2PM80M3	3	H630-NE,L630-NE,H800-NE,L800-NE	1	1	6	
	T2PMX3E3	3	S1250-NE,S1250-GE,S1250-NN	1	1	6	
	T2PMX3E4	4	S1250-NE,S1250-GE	1	1	8	
	XDM8-3	3	TL-1000NE,TL-1200NE	1	1	6	
	XDM8-4	4	TL-1000NE,TL-1200NE	1	1	8	
	XDM1-2 ①	2	E50-SF,E100-SF	1	1	4	
	XDM1-3 ①	3	E50-SF,E100-SF,E50-CM	1	1	6	
	T2PM12LC3	3	S50-SF,S125-SF,S125-SN	1	1	6	
	T2PM12C3	3	S50-GF,S100-NF,S100-GF,S100-NN,S125-NF,S125-GF,S125-NN	1	1	6	
	T2PM25C3	3	S225-NF,S225-GF,S225-GE S250-NF,S250-GF H100-NF,L100-NF,H125-NF,L125-NF,H225-NF,L225-NF	1	1	6	
	T2PM25LC3	3	E250-SF,S250-SF,S250-SN	1	1	6	
	T2PM40C3	3	S400-CF,S400-NF,S400-NE,S400-NN,S400-GF S400-GE,S400-PF,S400-PE,H400-NE,L400-NE	1	1	6	
	T2PM80C3	3	S630-CF,S630-NF,S630-NE,S630-RF,S630-PF,S630-RE,S630-PE,S630-GN S800-CF,S800-NF,S800-NE,S800-RF,S800-PF,S800-RE,S800-PE,S800-NN	1	1	6	
	T2PM80N3	3	H630-NE,L630-NE,H800-NE,L800-NE	1	1	6	
	T2PMX3C3	3	S1250-NE,S1250-GE,S1250-NN	1	1	6	
	T2PMX3C4	4	S1250-NE,S1250-GE	1	1	8	
	XDM8-3 ②	3	TL-1000NE,TL-1200NE	1	1	6	
	XDM8-4 ②	4	TL-1000NE,TL-1200NE	1	1	8	
High-performance	T2PM12B2	2	S50-GF,S100-NF,S100-GF,S100-NN S125-NF,S125-GF,S125-NN	1	1	4	
	T2PM12B3	3			1	6	
	T2PM12B4	4			1	8	
	T2PM25B3	3	S225-NF,S225-GF,S225-GE S250-NF,S250-GF H100-NF,L100-NF,H125-NF,L125-NF H225-NF,L225-NF	1	1	6	
	T2PM25B4	4	S400-CF,S400-NF,S400-NE,S400-NN,S400-GF S400-GE,S400-PF,S400-PE,H400-NE,L400-NE	1	1	6	
	T2PM40B3	3				8	
	T2PM40B4	4				8	
	T2PM80B3	3	S630-CF,S630-NF,S630-NE,S630-RF,S630-PF,S630-RE,S630-PE,S630-GN S800-CF,S800-NF,S800-NE,S800-RF,S800-PF,S800-RE,S800-PE,S800-NN	1	1	6	
	T2PM80B4	4	H630-NE,L630-NE,H800-NE,L800-NE	1	1	8	
	T2PM12P2	2	S50-GF,S100-NF,S100-GF,S100-NN S125-NF,S125-GF,S125-NN	1	1	4	
	T2PM12P3	3				6	
	T2PM12P4	4				8	
	T2PM25P3	3	S225-NF,S225-GF,S225-GE S250-NF,S250-GF H100-NF,L100-NF,H125-NF,L125-NF H225-NF,L225-NF	1	1	6	
	T2PM25P4	4	S400-CF,S400-NF,S400-NE,S400-NN,S400-GF S400-GE,S400-PF,S400-PE,H400-NE,L400-NE	1	1	6	
	T2PM40P3	3				8	
	T2PM40P4	4				8	
	T2PM80P3	3	S630-CF,S630-NF,S630-NE,S630-RF,S630-PF,S630-RE,S630-PE,S630-GN S800-CF,S800-NF,S800-NE,S800-RF,S800-PF,S800-RE,S800-PE,S800-NN	1	1	6	
	T2PM80P4	4	H630-NE,L630-NE,H800-NE,L800-NE	1	1	8	

• See page 5-17 or 5-19 for Nut J.

Notes: ① Please order 1 piece IP cover for 1 piece plug-in base. IP cover codes: IPC12 for 2 poles, IPC13 for 3 poles.

② When ordering the products, please specify as "IP20 applied products".

4. Flush Plate (with flat bar studs)

Type	Number of poles	Connection ①	Applicable breakers	Min order qty	Constituent parts						Remarks
					Flush plate ②		Flush-mounting frame	Stud bar	Frame mounting screw	Panel mounting screw	
					Molded	Iron					
T2FP12S2	2	①	S50-GF	1	—	1	1	—	2	4	
T2FP12S3	3		S100-NF,S100-GF,S100-NN						4		
T2FP12S4	4		S125-NF,S125-GF,S125-NN						4		
T2FP25S3	3	①	S225-NF,S225-GF	1	—	1	1	—	4	4	
T2FP25S4	4		S225-GE,S250-NF S250-GF						4		
T2FP25L3	3	①	H100-NF,L100-NF,H125-NF,L125-NF	1	—	1	1	—	4	4	
T2FP25L4	4		H225-NF,L225-NF						4		
T2FP40S3	3	①	S400-CF,S400-NF,S400-GF	1	—	1	1	—	—③	4	
T2FP40S4	4		S400-GE,S400-NN						—③		
T2FP40L3	3	①	H400-NE,L400-NE	1	—	1	1	—	—③	4	
T2FP40L4	4										

Notes:

①. Possible mounting positions include four angular ones: 0 (horizontal), 45, 90 (vertical) and 135 degrees.

②. The flash plate is painted in Munsell 5Y 7/1.

③. Use the breaker mounting screws (supplied with the breaker) to secure the breaker in the flush-mounting frame.

④. Stud bars are not supplied with the flush-mounting frame. See "2. Studs for rear connection" on page 5-6 to select and order suitable studs.

5

Mounting and Connection

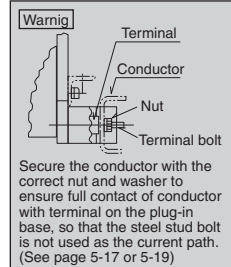
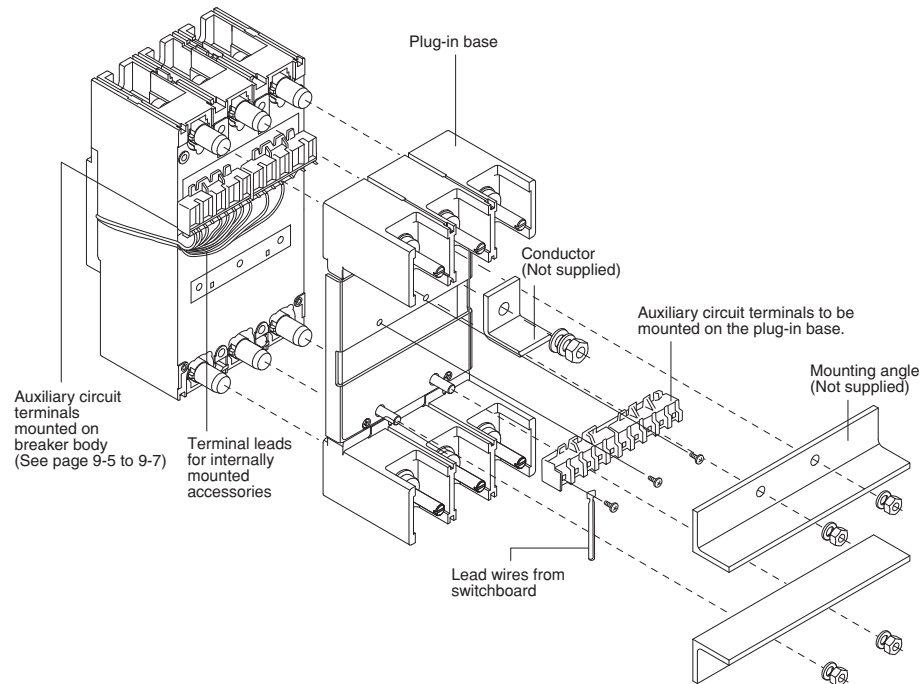
Molded Case Circuit Breakers

1 Type of connections and mountings

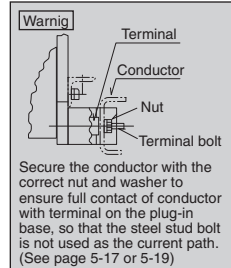
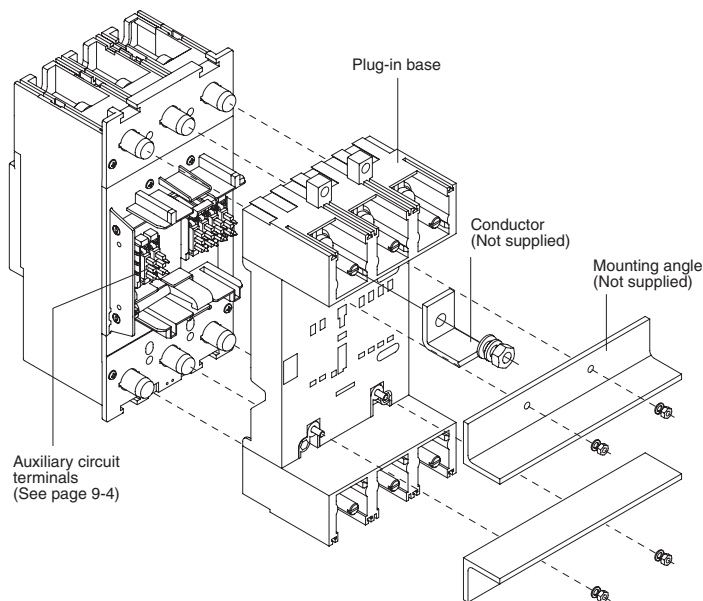
Plug-in type (PM)

1. For switchboards

Standard (PMC)



High-performance (PMB)



2. For distribution boards

Plug-in base

Frame size (A)	Breaker	No. of poles	Order codes for Plug-in bases	
50	S50-SF	2	For double	T2PM12LD2
			For single	T2PM12LS2
		3	For double	T2PM12LD3
			For single	T2PM12LS3
	S50-GF	3	For double	XDA2D-3
			For single	XDA2S-3
	E50-SF, E100-SF	2	For double	XDA1D-2
			For single	XDA1S-2
3		For double	XDA1D-3	
		For single	XDA1S-3	
100	S100-NF, S100-GF, S100-NN	3	For double	XDA2D-3
			For single	XDA2S-3
125	S125-SF	2	For double	T2PM12LD2
			For single	T2PM12LS2
		3	For double	T2PM12LD3
			For single	T2PM12LS3
	S125-SN	3	For double	T2PM12LD3
			For single	T2PM12LS3

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Mounting and Connection

Molded Case Circuit Breakers

1 Type of connections and mountings

■ Components / Parts to be purchased

Breaker	Components / Parts to be purchased				Mounting/connecting screws			Remarks
		Name	Type	Qty	Size	Qty	Remarks	
E50-SF E50-CM E100-SF	For double	Plug-in base	XDA1D-2	2	M4×30	2	For breaker mounting	For 2-pole breaker
			XDA1D-3	2	M4×30	4	For breaker mounting	For 3-pole breaker
		Branching bar (thickness)	2RT-LD (t=2)	2	M5×12	2	For busbar connection	For 10 – 50A
					M4×8	4	For Mounting base installation	
			22S-LD (t=2)	1	M5×12	1	For busbar connection	For 60 – 100A
					M4×8	2	For Mounting base installation	
			2RT-LD10 (t=3)	2	M5×12	2	For busbar connection	
					M4×8	4	For Mounting base installation	
			22S-LD10 (t=3)	1	M5×12	1	For busbar connection	
					M4×8	2	For Mounting base installation	
	For single	Connecting plate	Connecting plate 2 (for 2-pole breaker)	1	M4×35	4		
			Connecting plate 3PD (for 3-pole breaker)	1	M4×35	4		
		Insulator for arc	Arc guard 2PD (for 2-pole breaker)	1				
			Arc guard 3PD (for 3-pole breaker)	1				
		Branching bar barrier	Busbar barrier D	2				
		Plug-in base	XDA1S-2	1	M4×30	2	For breaker mounting	For 2-pole breaker
			XDA1S-3	1	M4×30	4	For breaker mounting	For 3-pole breaker
		Branching bar (thickness)	1R-LD (t=2)	1	M5×12	3	For busbar connection	For 10 – 50A
			1S-LD (t=2)	1				
			1T-LD (t=2)	1	M4×8	3	For Mounting base installation	For 60 – 100A
			1R-LD10 (t=3)	1	M5×12	3	For busbar connection	
			1S-LD10 (t=3)	1				
			1T-LD10 (t=3)	1	M4×8	3	For Mounting base installation	
S50-SF S125-SF S125-SN	For double	Plug-in base	T2PM12LD2	2	M4×30	2		For 2-pole breaker
			T2PM12LD3	2	M4×30	4		For 3-pole breaker
		Branching bar (thickness)	2RT-LDB (t=2)	2	M5×12	2	For busbar connection	For 15 – 50A
					M4×8	4	For Mounting base installation	
			22S-LDB (t=2)	1	M5×12	1	For busbar connection	For 60 – 125A
					M4×8	2	For Mounting base installation	
			2RT-LD10B (t=3)	2	M5×12	2	For busbar connection	
					M4×8	4	For Mounting base installation	
			22S-LD10B (t=3)	1	M5×12	1	For busbar connection	
					M4×8	2	For Mounting base installation	
	For single	Connecting plate	Connecting plate 2 (for 2-pole breaker)	1	M4×35	4		
			Connecting plate 3PD (for 3-pole breaker)	1	M4×35	4		
		Insulator for arc	Arc guard 2PD (for 2-pole breaker)	1				
			Arc guard 3PD (for 3-pole breaker)	1				
		Branching bar barrier	Busbar barrier D	2				
		Plug-in base	T2PM12LS2	1	M4×30	2	For breaker mounting	For 2-pole breaker
			T2PM12LS3	1	M4×30	4	For breaker mounting	For 3-pole breaker
		Branching bar (thickness)	1R-LDB (t=2)	1	M5×12	3	For busbar connection	For 15 – 50A
			1S-LDB (t=2)	1				
			1T-LDB (t=2)	1	M4×8	3	For Mounting base installation	For 60 – 125A
			1R-LD10B (t=3)	1	M5×12	3	For busbar connection	
			1S-LD10B (t=3)	1				
			1T-LD10B (t=3)	1	M4×8	3	For Mounting base installation	
S50-GF S100-NF S100-GF S100-NN S125-NF S125-GF S125-NN	For double	Plug-in base	XDA2D-3	2	M5×25	4	For breaker mounting	For 3-pole breaker
		Branching bar (thickness)	2RT-LE (t=2)	2	M5×12	2	For busbar connection	For 10 – 50A
					M4×8	4	For Mounting base installation	
			22S-LE (t=2)	1	M5×12	1	For busbar connection	For 60 – 125A
					M4×8	2	For Mounting base installation	
			2RT-LE10 (t=3)	2	M5×12	2	For busbar connection	
					M4×8	4	For Mounting base installation	
			22S-LE10 (t=3)	1	M5×12	1	For busbar connection	
					M4×8	2	For Mounting base installation	
		Connecting plate	Connecting plate 3P (for 3-pole breaker)	1	M4×35	4		
	For single	Insulator for arc	Arc guard 3P (for 3-pole breaker)	1				
		Branching bar barrier	Busbar barrier E	2				
		Plug-in base	XDA2S-3	1	M4×30	4	For breaker mounting	For 3-pole breaker
		Branching bar (thickness)	1R-LE (t=2)	1	M5×12	3	For busbar connection	For 10 – 50A
			1S-LE (t=2)	1				
			1T-LE (t=2)	1	M4×8	3	For Mounting base installation	For 60 – 125A
			1R-LE10 (t=3)	1	M5×12	3	For busbar connection	
			1S-LE10 (t=3)	1				
			1T-LE10 (t=3)	1	M4×8	3	For Mounting base installation	

Notes:

1. The number required to form either single or double plug-in base.
2. Branch bars for 10 – 50A and 60 – 125A differ in thickness only. The conductor for 10 – 50A (2 mm thick) can be used for applications where the breaker rated current is 50A or less.

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Mounting and Connection

Molded Case Circuit Breakers

1 Type of connections and mountings

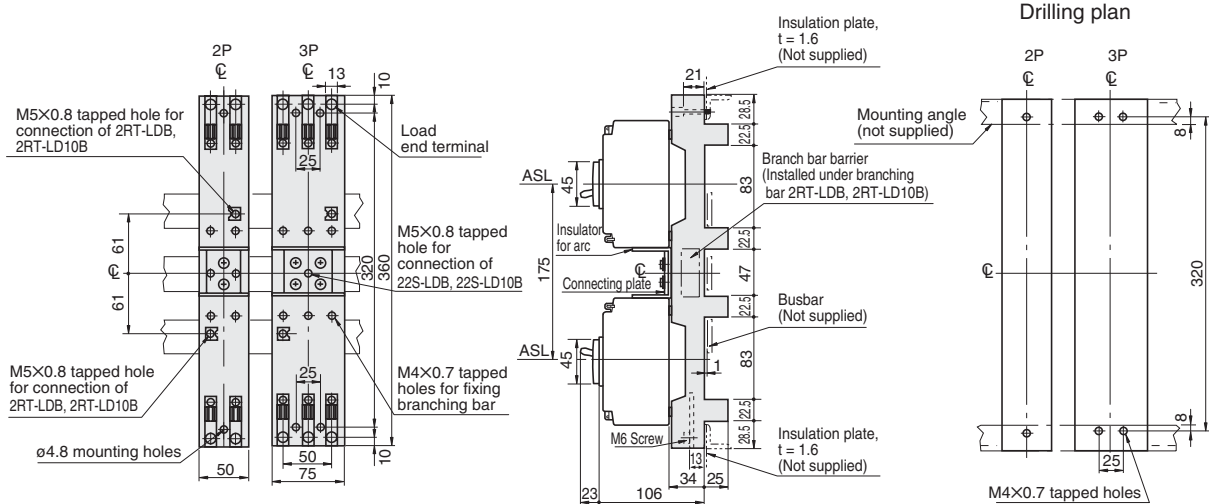
Outline dimensions

T2PM12LD2, T2PM12LD3, T2PM12LS2, T2PM12LS3

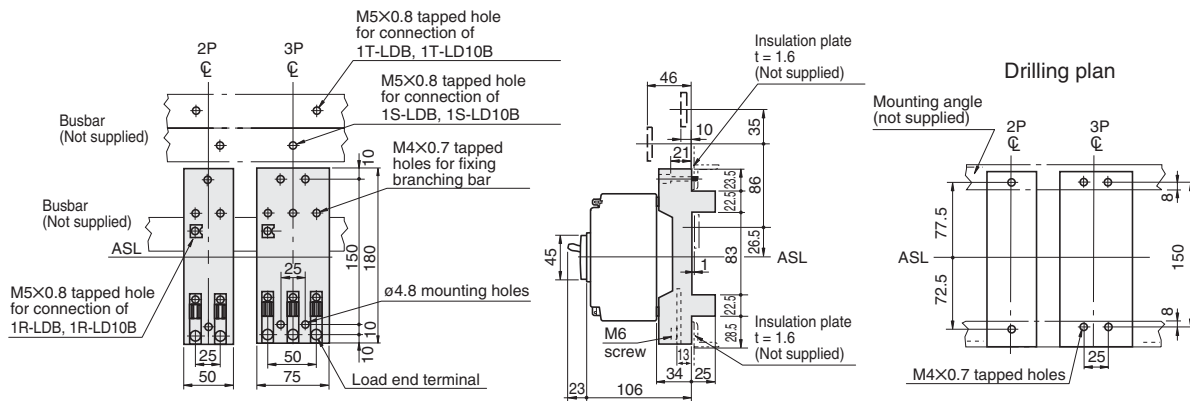
Applicable breaker types

S50-SF	S125-SF	S125-SN
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■ T2PM12LD2, T2PM12LD3

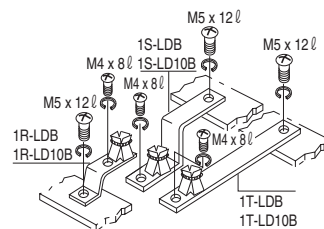
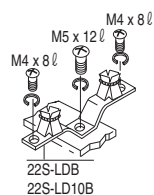
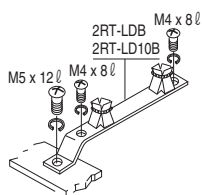


■ T2PM12LS2, T2PM12LS3

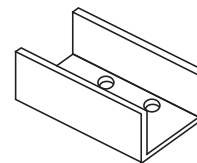


■ Components / Parts to be purchased

● Branching bar



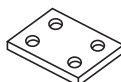
● Insulator for arc



● Branching bar barrier



● Connecting plate

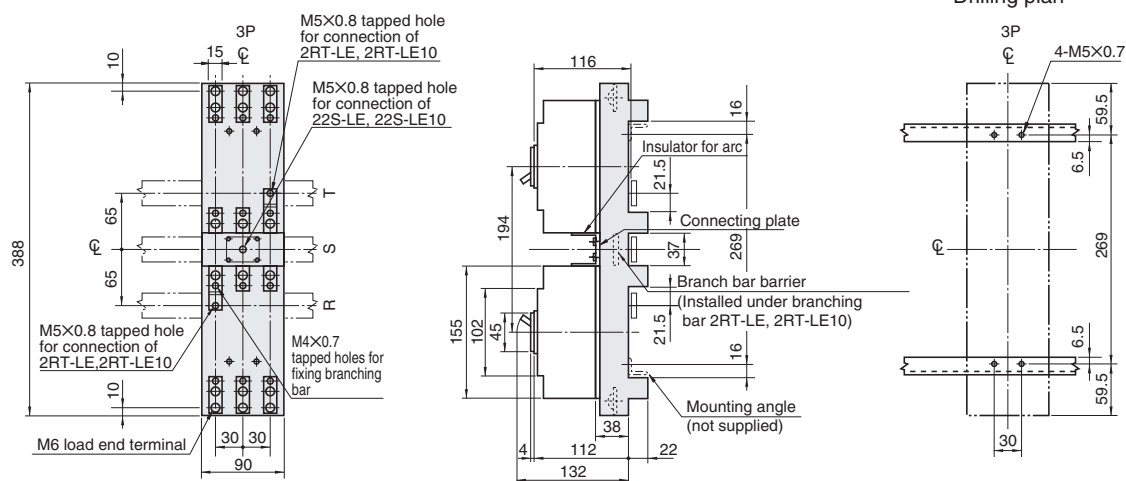


* Screws are not supplied.

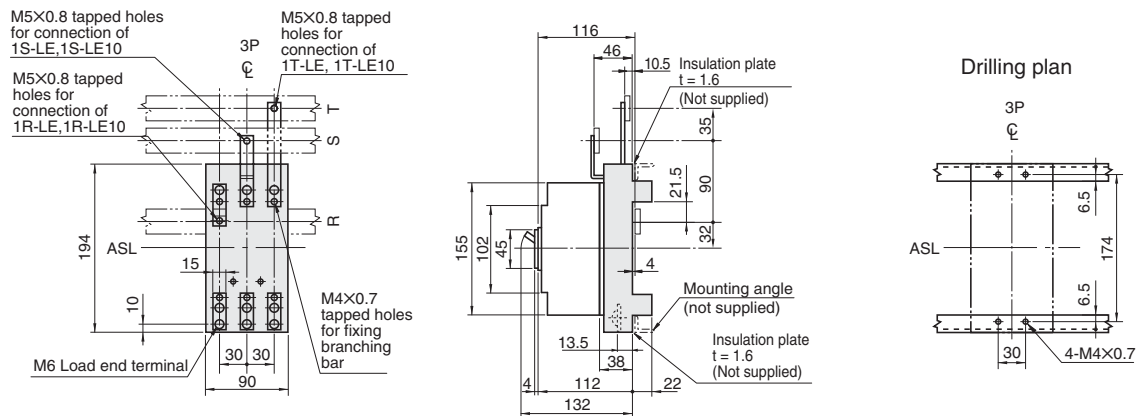
XDA2D-3, XDA2S-3

Applicable breaker types						
\$50-GF	\$100-NF	\$100-GF	\$100-NN	\$125-NF	\$125-GF	\$125-NN

■ XDA2D-3

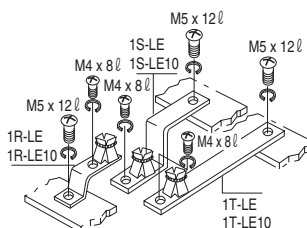
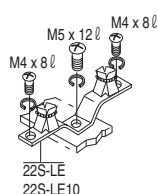
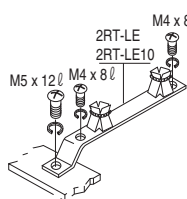


■ XDA2S-3

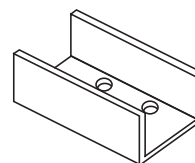


■ Components / Parts to be purchased

● **Branching bar**



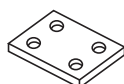
● Insulator for arc



● Branching bar barrier



● **Connecting plate**



* Screws are not supplied.

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Mounting and Connection

Molded Case Circuit Breakers

2 Compression terminals

Front connected type (without extension bar)

Frame size (A)	Breaker	Nominal wire size (mm ²)									
		2	5.5	8	14	22	38	60	80	100	150
50	E50-SF, S50-SF	R2-5 (R2-6)	R5.5-5 (R5.5-6)	R8-5 (R8-6)	R14-5	NTMCB22-5S AMP33114					
	S50-GF	R2-8	R5.5-8	R8-8	R14-8	R22-8	AMP322870 JST38-S8 NTK-R38-8-1 NTM38-8S	60-S8 Note ③ CB60-8			
100	S100-NF, S100-GF, S100-NM										
	S100-NN										
	H100-NF, L100-NF										
125	E100-SF, S125-SF, S125-SN, S125-NN (15-50A)	R2-5 (R2-6)	R5.5-5 (R5.5-6)	R8-5 (R8-6)	R14-5	NTMCB22-5S AMP33114					
				R8-8	R14-8	R22-8	AMP322870 JST38-S8 NTM38-8S	60-S8 Note ③			
	H125-NF, L125-NF	R2-8	R5.5-8	R8-8	R14-8	R22-8	AMP322870 JST38-S8 NTK-R38-8-1 NTM38-8S	60-S8 Note ③ CB60-8			
225	S225-NF, S225-GF, S225-GE, S225-NM H225-NF, L225-NF						R38-8	R60-8	80-3BA Note ③	100-3BA Note ③	CB150-8
250	S250-NF, S250-GF, E250-SF S250-SF, S250-SN								CB80-8	CB100-8	
400	S400-CF, S400-NF, S400-NE S400-GF, S400-GE, S400-NN S400-PF, S400-PE H400-NE, L400-NE						R38-10 Note ②	R60-10 Note ②	80-4B Note ② CB80-10 Note ②	100-4B Note ② CB100-10 Note ②	150-4B Note ② CB150-10 Note ②

Front connected type (with extension bar)

Frame size (A)	Breaker		Nominal wire size (mm²)						
			38	60	80	100	150	200	325
225, 250	S225-NF, S225-GF, S225-GE, S225-NM H225-NF, L225-NF S250-NF, S250-GF, E250-SF S250-SF, S250-SN	3P	R38-10	R60-10	R80-10	R100-10	R150-10		
		4P					CB150-10		
400	S400-CF, S400-NF, S400-NE S400-GF, S400-GE, S400-NN S400-PF, S400-PE H400-NE, L400-NE		R38-12	R60-12	R80-12	R100-12	R150-12	R200-12	JST325-12
630	S630-CF, S630-NF, S630-NE, S630-RF, S630-RE, S630-PF, S630-PE S630-GN H630-NE, L630-NE			R60-12 RD60-12	R80-12 RD80-12	R100-12 RD100-12	R150-12 RD150-12	R200-12 RD200-12	JST325-12 SD325-12
800	S800-CF, S800-NF, S800-NE, S800-RF, S800-RE, S800-PF, S800-PE S800-NN H800-NE, L800-NE								
1250	S1250-NE, S1250-GE, S1250-NN				R80-12 RD80-12	R100-12 RD100-12	R150-12 RD150-12	R200-12 RD200-12	JST325-12 SD325-12
1000	TL-1000NE				R80-12 RD80-12	R100-12 RD100-12	R150-12 RD150-12	R200-12 RD200-12	JST325-12 SD325-12
1200	TL-1200NE				R80-12 RD80-12	R100-12 RD100-12	R150-12 RD150-12	R200-12 RD200-12	JST325-12 SD325-12

Notes:

- Commercially made compression terminals can be used (refer to  boxes)
R/RD : JIS-compliant
CB : JEM 1399-compliant
AMP : Made by Tyco Electronics Japan G.K.
JST : Made by Japan Solderless Terminal Manufacturing Co., Ltd.
NTK : Made by Nippon Tanshi Co., Ltd.
NTM : Made by Nichifu Terminal Industries Co., Ltd.

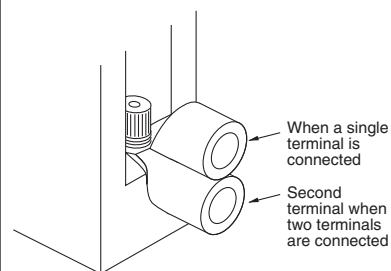
- Only a single terminal can be connected.

- Compression terminals in  box cells are made by us at Terasaki. They are available from us or our authorized agents.

- Compression terminals enclosed in parentheses are to be used as the lower terminal when two terminals are connected.

Connection (two terminals)

If a shortage of insulating occurs between the mounting plate and a terminal, use a recommended taping or insulator.

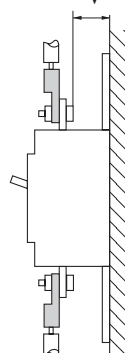


Terasaki made compression terminals are used (refer to  box)

60-S8	80-3BA	80-4B
100-3BA	100-4B	150-4B

Connection (one electric cable)

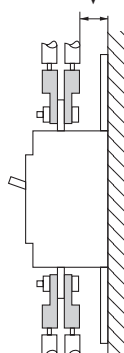
If a shortage of insulating occurs, use a recommended taping or insulator.



(Make connection so that the screw heads face toward the mounting surface.)

Connection (two electric cables)

If a shortage of insulating occurs, use a recommended taping or insulator.



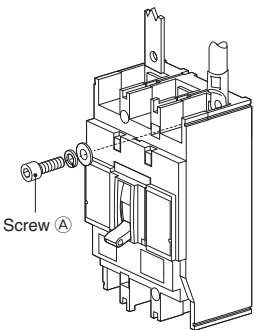
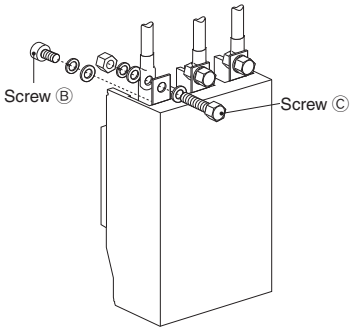
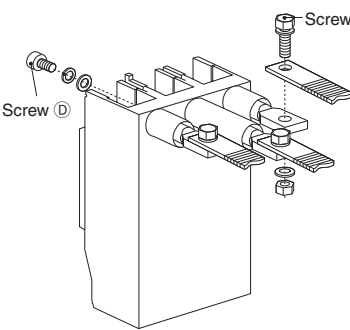
(Make connection so that the screw heads face toward the mounting surface.)

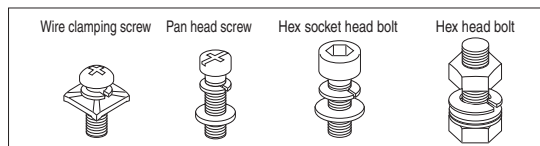
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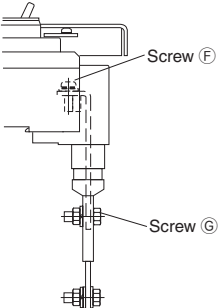
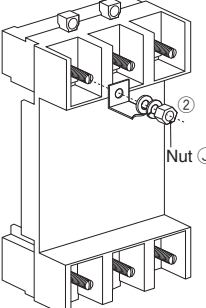
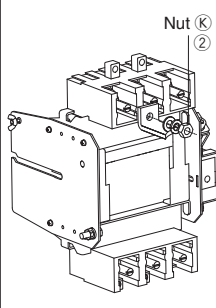
Mounting and Connection

Molded Case Circuit Breakers

3 Terminal screw sizes and standard torques

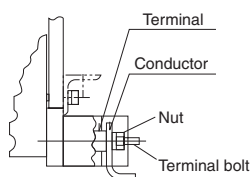
Connecting types Type		Front connection (FC)						Rear connection (RC) (Flat bar stud)				
												
Frame size (A)	Breaker	Compression terminal		Extension bar				Screw size (D)		Screw size (E)		
		Screw size (A)	Torque (N · m)	Screw size (B)	Torque (N · m)	Screw size (C)	Torque (N · m)	Screw size (D)	Torque (N · m)	Screw size (E)	Torque (N · m)	
50	S50-SF	Wire clamping M5×14	2.3~3.4	Wire clamping M5×14	2.3~3.4	Hex head M8×30	11.8~18.6	Pan head M5×14	2.3~2.8	Hex head M6×22	2.7~4.5	
	S50-GF	Pan head M8×16	4.9~6.9	Pan head M8×16	4.9~6.9	Hex head M8×25	11.8~18.6	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
100	S100-NF, S100-GF S100-NN	Pan head M8×16	4.9~6.9	Pan head M8×16	4.9~6.9	Hex head M8×25	11.8~18.6	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
	S100-NM	Pan head M8×16	4.9~6.9	Pan head M8×16	4.9~6.9	Hex head M8×25	11.8~18.6	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
	H100-NF, L100-NF	Hex socket head M8×20	7.8~12.7	Hex socket head M8×20	7.8~12.7	Hex head M10×25	22.5~37.2	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
125	S125-SF 15~50A	Wire clamping M5×14	2.3~3.4	Wire clamping M5×14	2.3~3.4	Hex head M8×30	11.8~18.6	Pan head M5×14	2.3~2.8	Hex head M6×22	2.7~4.5	
	S125-SF 60~125A	Pan head M8×14	4.9~6.9	Pan head M8×14	4.9~6.9	Hex head M8×30	11.8~18.6	Hex socket head M6×16	7.8~11.8	Hex head M8×23	11.8~18.6	
	S125-SN	Pan head M8×14	4.9~6.9	Pan head M8×14	4.9~6.9	Hex head M8×30	11.8~18.6	Hex socket head M6×16	7.8~11.8	Hex head M8×23	11.8~18.6	
	S125-NF, S125-GF S125-NN	Pan head M8×16	4.9~6.9	Pan head M8×16	4.9~6.9	Hex head M8×25	11.8~18.6	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
	H125-NF, L125-NF	Hex socket head M8×20	7.8~12.7	Hex socket head M8×20	7.8~12.7	Hex head M10×25	22.5~37.2	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
	S225-NF, S225-GF S225-GE H225-NF, L225-NF S225-NNM	Hex socket head M8×20	7.8~12.7	Hex socket head M8×20	7.8~12.7	Hex head M10×25	22.5~37.2	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
250	E250-SF, S250-SF S250-SN	Hex socket head M8×20	7.8~12.7	Hex socket head M8×20	7.8~12.7	Hex head M10×25	22.5~37.2	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
	S250-NF, S250-GF	Hex socket head M8×20	7.8~12.7	Hex socket head M8×20	7.8~12.7	Hex head M10×25	22.5~37.2	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	
400	S400-CF, S400-NF S400-NES S400-GE, S400-PF S400-PE, S400-NN H400-NE, L400-NE	Hex socket head M10×25	13.7~22.5	Hex socket head M10×25	13.7~22.5	Hex head M12×35	40.2~65.7	Special hex socket head M10×20	18.6~29.4	Hex head M12×35	40.2~65.7	
	S630-CF, S630-NF S630-NE, S630-RF S630-RE, S630-PF S630-PE, S630-GN H630-NE, L630-NE	—	—	Hex socket head M8×25×2	Extension bars are fitted as standard.	Hex head M12×40	40.2~65.7	Special hex socket head M10×27	18.6~29.4	Hex head M12×40	40.2~65.7	
	S800-CF, S800-NF S800-NE, S800-RF S800-RE, S800-PF S800-PE, S800-NN H800-NE, L800-NE	—	—	Hex socket head M8×25×2	Extension bars are fitted as standard.	Hex head M12×40	40.2~65.7	Special hex socket head M10×27	18.6~29.4	Hex head M12×40	40.2~65.7	



	Flush Plate (FP)				Plug-in (PM)		Draw-out (DR)	
								
	With flat bar stud							
	Screw size (F)	Torque (N·m)	Screw size (G)	Torque (N·m)	Nut size (J)	Torque (N·m)	Nut size (K)	Torque (N·m)
	Pan head M5×14	2.3~2.8	Hex head M6×22	2.7~4.5	Hex. nut M6	3.6~6.0	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	Hex. nut M6	3.6~6.0	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	Hex. nut M6	3.6~6.0	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	—	—	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	Hex. nut M8	8.8~14.7	—	—
	Pan head M5×14	2.3~2.8	Hex head M6×22	2.7~4.5	Hex. nut M6	3.6~6.0	—	—
	Hex socket head M6×16	7.8~11.8	Hex head M8×23	11.8~18.6	Hex. nut M6	3.6~6.0	—	—
	Hex socket head M6×16	7.8~11.8	Hex head M8×23	11.8~18.6	Hex. nut M6	3.6~6.0	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	Hex. nut M6	3.6~6.0	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	Hex. nut M8	8.8~14.7	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	Hex. nut M8	8.8~14.7	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	—	—	—	—
	Hex socket head M6×18	7.8~11.8	Hex head M8×25	11.8~18.6	Hex. nut M8	8.8~14.7	—	—
	Hex socket head M6×20	7.8~11.8	Hex head M8×25	11.8~18.6	Hex. nut M8	8.8~14.7	—	—
	Special hex socket head M10×40	18.6~29.4	Hex head M12×35	40.2~65.7	Hex. nut M10	18.6~29.4	Hex. nut M10	18.6~29.4
	Special hex socket head M10×27	18.6~29.4	Hex head M12×40	40.2~65.7	Hex. nut M12	32.3~51.9	Note ①	—
	Special hex socket head M10×27	18.6~29.4	Hex head M12×40	40.2~65.7	Hex. nut M12	32.3~51.9	Note ①	—

Notes:

- ①. Connecting method and standard torques are same as plug-in (PM).
- ②. Secure the conductor with the correct nut and washer to ensure full contact of conductor with terminal on the plug-in base, so that the steel terminal bolt is not used as the current path.



5

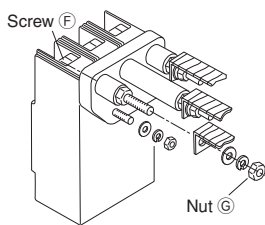
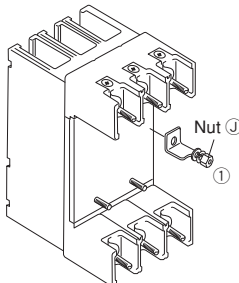
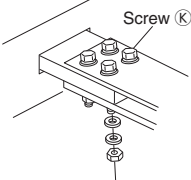
Mounting and Connection

Molded Case Circuit Breakers

3 Terminal screw sizes and standard torques

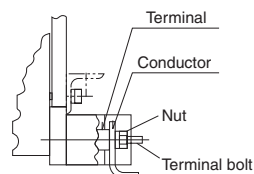
Connecting types Type		Front connection (FC)				Rear connection (RC) (Flat bar stud)							
		Compression terminal		Extension bar		Screw size (C)		Screw size (D)		Screw size (E)			
Frame size (A)	Breaker	Screw size (A)	Torque (N·m)	Screw size (B)	Torque (N·m)	Screw size (C)	Torque (N·m)	Screw size (D)	Torque (N·m)	Screw size (E)	Torque (N·m)		
50	TB-5S, TB-5P	Pan head M5×12 Wire clamping screw	2.3~3.4	—	—	—	—	—	—	—	—		
	TB-5D	—	—	—	—	—	—	—	—	—	—		
	E50-SF	Pan head M5×12 Wire clamping screw	2.3~3.4	—	—	—	—	—	—	—	—		
100	E100-SF (10~50A)	Pan head M5×12 Wire clamping screw	2.3~3.4	—	—	—	—	—	—	—	—		
	E100-SF (60~100A)	Pan head M8×14	4.9~6.9	—	—	—	—	—	—	—	—		
1000	TL-1000NE	—	—	Hex head M12×55	40.2~65.7	—	—	—	—	Hex head M12×47	40.2~65.7		
1200	TL-1200NE	—	—	Hex head M12×55	40.2~65.7	—	—	—	—	Hex head M12×47	40.2~65.7		
1250	S1250-NE, S1250-GE S1250-NN	—	—	Hex head M12×55	40.2~65.7	—	—	—	—	Hex head M12×47	40.2~65.7		
1600 ②	S1600-NE S1600-NN	—	—	Hex head M12×60	40.2~65.7	—	—	—	—	Hex head M10×45	22.5~37.2		
2000 ②	XS2000NE XS2000NN	—	—	Hex head M10×60	22.5~37.2	—	—	—	—	Hex head M10×60	22.5~37.2		

Note ②: Terminal screws for 1600AF and over are not provided as standard.

	Rear connection (RC) (Bolt stud)				Plug-in (PM)		Draw-out (DR)	
								
	Screw size (F)	Torque (N · m)	Nut size (G)	Torque (N · m)	Nut size (J)	Torque (N · m)	Screw size (K)	Torque (N · m)
	—	—	—	—	—	—	—	—
	—	—	—	—	Pan head M5×8 (screw)①	2.2～3.5	—	—
	Pan head M4×12	1.1～1.7	Hex. nut M6	2.7～4.5	Hex. nut M6	3.6～6.0	—	—
	Pan head M4×14	1.1～1.7	Hex. nut M6	2.7～4.5	Hex. nut M6	3.6～6.0	—	—
	Hex head M6 nut	2.7～4.5	Hex. nut M8	6.9～10.8	Hex. nut M6	3.6～6.0	—	—
	—	—	—	—	Hex. nut M12×47 (screw)	40.2～65.7	—	—
	—	—	—	—	Hex. nut M12×47 (screw)	40.2～65.7	—	—
	—	—	—	—	Hex. nut M12×47 (screw)	40.2～65.7	—	—
	—	—	—	—	—	—	Hex head M10×45	22.5～37.2
	—	—	—	—	—	—	Hex head M10×60	22.5～37.2

Note:

①. Secure the conductor with the correct nut and washer to ensure full contact of conductor with terminal on the plug-in base, so that the steel terminal bolt is not used as the current path.



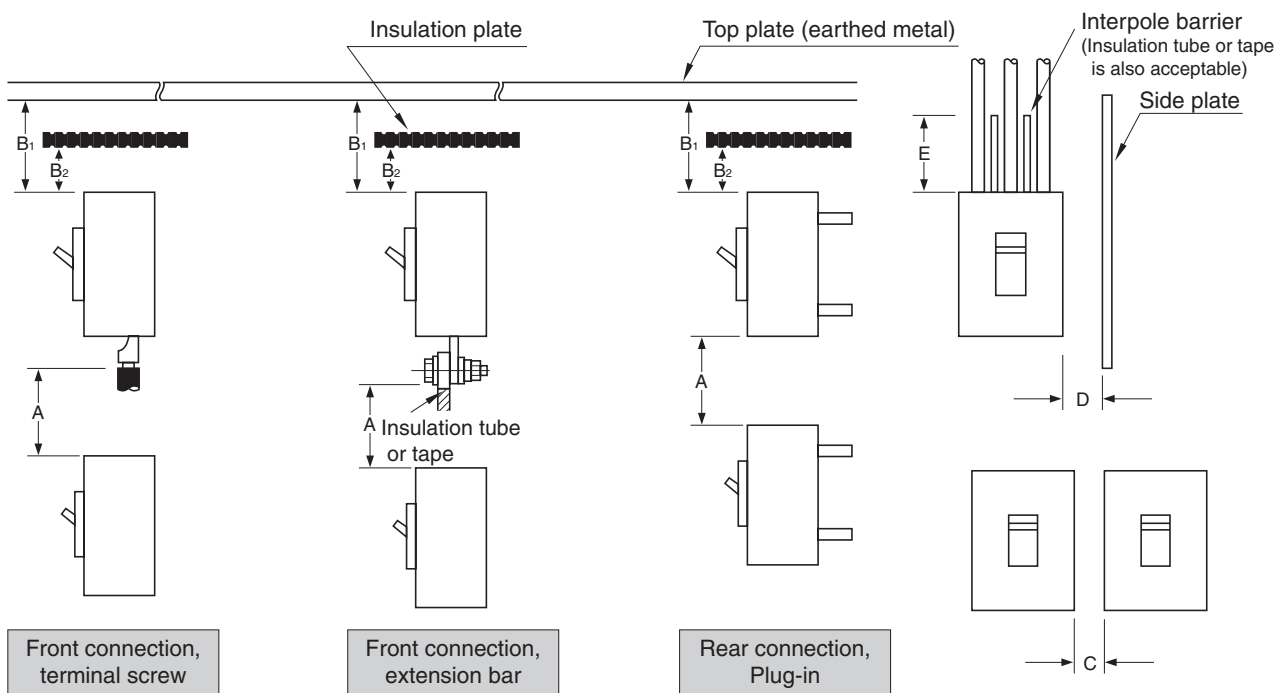
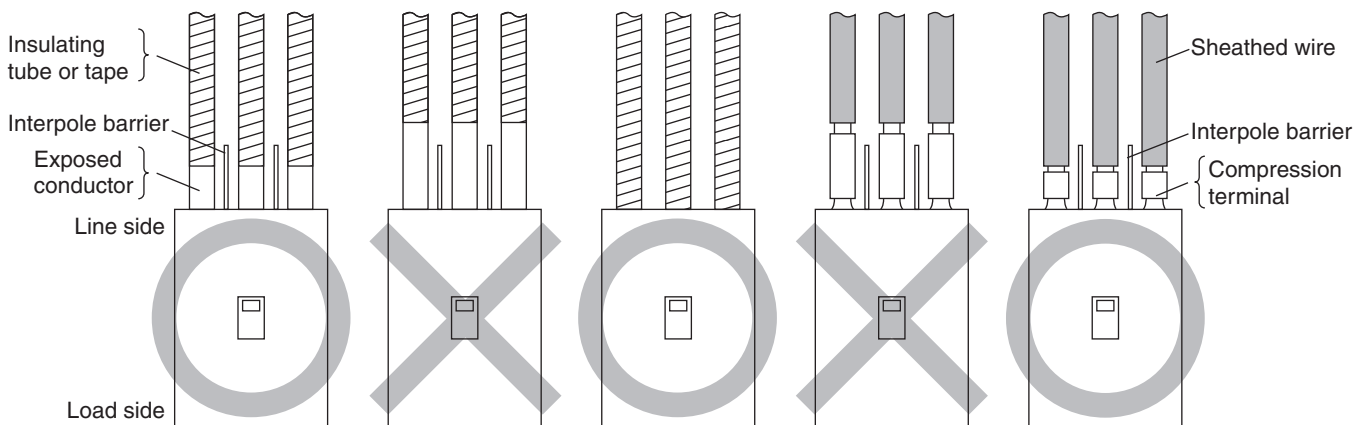
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Mounting and Connection

Molded Case Circuit Breakers

4 Insulation distance from the line side

The insulation distance between the breaker and earthed metal parts and insulators shown in the table on the next page must be maintained to prevent arcing faults occurring due to conductive ionised gas. In addition, completely cover exposed conductors, to their roots at the breaker or to below the height protected by interpole barriers, on the line side of the breaker using insulation tube or tape, in order to provide positive protection against short circuit or ground fault due to metal chipping, surge voltage, dust particles or salt. Be sure to install the interpole barriers supplied with the breaker.



- A . Distance from lower breaker to exposed live part of upper breaker terminal (front connection) or distance from lower breaker to end face of upper breaker (rear connection).
- 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 plate (earthed metal).
- E . Dimension of insulation over exposed conductors.

Insulation distance, mm (AC 460 V or less) ^{Note ①}

Molded Case Circuit Breakers

Series	Breaker		A Note②	B1	B2	C		D	E	
Economical	E50-SF	E100-SF	30	10	10	*	Possible to set close	25	Not less than the length of the bare live part Note③	
	E250-SF		50	40	40	*	Possible to set close	50	Not less than the length of the bare live part Note③	
Standard	S50-SF		30	30	10	*	Possible to set close	25	Not less than the length of the bare live part Note③	
	S125-SF		30	30	10	*	Possible to set close	25	Not less than the length of the bare live part Note③	
	S100-NF	S125-NF	50	50	10	*	Possible to set close	25	Not less than the length of the bare live part Note③	
	S250-SF		50	50	40	*	Possible to set close	50	Not less than the length of the bare live part Note③	
	S225-NF	S250-NF	50	50	40	*	Possible to set close	50	Not less than the length of the bare live part Note③	
	S400-CF	S400-NF	S400-NE	100	80	60	*	Possible to set close	80	Not less than the length of the bare live part Note③
	S630-CF	S630-NF	S630-NE	120	100	80	Possible to set close	80	Not less than the length of the bare live part Note③	
	S800-CF	S800-NF	S800-NE							
	S1250-NE		150	120	80	Possible to set close	80	Not less than the length of the bare live part Note③		
	S1600-NE		150	150	100	Possible to set close	100	Not less than the length of the bare live part Note③		
High-fault Level	S50-GF	S100-GF	S125-GF	75	60	25	*	Possible to set close	25	Not less than the length of the bare live part Note③
	S225-GF	S225-GE	S250-GF	100	80	60	*	Possible to set close	50	Not less than the length of the bare live part Note③
	S400-GF	S400-GE		100	80	60	*	Possible to set close	50	Not less than the length of the bare live part Note③
	S400-PF	S400-PE		120	120	80	*	Possible to set close	80	Not less than the length of the bare live part Note③
	S600-RF	S600-RE	S630-PF	S630-PE	150	120	80	Possible to set close	80	Not less than the length of the bare live part Note③
	S800-RF	S800-RE	S800-PF	S800-PE						
	S1250-GE		150	150	100	Possible to set close	100	Not less than the length of the bare live part Note③		
Current-limiting	H100-NF	H125-NF	H225-NF	100	80	60	*	Possible to set close	50	Not less than the length of the bare live part Note③
	H400-NE			120	120	80	*	Possible to set close	80	Not less than the length of the bare live part Note③
	H630-NE	H800-NE		120	120	80		Possible to set close	80	Not less than the length of the bare live part Note③
	TL-1000NE	TL-1200NE		150	150	100		Possible to set close	100	Not less than the length of the bare live part Note③
	L100-NF	L125-NF	L225-NF	100	80	60	*	Possible to set close	50	Not less than the length of the bare live part Note③
	L400-NE			120	120	80	*	Possible to set close	80	Not less than the length of the bare live part Note③
	L630-NE	L800-NE		120	120	80		Possible to set close	80	Not less than the length of the bare live part Note③
Motor protection	S100-NM			50	50	10	*	Possible to set close	25	Not less than the length of the bare live part Note③
	S225-NM			50	50	40	*	Possible to set close	50	Not less than the length of the bare live part Note③

Notes:

- ①. Required to allow free and uninterrupted flow of arc gases. Ensure additional clearance or insulation distance if required to perform wiring, barrier installation or electrical work or to meet the need for more insulation distance between bare live parts and grounded metal members in a switchboard or the like.
 - ②. The figures are for lower breakers.
 - ③. For front connection breakers, insulate all exposed conductors of the line side until the breaker end. If interpole barriers are packed, be sure to use the barriers; more over, insulate all exposed conductors by insulating tape or the like so that the tape overlaps with the barriers.
- *. If using extension bars (optional), ensure the insulation distance specified for the application.

5 Mounting and Connection

Molded Case Circuit Breakers

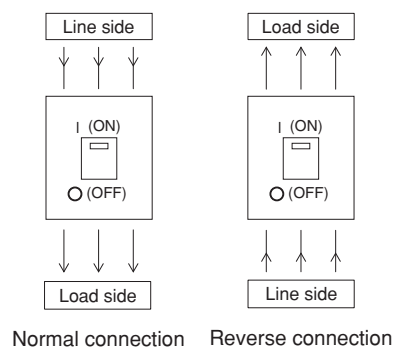
5 Reverse connection

The breakers are available for normal connection by default. Reverse connection is optionally allowed. See the tables below.

Breaker	AC240V	AC415V	AC450V	AC690V
TB-5S, TB-5P, TB-5D E50-SF, E100-SF, E250-SF H100-NF, L100-NF H125-NF, L125-NF H225-NF, L225-NF	◎	◎	◎	×
S50-SF, S50-GF, S100-NF, S100-GF S100-NM, S100-NN S125-SF, S125-NF, S125-GF S125-NN, S125-SN S225-NF, S225-GF, S225-GE, S225-NM S250-SF, S250-NF, S250-GF, S250-SN S400-CF, S400-NF, S400-NE, S400-NN S400-GF, S400-GE, S400-PF, S400-PE H400-NE, L400-NE S630-CF, S630-NF, S630-NE, S630-RF, S630-PF S630-RE, S630-PE, S630-GN S800-CF, S800-NF, S800-NE, S800-RF, S800-PF S800-RE, S800-PE, S800-NN H630-NE, L630-NE, H800-NE, L800-NE S1250-NE, S1250-GE, S1250-NN S1600-NE, S1600-NN XS2000NE, XS2000NN TL-1000NE, TL-1200NE	◎	◎	◎	◎

◎ : Standard.

× : Not available.



Series	Breaker	Number of poles	Front-connected (FC)		Rear-connected (RC)		Plug-in (PM) for switchboards			
			Screw size	Qty	Screw size	Qty	Standard		High-fault Level	
Economical	E50-SF	2	Pan head M4×35	2	Pan head M4×35	2	Pan head M4×35	2	—	—
		3	Pan head M4×35	2	Pan head M4×35	2	Pan head M4×35	2	—	—
	E100-SF	2	Pan head M4×65	2	Pan head M4×65	2	Pan head M4×65	2	—	—
		3	Pan head M4×65	2	Pan head M4×65	2	Pan head M4×65	2	—	—
	E250-SF	2	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×65	2	—	—
		3	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×65	2	—	—
Standard	S50-SF	2	Pan head M4×61	2	Pan head M4×61	2	Pan head M4×75	2	—	—
		3	Pan head M4×61	2	Pan head M4×61	2	Pan head M4×75	2	—	—
	S50-GF	3	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×58	2	Pan head M4×80	2
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×58	4	Pan head M4×80	4
	S100-NF, S100-GF	2	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×58	2	Pan head M4×80	2
		3	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×80	2	—	—
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×58	4	Pan head M4×80	4
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×58	4	Pan head M4×80	4
	S125-SF	2	Pan head M4×61	2	Pan head M4×61	2	Pan head M4×75	2	—	—
		3	Pan head M4×61	2	Pan head M4×61	2	Pan head M4×75	2	—	—
		4	Pan head M4×61	2	Pan head M4×61	2	—	—	—	—
		4	Pan head M4×61	2	Pan head M4×61	2	—	—	—	—
	S125-NF, S125-GF	2	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×58	2	Pan head M4×80	2
		3	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×80	2	—	—
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×58	4	Pan head M4×80	4
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×58	4	Pan head M4×80	4
	S100-NM	3	Pan head M4×55	2	Pan head M4×55	2	—	—	—	—
	S225-NF, S225-GF S250-NF, S250-GF	2	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×65	2	Pan head M4×80	2
		3	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×80	2	—	—
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×65	4	Pan head M4×80	4
	S250-SF	2	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×65	2	—	—
		3	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×65	2	—	—
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×65	4	—	—
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×65	4	—	—
	S225-GE	3	Pan head M4×90	2	Pan head M4×90	2	Pan head M4×100	2	Pan head M4×115	4
		4	Pan head M4×90	4	Pan head M4×90	4	Pan head M4×100	4	Pan head M4×115	4
		4	Pan head M4×90	4	Pan head M4×90	4	Pan head M4×100	4	Pan head M4×115	4
	S225-NM	3	Pan head M4×55	2	Pan head M4×55	2	—	—	—	—
	S400-CF, S400-NF S400-GF S400-NE, S400-GE S400-PF, S400-PE	3	Pan head M6×100	4	Pan head M6×100	4	Pan head M6×100	4	Pan head M6×120	4
		4	Pan head M6×100	4	Pan head M6×100	4	—	—	Pan head M6×120	4
		4	Pan head M6×100	4	Pan head M6×100	4	—	—	Pan head M6×120	4
	S630-CF, S630-NF, S630-RF S630-PF, S630-NE, S630-RE S630-PE S800-CF, S800-NF, S800-RF S800-PF, S800-NE, S800-RE S800-PE,	3	Pan head M8×45	4	Pan head M8×45	4	Cap nut *	4	Pan head M8×45	4
		4	Pan head M8×45	4	Pan head M8×45	4	—	—	Pan head M8×45	4
		4	Pan head M8×45	4	Pan head M8×45	4	—	—	Pan head M8×45	4
	S1250-NE, S1250-GE	3	Pan head M8×50	4	Pan head M8×50	4	Cap nut *	4	—	—
		4	Pan head M8×50	4	Pan head M8×50	4	—	—	Cap nut *	4
	S1600-NE	3	Pan head M8×50	4	Pan head M8×50	4	—	—	—	—
		4	Pan head M8×50	4	Pan head M8×50	4	—	—	—	—
Current limiting	H100-NF, H125-NF, H225-NF L100-NF, L125-NF, L225-NF	3	Pan head M4×90	2	Pan head M4×90	2	Pan head M4×100	2	Pan head M4×115	4
		4	Pan head M4×90	4	Pan head M4×90	4	Pan head M4×100	4	Pan head M4×115	4
	H400-NE, L400-NE	3	Pan head M6×140	4	Pan head M6×140	4	Pan head M6×140	4	Pan head M6×160	4
		4	Pan head M6×140	4	Pan head M6×140	4	—	—	Pan head M6×160	4
	H630-NE, L630-NE H800-NE, L800-NE	3	Pan head M8×85	4	Pan head M8×85	4	Cap nut *	4	Pan head M8×85	4
		4	Pan head M8×85	4	Pan head M8×85	4	—	—	Pan head M8×85	4
Switch disconnecter	S125-SN	3	Pan head M4×61	2	Pan head M4×61	2	Pan head M4×75	2	—	—
		4	Pan head M4×61	2	Pan head M4×61	2	—	—	—	—
	S100-NN, S125-NN	3	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×58	2	Pan head M4×80	2
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×58	4	Pan head M4×80	4
	S250-SN	3	Pan head M4×55	2	Pan head M4×55	2	Pan head M4×65	2	—	—
		4	Pan head M4×55	4	Pan head M4×55	4	Pan head M4×65	4	—	—
	S400-NN	3	Pan head M6×100	4	Pan head M6×100	4	Pan head M6×100	4	Pan head M6×120	4
		4	Pan head M6×100	4	Pan head M6×100	4	—	—	Pan head M6×120	4
	S630-GN, S800-NN	3	Pan head M8×45	4	Pan head M8×45	4	Cap nut *	4	Pan head M8×45	4
		4	Pan head M8×45	4	Pan head M8×45	4	—	—	Pan head M8×45	4
	S1250-NN	3	Pan head M8×50	4	Pan head M8×50	4	Cap nut *	4	—	—
		4	Pan head M8×50	4	Pan head M8×50	4	—	—	Cap nut *	4
	S1600-NN	3	Pan head M8×50	4	Pan head M8×50	4	—	—	—	—
		4	Pan head M8×50	4	Pan head M8×50	4	—	—	—	—
	S1600-NN	3	Pan head M8×50	4	Pan head M8×50	4	—	—	—	—
		4	Pan head M8×50	4	Pan head M8×50	4	—	—	—	—

*. Width across flats of hex socket: 8 mm (M10), thread size: M8

Series	Breaker	Number of poles	Front-connected (FC)		Rear-connected (RC)		Plug-in (PM) for switchboards		
			Screw size	Qty	Screw size	Qty	Standard		
Standard	XS2000NE	3,4	Hex socket head M10×160	4	Hex socket head M10×120	4	—	—	—
Current limiting	TL-1000NE, TL-1200NE	3,4	Pan head M8×50	4	Pan head M8×50	4	Cap nut *	—	4
Non-automatic trip breaker	XS2000NN	3,4	Hex socket head M10×160	4	Hex socket head M10×120	4	—	—	—

Notes:

①. The length of mounting screws may differ from the standard one if the breaker is equipped with external accessories (motor operator, external operation handle, etc.)

Consult the operating Instructions of external accessories for details.

*. Width across flats of hex socket: 8 mm (M10), thread size: M8

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Accessories

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Accessories

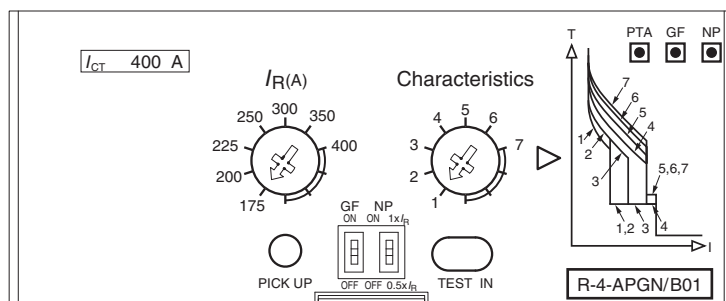
Molded Case Circuit Breakers

1 OCR for electronic breakers

1. TemBreak2 Electronic OCR (Standard type)

(1) Overcurrent trip characteristics

■ TemBreak2 electronic OCR for S400-NE



■ TemBreak2 OCR Specifications

CT rated current (I_{CT})	poles	Protection code	Long time, Short time, Instantaneous	Preferential trip alarm (PTA)	Ground fault trip (GF)	Neutral protection (NP)
			A	P	G	N
250	3	A	●	—	—	—
	3	AP	●	●	—	—
	4	A	●	—	—	—
	4	AP	●	●	—	—
	4	AN	●	—	—	●
400 630 800 1000 1250 1600	4	APN	●	●	—	●
	3	A	●	—	—	—
	3	AP	●	●	—	—
	3	AG	●	—	●	—
	3	APG	●	●	●	—
	4	A	●	—	—	—
	4	AP	●	●	—	—
	4	AN	●	—	—	●
	4	APN	●	●	—	●
	4	AGN	●	—	●	●
	4	APGN	●	●	●	●

■ OCR characteristics for S400-NE

Characteristics No.	1	2	3	4	5	6	7
Long time-delay pick-up current (A) : (I_p)	CT rated current : (I_{CT}) = 250A 125, 150, 175, 200, 225 CT rated current : (I_{CT}) = 400A 175, 200, 225, 250, 300, 350, 400						
Long time-delay time settings (s) : (t_p)	11	21	21	5	10	19	29
Short time-delay pick-up current (A) : (I_{sd})	at 200% $\times$ (I_p) at 600% $\times$ (I_p) Setting tolerance $\pm 20\%$						
Short time-delay time settings (s) : (t_{sd})	2.5	2.5	5	10	10	10	10
Instantaneous trip pick-up current (A) : (I_l)	Setting tolerance $\pm 15\%$ 0.1 0.1 0.1 0.1 0.2 0.2 0.2						
Option	Total clearing time +50ms, resettable time -20ms						
Preferential trip alarm	(I_p) $\times$ 1400% Max: (I_{CT}) $\times$ 1300% Setting tolerance $\pm 20\%$						
Pick-up current (A) : (I_p)	(I_p) $\times$ 80% Setting tolerance $\pm 10\%$						
Time-settings (s) : (t_p)	Definite time-delay characteristic, 40sec. Setting tolerance $\pm 10\%$						
Ground fault trip	Total clearing time +50ms, resettable time -20ms						
Pick-up current (A) : (I_g)	(I_{CT}) $\times$ 20% Setting tolerance $\pm 15\%$ ①						
Time-settings (s) : (t_g)	Definite time-delay characteristic, 0.2sec. Total tripping time +50ms, resettable time -20ms.						
Neutral protection	Pick-up current (A) : (I_N)						
Pick-up current (A) : (I_N)	(I_N) $\times$ 100% or 50% selectable ②						
Time-settings (s) : (t_N)	(t_N) = (t_p) Same as Long time-delay time settings						

Notes:

- ①. Ground fault trip is not available when (I_{CT}) is 250A.
- ②. In case of (I_R) $<$ (I_{CT}), the setting tolerance becomes big when (I_N) is set at (I_R) $\times$ 50%. Characteristic No.4 will be applied as standard setting unless otherwise specified.

■ Applicable breakers

Frame size (A)	Type of breaker
225	S225-GE
400	S400-NE, S400-GE, S400-PE H400-NE, L400-NE
630	S630-NE, S630-RE, S630-PE, H630-NE, L630-NE
800	S800-NE, S800-RE, S800-PE, H800-NE, L800-NE
1250	S1250-NE, S1250-GE
1600	S1600-NE

TemBreak2 electronic OCR allows you to achieve a wide range of protection simply by setting two dials located on the front of the breakers; one for selecting the rated current and the other for selecting a protection characteristic.

Coming standard with seven protection characteristics, the OCR provides optimum selective coordination between upstream breakers and downstream breakers and/or loads.

(5 protection characteristics for S225-GE)

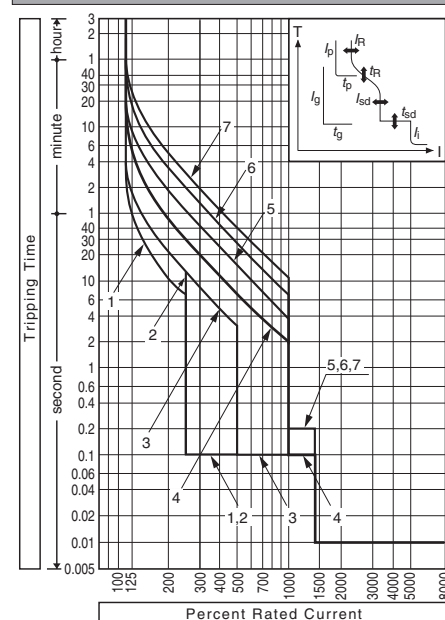
Characteristic 1: For generator protection

Characteristics 2, 3 and 4: For general feeder protection. The possibility of selecting one from three options makes it easy to achieve selective coordination with upstream or downstream breakers.

Characteristics 5, 6 and 7: For motor protection. The selection of the option best suited to motor startup characteristics provides an optimum protection solution to motors.

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 customized characteristic to your specification. Note: Characteristic is programmable within certain limits. Contact us for details.

Time/Current characteristic curves



Ex.S400-NE

(2) Optional OCR functions

■ Pretrip alarm (PTA)

The pretrip alarm function causes the alarm LED to flash when the load current exceeds 80% of the rated current (I_R) and, after 40 seconds, provides a contact output (1a). The contact output can be used to provide an alarm. The PTA function uses RMS sensing and hence does not suffer a malfunction due to harmonics. Control power and the OCR controller (supplied by Terasaki) are required to use this function.

Note ① : When the OCR controller is installed on the breaker, the breaker cannot be equipped with a terminal block for connection to the shunt trip device and undervoltage trip device.

● Specifications of OCR controller

Control voltage ② (Rated voltage)	AC100 – 120 V or AC200 – 240 V
Current consumption, VA	2VA
Note ② : The control voltage must be 85 to 110% of the rated voltage. Please state the rated voltage when ordering.	

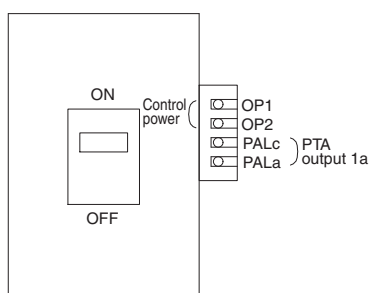
Operating time (s) [t_p]	40 secs (fixed definite time-delay) setting tolerance is $\pm 10\%$.		
Output contact	Normally open contact, (1a) Integral lead is standard. length (450mm)		
		Resistive load	Inductive load
Rating of contact	250V AC	125V A (2A max)	20V A (2A max)
	220V DC	60W (2A max)	10W (2A max)
Tripped indication	Pick-up LED flickers		

NOTE: the pick-up LED flickers at a higher current than [I_p].

When higher current flows continuously for 40 secs, the contact (1a) automatically resets.

● OCR controller connection diagram

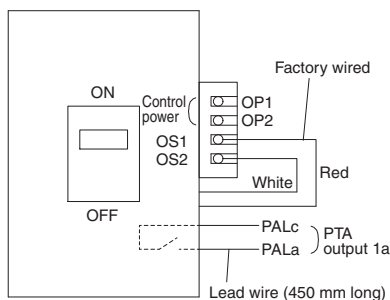
Applicable breakers: S225-GE



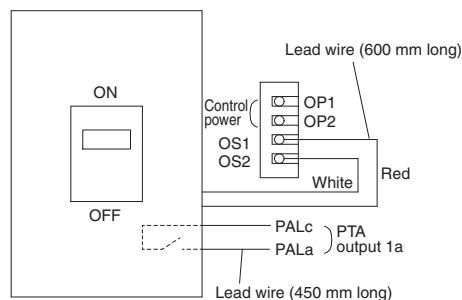
Note ③ : Separate installation of the OCR controller is not available.

Applicable breakers: S400-NE, S400-GE, S400-PE, H400-NE, L400-NE
S630-NE, S630-RE, S630-PE, H630-NE, L630-NE
S800-NE, S800-RE, S800-PE, H800-NE, L800-NE
S1250-NE, S1250-GE, S1600-NE

OCR controller installed on the breaker



OCR controller installed external to the breaker

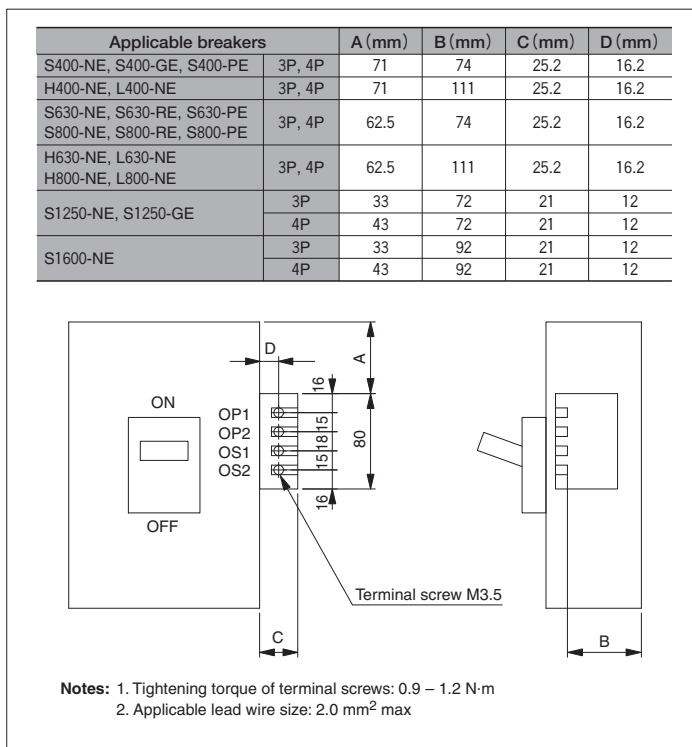
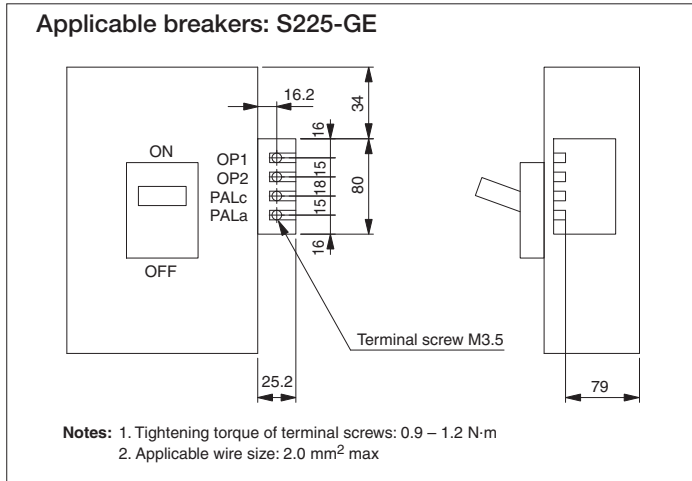


Note ④ : Standard installation of the OCR controller is on the right side of the breaker.
Separate installation is standard for the flush-mounted breakers.

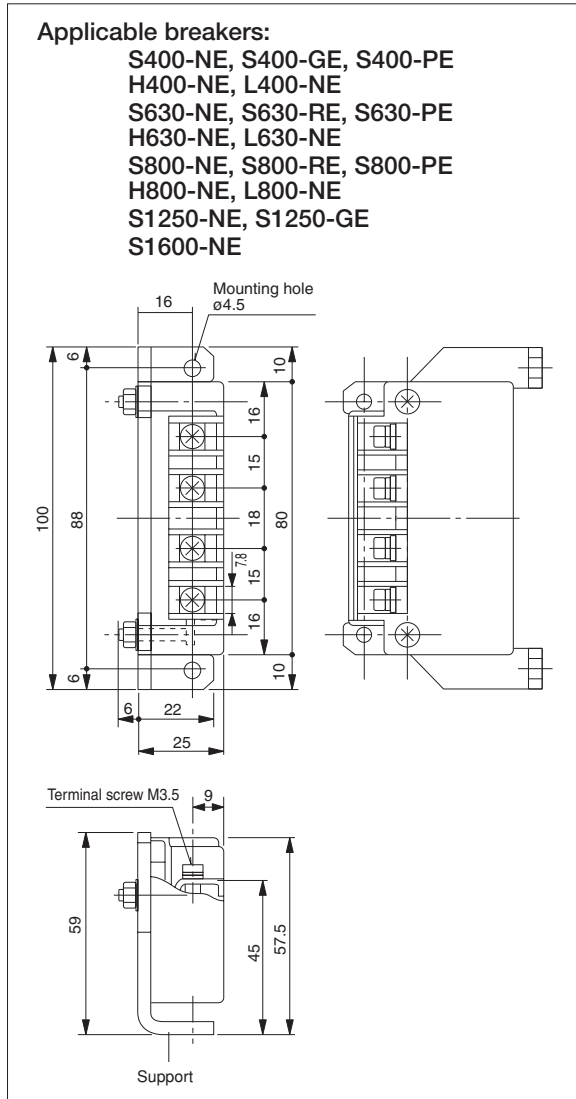
1. TemBreak2 Electronic OCR (Standard type)

(2) Optional OCR functions

- Mounting dimensions and terminal arrangement of the OCR controller installed on the breaker



- Outline of the OCR controller installed external to the breaker



■ Ground fault trip (GF)

The ground fault trip pickup current is 20% of the CT rated current (I_{CT}). The GF function provides protection against fire that may be caused by arcing ground fault current. The GF function is not available when I_{CT} is 250A.

Note: Separate type neutral CT is required when the GF function is added to a 3-pole breaker used in a 3-phase, 4-wire system. Contact us for details.

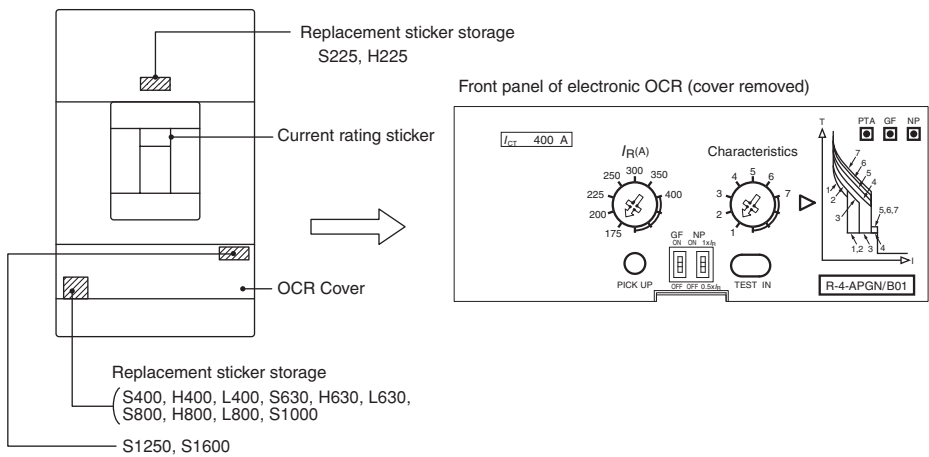
■ N-phase protection (NP)

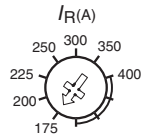
The NP function is available on 4-pole breakers and provides protection to the neutral conductor in a 3-phase, 4-wire system against overcurrent. The NP pickup current (I_N) can be selected with 1.0 or $0.5 \times I_R$ rated current. For S225 and H225, I_N is $1.0 \times I_R$ only. Characteristic of N-phase protection (t_N vs I_N) is identical to characteristic of phase protection (t_R vs I_R).

(3) How to change the tripping characteristics

The electronic breakers are designed so that their protective functions, i.e., long time delay trip, short time delay trip, instantaneous trip, ground fault trip and pretrip alarm functions, can be adjusted depending on a change in load or layout of power distribution lines.

Outer view



Item	Rated current	Long time delay trip, short time delay trip, instantaneous trip, ground fault trip, pretrip alarm
Adjusting procedure	• Turn the breaker to OFF position before changing the settings. 1. Peel the sealing sticker off and remove the cover. 2. Rotate the “$I_R(A)$” dial to the desired position using a flatblade screwdriver.  3. Take an appropriate current rating sticker and a sealing sticker from the replacement sticker storage. 4. Peel the existing current rating sticker off and affix the replacement current rating sticker. 5. Reinstall the cover and affix the replacement sealing sticker.	• Turn the breaker to OFF position before changing the settings. 1. Peel the sealing sticker off and remove the cover. 2. Rotate the “Characteristics” dial to the desired position using a flatblade screwdriver. 3. Take a sealing sticker from the replacement sticker storage. 4. Reinstall the cover and affix the replacement sealing sticker.

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Accessories

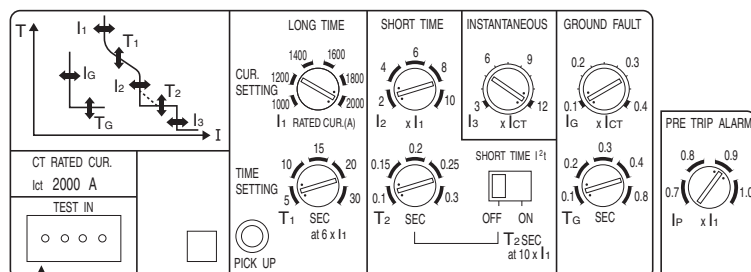
Molded Case Circuit Breakers

1 OCR for electronic breakers

2. TemBreak Electronic OCR

(1) Overcurrent trip characteristics

■ TemBreak electronic OCR for XS2000NE



Standard Protective Characteristics

The electronic type TemBreak incorporates an adjustable long time-delay, short time-delay and instantaneous trips, enabling co-ordination with fuses on the high voltage side and down stream breakers.

Adjustable LTD

Essential for general industrial plants and generator protection

Ramp Characteristic [I^2t], STD

The ramp characteristic [I^2t] enables precise co-ordination with thermal magnetic MCCBs or fuses. The ramp characteristic or the definite time-delay characteristic can be used by operating the OFF-ON switch (on for [I^2t] ramp characteristic).

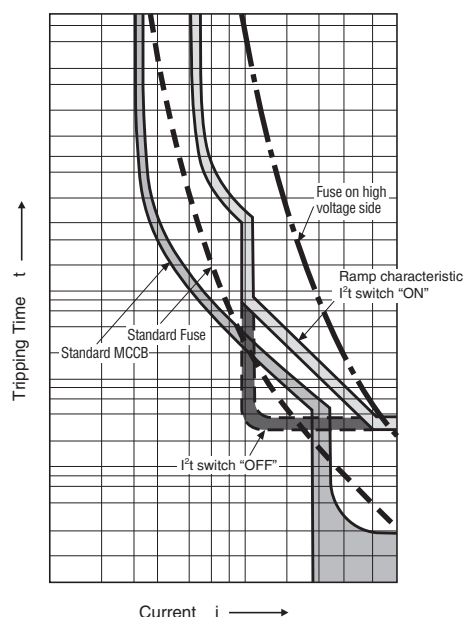
The definite time-delay characteristic is 1000% of the rated current [I_1]

■ OCR characteristics for XS2000NE

CT rated current (A) (I_{CT})	2000
Long time-delay pick-up current (A) (I_1)	1000, 1200, 1400, 1600, 1800, 2000
Long time-delay time settings (S) (T_1)	(5–10–15–20–30) at (I_1) x 600% current Setting tolerance $\pm 20\%$
Short time-delay pick-up current (A) (I_2)	(I_1) x 200, 400, 600, <u>800</u> , 1000% Setting tolerance $\pm 15\%$
Short time-delay time settings (S) (T_2)	Opening time (0.1, 0.15, <u>0.2</u> , 0.25, 0.3) in the definite time-delay. Total clearing time is +50ms and resettable time –20ms for the time-delay settings
Instantaneous trip pick-up current (A) (I_3)	Continuously adjustable from (I_{CT}) x 300 ~ <u>1200</u> %. Setting tolerance $\pm 20\%$
Pre-trip alarm pick-up current (A) (I_P) (optional)	(I_1) x 70, 80, 90, 100% Setting tolerance $\pm 10\%$
Pre-trip alarm time setting (S) (T_P) (optional)	40 fixed definite time-delay. Setting tolerance $\pm 10\%$
Ground fault trip pick-up current (A) (I_G) (optional) ⁶⁴	Continuously adjustable from (I_{CT}) x 10 ~ 40% Setting tolerance $\pm 15\%$
Ground fault trip-time setting (S) (T_G) (optional) ⁶⁴	Opening time (0.1, 0.2, 0.3, 0.4, <u>0.8</u>) in the definite time- delay. Total clearing time is +50ms and resettable time –20ms for the time-delay settings

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

Time/Current characteristic curves

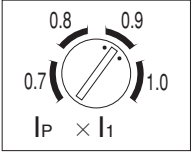


(2) Optional OCR functions

■ Pretrip alarm (PTA)

The pretrip alarm function causes the alarm LED to flash when the load current exceeds the pre-set current value and, after 40 seconds, provides a contact output (1a). The contact output can be used to provide an alarm. The PTA function uses RMS sensing and hence does not suffer a malfunction due to harmonics. Control power and the OCR controller (supplied by Terasaki) are required to use this function.

● PTA specifications

Pick-up current (A) [I_p]			
			
Adjustable steps of 70, 80, 90, 100% of the selected rated current [I_1].			
Setting tolerance $\pm 10\%$			
Note: The long time-delay trip does not operate 'first' when the pick-up current is adjusted to 100% of the rated current [I_1].			
Operating time (s) [T_p]			
40 secs (fixed definite time-delay) setting tolerance is $\pm 10\%$.			
Output contact			
Normally open contact, (1a) Integral lead is standard length (450mm)			
		Resistive load	Inductive load
Rating of contact	250V AC	125V A (2A max)	20V A (2A max)
	220V DC	60W (2A max)	10W (2A max)
Tripped indication ①			
Pick-up LED flickers			
Note ①: the pick-up LED flickers at a higher current than [I_p].			
When higher current flows continuously for 40 secs, the contact (1a) automatically resets.			
PTA is automatically reset at a lower current than [I_p].			

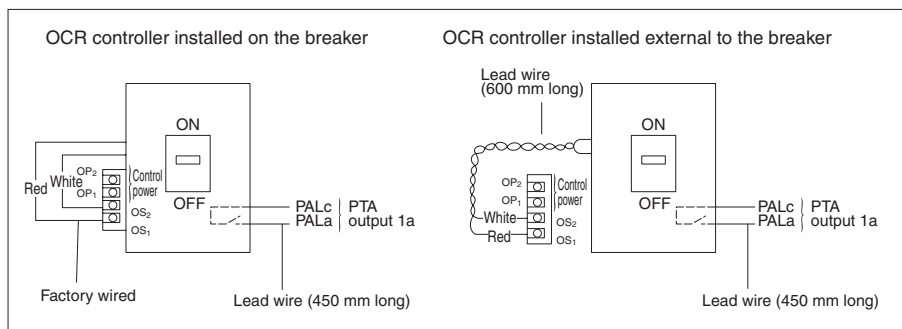
● OCR controller (PTA and trip indication)

The OCR controller is installed in the left hand of the breaker (standard). This can also be installed externally to the breaker (please specify when ordering).

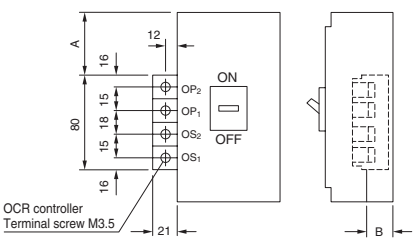
● Specifications of OCR controller

Control voltage ②	AC100 - 120 V or AC200 - 240 V
(Rated voltage)	
Current consumption, VA	2VA
Note ②: The control voltage must be 80 to 110% of the rated voltage.	
Please state the rated voltage when ordering.	

● OCR controller connection diagram

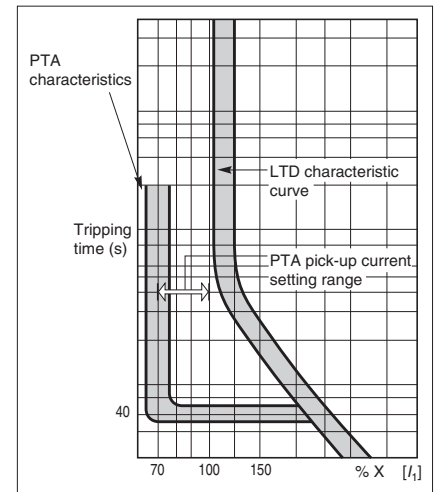


● Mounting dimensions and terminal arrangement of the OCR controller installed on the breaker

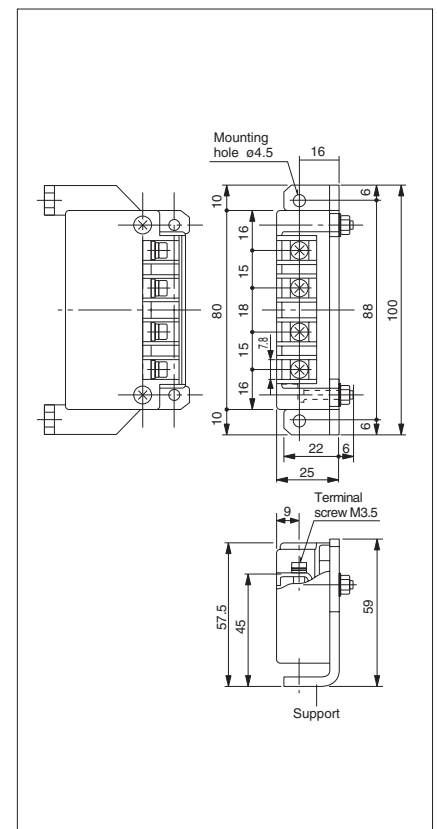
		Dimension table (mm)		
Type of MCCB		A		B
		With UVT controller	Without UVT controller	
TL-1000NE		51	114	92
TL-1200NE				
XS2000NE		54	180	115

Remarks 1): Standard torque for the terminal screws M3.5 — 0.9~1.2N.m
2): Connected cable size — Max. 2.0mm²

● PTA Characteristics



● Outline of the OCR controller installed external to the breaker



Molded Case Circuit Breakers

1 OCR for electronic breakers

2. TemBreak Electronic OCR

(2) Optional OCR functions

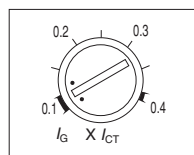
■ Ground fault trip (GF)

The ground fault trip pickup current is 10 to 40% of the CT rated current (I_{CT}). The GF function provides protection against fire that may be caused by arcing ground fault current.

Note that a separate type neutral CT is required when the GF function is added to a 3-pole breaker used in a 3-phase, 4-wire system. Contact us for details.

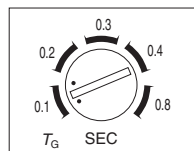
● GF Specifications

Pick-up current (A): [I_G]



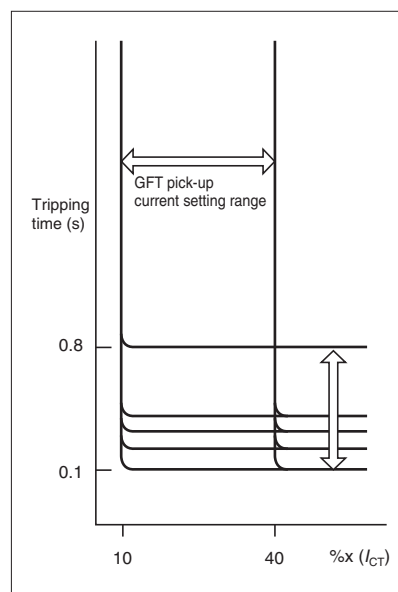
Continuously adjustable from 10 to 40% of the rated CT current [I_{CT}].
Setting tolerance $\pm 15\%$

Time-delay (S) [T_G]



The GFT has a definite time-delay characteristic and is adjustable in steps of 0.1, 0.2, 0.3, 0.4 and 0.8s.
Total clearing time is +50ms and resettable time is -20ms for the pre-set time-delay.

● GF characteristics

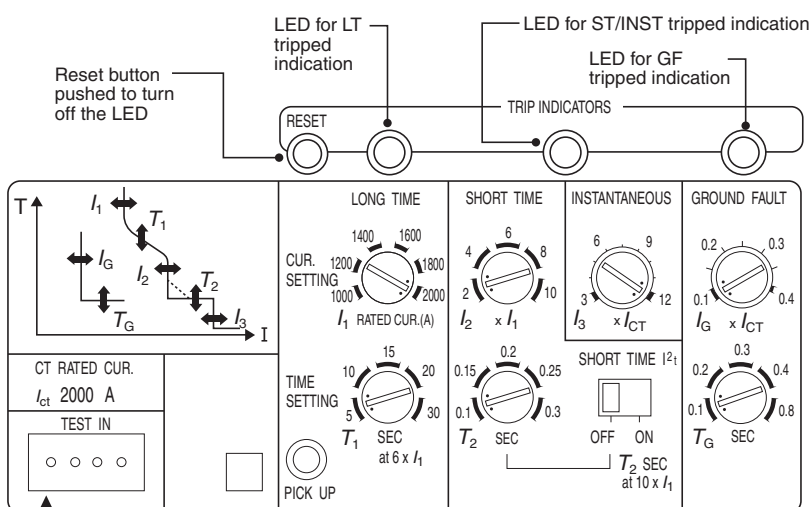


■ Trip indicators

The LEDs, when lit, indicate which trip function tripped the breaker; Long time-delay (LTD), short time-delay/instantaneous (ST/INST) or ground fault (GF) (control power required)

If a pre-trip alarm (PTA) is fitted, the LED control power can be used (common). See page 6-7 for PTA. This is not applicable to high instantaneous trip breakers (See page 4-3).

● Trip indicator display

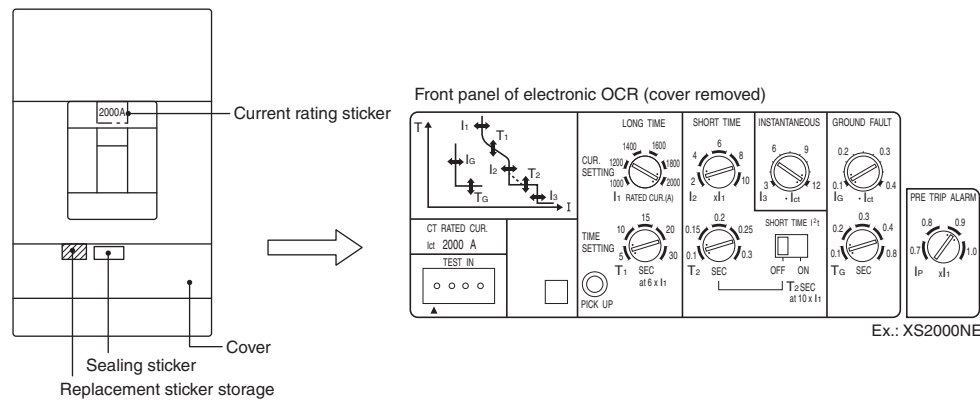


Example XS2000NE

(3) How to change the tripping characteristics

The electronic breakers are designed so that their protective functions, i.e., long time delay trip, short time delay trip, instantaneous trip, ground fault trip and pretrip alarm functions, can be adjusted depending on a change in load or layout of power distribution lines.

Outer view



Item	Rated current	Long time delay trip, short time delay trip, instantaneous trip, ground fault trip, pretrip alarm
Adjusting procedure	• Turn OFF the breaker before changing the settings. 1. Peel the sealing sticker off, loosen the cover mounting screws and remove the cover. 2. Rotate the “RATED CUR. (A)” dial using a flatblade screwdriver so that the black points on the dial point the desired position. LONG TIME (Ex.: XS2000NE) 3. Take an appropriate current rating sticker and a sealing sticker from the replacement sticker storage. 4. Peel the existing current rating sticker off and affix the replacement current rating sticker. 5. Reinstall the cover and affix the replacement sealing sticker.	• Turn OFF the breaker before changing the settings. 1. Peel the sealing sticker off, loosen the cover mounting screws and remove the cover. 2. Rotate the desired dial using a flatblade screwdriver so that the black points on the dial point the desired position. The instantaneous trip and ground fault trip pickup current can be continuously adjusted. 3. Take a sealing sticker from the replacement sticker storage. 4. Reinstall the cover and affix the replacement sealing sticker.

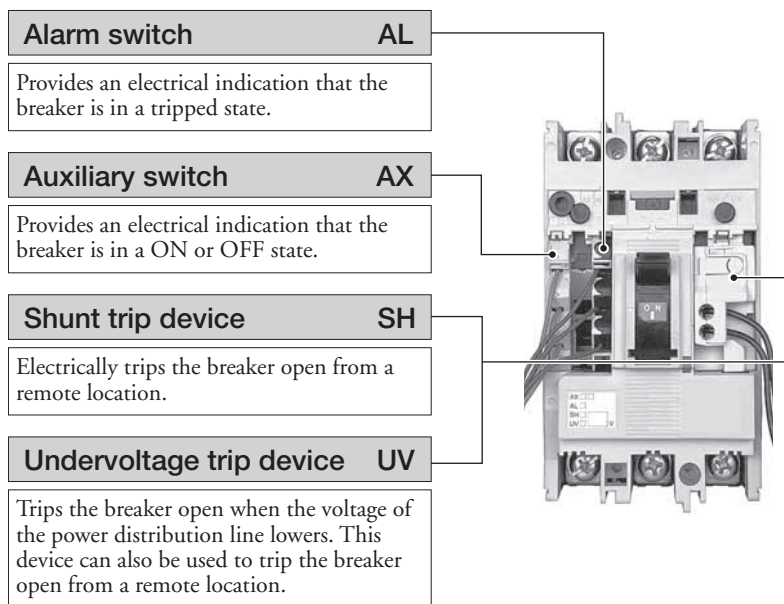
6 Accessories

Molded Case Circuit Breakers

2 Internally mounted accessories

1. Overview

The following internally mounted accessories are available. See the tables of possible combinations of internally mounted accessories on pages 6-12 to 6-14 for the number of accessories that can be installed per breaker and their locations.



Caution: Combined use of SH and UV is not available.

Termination or ending of lead wires from accessories

There are three manners in which lead wires from accessories are ended or terminated, as shown below:

Lead wires are open:

- Standard lead wire ending manner for front-connected, rear-connected and flush-mounted breakers. Lead wires from accessories are derived vertically, thereby enabling contact mounting.

Lead wire specifications

TemBreak2 series

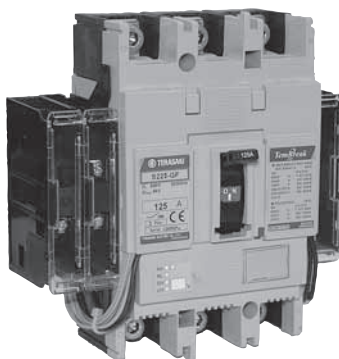
accessory	Grade	Size	Finished OD	Length	Color
SH	Heat resistant	0.5mm ²	3mmø	500mm	Black
UV			3mmø	500mm	Black
AX			1.8mmø	700mm	Gray
AL			1.8mmø	700mm	Black

XS, TL series

accessory	Grade	Size	Finished OD	Length	Color
SH	Heat resistant	0.5mm ²	3mmø	450mm	Black
UV			3mmø	450mm	Black
AX			1.8mmø	450mm	Gray
AL			1.8mmø	450mm	Black

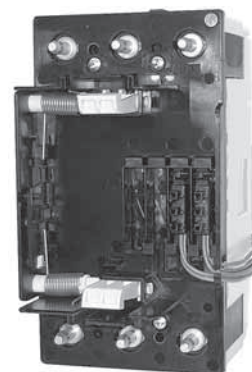
Lead wires are terminated in a terminal block:

- Optional lead wire termination manner for front-connected and rear-connected breakers.
- There are two types of terminal blocks available depending on the direction in which lead wires are derived; vertical and horizontal. See pages 6-75 to 6-79 for details.



Lead wires are ended at auxiliary circuit (self-engaging) terminals:

- Standard lead wire ending manner for plug-in breakers.
- See pages 9-4 and 9-7 for the standard arrangement of auxiliary circuit terminals. Contact us for other arrangements.



2. Connection diagrams and terminal numbers

Accessory	Combination symbol	Connection diagram and terminal No.		Remarks	
Shunt trip device (SH)		• With anti-burn switch		Applicable to E50-SF, E100-SF, E50-CM, TL-1000NE and TL-1200NE. Shunt trips are fitted with anti-burn switches.	
		• Without anti-burn switch		Applicable to other breakers except above breakers. Shunt trips are continuous rating without anti-burn switches.	
Undervoltage trip device (UV)		For AC With UVT controller		For DC 	Applicable to E50-SF, E100-SF, TL-1000NE and TL-1200NE. UVT controller is required for AC UVT. See page 6-18 for the details.
				Applicable to other breakers except above breakers.	
Auxiliary switch (AX)				1pc Aux. SW installed.	
				2pcs Aux. SW installed.	
				4pcs Aux. SW installed.	
				6pcs Aux. SW installed.	
				Applicable to E50-SF, E100-SF and E50-CM	
Alarm switch (AL)				1pc Alarm. SW installed.	
				2pcs Alarm. SW installed. Available for S125-SF, S250-SF, S630, S800, S1250 and S1600.	
				Applicable to E50-SF, E100-SF and E50-CM	

Molded Case Circuit Breakers

2 Internally mounted accessories

3. Possible combinations

Molded Case Circuit Breakers

Economical series					E250-SF			
Standard series	S50-SF S125-SF	S50-SF S125-SF	S100-NF S125-NF	S100-NF S125-NF S225-NF S250-NF	S250-SF	S400-CF S400-NF S400-NE	S630-CF S630-NF S630-NE S800-CF S800-NF S800-NE	S1250-NE S1600-NE
High-fault level series				S50-GF S100-GF S125-GF S225-GF S250-GF		S400-GF S400-GE S400-PF S400-PE	S630-RF S630-RE S630-PF S630-PE S800-RF S800-RE S800-PF S800-PE	S1250-GE
Current limiting series				H100-NF H125-NF H225-NF		H400-NE	H630-NE H800-NE	
Current limiting series				L100-NF L125-NF L225-NF		L400-NE	L630-NE L800-NE	
Motor protection series				S100-NM S225-NM				
Number of poles	2	3	2	3	3	3	3	3
Combinations of accessories	AX							
	AL							
	SH							
	UV							
	AX AL							
	AX SH							
	AX UV							
	AL SH							
	AL UV							
	AX AL SH							
	AX AL UV							

Molded Case Circuit Breakers

Type	Economical series	E50-SF	E50-SF	E100-SF	E100-SF		
	Standard series						XS2000NE
	High-fault level series						
	Current limiting series					TL-1000NE TL-1200NE	
Number of poles ①		2	3	2	3	3	3
Combinations of accessories	AX						
	AL						
	SH						
	② UV						
	AX AL						
	AX SH						
	② AX UV						
	AL SH						
	② AL UV						
	AX AL SH						
	AX AL UV						

Notes:

① : For the four-pole type, see the column for the three-pole type.

② : A breaker with AC UVT is provided with an external UVT controller. See page 6-18.

Molded Case Circuit Breakers

Motor protection series

Type	E50-CM
Number of poles	3
AX	
AL	
SH	
UV	
AX AL	
AX SH	
AX UV	
AL SH	
AL UV	
AX AL SH	
AX AL UV	

Molded Case Circuit Breakers

2 Internally mounted accessories

3. Possible combinations

Molded Case Circuit Breakers

Switch disconnectors

Type	S125-SN	S100-NN S125-NN	S250-SN	S400-NN	S630-GN S800-NN	S1250-NN S1600-NN
Number of poles	3	3	3	3	3	3
AX						
AL						
SH						
UV						
Combinations of accessories						
AX AL						
AX SH						
AX UV						
AL SH						
AL UV						
AX AL SH						
AX AL UV						

Molded Case Circuit Breakers

Non-automatic breakers

Type	XS2000NN
Number of poles	3
AX	
AL	
SH	
UV	
Combinations of accessories	
AX AL	
AX SH	
AX ② UV	
AL SH	
AL ② UV	
AX AL SH	
AX AL ② UV	

Notes:

② : A breaker with AC UVT is provided with an external UVT controller. See page 6-18.

4. Ratings and operation data of auxiliary and alarm switches

(1) Ratings of AX and AL

• The applicable load of the switch shall be no larger than the rating and no smaller than the minimum load.

Type of breaker	Standard						For microload ①			
	AC (V)			DC (V)			Minimum load	DC (V)		Minimum load
	Voltage (V)	Current (A)		Voltage (V)	Current (A)			Voltage (V)	Current (A)	
		Resistive load	Inductive load ②		Resistive load	Inductive load ②				
E250-SF S50-SF S125-SF S50-GF S100-NF, S100-GF S125-NF, S125-GF S225-NF, S225-GF S225-GE S250-NF, S250-GF S400-CF, S400-NF S400-GF, S400-GE S400-PF, S400-PE S630-CF, S630-NF, S630-RF, S630-PF S630-NE, S630-RE, S630-PE S800-CF, S800-NF, S800-RF, S800-PF S800-NE, S800-RE, S800-PE S1250-NE S1600-NE S250-SF H100-NF, L100-NF H125-NF, L125-NF H225-NF, L225-NF H400-NF, L400-NE H630-NE, L630-NE H800-NE, L800-NE S100-NM S225-NM S125-SN S250-SN S100-NN S125-NN S400-NN S630-GN S800-NN S1250-NN S1600-NN	480	—	—	250	—	—	DC15V 100mA	30	0.1	DC5V 1mA
	250	3	2	125	0.4	0.05				
	125	3	2	30	3	2				
E50-SF, E100-SF, E50-CM	480	—	—	250	0.2	0.03	DC6V 100mA DC24V 25mA	125	0.1	DC6V 5mA DC24V 1.25mA
	250	3	2	125	0.4	0.05		30	0.1	
	125	3	2	30	3	2				
XS2000NE TL1000-NE, TL1200-NE XS2000NN	480	3	2	250	0.3	0.3	DC5V 160mA DC30V 26.7mA	30	0.1	DC5V 1mA DC30V 1mA
	250	5	5	125	0.6	0.6				
	125	5	5	30	5	4				

Note: ① This is a custom-made product. When ordering for this product, specify that it is intended for microload use.

Note: ② The inductive load means power factor of no smaller than 0.4 for AC and time constant of no larger than 7 ms for DC.

(2) Operation of AX and AL

Switch	Breaker status	[ON]	[OFF]	[TRIP]
Auxiliary switch (AX) status		11/AXc-14/AXa "Closed" 11/AXc-12/AXb "Open"	11/AXc-14/AXa "Open" 11/AXc-12/AXb "Closed"	11/AXc-14/AXa "Open" 11/AXc-12/AXb "Closed"
Alarm switch (AL) status		91/ALc-94/ALa "Open" 91/ALc-92/ALb "Closed"	91/ALc-94/ALa "Open" 91/ALc-92/ALb "Closed"	91/ALc-94/ALa "Closed" 91/ALc-92/ALb "Open"

5. Shunt trip device (SH)

Ratings of SHT

Type of breaker	Peak exciting current, A							
	Rated voltage	AC (V)			DC (V)			
		100-120	200-240	380-450	24	48	100-120	200-240
E250-SF		0.014	0.014	0.0065	0.03	0.03	0.011	0.011
S50-GF, S50-SF								
S100-NF, S100-GF								
S125-NF, S125-GF								
S125-SF								
S225-NF, S225-GF								
S225-GE								
S250-NF, S250-GF								
S250-SF								
S400-CF, S400-NF								
S400-GF, S400-GE								
S400-PF, S400-PE								
S630-CF, S630-NF, S630-RF, S630-PF								
S630-NE, S630-RE, S630-PE								
S800-CF, S800-NF, S800-RF, S800-PF								
S800-NE, S800-RE, S800-PE								
S1250-NE, S1250-GE								
S1600-NE								
H100-NF, L100-NF								
H225-NF, L225-NF								
H125-NF, L125-NF								
H400-NE, L400-NE								
H630-NE, L630-NE								
H800-NE, L800-NE								
S100-NM								
S225-NM								
S100-NN								
S125-SN								
S250-SN								
S400-NN								
S630-GN								
S800-NN								
S1250-NN								
S1600-NN								

Type of breaker	Peak exciting current, A						
	Rated voltage	AC (V)		DC (V)			
		100-115	200-480	24	48	100-115	200-230
E50-SF, E100-SF, E50-CM		3.4	0.83	1.6	0.71	0.4	0.16
XS2000NE, XS2000NN		1.1	① 0.4 (AC200-240V) 0.93 (AC380-480V)	2.52	1.55	0.67	0.35
TL1000-NE, TL1200-NE		1.1	0.93	2.52	1.55	0.67	0.35

Notes:

①: Exclusive use for 200V class and 400V class.

(1) The permissible voltage range is from 70% to 110% of the rated voltage.

Ensure that the voltage does not drop exceeding the permissible voltage range when SHT is actuated.

(2) Breaker contacts usually start opening within 30 ms after the rated voltage is applied to the breaker.

6. Undervoltage trip device (UV)

Ratings of UVT with Inst

Type of breaker	Power supply capacity, VA ①			Exciting current, mA ①		
	Rated voltage	AC (V)			DC (V)	
		100-120	200-240	380-450	24	100-120 200-240
S50-GF S100-NF, S100-GF S125-NF, S125-GF S225-NF, S225-GF S225-GE S250-NF, S250-GF S400-CF, S400-NF S400-NE S400-GF, S400-GE S400-PF, S400-PE H100-NF, L100-NF H125-NF, L125-NF H225-NF, L225-NF H400-NE, L400-NE S100-NM S225-NM S100-NN S400-NN		1.4	2.8	2.3	23	10 10
S50-SF, S125-SF, S125-SN E250-SF, S250-SF, S250-SN		1.4	1.5	2.3	23	10 3.5

Note: ①: No UVT controller is required.

(1) Tripping voltage is from 35% to 70% of the rated voltage.

Resettable voltage is 85% or less of the rated voltage.

(2) Response time is below 50ms.

Type of breaker	Power supply capacity, VA ①							Exciting current, mA ①		
	Rated voltage	AC (V)						DC (V)		
		100-110	115-120	200-220	230-240	380-415	440-450	24	100-120	200-240
S630-CF, S630-NF, S630-RF, S630-PF S630-NE, S630-RE, S630-PE S800-CF, S800-NF, S800-RF, S800-PF S800-NE, S800-RE, S800-PE S1250-NE, S1250-GE S1600-NE H630-NE, L630-NE H800-NE, L800-NE S630-GN S800-NN S1250-NN S1600-NN	1.5	1.6	2.4	2.9	2.1	2.3	29	13	11	

Note: ①: No UVT controller is required.

(1) Tripping voltage is from 35% to 70% of the rated voltage.

Resettable voltage is 85% or less of the rated voltage.

(2) Response time is below 50ms.

Type of breaker	Power supply capacity, VA ②			Exciting current, mA ①		
	Rated voltage	AC (V)			DC (V)	
		100-120	200-240	380-450	24	100-120 200-240
E50-SF, E100-SF		5 min	5 min	5 min	18.2	4.8 —
XS2000NE, XS2000NN		5 min	5 min	5 min	22.7	6 —
TL1000-NE, TL1200-NE		5 min	5 min	5 min	22.7	6 —

Notes: ①: No UVT controller is required.

②: Equipped with the UVT controller. See page 6-18 for specifications of the UVT controller.

(1) Tripping voltage is from 35% to 70% of the rated voltage.

Resettable voltage is 85% or less of the rated voltage.

(2) The UVT consists of a tripping mechanism and mechanism of maintain handle at OFF position when without the control voltage.

Please reset the breaker before turning the handle to ON position.

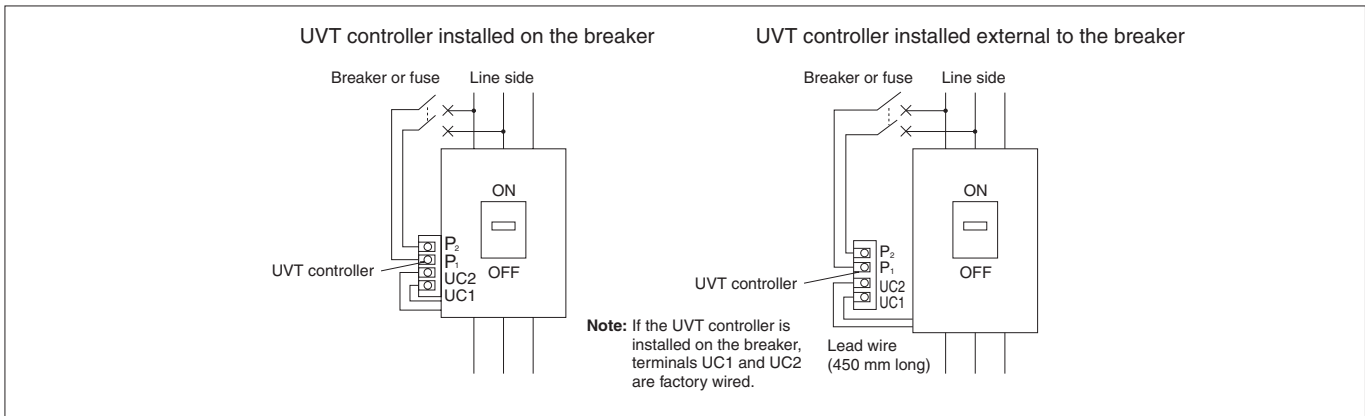
6. Undervoltage trip device (UV)

UVT controller

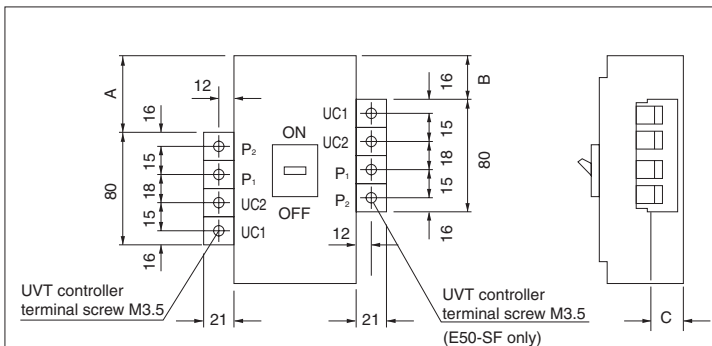
- See pages 6-17 for the breakers on which the UVT controller is installed.

A breaker equipped with the AC UVT need a UVT controller. The UVT controller is installed on the breaker by default. Separate installation of the controller is also available on request. If the breaker is of flush-mounted (FP) type, the UVT controller is separately installed by default. Also a UVT controller (type XCU1D) with a time delay of less than 500 ms is available on request.

UVT controller connection diagram



Mounting dimensions and terminal arrangement of the UVT controller installed on the breaker



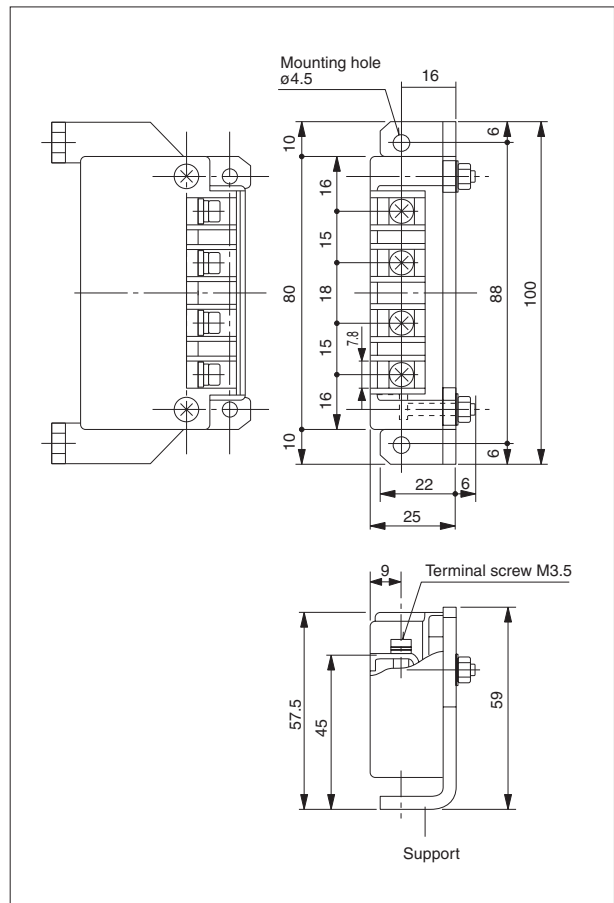
Mounting dimensions

Frame size (A)	Type of breaker	A	B	C
50	E50-SF	—	12.5	38
100	E100-SF	30.5	—	38
1000	TL-1000NE, TL-1200NE	114 (138)	—	92
2000	XS2000NE, XS2000NN	180	—	115

Notes:

- Dimension A shown in parentheses "()" are the case fitted with OCR controller.
- Tightening torque of terminal screws: 0.88 – 1.18 N·m
- Applicable wire size: 2.0 mm² max

Outline of the UVT controller installed external to the breaker



UVT with time delays for TemBreak2

TemBreak2 UVT are available with 500 ± 300 msec time delays.
UVT controller is installed on the breaker.

Rating of UVT with time delay

Time delays: 500 ± 300 msec.

Applicable breakers	Power supply capacity, VA							Exciting current, mA				
	Rated voltage	AC (V)						DC (V)				
		100-110	115-120	200-220	230-240	380-415	440-450	24	100-110	115-120	200-220	230-240
S50-GF, S100, S125-NF, S125-GF, S125-NN, E250, S225, S250-NF, S250-GF, H100, H125, H225, L100, L125, L225, S400, H400, L400	1.1	1.3	2.1	2.5	1.5	1.7	22	7.6	8.3	8.6	9.3	
S50-SF, S125-SF, S125-SN E250-SF, S250-SF, S250-SN	1.4	1.4	1.5	1.5	2.3	2.3	23	8.3	8.3	3.5	3.5	

Applicable breakers	Power supply capacity, VA							Exciting current, mA				
	Rated voltage	AC (V)						DC (V)				
		100-110	115-120	200-220	230-240	380-415	440-450	24	100-110	115-120	200-220	230-240
S630, S800, H630, L630, H800, L800, S1250, S1600	1.5	1.6	2.4	2.9	2.1	2.3	29	13	13	11	11	

- Mounting dimensions and terminal arrangement of the UVT controller installed on the breaker

Applicable breakers		A (mm)	B (mm)	C (mm)	D (mm)
S50-GF, S100, S125-NF, S125-GF, S125-NN	2P, 3P, 4P	28.5	44	25.2	16.2
S50-SF, S125-SF, S125-SN	2P, 3P, 4P	34	55	24	15
S225, S250-NF, S250-GF (except S225-GE)	3P, 4P	33.5	44	25.2	16.2
E250-SF, S250-SF, S250-SN	3P, 4P	49.5	55	24	15
S225-GE H100, H125, H225 L100, L125, L225	3P, 4P	33.5	79	25.2	16.2
S400	3P, 4P	71	74	25.2	16.2
H400, L400	3P, 4P	71	111	25.2	16.2
S630, S800	3P, 4P	62.5	74	25.2	16.2
H630, L630, H800, L800	3P, 4P	62.5	111	25.2	16.2

• The UVT controller is installed in the right hand side of the breaker

Notes: 1. Tightening torque of terminal screws: 0.9 – 1.2 N·m
2. Applicable lead wire size: 2.0 mm² max

Applicable breakers	A (mm)	B (mm)	C (mm)	D (mm)
S1250	114	72	21	12
S1600	114	92	21	12

• The UVT controller is installed in the left hand side of the breaker

Notes: 1. Tightening torque of terminal screws: 0.9 – 1.2 N·m
2. Applicable lead wire size: 2.0 mm² max

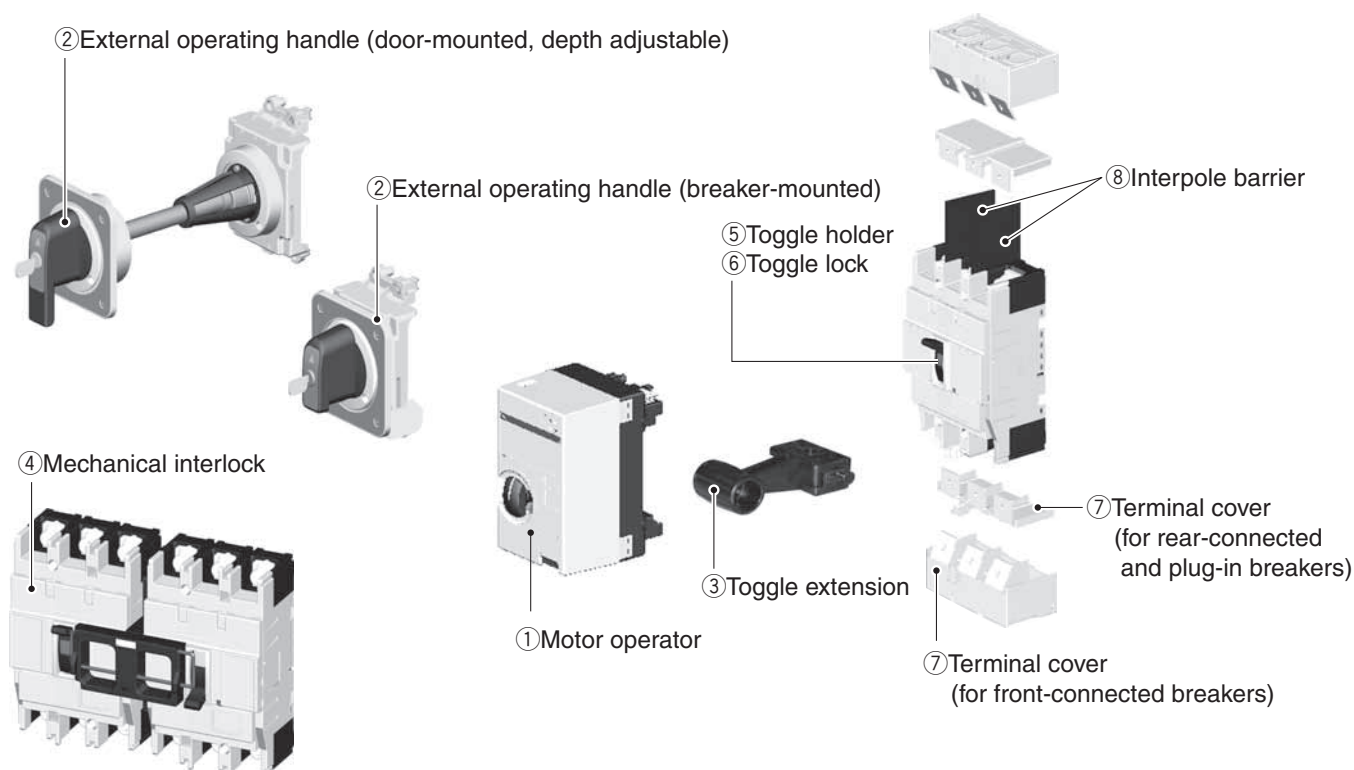
6

Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

1. Overview



1 Motor operator MC

Allows electrical operation (closing, opening and resetting) of the breaker.

2 External operating handle HB

Allows the breaker installed in a switchboard or box to be operated from outside.

Breaker-mounted HB

The handle is mounted directly on the breaker.

Door-mounted (depth adjustable) HP

The handle is coupled to the breaker through a shaft.

3 Toggle extension HA

Lessens the force require to close, open or reset the breaker. (Applicable to breakers with a frame size of 600A or larger)

4 Mechanical interlock MS

Provides an interlock that allows one of two breakers to be closed.

Slide type MS

5 Toggle holder HH

Holds the breaker on or off when simply fitted onto the breaker toggle.

6 Toggle lock HL

Allows the breaker to be locked on or off with commercially available padlocks.

7 Terminal cover CF

Prevents live parts of the breaker from being exposed.

For front-connected breakers CF

For rear-connected and plug-in breakers CR

For front-connected breakers with cable clamps CS

8 Interpole barrier BA

Enhances electrical insulation between poles and prevents short-circuit due to electrically conductive foreign matter.

9 Terminal block TF

Terminates lead wires from internally mounted accessories.

10 Door flange DF

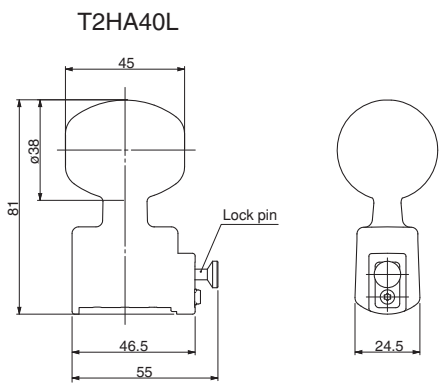
Is intended to cover the cutout of a switchboard panel from the front.

11 DIN rail adaptor DF

Allows the breaker to be mounted on DIN rails.

2. Toggle extension (HA)

Outline dimensions

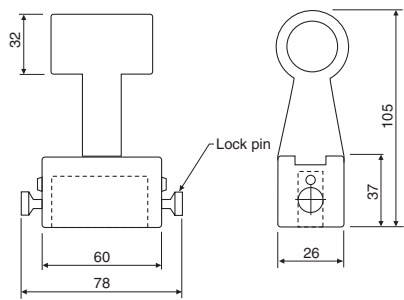


Frame size (A)	Type of breaker	Toggle extension Order code
400	S400, H400, L400	T2HA40L

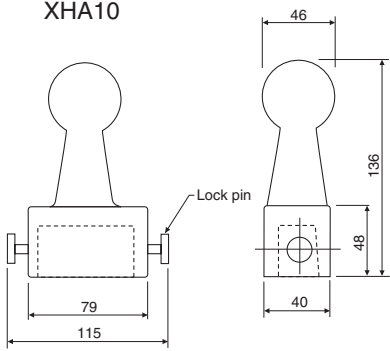
Note: Optional. Specify when ordering.
Please be careful of pull lock pin when use with mechanical interlock.
For more details please refer to the instruction manual.

Outline dimensions

XHA9B, T2HA80

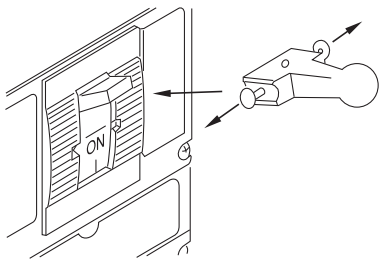


XHA10



Frame size (A)	Type of breaker	Toggle extension Order codes
630	S630-CF, S630-NF, S630-NE S630-RF, S630-RE, S630-PF, S630-PE S630-GN, H630-NE, L630-NE	① T2HA80
800	S800-CF, S800-NF, S800-NE S800-RF, S800-RE, S800-PF, S800-PE S800-NN, H800-NE, L800-NE	① T2HA80
1000	TL-1000NE	② XHA9B
1200	TL-1200NE	② T2HA80
1250	S1250-NE, S1250-GE, S1250-NN	② T2HA80
1600	S1600-NE, S1600-NN	② T2HA80
2000	XS2000NE, XS2000NN	③ XHA10

Note: ① Optional. Specify when ordering.
② One is supplied with every five breakers. Please specify if more are required.
③ Supplied as standard.



• Mounting and Removal
Pull lock pins out left and right in direction of the arrows, and slot the toggle extension in place.
The lock pins are spring loaded.
Removal-Pull out left and right hand lock pins and hold while removing.

6

Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

3. Toggle holder (HH) and toggle lock (HL)

Toggle holder (HH)

Simply fitting the toggle holder onto the breaker toggle disables breaker operation without using padlocks.

Toggle lock (HL)

The toggle lock is a tool that locks the breaker on or off. When an overcurrent occurs, the breaker will trip even if the breaker toggle is locked in the ON position.
(Use commercially available padlocks).

Toggle holders/toggle locks

Frame size (A)	Type of breaker	Toggle holder		Figure	Toggle lock		Figure
		Order codes	Marking codes		Order codes	Marking codes	
50	S50-SF	T2HH25L	T2HH25L	1	T2HL25L	T2HL25L	2
100	S100-NF S100-GF, S50-GF H100-NF L100-NF S100-NM S100-NN	T2HH25	T2HH25	1	T2HL25	T2HL25	2
125	S125-NF, S125-NN	T2HH25	T2HH25	1	T2HL25	T2HL25	2
	S125-SF, S125-SN	T2HH25L	T2HH25L	1	T2HL25L	T2HL25L	2
	S125-GF H125-NF L125-NF	T2HH25	T2HH25	1	T2HL25	T2HL25	2
225	S225-NF S225-GF, S225-GE H225-NF L225-NF S225-NM	T2HH25	T2HH25	1	T2HL25	T2HL25	2
250	S250-NF	T2HH25	T2HH25	1	T2HL25	T2HL25	2
	E250-SF, S250-SF, S250-SN	T2HH25L	T2HH25L	1	T2HL25L	T2HL25L	2
	S250-GF	T2HH25	T2HH25	1	T2HL25	T2HL25	2
400	S400-CF, S400-NF S400-NE S400-GF, S400-GE S400-PF, S400-PE H400-NE L400-NE S400-NN	T2HL40 ①	T2HL40	3	T2HL40	T2HL40	3
630	S630-CF, S630-NF S630-NE, S630-RF, S630-RE S630-PF, S630-PE H630-NE L630-NE S630-GN	T2HL40 ①	T2HL40	3	T2HL40	T2HL40	3
800	S800-CF, S800-NF S800-NE, S800-RF, S800-RE S800-PF, S800-PE H800-NE L800-NE S800-NN	T2HL40 ①	T2HL40	3	T2HL40	T2HL40	3
1250	S1250-NE S1250-GE S1250-NN	T2HLX6	XKC9	6 (l=86)	T2HLX6	XKC9	6 (l=86)
1600	S1600-NE S1600-NN	T2HLX6	XKC9	6 (l=86)	T2HLX6	XKC9	6 (l=86)
50 100	TB-5S, TB-5P TB-5D	for 1P...TKB-50SGH (TAA-5CR) ②	for 1P...TKB-50SGH (TAA-5CR) ②	7 (a)	TKB-50SG	TKB-50SG	5
		for 2P...TAA-52SH for 3P...TAA-53SH	for 2P...TAA-52SH for 3P...TAA-53SH	7 (b)	—	—	—
	E50-SF, E100-SF, E50-CM	TKB-1DH	—	4	③	—	5
1000	TL-1000NE	XKC9	XKC9	6 (l=86)	XKC9	XKC9	6 (l=86)
1200	TL-1200NE	XKC9	XKC9	6 (l=86)	XKC9	XKC9	6 (l=86)
2000	XS2000NE XS2000NN	XKC10	XKC10	6 (l=94)	XKC10	XKC10	6 (l=94)

Notes: ①. Same as toggle lock.
②. Order codes shown in parentheses "()" are toggle caps. The colour is Red.
③. A hole must be drilled in the breaker toggle. Please state "with toggle lock (HL)" when ordering the breaker.

Fig. 1

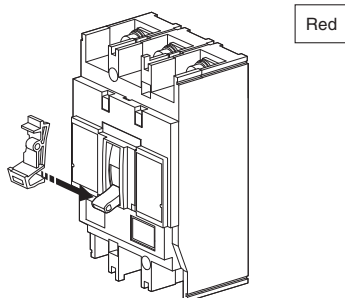


Fig. 2

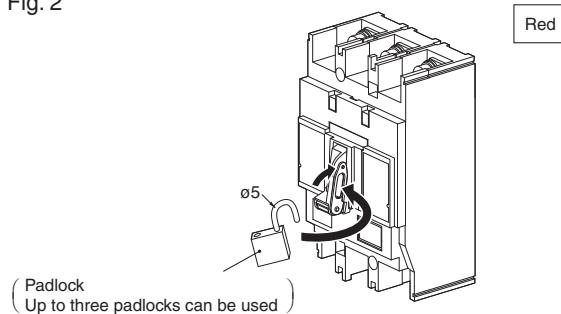


Fig. 3

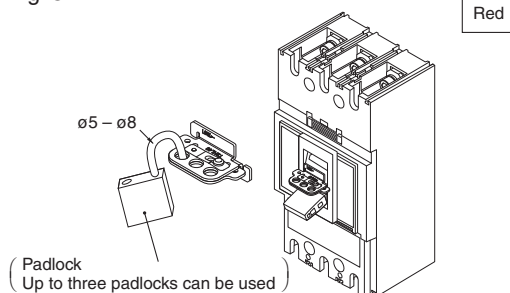


Fig. 4

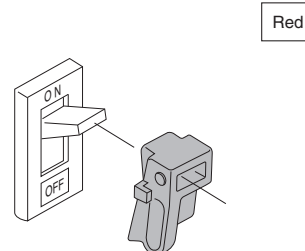


Fig. 5

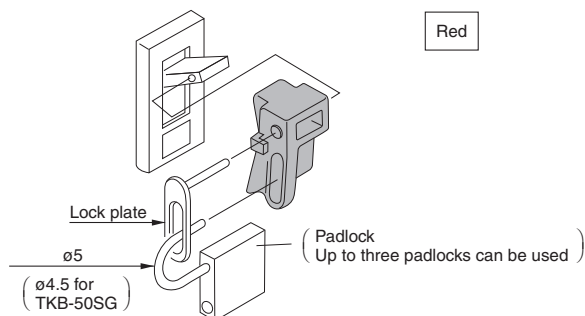
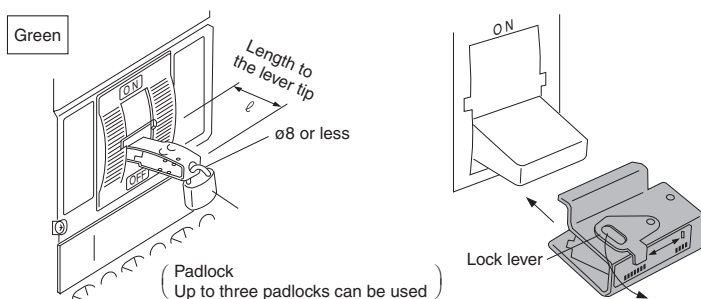


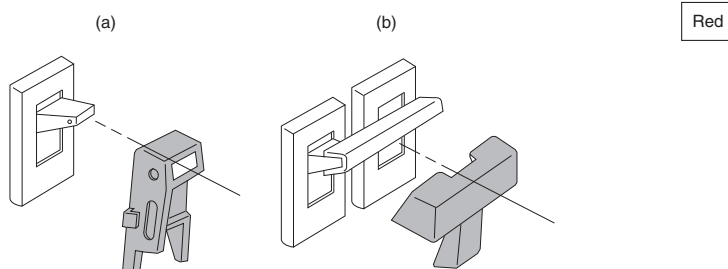
Fig. 6



Toggle holder (HH): Make sure the lock lever of the toggle holder is in the UNLOCK position, fit the toggle holder onto the toggle and swing the lock lever to the LOCK position. The toggle is now locked on or off.

Toggle lock (HL): Padlock the toggle in the ON or OFF position.

Fig. 7



6

Accessories

Molded Case Circuit Breakers

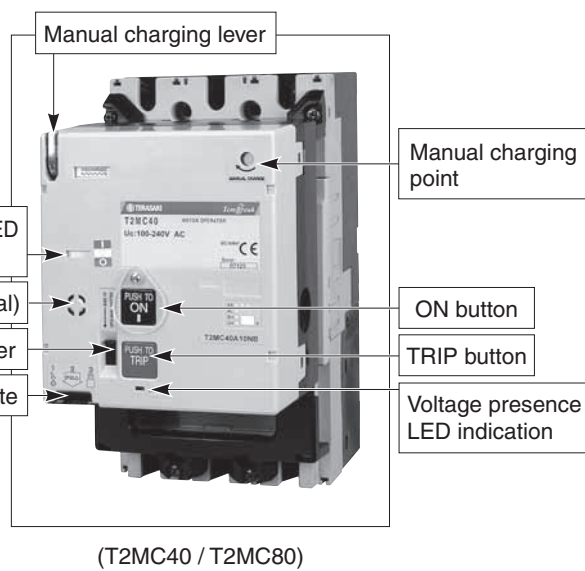
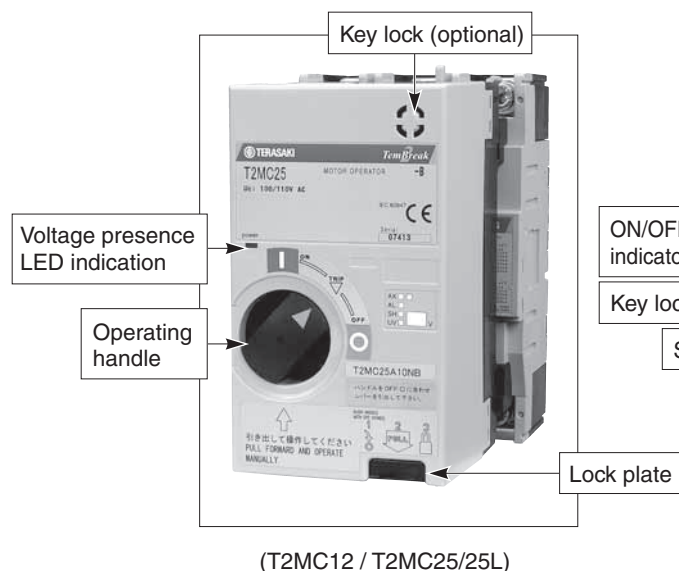
3 Externally mounted accessories

4. Motor operators (MC)

4-1. TemBreak2

Motor driven type

Spring charged type



(T2MC12 / T2MC25/25L)

(T2MC40 / T2MC80)

Ratings and Specifications

	T2MC12	T2MC25	T2MC25L	T2MC40	T2MC80
Type of breaker	S50-GF S100-NF S100-GF S125-NF S125-GF H100-NF L100-NF H125-NF L125-NF S100-NM S100-NN S125-NN	S225-NF S225-GF S225-GE S250-NF S250-GF H225-NF L225-NF S225-NM	S250-SF S250-SN	S400-CF, S400-NF S400-GF S400-NE, S400-GE S400-PF, S400-PE H400-NE, L400-NE S400-NN	S630-CF, S630-NF, S630-RF S630-PF, S630-NE, S630-RE S630-PE S800-CF, S800-NF, S800-RF S800-PF, S800-NE, S800-RE S800-PE H630-NE, L630-NE H800-NE, L800-NE S630-GN S800-NN
Rated operational voltage ①	● AC100-110V ● AC200-220V ● AC230-240V ● DC24V ● DC48V ● DC100-110V ● DC200-220V			● AC100-240V ● DC24-48V ● DC100-120V	● AC100-240V ● DC24-48V ● DC100-120V
Peak steady-state/starting current, A ②	AC100-110V AC200-220V AC230-240V DC24V DC48V DC100-110V DC200-220V	4.5/8 4/8 3.5/7 18/26 12/18 2.2/6 2.2/5.5		—/1.9(ON) 1.3/3.8(OFF, RESET) —/3.3(ON) 0.9/3.8(OFF, RESET) —/3.3(ON) 0.9/3.8(OFF, RESET) —/9.2(ON) 4.3/9.8(OFF, RESET) —/3.8(ON) 2.0/5.2(OFF, RESET) —/1.3(ON) 1.2/2.9(OFF, RESET)	—/2.2(ON) 1.7/3.5(OFF, RESET) —/2.2(ON) 1.3/3.5(OFF, RESET) —/2.2(ON) 1.3/3.5(OFF, RESET) —/2.2(ON) 1.3/3.5(OFF, RESET)
Operation method	Motor driven (direct drive system)			Spring driven	Spring driven
Operating time, s at rated voltage	ON	0.1		0.1	0.1
OFF/RESET		0.1③④		1.5③④	1.5③④
Operating switch ratings	100V 0.1A (Open voltage/current: 44 V/4 mA)⑤			100V 0.1A (Open voltage/current: 48 V/1 mA)	100V 0.1A (Open voltage/current: 48 V/1 mA)
Power supply required	300VA or higher			300VA or higher	300VA or higher
Dielectric withstand voltage (for one minute)	AC1500V (AC 1000 V for DC 24/48 V)			AC1500V (AC 1000 V for DC 24/48 V)	AC1500V (AC 1000 V for DC 24/48 V)
Weight	1.4kg			3.5kg	3.5kg

Notes:

- ① : Permissible operating range is 85 to 110%. A power transformer is available as option for AC380V or AC400-460V.
- ② : The currents shown are the maximum values at the maximum rated operational voltage.
- ③ : The operating time is the value when the rated operational voltage is supplied.
Loss of the control power in this operating time may cause the motor operator to fail to work.
- ④ : The motor operator is of a short time duty. Do not subject it to more than 10 continuous ON-OFF operations. If this occurs, allow the motor operator to cool for at least 15 minutes.
- ⑤ : When the rated operational voltage is DC24V the open voltage will be DC22V.

Features

★ Installation and removal ease

T2MC12/25/25L: Simply rotate two knobs allows the motor operator to be installed on or removed from the breaker.

T2MC40/80: The compact and lightweight design enables easy installation and removal.

★ High-speed, stable actuation

The operating time as short as up to 0.1 second makes it possible to use the motor operators for synchronized closing of breakers.

★ Silent operation

T2MC12/25/25L use a direct drive system, providing operational silence.

★ “Lock-in off” capability

This capability allows the breaker to be padlocked in the OFF state. Up to three padlocks with a 5 to 8 mm hasp diameter can be used. Padlocks are not supplied.

★ Compact and lightweight

T2MC40/80 is of compact design where the OCR of the breakers does not hide behind the operator, and thus does not need to be removed when changes in setting of the OCR are to be made.

Motorized operation

The motor operator has an input-signal self-hold circuit; closing the ON or OFF switch (see circuit diagrams shown below) momentarily allows activating the motor operator. To reset the tripped breaker to the OFF position, close the OFF (RESET) switch.

The voltage presence LED indication is on when the power is supplied to the motor operator.

Auto reset feature (optional)

The auto reset feature allows the breaker to be automatically reset approx. 1.5 seconds after the breaker trips open. This option contains auto-reset switches and does not require to use auxiliary or alarm switches installed in the breaker.

Note 1: that after the thermal OCR trips a thermal-magnetic breaker, the breaker cannot be immediately closed though it can be auto-reset. Wait for a few minutes after the tripping and provide a close signal to the breaker.

Note 2: Do not use an alarm switch to reset breakers.

This option resets the tripped breaker automatically, regardless of the cause of the tripping.

Breakers position in tripped state

Breakers position when the breaker has tripped differs depending on the motor operator being of standard type or being equipped with the auto reset feature (optional), as shown in the table below:

T2MC12 / T2MC25/25L

Cause of trip	Breakers position in tripped state	
	Standard type	With auto reset feature
Manually tripped	TRIP	○ (OFF)*
SHT/UVT		
Overcurrent		

*: The motor operator automatically provides OFF (reset) operation to the breaker.

T2MC40 / T2MC80

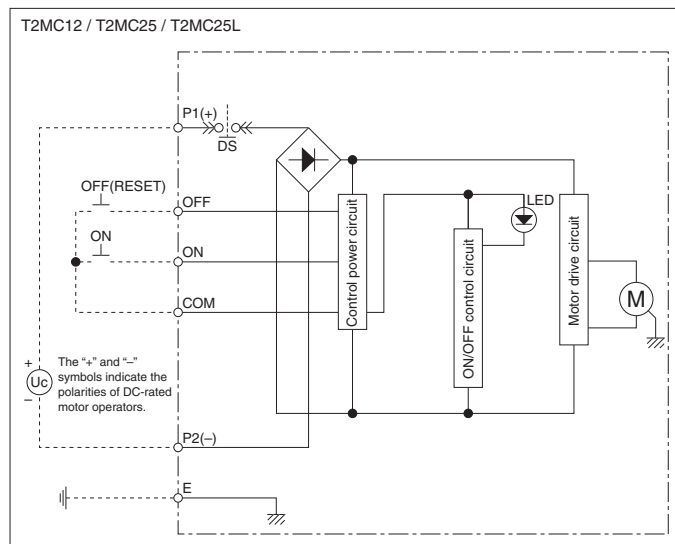
Cause of trip	Breakers position in tripped state	
	Standard type	With auto reset feature
Manually tripped	○ (OFF) *	○ (OFF) *
SHT/UVT	TRIP	
Overcurrent		

*: The motor operator automatically provides OFF (reset) operation to the breaker.

Table 1 Electrical interlock cables

Interlock cables Order codes	Length	Remarks
T2MM25L05	500mm	for the electrical interlock between T2MC12 and T2MC25/25L.
T2MM25L15	1500mm	
T2MM40L06	600mm	for the electrical interlock between T2MC40 and T2MC80.
T2MM40L21	2100mm	
T2MM40S06	600mm	for the electrical interlock between T2MC40 and T2MC12/25/25L.
T2MM40S21	2100mm	

Control circuit diagrams of motor operators



Manual operation

T2MC12/25/25L: Pull the operating handle out. Rotating the handle counterclockwise turns ON the breaker and clockwise turns OFF or resets the breaker.

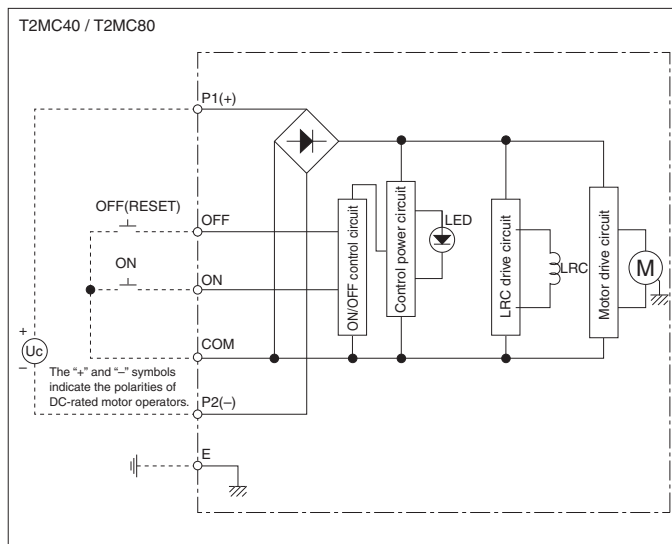
T2MC40/80 : Switch to Manual operation from Motorized operation by Select lever. Use the spring charging handle to charge the spring and press the ON or TRIP button.

T2MC40/80 : When the TRIP button is pressed while the control power is supplied, the breaker turns OFF and if equipped with an alarm switch, it provides an output signal.

Press the TRIP button all the way in. Pressing the TRIP button halfway causes the breaker to go off without tripping, resulting in no alarm signal delivered even if the breaker is equipped with an alarm switch.

Operation precautions

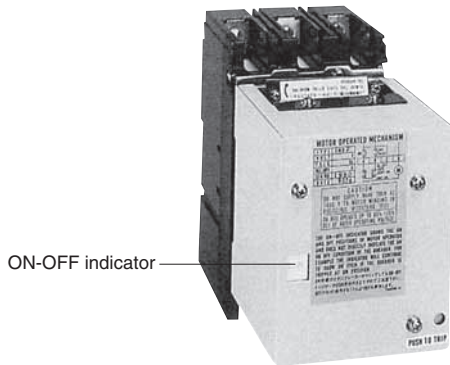
1. Ensure that the actual operation voltage ranges from 85% to 110% of the rated one.
2. Use operation switches whose ratings and power capacity is as specified in the "Ratings and Specifications" table on the previous page.
3. Ensure an operating time of 50 msec or more when operating switches to turn on/off the breaker. A shorter operating time may result in failure in operating the breaker. In such a case, repeat the operation.
4. Do not continuously apply ON/OFF operating signals. ON/OFF signals must be separated by 0.3 sec or more. With the T2MC40/80, OFF and RESET operations must be 1.5 sec or more apart.
5. With the T2MC12/25/25L, do not connect alarm switches (AL) to the control circuit (OFF, ON or COM terminals). Doing so may cause the motor operator to fail to work.
6. If the motor operator is used in conjunction with a shunt trip device (SH), ensure that voltage supply to the SHT is shut off after the reset operation ends.
7. To operate multiple motor operators in batch, do not directly connect their control terminals in series, but through a separate relay for each. Otherwise, sneak circuits may form and cause the operators to fail to work.
8. Use noise filters if the control power supply of the motor operator is shared by peripheral devices. Otherwise, power supply noise may cause malfunction of the peripheral devices.
9. When the motors are used in conjunction with the mechanical interlock the electrical interlock should be provided between the motors in order to avoid the simultaneous closing. The followings are the available electrical interlock cables.



4. Motor operators (MC)

4-2. TemBreak

Motor driven type



(XMB1)



(XMB10)

Ratings and Specifications

	XMB1	XMB10
Series/type of breaker	E50-SF E100-SF	XS2000NE XS2000NN
Rated operational voltage ①	● AC100-110V ● AC200-220V ● DC100V ● DC110V	● AC100-110V ● AC200-220V ● DC100-110V
Auto reset	Optional ②	Optional ②
	Non	Non
Peak steady-state/ starting current, A ③	AC100-110V	2.0/4.5
	AC200-220V	1.0/2.0
	DC100V	—⑥
	DC110V	—⑥
Operation method	Motor driven	Motor driven
Operating time, s at rated voltage	ON	1.2
	OFF/RESET	0.85 ④⑤
Operating switch ratings	250V, 5A	250V, 5A
Power supply required	100 VA or higher	300VA or higher
Dielectric withstand voltage (for one minute)	AC1000V	AC1000V
Weight	1.8kg	16kg

Notes: ① Permissible operating range is 85 to 110%.
A power transformer is available as option for AC380V or AC400-460V.

② Auto reset require to use auxiliary switch (1b) installed in the breaker. If the number of auxiliary switches is insufficient, actuate an external relay via an auxiliary switch (1a) and use the relay contact (1b) for auto reset.

③ The currents shown are the maximum values at the maximum rated operational voltage.

④ The operating time assume the motor operator is supplied with the rated operation voltage. Loss of the control power in this operating time may cause the motor operator to fail to work.

⑤ The motor operator is short-time rated. The number of continuous switching (ON-OFF) cycles must not exceed 10. After any 10 continuous switching cycles, provide a pause of at least 15 minutes to the motor operator for cooling.

⑥ Can be custom-made on request. An auto-reset switch cannot be used.

Operation mechanism

Motorized operation

■Breaker ON

Closing the ON switch throws the motor switch from contact status “1-2” to “3-2”, thereby activating the X relay and energizing the motor operator to turn the breaker ON. When the breaker turns ON, the motor switch is thrown from contact status “3-2” to “1-2”, thereby releasing the X relay to de-energize and stop the motor operator.

■Breaker OFF

Closing the OFF/RESET switch throws the motor switch from contact status “3-2” to “1-2”, thereby activating the Y relay and energizing the motor operator to turn the breaker OFF. When the breaker turns OFF, the motor switch is thrown from contact status “1-2” to “3-2”, thereby releasing the Y relay to de-energize and stop the motor operator.

■Breaker RESET

To reset the tripped breaker to the OFF position, close the OFF/RESET switch.

■Breaker auto-reset (optional)

Using the AUTO RESET auxiliary switch (1b) of the breaker allows resetting the breaker automatically when the breaker trips open.

Note: Do not use a normally closed switch as the ON switch. Doing so will result in “ON-TRIP-RESET-ON” cycles repeated unless the cause of tripping is removed.

Manual operation

Mount the operating handle onto the mounting shaft located on the front of the motor operator and rotate the shaft to turn the breaker ON or OFF. Rotating the handle anti-clockwise turns ON the breaker and clockwise turns OFF or resets the breaker. When the operating handle is mounted, the motorized operation mechanism is disengaged. Removing the handle engages the motorized operation mechanism to enable motorized operation.

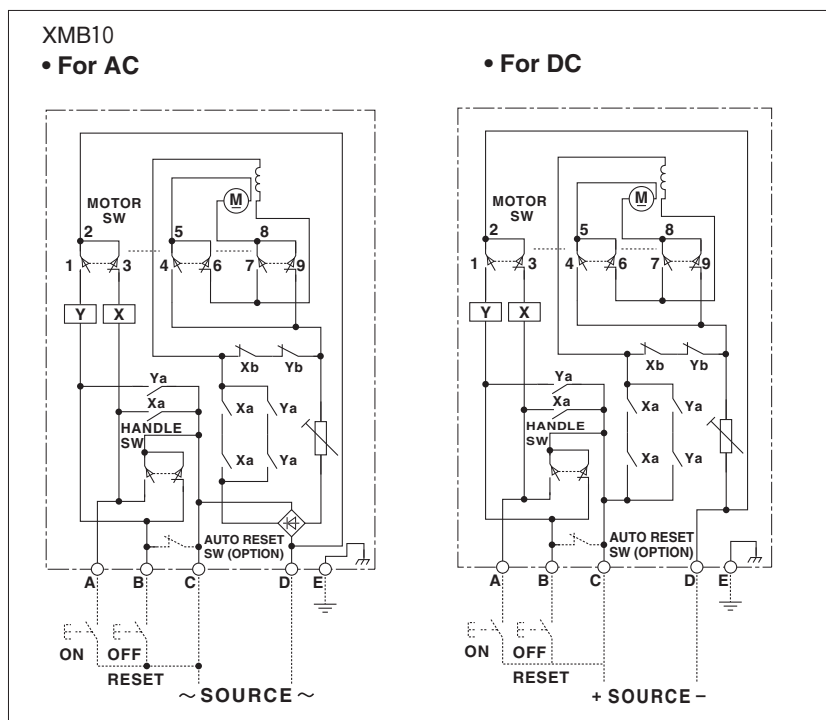
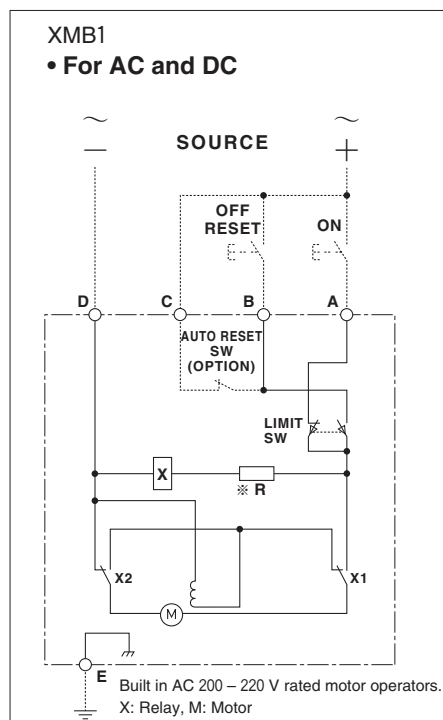
■Handle switch

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

Operation precautions

- When the breaker is ON and is then tripped, the ON/OFF indicator on the motor operator will indicate ON until the breaker is reset.
Note: The breaker's condition may differ.
- When a thermal-magnetic breaker is tripped by the thermal OCR, wait for a few minutes; then reset the breaker.
- When a breaker equipped with the UVT device is in the OFF position and the UVT device is deenergized, the breaker cannot be closed. To close such a breaker, perform ON and OFF (RESET) operation on the motor operator once and repeat ON operation. The breaker will be able to closed.
(Breaker XS2000NE can be closed without the need for the ON and OFF (RESET) operation on the motor operator described above).
- Use noise filters if the control power supply of the motor operator is shared by peripheral devices. Otherwise, power supply noise may cause malfunction of the peripheral devices.

Control circuit diagrams of motor operators



6

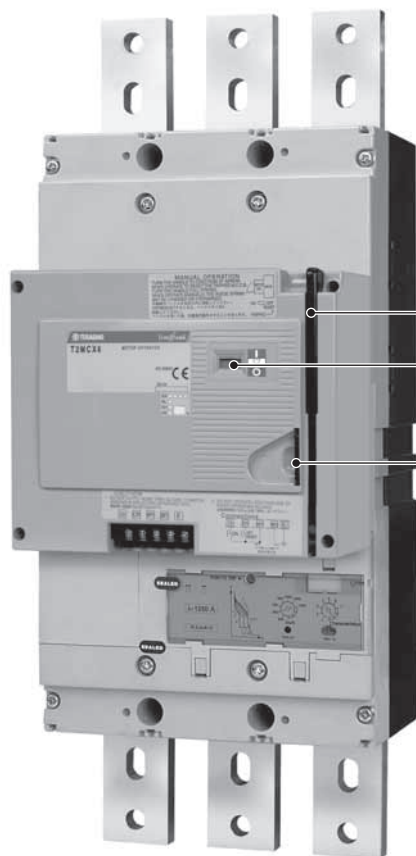
Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

4. Motor operators (MC)

4-3. TemBreak2, TemBreak

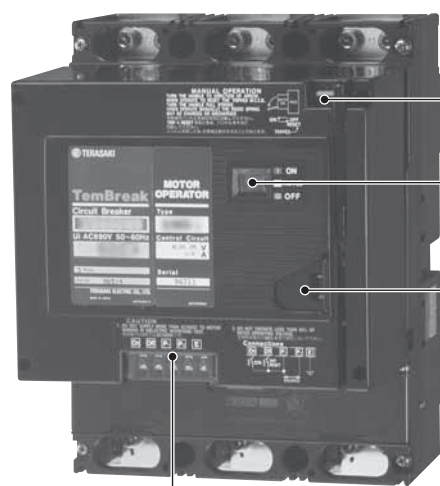


(T2MCX6)
Spring charged type

Manual operating handle

Indicator

Lock plate



Manual operating handle

Indicator

Lock plate

Control circuit terminal

(XMD9)
Spring charged type

Ratings and Specifications

		T2MCX6	XMD9
Applicable breakers		S1250-NE, S1250-GE, S1250-NN S1600-NE, S1600-NN	TL-1000NE, TL-1200NE
Rated operational voltage ①		● AC100-115V ● AC200-230V ● DC100-110V ● DC24V	
Peak steady-state/ starting current, A ②	AC100-115V	ON	— / 3.1
		OFF, RESET	1.8 / 6.0
	AC200-230V	ON	— / 1.2
		OFF, RESET	1.0 / 3.2
	DC100-110V	ON	— / 0.8
		OFF, RESET	1.1 / 4.2
	DC24V	ON	— / 4.5
		OFF, RESET	4.0 / 12.0
Operation method		Spring charged	
Operating time, s	ON (Max)	0.06	
@ rated voltage	OFF/RESET	3 ③	
Power supply required		300VA	
Dielectric withstand voltage (for one minute)		AC1500V ④	
Weight		6.4kg	

Notes:

① : Permissible operating range is 85 to 110%. A power transformer is available as option for AC380V or AC400-460V.

② : The currents shown are the maximum values at the maximum rated operational voltage.

③ : The operating time is the value when the rated operational voltage is supplied.

Loss of the control power in this operating time may cause the motor operator to fail to work.

④ : Dielectric withstand voltage for DC 24 V motor is AC 500 V.

Features

★ Clear status indication

Color indication; Red means ON, green OFF and white TRIPPED.

★ Quick closing

Energy in a charged spring closes the breaker 60 msec or less.

High-speed, time-stable operation is ensured after multiple times of closing cycles.

★ Equipped with anti-pumping circuit

When the closing signal is applied, TRIP-RESET-ON cycles are not repeated even though the cause of tripping is in the breaker.

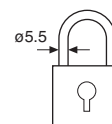
★ Ease of manual ON-OFF operation

Simply pressing the ON or OFF button closes or opens the breaker.

★ “Lock-in off” capability

This capability allows the breaker to be padlocked in the OFF state.

Padlocks are not supplied.



5. External operating handles

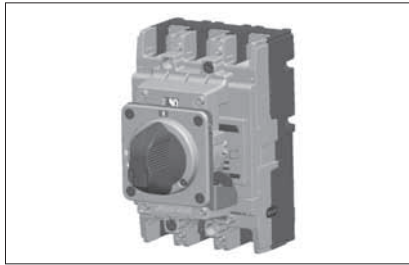
5-1. Breaker-mounted (field installable small type) (HB)

The external operating handle is a tool that allows the breaker installed in a switchboard to be operated from outside and complies with IEC 60204-1.

The breaker-mounted type external operating handle is designed to be mounted directly to the breaker body.

■ Outer view

Types
T2HB16L
T2HB25L



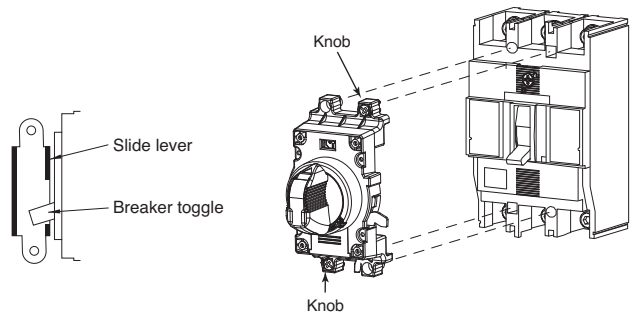
■ Mounting instructions

The external operating handle has not been mounted on the breakers.

For details on how to mount the handle, see the Operating Instructions packaged with the product.

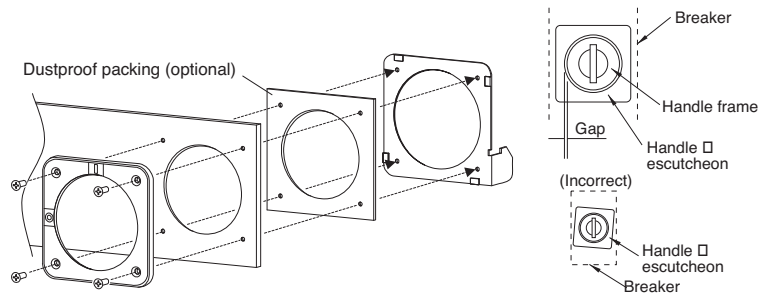
[1] Mounting of external operating handle assembly

- Make sure that the breaker is in the OFF position.
 - Put the external operating handle assembly onto the breaker in place so that the breaker handle is engaged with the handle catch of the assembly.
- Rotate two knobs to secure the handle assembly.



[2] Installation of handle escutcheon and latch plate

- Drill holes in the panel according to the panel cutout dimensions.
- Sandwich the panel between the handle escutcheon and latch plate and temporarily tighten using the supplied screws.
- Close the panel.
- Make adjustment so that the gap between the handle assembly and handle escutcheon is even and the assembly is not inclined against the breaker.



■ Breaker mounting direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction. The upper power supply type is standard. If a non-standard type is required, state the type when ordering.

R : Right □ power supply type	U: Upper power supply type □ (standard)	L: Left □ power supply type

- For a change in mounting direction, see the Operating Instructions packaged with the product.

■ Panel lock mechanism

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

(1) Reset Open (Standard type)

The handle is turned to the RESET OPEN position to open the panel door.

(2) OFF Open

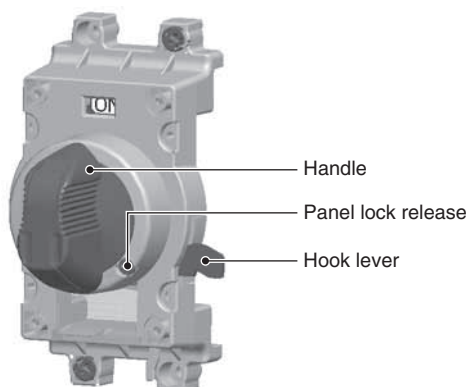
The handle is turned to the OFF position to open the panel door.

● Panel lock release knob

The release knob enables the panel door to be opened with the handle in the 'ON' position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.

● Safety interlock (Standard)

The safety interlock prevents the breaker from turning ON as long as the panel is open. This interlock can be released using the hook lever.



■ Toggle lock mechanism

● Padlock (Standard)

This mechanism allows the breaker to be padlocked in the ON or OFF position.

Padlocks are not supplied.

Up to three padlocks can be installed.

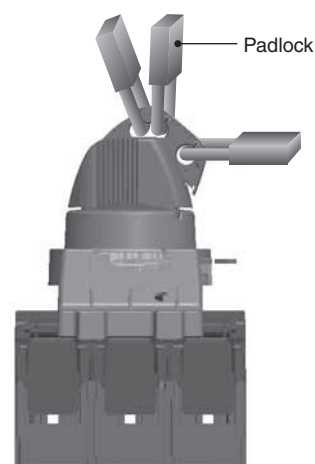


Padlock dimensions (mm)

Type of handle	A	Dia.
T2HB	13 min	ø5.5-8

※ : Padlocking in OFF position only required by IEC 60204-1 is also available.

Please specify when ordering.



■ Protection degree (IEC 60529)

IP30	standard specification
IP50	optional, with a dust proof packing
IP55	special specification ①

Notes ① : For the depth of switchboard, take account of thickness of the packing.
See the Operating Instructions packaged with the product.

■ To be stated when ordering

Order code T2HB16L U R 3 B T

Type of external operating handle	Breaker mounting direction	Panel lock	Protection degree	Colour	Padlock
T2HB16L T2HB25L	U: Upper power supply type * R: Right power supply type L: Left power supply type	R: RESET open * F: OFF open	3: IP30 * 5: IP50 S: IP55 (special spec.)	B: Black handle (Light gray base) * R: Red handle (Yellow base)	T: Lock in ON or OFF* N: Lock in OFF

※: standard specification

5. External operating handles

Outline dimensions

T2HB16L

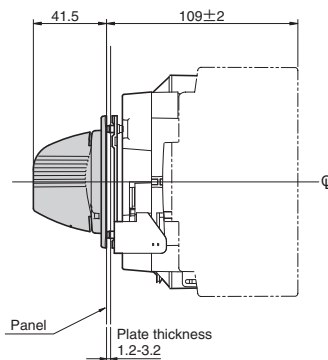
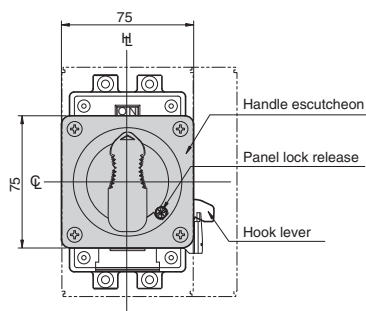
Applicable breaker types

S50-SF, S125-SF, S125-SN

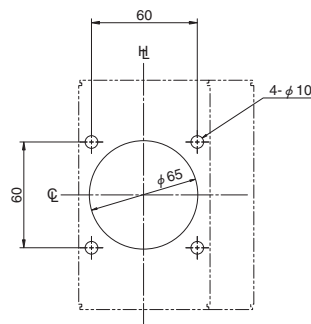
 $\overline{H}$: Handle Frame Centre Line

 $\overline{C}$: Handle Centre Line

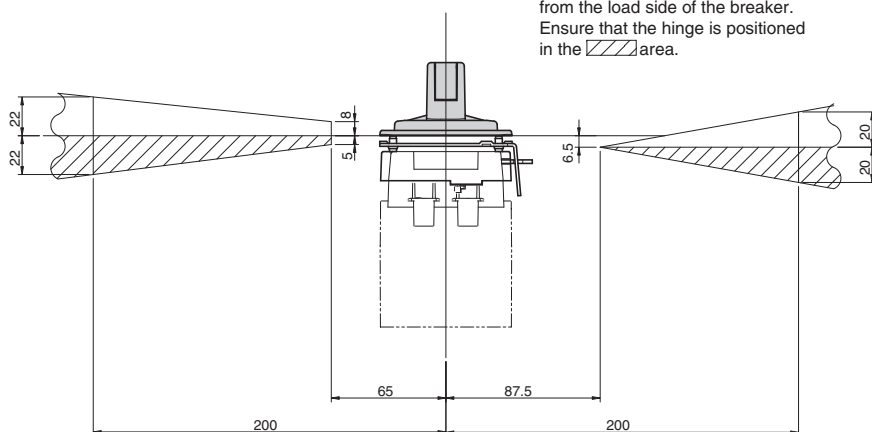
Outline dimensions



Panel cutout dimensions



• Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the  area.



■ Outline dimensions

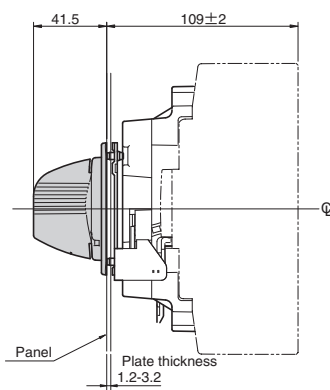
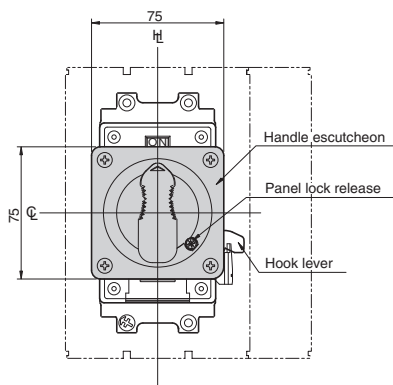
T2HB25L

Applicable breaker types

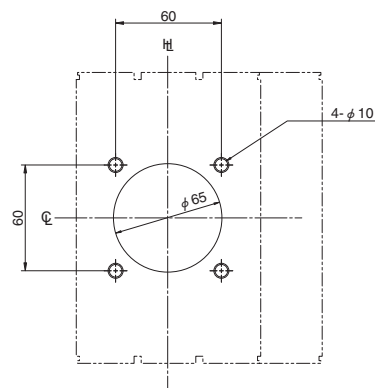
E250-SF, S250-SF, S250-SN

HL: Handle Frame Centre Line
CL: Handle Centre Line

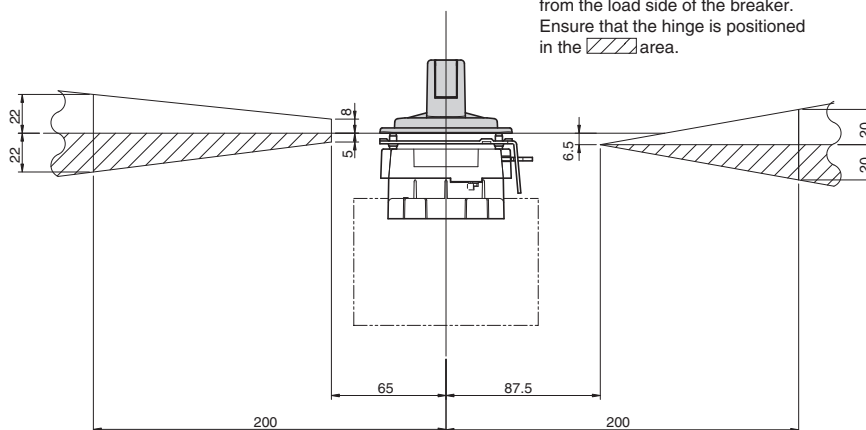
● Outline dimensions



● Panel cutout dimensions



- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the  area.



6

Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

5. External operating handles

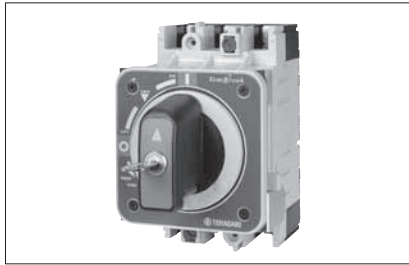
5-2. Breaker-mounted (field installable standard type) (HB)

The external operating handle is a tool that allows the breaker installed in a switchboard to be operated from outside and complies with IEC 60204-1.

The breaker-mounted type external operating handle is designed to be mounted directly to the breaker body.

Outer view

Types
T2HB12
T2HB25
T2HB40
T2HB80



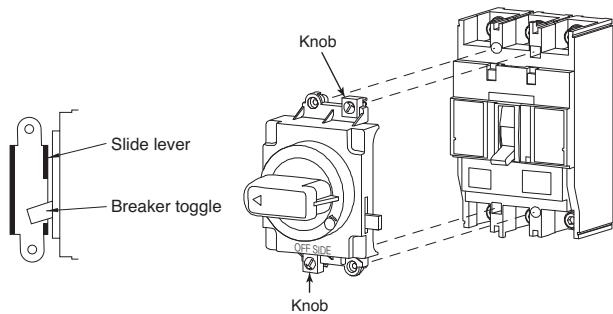
Mounting instructions

The external operating handle has not been mounted on the breakers.

For details on how to mount the handle, see the Operating Instructions packaged with the product.

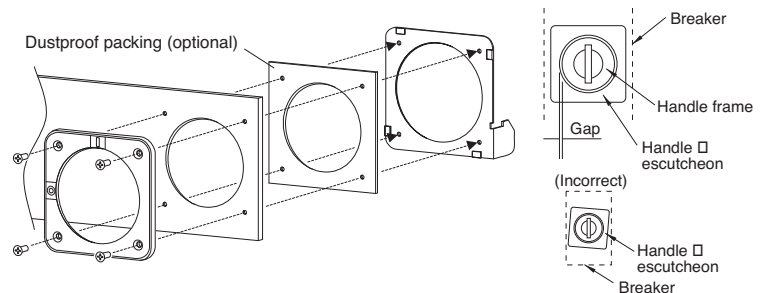
[1] Mounting of external operating handle assembly

- Make sure that the breaker is in the OFF position.
- Put the external operating handle assembly onto the breaker in place so that the breaker handle is engaged with the handle catch of the assembly.
- Rotate two knobs to secure the handle assembly.
- For T2HB40 and T2HB80, tighten the bolts to secure the handle assembly.



[2] Installation of handle escutcheon and latch plate

- Drill holes in the panel according to the panel cutout dimensions.
- Sandwich the panel between the handle escutcheon and latch plate and temporarily tighten using the supplied screws.
- Close the panel.
- Make adjustment so that the gap between the handle assembly and handle escutcheon is even and the assembly is not inclined against the breaker.



Breaker mounting direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction. The upper power supply type is standard. If a non-standard type is required, state the type when ordering.

R : Right □ power supply type	U: Upper power supply type □ (standard)	L: Left □ power supply type

- For a change in mounting direction, see the Operating Instructions packaged with the product.

■ Panel lock mechanism

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

(1) Reset Open (Standard type)

The handle is turned to the RESET OPEN position to open the panel door.

(2) OFF Open

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

● Panel lock release knob

The release knob enables the panel door to be opened with the handle in the 'ON' position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.

● Safety interlock (Standard)

The safety interlock prevents the breaker from turning ON as long as the panel is open. This interlock can be released using the hook lever.

■ Toggle lock mechanism

● Padlock (Standard)

This mechanism allows the breaker to be padlocked in the ON or OFF position.

Padlocks are not supplied.

Up to three padlocks can be installed.

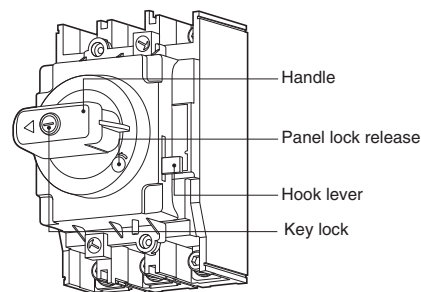


Padlock dimensions (mm)

Type of handle	A	Dia.
T2HB	13 min	ø5.5-8

● Key lock (Optional)

Key locking is possible in the ON or OFF position.



※ : Padlocking in OFF position only required by IEC 60204-1 is also available.

Please specify when ordering.

■ Protection degree (IEC 60529)

IP30	standard specification
IP50	optional, with a dust proof packing
IP55	special specification ①

Notes ① : For the depth of switchboard, take account of thickness of the packing.
See the Operating Instructions packaged with the product.

■ To be stated when ordering

Order code T2HB12 U R 3 B T

Type of external operating handle	Breaker mounting direction	Panel lock	Protection degree	Colour	Key lock / Padlock
T2HB12 T2HB25 T2HB40 T2HB80	U: Upper power supply type * R: Right power supply type L: Left power supply type	R: RESET open * F: OFF open	3 : IP30 * 5 : IP50 S : IP55 (special spec.)	B: Black handle (Light gray base) * R: Red handle (Yellow base)	T : with padlock (Lock in ON or OFF) * W : with key lock and padlock (Lock in ON or OFF) N : with padlock (lock in OFF) K : with key lock and padlock (lock in OFF)

*: standard specification

Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

■ Outline dimensions

T2HB12

Applicable breaker types

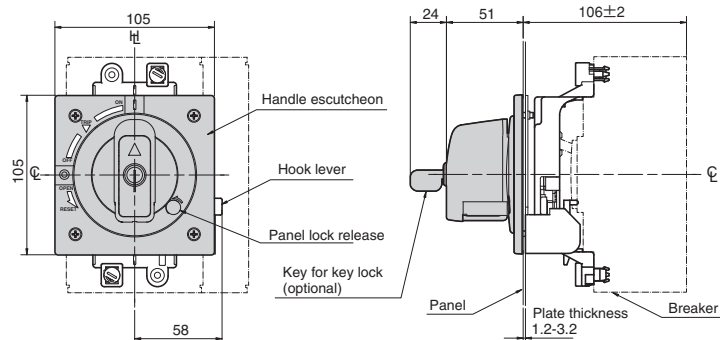
**S50-GF, S100-NF, S125-NF, S100-GF, S125-GF,
S100-NM, S100-NN, S125-NN**

ASL: Arrangement Standard Line

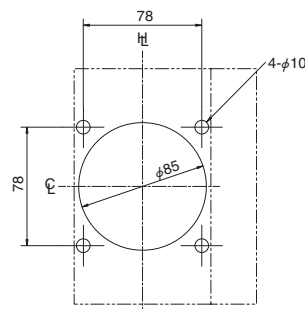
HL: Handle Frame Centre Line

℄: Handle Centre Line

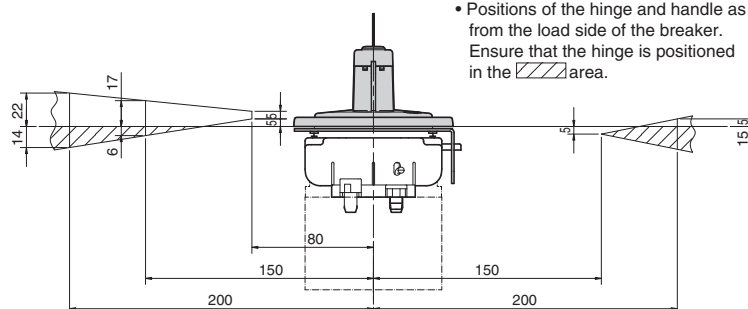
- Outline dimensions



- Panel cutout dimensions



- Positions of the hinge and handle as seen from the load side of the breaker.
Ensure that the hinge is positioned in the  area.



T2HB25

Applicable breaker types

A (mm)

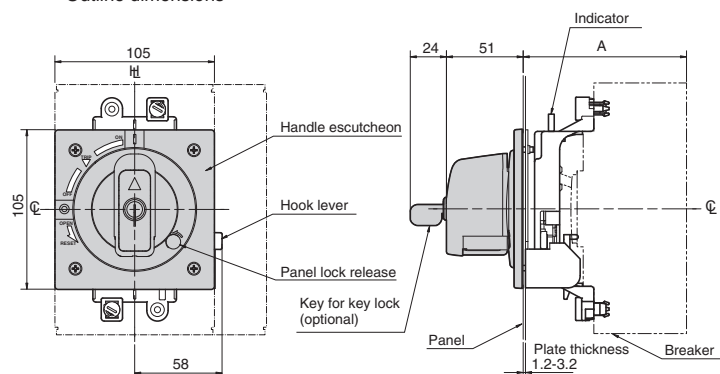
S225-NF, S250-NF, S225-GF, S250-GF,
S225-NM

 106 ± 2

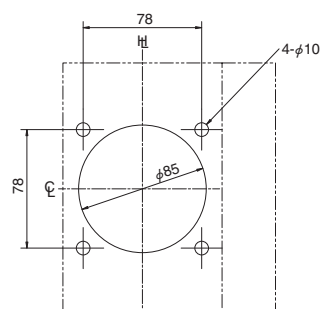
**S225-GE,
H100, L100, H125, L125,
H225, L225**

 141 ± 2

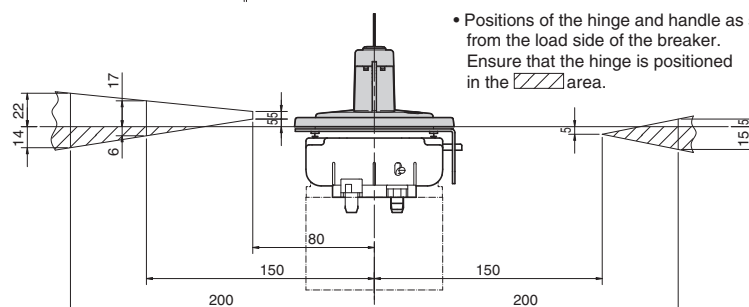
- Outline dimensions



- Panel cutout dimensions



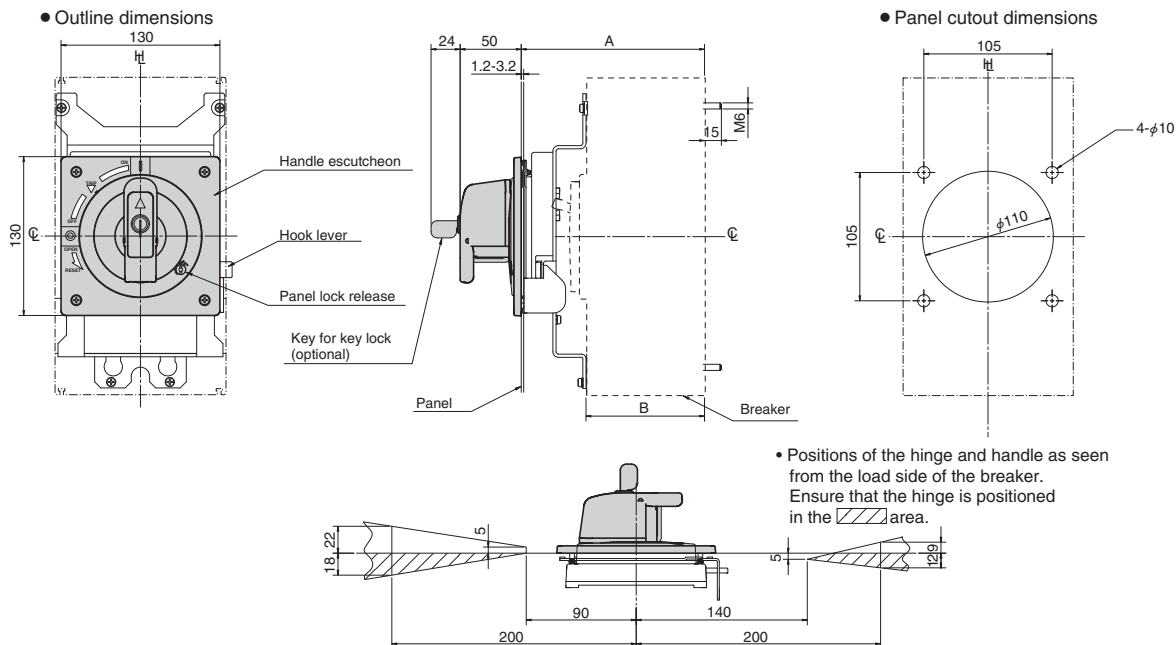
- Positions of the hinge and handle as seen from the load side of the breaker.
Ensure that the hinge is positioned in the  area.



Outline dimensions

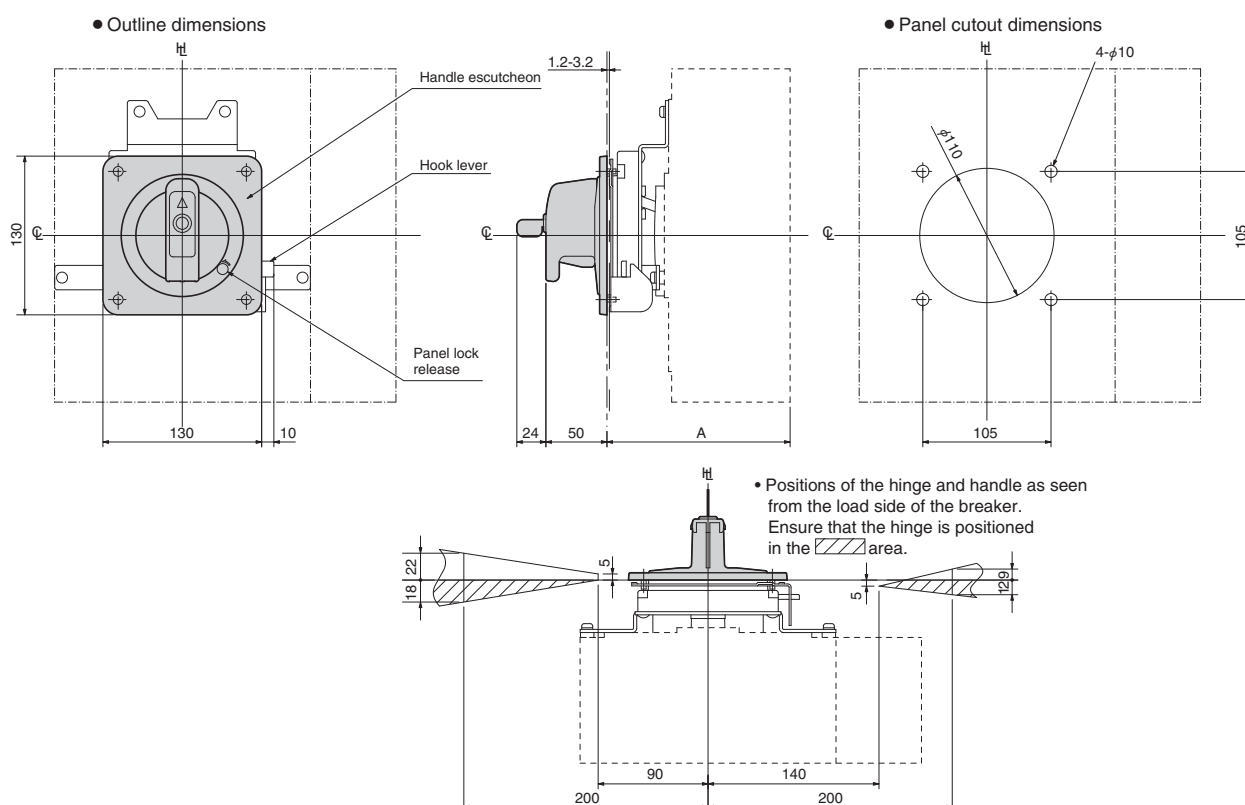
T2HB40

Applicable breaker types	A (mm)	B (mm)
S400	150±2	97
H400, L400	187±2	134



T2HB80

Applicable breaker types	A (mm)
S630, S800	150±2
H630, L630, H800, L800	187±2

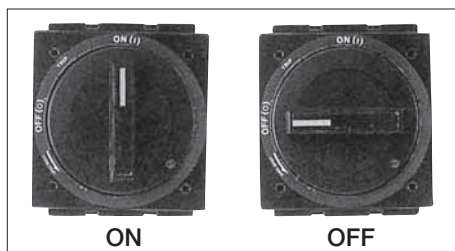


5. External operating handles

5-3. Breaker-mounted (HB)

The external operating handle is a tool that allows the breaker installed in a switchboard to be operated from outside. The breaker-mounted type external operating handle is designed to be mounted directly to the breaker body.

Outer view



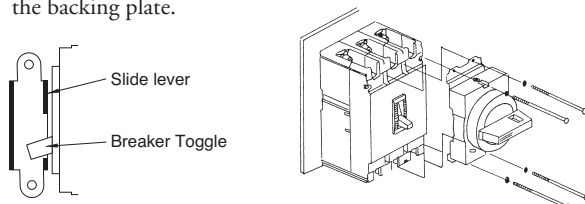
Mounting instructions

The external operating handle has not been mounted on the breakers. For details on how to mount the handle, see the Operating Instructions packaged with the product.

[1] Mounting of external operating handle assembly

1.1 Secured to backing plate (TFJ21B / TFJ21XH)

- Make sure that the breaker is in the OFF position.
- Put the external operating handle assembly onto the breaker in place so that the breaker toggle is engaged with the slide lever of the assembly. Secure the assembly together with the breaker to the backing plate.

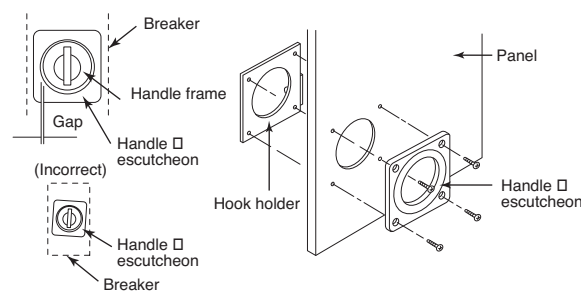


1.2 Secured to breaker cover (TFJ38X / T2HBX6)

- Make sure that the breaker is in the OFF position.
- Remove the four breaker cover mounting screws at the positions where the external operating handle assembly is secured.
- Put the handle assembly onto the breaker in place so that the breaker toggle is engaged with the slide lever of the assembly. Use the supplied mounting screws to secure the assembly to the breaker.

[2] Installation of handle escutcheon and latch plate

- Drill holes in the panel according to the panel cutout dimensions. Sandwich the panel between the handle escutcheon and latch plate and temporarily tighten using the supplied screws.
- Close the panel. Make adjustment so that the gap between the handle assembly and handle escutcheon is even and the assembly is not inclined against the breaker.



Breaker mounting direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction. The upper power supply type is standard. If a non-standard type is required, state the type when ordering.

R : Right □ power supply type	U: Upper power supply type □ (standard)	L: Left □ power supply type

- For a change in mounting direction, see the Operating Instructions packaged with the product.

■ Panel lock mechanism

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

(1) Reset Open (Standard type)

The handle is turned to the RESET OPEN position to open the panel door.

(2) OFF Open

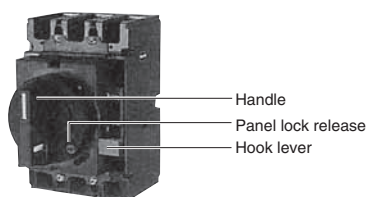
The handle is turned to the OFF position to open the panel door.

● Panel lock release knob

The release knob enables the panel door to be opened with the handle in the 'ON' position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.

● Safety interlock (Standard)

The safety interlock prevents the breaker from turning ON as long as the panel is open. This interlock can be released using the hook lever.

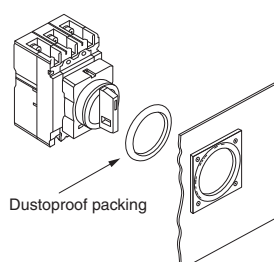
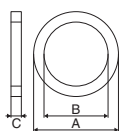


■ Protection degree (IEC 60529)

IP30	standard specification
IP50	optional, with a dust proof packing
IP55	special specification

Dustproof packing for IP50 (optional) mm

Type of handle	Type of dustproof packing	A	B	C
TFJ21B	Dustproof packing /2	93	73	7
TFJ21XH				
TFJ38X	Dustproof packing /3	145	117	7
T2HBX6				



■ Toggle lock mechanism

● Padlock (Standard)

This mechanism allows the breaker to be padlocked in the ON or OFF position.

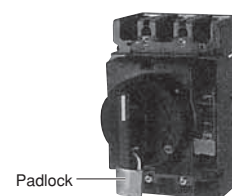
Padlocks are not supplied.

Up to three padlocks can be installed.



Padlock dimensions (mm)

Type of handle	A	Dia.
TFJ21B	13 min	ø3.5-6
TFJ21XH		
TFJ21BP		
TFJ38X	19 min	
T2HBX6		



■ To be stated when ordering

Order code TFJ21B U R 3 B

Type of external operating handle	Breaker mounting direction	Panel lock	Protection degree	Colour
TFJ21B TFJ21XH TFJ38X T2HBX6	U: Upper power supply type * R: Right power supply type L: Left power supply type	R : RESET open * F : OFF open	3 : IP30 * 5 : IP50 55: IP55 (special spec.)	B : Black handle (Black base) * R : Red handle (Yellow base)

*: standard specification

6

Accessories

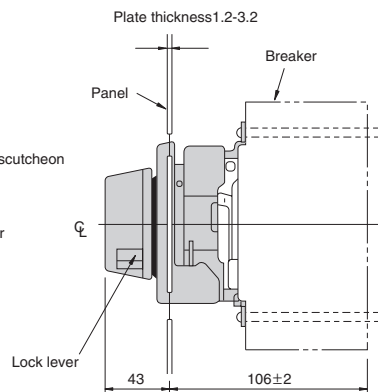
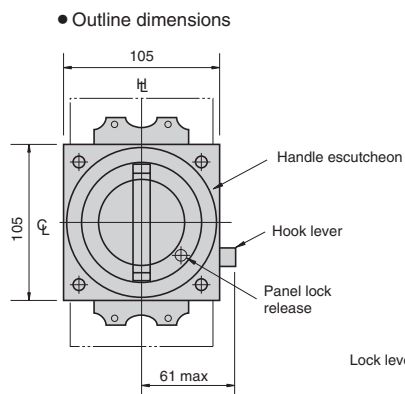
Molded Case Circuit Breakers

3 Externally mounted accessories

Outline dimensions

TFJ21B

Applicable breaker types	Mounting screw
E50-SF, E50-CM	M4×72 2 pcs

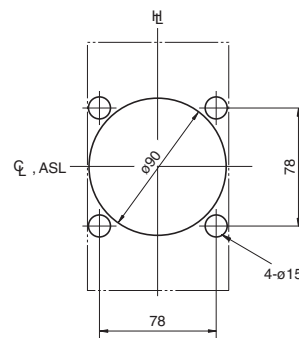


TFJ21XH

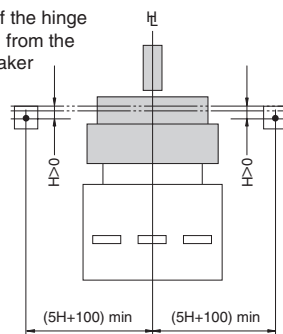
Applicable breaker types	Mounting screw
E100-SF	M4×75 2 pcs

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

Panel cutout dimensions



Relative positions of the hinge and handle as seen from the load side of the breaker

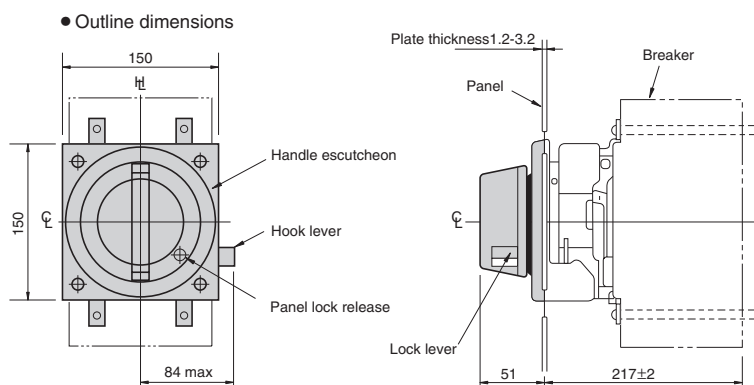


Outline dimensions

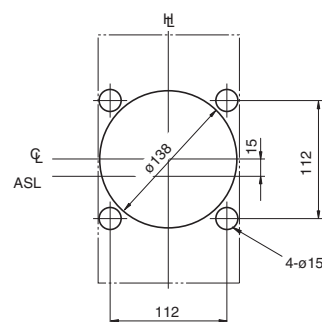
TFJ38X

Applicable breaker types	Mounting screw *
TL-1000NE, TL-1200NE	M6×110 4 pcs

* Secured to breaker cover.

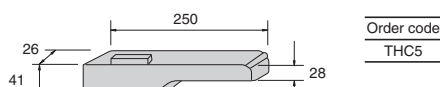


Panel cutout dimensions

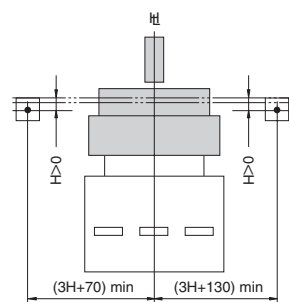


● Relative positions of the hinge and handle as seen from the load side of the breaker

Toggle extension for TFJ38X (optional)



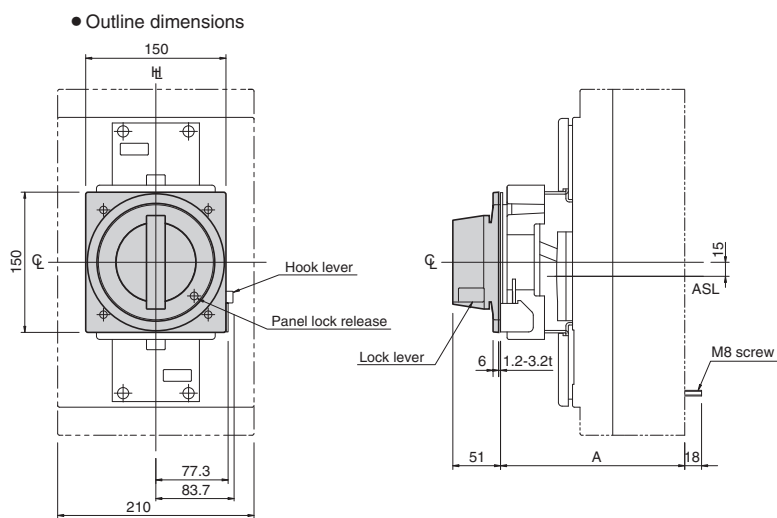
Order code
THC5



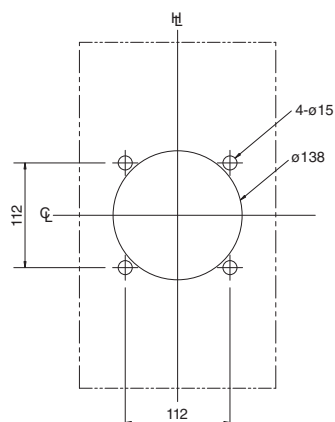
T2HBX6

Applicable breaker types	A (mm)	Mounting screw *
S1250	197±2	M6×110 4 pcs
S1600	217±2	

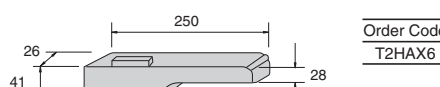
* Secured to breaker cover.



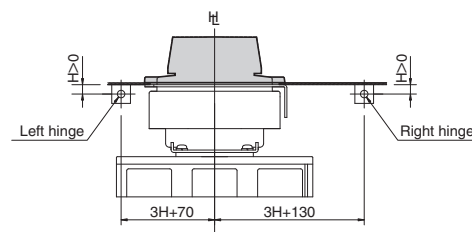
Panel cutout dimensions



Toggle extension for T2HBX6 (optional)



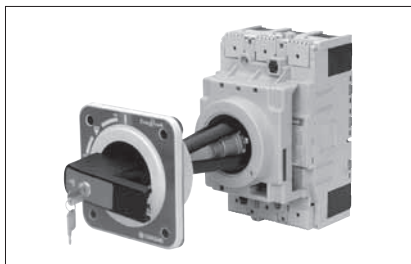
Order Code
T2HAX6



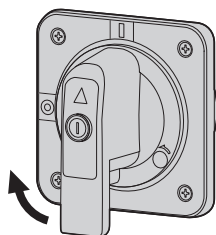
Molded Case Circuit Breakers**3 Externally mounted accessories****5. External operating handles****5-4. Door-mounted (depth adjustable) (HP)**

Door-mounted type external operating handles allow breakers installed in control centers or switchboards to be manually operated from outside and complies with IEC 60204-1.

This handle assembly consists of an operation mechanism section which is to be installed in the breaker body, a handle section which is to be installed in a panel and a square shaft which couples both the sections.

■ Outer view**■ Operation direction of handles**

Rotate the operating handle clockwise to turn the breaker on.



Rotate clockwise
to turn the breaker ON

■ Breaker mounting direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction.

Horizontal mounting / ON to move the breaker handle right	Vertical mounting / ON to move the breaker handle up	Horizontal mounting / ON to move the breaker handle left

■ Panel lock mechanism

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

(1) Reset Open (Standard type)

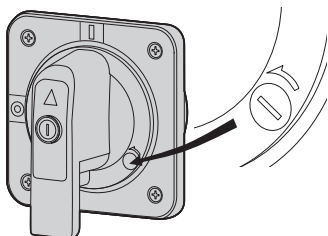
The handle is turned to the RESET OPEN position to open the panel door.

(2) OFF Open

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

● Panel lock release knob

The release knob enables the panel door to be opened with the handle in the 'ON' position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.



■ Protection degree (IEC 60529)

IP54	standard specification
IP65	special specification

■ Toggle lock mechanism

● Padlock (Standard)

This mechanism allows the breaker to be padlocked in the ON or OFF position.

Padlocks are not supplied.

Up to three padlocks can be installed.



Padlock dimensions (mm)

Type of handle	A	Dia.
T2HP	13 min	ø5.5-8

● Key lock (Optional)

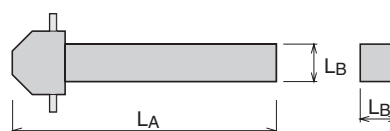
Key locking is possible in the ON or OFF position.

※ : Padlocking in OFF position only required by IEC 60204-1 is also available.

Please specify when ordering.

■ Dimensions of square shafts available

There are the following shaft dimensions available. Select an appropriate shaft depending on the mounting position of the breaker. Cut the shaft to an appropriate length if required. Coat the cut end faces of the shaft with an anti-corrosion paint.



Shafts order codes	LA (mm)	LB (mm)
T2PS251	121	8
T2PS252	221	
T2PS253	321	
T2PS254	421	
T2PS401	147.5	14
T2PS402	247.5	
T2PS403	347.5	
T2PS404	447.5	

■ To be stated when ordering

Order code T2HP25 R 5 B T

Type of external operating handle	Panel lock	Protection degree	Colour	Key lock / Padlock
T1HP05 T1HP10X T1HPX6 T2HP16L T2HP25L T2HPX6	T2HP12 T2HP25 T2HP40 T2HP80 T2HPX6	R : RESET open * F : OFF open	5 : IP54 * 6 : IP65	B : Black handle (Light gray base) * R : Red handle (Yellow base)
T : with padlock (Lock in ON or OFF) * W : with key lock and padlock (Lock in ON or OFF) N : with padlock (lock in OFF) K : with key lock and padlock (lock in OFF)				

※: standard specification

5. External operating handles

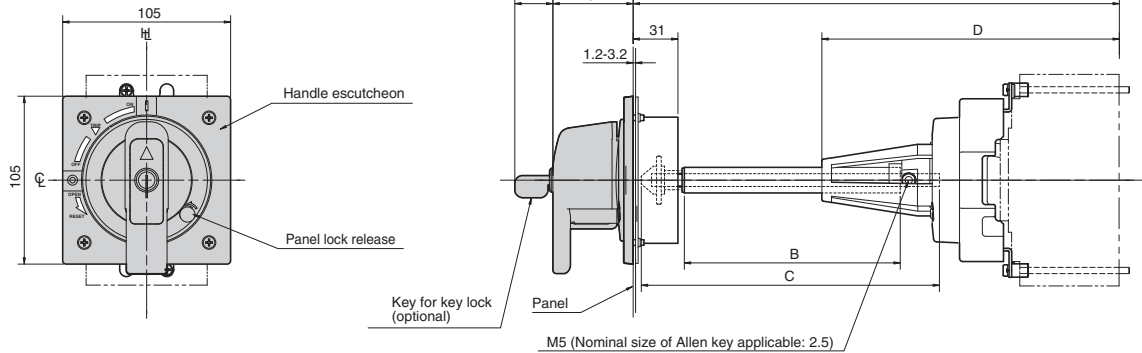
HL: Handle Frame Centre Line

CL: Handle Centre Line

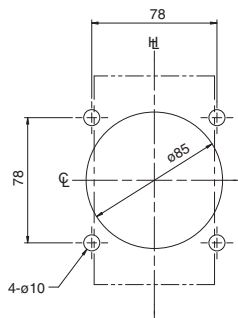
■ Outline dimensions

T1HP05, T1HP10X

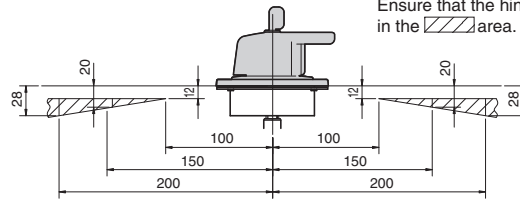
● Outline dimensions



● Panel cutout dimensions



- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the  area.



Applicable breaker types	A ①	B	C	D	Square shaft applicable	Shaft support
E50-SF, E50-CM (T1HP05)	236min.	56	107	194	T2PS251	Yes
E100-SF (T1HP10X)	250max.	70	121	194		Yes
	350max.	170	221	194	T2PS252	Yes
	450max.	270	321	194	T2PS253	Yes
	550max.	370	421	194	T2PS254	Yes

Note ①:

"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.

"Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface

B: Length of the tube used to cover the square shaft

C: Length of the square shaft used

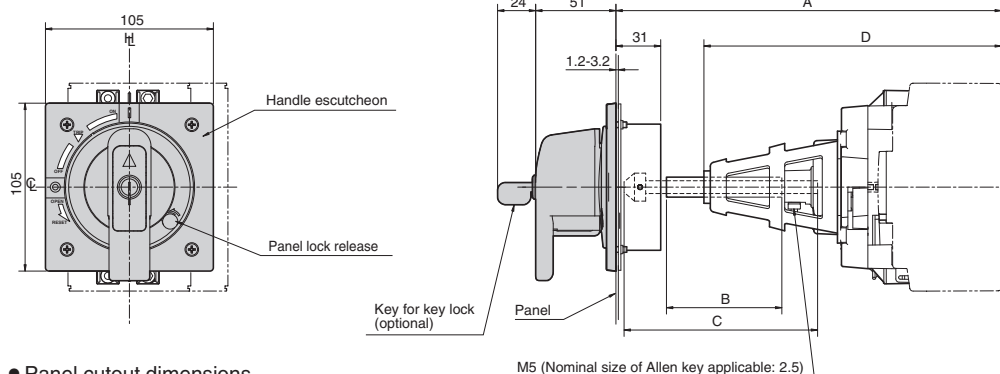
D: Distance from the tip of the shaft support to the breaker mounting surface

HL: Handle Frame Centre Line
 CL: Handle Centre Line

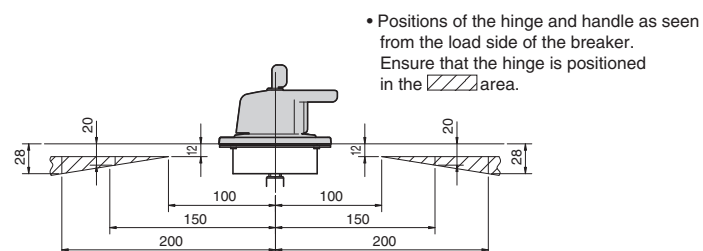
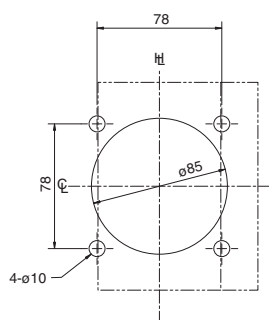
■ Outline dimensions

T2HP16L

● Outline dimensions



● Panel cutout dimensions



Applicable breaker types	A ①	B	C	D	Square shaft applicable	Shaft support
S50-SF, S125-SF, S125-SN	229 min.	56	107	186	T2PS251	Yes
	243 max.	70	121	186		Yes
	343 max.	170	221	186	T2PS252	Yes
	443 max.	270	321	186	T2PS253	Yes
	543 max.	370	421	186	T2PS254	

Note ①:

"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
 "Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

- A: Distance from the panel surface to the breaker mounting surface
 B: Length of the tube used to cover the square shaft
 C: Length of the square shaft used
 D: Distance from the tip of the shaft support to the breaker mounting surface

Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

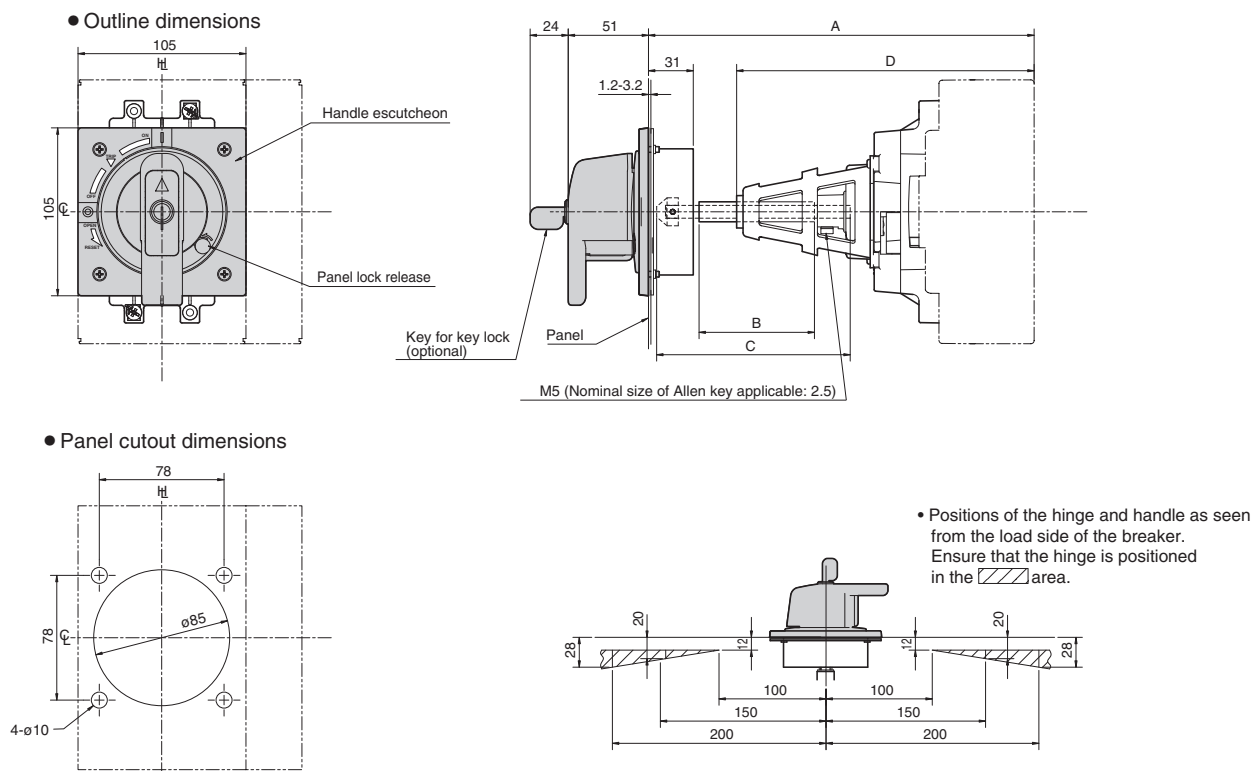
5. External operating handles

 $\mathbb{H}$: Handle Frame Centre Line

℄ : Handle Centre Line

■ Outline dimensions

T2HP25L



Applicable breaker types	A ①	B	C	D	Square shaft applicable	Shaft support
E250-SF, S250-SF, S250-SN	229 min.	56	107	186	T2PS251	Yes
	243 max.	70	121	186		Yes
	343 max.	170	221	186	T2PS252	Yes
	443 max.	270	321	186	T2PS253	Yes
	543 max.	370	421	186	T2PS254	

Note ①:

"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.

"Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface

B: Length of the tube used to cover the square shaft

C: Length of the square shaft used

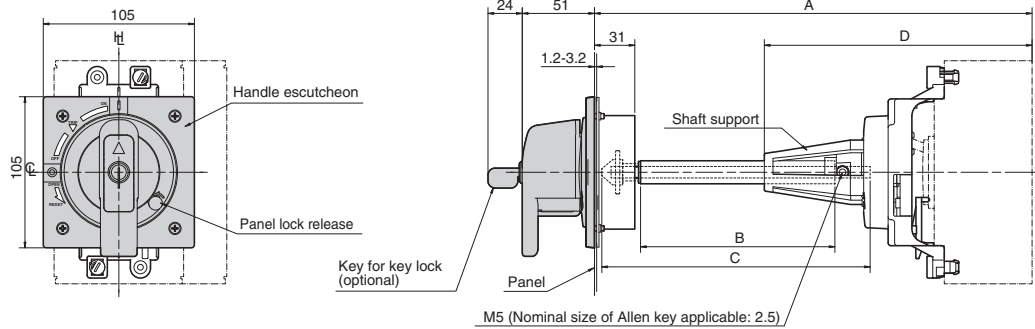
D: Distance from the tip of the shaft support to the breaker mounting surface

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

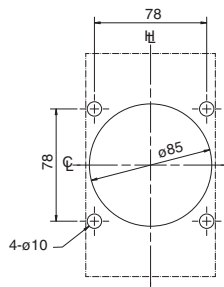
Outline dimensions

T2HP12

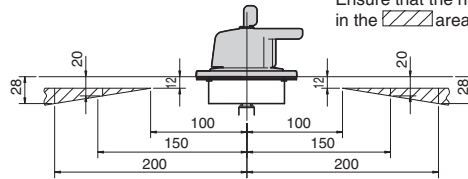
Outline dimensions



Panel cutout dimensions



• Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the  area.



Applicable breaker types	A ①	B	C	D	Square shaft applicable	Shaft support
S50-GF, S100-NF, S125-NF, S100-GF, S125-GF, S100-NM, S100-NN, S125-NN	229 min.	56	107	186	T2PS251 T2PS252 T2PS253 T2PS254	Yes
	243 max.	70	121	186		
	343 max.	170	221	186		
	443 max.	270	321	186		
	543 max.	370	421	186		

Note ①:

"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
 "Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface
 B: Length of the tube used to cover the square shaft
 C: Length of the square shaft used
 D: Distance from the tip of the shaft support to the breaker mounting surface

5. External operating handles

ASL: Arrangement Standard Line

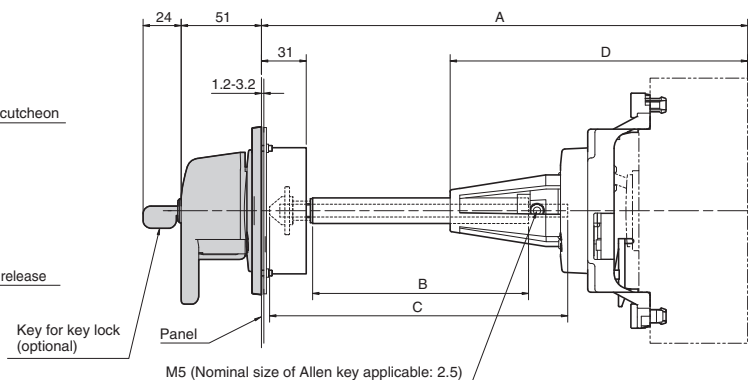
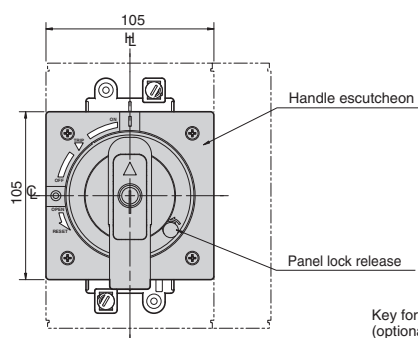
HL: Handle Frame Centre Line

CL: Handle Centre Line

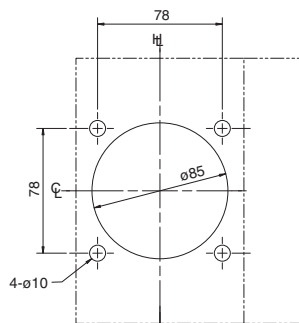
■ Outline dimensions

T2HP25

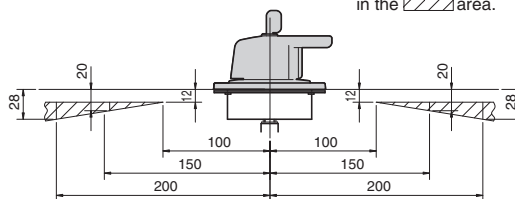
● Outline dimensions



● Panel cutout dimensions



- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the area.



Applicable breaker types	A ①	B	C	D	Square shaft applicable	Shaft support
S225-NF, S250-NF, S225-GF, S250-GF, S225-NM	229 min.	56	107	186	T2PS251	Yes
	243 max.	70	121	186		
	343 max.	170	221	186		
	443 max.	270	321	186		
	543 max.	370	421	186		
S225-GE, H100, H125, H225, L100, L125, L225	264 min.	56	107	221	T2PS251	
	278 max.	70	121	221		
	378 max.	170	221	221		
	478 max.	270	321	221		
	578 max.	370	421	221		

Note ①:

"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.

"Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface

B: Length of the tube used to cover the square shaft

C: Length of the square shaft used

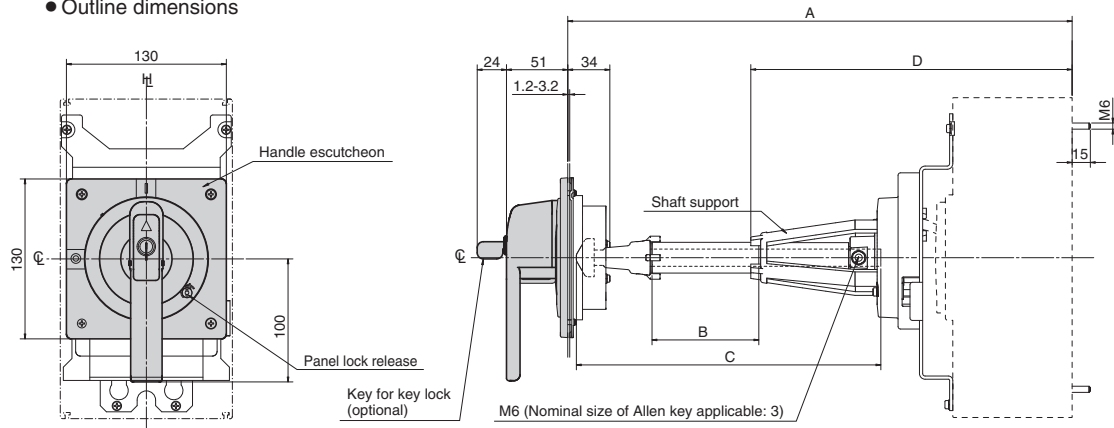
D: Distance from the tip of the shaft support to the breaker mounting surface

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

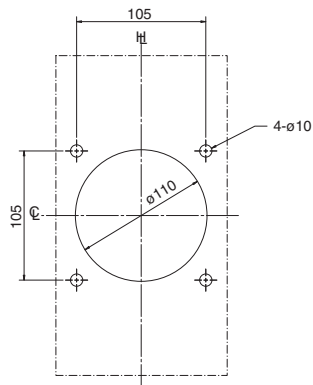
■ Outline dimensions

T2HP40

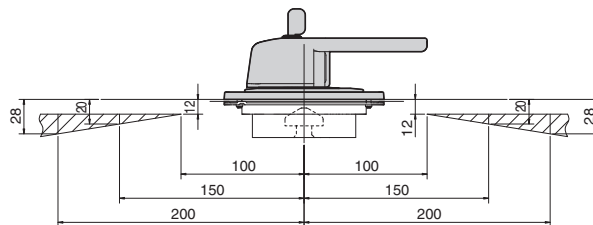
● Outline dimensions



● Panel cutout dimensions



- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the  area.



Applicable breaker types	A ①	B	C	D	Square shaft applicable	Shaft support
S400	270 min.	12	107.5	—	T2PS401	Non
	310 max.②	52	147.5	—		
	340 min.②	10	177.5	261	T2PS402	Yes
	410 max.	80	247.5	261		
	510 max.	180	347.5	261		
	610 max.	280	447.5	261	T2PS404	
H400, L400	307 min.	12	107.5	—	T2PS401	Non
	347 max.③	52	147.5	—		
	377 min.③	10	177.5	298	T2PS402	Yes
	447 max.	80	247.5	298		
	547 max.	180	347.5	298		
	647 max.	280	447.5	298	T2PS404	

Notes:

- ①. "Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft. "Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.
- ②. When dimension A is in a range of 310 mm to 340 mm, cut square shaft T2PS402 to an appropriate length and use the shaft without shaft support.
- ③. When dimension A is in a range of 347 mm to 377 mm, cut square shaft T2PS402 to an appropriate length and use the shaft without shaft support.

- A: Distance from the panel surface to the breaker mounting surface
 B: Length of the tube used to cover the square shaft
 C: Length of the square shaft used
 D: Distance from the tip of the shaft support to the breaker mounting surface

Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

5. External operating handles

ASL: Arrangement Standard Line

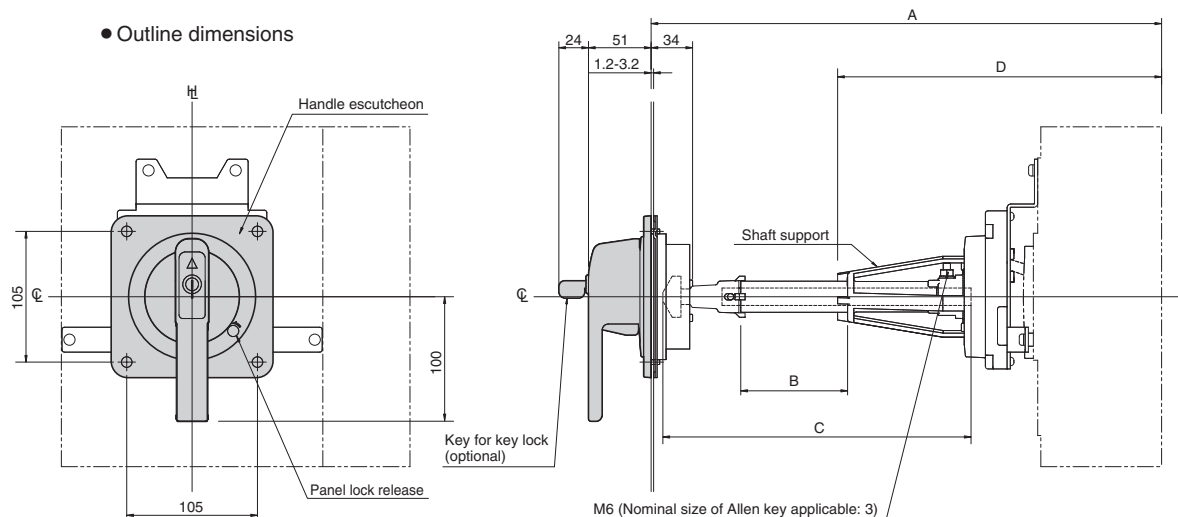
HL: Handle Frame Centre Line

℄: Handle Centre Line

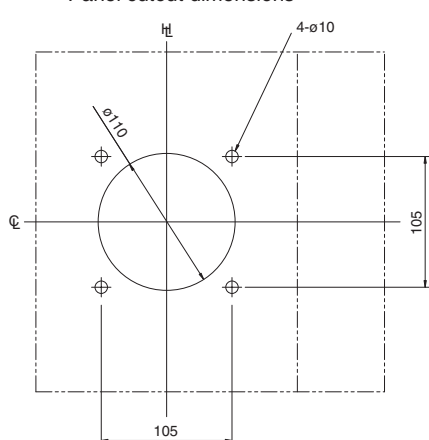
■ Outline dimensions

T2HP80

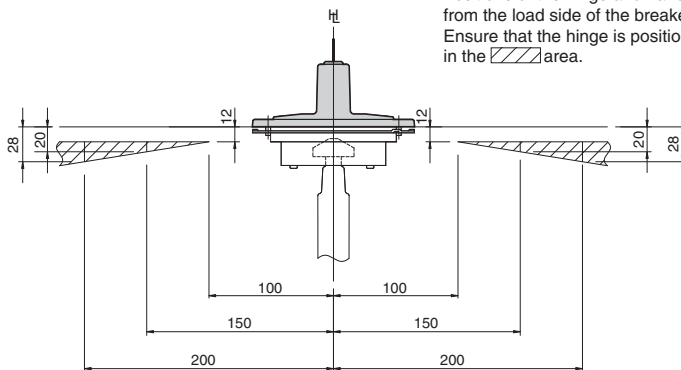
- Outline dimensions



- Panel cutout dimensions



- Positions of the hinge and handle as seen from the load side of the breaker.
Ensure that the hinge is positioned in the  area.



Applicable breaker types	A ①	B	C	D	Square shaft applicable	Shaft support
S630, S800	270 min.	12	107.5	—	T2PS401	Non
	310 max.②	52	147.5	—		
	340 min.②	10	177.5	261	T2PS402	Yes
	410 max.	80	247.5	261		
	510 max.	180	347.5	261	T2PS403	
	610 max.	280	447.5	261	T2PS404	
H630, L630, H800, L800	307 min.	12	107.5	—	T2PS401	Non
	347 max.③	52	147.5	—		
	377 min.③	10	177.5	298	T2PS402	Yes
	447 max.	80	247.5	298		
	547 max.	180	347.5	298	T2PS403	
	647 max.	280	447.5	298	T2PS404	

Notes:

①. "Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.

“Max (maximum)” means the maximum distance of the same section, which is formed with no cutting of the square shaft.

②. When dimension A is in a range of 310 mm to 340 mm, cut square shaft T2PS402 to an appropriate length and use the shaft without shaft support.

③. When dimension A is in a range of 347mm to 377mm, cut square shaft T2PS402 to an appropriate length and use the shaft without shaft support.

A: Distance from the panel surface to the breaker mounting surface

B: Length of the tube used to cover the square shaft

C: Length of the square shaft used

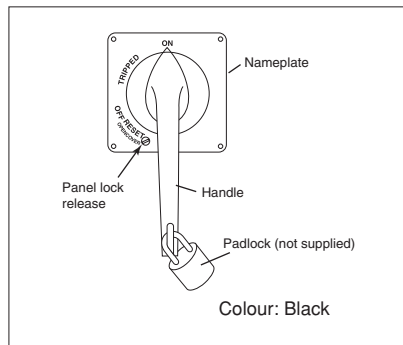
D: Distance from the tip of the shaft support to the breaker mounting surface

5. External operating handles

5-5.Door-mounted (depth fixed) (HP)

Door-mounted type external operating handles allow breakers installed in control centers or switchboards to be manually operated from outside.

Outer view



Operation mechanism

ON

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

OFF

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

RESET

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

OPENING THE PANEL

Turn the handle anti-clockwise to 'OPEN COVER'. The lock is released and the panel can be opened.

Panel lock mechanism

The external operating handle keeps the panel door locked when in the ON, OFF or TRIP position.

Hook holder shown in the outline dimension drawing should be provided.

Panel lock release knob

When the release knob is turned clockwise the panel door can be opened irrespective of the handle being in the ON, OFF or TRIP position.

Toggle lock mechanism

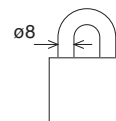
Padlock (Standard)

This mechanism allows the breaker to be padlocked in the ON or OFF position.

Padlocks are not supplied.

Up to three padlocks can be installed.

Padlock dimensions

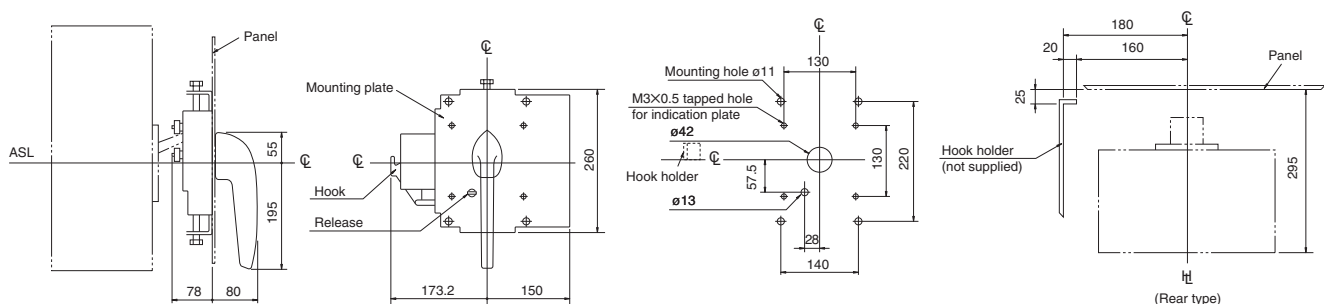


Outline dimensions

XFE10

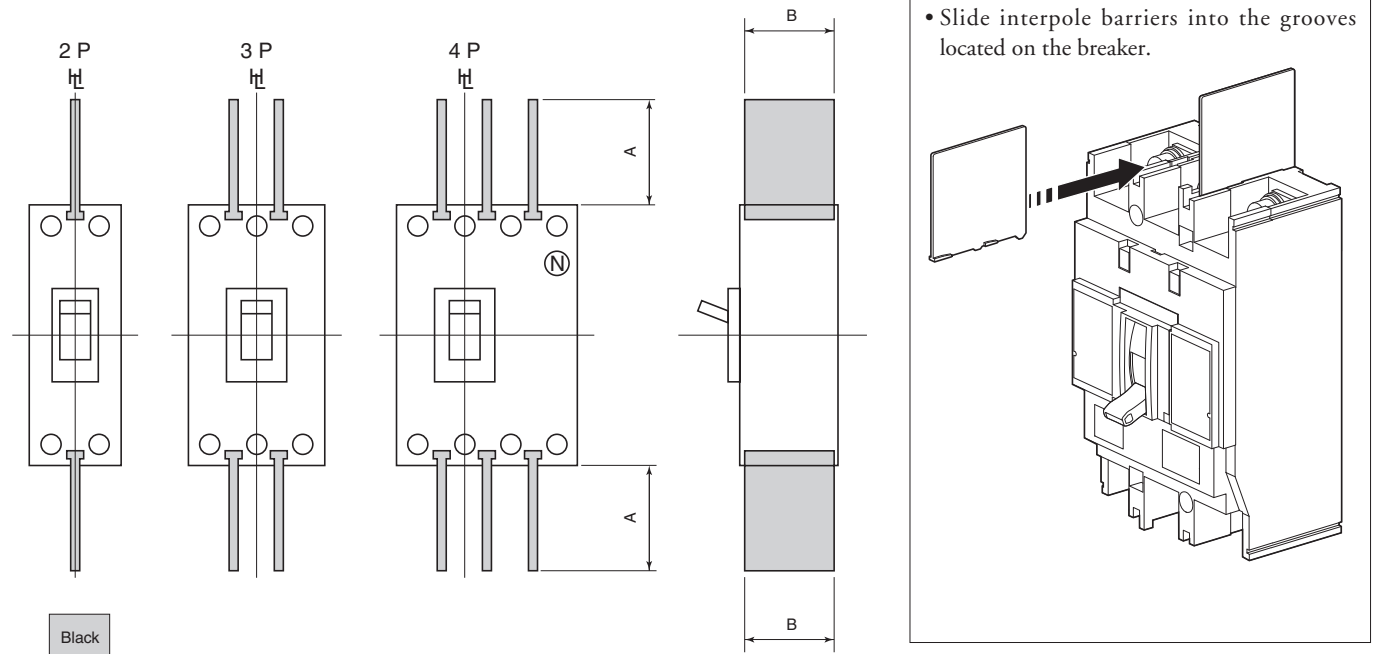
Applicable breaker types

XS2000NE,
XS2000NN



6. Interpole barriers (BA)

Interpole barriers serve to enhance electrical insulation between poles and prevent short-circuit due to electrically conductive foreign matter. Combined use of interpole barriers and terminal covers (standard type) is not possible.



■ To be stated when ordering

Please state the type when ordering. ① One set contains two barriers. ② It is ordering by one.

Caution: Be sure to use the interpole barriers supplied with the breaker in order to prevent accidents.

Types and dimensions of interpole barriers, units in mm

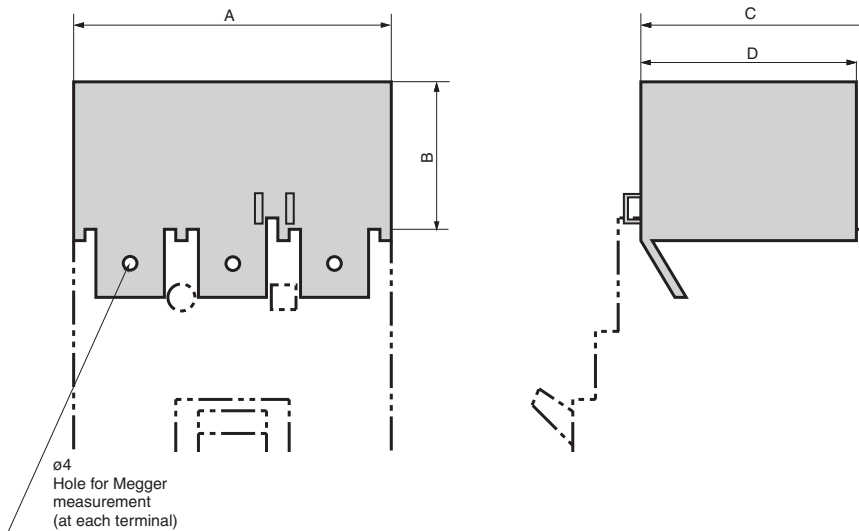
Frame size	Types of breakers	Interpole barrier		A	B
		Type	Code		
50	E50-SF, E50-CM, TB-5S, TB-5P, TB-5D	② TQQ-2CC	—	36	50
	S50-SF	① T2BA16L3SH	—	50	55
	S50-GF	① T2BA123SH	T2BA12S	47	53
100	E100-SF	② TQQ-2CC	—	36	50
	S100-NF, S100-GF, S100-NM, S100-NN	① T2BA123SH	T2BA12S	47	53
	H100-NF, L100-NF	① T2BA253LH	T2BA25L	100	88
125	S125-SF, S125-SN	① T2BA16L3SH	—	50	55
	S125-NF, S125-GF	① T2BA123SH	T2BA12S	47	53
	H125-NF, L125-NF	① T2BA253LH	T2BA25L	100	88
225	S225-NF, S225-GF, S225-NM	① T2BA253SH	T2BA25S	100	53
	H225-NF, L225-NF, S225-GE	① T2BA253LH	T2BA25L	100	88
	E250-SF, S250-SF, S250-SN	① T2BA25L3SH	T2BA25LS	101	53
250	S250-NF, S250-GF	① T2BA253SH	T2BA25S	100	53
	S400-CF, S400-NF, S400-GF, S400-NE, S400-GE	① T2BA403SH	TQQ-5BA	110	95
	S400-PF, S400-PE, S400-NN, H400-NE, L400-NE	① T2BA403SH	TQQ-5BA	110	95
630	S630-CF, S630-NF, S630-RF, S630-PF, S630-NE	① T2BA403SH	TQQ-5BA	110	95
	S630-RE, S630-PE, S630-GN, H630-NE, L630-NE	① T2BA403SH	TQQ-5BA	110	95
	S800-CF, S800-NF, S800-RF, S800-PF, S800-NE	① T2BA403SH	TQQ-5BA	110	95
800	S800-RE, S800-PE, S800-NN, H800-NE, L800-NE	① T2BA403SH	TQQ-5BA	110	95
	TL-1000NE	② TQQ-5BA	TQQ-5BA	110	95
	TL-1200NE	② TQQ-5BA	TQQ-5BA	110	95
1250	S1250-NE, S1250-GE, S1250-NN	① T2BA403SH	TQQ-5BA	110	95
1600	S1600-NE, S1600-NN	① T2BA403SH	TQQ-5BA	110	95

Note: Line side interpole barriers are supplied as standard for all front connected breakers except TB, E50-SF, E50-CM and E100-SF.

7. Terminal covers CF/CR/CS

Terminal covers prevent live parts of the breaker from being exposed to the external environment. There are three types of terminal covers available: CF for front-connected breakers, CR for rear-connected and plug-in breakers, and CS for front-connected breakers with cable clamps. Select appropriate terminal covers depending on the type and application of the breaker.

(1) CF for front-connected breakers

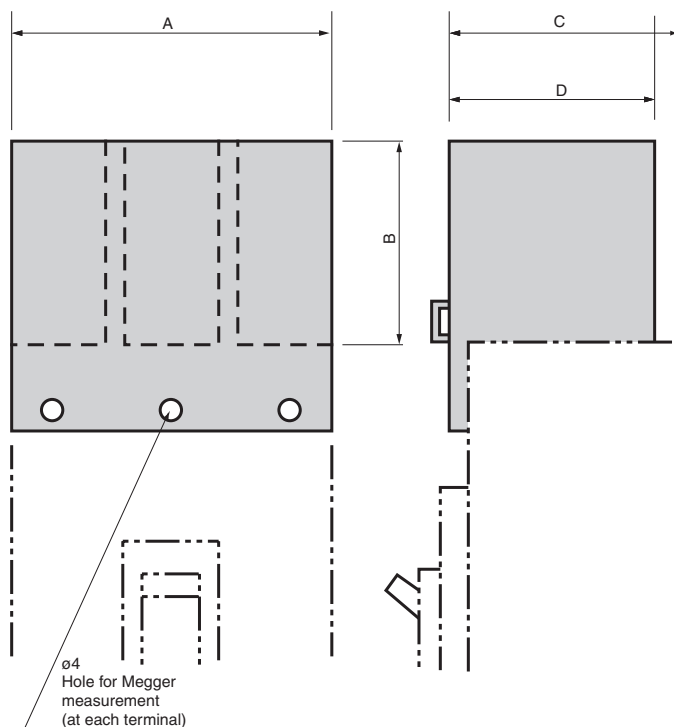


Plug-in mounted version

This version can be mounted simply by being plugged in the breaker body.

■ To be stated when ordering

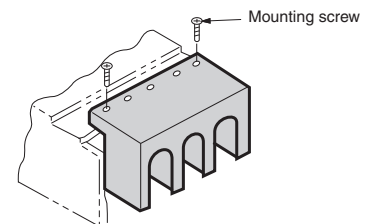
- Please state the order codes on the next page. One set includes one terminal cover for the ON side and one for the OFF side.
- For the terminal covers for 1250AF, please order with the breakers.



Screw-mounted version

The terminal covers for 630 to 800AF are mounted to the breakers using tapping screws.

The terminal cover for 1250AF is mounted to insert nuts of the breaker cover using screws. The insert nuts do not come standard with the breaker. Please be sure to state “with terminal cover (CF)” when ordering the breaker.



Types and dimensions of terminal covers, units in mm

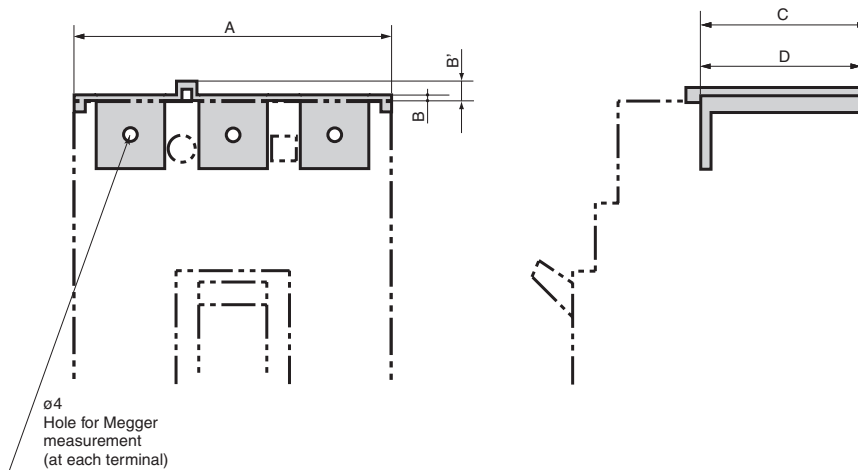
CF for front-connected breakers

Frame size (A)	Types of breakers	Terminal cover				A			B		C		D		Colour of cover		Mounting version				
		Size	Note:	Order codes ①	Marking codes	2 poles	3 poles	4 poles	2/3 poles	4 poles	2/3 poles	4 poles	2/3 poles	4 poles	G:Gray C':Clear	Plug-in mounted	Screw-mounted				
50	E50-SF, E50-CM	Large		TPR1S * G	—	50	75	—	30	—	63	—	58.5	—	G	○	—				
				TPR1S * CL											C'						
		Small		TPT1S * G	—	50	75	—	2.5	—	63	—	61	—	G						
				TPT1S * CL											C'						
	S50-SF	Large		T2CF12L * SLNG	—	50	75	—	50	—	61	—	60.3	—	G	○	—				
				T2CF12L * SLNC											C'						
		Small		T2CF12L * SSNG	—	50	75	—	25	—	61	—	60.3	—	G						
				T2CF12L * SSNC											C'						
	S50-GF	Large		T2CF12 * SLNG	T2CF12 * SL	—	90	120	40	40	48	48	46	46	G	○	—				
				T2CF12 * SLNC											C'						
		Small		T2CF12 * SSNG	T2CF12 * SS	—	90	120	22	22	48	48	47	47	G						
				T2CF12 * SSNC											C'						
100	E100-SF	Large		XPRI * G	—	49	74	—	30	—	63	—	54	—	G	○	—				
				XPRI * CL											C'						
		Small		TPT1 * G	—	49	74	—	2	—	63	—	54	—	G						
				TPT1 * CL											C'						
	S100-NF, S100-GF S100-NM, S100-NN	Large		T2CF12 * SLNG	T2CF12 * SL	60	90	120	40	40	48	48	46	46	G	○	—				
				T2CF12 * SLNC											C'						
		Small		T2CF12 * SSNG	T2CF12 * SS	60	90	120	22	22	48	48	47	47	G						
				T2CF12 * SSNC											C'						
	H100-NF, L100-NF	Large	②	T2CF25 * LLNG	T2CF25 * LL	—	105	140	55	55	89	89	87	87	G	○	—				
				T2CF25 * LLNC											C'						
		125	S125-SF, S125-SN	Large	⑥	T2CF12L * SLNG	—	50	75	100	50	50	61	61	60.3			60.3	G	○	—
						T2CF12L * SLNC													C'		
Small	⑥			T2CF12L * SSNG	—	50	75	100	25	25	61	61	60.3	60.3	G						
				T2CF12L * SSNC											C'						
S125-NF, S125-GF S125-NN	Large			T2CF12 * SLNG	T2CF12 * SL	60	90	120	40	40	48	48	46	46	G	○	—				
				T2CF12 * SLNC											C'						
	Small			T2CF12 * SSNG	T2CF12 * SS	60	90	120	22	22	48	48	47	47	G						
				T2CF12 * SSNC											C'						
H125-NF, L125-NF	Large		②	T2CF25 * LLNG	T2CF25 * LL	—	105	140	55	55	89	89	87	87	G	○	—				
				T2CF25 * LLNC											C'						
	225 250		S225-NF S225-GF, S225-NM	Large	②	T2CF25 * SLNG	T2CF25 * SL	—	105	140	55	55	54	54	52			52	G	○	—
						T2CF25 * SLNC													C'		
Small		②		T2CF25 * SSNG	T2CF25 * SS	—	105	140	29	29	54	54	53.5	53.5	G						
				T2CF25 * SSNC											C'						
H225-NF, L225-NF S225-GE		Large	②	T2CF25 * LLNG	T2CF25 * LL	—	105	140	55	55	89	89	87	87	G	○	—				
				T2CF25 * LLNC											C'						
		E250-SF	Small		T2CF25L * SSNG	T2CF25L * SS	105	105	—	29	—	59	—	57.5	—			G	○	—	
					T2CF25L * SSNC													C'			
Large			③	T2CF25L * SWNG	T2CF25L * SW	147.5	147.5	—	55	—	59	—	57.5	—	G						
				T2CF25L * SWNC											C'						
Large				T2CF25L * SLNG	T2CF25L * SL	105	105	—	55	—	59	—	57.5	—	G						
				T2CF25L * SLNC											C'						
S250-SF, S250-SN			Small		T2CF25L * SSNG	T2CF25L * SS	105	105	140	29	29	59	59	57.5	57.5	G					
					T2CF25L * SSNC											C'					
		Large	③	T2CF25L * SWNG	T2CF25L * SW	147.5	147.5	196	55	55	59	59	57.5	57.5	G						
				T2CF25L * SWNC											C'						
S250-NF, S250-GF		Large	②	T2CF25 * SLNG	T2CF25 * SL	—	105	140	55	55	54	54	52	52	G	○	—				
				T2CF25 * SLNC											C'						
		Small	②	T2CF25 * SSNG	T2CF25 * SS	—	105	140	29	29	54	54	53.5	53.5	G						
				T2CF25 * SSNC											C'						
400	S400-CF, S400-NF S400-GF S400-NE, S400-GE S400-PF, S400-PE S400-NN	Large	③ ⑥	T2CF40 * SWNG	T2CF40 * SW	—	180	240	110	114	97	98	94.5	98	G	○	—				
				T2CF40 * SWNC											C'						
		Large		T2CF40 * SLNG	T2CF40 * SL	—	140	185	85	85	97	97	94.5	94.5	G						
				T2CF40 * SLNC											C'						
	H400-NE, L400-NE	Large	③ ④ ⑥	T2CF40 * SWNG	T2CF40 * SW	—	180	240	110	114	134	135	94.5	98	G	○	—				
				T2CF40 * SWNC											C'						
		Large	④	T2CF40 * SLNG	T2CF40 * SL	—	140	185	85	85	134	134	94.5	94.5	G						
				T2CF40 * SLNC											C'						
630	S630-CF, S630-NF S630-RF, S630-PF S630-NE, S630-RE S630-PE, S630-GN H630-NE, L630-NE	Large	⑤	T2CF80 * SLNG	TPR-5BA	—	215	285	130	130	99.5 (102)	99.5 (102)	99 (101.5)	99 (101.5)	G	—	○				
				T2CF80 * SLNC											C'						
		Large	④ ⑤	T2CF80 * SLNG	TPR-5BA	—	215	285	130	130	136.5 (139)	136.5 (139)	99 (101.5)	99 (101.5)	G						
				T2CF80 * SLNC											C'						
800	S800-CF, S800-NF S800-RF, S800-PF S800-NE, S800-RE S800-PE, S800-GN H800-NE, L800-NE	Large	⑤	T2CF80 * SLNG	TPR-5BA	—	215	285	130	130	99.5 (102)	99.5 (102)	99 (101.5)	99 (101.5)	G	—	○				
				T2CF80 * SLNC											C'						
		Large	④ ⑤	T2CF80 * SLNG	TPR-5BA	—	215	285	130	130	136.5 (139)	136.5 (139)	99 (101.5)	99 (101.5)	G						
				T2CF80 * SLNC											C'						
1250	S1250-NE, S1250-GE	Large	⑤ ⑥	—	TPR-5BA	—	215	285	130	130	115	115	99 (102.5)	99 (102.5)	G C'	—	○				

7. Terminal covers CF/CR/CS

(2) CR for rear-connected and plug-in breakers

CS for front-connected breakers with cable clamps

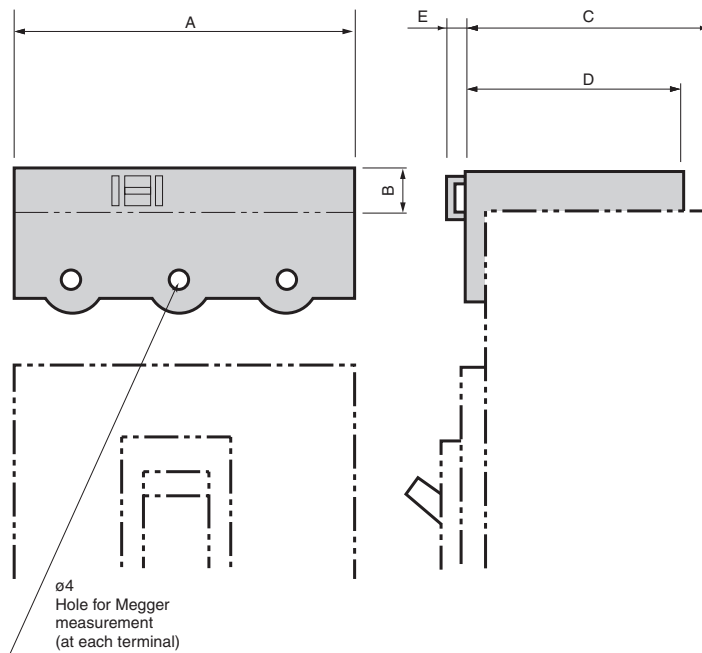


Plug-in mounted version

This version can be mounted simply by being plugged in the breaker body.

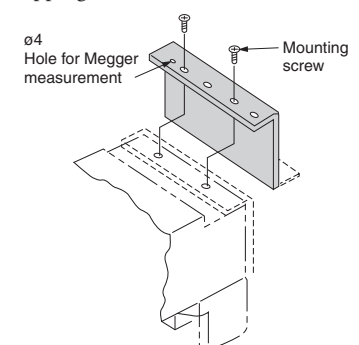
■ To be stated when ordering

- Please state "with CR" if ordering along with the breaker.
 - Please state the order codes on the next page if ordering separately from the breaker.
- One set includes one terminal cover for the ON side and one for the OFF side.



Screw-mounted version

The terminal covers for 630 to 800AF are mounted to the breakers using tapping screws.



Types and dimensions of terminal covers, units in mm

CR for rear-connected and plug-in breakers

Frame size (A)	Types of breakers	Terminal cover		A			B		B'	C		D		Colour of cover G: Gray	Mounting version	
		Order codes ①	Marking codes	2 poles	3 poles	4 poles	2/3 poles	4 poles		2/3 poles	4 poles	2/3 poles	4 poles		Plug-in mounted	Screw-mounted
50	S50-SF	T2CR12L * SG	—	50	75	—	5.5	—	—	61	—	60.3	—	G	○	—
	S50-GF	T2CR12 * SG	T2CR12 * S	—	90	120	2	2	6	41.5	41.5	40.5	40.5	G	○	—
100	S100-NF, S100-GF S100-NM, S100-NN	T2CR12 * SG	T2CR12 * S	60	90	120	2	2	6	41.5	41.5	40.5	40.5	G	○	—
	H100-NF, L100-NF	T2CR25 * SG	T2CR25 * S	—	105	140	2	2	6	77.5	77.5	39.5	39.5	G	○	—
125	S125-SF, S125-SN	T2CR12L * SG	—	50	75	100	5.5	5	—	61	61	60.3	60.3	G	○	—
	S125-NF, S125-GF	T2CR12 * SG	T2CR12 * S	60	90	120	2	2	6	41.5	41.5	40.5	40.5	G	○	—
	H125-NF, L125-NF	T2CR25 * SG	T2CR25 * S	—	105	140	2	2	6	77.5	77.5	39.5	39.5	G	○	—
225 250	S225-NF S225-GF, S225-NM	T2CR25 * SG	T2CR25 * S	—	105	140	2	2	6	42.5	42.5	39.5	39.5	G	○	—
	H225-NF, L225-NF S225-GE	T2CR25 * SG	T2CR25 * S	—	105	140	2	2	6	77.5	77.5	39.5	39.5	G	○	—
	E250-SF	T2CR25L * SG	T2CR25L	105	105	—	2.3	—	5.3	58.6	—	57.1	—	G	○	—
	S250-SF, S250-SN	T2CR25L * SG	T2CR25L	105	105	140	2.3	2.3	5.3	58.6	58.6	57.1	57.1	G	○	—
	S250-NF, S250-GF	T2CR25 * SG	T2CR25 * S	—	105	140	2	2	6	77.5	77.5	39.5	39.5	G	○	—
	S400-CF, S400-NF S400-GF S400-NE, S400-GE S400-PF, S400-PE S400-NN	T2CR40 * SG	T2CR40 * S	—	140	185	3	3	4.5	97	97	93	93	G	○	—
400	H400-NE, L400-NE	T2CR40 * SG ③	T2CR40 * S	—	140	185	3	3	4.5	134	134	93	93	G	○	—

Frame size (A)	Types of breakers	Terminal cover		A			B		E (To screw head)	C ②		D ②		Colour of cover G: Gray	Mounting version	
		Order codes ①	Marking codes	2 poles	3 poles	4 poles	2/3 poles	4 poles		2/3 poles	4 poles	2/3 poles	4 poles		Plug-in mounted	Screw-mounted
50	E50-SF, E50-CM	TPS1S * G	—	50	75	—	2	—	2.5	63	—	61	—	G	○	—
100	E100-SF	XPS1 * G	—	49	74	—	10	—	2.5	63	—	54	—	G	○	—
630	S630-CF, S630-NF S630-RF, S630-PF S630-RE, S630-PE S630-NE, S630-GN	T2CR80 * SG	XPS6	—	206	280	15	18	(3.5)	101 (103.5)	99 (101.5)	100.5 (103)	98 (100.5)	G	—	○
	H630-NE, L630-NE	T2CR80 * LG	—	—	210	280	15	15	(3.5)	136 (138.5)	136 (138.5)	135 (137.5)	135 (137.5)	G	—	○
	S800-CF, S800-NF S800-RF, S800-PF S800-RE, S800-PE S800-NE, S800-NN	T2CR80 * SG	XPS6	—	206	280	15	18	(3.5)	101 (103.5)	99 (101.5)	100.5 (103)	98 (100.5)	G	—	○
800	H800-NE, L800-NE	T2CR80 * LG	—	—	210	280	15	15	(3.5)	136 (138.5)	136 (138.5)	135 (137.5)	135 (137.5)	G	—	○

Notes:

- ①. The asterisk indicates the number of poles. Please state the number of poles at the asterisk position when ordering.
One set includes one terminal cover for the ON side and one for the OFF side.
- ②. Values in parentheses indicate the distance to the head of terminal cover mounting screws.
- ③. There will be an approx. 40 mm gap between the bottom of the terminal cover and the breaker mounting surface.

- (1) Terminal covers for motor protection breakers are 3-pole type only.
- (2) Terminal covers for switch-disconnectors are 3-pole and 4-pole type only.

CS for front-connected with cable clamps breakers

Frame size (A)	Types of breakers	Terminal cover		A		B	B'	C	D	Colour of cover G: Gray	Mounting version	
		Order codes ①	Marking codes	3 poles	4 poles						Plug-in mounted	Screw-mounted
50	S50-GF	T2CS12 * SG	T2CS12 * S	90	120	2.5	6	61	59.5	G	○	—
100	S100-NF, S100-GF S100-NM, S100-NN	T2CS12 * SG	T2CR12 * S	90	120	2.5	6	61	59.5	G	○	—
	H100-NF, L100-NF	T2CS25 * SG	T2CS25 * S	105	140	2.5	6	96	59.5	G	○	—
125	S125-NF, S125-GF S125-NN	T2CS12 * SG	T2CS12 * S	90	120	2.5	6	61	59.5	G	○	—
	H125-NF, L125-NF	T2CR25 * SG	T2CR25 * S	105	140	2.5	6	96	5.5	G	○	—
225	S225-NF S225-GF, S225-NM	T2CS25 * SG	T2CS25 * S	105	140	2.5	6	61	59.5	G	○	—
	H225-NF, L225-NF S225-GE	T2CS25 * SG	T2CS25 * S	105	140	2.5	6	96	59.5	G	○	—
250	S250-NF, S250-GF	T2CS25 * SG	T2CS25 * S	105	140	2.5	6	61	59.5	G	○	—
400	S400-CF, S400-NF S400-GF S400-NE, S400-GE S400-PF, S400-PE S400-NN	T2CS40 * SG	T2CS40 * S	140	185	3	5	97	93	G	○	—
	H400-NE, L400-NE	T2CS40 * SG	T2CS40 * S	140	185	3	5	134	93	G	○	—

Notes:

- ①. The asterisk indicates the number of poles. Please state the number of poles at the asterisk position when ordering.
One set includes one terminal cover for the ON side and one for the OFF side.
- (1) Terminal covers for motor protection breakers are 3-pole type only.

8. Mechanical interlock

Slide interlock (MS)

The slide interlock provides a mechanical interlock between two breakers so that only one of the two can be closed. Moving the slide on the front of the breaker left and right allows activation or deactivation of the interlock.

Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes
50	S50-SF	3	FC,RC	T2MS16L3SF
125	S125-SF, S125-SN	4	FC,RC	T2MS16L4SF

ASL : Arrangement Standard Line

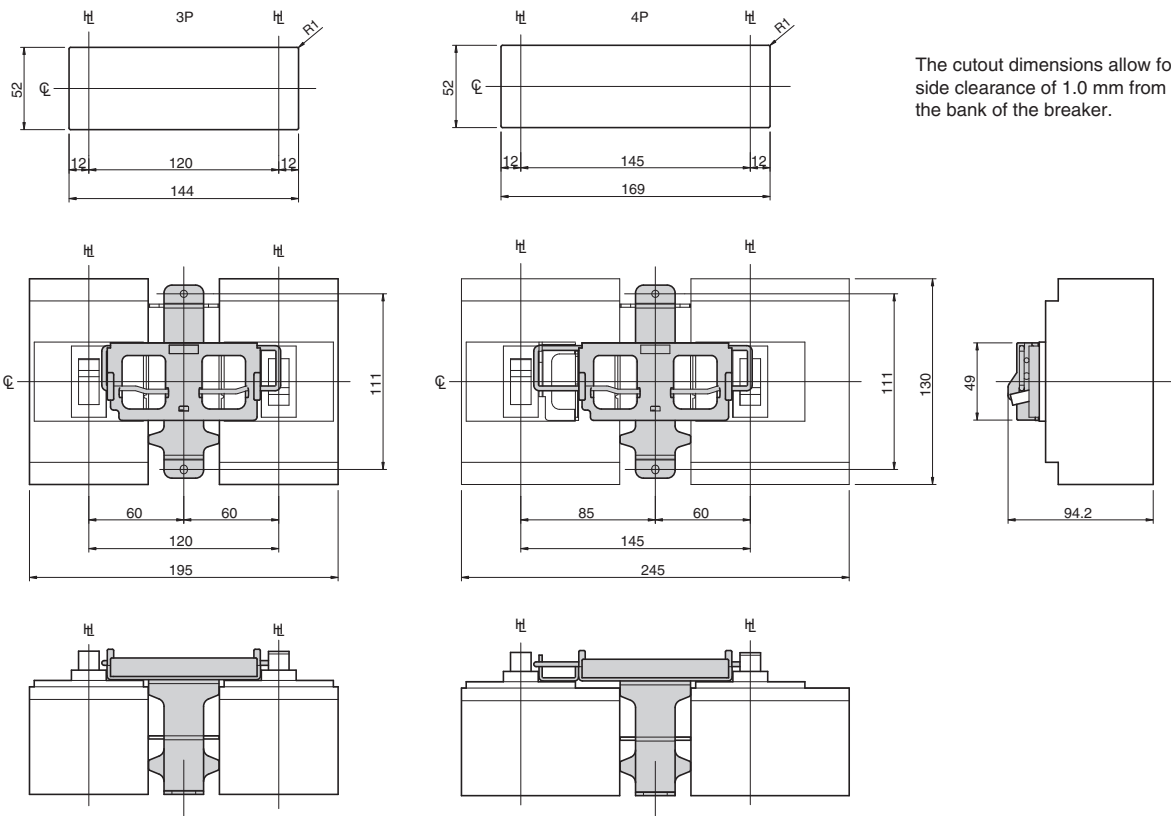
HL : Handle Frame Centre Line

CL : Handle Centre Line

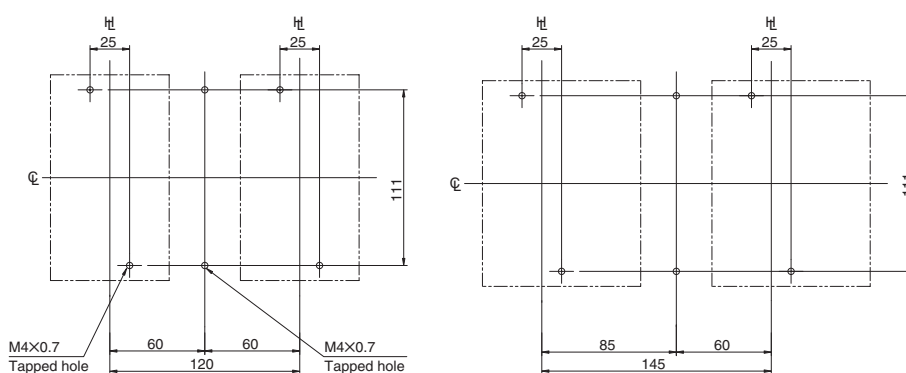
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
 (2) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes
50 125	S50-SF S125-SF, S125-SN	3	PMC	T2MS16L3SC

ASL: Arrangement Standard Line

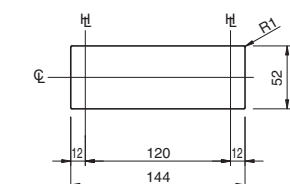
HL: Handle Frame Centre Line

CL: Handle Centre Line

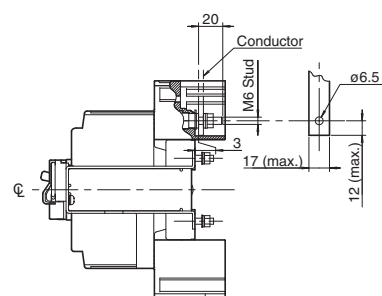
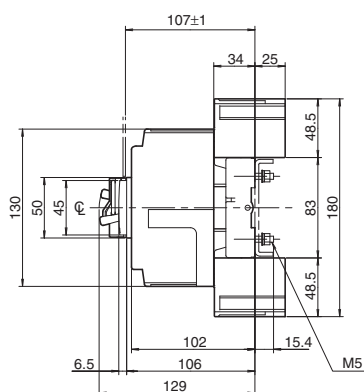
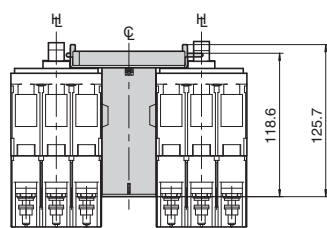
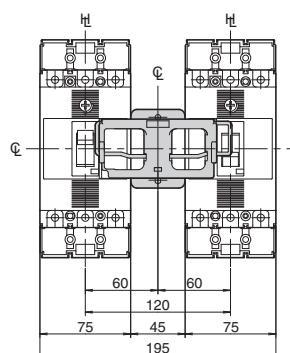
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
(2) The UVT with time-delay can not be fitted to the left breaker.

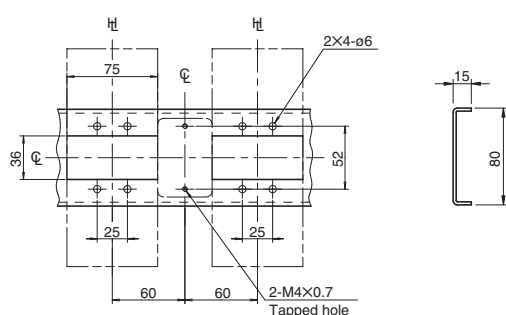
Panel cutout (front view)



The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.



Drilling plan (front view)



8. Mechanical interlock

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line

Dimensions mm

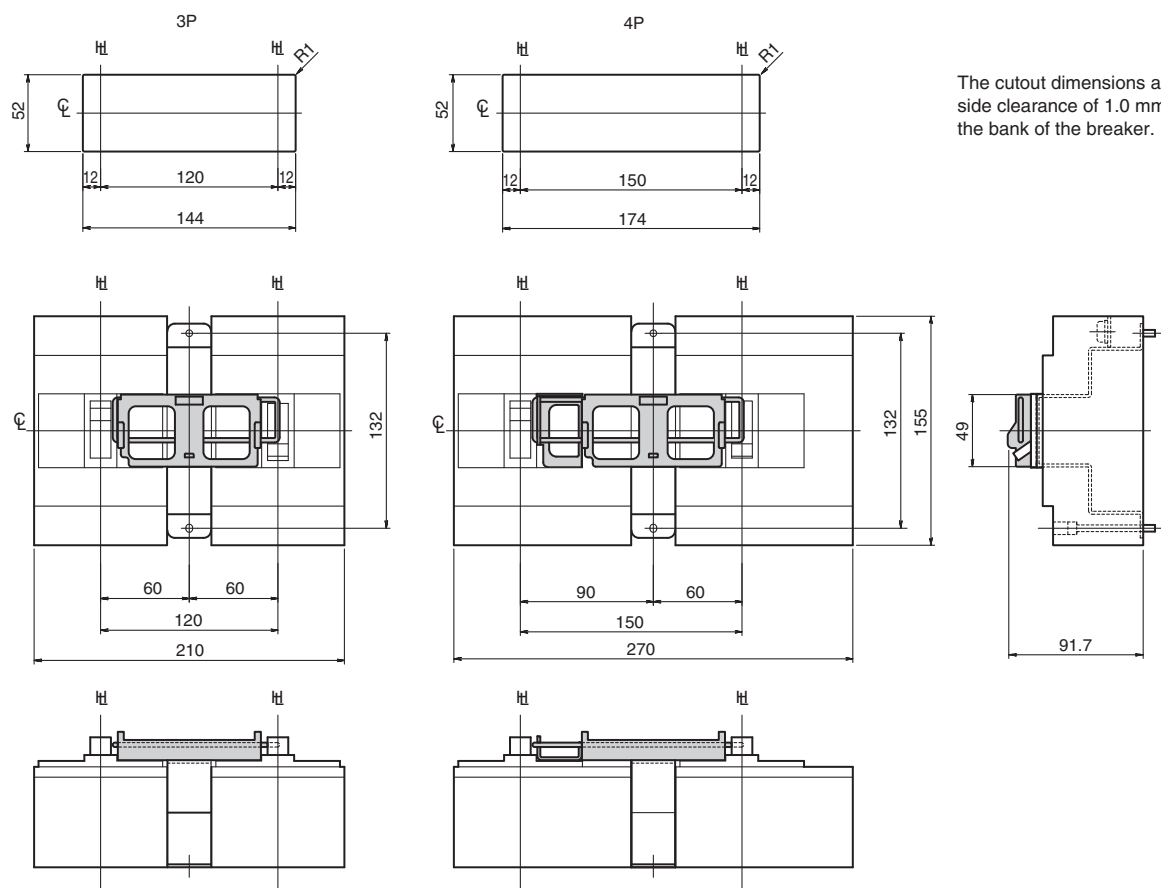
Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes
50	S50-GF	3	FC, RC	T2MS123SF
100	S100-NF, S100-GF, S100-NN			
125	S125-NF, S125-GF, S125-NN	4	FC, RC	T2MS124SF

Notes:

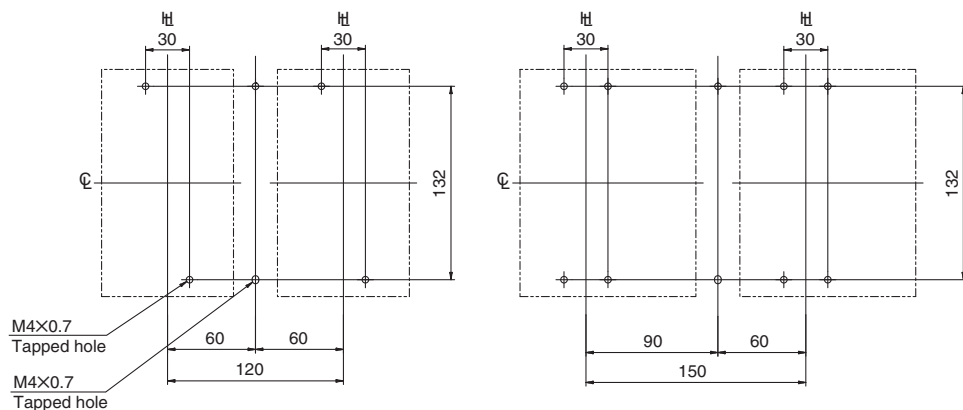
(1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.

(2) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



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

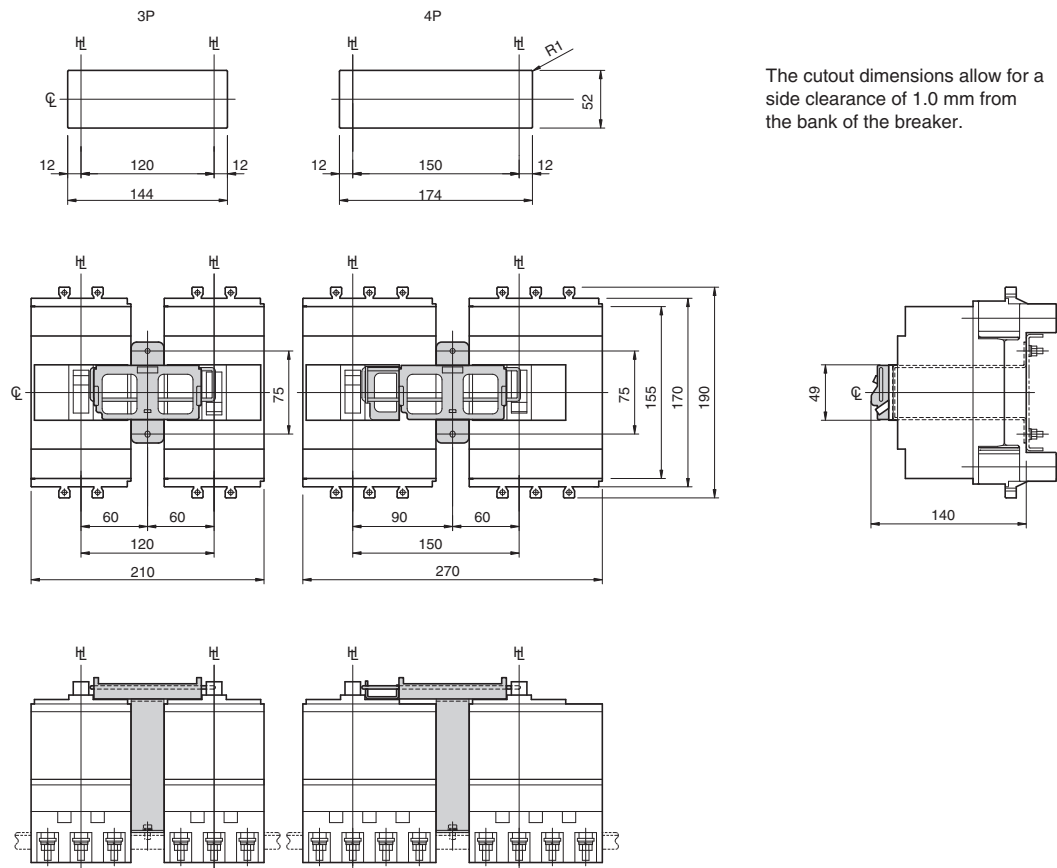
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes
50 100 125	S50-GF S100-NF, S100-GF, S100-NN S125-NF, S125-GF, S125-NN	3	PMB	T2MS123SP
		4	PMB	T2MS124SP

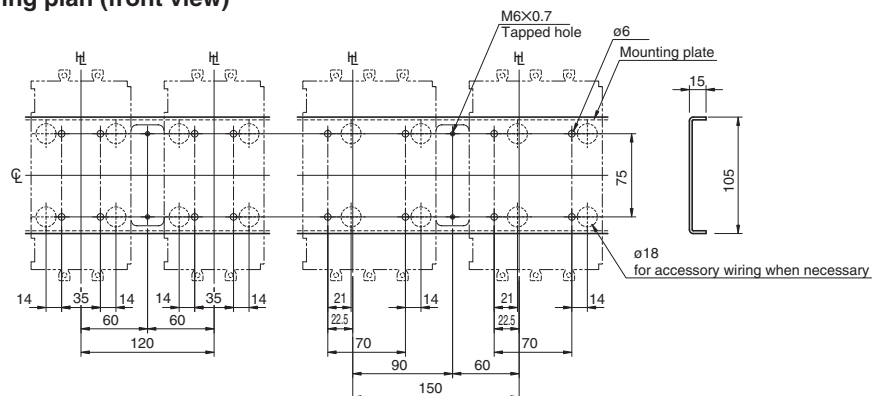
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
 (2) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



8. Mechanical interlock

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line

Dimensions mm

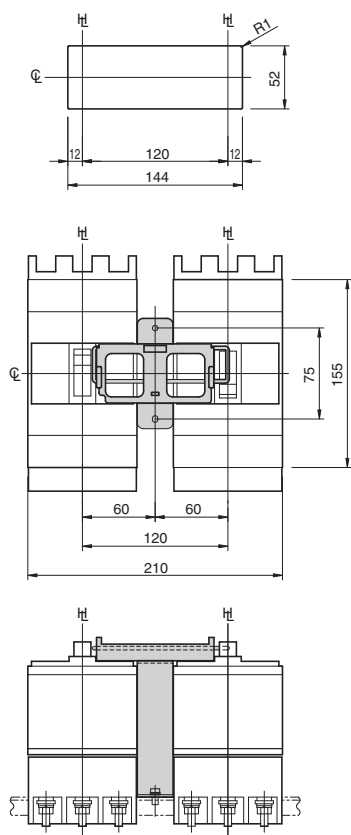
Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes
50	S50-GF	3	PMC	T2MS123SC
100	S100-NF, S100-GF, S100-NN			
125	S125-NF, S125-GF, S125-NN			

Notes:

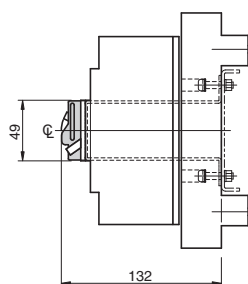
(1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.

(2) The UVT with time-delay can not be fitted to the left breaker.

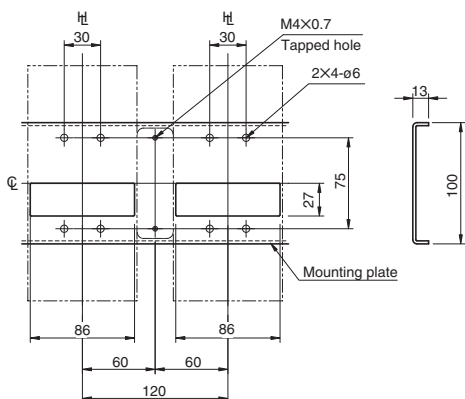
Panel cutout (front view)



The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.



Drilling plan (front view)



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

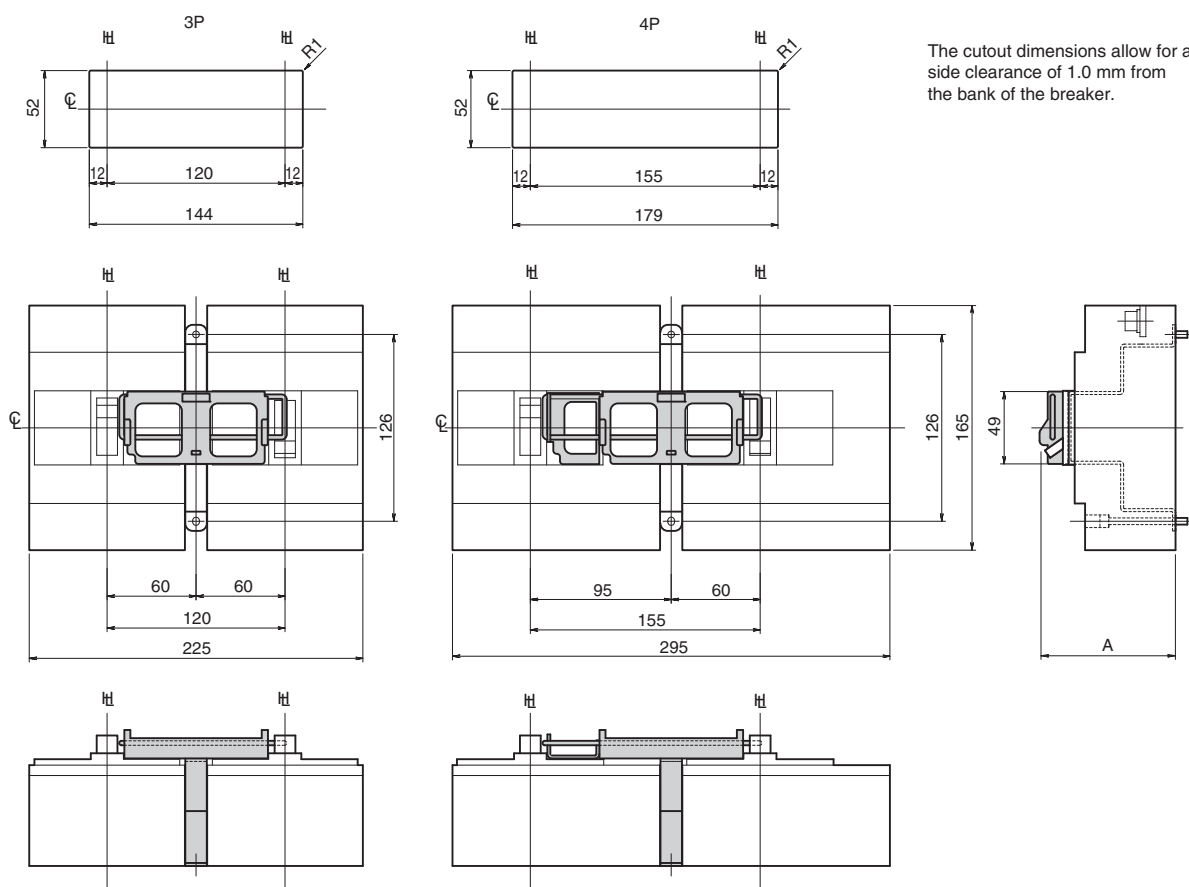
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes	A
100	H100-NF, L100-NF	3	FC, RC	T2MS253LF	126.7
125	H125-NF, L125-NF	4	FC, RC	T2MS254LF	
225	S225-NF, S225-GF	3	FC, RC	T2MS253SF	91.7
250	S250-NF, S250-GF	4	FC, RC	T2MS254SF	
	H225-NF, L225-NF, S225-GE	3	FC, RC	T2MS253LF	126.7
		4	FC, RC	T2MS254LF	

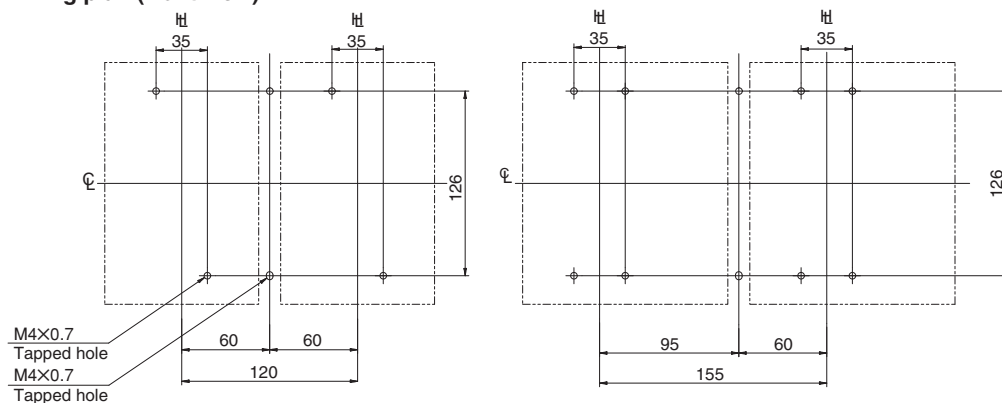
Notes:

- (1) Due to the shortage of the insulating distance, the interlock can be fitted to the breakers equipped by the insulation process extension bars.
- (2) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
- (3) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



6

Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

8. Mechanical interlock

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line

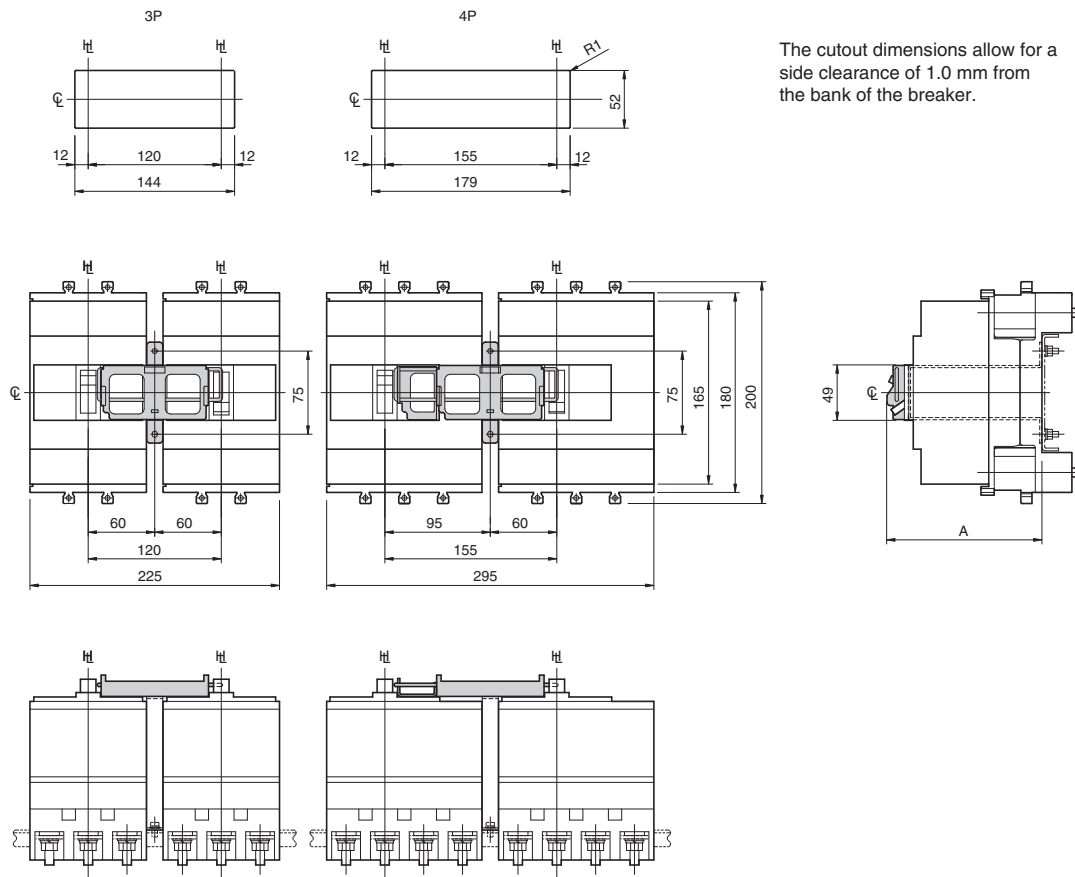
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes	A
100	H100-NF, L100-NF	3	PMB	T2MS253LP	175
125	H125-NF, L125-NF	4	PMB	T2MS254LP	
225	S225-NF, S225-GF	3	PMB	T2MS253SP	140
250	S250-NF, S250-GF	4	PMB	T2MS254SP	
	H225-NF, L225-NF, S225-GE	3	PMB	T2MS253LP	175
		4	PMB	T2MS254LP	

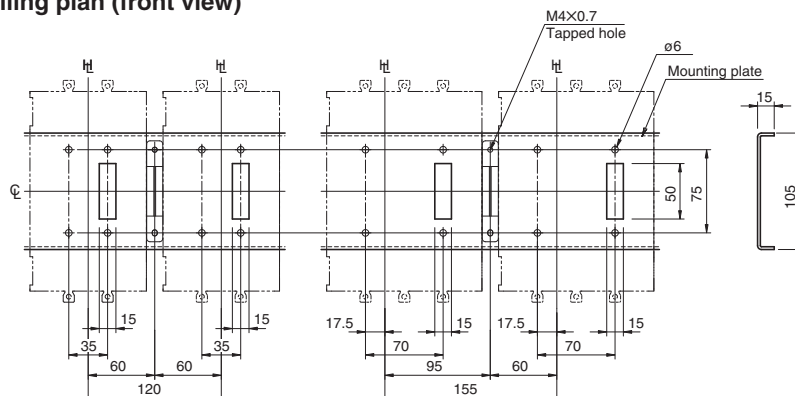
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
- (2) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



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

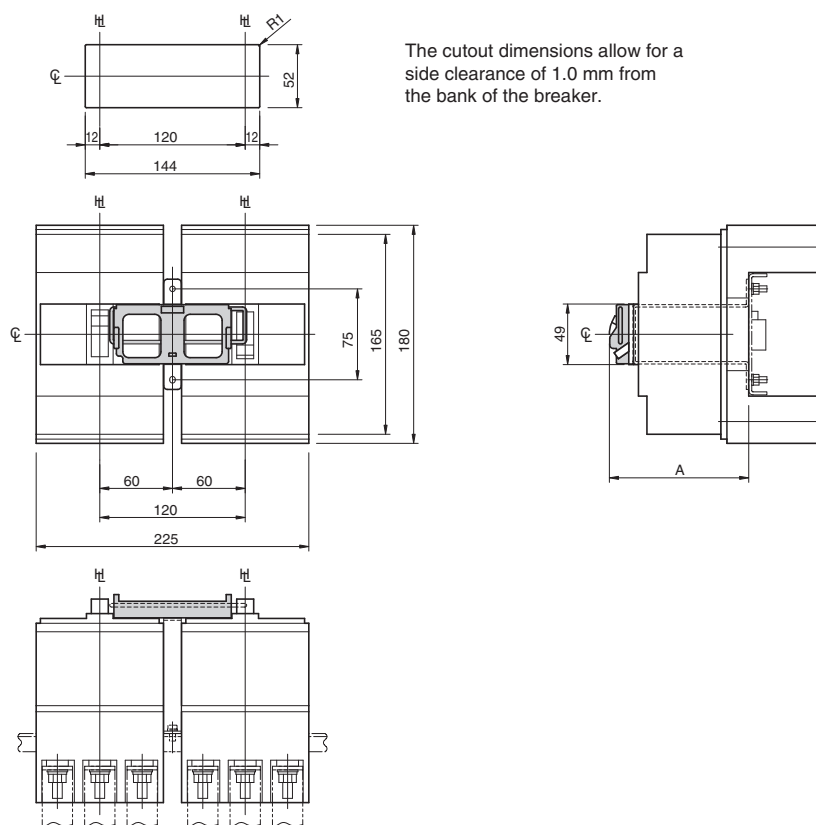
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes	A
100 125	H100-NF, L100-NF H125-NF, L125-NF	3	PMC	T2MS253LC	150
225 250	S225-NF, S225-GF S250-NF, S250-GF	3	PMC	T2MS253SC	115
	H225-NF, L225-NF, S225-GE	3	PMC	T2MS253LC	150

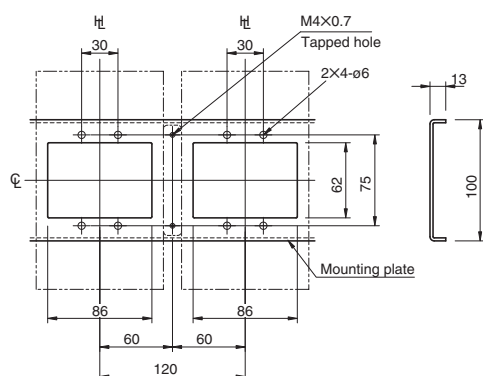
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
 (2) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



8. Mechanical interlock

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line

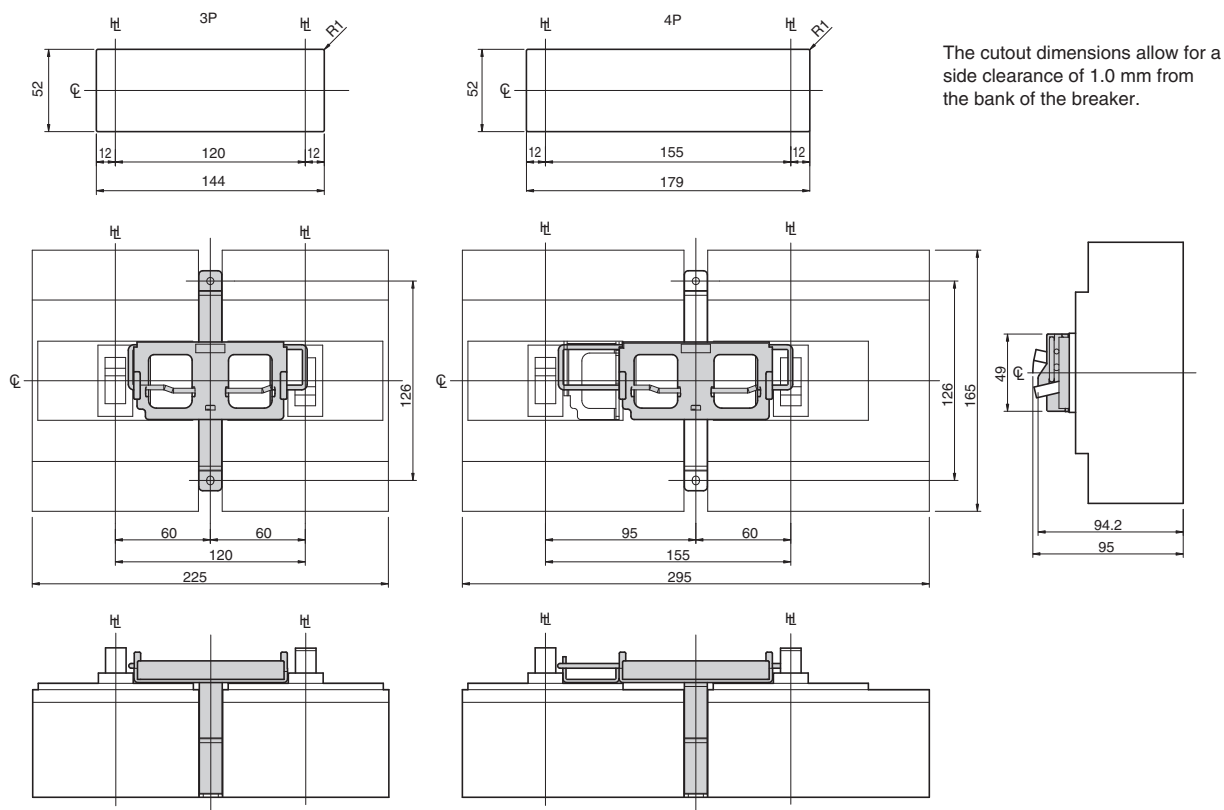
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes
225 250	E250-SF, S250-SF S250-SN	3	FC, RC	T2MS25L3SF
		4	FC, RC	T2MS25L4SF

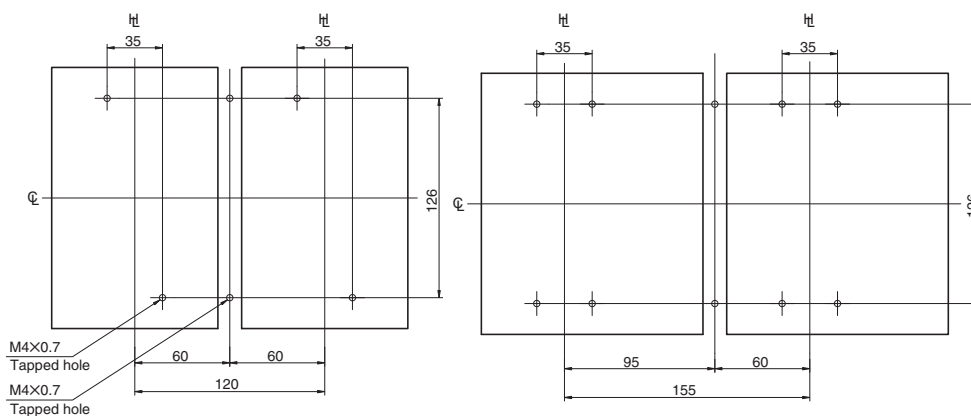
Notes:

- (1) Due to the shortage of the insulating distance, the interlock can be fitted to the breakers equipped by the insulation process extension bars.
 (2) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
 (3) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



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

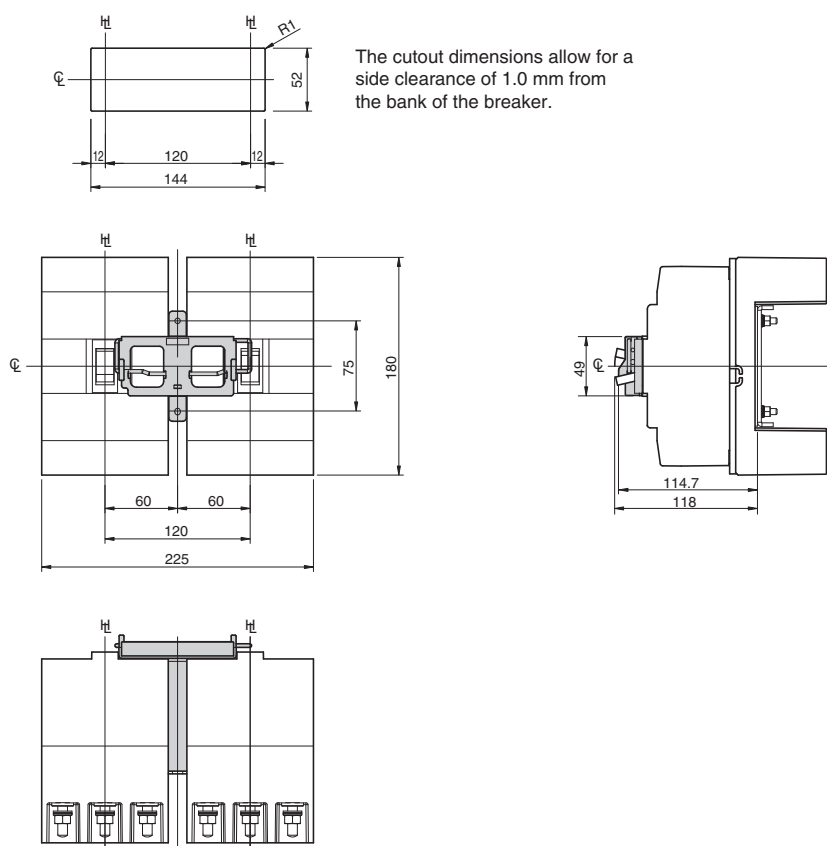
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes
225 250	E250-SF, S250-SF S250-SN	3	PMC	T2MS25L3SC

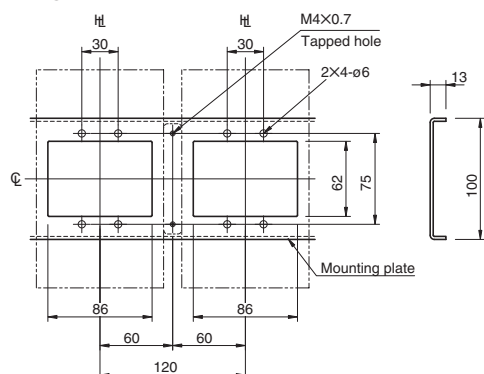
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
- (2) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



8. Mechanical interlock

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line

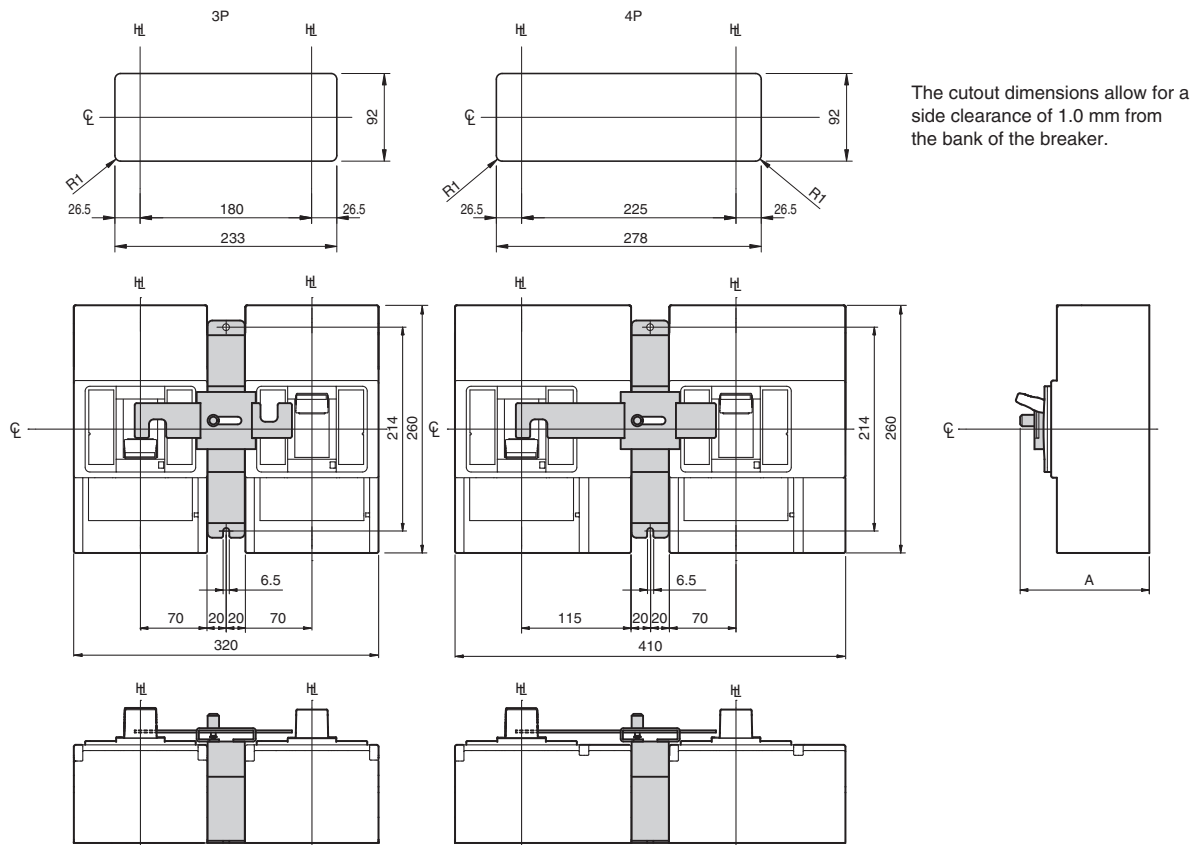
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes	A
400	S400-CF, S400-NF, S400-NE S400-GF, S400-GE, S400-NN S400-PF, S400-PE	3	FC, RC	T2MS403SF	135.5
		4	FC, RC	T2MS404SF	
	H400-NE, L400-NE	3	FC, RC	T2MS403LF	172.5
		4	FC, RC	T2MS404LF	

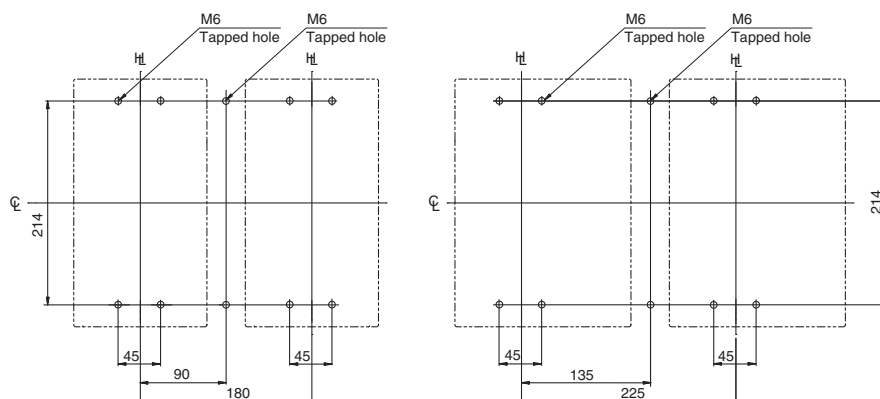
Notes:

- (1) Due to the shortage of the insulating distance, the interlock can be fitted to the breakers equipped by the insulation process extension bars.
 (2) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
 (3) The UVT with time-delay can not be fitted to the left breaker.
 (4) Wide terminal covers can not be fitted to interfere with each other. Straight terminal covers can be fitted.

Panel cutout (front view)



Drilling plan (front view)



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

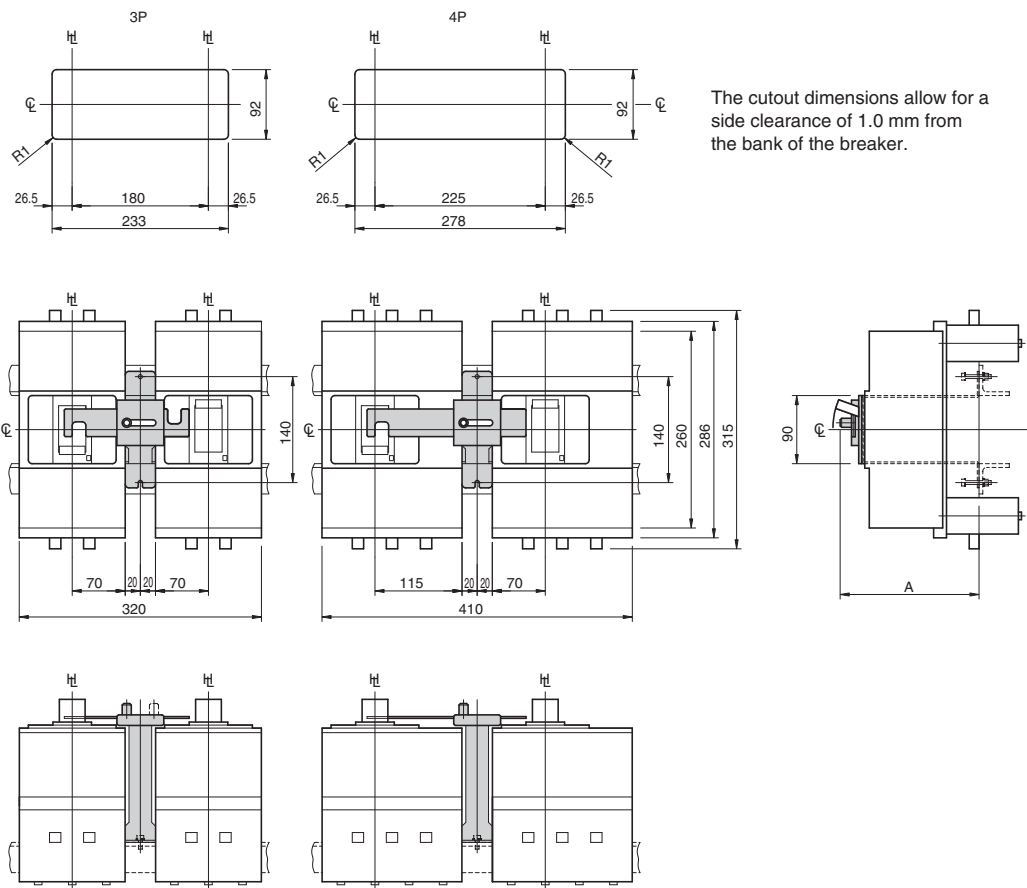
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes	A
400	S400-CF, S400-NF, S400-NE S400-GF, S400-GE, S400-NN S400-PF, S400-PE	3	PMB	T2MS403SP	183.5
		4	PMB	T2MS404SP	
	H400-NE, L400-NE	3	PMB	T2MS403LP	220.5
		4	PMB	T2MS404LP	

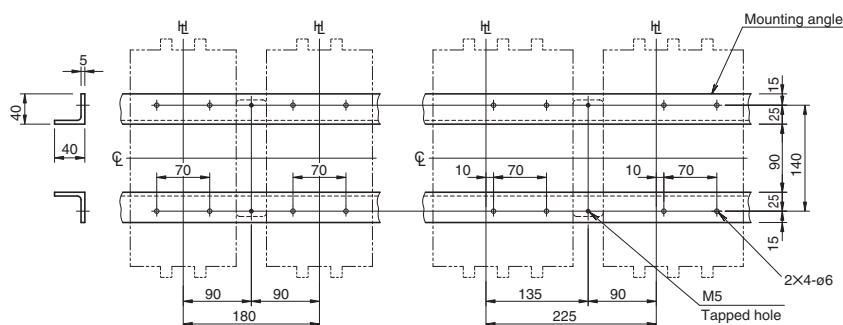
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
- (2) The UVT with time-delay can not be fitted to the left breaker.
- (3) Wide terminal covers can not be fitted to interfere with each other. Straight terminal covers can be fitted.

Panel cutout (front view)



Drilling plan (front view)



3 Externally mounted accessories

℄ : Handle Centre Line

(3) Wide terminal covers can not be fitted to interfere with each other. Straight terminal covers can be fitted.

℄: Handle Centre Line

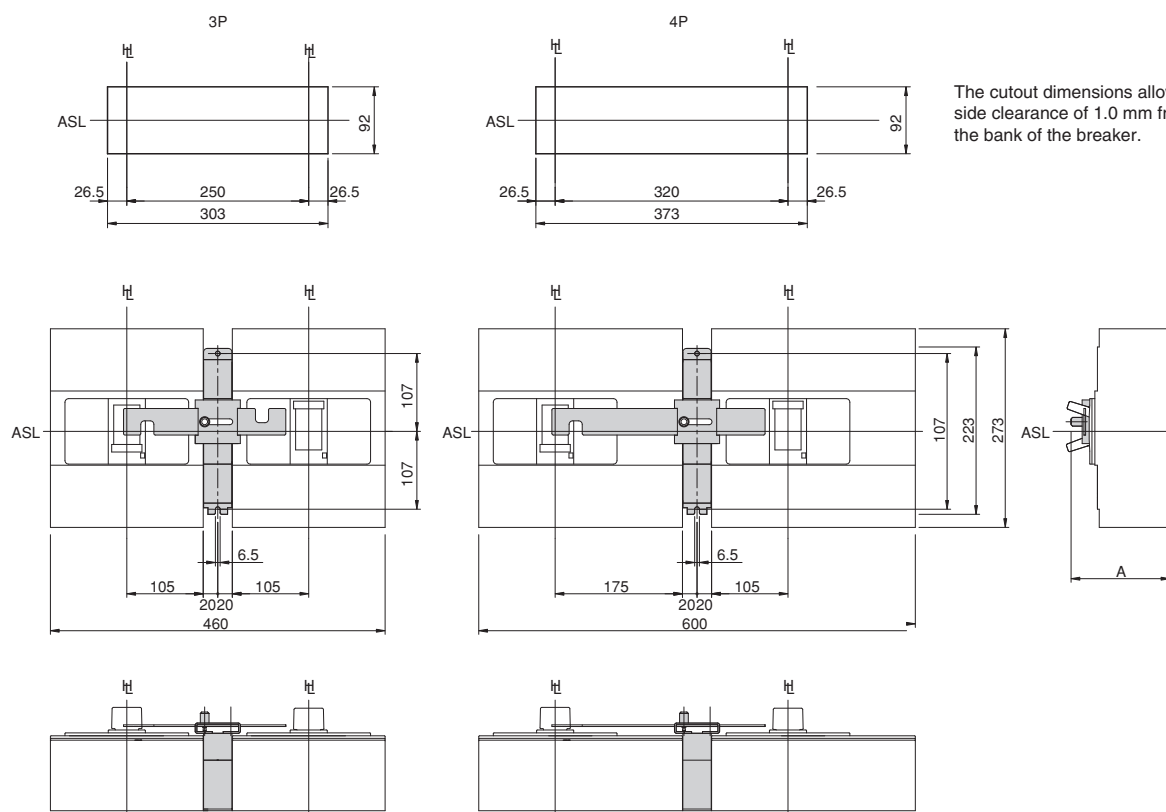
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes	A
630 800	S630-CF, S630-NF, S630-RF, S630-PF S630-NE, S630-RE, S630-PE, S630-GN S800-CF, S800-NF, S800-RF, S800-PF S800-NE, S800-RE, S800-PE, S800-NN	3	FC, RC	T2MS803SF	135.5
		4	FC, RC	T2MS804SF	
	H630-NE, L630-NE H800-NE, L800-NE	3	FC, RC	T2MS803LF	172.5
		4	FC, RC	T2MS804LF	

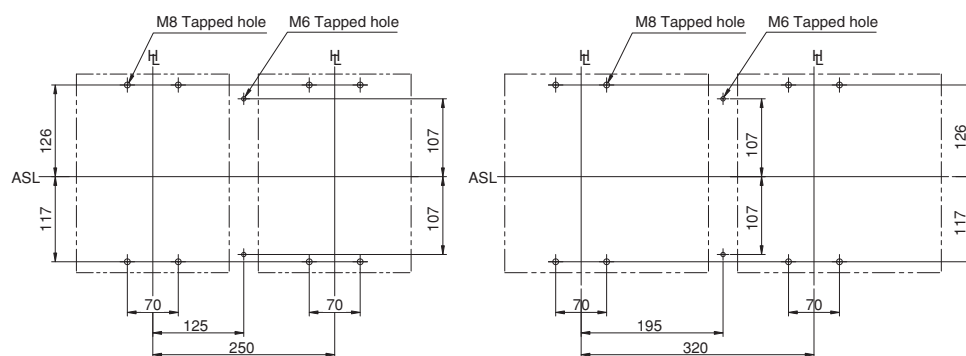
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
- (2) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



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Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

8. Mechanical interlock

ASL: Arrangement Standard Line

H_L: Handle Frame Centre Line

℄: Handle Centre Line

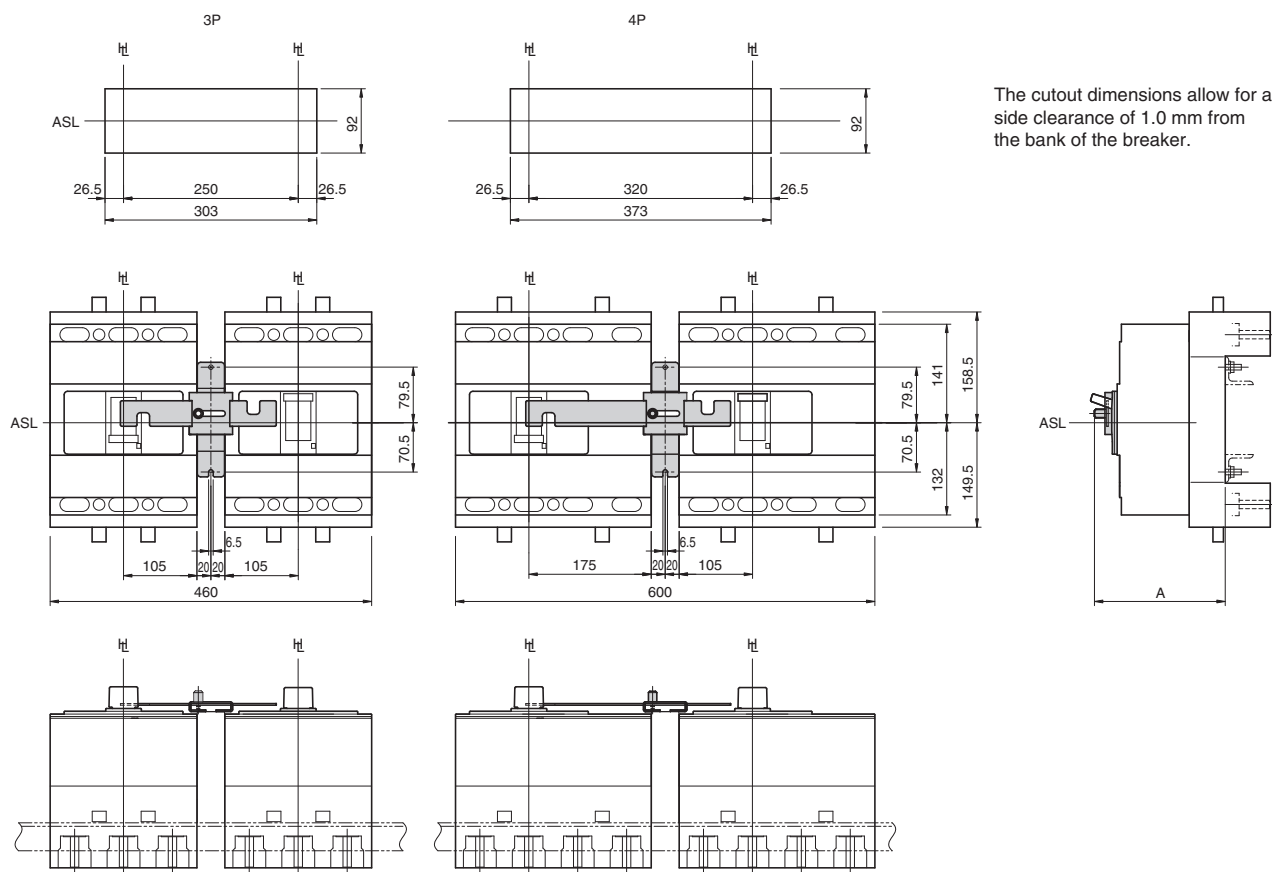
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes	A
630 800	S630-CF, S630-NF, S630-RF, S630-PF	3	PMB	T2MS803SP	187
	S630-NE, S630-RE, S630-PE, S630-GN				
	S800-CF, S800-NF, S800-RF, S800-PF	4	PMB	T2MS804SP	187
	S800-NE, S800-RE, S800-PE, S800-NN				
	H630-NE, L630-NE	3	PMB	T2MS803LP	224
	H800-NE, L800-NE	4	PMB	T2MS804LP	

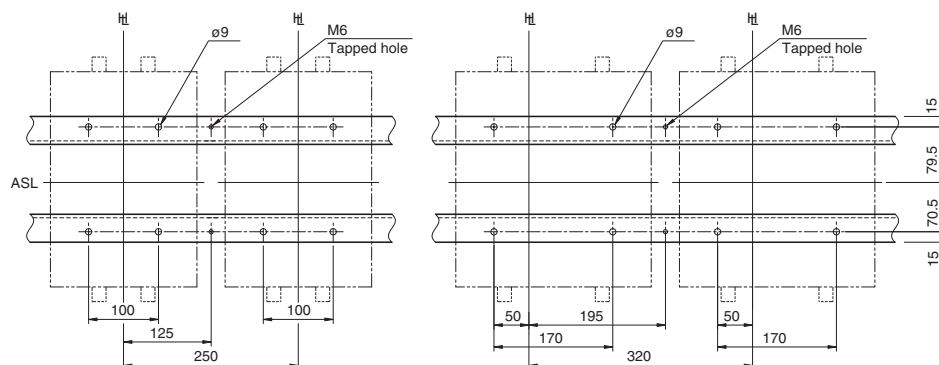
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
- (2) The UVT with time-delay can not be fitted to the left breaker.

Panel cutout (front view)



Drilling plan (front view)



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

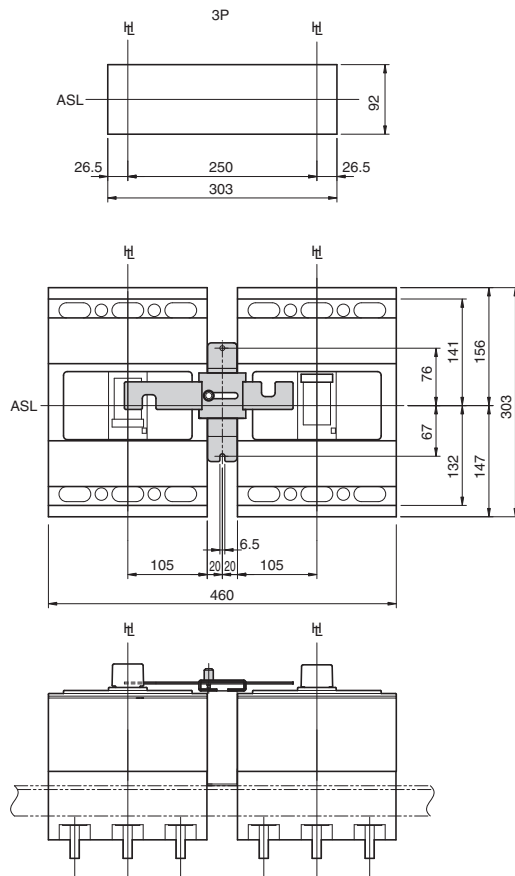
Dimensions mm

Frame size (A)	Types of breakers	Number of poles	Breaker connection method	Interlock Order codes	A
630 800	S630-CF, S630-NF, S630-RF, S630-PF S630-NE, S630-RE, S630-PE, S630-GN S800-CF, S800-NF, S800-RF, S800-PF S800-NE, S800-RE, S800-PE, S800-NN	3	PMC	T2MS803SC	153.5
	H630-NE, L630-NE H800-NE, L800-NE	3	PMC	T2MS803LC	190.5

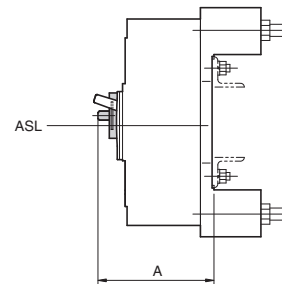
Notes:

- (1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.
- (2) The UVT with time-delay can not be fitted to the left breaker.

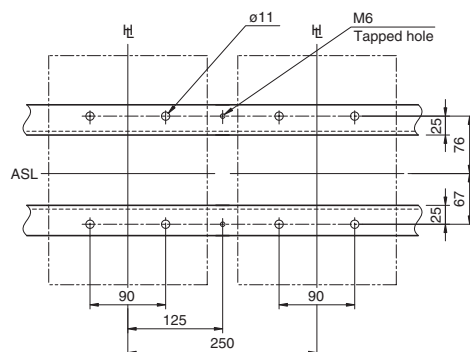
Panel cutout (front view)



The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.



Drilling plan (front view)



8. Mechanical interlock

ASL: Arrangement Standard Line

H: Handle Frame Centre Line

C: Handle Centre Line

Dimensions mm

Frame size (A)	Types of molded case circuit breakers	Interlock Order codes	Number of poles	a	b	c	d	e	f	g	h	k	m	ℓ	R
50, 100	E50-SF, E50-CM, E100-SF	XLF1 ①②	3	100	150	102	26.5	153	52.5	52.5	105	175	99.6	15	8.5
1000	TL-1000NE	XLF9 ①	3	220	340	129	61.5	343	58	74	132	430	179.6	30	8.5
			4	290	410	129	61.5	413	58	74	132	570	179.6	30	8.5
1200	TL-1200NE	XLF9 ①	3	220	340	129	61.5	343	58	74	132	430	179.6	30	8.5
			4	290	410	129	61.5	413	58	74	132	570	179.6	30	8.5
1250	S1250-NE, S1250-GE S1250-NN	T2MSX63SF	3	220	340	124.5	61.5	343	53.5	74	127.5	430	159.2	30	8.5
		T2MSX64SF	4	290	410	124.5	61.5	413	53.5	74	127.5	570	159.2	30	8.5
1600	S1600-NE, S1600-NN	T2MSX63SF	3	220	340	124.5	61.5	343	53.5	74	127.5	430	179.2	30	8.5
		T2MSX64SF	4	290	410	124.5	61.5	413	53.5	74	127.5	570	179.2	30	8.5
2000	XS2000NE, XS2000NN	XLF10 ①	3	Contact us for the detailed dimensions.											
			4												

Notes:

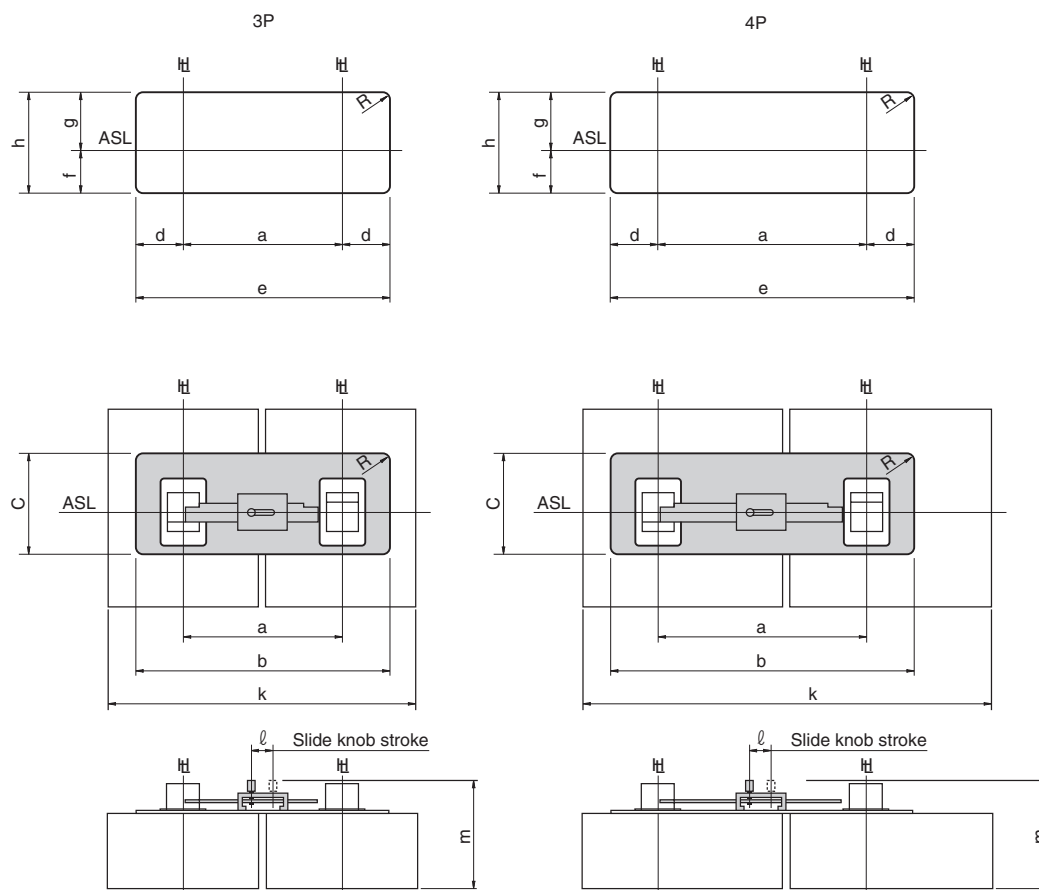
①: Please order with the breakers.

②: When you use with the terminal covers the special terminal covers are needed. Please specify the special terminal covers when necessary.

(1) The terminal block can not be fitted to the right-hand side of the left breaker and to the left-hand side of the right breaker.

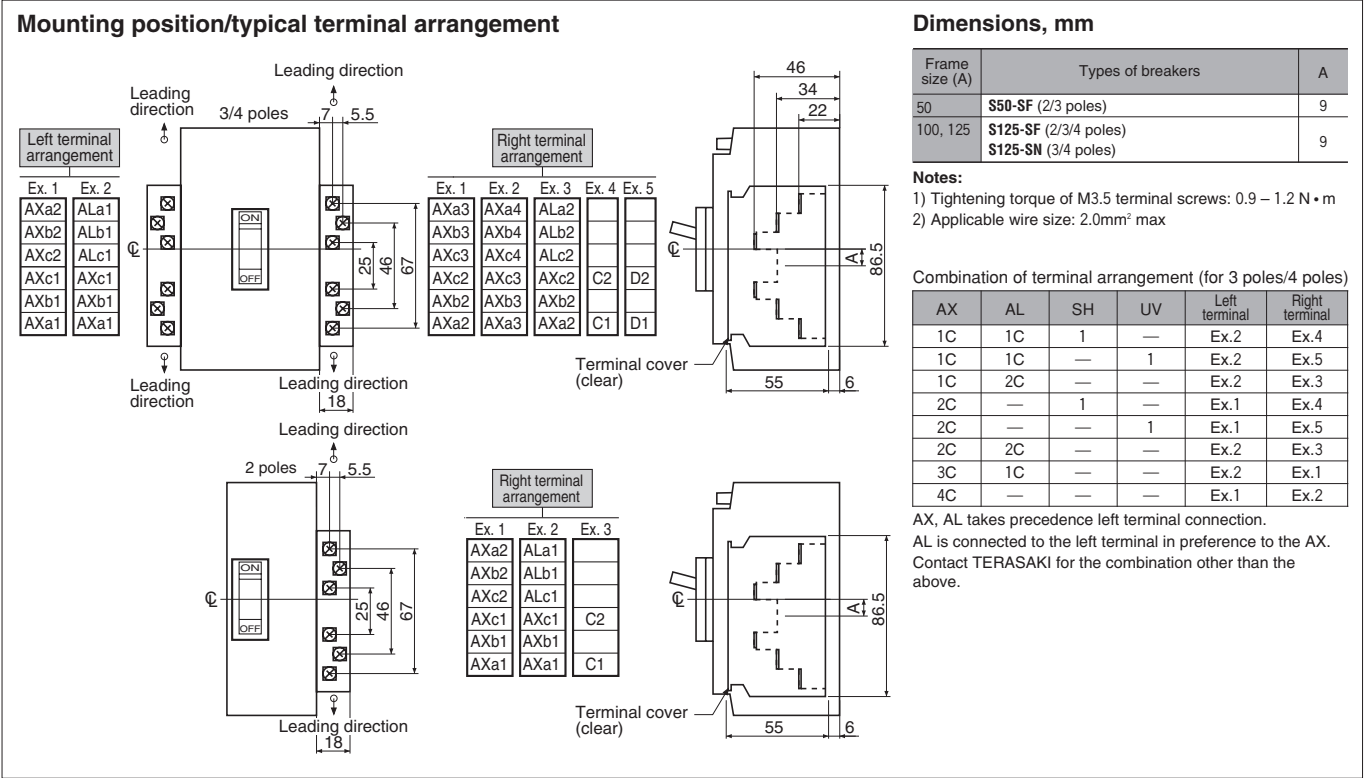
(2) The UVT controller or the OCR controller may be required to be installed external to the breaker.

(3) See the outline dimensions of the breaker for the drilling plan.

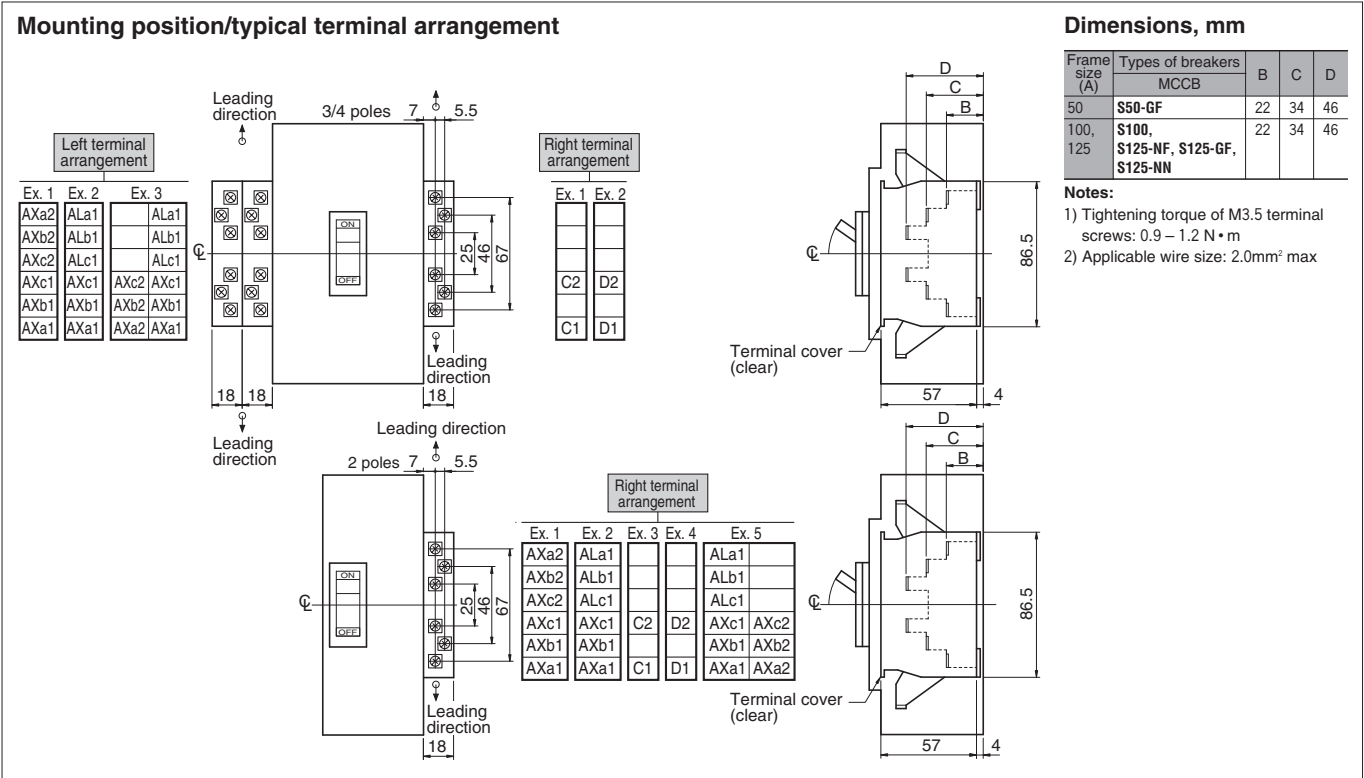


9. Terminal blocks (TF)

18mm width 6 terminals Vertical leading type (T2TF00L) with 50/100/125A frame MCCB



18mm width 6 terminals Vertical leading type (T2TFX0) with 50/100/125A frame MCCB



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Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

9. Terminal blocks (TF)

18mm width 6 terminals

Vertical leading type (T2TFX0) with 100/125/225/250A frame MCCB

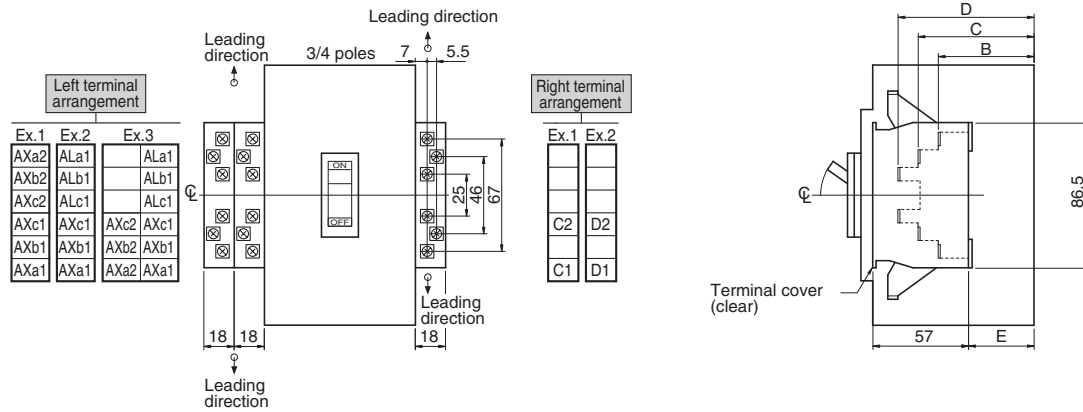
Mounting position/typical terminal arrangement

Dimensions, mm

Frame size (A)	Types of breakers	B	C	D	E
	MCCB				
100, 125	H100, L100, H125, L125	57	69	81	39
225, 250	S225-NF, S225-GF, S250-NF, S250-GF, S225-NM	22	34	46	4
	H225, L225, S225-GE	57	69	81	39

Notes:

- 1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N • m
- 2) Applicable wire size: 2.0mm² max



18mm width 6 terminals

Vertical leading type (T2TF00L) with 225/250A frame MCCB

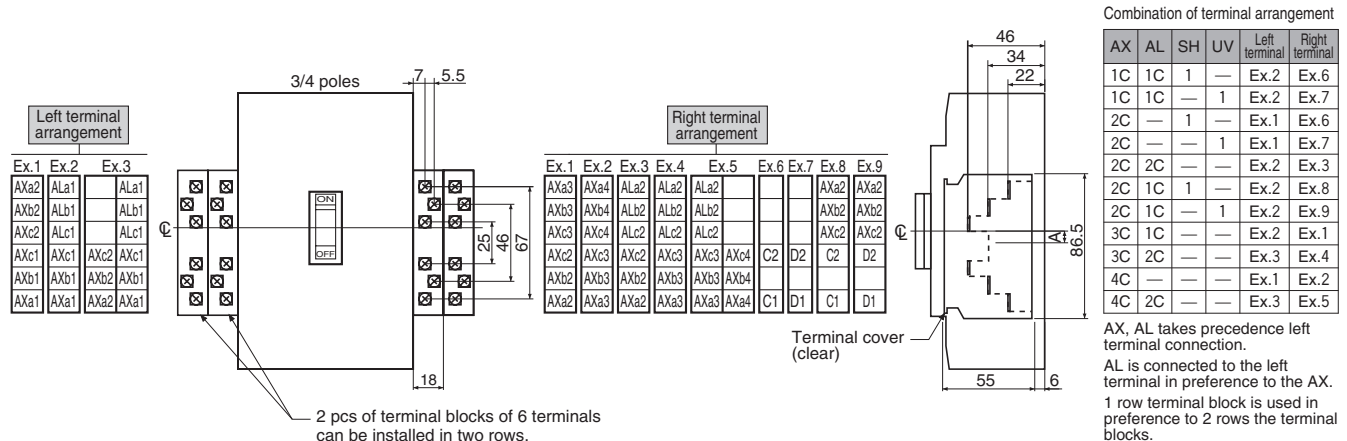
Mounting position/typical terminal arrangement

Dimensions, mm

Frame size (A)	Types of breakers	A
225,	E250-SF (3 poles)	7
250	S250-SF, S250-SN (3/4 poles)	7

Notes:

- 1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N • m
- 2) Applicable wire size: 2.0mm² max



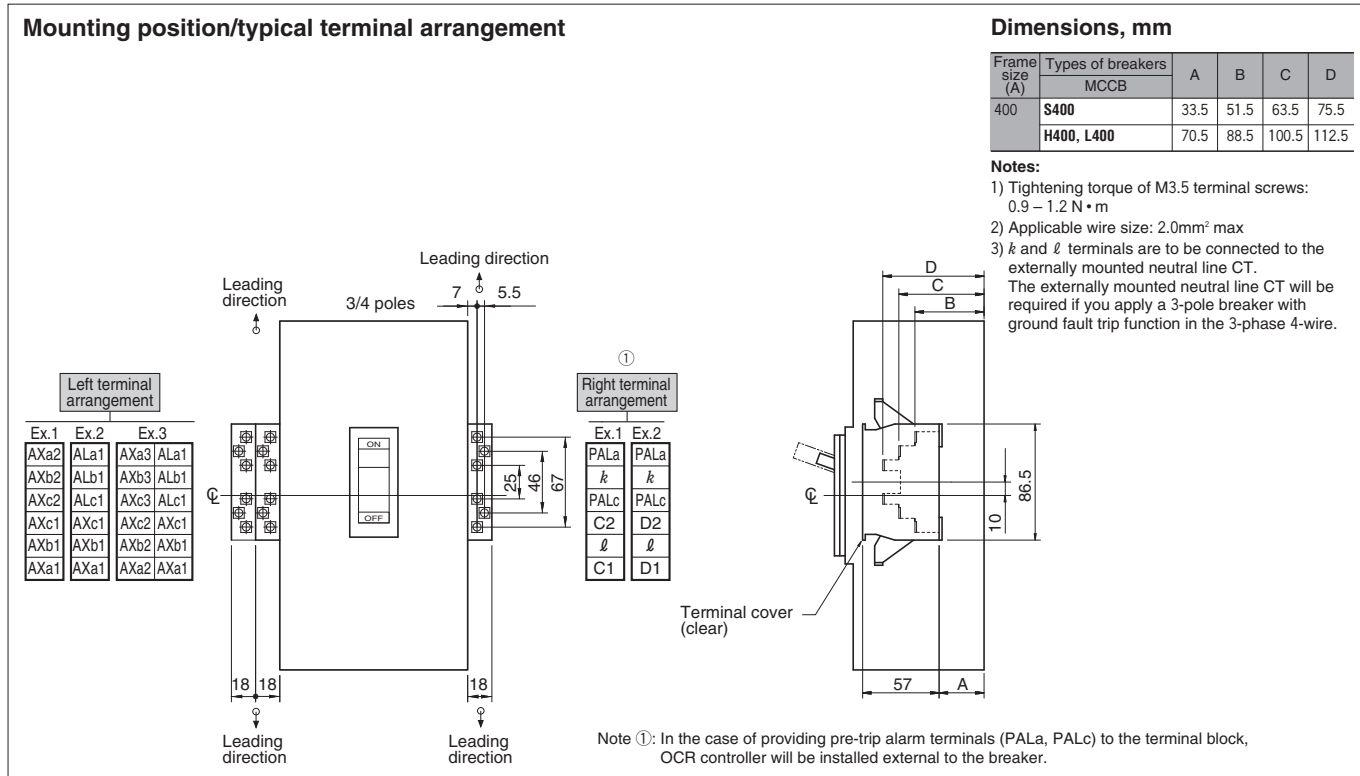
Combination of terminal arrangement

AX	AL	SH	UV	Left terminal	Right terminal
1C	1C	1	—	Ex.2	Ex.6
1C	1C	—	1	Ex.2	Ex.7
2C	—	1	—	Ex.1	Ex.6
2C	—	—	1	Ex.1	Ex.7
2C	2C	—	—	Ex.2	Ex.3
2C	1C	1	—	Ex.2	Ex.8
2C	1C	—	1	Ex.2	Ex.9
3C	1C	—	—	Ex.2	Ex.1
3C	2C	—	—	Ex.3	Ex.4
4C	—	—	—	Ex.1	Ex.2
4C	2C	—	—	Ex.3	Ex.5

AX, AL takes precedence left terminal connection.
 AL is connected to the left terminal in preference to the AX.
 1 row terminal block is used in preference to 2 rows the terminal blocks.
 Contact TERASAKI for the combination other than the above.

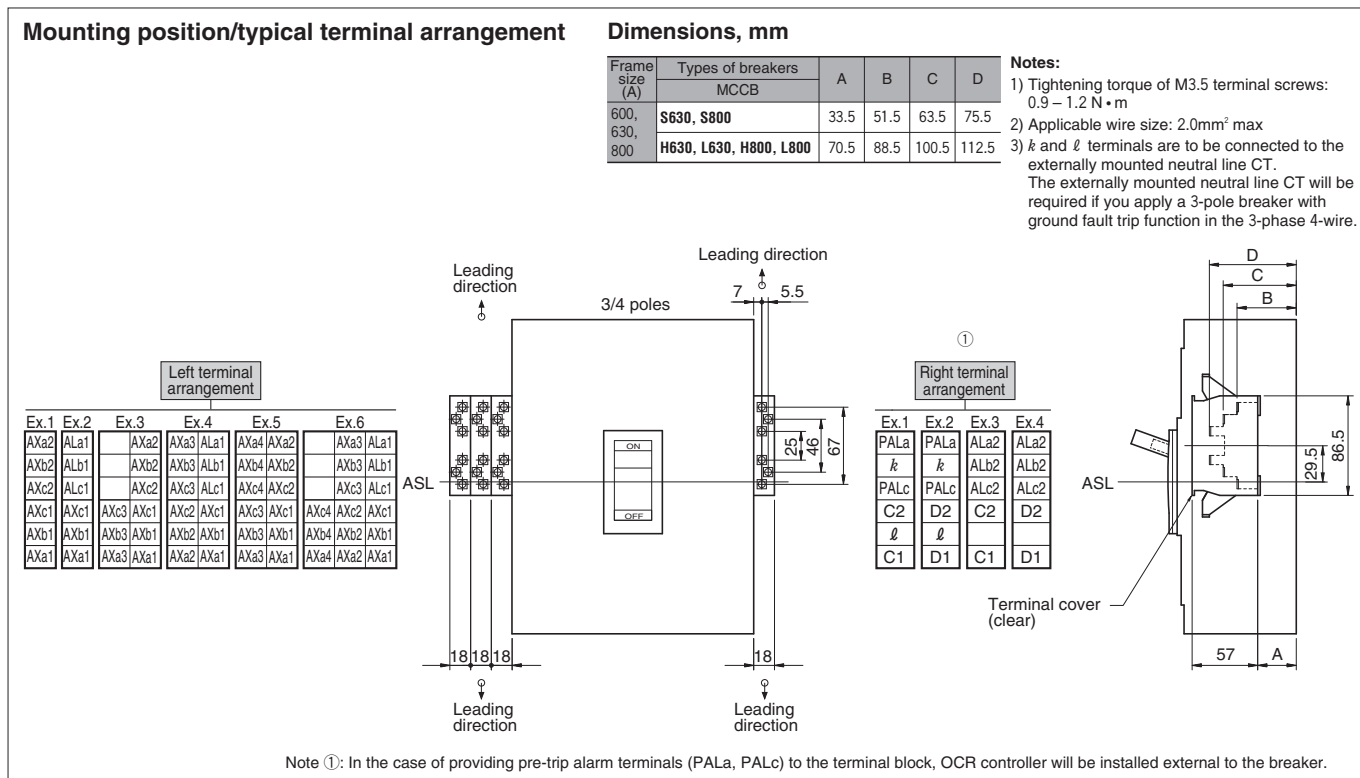
18mm width 6 terminals

Vertical leading type (T2TFX0) with 400A frame MCCB



18mm width 6 terminals

Vertical leading type (T2TFX0) with 630/800A frame MCCB



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Accessories

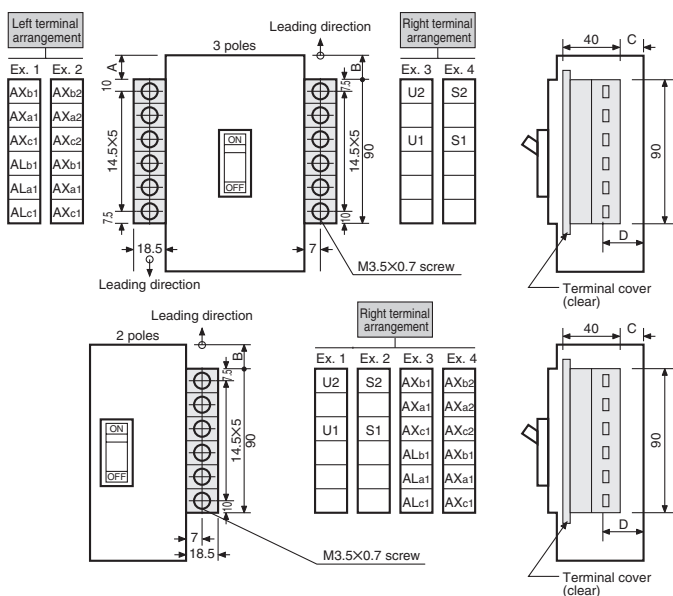
Molded Case Circuit Breakers

3 Externally mounted accessories

9. Terminal blocks (TF)

Vertical leading type (LTS) with 50A frame MCCB

Mounting position/typical terminal arrangement



Dimensions, mm

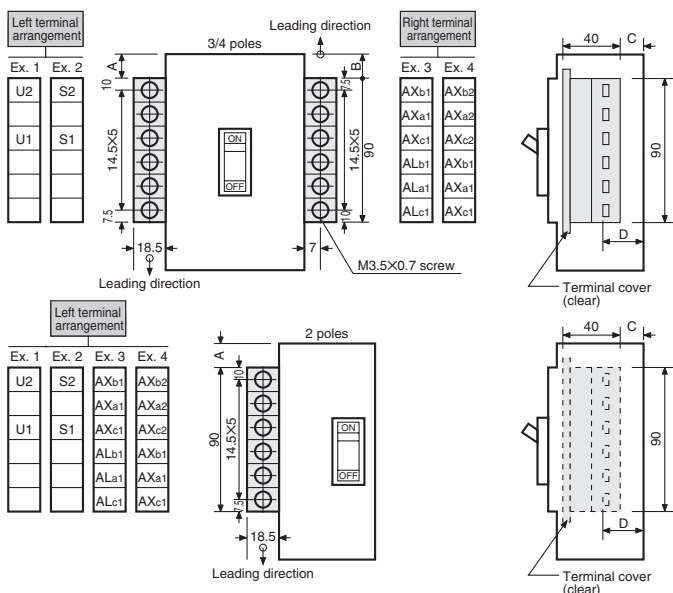
Frame size (A)	Types of breakers	A	B	C	D
50	E50-SF, E50-CM	16.5	16.5	21	36

Notes:

- 1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N·m
- 2) Applicable wire size: 1.25mm² max (Vinyl-coated wire)

Vertical leading type (LTS) with 100A frame MCCB

Mounting position/typical terminal arrangement



Dimensions, mm

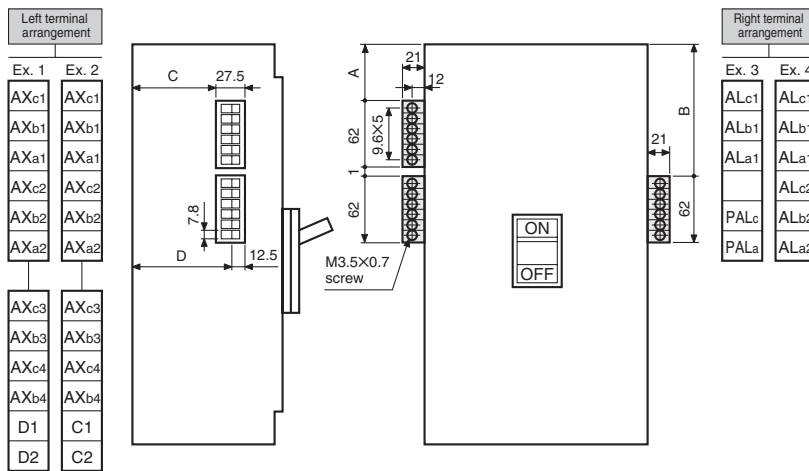
Frame size (A)	Types of breakers	A	B	C	D
100	E100-SF ①	16.5	16.5	21	36

Notes:

- ①: Terminal block cannot be mounted on the breaker which is equipped with the motor operator.
- 1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N·m
- 2) Applicable wire size: 1.25mm² max (Vinyl-coated wire)

Horizontal leading type (LTF) with 1250/1600A frame MCCB

Mounting position/typical terminal arrangement



Dimensions, mm

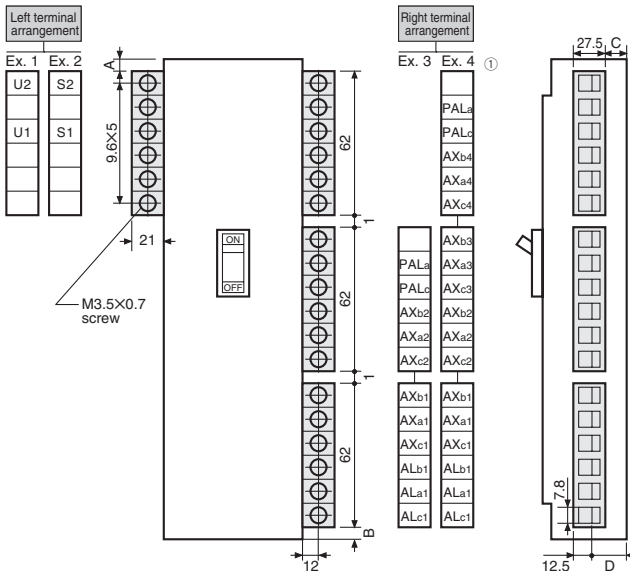
Frame size (A)	Types of breakers	A	B	C	D
1250	S1250	51	114 (124)	57	72
1600	S1600	51	114 (124)	77	92

Notes:

- 1) Values in parentheses applies to 4-pole breakers.
- 2) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N·m
- 3) Applicable wire size: 2.0mm² max x 2

Horizontal leading type (LTF) with 1000 to 2000A frame MCCB

Mounting position/typical terminal arrangement



Dimensions, mm

Frame size (A)	Types of breakers	A	B	C	D
1000	TL-1000NE	51	194 (184)	77	92
1200	TL-1200NE	51	194 (184)	77	92
2000	XS2000NE, XS2000NN	54	208	100	115

Notes:

- ①: The terminal arrangement Ex.4 shown in the figure applies to type XS2000NE breakers only.
- 1) Values in parentheses applies to 4-pole breakers.
- 2) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N·m
- 3) Applicable wire size: 2.0mm² max x 2

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Accessories

Molded Case Circuit Breakers

3 Externally mounted accessories

10. Door Flange (D.F)

Door flanges are recommended to be used to cover the cutout of a switchboard panel.

Fig. 1

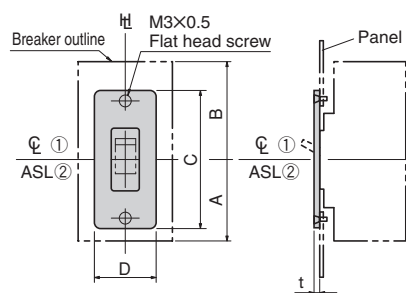
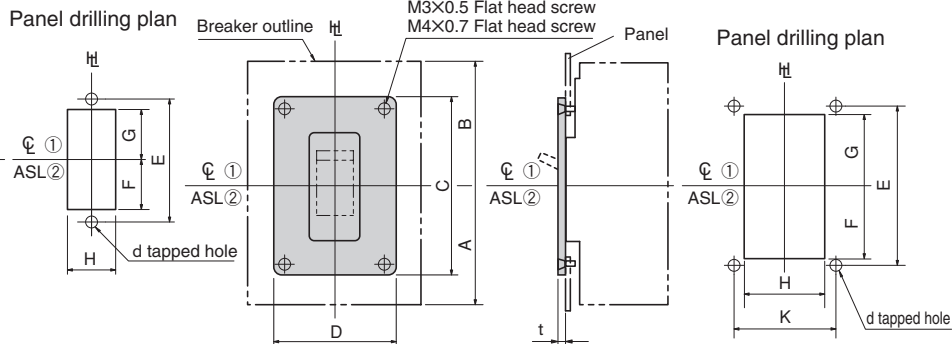


Fig. 2



Dimensions mm

Frame size (A)	Types of breakers	Order codes	Fig.	A	B	C	D	E	F		G		H		K	d	t
									Min	Max	Min	Max	Min	Max			
50	E50-SF, E50-CM	XAA1	1②	65	65	105	50	92	37	42	37	42	32	45	—	M3×0.5	3
	S50-SF	T2DF25	1①	65	65	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
	S50-GF	T2DF25	1①	77.5	77.5	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
	E100-SF	XAA1	1②	65	65	105	50	92	37	42	37	42	32	45	—	M3×0.5	3
100	S100-NF, S100-GF S100-NM, S100-NN	T2DF25	1①	77.5	77.5	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
	H100-NF, L100-NF	T2DF25	1①	82.5	82.5	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
	S125-SF, S125-SN	T2DF25	1①	65	65	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
	S125-NF, S125-GF S125-NN	T2DF25	1①	77.5	77.5	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
125	H125-NF, L125-NF	T2DF25	1①	82.5	82.5	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
	S225-NF, S225-GF S225-NN	T2DF25	1①	82.5	82.5	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
	S225-GE H225-NF, L225-NF	T2DF25	1①	82.5	82.5	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
	E250-SF, S250-SF S250-SN S250-NF, S250-GF	T2DF25	1①	82.5	82.5	105	50	92	37	42	37	42	32	45	—	M3×0.5	2
250	S400-CF, S400-NF S400-GF S400-NE, S400-GE S400-PF, S400-PE S400-NN	T2DF40	2①	130	130	135	95	120	48	56	48	56	57	90	80	M3×0.5	2
	H400-NE, L400-NE	T2DF40	2①	130	130	135	95	120	48	56	48	56	57	90	80	M3×0.5	2
	S630-CF, S630-NF S630-RF, S630-NE S630-RE, S630-GN	T2DF40	2②	132	141	135	95	120	48	56	48	56	57	90	80	M3×0.5	2
	H630-NE, L630-NE	T2DF40	2②	132	141	135	95	120	48	56	48	56	57	90	80	M3×0.5	2
630	S800-CF, S800-NF S800-RF, S800-NE S800-RE, S800-NN	T2DF40	2②	132	141	135	95	120	48	56	48	56	57	90	80	M3×0.5	2
	H800-NE, L800-NE	T2DF40	2②	132	141	135	95	120	48	56	48	56	57	90	80	M3×0.5	2
	TL-1000NE	TAA5	2②	170	200	150	120	135	51	63.5	51	63.5	85	115	80	M3×0.5	5
	TL-1200NE	TAA5	2②	170	200	150	120	135	51	63.5	51	63.5	85	115	80	M3×0.5	5
1200	S1250-NE, S1250-GE S1250-NN	T2DFX6	2②	170	200	150	120	135	51	63.5	51	63.5	85	115	80	M3×0.5	2
	S1600-NE, S1600-NN	T2DFX6	2②	170	200	150	120	135	51	63.5	51	63.5	85	115	80	M3×0.5	2
	XS2000NE, XS2000NN	TAA-10	2②	193	257	200	175	175	74	83.5	74	83.5	123	170	150	M4×0.7	5

Notes:

① : CL Handle centre line is applied.

② : ASL Arrangement standard line is applied.

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Characteristics and Outline Dimensions

Molded Case Circuit Breakers

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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(50A Frame)

E50-SF

Ratings and Specifications

Type	E50-SF					
Number of poles	2	3				
■ Ratings						
Rated current, A	10	40				
Calibrated at 45°C	15	50				
	20					
	30					
Rated insulation voltage [U_i] V			690			
Rated impulse withstand voltage [U_{imp}] kV			6			
■ Rated breaking capacity, kA						
NK	AC	690V	—			
I_{cu}/I_{cs} (sym)		450V	10/— (13)			
		240V	25/— (14)			
	① DC	250V	7.5/— (27)			
IEC60947-2	AC	690V	—			
I_{cu}/I_{cs} (sym)		500V	7.5/3.8			
		440V	10/5			
		415V	10/5			
		380V	16/8			
		240V	25/13			
	① DC	250V	7.5/3.8 (27)			
		125V	15/7.5 (27)			
			—			
■ Rated short time withstand current, kA						
Weight (● marked standard type) kg			0.48	0.74		
■ Connections and Mountings						
Front-connected (FC)	Terminal screws		●			
	With extension bars		—			
Rear-connected (RC)	Bolt studs		○			
	Flat bar studs		—			
Plug-in (PM)	For switchboards	Standard (PMC)	○			
		High-performance (PMB)	—			
		For distribution boards (PMC)	○			
Flush-mounted (FP)			○ Bolt studs			
Draw-out type (DR)			—			
TemPlug70 (PG)			—			
TemPlug45B (PG4)			—			
DIN rail mount			—			
Clip-in chassis mount			—			
■ Accessories (optional)		Symbol				
Externally mounted	Motor operator	M C	—	●		
	External operating Breaker-mounted	H B	—	●		
	handle Door-mounted (variable depth)	H P	—	●		
	Toggle extension	H A	—	—		
	Mechanical interlock Slide type	M S	—	●		
	Toggle holder	H H	●			
	Toggle lock	H L	●			
	Terminal cover	For front-connected	C F	●		
		For rear-connected and plug-in	C R	●		
	Interpole barrier	B A	●			
	Terminal block for lead	T F	●			
	Door flange	D F	●			
■ Standard specifications						
Overcurrent trip mechanism			Thermal-magnetic⑦			
Trip button (color)			Yes (Red)			
Handle position indication (ON: Red, OFF: Green)			Yes			
Suitability for isolation			Non			
CE marking			Non			

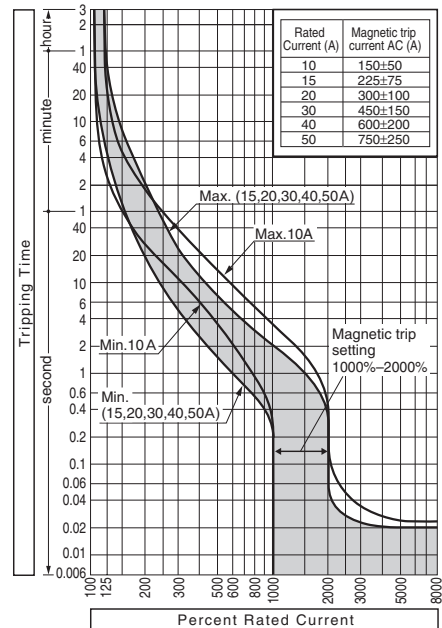
Notes:

● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.

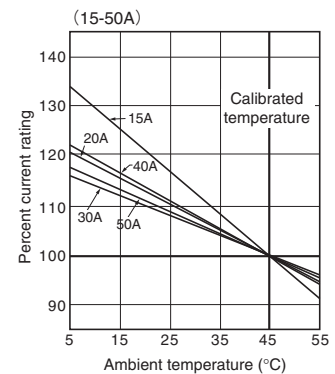
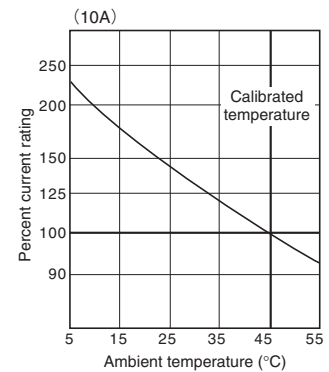
● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request.

⑦ : Hydraulic-magnetic type for below 10A rating. 13 : at 500V AC. 14 : at 250V AC. 27 : Applicable to only 2 poles breakers.

Time/Current characteristic curves



Ambient Compensating Curves



Combinations of Internally Mounted Accessories (Optional)

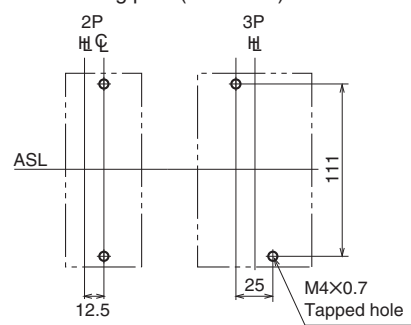
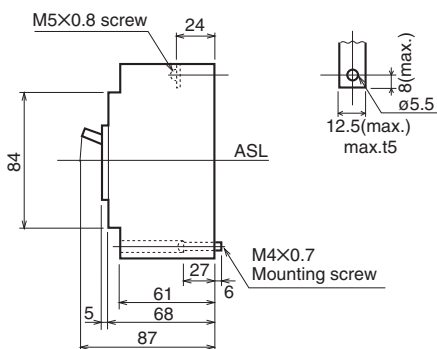
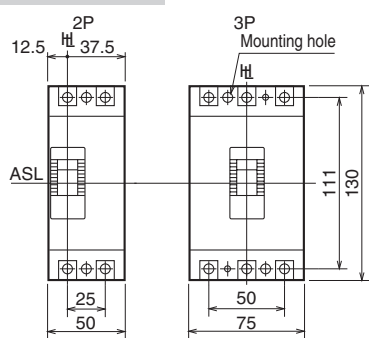
Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip *	AX	SH	UV	SH	UV	AX	UV
3											

NOTE: 2-pole type breaker may incorporate only one combination of [AX (max.2C)], [AL], [SH], [UV], [AX]-[AL] into the right pole.

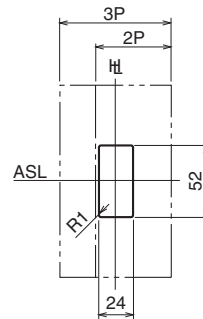
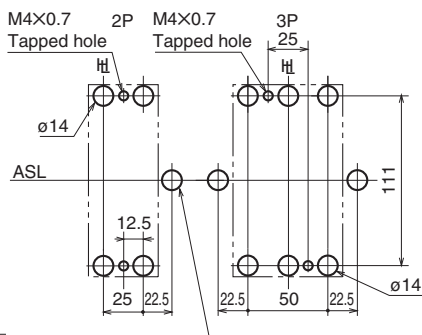
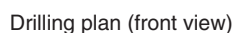
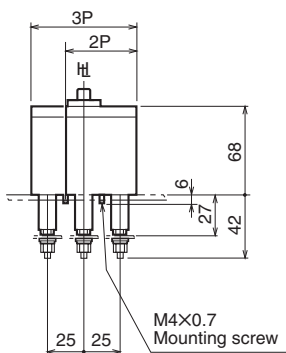
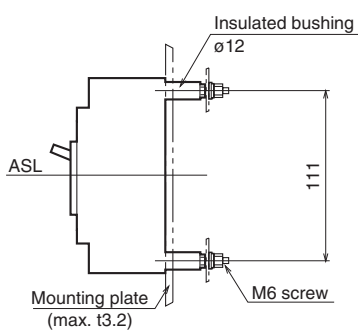
NOTE: * The UV Controller is installed externally when provided with AC UV.

E50-SF

Front-connected

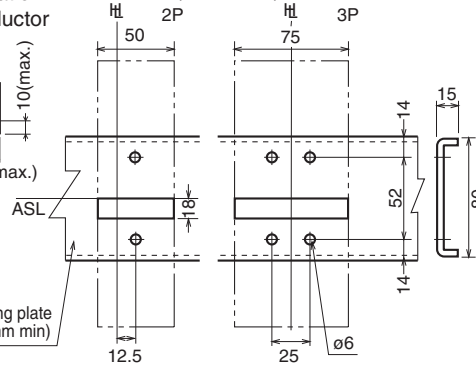
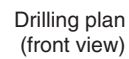
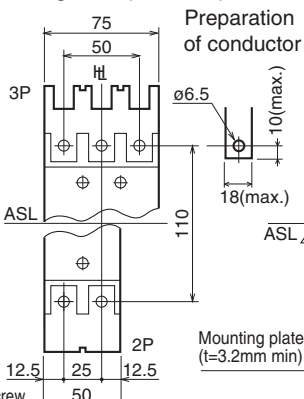
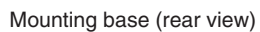
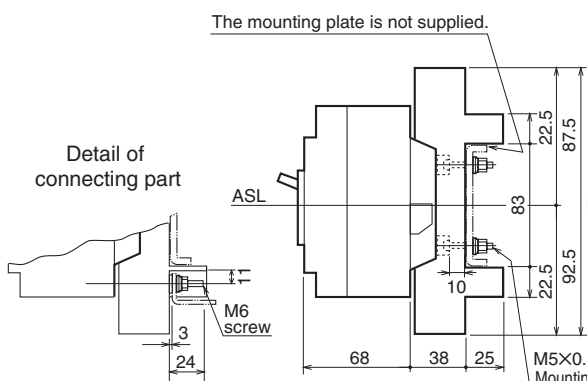


Rear-connected



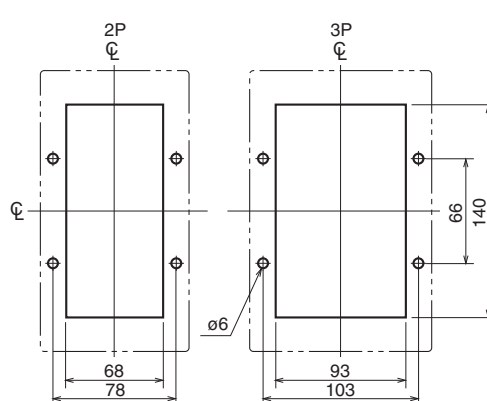
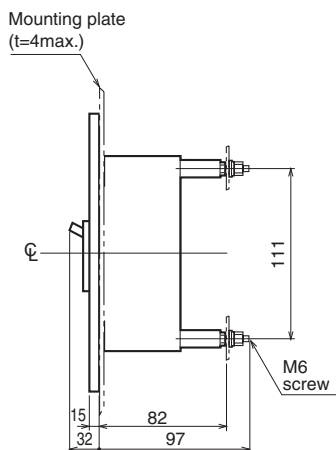
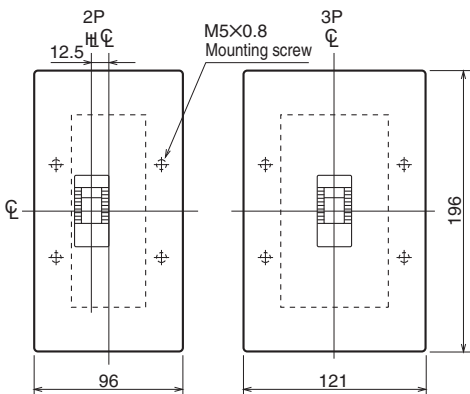
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Plug-in (Standard)



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

Flush-mounted





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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(100A Frame)

E100-SF

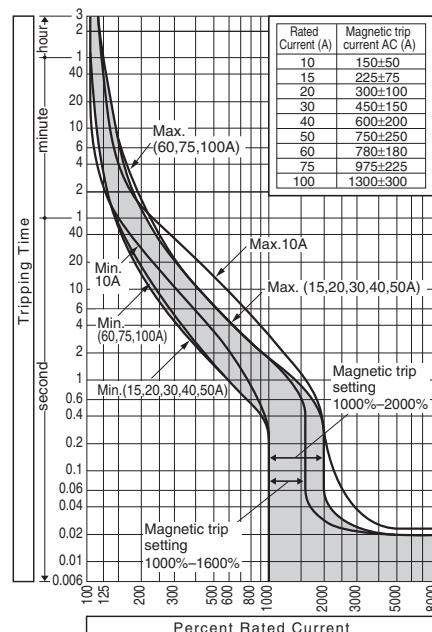
Ratings and Specifications

Type		E100-SF			
Number of poles		2	3		
■ Ratings					
Rated current, A		10	40	100	
Calibrated at 45°C		15	50		
		20	60		
		30	75		
Rated insulation voltage [U _i] V		690			
Rated impulse withstand voltage [U _{imp}] kV		6			
■ Rated breaking capacity, kA					
NK	AC	690V	—		
		450V	10/— (13)		
		240V	25/— (14)		
	① DC	250V	7.5/— (27)		
IEC60947-2	AC	690V	—		
		500V	7.5/3.8		
		440V	10/5		
		415V	10/5		
I _{cu} /I _{cs} (sym)		380V	16/8		
		240V	25/13		
	① DC	250V	7.5/3.8 (27)		
		125V	15/7.5 (27)		
■ Rated short time withstand current, kA					
Weight (● marked standard type) kg		0.48	0.74		
■ Connections and Mountings					
Front-connected (FC)	Terminal screws	●			
	With extension bars	—			
Rear-connected (RC)	Bolt studs	○			
	Flat bar studs	—			
Plug-in (PM)	For switchboards Standard (PMC)	○			
	High-performance (PMB)	—			
For distribution boards (PMC)		○			
Flush-mounted (FP)		○ Bolt studs			
Draw-out type (DR)		—			
TemPlug70 (PG)		—			
TemPlug45B (PG4)		—			
DIN rail mount		—			
Clip-in chassis mount		—			
■ Accessories (optional)		Symbol			
Externally mounted	Motor operator	M C	—	●	
	External operating Breaker-mounted	H B	—	●	
	handle Door-mounted (variable depth)	H P	—	●	
	Toggle extension	H A	—	—	
	Mechanical interlock Slide type	M S	—	●	
	Toggle holder	H H	—	●	
	Toggle lock	H L	—	●	
	Terminal cover For front-connected	C F	—	●	
	For rear-connected and plug-in	C R	—	●	
	Interpole barrier	B A	—	●	
Standard specifications	Overcurrent trip mechanism	Thermal-magnetic ⑦			
	Trip button (color)	Yes (Red)			
	Handle position indication (ON: Red, OFF: Green)	Yes			
	Suitability for isolation	Non			
CE marking		Non			

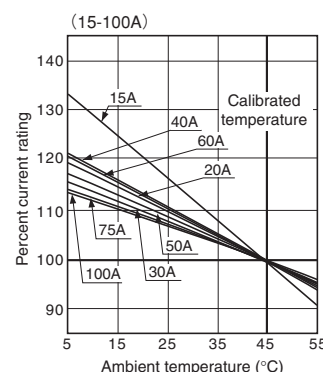
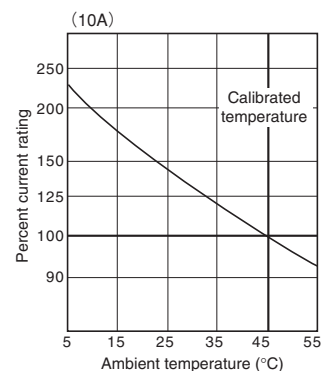
Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request.
⑦ : Hydraulic-magnetic type for below 10A rating. ⑬ : at 500V AC. ⑭ : at 250V AC. ⑳ : Applicable to only 2 poles breakers.

Time/Current characteristic curves



Ambient Compensating Curves



Combinations of Internally Mounted Accessories (Optional)

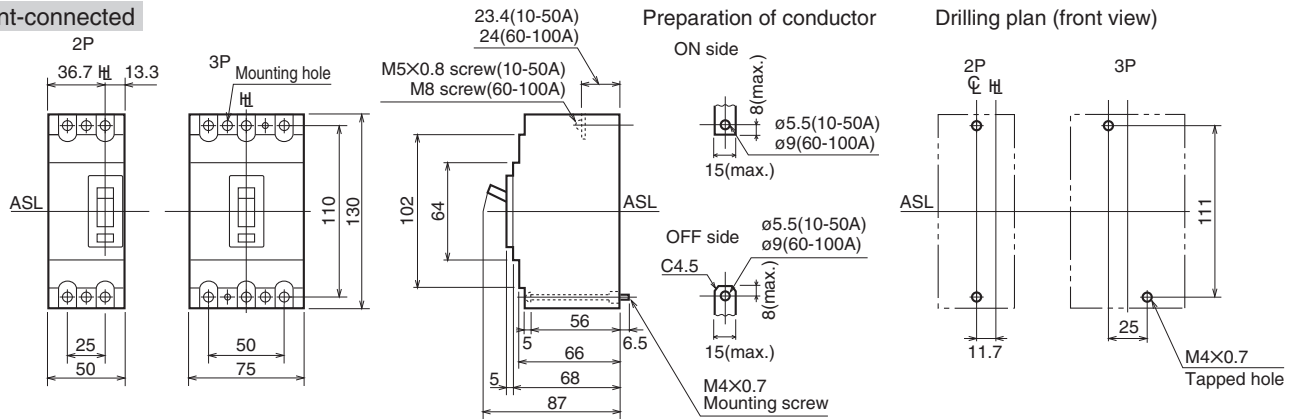
Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip #1	Under voltage trip #2	AX	SH	UV	SH	UV	AX	UV
3											

NOTE: 2-pole type breaker may incorporate only one combination of [AX (max.2C)], [AL], [SH], [UV], [AX-AL] into the left pole.
NOTE: #1 Shunt trip is provided with anti-burnout switch.
NOTE: #2 The UV Controller is installed externally when provided with AC UV.

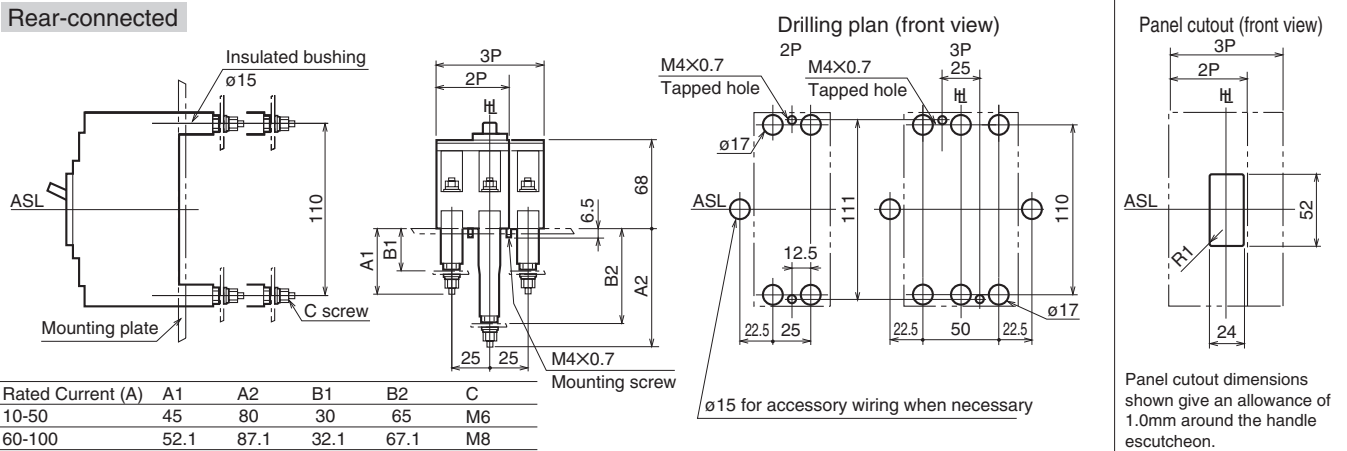
Outline dimensions (mm)

E100-SF

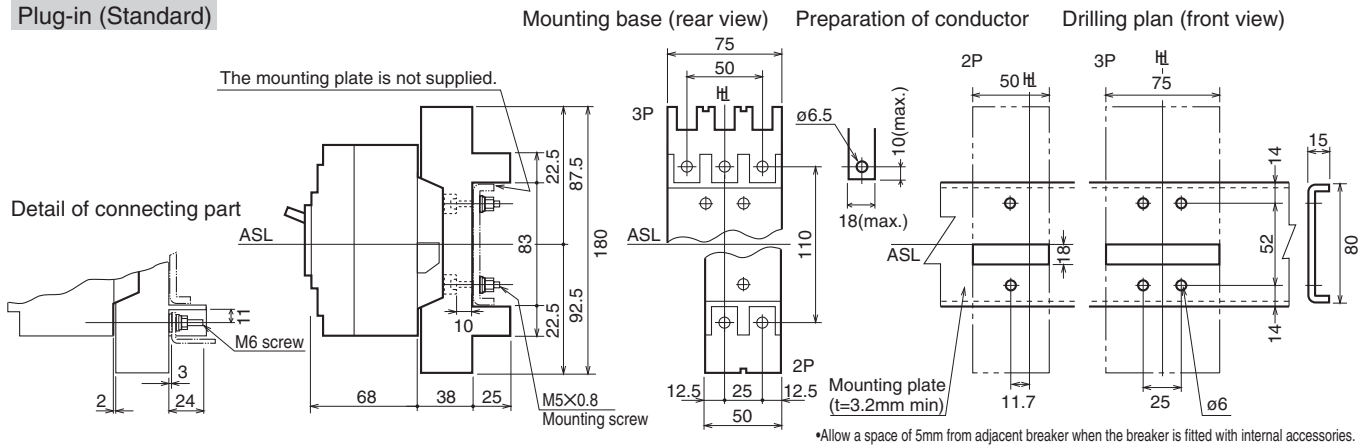
Front-connected



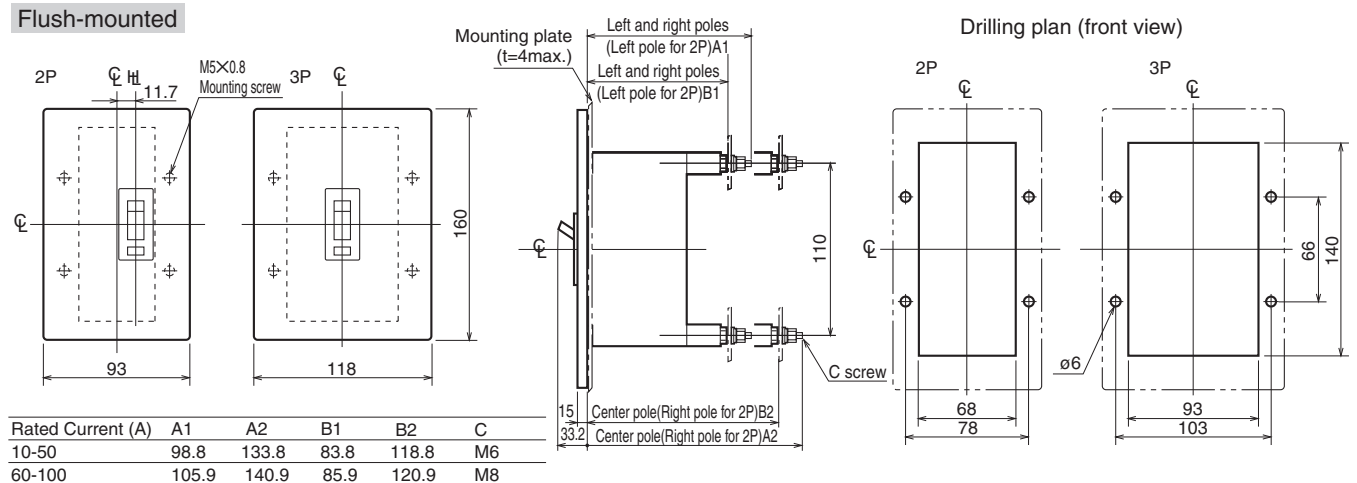
Rear-connected



Plug-in (Standard)



Flush-mounted





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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(50A Frame)

S50-SF

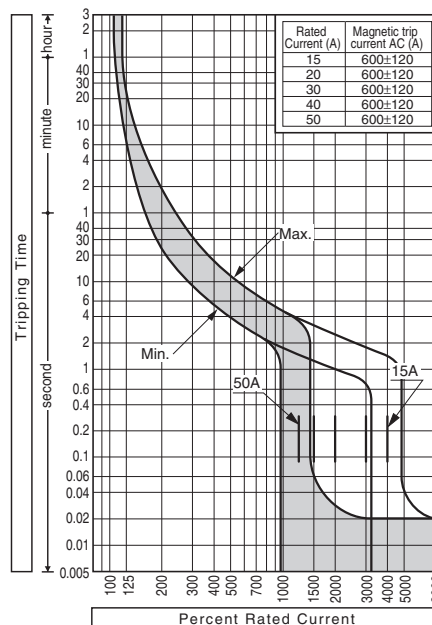
Ratings and Specifications

Type		S50-SF			
Number of poles		2	3		
■ Ratings					
Rated current, A		15			
Calibrated at 45°C		20			
		30			
		40			
		50			
Rated insulation voltage [U _i] V		690			
Rated impulse withstand voltage [U _{imp}] kV		8			
■ Rated breaking capacity, kA					
NK	AC	690V	—		
		450V	25/13		
<i>I_{cu}/I_{cs}</i> (sym)		240V	50/25		
	① DC	250V	25/13 ②		
IEC60947-2	AC	690V	6/3		
		500V	12/6		
<i>I_{cu}/I_{cs}</i> (sym)		440V	25/13		
		415V	30/15		
		380V	30/15		
		240V	50/25		
① DC		250V	25/13 ②		
		125V	40/20 ②		
■ Rated short time withstand current, kA		—			
Weight (● marked standard type) kg		0.6	0.8		
■ Connections and Mountings					
Front-connected (FC)	Terminal screws	●			
	With extension bars	○ ⑤③			
Rear-connected (RC)	Bolt studs	—			
	Flat bar studs	○			
Plug-in (PM)	For switchboards Standard (PMC)	—	○		
	High-performance (PMB)	—			
For distribution boards (PMC)		○ ⑤③			
Flush-mounted (FP) With flat bar studs		○			
Draw-out type (DR)		—			
TemPlug70 (PG)		—			
TemPlug45B (PG4)		—			
DIN rail mount		—	○ ①①		
Clip-in chassis mount		—			
■ Accessories (optional)		Symbol			
Externally mounted	Motor operator	M C	—		
	External operating handle	H B	—	●	
	Door-mounted (variable depth)	H P	—	●	
	Toggle extension	H A	—		
	Mechanical interlock Slide type	M S	—	●	
	Toggle holder	H H	—	●	
	Toggle lock	H L	—	●	
	Terminal cover For front-connected	C F	—	●	
	For rear-connected and plug-in	C R	—	●	
	Interpole barrier	B A	—	● ③	
	Terminal block for lead	T F	—	●	
	Door flange	D F	—	●	
	■ Standard specifications				
	Overcurrent trip mechanism		Thermal-magnetic		
	Trip button (color)		Yes (Red)		
	Handle position indication (ON: Red, OFF: Green)		Yes		
	Suitability for isolation		Yes		
	CE marking		Yes		

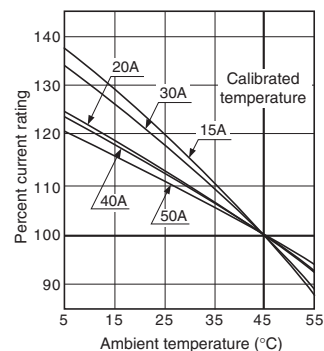
Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request.
③ : Line side interpole barriers are supplied as standard. (Front connection only) ①① : Provided with DIN rail adaptor.
② : Applicable to only 2 poles breakers. ⑤③ : For the extension bars, please place the order separately in parts.
⑤③ : Specify PMD when the internal accessories are fitted.

Time/Current characteristic curves



Ambient Compensating Curves



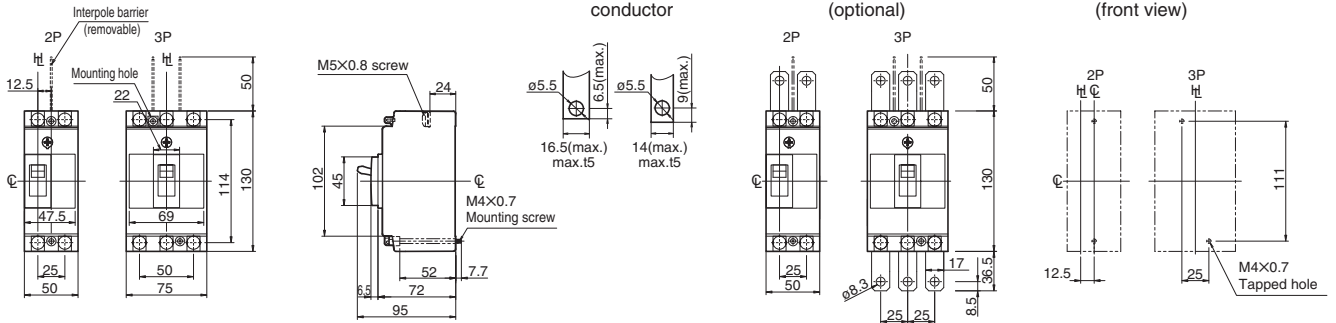
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
2											
3											
		Left pole		Right pole							

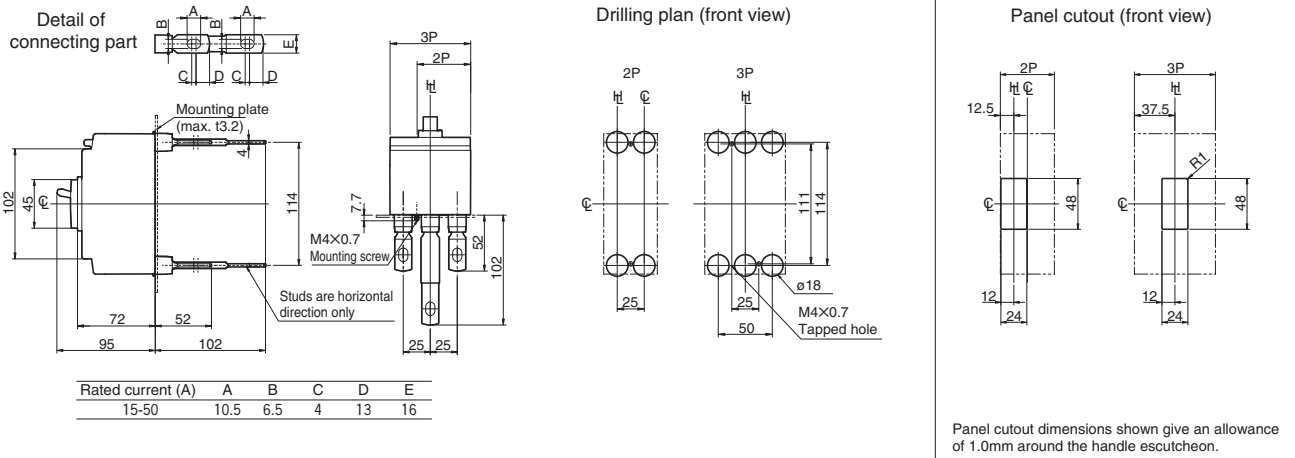
Outline dimensions (mm)

S50-SF

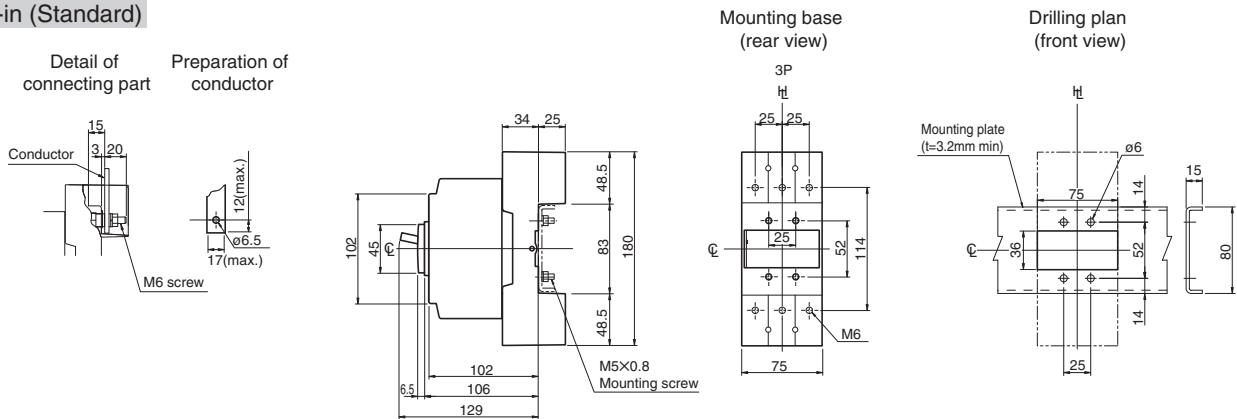
Front-connected



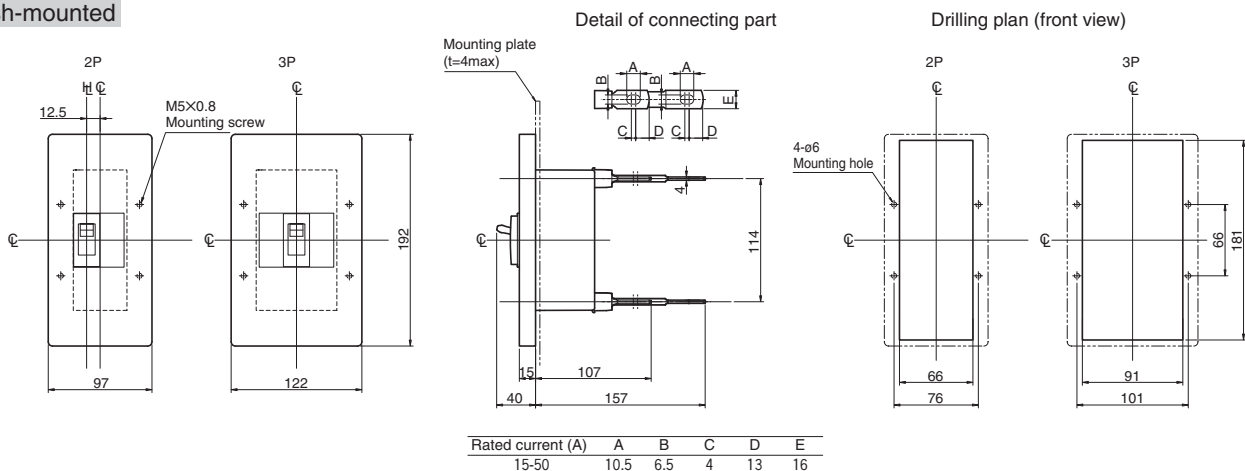
Rear-connected



Plug-in (Standard)



Flush-mounted





7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(125A Frame)

S125-SF

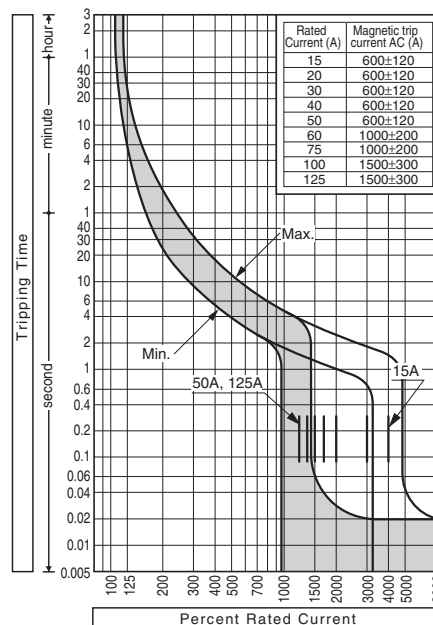
Ratings and Specifications

Type			S125-SF					
Number of poles			2	3	4	2	3	4
■ Ratings								
Rated current, A			15	50		125		
Calibrated at 45°C			20	60				
			30	75				
			40	100				

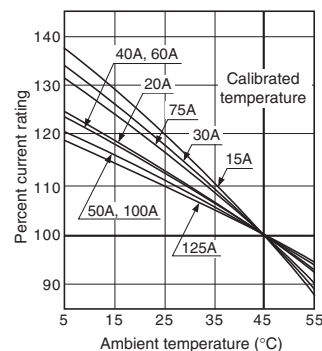
Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request.
③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑪ : Provided with DIN rail adaptor.
⑦ : Applicable to only 2 poles breakers. 53 : For the extension bars, please place the order separately in parts.
58 : Specify PMD when the internal accessories are fitted.

Time/Current characteristic curves



Ambient Compensating Curves



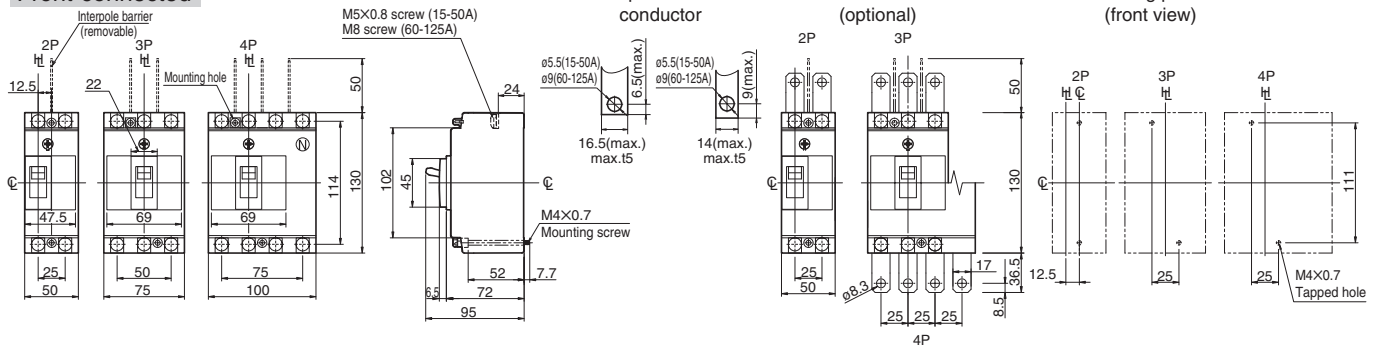
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
2											
3											
4											
		Left pole Right pole									

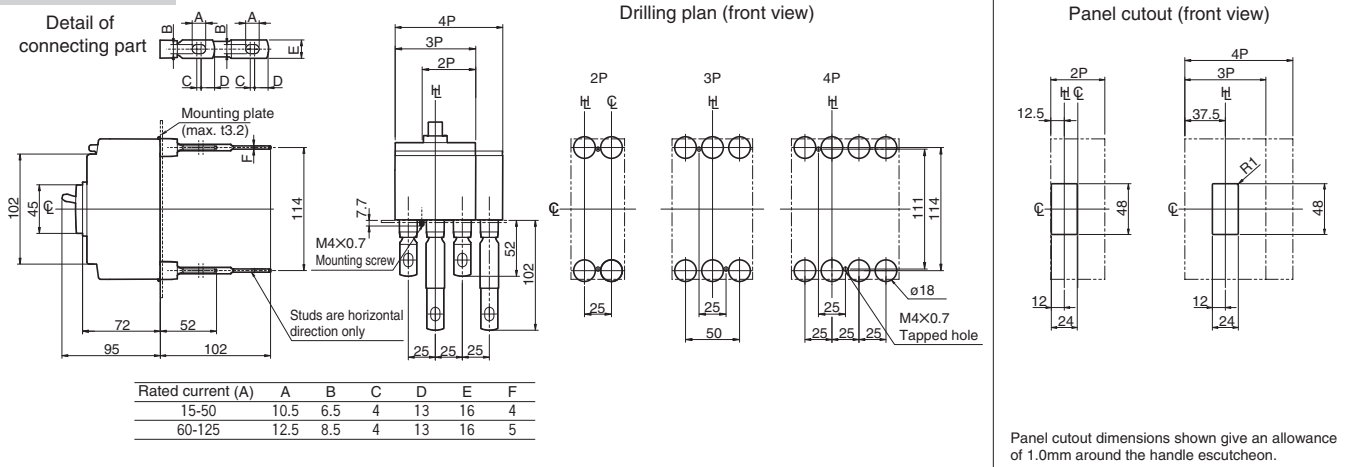
Outline dimensions (mm)

S125-SF

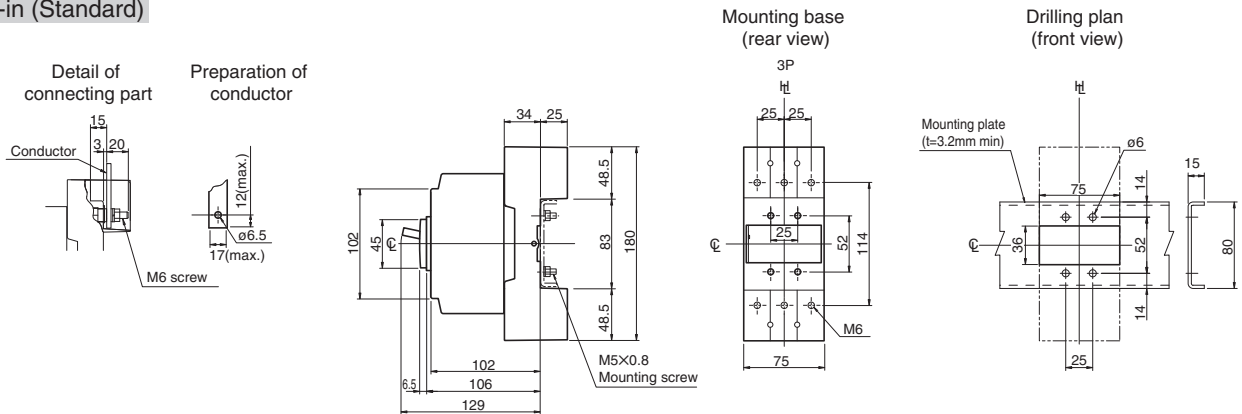
Front-connected



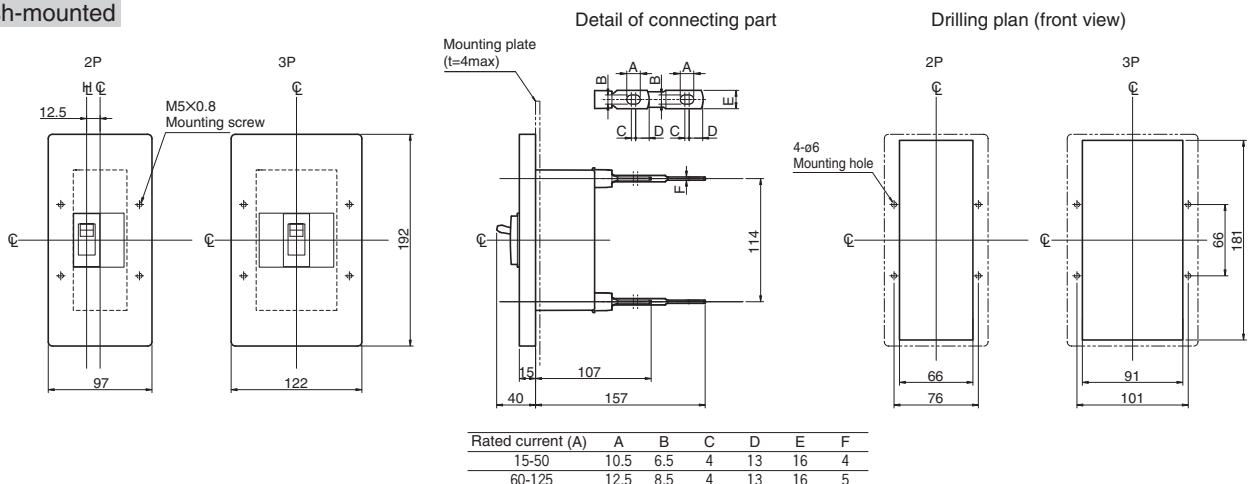
Rear-connected



Plug-in (Standard)



Flush-mounted





7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(100A · 50A Frame)

S100-NF, S50-GF, S100-GF

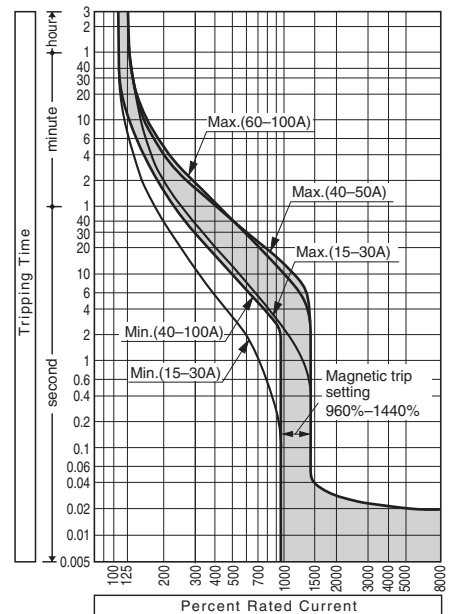
Ratings and Specifications

Type	S100-NF	S50-GF	S100-GF
Number of poles	2 3 4	3 4	2 3 4
■ Ratings			
Rated current, A	15 50	15	15 60
Calibrated at 45°C	20 60	20	20 75
	30 75	30	30 100
	40 100	40	40
		50	50
Rated insulation voltage [U_i] V			
Rated impulse withstand voltage [U _{imp}] kV	690	690	690
■ Rated breaking capacity, kA			
NK	AC 690V	6/6	6/6
I _{cu} /I _{cs} (sym)	450V	25/25	50/25
	240V	50/50	85/85
① DC	250V	25/19 ②	40/40 ②
	690V	6/6	6/6
IEC60947-2	500V	22/22	25/22
	440V	25/25	50/25
I _{cu} /I _{cs} (sym)	415V	30/30	65/33
	380V	30/30	65/33
① DC	240V	50/50	85/85
	250V	25/19 ②	40/40 ②
	125V	40/30 ②	40/40 ②
■ Rated short time withstand current, kA			
Weight (● marked standard type) kg	0.7 1.1 1.4	1.1 1.4	0.7 1.1 1.4
■ Connections and Mountings			
Front-connected (FC)	Terminal screws	●	●
	With extension bars	○ ⑤	○ ⑤
Rear-connected (RC)	Bolt studs	—	—
	Flat bar studs	○	○
Plug-in (PM)	For switchboards Standard (PMC)	— ○ —	— ○ —
	High-performance (PMB)	○	○
	For distribution boards (PMC)	— ○ —	— ○ —
Flush-mounted (FP)	With flat bar studs	○	○
Draw-out type (DR)	—	—	—
TemPlug70 (PG)	— ○ —	○ —	○ ○ —
TemPlug45B (PG4)	—	—	—
DIN rail mount	— ○ ①	○ ①	— ○ ①
Clip-in chassis mount	—	—	—
■ Accessories (optional)			
Externally mounted	Motor operator	M C	— ●
	External operating handle	H B	— ●
	Door-mounted (variable depth)	H P	— ●
	Toggle extension	H A	—
	Mechanical interlock Slide type	M S	— ●
	Toggle holder	H H	●
	Toggle lock	H L	●
	Terminal cover For front-connected	C F	●
	For rear-connected and plug-in	C R	●
	Interpole barrier	B A	● ③
Standard specifications	Overcurrent trip mechanism	Thermal-magnetic	Thermal-magnetic
	Trip button (color)	Yes (Red)	Yes (Red)
	Handle position indication (ON: Red, OFF: Green)	Yes	Yes
	Suitability for isolation	Yes	Yes
CE marking		Yes	Yes

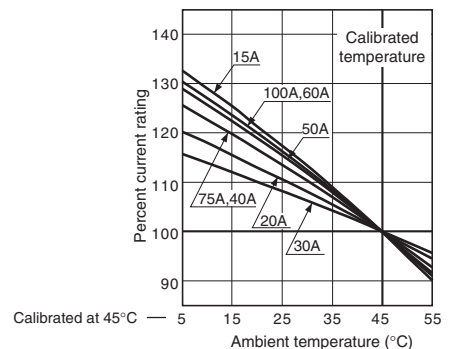
Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request. ③ : Line side interpole barriers are supplied as standard. (Front connection only) ① : Provided with DIN rail adaptor. ② : Applicable to only 2 poles breakers.
⑤ : For the extension bars, please place the order separately in parts.

Time/Current characteristic curves



Ambient Compensating Curves



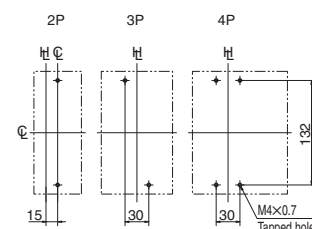
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AL	SH	UV	SH	UV	AL	UV
2											
3											
4											

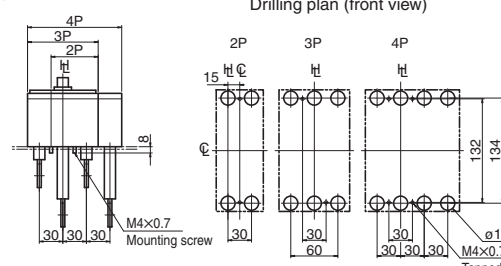
NOTE: 2-pole type breaker may incorporate only one combination of [AX (max.2C)], [AL], [SH], [UV], [AX (max.2C)]-[AL] into the right pole.

S100-NF, S50-GF, S100-GF

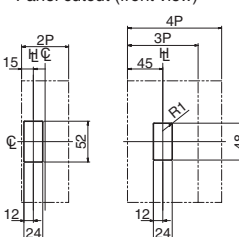
Drilling plan (front view)



Detail of connecting part



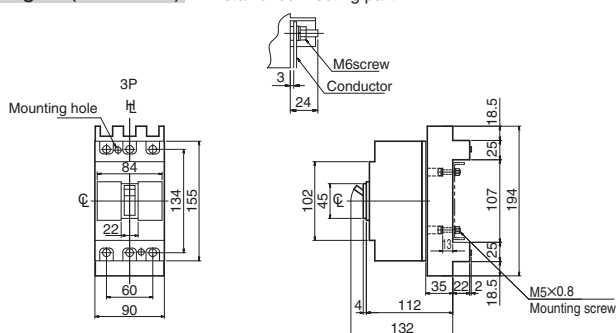
Panel cutout (front view)



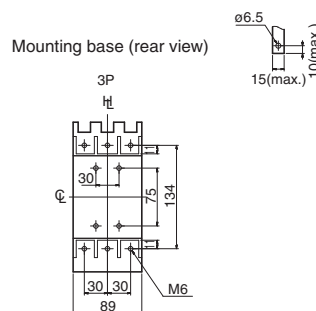
Note: Studs are factory installed in horizontal direction both on the line and load sides.

Panel cutout dimensions shown give an allowance

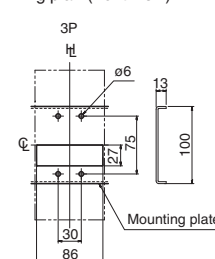
Detail of connecting part



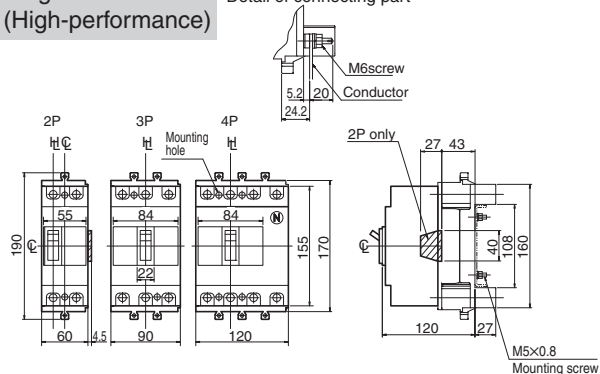
Preparation of conductor



Drilling plan (front view)



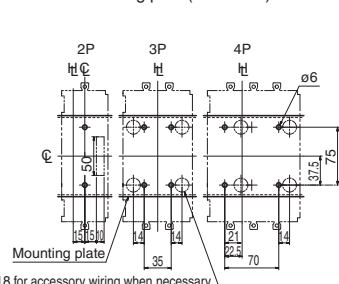
Detail of connecting part



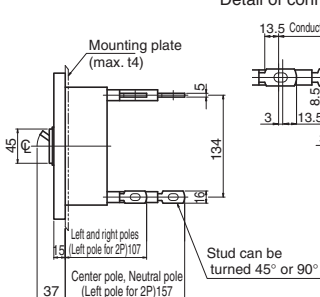
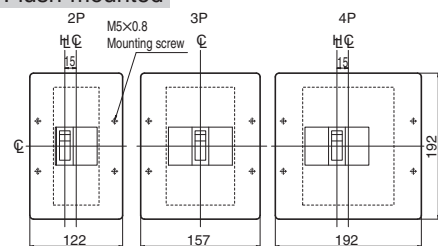
Preparation of conductor



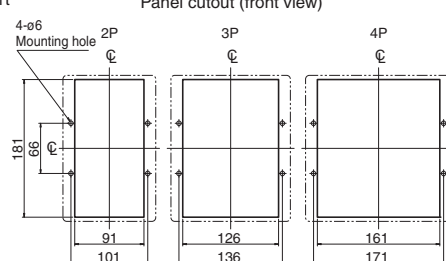
Drilling plan (front view)



Detail of connecting part



Panel cutout (front view)



Note: Studs are factory installed in horizontal direction both on the line and load sides.



Molded Case Circuit Breakers

(125A Frame)

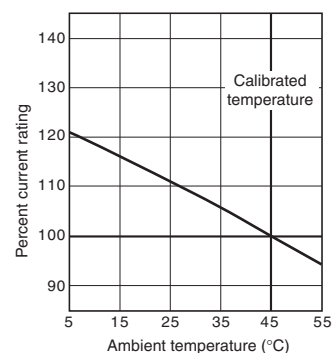
S125-NF, S125-GF

Time/Current characteristic curves

The graph illustrates the tripping time characteristics of a magnetic trip device. The Y-axis, labeled 'Tripping Time', uses a logarithmic scale with units ranging from 0.005 to 3 hours. The X-axis, labeled 'Percent Rated Current', also uses a logarithmic scale from 100 to 5000. A shaded area between two curves, labeled 'Max.' and 'Min.', represents the range of possible tripping times. Both curves show a sharp decrease in tripping time as the current increases from 100% to about 700%, after which the time levels off. A horizontal line at approximately 0.1 hours is labeled 'Magnetic trip setting 800%–1200%'.

Percent Rated Current	Max. Tripping Time (hours)	Min. Tripping Time (hours)
100	2.5	1.5
200	0.5	0.3
400	0.15	0.08
700	0.05	0.03
1000	0.04	0.02
2000	0.03	0.015
5000	0.025	0.01

Ambient Compensating Curves



Combinations of Internally Mounted Accessories (Optional)

Poles	AX Auxiliary switch	AL Alarm switch	SH Shunt trip	UV Under voltage trip	AX AL	AX SH	AX UV	AL SH	AL UV	AX AL SH	AX AL UV
2											
3 4											

Toggle
 Left pole
 Right pole

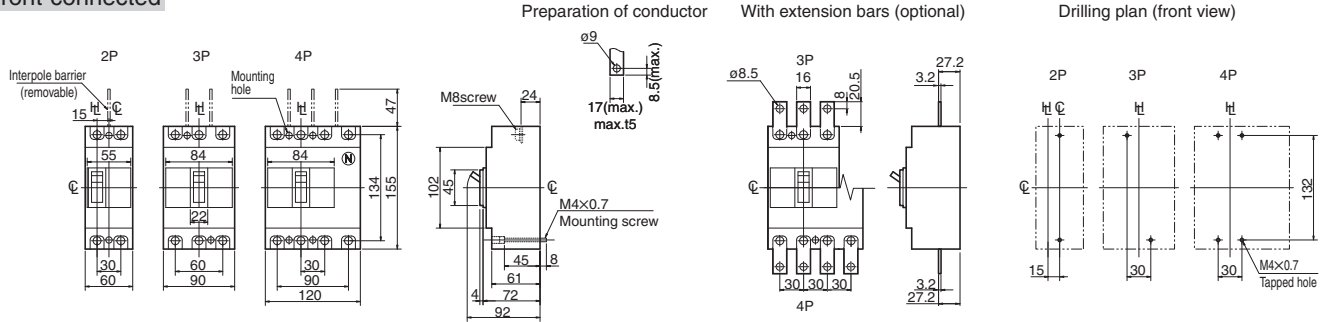
NOTE: 2-pole type breaker may incorporate only one combination of [AX (max.2C)], [AL], [SH], [UV], [AX (max.2C)]-[AL] into the right pole.

NOTE: 2-pole type breaker may incorporate only one combination of AX (max.2C), AL, SH, UV, AX (max.2C) — AL into the right pole.

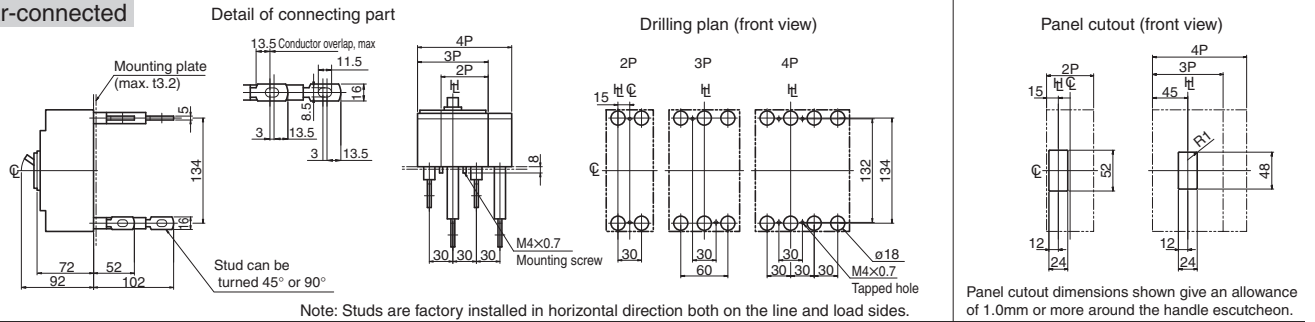
Outline dimensions (mm)

S125-NF, S125-GF

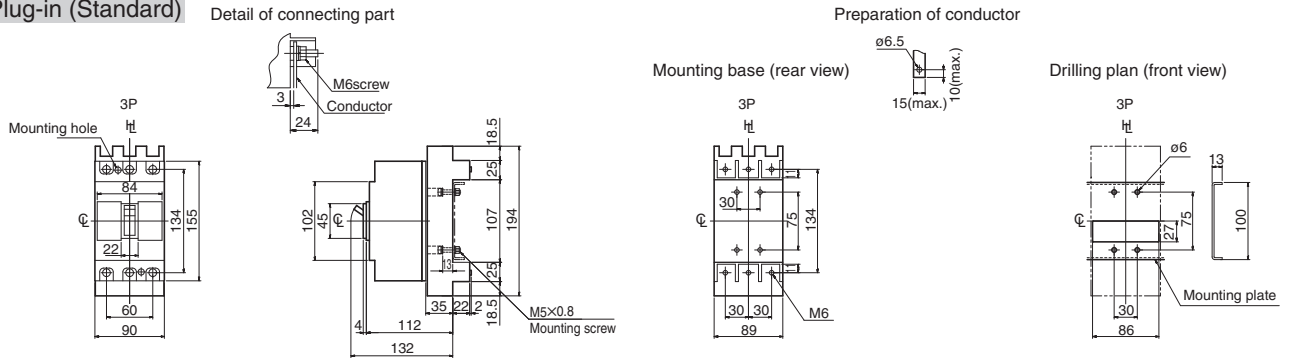
Front-connected



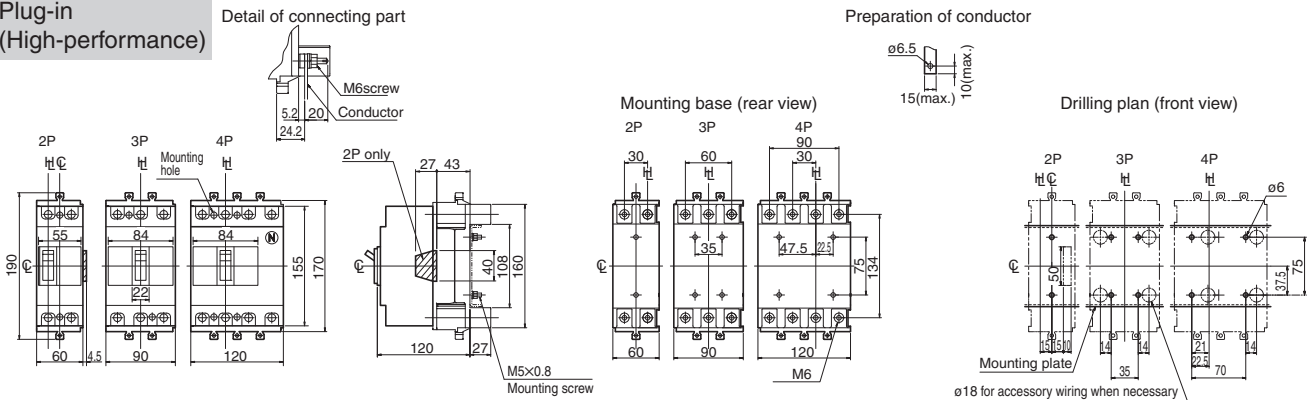
Rear-connected



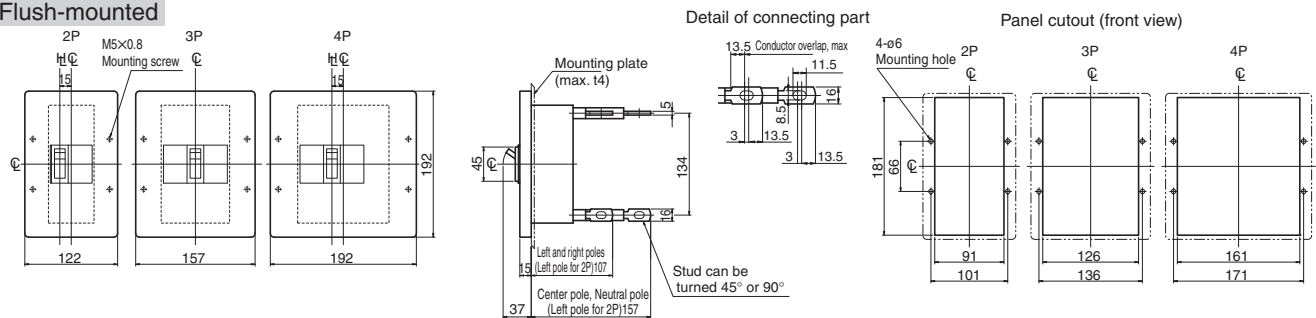
Plug-in (Standard)



Plug-in (High-performance)



Flush-mounted





7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(225A Frame)

S225-NF, S225-GF

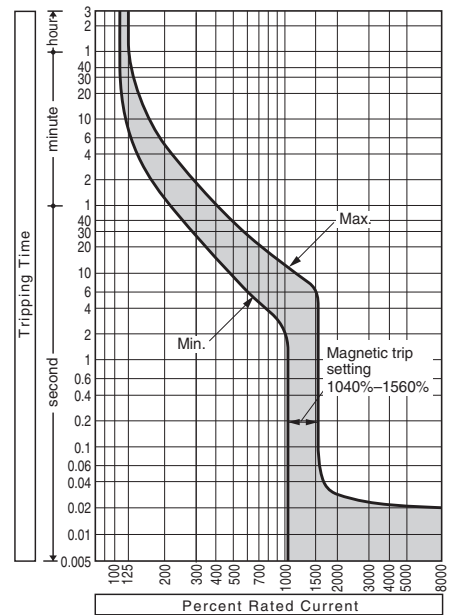
Ratings and Specifications

Type	S225-NF			S225-GF				
Number of poles	2 *	3	4	2 *	3	4		
■ Ratings								
Rated current, A	125	200		125				
Calibrated at 45°C	150	225		150				
	175			175				
				200				
				225				
* 2 poles breakers use the terminals of both ends of 3 poles breakers.								
Rated insulation voltage [U _i] V	690			690				
Rated impulse withstand voltage [U _{imp}] kV	8			8				
■ Rated breaking capacity, kA								
NK	AC	690V	7.5/7.5	7.5/7.5				
I _{cu} /I _{cs} (sym)		450V	25/25	50/25				
		240V	65/65	85/85				
	① DC	250V	40/40	40/40				
IEC60947-2	AC	690V	7.5/7.5	7.5/7.5				
I _{cu} /I _{cs} (sym)		500V	25/25	25/25				
		440V	25/25	50/25				
		415V	35/35	65/35				
		380V	35/35	65/35				
		240V	65/65	85/85				
	① DC	250V	40/40	40/40				
		125V	40/40	40/40				
■ Rated short time withstand current, kA								
Weight (● marked standard type) kg	1.5	1.5	1.9	1.5	1.5	1.9		
■ Connections and Mountings								
Front-connected (FC)	Terminal screws			●				
	With extension bars			○ 53				
Rear-connected (RC)	Bolt studs			—				
	Flat bar studs			○				
Plug-in (PM)	For switchboards Standard (PMC)			— ○ —				
	High-performance (PMB)			○				
	For distribution boards (PMC)			—				
Flush-mounted (FP)	With flat bar studs			○				
Draw-out type (DR)				—				
TemPlug70 (PG)	— ○ —			— ○ —				
TemPlug45B (PG4)				—				
DIN rail mount	—			—				
Clip-in chassis mount	—			—				
■ Accessories (optional)	Symbol							
Motor operator	M C			●				
External operating handle	Breaker-mounted H B			●				
Door-mounted (variable depth) H P	●			●				
Toggle extension	H A			—				
Mechanical interlock Slide type	M S			●				
Toggle holder	H H			●				
Toggle lock	H L			●				
Terminal cover For front-connected	C F			●				
For rear-connected and plug-in	C R			●				
Interpole barrier	B A			● ③				
Terminal block for lead	T F			●				
Door flange	D F			●				
■ Standard specifications								
Overcurrent trip mechanism	Thermal-magnetic			Thermal-magnetic				
Trip button (color)	Yes (Red)			Yes (Red)				
Handle position indication (ON: Red, OFF: Green)	Yes			Yes				
Suitability for isolation	Yes			Yes				
CE marking	Yes			Yes				

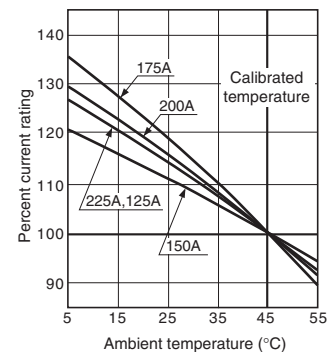
Notes:

● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request. ③ : Line side interpole barriers are supplied as standard. (Front connection only) 53 : For the extension bars, please place the order separately in parts.

Time/Current characteristic curves



Ambient Compensating Curves



Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
AX	AX	AX	AX	AX	AX	AX	AX	AX	AX	AX	AX
Left pole	Left pole	Left pole	Left pole	Left pole	Left pole	Left pole	Left pole	Left pole	Left pole	Left pole	Left pole
Right pole	Right pole	Right pole	Right pole	Right pole	Right pole	Right pole	Right pole	Right pole	Right pole	Right pole	Right pole

Technical drawing of the rear view of the connector housing. The drawing shows a cross-section of the housing with various dimensions and labels. Key features include:

- Dimensions:**
 - Overall width: 92
 - Overall height: 102
 - Top flange thickness: 4
 - Top flange width: 45
 - Internal width: 61
 - Internal height: 45
 - Bottom flange thickness: 8
 - Bottom flange width: 72
 - Mounting hole diameter: $\varnothing 9$
 - Mounting hole offset: 25 (max.)
 - Mounting hole diameter tolerance: 10 (max.)
 - Mounting hole diameter tolerance: max. t7
- Labels:**
 - M8screw
 - M4X0.7
 - Mounting screw

[illegible][illegible][illegible]

3P 4P

35 35 35 35 35 35

126 144

M4x0.7 Tapped hole

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Diagram illustrating the mounting of the unit to a panel. The unit is secured by an M8 screw through a mounting plate. Dimensions shown include 18, 27, 26.5, 15, 16.5(max.), and Conductor width, max. 25.

Technical drawing of a rectangular plate. The overall width is 105, divided into two 35 segments. The overall height is 144, divided into two 18 segments and a central 75 segment. The top and bottom edges are labeled 3P. The left edge is labeled rP. The right edge is labeled M. A central rectangular hole is shown with a width of 30 and a height of 75. There are four circular features, one in each corner, with a diameter of 30. There are also four small square features, one in each corner, with a side length of 30.

[illegible]

Technical drawings of the 3P and 4P mounting plates. The 3P drawing shows a plate with a central rectangular cutout and four diamond-shaped holes. The 4P drawing shows a plate with a central rectangular cutout, four diamond-shaped holes, and a central cross-shaped hole. Dimensions are provided for both plates, including overall width and height, and cutout dimensions.

7-15



Molded Case Circuit Breakers

E250-SF, S250-SF

Time/Current characteristic curves

Figure 1 is a line graph showing the relationship between Ambient temperature (°C) on the x-axis and Percent current rating on the y-axis. The x-axis ranges from 5 to 55°C, and the y-axis ranges from 90 to 140%. A vertical line at 45°C is labeled 'Calibrated temperature'. Five lines represent different motor types: 125A, 175A, 200A, 225A, and 250A. All lines show a decrease in percent current rating as ambient temperature increases.

Ambient temperature (°C)	125A (%)	175A (%)	200A (%)	225A (%)	250A (%)
5	125	120	115	110	105
15	120	115	110	105	100
25	115	110	105	100	95
35	110	105	100	95	90
45	105	100	95	90	85
55	100	95	90	85	80

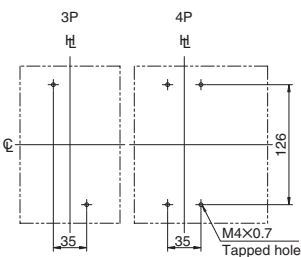
Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX AL SH	AX AL UV
Auxiliary switch											
4-w											

Toggle

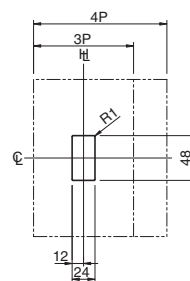
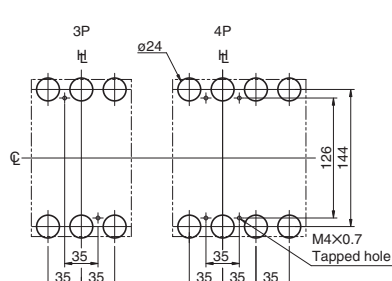
Left pole

Right pole

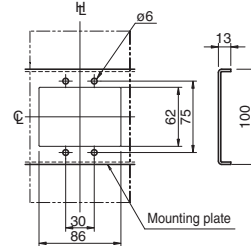
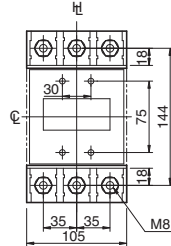
Drilling plan
(front view)



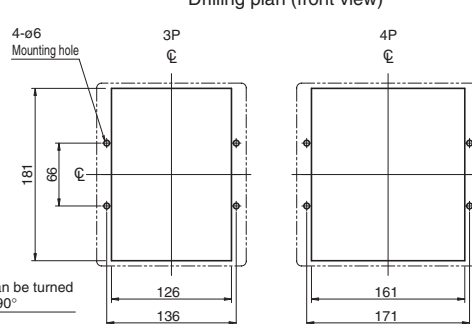
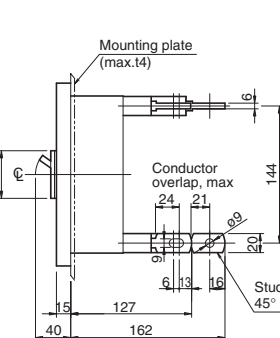
Panel cutout (front view)



Drilling plan
(front view)



Drilling plan (front view)





Molded Case Circuit Breakers

S250-NF, S250-GF

Time/Current characteristic curves

[illegible]

Ambient temperature (°C)	Percent current rating
5	120
15	115
25	110
35	105
45	100
55	95

Combinations of Internally Mounted Accessories (Optional)

7-18

Technical drawings of the front and rear views of the 3P and 4P models of the 200 Series. The front view shows a rectangular unit with a central vertical slot and two horizontal slots. The rear view shows the mounting holes and the interpole barrier. Dimensions are provided in millimeters.

Front View Dimensions:

- Overall width: 105 mm
- Overall height: 165 mm
- Top horizontal slot width: 98 mm
- Bottom horizontal slot width: 70 mm
- Central vertical slot width: 22 mm
- Mounting hole diameter: $\varnothing$

Rear View Dimensions:

- Overall width: 140 mm
- Overall height: 165 mm
- Top horizontal slot width: 98 mm
- Bottom horizontal slot width: 35 mm
- Mounting hole diameter: $\varnothing$
- Interpole barrier (removable): 3P, 4P
- Mounting hole: 100 mm

Preparation of conduit

M8screw

24

$\phi 9$

25(max.)
max.t7

102

45

6

M4X0.7
Mounting screw

45

61

72

92

8

Technical drawing of the rear view of a 144-pin connector. The drawing shows a rectangular connector with a mounting plate on top. Dimensions include a total width of 144, a mounting plate height of (max. t3.2), a pin pitch of 0.9, and a total pin length of 106. A note indicates "Stud can be turned".

Technical drawing of the front view of a rectangular plate. The plate has a total width of 144 and a total height of 126. It features a central rectangular area with a width of 35 and a height of 25. This central area is surrounded by a border of 25 on all sides. The plate has four M4x0.7 tapped holes, one in each corner. The distance between the centers of the holes is 126 horizontally and 144 vertically. The holes are labeled with their dimensions: 3P (3mm pitch) and 4P (4mm pitch). The central area is labeled with dimensions 35 and 25. The overall dimensions are 144 and 126. The plate is labeled with 'M4x0.7 Tapped hole'.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Figure 1: Dimensions of the mounting plate. The diagram shows a cross-section of the mounting plate with various dimensions labeled. The total width is 18 mm. The distance from the left edge to the center of the M8 screw hole is 27 mm. The distance from the center of the M8 screw hole to the right edge is 26.5 mm. The thickness of the mounting plate is 15 mm. The maximum width of the conductor is 16.5 mm (max.). The maximum width of the conductor is also labeled as 25 mm. The M8 screw is shown passing through the mounting plate.

[illegible]

Technical drawing showing the dimensions for the 3P and 4P connector assemblies. The 3P assembly has a width of 70mm and a height of 35mm. The 4P assembly has a width of 105mm and a height of 52.5mm. Both assemblies are shown in a side view with dimensions and a cross-section view below.

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7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(400A Frame)

S400-CF, S400-NF, S400-GF, S400-PF

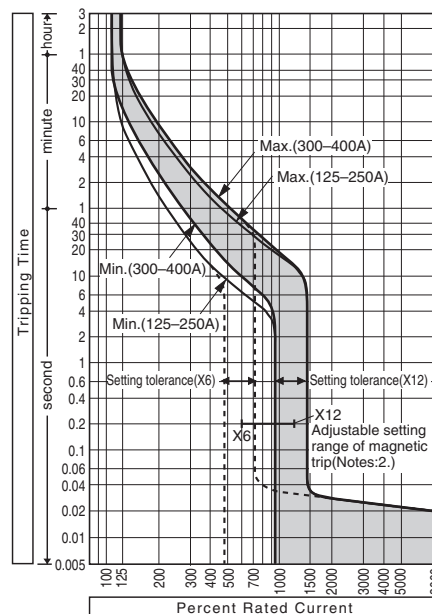
Ratings and Specifications

Type	\$400-CF		\$400-NF		\$400-GF		\$400-PF	
Number of poles	3	4	3	4	3	4	3	4
■ Ratings								
Rated current, A	125	250	125	250	125	250	250	
Calibrated at 45°C	150	300	150	300	150	300	300	
	175	350	175	350	175	350	350	
	200	400	200	400	200	400	400	
	225		225		225			
Rated insulation voltage [U_i] V	690		690		690		690	
Rated impulse withstand voltage [U_{imp}] kV	8		8		8		8	
■ Rated breaking capacity, kA								
NK	AC	690V	15/15	20/15	20/15		20/15	
$I_{cu}/I_{cs}(sym)$		450V	30/30	45/45	65/50		80/80	
		240V	50/50	85/85	100/85		100/85	
	① DC	250V	40/40	—	—		—	
IEC60947-2	AC	690V	15/15	20/15	20/15		20/15	
$I_{cu}/I_{cs}(sym)$		500V	22/22	30/30	30/30		30/30	
		440V	30/30	45/45	65/50		80/80	
		415V	36/36	50/50	70/50		85/85	
		380V	36/36	50/50	70/50		85/85	
		240V	50/50	85/85	100/85		100/85	
	① DC	250V	40/40	40/40	40/40		40/40	
		125V	40/40	40/40	40/40		40/40	
■ Rated short time withstand current, kA								
Weight (● marked standard type) kg	4.2	5.6	4.2	5.6	4.2	5.6	4.2	5.6
■ Connections and Mountings								
Front-connected (FC)	Terminal screws		●	●	●		●	
	With extension bars		○ (BAR)	○ (BAR)	○ (BAR)		○ (BAR)	
Rear-connected (RC)	Bolt studs		—	—	—		—	
	Flat bar studs		○	○	○		○	
Plug-in (PM)	For switchboards Standard (PMC)		○	—	○	—	○	—
	High-performance (PMB)		○	○	○		○	
	For distribution boards (PMC)		—	—	—		—	
Flush-mounted (FP)	With flat bar studs		○	○	○		○	
Draw-out type (DR)			▲	▲	▲		▲	
TemPlug70 (PG)			○	—	○	—	○	—
TemPlug45B (PG4)			—	—	—		—	
DIN rail mount			—	—	—		—	
Clip-in chassis mount			—	—	—		—	
■ Accessories (optional)	Symbol							
Motor operator	M C		●	●	●		●	
External operating handle	Breaker-mounted H B		●	●	●		●	
	Door-mounted (variable depth) H P		●	●	●		●	
Toggle extension	H A		●	●	●		●	
Mechanical interlock⑨	Slide type M S		●	●	●		●	
Toggle holder	H H		●	●	●		●	
Toggle lock	H L		●	●	●		●	
Terminal cover	For front-connected C F		●	●	●		●	
	For rear-connected and plug-in C R		●	●	●		●	
Interpole barrier	B A		● ③	● ③	● ③		● ③	
Terminal block for lead	T F		●	●	●		●	
Door flange	D F		●	●	●		●	
■ Standard specifications								
Overcurrent trip mechanism			Thermal-magnetic	Thermal-magnetic	Thermal-magnetic		Thermal-magnetic	
Trip button (color)			Yes (Red)	Yes (Red)	Yes (Red)		Yes (Red)	
Handle position indication (ON: Red, OFF: Green)			Yes	Yes	Yes		Yes	
Suitability for isolation			Yes	Yes	Yes		Yes	
CE marking			Yes	Yes	Yes		Yes	

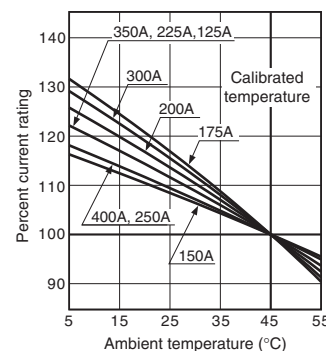
Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
 ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request.
 ③ : Line side interpole barriers are supplied as standard. (Front connection only)
 ⑨ : The mechanical interlock is not applicable to the draw-out type (DR).

Time/Current characteristic curves



Ambient Compensating Curves



Magnetic trip pickup current

Rated current (A)	Magnetic trip pickup current Adjustable range (A)					
	$I_n \times 12$	11	10	9	8	7
125	1500	1375	1250	1125	1000	875
150	1800	1650	1500	1350	1200	1050
175	2100	1925	1750	1575	1400	1225
200	2400	2200	2000	1800	1600	1400
225	2700	2475	2250	2025	1800	1575
250	3000	2750	2500	2250	2000	1750
300	3600	3300	3000	2700	2400	2100
350	4200	3850	3500	3150	2800	2450
400	4800	4400	4000	3600	3200	2800

Notes:

- Setting tolerance: $\pm 20\%$.
- The protection characteristic curves assume that the magnetic trip current is adjustable.
- Unless otherwise stated when ordering, the selector dial is factory set to position "12".
- The trip pickup current of DC models is not adjustable; the dial position corresponding to the trip pickup current is marked with a white point.

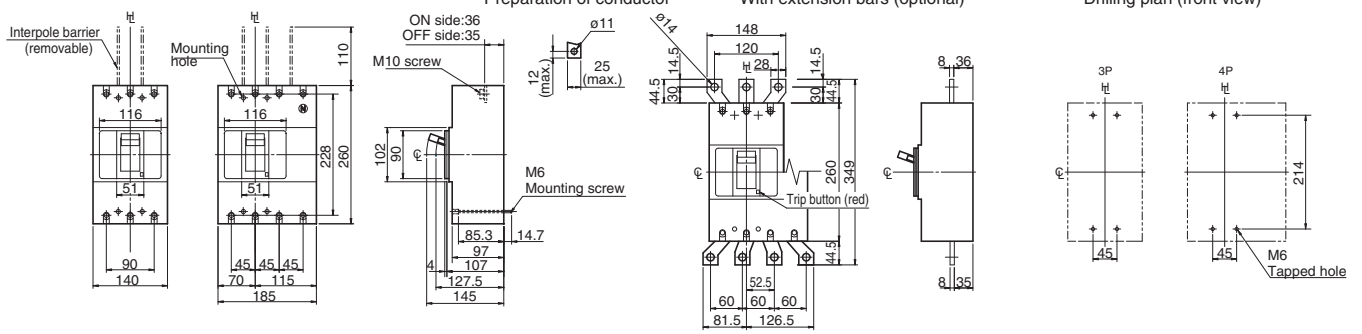
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
Left pole	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle
Right pole	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle

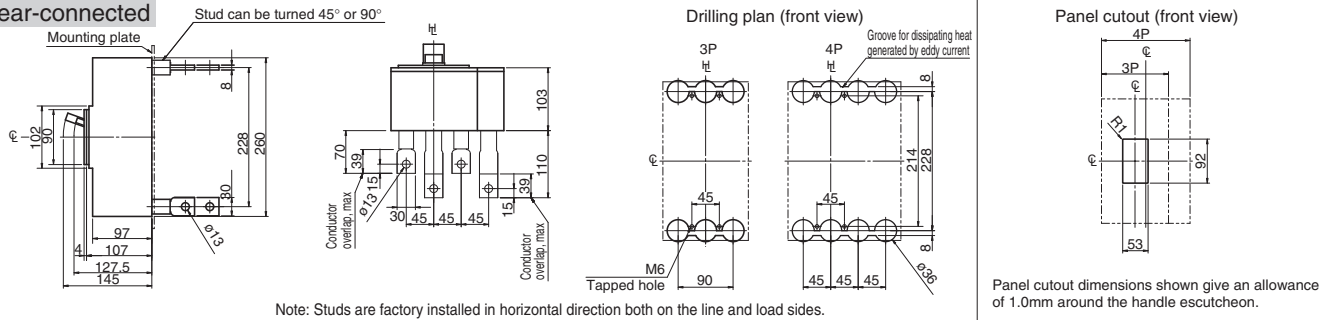
Outline dimensions (mm)

S400-CF, S400-NF, S400-GF, S400-PF

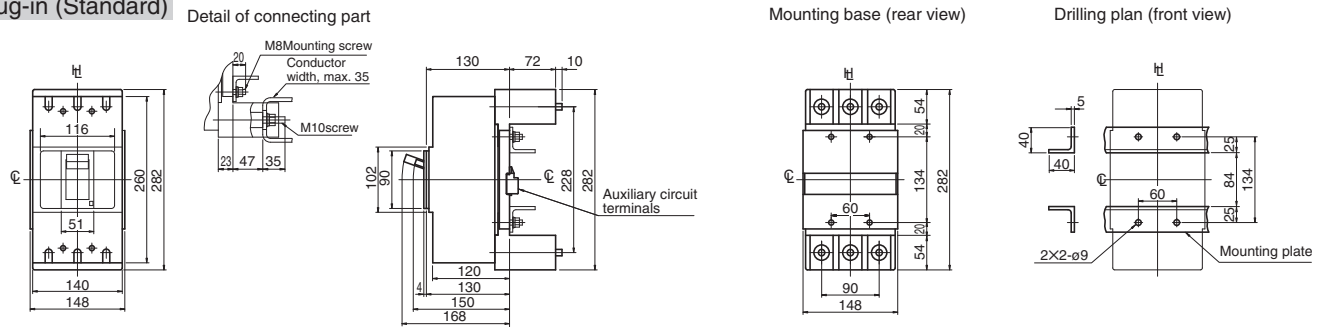
Front-connected



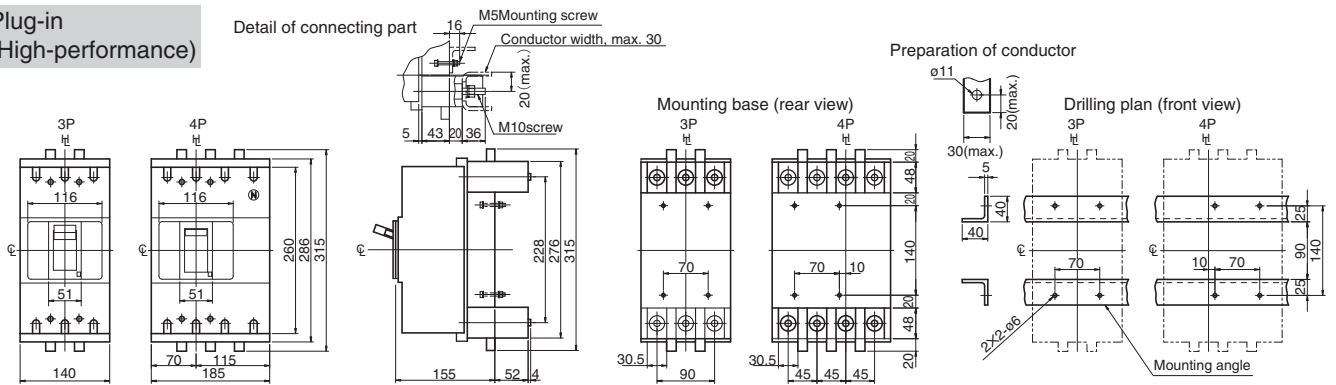
Rear-connected



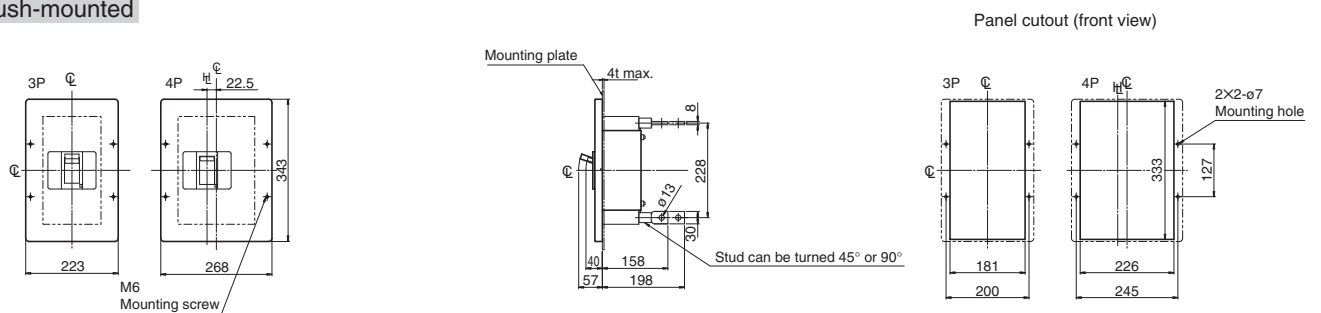
Plug-in (Standard)



Plug-in (High-performance)



Flush-mounted



Note: Studs are factory installed in horizontal direction both on the line and load sides.



Molded Case Circuit Breakers

H100-NF, L100-NF

Time/Current characteristic curves

The graph plots Tripping Time (Y-axis, logarithmic scale from 0.005 to 3 hours) against Percent Rated Current (X-axis, logarithmic scale from 100 to 5000). The Y-axis is divided into sections for hours (0.1 to 3), minutes (1 to 60), and seconds (0.005 to 1). The X-axis is divided into sections for 100, 200, 300, 400, 500, 700, 1000, 1500, 2000, 3000, 4000, and 5000. The graph shows two sets of curves: one for 15-30A and one for 40-100A. Each set includes a 'Max.' curve and a 'Min.' curve. A shaded region represents the 'Magnetic trip setting 960%–1440%'. The curves indicate that tripping time decreases as the percent rated current increases, and the magnetic trip setting is a constant current value independent of time.

Figure 1 is a line graph showing the relationship between Percent current rating (Y-axis, 90 to 140) and Ambient temperature in °C (X-axis, 5 to 55). The graph includes a horizontal line at 100% rating labeled 'Calibrated temperature'. Several downward-sloping lines represent different fuse ratings: 15A, 40A, 75A, 20A, 50A, 60A, 30A, and 100A. The 100A line is the lowest, while the 15A line is the highest. All lines intersect at the 100% rating point at 45°C.

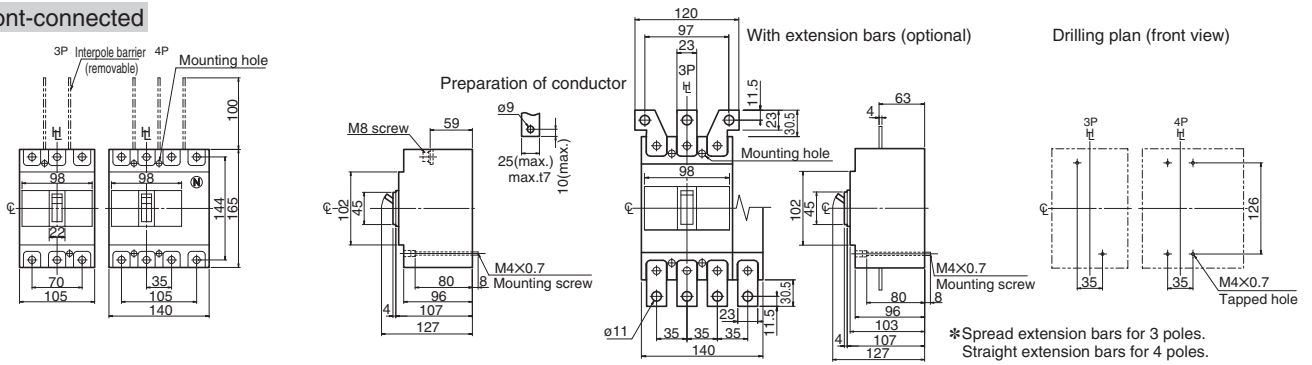
Ambient temperature (°C)	15A (%)	40A (%)	75A (%)	20A (%)	50A, 60A (%)	30A (%)	100A (%)
5	135	125	120	115	110	105	100
15	130	120	115	110	105	100	95
25	125	115	110	105	100	95	90
35	120	110	105	100	95	90	85
45	100	100	100	100	100	100	100
55	95	90	85	80	75	70	65

Poles	AX		AL		SH		UV		AX		AX		AX		AL		AL		AX		AX	
	Auxiliary switch		Alarm switch		Shunt trip		Under voltage trip		AX		SH		UV		SH		UV		AX		UV	
4+U																						

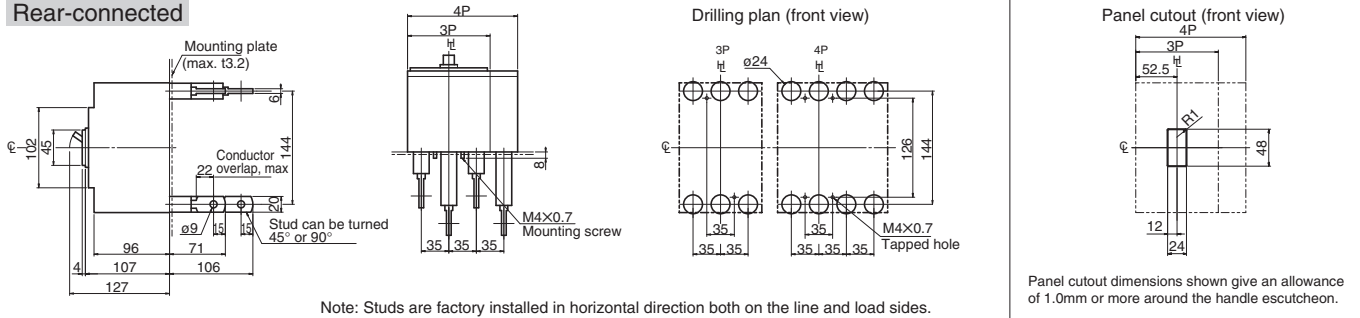
Outline dimensions (mm)

H100-NF, L100-NF

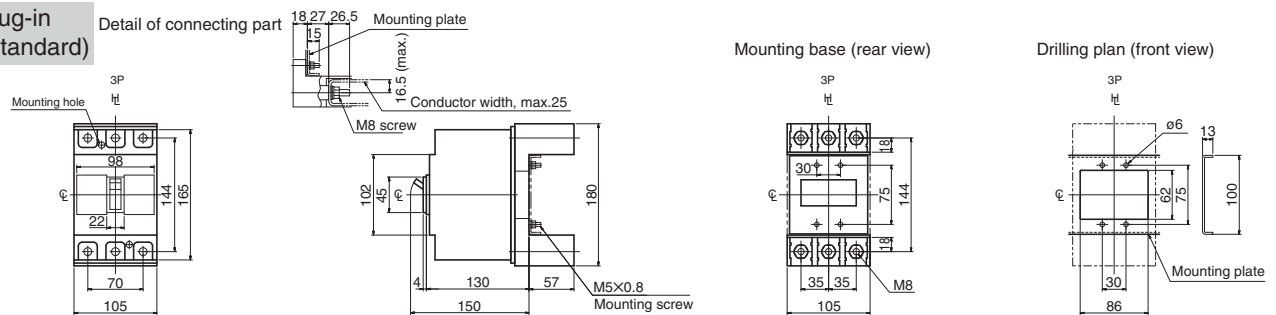
Front-connected



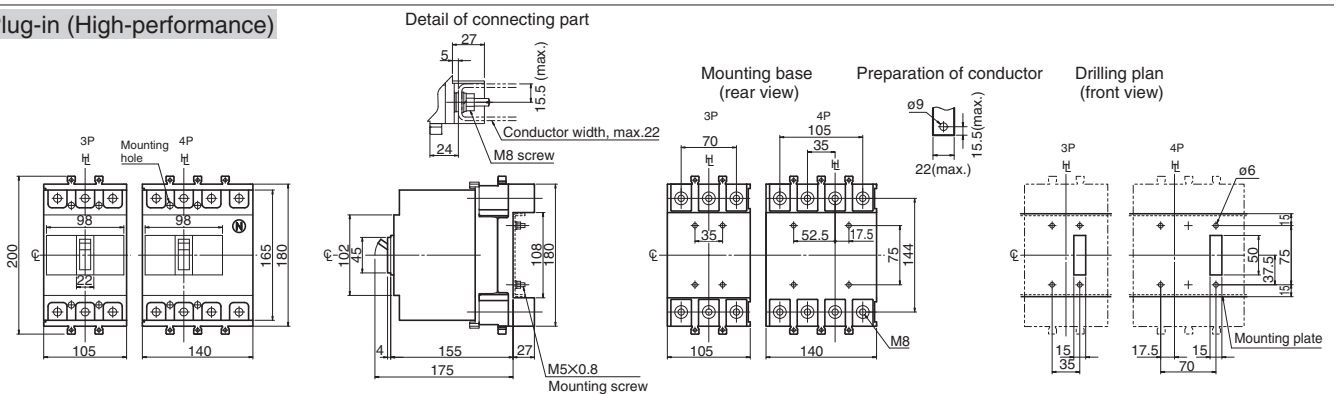
Rear-connected



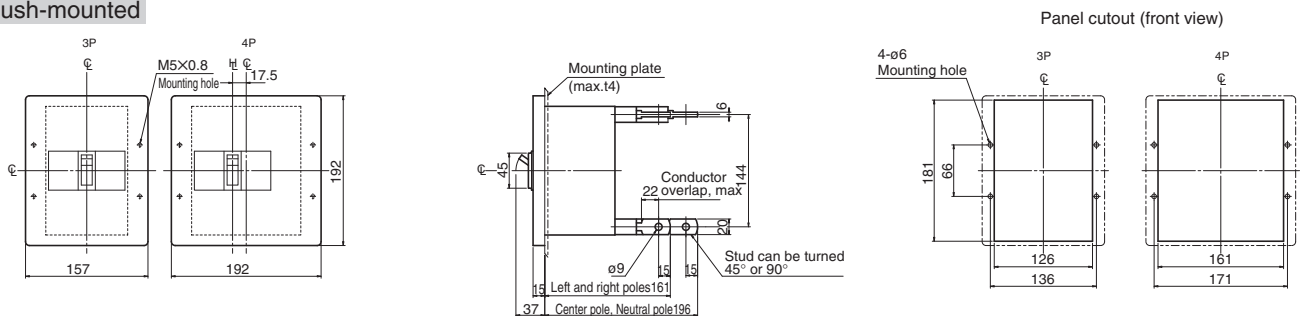
Plug-in (Standard)



Plug-in (High-performance)



Flush-mounted





Molded Case Circuit Breakers

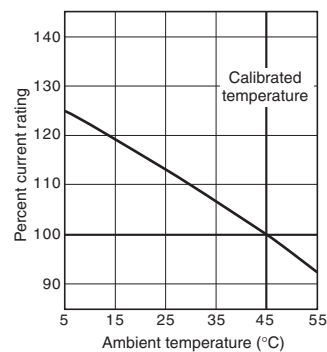
H125-NF, L125-NF

Time/Current characteristic curves

The graph shows the relationship between tripping time and percent rated current for a 100A circuit breaker. The y-axis represents tripping time on a logarithmic scale from 0.005 to 3 hours. The x-axis represents percent rated current on a logarithmic scale from 100 to 5000%. A shaded region between the 'Min.' and 'Max.' curves indicates the magnetic trip setting range of 960% to 1440%.

Percent Rated Current	Min. Tripping Time (hours)	Max. Tripping Time (hours)
100	> 3	> 3
125	~1.5	~2.5
200	~0.5	~1.0
300	~0.25	~0.5
400	~0.18	~0.35
500	~0.15	~0.3
700	~0.1	~0.2
1000	~0.05	~0.1
1500	~0.02	~0.05
2000	~0.015	~0.04
3000	~0.012	~0.03
4000	~0.01	~0.025
5000	~0.008	~0.02

Ambient Compensating Curves



Combinations of Internally Mounted Accessories (Optional)

Poles	AX		AL		SH		UV		AX		AX		AX		AL		AL		AX		AX	
	Auxiliary switch		Alarm switch		Shunt trip		Under voltage trip		AX		SH		UV		SH		UV		AX		UV	
4+3																						

*Spread extension bars for 3 poles.
Straight extension bars for 4 poles.

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

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Molded Case Circuit Breakers

H225-NF, L225-NF

Time/Current characteristic curves

Figure 1 is a graph showing typical inverse time-current characteristic curves for a 100A, 120V, 1-phase, 2-wire, 60 Hz circuit breaker. The Y-axis represents Tripping Time, with scales for hour, minute, and second. The X-axis represents Percent Rated Current, ranging from 100 to 5000. The graph shows two curves: Max. (Maximum) and Min. (Minimum). The area between the curves is shaded. A vertical line at 100% current indicates the Magnetic trip setting 1040%–1560%.

Figure 1 is a line graph showing the relationship between ambient temperature and percent current rating for various motor sizes. The y-axis represents 'Percent current rating' from 90 to 140. The x-axis represents 'Ambient temperature (°C)' from 5 to 55. Five curves are plotted, labeled 125A, 175A, 200A, 150A, and 225A. All curves converge at 100% current rating at 45°C. The 125A curve is the highest, and the 225A curve is the lowest. A label 'Calibrated temperature' points to the 45°C mark on the x-axis.

Ambient temperature (°C)	125A (%)	175A (%)	200A (%)	150A (%)	225A (%)
5	130	125	122	120	118
15	125	120	118	116	114
25	120	115	113	111	109
35	115	110	108	106	104
45	100	100	100	100	100
55	92	90	88	86	84

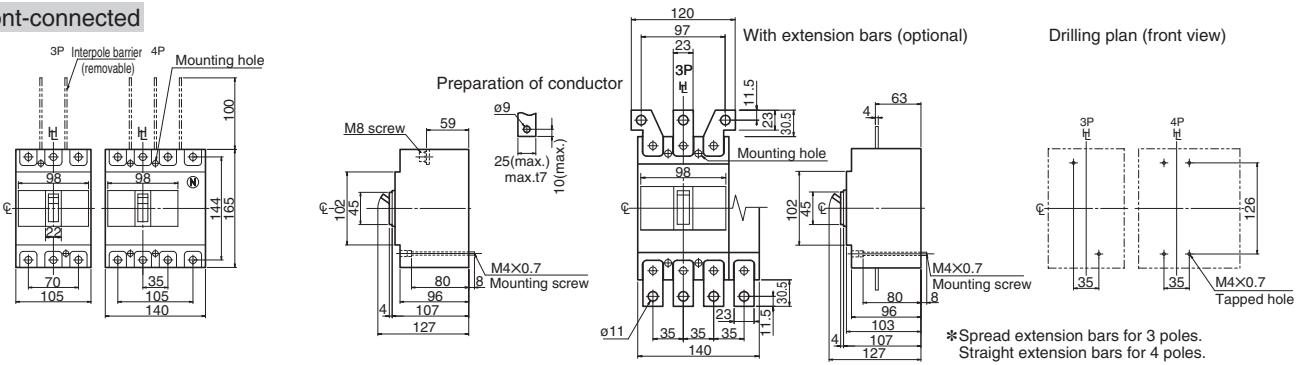
Combinations of Internally Mounted Accessories (Optional)

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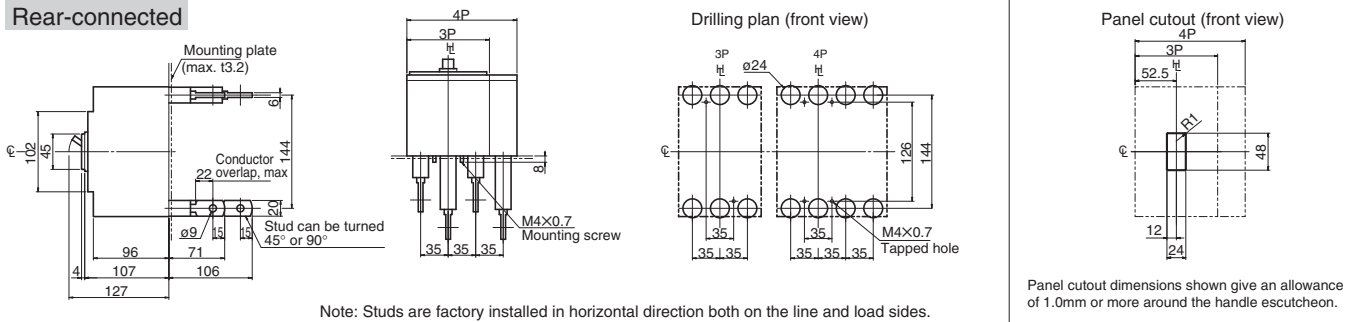
Outline dimensions (mm)

H225-NF, L225-NF

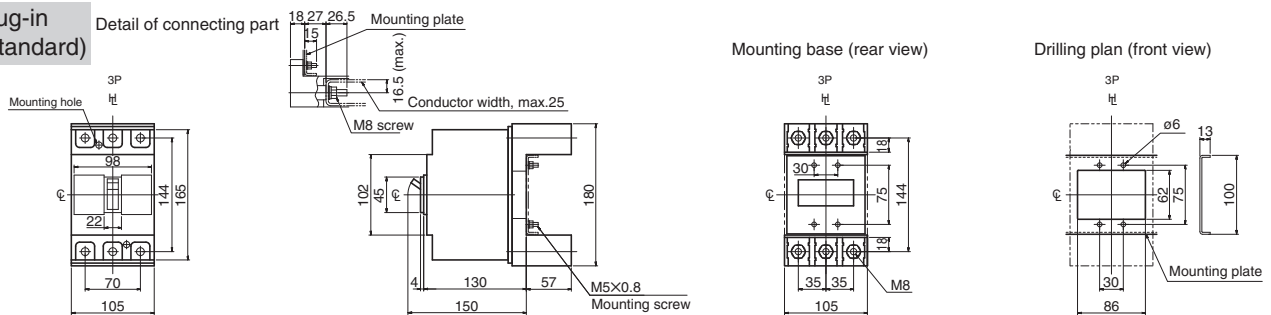
Front-connected



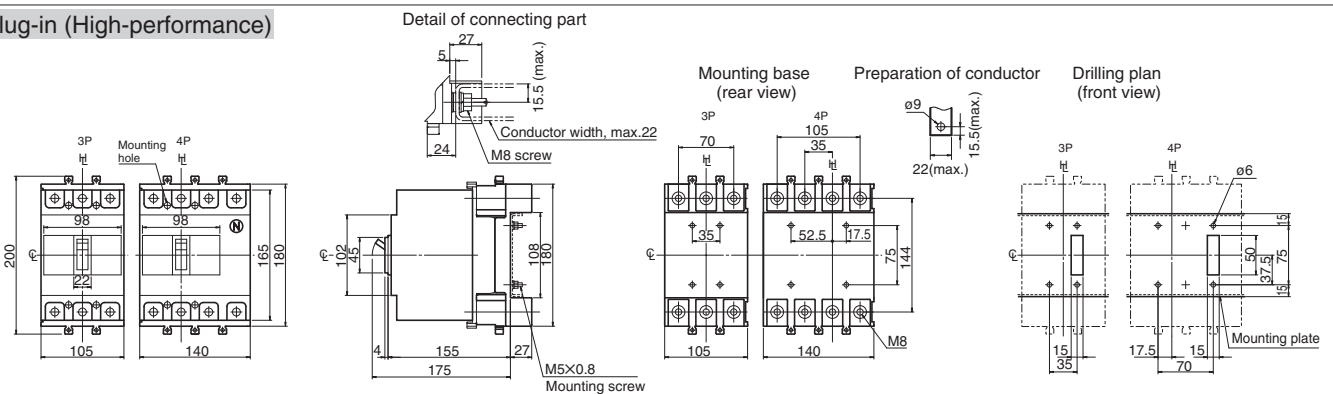
Rear-connected



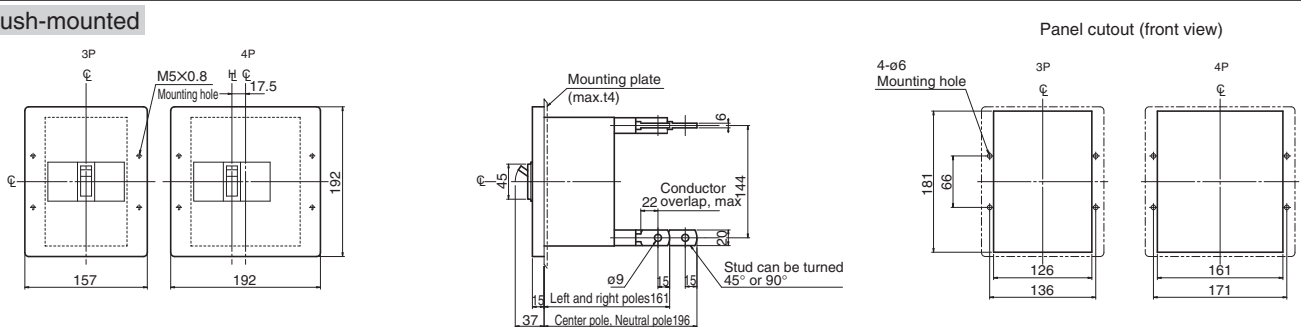
Plug-in (Standard)



Plug-in (High-performance)



Flush-mounted



Note: Studs are factory installed in horizontal direction both on the line and load sides.



Molded Case Circuit Breakers

(225A Frame)

S225-GE

Ratings and Specifications

Time/Current characteristic curves

The graph plots tripping time against percent rated current for five different circuit breaker types. The y-axis represents tripping time on a logarithmic scale, ranging from 0.005 seconds to 3 hours. The x-axis represents percent rated current on a logarithmic scale, ranging from 100% to 5000%. The curves are labeled 1 through 5. An inset diagram illustrates the sequence of current levels and time intervals: I_p (peak current), I_o (operating current), I_g (gap current), I_{sd} (short-circuit current), and I_i (inrush current), with corresponding time intervals t_p , t_o , t_g , t_{sd} , and t_i .

Overcurrent tripping characteristics

Characteristics No.		1	2	3	4	5
Long time-delay pick-up current (A) : (I_{fn})		CT rated current : (I_{cn}) = 250A 125, 150, 175, 200, 225				
Long time-delay time settings (s) : (t_{fn})		11	21	21	5	7.5
		at 200%×(I_{fn})			at 600%×(I_{fn})	
		Setting tolerance ±20%				
Short time-delay (I_{ft})× pick-up current (A) : (I_{fsd})		2.5	2.5	5	10	10
		Setting tolerance ±15%				
Short time-delay time settings (s) : (t_{fsd})		0.1	0.1	0.1	0.1	0.2
		Total clearing time +50ms, resettable time ~20ms				
Instantaneous trip pick-up current (A) : (I_l)		(I_{fn})×1400% Setting tolerance ±20%				
Option	Preferential trip alarm					
	Pick-up current (A) : (I_f)	(I_{fn})×80% Setting tolerance ±10%				
	Time-settings (s) : (t_f)	Definite time-delay characteristic, 40sec. Setting tolerance ±10%				
	Neutral protection					
	Pick-up current (A) : (I_{fn})	(I_{fn})×100%				
	Time-settings (s) : (t_{fn})	(t_{fn})= (t_{fn}) Same as Long time-delay time settings				

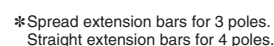
Note: Characteristic No.4 will be applied as standard setting unless otherwise specified.

Combinations of Internally Mounted Accessories (Optional)

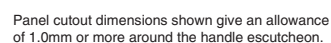
Poles											
Auxiliary switch											
4+0											
	 Toggle Left pole Right pole										

S225-GE

Front-connected

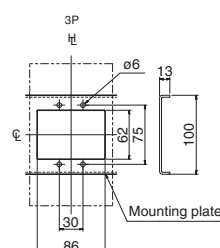


Rear-connected



Note: Studs are factory installed in horizontal direction both on the line and load sides.

Plug-in (Standard)



Plug-in (High-performance)



Flush-mounted





7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(400A Frame)

S400-NE, S400-GE, S400-PE

Ratings and Specifications

Type			S400-NE		S400-GE		S400-PE	
Number of poles			3	4	3	4	3	4
■ Ratings								
Rated current, A			(Adjustable)	(Adjustable)	(Adjustable)	(Adjustable)	(Adjustable)	(Adjustable)
Calibrated at 45°C			125	175	125	175	125	175
			150	200	150	200	150	200
			175	225	175	225	175	225
			200	250	200	250	200	250
			225	300	225	300	225	300
				350		350		350
				400		400		400
Rated insulation voltage [U_i] V			690		690		690	
Rated impulse withstand voltage [U_{imp}] kV			8		8		8	
■ Rated breaking capacity, kA								
NK	AC	690V	20/15		20/15		20/15	
I_{cu}/I_{cs} (sym)		450V	45/45		65/50		80/80	
		240V	85/85		100/85		100/85	
	DC	250V	—		—		—	
IEC60947-2	AC	690V	20/15		20/15		20/15	
I_{cu}/I_{cs} (sym)		500V	30/30		30/30		30/30	
		440V	45/45		65/50		80/80	
		415V	50/50		70/50		85/85	
		380V	50/50		70/50		85/85	
		240V	85/85		100/85		100/85	
	DC	250V	—		—		—	
		125V	—		—		—	
■ Rated short time withstand current, kA			5 (0.3sec)		5 (0.3sec)		5 (0.3sec)	
Weight (● marked standard type) kg			4.3	5.7	4.3	5.7	4.3	5.7
■ Connections and Mountings								
Front-connected (FC) Terminal screws			●		●		●	
With extension bars			○ (BAR)		○ (BAR)		○ (BAR)	
Rear-connected (RC) Bolt studs			—		—		—	
Flat bar studs			○		○		○	
Plug-in (PM) For switchboards Standard (PMC)			○	—	○	—	○	—
High-performance (PMB)			○		○		○	
For distribution boards (PMC)			—		—		—	
Flush-mounted (FP) With flat bar studs			○		○		○	
Draw-out type (DR)			▲		▲		▲	
TemPlug70 (PG)			○	—	○	—	○	—
TemPlug45B (PG4)			—		—		—	
DIN rail mount			—		—		—	
Clip-in chassis mount			—		—		—	
■ Accessories (optional) Symbol								
Motor operator			M C	●	●		●	
External operating handle			Breaker-mounted	H B	●		●	
Door-mounted (variable depth)			H P	●	●		●	
Toggle extension			H A	●	●		●	
Mechanical interlock⑨ Slide type			M S	●	●		●	
Toggle holder			H H	●			●	
Toggle lock			H L	●	●		●	
Terminal cover For front-connected			C F	●	●		●	
For rear-connected and plug-in			C R	●	●		●	
Interpole barrier			B A	● ③	● ③		● ③	
Terminal block for lead			T F	●	●		●	
Door flange			D F	●	●		●	
■ Standard specifications								
Overcurrent trip mechanism			Electronic ⑩		Electronic ⑩		Electronic ⑩	
Trip button (color)			Yes (Red)		Yes (Red)		Yes (Red)	
Handle position indication (ON: Red, OFF: Green)			Yes		Yes		Yes	
Suitability for isolation			Yes		Yes		Yes	
CE marking			Yes		Yes		Yes	

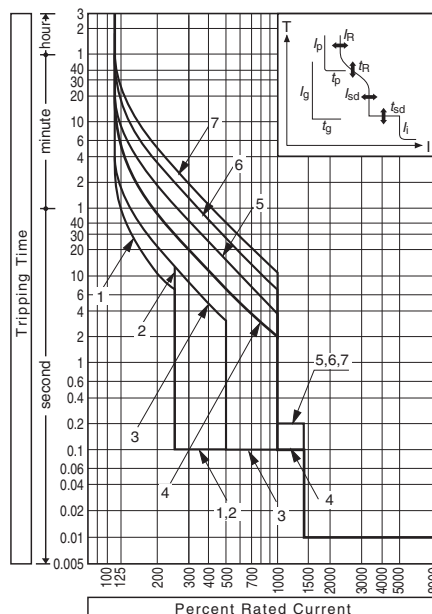
Notes:
● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

⑨ : The mechanical interlock is not applicable to the draw-out type (DR).

⑩ : Optional pretrip alarm or ground fault trip function available on request.

Time/Current characteristic curves



Overcurrent tripping characteristics

Characteristics No.		1	2	3	4	5	6	7
Long time-delay pick-up current (A) : (I_R)		CT rated current : (I_{CT}) = 250A 125, 150, 175, 200, 225						
		CT rated current : (I_{CT}) = 400A 175, 200, 225, 250, 300, 350, 400						
Long time-delay time settings (s) : (t_R)		11	21	21	5	10	19	29
		at 200%×(I_R)			at 600%×(I_R)			
		Setting tolerance ±20%						
Short time-delay pick-up current (A) : (I_{SD})	(I_R)×	2.5	2.5	5	10	10	10	10
		Setting tolerance ±15%						
Short time-delay time settings (s) : (t_{SD})		0.1	0.1	0.1	0.1	0.2	0.2	0.2
		Total clearing time +50ms, resettable time ~20ms						
Instantaneous trip pick-up current (A) : (I_I)		(I_R)×1400%			Max: (I_{CT})×1300%			
		Setting tolerance ±20%						
Option	Preferential trip alarm							
	Pick-up current (A) : (I_P)	(I_R)×80% Setting tolerance ±10%						
	Time-settings (s) : (t_P)	Definite time-delay characteristic, 40sec. Setting tolerance ±10%						
	Ground fault trip							
	Pick-up current (A) : (I_{GT})	(I_{CT})×20% Setting tolerance ±15% ①						
	Time-settings (s) : (t_{GT})	Definite time-delay characteristic, 0.2sec. Total tripping time +50ms, resettable time ~20ms.						
Neutral protection								
	Pick-up current (A) : (I_N)	(I_R)×100% or 50% selectable ②						
	Time-settings (s) : (t_N)	(t_N)=(t_P) Same as Long time-delay time settings						

Note:
①: Ground fault trip is not available when (I_{CT}) = 250A.
②: In case of (I_N) < (I_{CT}), the setting tolerance becomes big when (I_N) is set at (I_N) × 50%.
Characteristic No.4 will be applied as standard setting unless otherwise specified.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
Auxiliary switch	□	□	□	□	□	□	□	□	□	□	□
Alarm switch	□	□	□	□	□	□	□	□	□	□	□
Shunt trip	□	□	□	□	□	□	□	□	□	□	□
Under voltage trip	□	□	□	□	□	□	□	□	□	□	□
Left pole	□	□	□	□	□	□	□	□	□	□	□
Right pole	□	□	□	□	□	□	□	□	□	□	□
Toggle	□	□	□	□	□	□	□	□	□	□	□

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

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7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(400A Frame)

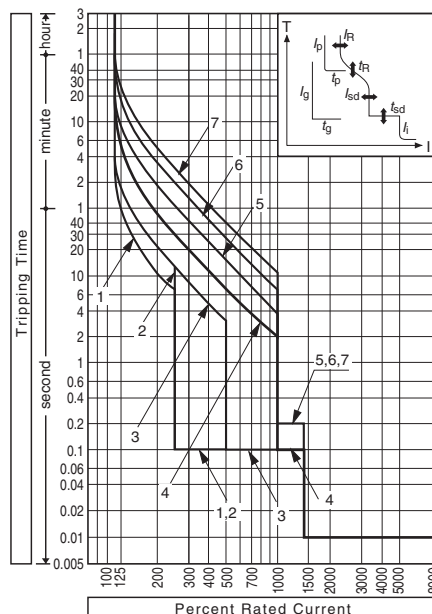
H400-NE, L400-NE

Ratings and Specifications

Type			H400-NE		L400-NE			
Number of poles			3	4	3	4		
■ Ratings								
Rated current, A			(Adjustable)	(Adjustable)	(Adjustable)	(Adjustable)		
Calibrated at 45°C			125	175	125	175		
			150	200	150	200		
			175	225	175	225		
			200	250	200	250		
			225	300	225	300		
				350		350		
				400		400		
Rated insulation voltage [U_i] V			690		690			
Rated impulse withstand voltage [U_{imp}] kV			8		8			
■ Rated breaking capacity, kA								
NK	AC	690V	35/35		50/50			
I_{cu}/I_{cs} (sym)		450V	120/80		180/135			
		240V	150/150		200/150 ③①			
	DC	250V	—		—			
IEC60947-2	AC	690V	35/35		50/50			
I_{cu}/I_{cs} (sym)		500V	45/45		65/65			
		440V	120/80		180/135			
		415V	125/85		200/150			
		380V	125/85		200/150			
		240V	150/150		200/150			
	DC	250V	—		—			
		125V	—		—			
■ Rated short time withstand current, kA			5 (0.3sec)		5 (0.3sec)			
Weight (● marked standard type) kg			7.1 9.4		7.1 9.4			
■ Connections and Mountings								
Front-connected (FC) Terminal screws			●		●			
With extension bars			○ (BAR)		○ (BAR)			
Rear-connected (RC) Bolt studs			—		—			
Flat bar studs			○		○			
Plug-in (PM) For switchboards Standard (PMC)			○ —		○ —			
High-performance (PMB)			○		○			
For distribution boards (PMC)			—		—			
Flush-mounted (FP) With flat bar studs			○		○			
Draw-out type (DR)			—		—			
TemPlug70 (PG)			—		—			
TemPlug45B (PG4)			—		—			
DIN rail mount			—		—			
Clip-in chassis mount			—		—			
■ Accessories (optional) Symbol								
Motor operator			●		●			
External operating handle Breaker-mounted			●		●			
Door-mounted (variable depth)			●		●			
Toggle extension			●		●			
Mechanical interlock⑨ Slide type			●		●			
Toggle holder			●		●			
Toggle lock			●		●			
Terminal cover For front-connected			●		●			
For rear-connected and plug-in			●		●			
Interpole barrier			● ③		● ③			
Terminal block for lead			●		●			
Door flange			●		●			
■ Standard specifications								
Overcurrent trip mechanism			Electronic ⑩		Electronic ⑩			
Trip button (color)			Yes (Red)		Yes (Red)			
Handle position indication (ON: Red, OFF: Green)			Yes		Yes			
Suitability for isolation			Yes		Yes			
CE marking			Yes		Yes			

Notes:
 ● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
 ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".
 ③ : Line side interpole barriers are supplied as standard. (Front connection only)
 ⑨ : The mechanical interlock is not applicable to the draw-out type (DR).
 ⑩ : Optional pretrip alarm or ground fault trip function available on request.
 ⑪ : Also applicable to AC415V.

Time/Current characteristic curves



Overcurrent tripping characteristics

Characteristics No.	1	2	3	4	5	6	7
Long time-delay trip pick-up current (A) : (I_{CT})	CT rated current : (I_{CT}) = 250A 125, 150, 175, 200, 225						
Long time-delay time settings (s) : (t_{td})	11	21	21	5	10	19	29
Short time-delay pick-up current (A) : (I_{sd})	2.5	2.5	5	10	10	10	10
Short time-delay time settings (s) : (t_{sd})	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Instantaneous trip pick-up current (A) : (I_i)	(I_i) × 1400% Setting tolerance ±20%						
Preferential trip alarm	Pick-up current (A) : (I_p) Time-settings (s) : (t_p)						
Ground fault trip	Pick-up current (A) : (I_g) Time-settings (s) : (t_g)						
Neutral protection	Pick-up current (A) : (I_n) Time-settings (s) : (t_n)						

Note:
 ① : Ground fault trip is not available when (I_{CT}) = 250A.
 ② : In case of (I_p) < (I_{CT}), the setting tolerance becomes big when (I_p) is set at (I_p) × 50%.
 Characteristic No.4 will be applied as standard setting unless otherwise specified.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
Auxiliary switch	□	□	□	□	□	□	□	□	□	□	□
Alarm switch	□	□	□	□	□	□	□	□	□	□	□
Shunt trip	□	□	□	□	□	□	□	□	□	□	□
Under voltage trip	□	□	□	□	□	□	□	□	□	□	□
Left pole	□	□	□	□	□	□	□	□	□	□	□
Right pole	□	□	□	□	□	□	□	□	□	□	□

Drilling plan (front view)





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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(630A Frame)

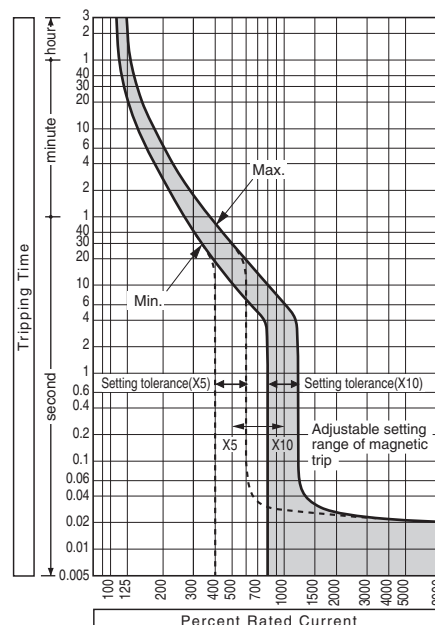
S630-CF, S630-NF, S630-RF, S630-PF

Ratings and Specifications

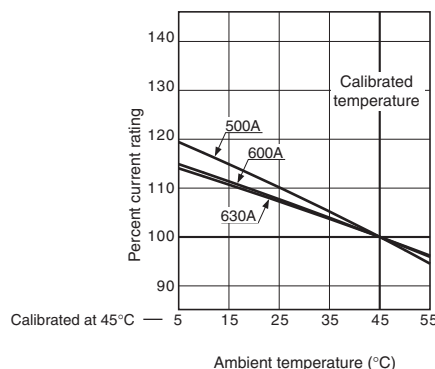
Type	S630-CF		S630-NF		S630-RF		S630-PF	
Number of poles	3	4	3	4	3	4	3	4
■ Ratings								
Rated current, A	500	630	500	630	500	630	500	630
Calibrated at 45°C	600		600		600		600	

Notes:
 ● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
 ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request.
 ③ : Line side interpole barriers are supplied as standard. (Front connection only)
 ⑨ : Not applicable to the draw-out type (DR).

Time/Current characteristic curves



Ambient Compensating Curves



Magnetic trip pickup current

Rated current (A)	Magnetic trip pickup current Adjustable range (A)				
	$I_n \times 10$	9	8	7	6
500	5000	4500	4000	3500	3000
600	6000	5400	4800	4200	3600
630	6300	5670	5040	4410	3780

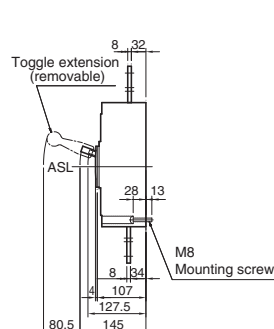
Notes:
 1. Setting tolerance: $\pm 20\%$.
 2. Unless otherwise stated when ordering, the selector dial is factory set to position "10".
 3. The trip pickup current of DC models is not adjustable; the dial position corresponding to the trip pickup current is marked with a white point.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
Left pole	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle
Right pole	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle

Technical drawings of the ASL connector showing front and side views with dimensions and labels.

Labels: Interpole barrier (removable), 4P, Mounting hole, 3P, $\phi 13$, ASL, Trip button (red), 5.1, 140, 210, 110, 170, 80, 141, 273, 132, 80, 70, 105, 175, 280, 14.5, 15.5, 16.5, 17.5, 18.5, 19.5, 20.5, 21.5, 22.5, 23.5, 24.5, 25.5, 26.5, 27.5, 28.5, 29.5, 30.5, 31.5, 32.5, 33.5, 34.5, 35.5, 36.5, 37.5, 38.5, 39.5, 40.5, 41.5, 42.5, 43.5, 44.5, 45.5, 46.5, 47.5, 48.5, 49.5, 50.5, 51.5, 52.5, 53.5, 54.5, 55.5, 56.5, 57.5, 58.5, 59.5, 60.5, 61.5, 62.5, 63.5, 64.5, 65.5, 66.5, 67.5, 68.5, 69.5, 70.5, 71.5, 72.5, 73.5, 74.5, 75.5, 76.5, 77.5, 78.5, 79.5, 80.5, 81.5, 82.5, 83.5, 84.5, 85.5, 86.5, 87.5, 88.5, 89.5, 90.5, 91.5, 92.5, 93.5, 94.5, 95.5, 96.5, 97.5, 98.5, 99.5, 100.5, 101.5, 102.5, 103.5, 104.5, 105.5, 106.5, 107.5, 108.5, 109.5, 110.5, 111.5, 112.5, 113.5, 114.5, 115.5, 116.5, 117.5, 118.5, 119.5, 120.5, 121.5, 122.5, 123.5, 124.5, 125.5, 126.5, 127.5, 128.5, 129.5, 130.5, 131.5, 132.5, 133.5, 134.5, 135.5, 136.5, 137.5, 138.5, 139.5, 140.5, 141.5, 142.5, 143.5, 144.5, 145.5, 146.5, 147.5, 148.5, 149.5, 150.5, 151.5, 152.5, 153.5, 154.5, 155.5, 156.5, 157.5, 158.5, 159.5, 160.5, 161.5, 162.5, 163.5, 164.5, 165.5, 166.5, 167.5, 168.5, 169.5, 170.5, 171.5, 172.5, 173.5, 174.5, 175.5, 176.5, 177.5, 178.5, 179.5, 180.5, 181.5, 182.5, 183.5, 184.5, 185.5, 186.5, 187.5, 188.5, 189.5, 190.5, 191.5, 192.5, 193.5, 194.5, 195.5, 196.5, 197.5, 198.5, 199.5, 200.5, 201.5, 202.5, 203.5, 204.5, 205.5, 206.5, 207.5, 208.5, 209.5, 210.5, 211.5, 212.5, 213.5, 214.5, 215.5, 216.5, 217.5, 218.5, 219.5, 220.5, 221.5, 222.5, 223.5, 224.5, 225.5, 226.5, 227.5, 228.5, 229.5, 230.5, 231.5, 232.5, 233.5, 234.5, 235.5, 236.5, 237.5, 238.5, 239.5, 240.5, 241.5, 242.5, 243.5, 244.5, 245.5, 246.5, 247.5, 248.5, 249.5, 250.5, 251.5, 252.5, 253.5, 254.5, 255.5, 256.5, 257.5, 258.5, 259.5, 260.5, 261.5, 262.5, 263.5, 264.5, 265.5, 266.5, 267.5, 268.5, 269.5, 270.5, 271.5, 272.5, 273.5, 274.5, 275.5, 276.5, 277.5, 278.5, 279.5, 280.5, 281.5, 282.5, 283.5, 284.5, 285.5, 286.5, 287.5, 288.5, 289.5, 290.5, 291.5, 292.5, 293.5, 294.5, 295.5, 296.5, 297.5, 298.5, 299.5, 300.5, 301.5, 302.5, 303.5, 304.5, 305.5, 306.5, 307.5, 308.5, 309.5, 310.5, 311.5, 312.5, 313.5, 314.5, 315.5, 316.5, 317.5, 318.5, 319.5, 320.5, 321.5, 322.5, 323.5, 324.5, 325.5, 326.5, 327.5, 328.5, 329.5, 330.5, 331.5, 332.5, 333.5, 334.5, 335.5, 336.5, 337.5, 338.5, 339.5, 340.5, 341.5, 342.5, 343.5, 344.5, 345.5, 346.5, 347.5, 348.5, 349.5, 350.5, 351.5, 352.5, 353.5, 354.5, 355.5, 356.5, 357.5, 358.5, 359.5, 360.5, 361.5, 362.5, 363.5, 364.5, 365.5, 366.5, 367.5, 368.5, 369.5, 370.5, 371.5, 372.5, 373.5, 374.5, 375.5, 376.5, 377.5, 378.5, 379.5, 380.5, 381.5, 382.5, 383.5, 384.5, 385.5, 386.5, 387.5, 388.5, 389.5, 390.5, 391.5, 392.5, 393.5, 394.5, 395.5, 396.5, 397.5, 398.5, 399.5, 400.5, 401.5, 402.5, 403.5, 404.5, 405.5, 406.5, 407.5, 408.5, 409.5, 410.5, 411.5, 412.5, 413.5, 414.5, 415.5, 416.5, 417.5, 418.5, 419.5, 420.5, 421.5, 422.5, 423.5, 424.5, 425.5, 426.5, 427.5, 428.5, 429.5, 430.5, 431.5, 432.5, 433.5, 434.5, 435.5, 436.5, 437.5, 438.5, 439.5, 440.5, 441.5, 442.5, 443.5, 444.5, 445.5, 446.5, 447.5, 448.5, 449.5, 450.5, 451.5, 452.5, 453.5, 454.5, 455.5, 456.5, 457.5, 458.5, 459.5, 460.5, 461.5, 462.5, 463.5, 464.5, 465.5, 466.5, 467.5, 468.5, 469.5, 470.5, 471.5, 472.5, 473.5, 474.5, 475.5, 476.5, 477.5, 478.5, 479.5, 480.5, 481.5, 482.5, 483.5, 484.5, 485.5, 486.5, 487.5, 488.5, 489.5, 490.5, 491.5, 492.5, 493.5, 494.5, 495.5, 496.5, 497.5, 498.5, 499.5, 500.5, 501.5, 502.5, 503.5, 504.5, 505.5, 506.5, 507.5, 508.5, 509.5, 510.5, 511.5, 512.5, 513.5, 514.5, 515.5, 516.5, 517.5, 518.5, 519.5, 520.5, 521.5, 522.5, 523.5, 524.5, 525.5, 526.5, 527.5, 528.5, 529.5, 530.5, 531.5, 532.5, 533.5, 534.5, 535.5, 536.5, 537.5, 538.5, 539.5, 540.5, 541.5, 542.5, 543.5, 544.5, 545.5, 546.5, 547.5, 548.5, 549.5, 550.5, 551.5, 552.5, 553.5, 554.5, 555.5, 556.5, 557.5, 558.5, 559.5, 560.5, 561.5, 562.5, 563.5, 564.5, 565.5, 566.5, 567.5, 568.5, 569.5, 570.5, 571.5, 572.5, 573.5, 574.5, 575.5, 576.5, 577.5, 578.5, 579.5, 580.5, 581.5, 582.5, 583.5, 584.5, 585.5, 586.5, 587.5, 588.5,



connected

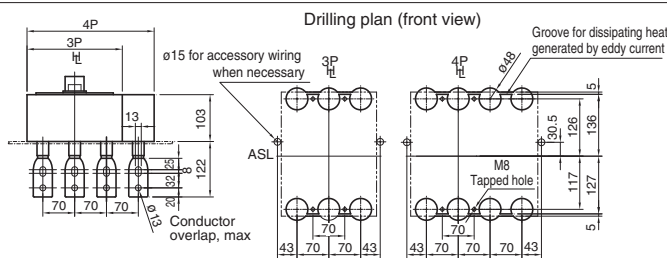
Toggle extension (removable)

ASL

Stud can be turned 90°

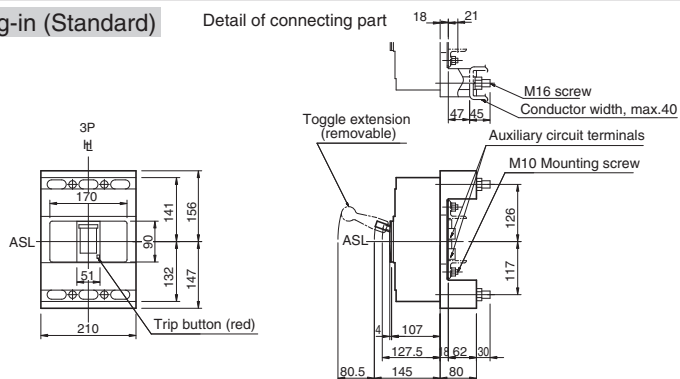
M8 Mounting screw

Dimensions (mm): 80.5, 4, 107, 127.5, 145, 28, 13, 42, 10, 126, 117.



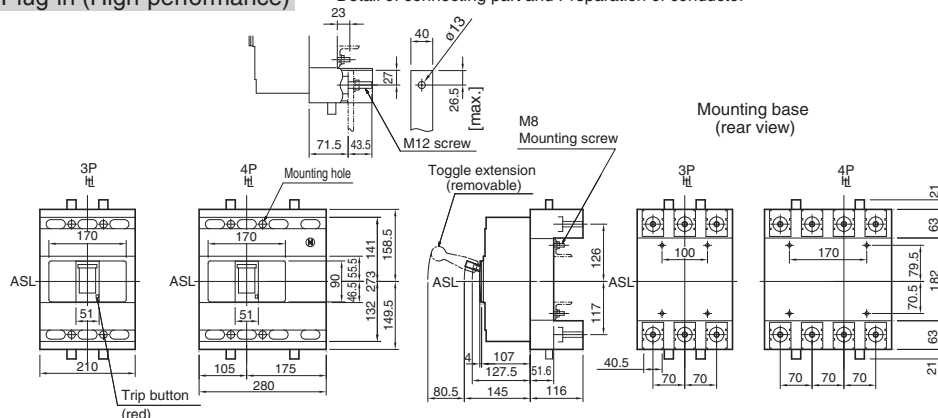
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Detail of connecting part

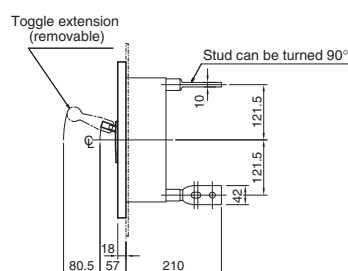


Technical drawing of a 3P ASL (Assemblage de Support Latéral). The drawing shows a side view of the assembly with dimensions in millimeters. Key dimensions include a total width of 210 mm, a central width of 140 mm, and a total height of 303 mm. The assembly consists of two main horizontal sections, each 30 mm high, with a central section of 18 mm. The top section has a 3P label and a 90 mm dimension. The bottom section has a 30 mm dimension. The central section has a 76 mm dimension. The overall height is 303 mm, with a 32 mm dimension for the top section and a 32 mm dimension for the bottom section. The drawing also shows a 3P label and a 90 mm dimension for the central section.

Detail of connecting part and Preparation of conductor



Technical drawings of the front and side views of the 3P and 4P versions of the 343 Trip button. The front view shows a square button with a central rectangular slot and four mounting holes. The side view shows the button's profile with a mounting hole and a 4.5mm ASL dimension. Dimensions include 268mm width, 343mm height, and 338mm width for the 4P version.



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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(630A Frame)

S630-NE, S630-RE, S630-PE

Ratings and Specifications

Type	S630-NE		S630-RE		S630-PE		
Number of poles	3	4	3	4	3	4	
■ Ratings							
Rated current, A	(Adjustable)		(Adjustable)		(Adjustable)		
Calibrated at 45°C	250	500	250	500	250	500	
	300	600	300	600	300	600	
	350	630	350	630	350	630	
	400		400		400		
Rated insulation voltage [U _i] V	690		690		690		
Rated impulse withstand voltage [U _{imp}] kV	8		8		8		
■ Rated breaking capacity, kA							
NK	AC	690V	20/20	—	—		
I _{cu} /I _{cs} (sym)		450V	50/50	—	—		
		240V	85/85	—	—		
	DC	250V	—	—	—		
IEC60947-2	AC	690V	20/20	25/20	25/20		
I _{cu} /I _{cs} (sym)		500V	30/30	45/34	45/34		
		440V	50/50	65/50	85/50		
		415V	50/50	70/50	100/50		
		380V	50/50	70/50	100/50		
		240V	85/85	100/75	125/125		
	DC	250V	—	—	—		
		125V	—	—	—		
■ Rated short time withstand current, kA			10 (0.3sec)		10 (0.3sec)		
Weight (● marked standard type) kg	8.7		11.9	8.7	11.9	8.7	11.9
■ Connections and Mountings							
Front-connected (FC)	Terminal screws		—		—		
	With extension bars		●		●		
Rear-connected (RC)	Bolt studs		—		—		
	Flat bar studs		○		○		
Plug-in (PM)	For switchboards		○		○		
	Standard (PMC)		—		—		
	High-performance (PMB)		○		○		
	For distribution boards (PMC)		—		—		
Flush-mounted (FP)	With flat bar studs		○		○		
Draw-out type (DR)			▲		▲		
TemPlug70 (PG)			○		○		
TemPlug45B (PG4)			—		—		
DIN rail mount			—		—		
Clip-in chassis mount			—		—		
■ Accessories (optional)	Symbol						
Externally mounted	Motor operator		●		●		
	External operating handle	Breaker-mounted	●		●		
		Door-mounted (variable depth)	●		●		
	Toggle extension ⑨		●		●		
	Mechanical interlock ⑨ Slide type		●		●		
	Toggle holder ⑨		●		●		
	Toggle lock ⑨		●		●		
	Terminal cover	For front-connected ⑨	●		●		
		For rear-connected and plug-in	●		●		
	Interpole barrier ⑨		● ③		● ③		
	Terminal block for lead ⑨		●		●		
	Door flange ⑨		●		●		
	■ Standard specifications						
	Overcurrent trip mechanism		Electronic ⑩		Electronic ⑩		
Trip button (color)		Yes (Red)		Yes (Red)			
Handle position indication (ON: Red, OFF: Green)		Yes		Yes			
Suitability for isolation		Yes		Yes			
CE marking		Yes		Yes			

Notes:

● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.

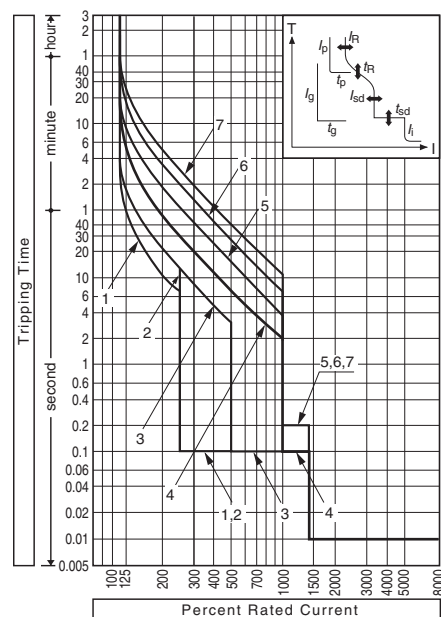
▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

⑨ : Not applicable to the draw-out type (DR).

⑩ : Optional pretrip alarm or ground fault trip function available on request.

Time/Current characteristic curves



Overcurrent tripping characteristics

Characteristics No.		1	2	3	4	5	6	7
Long time-delay pick-up current (A) : (I_R)		CT rated current : (I_{CT}) = 630A 250, 300, 350, 400, 500, 600, 630						
Long time-delay time settings (s) : (t_R)		11	21	21	5	10	19	29
		at 200% $\times(I_R)$			at 600% $\times(I_R)$			
		Setting tolerance $\pm 20\%$						
Short time-delay pick-up current (A) : (I_{SD})		2.5	2.5	5	10	10	10	10
		Setting tolerance $\pm 15\%$						
Short time-delay time settings (s) : (t_{SD})		0.1	0.1	0.1	0.1	0.2	0.2	0.2
		Total clearing time +50ms, resettable time ~20ms						
Instantaneous trip pick-up current (A) : (I_I)		(I_R) $\times 1400\%$ Setting tolerance $\pm 20\%$				Max: (I_{CT}) $\times 1200\%$		
Option	Preferential trip alarm							
	Pick-up current (A) : (I_p)	(I_R) $\times 80\%$ Setting tolerance $\pm 10\%$						
	Time-settings (s) : (t_p)	Definite time-delay characteristic, 40sec. Setting tolerance $\pm 10\%$						
	Ground fault trip							
	Pick-up current (A) : (I_g)	(I_{CT}) $\times 20\%$ Setting tolerance $\pm 15\%$						
	Time-settings (s) : (t_g)	Definite time-delay characteristic, 0.2sec. Total tripping time +50ms, resettable time ~20ms.						
	Neutral protection							
	Pick-up current (A) : (I_h)	(I_R) $\times 100\%$ or 50% selectable ②						
	Time-settings (s) : (t_h)	(t_h)=(t_p) Same as Long time-delay time settings						

Characteristic No.4 will be applied as standard setting unless otherwise specified.

Note:

②: In case of (I_R)<(I_{CT}), the setting tolerance becomes big when (I_h) is set at (I_R)×50%.

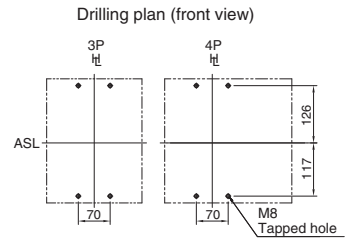
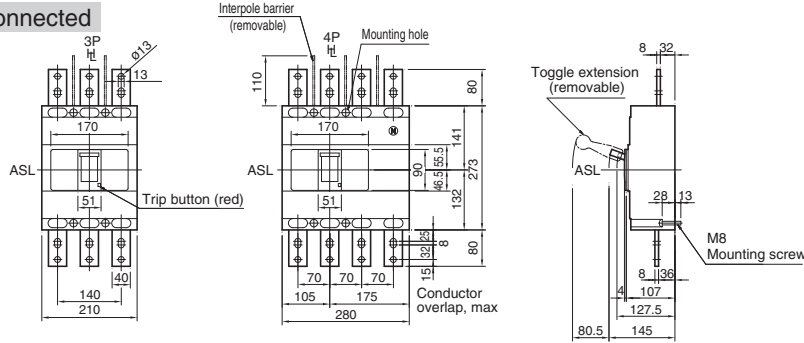
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
Auxiliary switch	■	■	■	■	■	■	■	■	■	■	■
Alarm switch	■	■	■	■	■	■	■	■	■	■	■
Shunt trip	■	■	■	■	■	■	■	■	■	■	■
Under voltage trip	■	■	■	■	■	■	■	■	■	■	■
Left pole	■	■	■	■	■	■	■	■	■	■	■
Right pole	■	■	■	■	■	■	■	■	■	■	■

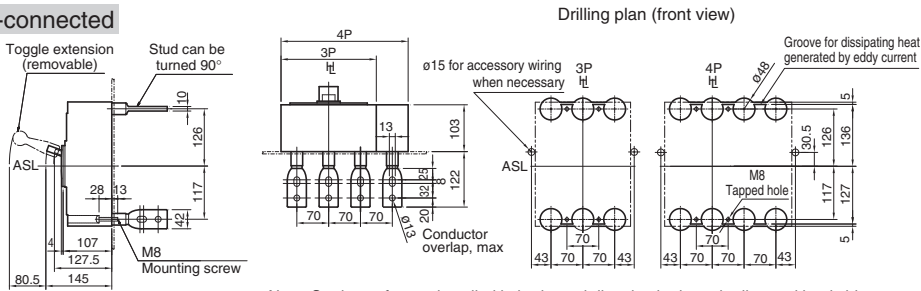
Outline dimensions (mm)

S630-NE, S630-RE, S630-PE

Front-connected



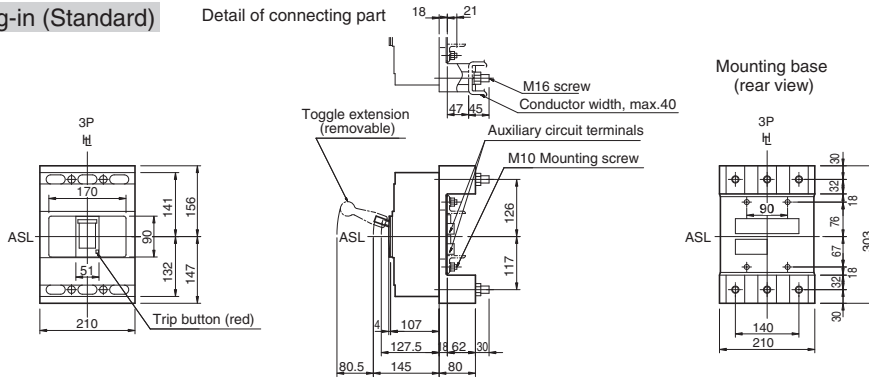
Rear-connected



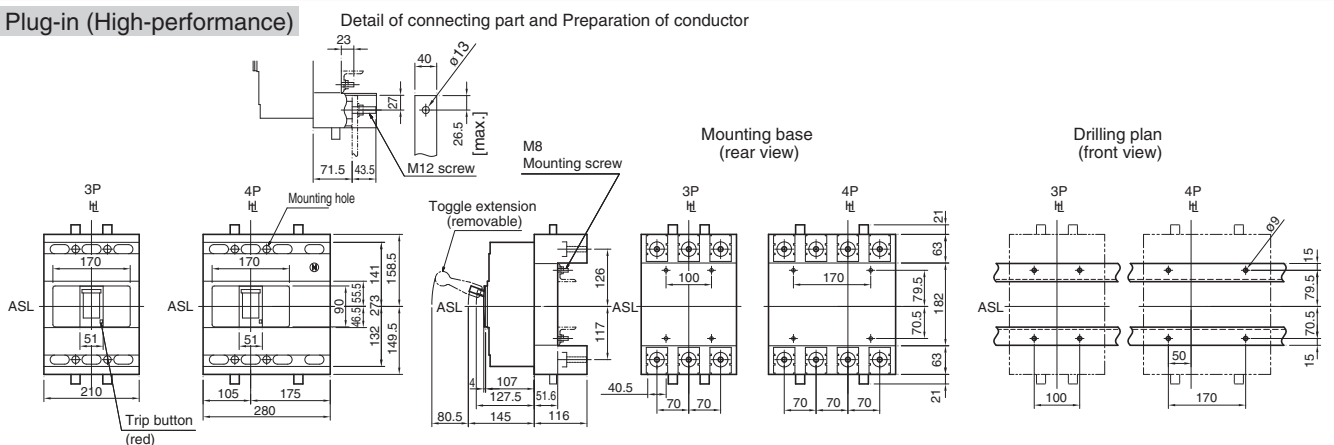
Note: Studs are factory installed in horizontal direction both on the line and load sides.

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

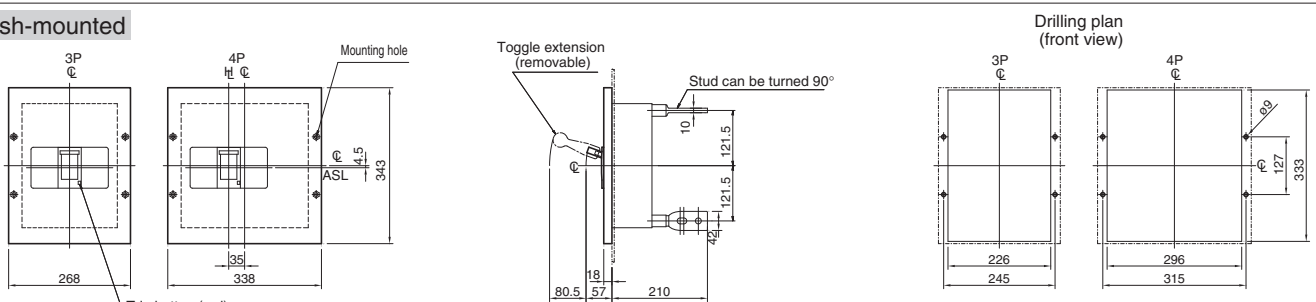
Plug-in (Standard)



Plug-in (High-performance)



Flush-mounted



Note: Studs are factory installed in horizontal direction both on the line and load sides.



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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(630A Frame)

H630-NE, L630-NE

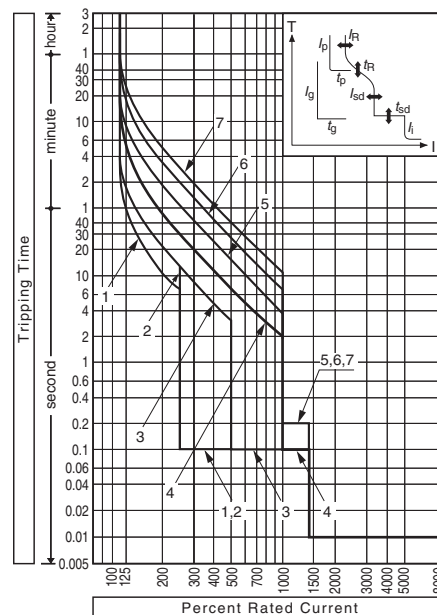
Ratings and Specifications

Type	H630-NE		L630-NE			
Number of poles	3	4	3	4		
■ Ratings						
Rated current, A	(Adjustable)		(Adjustable)			
Calibrated at 45°C	250	500	250	500		
	300	600	300	600		
	350	630	350	630		
	400		400			
Rated insulation voltage [U_i] V	690		690			
Rated impulse withstand voltage [U_{imp}] kV	8		8			
■ Rated breaking capacity, kA						
NK	AC	690V	25/20	25/20		
I_{cu}/I_{cs} (sym)		450V	125/94	180/135		
		240V	150/150	200/150		
	DC	250V	—	—		
IEC60947-2	AC	690V	25/20	25/20		
I_{cu}/I_{cs} (sym)		500V	45/34	45/34		
		440V	125/94	180/135		
		415V	125/94	200/150		
		380V	125/94	200/150		
		240V	150/150	200/150		
	DC	250V	—	—		
		125V	—	—		
	■ Rated short time withstand current, kA					
Weight (● marked standard type) kg	13.5 19.6		13.5 19.6			
■ Connections and Mountings						
Front-connected (FC)	Terminal screws		—			
	With extension bars		●			
Rear-connected (RC)	Bolt studs		—			
	Flat bar studs		○			
Plug-in (PM)	For switchboards	Standard (PMC)	○	—		
		High-performance (PMB)	○	○		
	For distribution boards (PMC)		—			
Flush-mounted (FP)	With flat bar studs		○			
Draw-out type (DR)			—			
TemPlug70 (PG)			—			
TemPlug45B (PG4)			—			
DIN rail mount			—			
Clip-in chassis mount			—			
■ Accessories (optional)	Symbol					
Motor operator	M C		●			
External operating handle	Breaker-mounted H B		●			
	Door-mounted (variable depth) H P		●			
Toggle extension	H A		●			
Mechanical interlock⑨ Slide type	M S		●			
Toggle holder	H H		●			
Toggle lock	H L		●			
Terminal cover	For front-connected	C F	●			
	For rear-connected and plug-in	C R	●			
Interpole barrier	B A		● ③			
Terminal block for lead	T F		●			
Door flange	D F		●			
■ Standard specifications						
Overcurrent trip mechanism	Electronic ⑩		Electronic ⑩			
Trip button (color)	Yes (Red)		Yes (Red)			
Handle position indication (ON: Red, OFF: Green)	Yes		Yes			
Suitability for isolation	Yes		Yes			
CE marking	Yes		Yes			

Notes:

● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
 ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available". ③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : The mechanical interlock is not applicable to the draw-out type (DR).
 ⑩ : Optional pretrip alarm or ground fault trip function available on request.

Time/Current characteristic curves



Overcurrent tripping characteristics

Characteristics No.		1	2	3	4	5	6	7
Long time-delay pick-up current (A) : (I_R)		CT rated current : (I_{CT}) = 630A 250, 300, 350, 400, 500, 600, 630						
Long time-delay time settings (s) : (t_R)		11	21	21	5	10	19	29
		at 200%×(I_R)			at 600%×(I_R)			
		Setting tolerance ±20%						
Short time-delay pick-up current (A) : (I_{SD})		2.5	2.5	5	10	10	10	10
		Setting tolerance ±15%						
Short time-delay time settings (s) : (t_{SD})		0.1	0.1	0.1	0.1	0.2	0.2	0.2
		Total clearing time +50ms, resettable time ~20ms						
Instantaneous trip pick-up current (A) : (I_I)		(I_R)×1400%			Max: (I_{CT})×1200%			
		Setting tolerance ±20%						
Option	Preferential trip alarm							
	Pick-up current (A) : (I_P)	(I_R)×80% Setting tolerance ±10%						
	Time-settings (s) : (t_P)	Definite time-delay characteristic, 40sec. Setting tolerance ±10%						
	Ground fault trip							
	Pick-up current (A) : (I_G)	(I_{CT})×20% Setting tolerance ±15%						
	Time-settings (s) : (t_G)	Definite time-delay characteristic, 0.2sec. Total tripping time +50ms, resettable time ~20ms.						
	Neutral protection							
	Pick-up current (A) : (I_N)	(I_R)×100% or 50% selectable ②						
Time-settings (s) : (t_N)		(t_R)-(t_P) Same as Long time-delay time settings						

Characteristic No.4 will be applied as standard setting unless otherwise specified.

Note:

②: In case of $(I_R) < (I_{CT})$, the setting tolerance becomes big when (I_N) is set at $(I_R) \times 50\%$.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
Auxiliary switch	□	□	□	□	□	□	□	□	□	□	□
Alarm switch	□	□	□	□	□	□	□	□	□	□	□
Shunt trip	□	□	□	□	□	□	□	□	□	□	□
Under voltage trip	□	□	□	□	□	□	□	□	□	□	□
Toggle	□	□	□	□	□	□	□	□	□	□	□
Left pole	□	□	□	□	□	□	□	□	□	□	□
Right pole	□	□	□	□	□	□	□	□	□	□	□

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

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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(800A Frame)

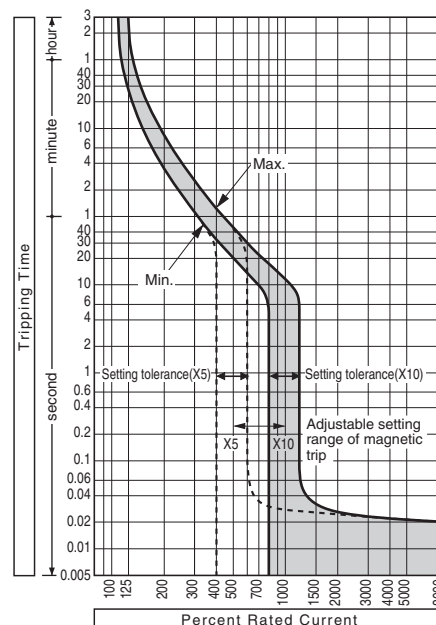
S800-CF, S800-NF, S800-RF, S800-PF

Ratings and Specifications

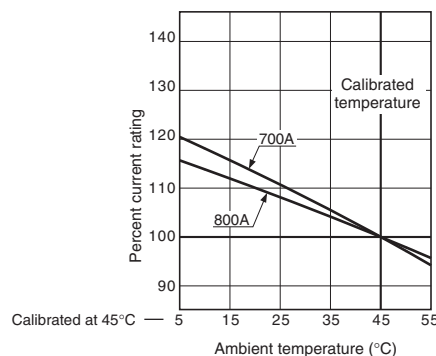
Type	\$800-CF		\$800-NF		\$800-RF		\$800-PF	
Number of poles	3	4	3	4	3	4	3	4
■ Ratings								
Rated current, A	700		700		700		700	
Calibrated at 45°C	800		800		800		800	

Notes:
● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available". ① : DC rating available on request.
③ : Line side interpole barriers are supplied as standard. (Front connection only)
⑨ : Not applicable to the draw-out type (DR).

Time/Current characteristic curves



Ambient Compensating Curves



Magnetic trip pickup current

Rated current (A)	Magnetic trip pickup current Adjustable range (A)				
	$I_n \times 10$	9	8	7	6
700	7000	6300	5600	4900	4200
800	8000	7200	6400	5600	4800

- Notes:**
- Setting tolerance: $\pm 20\%$.
 - Unless otherwise stated when ordering, the selector dial is factory set to position "10".
 - The trip pickup current of DC models is not adjustable; the dial position corresponding to the trip pickup current is marked with a white point.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
4											
3											
2											
1											
Toggle	Left pole	Right pole									

S800-CF, S800-NF, S800-RF, S800-PF

Flush-mounted

3P
4P
Mounting hole
4.5
343
268
338
35
Toggle extension (removable)
Stud can be turned 90°
10
121.5
121.5
121.5
18
80.5
57
210
3P
4P
226
245
296
315
127
127

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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(800A Frame)

S800-NE, S800-RE, S800-PE

Ratings and Specifications

Type	S800-NE		S800-RE		S800-PE	
Number of poles	3	4	3	4	3	4
■ Ratings						
Rated current, A	(Adjustable)		(Adjustable)		(Adjustable)	
Calibrated at 45°C	350	600	350	600	350	600
	400	700	400	700	400	700
	450	800	450	800	450	800
	500		500		500	
Rated insulation voltage [U _i] V	690		690		690	
Rated impulse withstand voltage [U _{imp}] kV	8		8		8	
■ Rated breaking capacity, kA						
NK	AC	690V	20/20	—	—	
I _{cu} /I _{cs} (sym)		450V	50/50	—	—	
		240V	85/85	—	—	
	DC	250V	—	—	—	
IEC60947-2	AC	690V	20/20	25/20	25/20	
I _{cu} /I _{cs} (sym)		500V	30/30	45/34	45/34	
		440V	50/50	65/50	85/50	
		415V	50/50	70/50	100/50	
		380V	50/50	70/50	100/50	
		240V	85/85	100/75	125/125	
	DC	250V	—	—	—	
		125V	—	—	—	
■ Rated short time withstand current, kA						
Weight (● marked standard type) kg	9.1		12.3	9.1	12.3	9.1
■ Connections and Mountings						
Front-connected (FC)	Terminal screws		—		—	
	With extension bars		●		●	
Rear-connected (RC)	Bolt studs		—		—	
	Flat bar studs		○		○	
Plug-in (PM)	For switchboards Standard (PMC)		○ —		○ —	
	High-performance (PMB)		○		○	
	For distribution boards (PMC)		—		—	
Flush-mounted (FP)	With flat bar studs		○		○	
Draw-out type (DR)			▲		▲	
TemPlug70 (PG)			—		—	
TemPlug45B (PG4)			—		—	
DIN rail mount			—		—	
Clip-in chassis mount			—		—	
■ Accessories (optional) Symbol						
Motor operator	M C		●		●	
External operating handle	Breaker-mounted		●		●	
	Door-mounted (variable depth)		●		●	
Toggle extension ⑨	H A		●		●	
Mechanical interlock ⑨ Slide type	M S		●		●	
Toggle holder ⑨	H H		●		●	
Toggle lock ⑨	H L		●		●	
Terminal cover	For front-connected ⑨		●		●	
	For rear-connected and plug-in		●		●	
Interpole barrier ⑨	B A		● ③		● ③	
Terminal block for lead ⑨	T F		●		●	
Door flange ⑨	D F		●		●	
■ Standard specifications						
Overcurrent trip mechanism	Electronic ⑩		Electronic ⑩		Electronic ⑩	
Trip button (color)	Yes (Red)		Yes (Red)		Yes (Red)	
Handle position indication (ON: Red, OFF: Green)	Yes		Yes		Yes	
Suitability for isolation	Yes		Yes		Yes	
CE marking	Yes		Yes		Yes	

Notes:

● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.

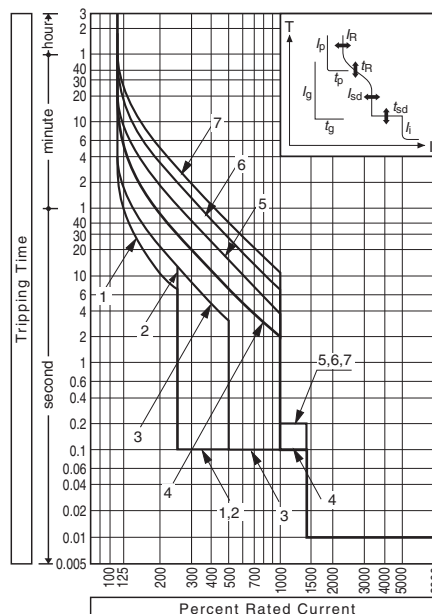
▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

⑨ : Not applicable to the draw-out type (DR).

⑩ : Optional pretrip alarm or ground fault trip function available on request.

Time/Current characteristic curves



Overcurrent tripping characteristics

Characteristics No.		1	2	3	4	5	6	7
Long time-delay pick-up current (A) : (I_R)		CT rated current : (I_{CT}) = 800A 350, 400, 450, 500, 600, 700, 800						
Long time-delay time settings (s) : (t_R)		11	21	21	5	10	19	29
		at 200%×(I_R)			at 600%×(I_R)			
		Setting tolerance ±20%						
Short time-delay pick-up current (A) : (I_{SD})		2.5	2.5	5	10	10	10	10
		Setting tolerance ±15%						
Short time-delay time settings (s) : (t_{SD})		0.1	0.1	0.1	0.1	0.2	0.2	0.2
		Total clearing time +50ms, resettable time ~20ms						
Instantaneous trip pick-up current (A) : (I_I)		(I_R)×1400%				Max: (I_{CT})×1200%		
		Setting tolerance ±20%						
Option	Preferential trip alarm							
	Pick-up current (A) : (I_p)	(I_R)×80% Setting tolerance ±10%						
	Time-settings (s) : (t_p)	Definite time-delay characteristic, 40sec. Setting tolerance ±10%						
	Ground fault trip							
	Pick-up current (A) : (I_g)	(I_{CT})×20% Setting tolerance ±15%						
	Time-settings (s) : (t_g)	Definite time-delay characteristic, 0.2sec. Total tripping time +50ms, resettable time ~20ms.						
	Neutral protection							
	Pick-up current (A) : (I_N)	(I_R)×100% or 50% selectable ②						
	Time-settings (s) : (t_N)	(t_N)=(t_p) Same as Long time-delay time settings						

Characteristic No.4 will be applied as standard setting unless otherwise specified.

Note:

②: In case of (I_R)<(I_{CT}), the setting tolerance becomes big when (I_N) is set at (I_R)×50%.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
Auxiliary switch	□	□	□	□	□	□	□	□	□	□	□
Alarm switch	□	□	□	□	□	□	□	□	□	□	□
Shunt trip	□	□	□	□	□	□	□	□	□	□	□
Under voltage trip	□	□	□	□	□	□	□	□	□	□	□
Left pole	□	□	□	□	□	□	□	□	□	□	□
Right pole	□	□	□	□	□	□	□	□	□	□	□

S800-NE, S800-RE, S800-PE

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Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(800A Frame)

H800-NE, L800-NE

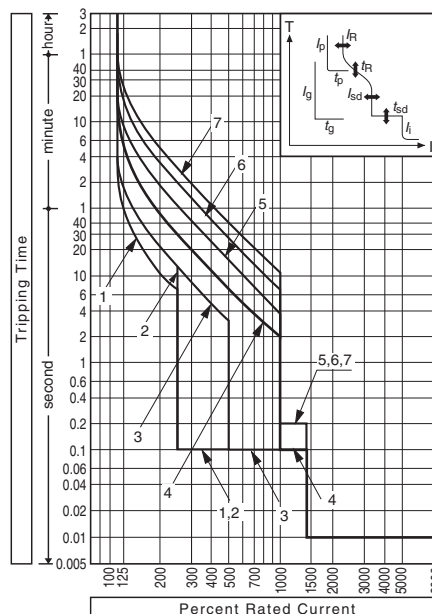
Ratings and Specifications

Type	H800-NE		L800-NE			
Number of poles	3	4	3	4		
■ Ratings						
Rated current, A	(Adjustable)		(Adjustable)			
Calibrated at 45°C	350	600	350	600		
	400	700	400	700		
	450	800	450	800		
	500		500			
Rated insulation voltage [U_i] V	690		690			
Rated impulse withstand voltage [U_{imp}] kV	8		8			
■ Rated breaking capacity, kA						
NK	AC	690V	25/20	25/20		
I_{cu}/I_{cs} (sym)		450V	125/94	180/135		
		240V	150/150	200/150		
	DC	250V	—	—		
IEC60947-2	AC	690V	25/20	25/20		
I_{cu}/I_{cs} (sym)		500V	45/34	45/34		
		440V	125/94	180/135		
		415V	125/94	200/150		
		380V	125/94	200/150		
		240V	150/150	200/150		
	DC	250V	—	—		
		125V	—	—		
	■ Rated short time withstand current, kA					
Weight (● marked standard type) kg	14.3 20.3		14.3 20.3			
■ Connections and Mountings						
Front-connected (FC)	Terminal screws	—	—			
	With extension bars	●	●			
Rear-connected (RC)	Bolt studs	—	—			
	Flat bar studs	○	○			
Plug-in (PM)	For switchboards Standard (PMC)	○ —	○ —			
	High-performance (PMB)	○	○			
For distribution boards (PMC)		—	—			
Flush-mounted (FP)	With flat bar studs	○	○			
Draw-out type (DR)		—	—			
TemPlug70 (PG)		—	—			
TemPlug45B (PG4)		—	—			
DIN rail mount		—	—			
Clip-in chassis mount		—	—			
■ Accessories (optional)	Symbol					
Motor operator	M C	●	●			
External operating handle	Breaker-mounted	H B	●	●		
	Door-mounted (variable depth)	H P	●	●		
Toggle extension		H A	●	●		
Mechanical interlock⑨	Slide type	M S	●	●		
Toggle holder		H H	●	●		
Toggle lock		H L	●	●		
Terminal cover	For front-connected	C F	●	●		
	For rear-connected and plug-in	C R	●	●		
Interpole barrier		B A	● ③	● ③		
Terminal block for lead		T F	●	●		
Door flange		D F	●	●		
■ Standard specifications						
Overcurrent trip mechanism	Electronic ⑩		Electronic ⑩			
Trip button (color)	Yes (Red)		Yes (Red)			
Handle position indication (ON: Red, OFF: Green)	Yes		Yes			
Suitability for isolation	Yes		Yes			
CE marking	Yes		Yes			

Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available". ③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : The mechanical interlock is not applicable to the draw-out type (DR).
⑩ : Optional pretrip alarm or ground fault trip function available on request.

Time/Current characteristic curves



Overcurrent tripping characteristics

Characteristics No.		1	2	3	4	5	6	7
Long time-delay pick-up current (A) : (I_R)		CT rated current : (I_{CT}) = 800A 350, 400, 450, 500, 600, 700, 800						
Long time-delay time settings (s) : (t_R)		11	21	21	5	10	19	29
		at 200%×(I_R)			at 600%×(I_R)			
		Setting tolerance ±20%						
Short time-delay pick-up current (A) : (I_{SD})		2.5	2.5	5	10	10	10	10
		Setting tolerance ±15%						
Short time-delay time settings (s) : (t_{SD})		0.1	0.1	0.1	0.1	0.2	0.2	0.2
		Total clearing time +50ms, resettable time ~20ms						
Instantaneous trip pick-up current (A) : (I_I)		(I_R)×1400%			Max: (I_{CT})×1200%			
		Setting tolerance ±20%						
Option	Preferential trip alarm							
	Pick-up current (A) : (I_P)	(I_R)×80% Setting tolerance ±10%						
	Time-settings (s) : (t_P)	Definite time-delay characteristic, 40sec. Setting tolerance ±10%						
	Ground fault trip							
	Pick-up current (A) : (I_G)	(I_{CT})×20% Setting tolerance ±15%						
	Time-settings (s) : (t_G)	Definite time-delay characteristic, 0.2sec. Total tripping time +50ms, resettable time ~20ms.						
	Neutral protection							
Pick-up current (A) : (I_N)		(I_R)×100% or 50% selectable ②						
Time-settings (s) : (t_N)		(t_N)= (t_P) Same as Long time-delay time settings						

Characteristic No.4 will be applied as standard setting unless otherwise specified.

Note:

- ②: In case of $(I_R) < (I_{CT})$, the setting tolerance becomes big when (I_N) is set at $(I_R) \times 50\%$.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
Auxiliary switch	□	□	□	□	□	□	□	□	□	□	□
Alarm switch	□	□	□	□	□	□	□	□	□	□	□
Shunt trip	□	□	□	□	□	□	□	□	□	□	□
Under voltage trip	□	□	□	□	□	□	□	□	□	□	□
Left pole	□	□	□	□	□	□	□	□	□	□	□
Toggle	□	□	□	□	□	□	□	□	□	□	□
Right pole	□	□	□	□	□	□	□	□	□	□	□

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

Technical drawing showing the front view of a rectangular plate. The drawing includes two views: a top view (labeled 3P) and a side view (labeled 4P). The top view shows a rectangle with a width of 226 mm and a height of 127 mm. The side view shows a rectangle with a width of 296 mm and a height of 127 mm. The drawing also indicates a hole with a diameter of 9 mm and a center-to-center distance of 333 mm between the holes.

7-45



7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(1250A Frame)

S1250-NE, S1250-GE

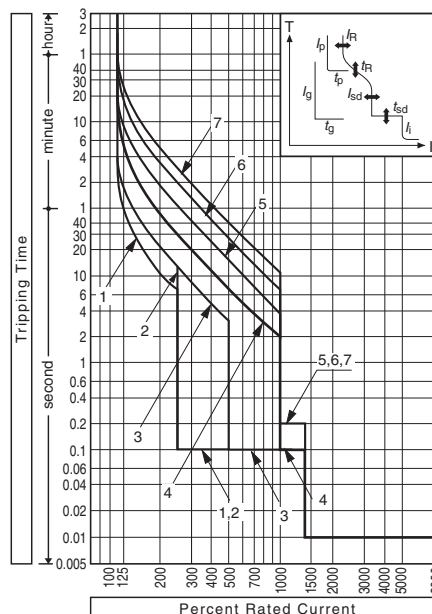
Ratings and Specifications

Type	S1250-NE		S1250-GE			
Number of poles	3	4	3	4		
■ Ratings						
Rated current, A	(Adjustable)		(Adjustable)			
Calibrated at 45°C	500	1000	500	1000		
	600	1200	600	1200		
	700	1250	700	1250		
	800		800			
Rated insulation voltage [U_i] V	690		690			
Rated impulse withstand voltage [U_{imp}] kV	8		8			
■ Rated breaking capacity, kA						
NK	AC	690V	25/20	45/34		
I_{cu}/I_{cs} (sym)		450V	65/50	85/65		
		240V	100/75	125/94		
	DC	250V	—	—		
IEC60947-2	AC	690V	25/20	45/34		
I_{cu}/I_{cs} (sym)		500V	45/34	65/50		
		440V	65/50	85/65		
		415V	70/50	85/65		
		380V	85/65	100/75		
		240V	100/75	125/94		
	DC	250V	—	—		
		125V	—	—		
■ Rated short time withstand current, kA			15 (0.3sec)		15 (0.3sec)	
Weight (● marked standard type) kg	19.8		25.0	19.8	25.0	
■ Connections and Mountings						
Front-connected (FC)	Terminal screws		—		—	
	With extension bars		●		●	
Rear-connected (RC)	Bolt studs		—		—	
	Flat bar studs		○		○	
Plug-in (PM)	For switchboards Standard (PMC)		○		○	
	High-performance (PMB)		—		—	
	For distribution boards (PMC)		—		—	
Flush-mounted (FP)	With flat bar studs		○		○	
Draw-out type (DR)			▲		▲	
TemPlug70 (PG)			—		—	
TemPlug45B (PG4)			—		—	
DIN rail mount			—		—	
Clip-in chassis mount			—		—	
■ Accessories (optional)	Symbol					
Motor operator	M C		●		●	
External operating handle	Breaker-mounted		●		●	
	Door-mounted (variable depth)		●		●	
Toggle extension	H A		● ②④		● ②④	
Mechanical interlock⑨ Slide type	M S		●		●	
Toggle holder	H H		●		●	
Toggle lock	H L		●		●	
Terminal cover	For front-connected		●		●	
	For rear-connected and plug-in		C R		—	
Interpole barrier	B A		● ③		● ③	
Terminal block for lead	T F		●		●	
Door flange	D F		●		●	
■ Standard specifications						
Overcurrent trip mechanism			Electronic ⑩		Electronic ⑩	
Trip button (color)			Yes (Red)		Yes (Red)	
Handle position indication (ON: Red, OFF: Green)			Yes		Yes	
Suitability for isolation			Yes		Yes	
CE marking			Yes		Yes	

Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
 ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available". ③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : The mechanical interlock is not applicable to the draw-out type (DR).
 ⑩ : Optional pretrip alarm or ground fault trip function available on request.
 ②④ : One is supplied with every five breakers. Please specify if more are required.

Time/Current characteristic curves



Overcurrent tripping characteristics

Characteristics No.		1	2	3	4	5	6	7
Long time-delay pick-up current (A) : (I_R)		CT rated current : (I_{CT}) = 1250A 500, 600, 700, 800, 1000, 1200, 1250						
Long time-delay time settings (s) : (t_R)		11	21	21	5	10	19	29
		at 200%×(I_R)			at 600%×(I_R)			
		Setting tolerance ±20%						
Short time-delay pick-up current (A) : (I_{SD})		2.5	2.5	5	10	10	10	10
		Setting tolerance ±15%						
Short time-delay time settings (s) : (t_{SD})		0.1	0.1	0.1	0.1	0.2	0.2	0.2
		Total clearing time +50ms, resettable time -20ms						
Instantaneous trip pick-up current (A) : (I_I)		(I_R)×1400%			Max: (I_{CT})×1200%			
		Setting tolerance ±20%						
Option	Preferential trip alarm							
	Pick-up current (A) : (I_P)	(I_R)×80% Setting tolerance ±10%						
	Time-settings (s) : (t_P)	Definite time-delay characteristic, 40sec. Setting tolerance ±10%						
	Ground fault trip							
	Pick-up current (A) : (I_G)	(I_{CT})×20% Setting tolerance ±15%						
	Time-settings (s) : (t_G)	Definite time-delay characteristic, 0.2sec. Total tripping time +50ms, resettable time -20ms.						
	Neutral protection							
	Pick-up current (A) : (I_N)	(I_R)×100% or 50% selectable ②						
	Time-settings (s) : (t_N)	(t_N)= (t_P) Same as Long time-delay time settings						

Characteristic No.4 will be applied as standard setting unless otherwise specified.

Note:

- ②: In case of (I_R) < (I_{CT}), the setting tolerance becomes big when (I_N) is set at (I_R)×50%.

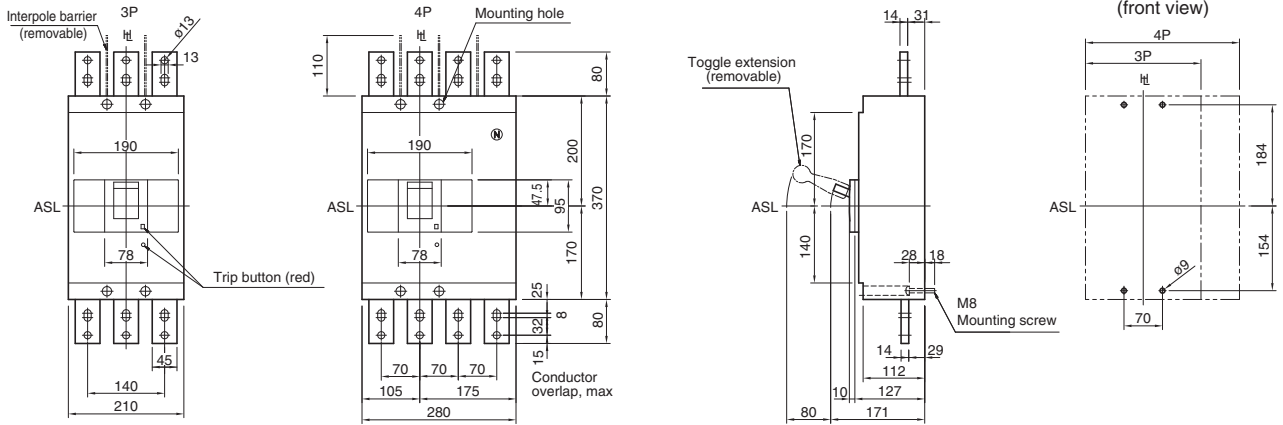
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
Left pole	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle
Right pole	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle

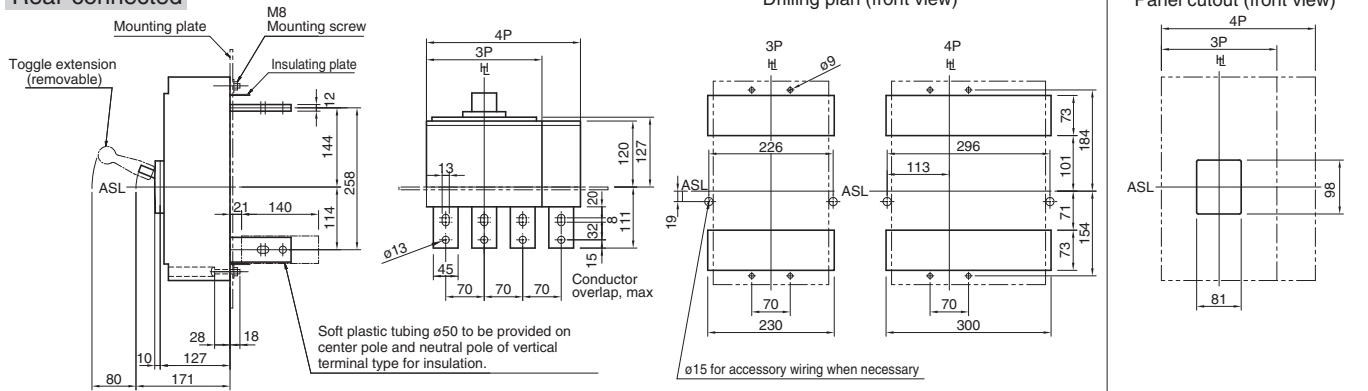
Outline dimensions (mm)

S1250-NE, S1250-GE

Front-connected

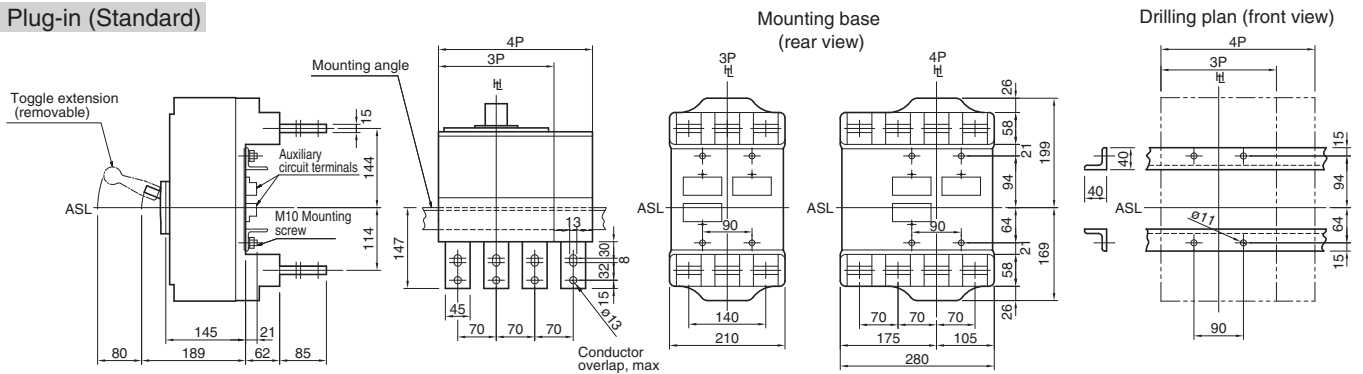


Rear-connected

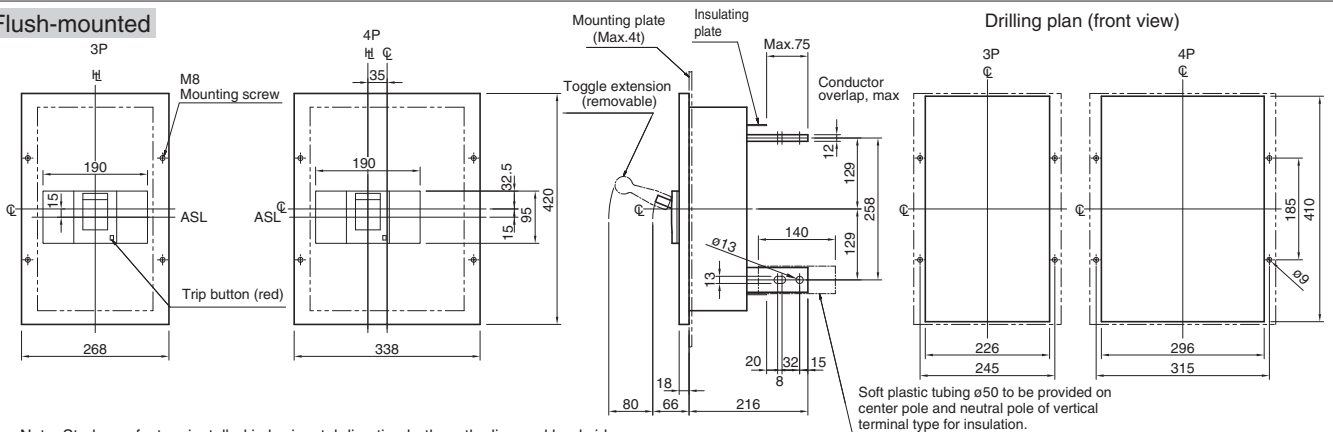


Note: Studs are factory installed in horizontal direction both on the line and load sides.

Plug-in (Standard)



Flush-mounted



Note: Studs are factory installed in horizontal direction both on the line and load sides.



7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(1600A Frame)

S1600-NE

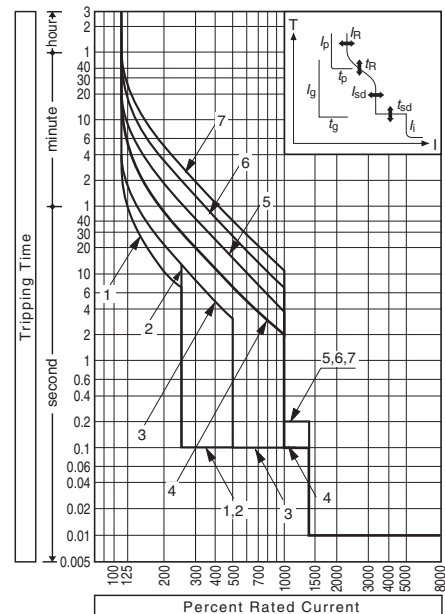
Ratings and Specifications

Type	S1600-NE				
Number of poles	3	4			
■ Ratings					
Rated current, A	(Adjustable)				
Calibrated at 45°C	700	1200			
	800	1400			
	900	1500			
	1000	1600			
Rated insulation voltage [U_i] V	690				
Rated impulse withstand voltage [U_{imp}] kV	8				
■ Rated breaking capacity, kA					
NK	AC	690V	—		
I_{cu}/I_{cs} (sym)		450V	—		
		240V	—		
	DC	250V	—		
IEC60947-2	AC	690V	45/34		
I_{cu}/I_{cs} (sym)		500V	65/50		
		440V	85/65		
		415V	85/65		
		380V	100/75		
		240V	125/94		
	DC	250V	—		
		125V	—		
■ Rated short time withstand current, kA	20 (0.3sec)				
Weight (● marked standard type) kg	27.0	35.0			
■ Connections and Mountings					
Front-connected (FC)	Terminal screws		—		
	With extension bars		○		
Rear-connected (RC)	Bolt studs		—		
	Flat bar studs		●		
Plug-in (PM)	For switchboards	Standard (PMC)	—		
		High-performance (PMB)	—		
	For distribution boards (PMC)		—		
Flush-mounted (FP)	With flat bar studs		○		
Draw-out type (DR)			○		
TemPlug70 (PG)			—		
TemPlug45B (PG4)			—		
DIN rail mount			—		
Clip-in chassis mount			—		
■ Accessories (optional)	Symbol				
Motor operator	M C	●			
External operating handle	Breaker-mounted	H B	●		
	Door-mounted (variable depth)	H P	●		
Toggle extension		H A	● ②④		
Mechanical interlock⑨	Slide type	M S	●		
Toggle holder		H H	●		
Toggle lock		H L	●		
Terminal cover	For front-connected	C F	—		
	For rear-connected and plug-in	C R	—		
Interpole barrier		B A	● ③		
Terminal block for lead		T F	●		
Door flange		D F	●		
■ Standard specifications					
Overcurrent trip mechanism	Electronic ⑩				
Trip button (color)	Yes (Red)				
Handle position indication (ON: Red, OFF: Green)	Yes				
Suitability for isolation	Yes				
CE marking	Yes				

Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
● : "yes" or "available". — : "no" or "not available". ③ : Line side interpole barriers are supplied as standard. (Front connection only) ⑨ : The mechanical interlock is not applicable to the draw-out type (DR).
⑩ : Optional pretrip alarm or ground fault trip function available on request.
②④ : One is supplied with every five breakers. Please specify if more are required.

Time/Current characteristic curves



Overcurrent tripping characteristics

Characteristics No.	1	2	3	4	5	6	7
Long time-delay pick-up current (A) : (I_p)	CT rated current : (I_{CT}) = 1600A 700, 800, 900, 1000, 1200, 1400, 1500, 1600						
Long time-delay time settings (s) : (t_p)	11 at 200%×(I_p)	21 at 200%×(I_p)	21 at 200%×(I_p)	5 at 600%×(I_p)	10 at 600%×(I_p)	19 at 600%×(I_p)	29 at 600%×(I_p)
Short time-delay pick-up current (A) : (I_{sd})	2.5	2.5	5	10	10	10	10
Short time-delay time settings (s) : (t_{sd})	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Instantaneous trip pick-up current (A) : (I_i)	(I_p)×1400% Setting tolerance ±20%						
Preferential trip alarm	Pick-up current (A) : (I_p) Time-settings (s) : (t_p)						
Ground fault trip	Pick-up current (A) : (I_g) Time-settings (s) : (t_g)						
Neutral protection	Pick-up current (A) : (I_n) Time-settings (s) : (t_n)						

Characteristic No.4 will be applied as standard setting unless otherwise specified.

Note:

- ②. In case of (I_p) < (I_{CT}), the setting tolerance becomes big when (I_p) is set at (I_p)×50%.

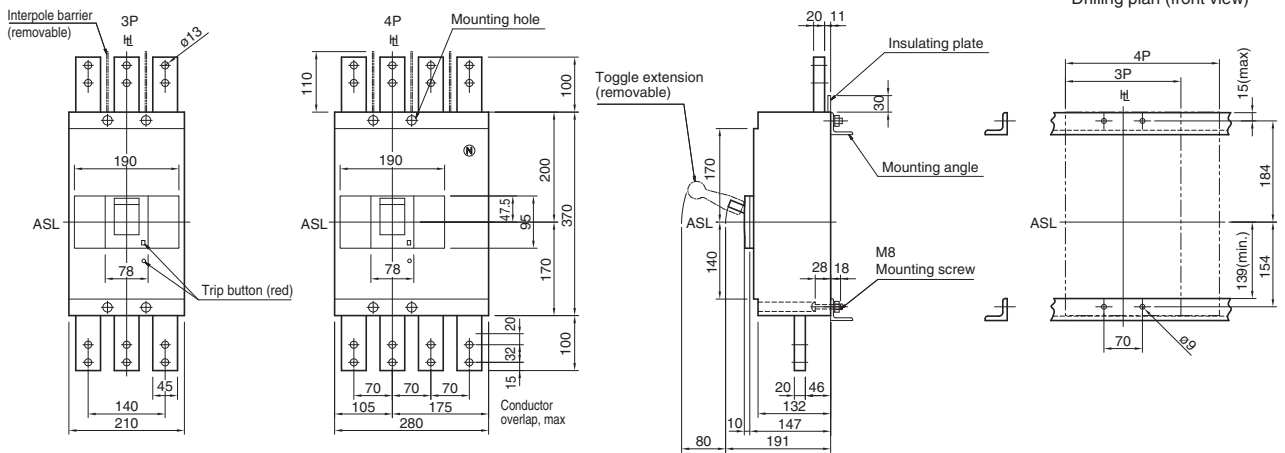
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
Auxiliary switch	□	□	□	□	□	□	□	□	□	□	□
Alarm switch	□	□	□	□	□	□	□	□	□	□	□
Shunt trip	□	□	□	□	□	□	□	□	□	□	□
Under voltage trip	□	□	□	□	□	□	□	□	□	□	□
Toggle	□	□	□	□	□	□	□	□	□	□	□
Left pole	□	□	□	□	□	□	□	□	□	□	□
Right pole	□	□	□	□	□	□	□	□	□	□	□

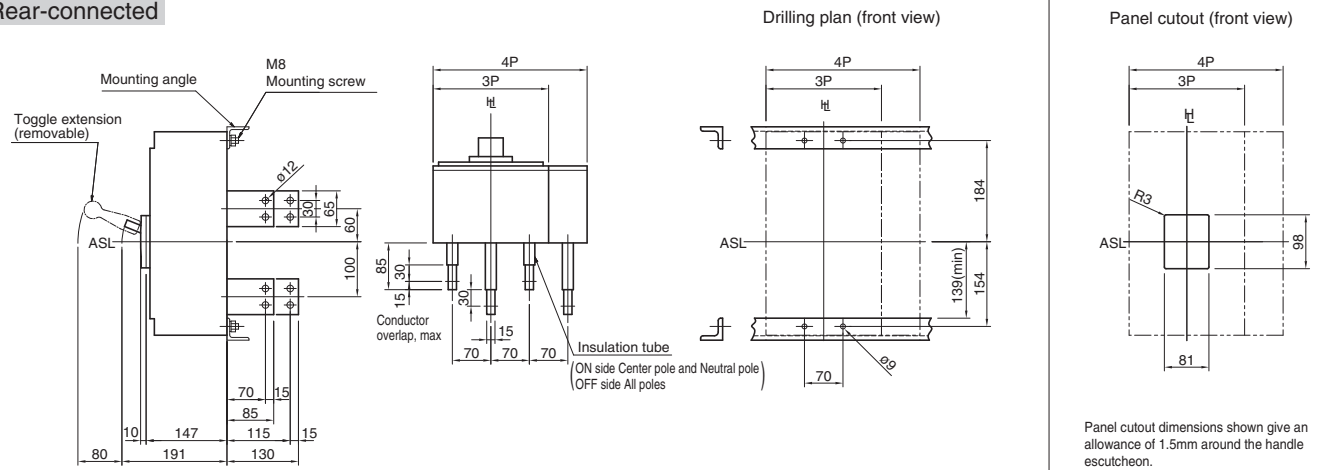
Outline dimensions (mm)

S1600-NE

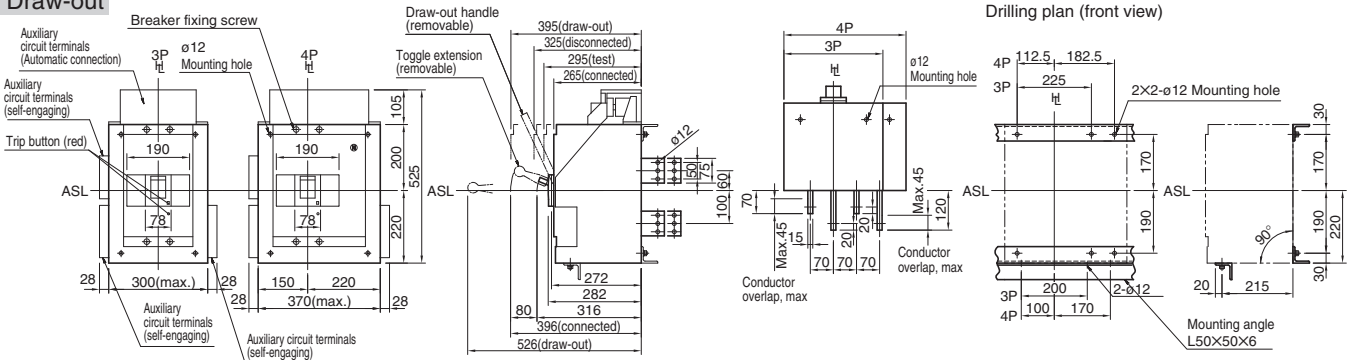
Front-connected



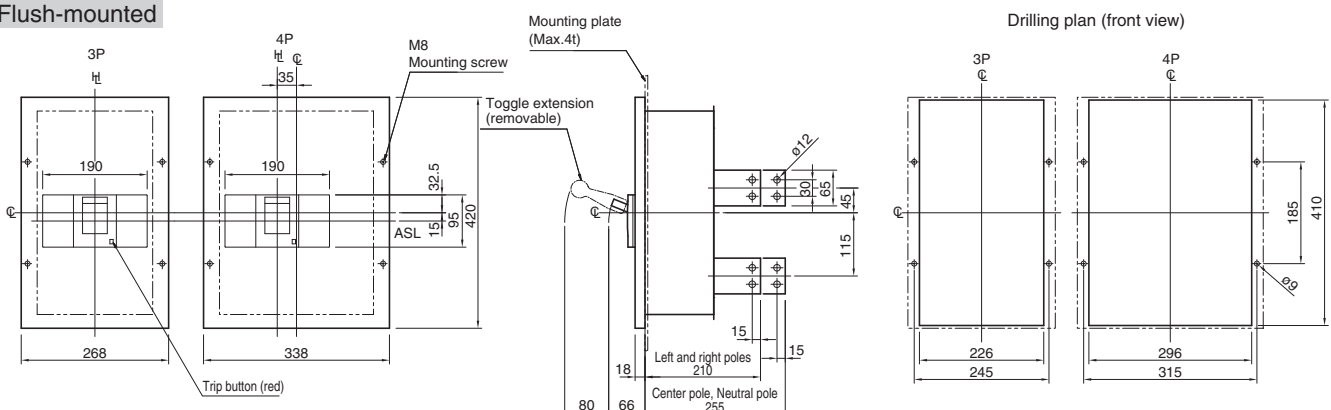
Rear-connected



Draw-out



Flush-mounted



7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(50A Frame)

E50-CM

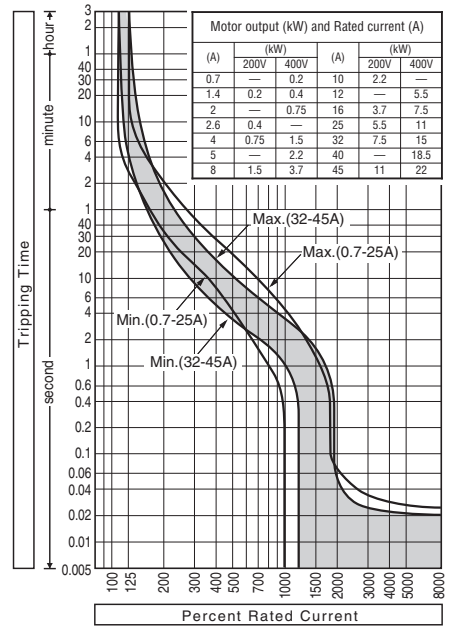
Ratings and Specifications

Type	E50-CM
Number of poles	3
Ratings	
Motor rated capacity (kW) and breaker rated current (A)	
Calibrated at 45°C	
	(A) (kW)
	200/220V 400/440V
	0.7 — 0.2
	1.4 0.2 0.4
	2 — 0.75
	2.6 0.4 —
	4 0.75 1.5
	5 — 2.2
	8 1.5 3.7
	10 2.2 —
	12 — 5.5
	16 3.7 7.5
	25 5.5 11
	32 7.5 15
	40 — 18.5
	45 11 22
Note: Select an appropriate one depending on the total load current of the motor operator.	
Rated insulation voltage [U_i] V	690
Rated impulse withstand voltage [U_{imp}] kV	6
Rated breaking capacity, kA	
NK AC	690V —
$I_{cu}/I_{cs}(sym)$	450V 2.5/— ⑬
	240V 5/— ⑭
	DC 250V —
IEC 60947-2 AC	440V 2.5/1.3
$I_{cu}/I_{cs}(sym)$	415V 2.5/1.3
	380V 2.5/1.3
	240V 5/2.5
	DC 250V —
Weight (● marked standard type) kg	0.74
Connections and Mountings	
Front-connected (FC) Terminal screws	●
	With extension bars —
Rear-connected (RC) Bolt studs	○
	Flat bar studs —
Plug-in (PM) For switchboards Standard (PMC)	○
	High-performance (PMB) —
	For distribution boards (PMC) ○
Flush-mounted (FP) With flat bar studs	○ Bolt studs
Draw-out type (DR)	—
TemPlug70 (PG)	—
TemPlug45B (PG4)	—
DIN rail mount	—
Clip-in chassis mount	—
Accessories (optional) Symbol	
Motor operator	M C
Externally mounted	
External operating handle	H B ●
Door-mounted (variable depth)	H P ●
Toggle extension	H A —
Mechanical interlock	Slide type M S ●
Toggle holder	H H ●
Toggle lock	H L ●
Terminal cover	For front-connected C F ●
	For rear-connected and plug-in C R ●
Interpole barrier	B A ●
Terminal block for lead	T F ●
Door flange	D F ●
Standard specifications	
Overcurrent trip mechanism	Thermal-magnetic ⑳
Trip button (color)	Yes (Red)
Handle position indication (ON: Red, OFF: Green)	Yes
Suitability for isolation	Non
CE marking	Non

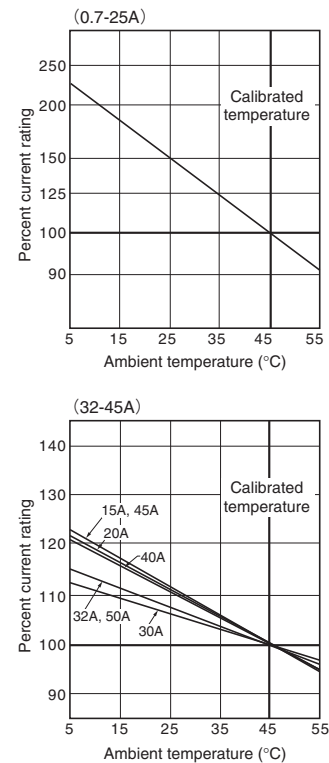
Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
 ● : "yes" or "available". — : "no" or "not available". ⑬ : at 500V AC. ⑭ : at 250V AC. ⑳ : Hydraulic-magnetic type for below 25A rating.

Time/Current characteristic curves



Ambient Compensating Curves



Combinations of Internally Mounted Accessories (Optional)

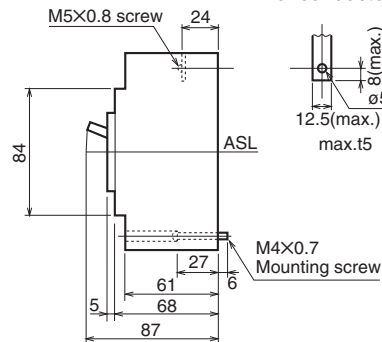
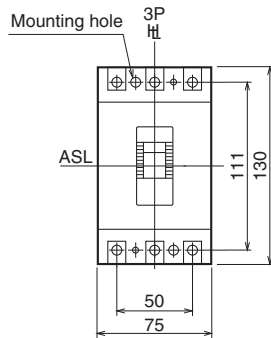
Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip #1	Under voltage trip	AX	SH	UV	SH	UV	AX	AX
3				—			—		—		—
		Left pole	Right pole								

NOTE: #1 Shunt trip is provided with anti-burnout switch.

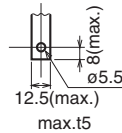
Outline dimensions (mm)

E50-CM

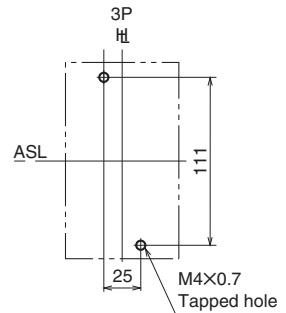
Front-connected



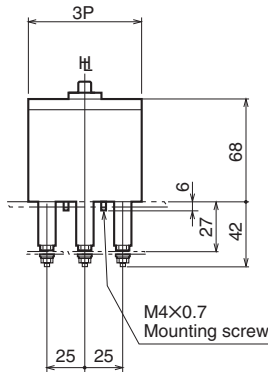
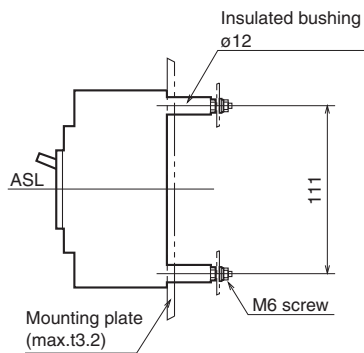
Preparation of conductor



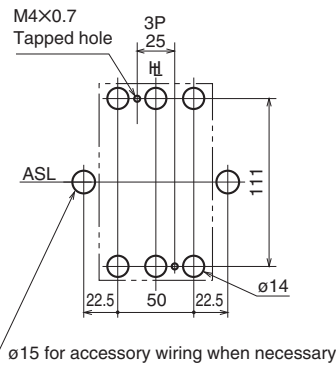
Drilling plan (front view)



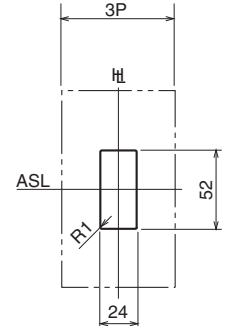
Rear-connected



Drilling plan (front view)

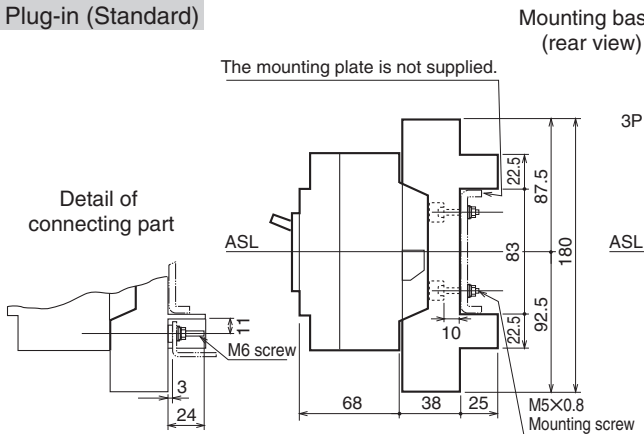


Panel cutout (front view)

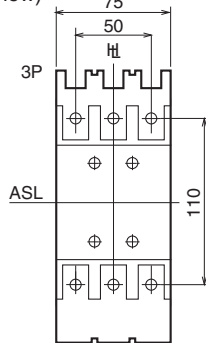


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

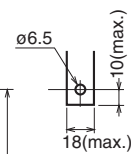
Plug-in (Standard)



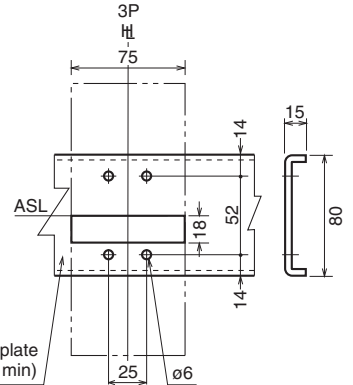
Mounting base (rear view)



Preparation of conductor

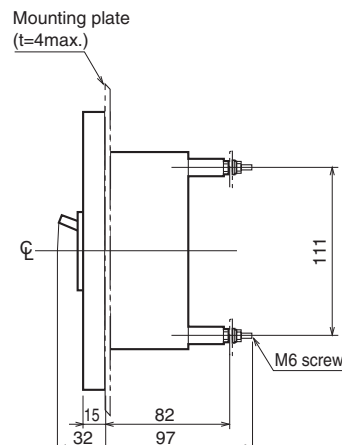
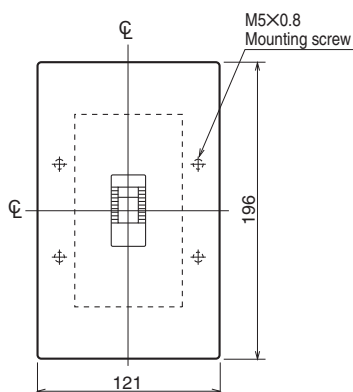


Drilling plan (front view)

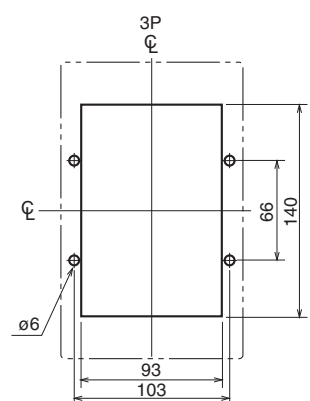


• Allow a space of 5mm from adjacent breaker when the breaker is fitted with internal accessories.

Flush-mounted



Drilling plan (front view)





7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(100A Frame)

S100-NM

Ratings and Specifications

Type

Number of poles

■ Ratings

Motor rated capacity (kW)

and breaker rated current (A)

Calibrated at 40°C

S100-NM

3

(A)	(kW)	
	200/220V	400/440V
16	3.7	7.5
24	5.5	11
32	7.5	15
40	—	18.5
45	11	22
60	15	30
75	18.5	37
90	22	45
100	—	55

Note: Select an appropriate one depending on the total load current of the motor operator.

Rated insulation voltage [U_i] V

Rated impulse withstand voltage [U_{imp}] kV

■ Rated breaking capacity, kA

NK AC 690V

$I_{cu}/I_{cs}(sym)$ 450V 25/25

240V 50/50

DC 250V

IEC 60947-2 AC 440V 25/25

$I_{cu}/I_{cs}(sym)$ 415V 30/30

380V 30/30

240V 50/50

DC 250V

Weight (● marked standard type) kg

1.1

■ Connections and Mountings

Front-connected (FC) Terminal screws

With extension bars

Rear-connected (RC) Bolt studs

Flat bar studs

Plug-in (PM) For switchboards Standard (PMC)

High-performance (PMB)

For distribution boards (PMC)

Flush-mounted (FP) With flat bar studs

Draw-out type (DR)

TemPlug70 (PG)

TemPlug45B (PG4)

DIN rail mount

Clip-in chassis mount

■ Accessories (optional)

Symbol

Motor operator M C ●

External operating Breaker-mounted H B ●

handle Door-mounted (variable depth) H P ●

Toggle extension H A —

Mechanical interlock Slide type M S ●

Toggle holder H H ●

Toggle lock H L ●

Terminal cover For front-connected C F ●

For rear-connected and plug-in C R ●

Interpole barrier B A ● ③

Terminal block for lead T F ●

Door flange D F ●

■ Standard specifications

Overcurrent trip mechanism

Thermal-magnetic

Trip button (color)

Yes (Red)

Handle position indication (ON: Red, OFF: Green)

Yes

Suitability for isolation

Yes

CE marking

Yes

Notes:

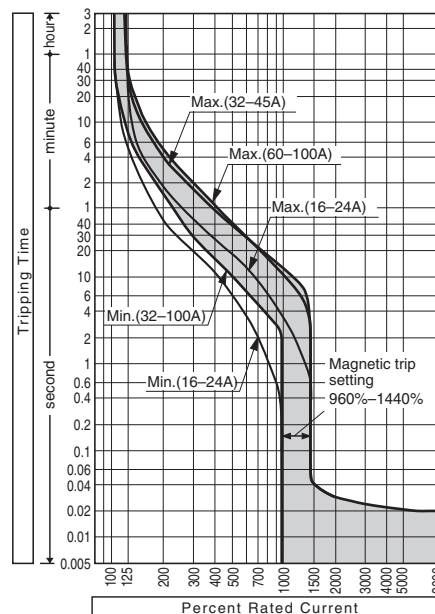
● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.

● : "yes" or "available". — : "no" or "not available".

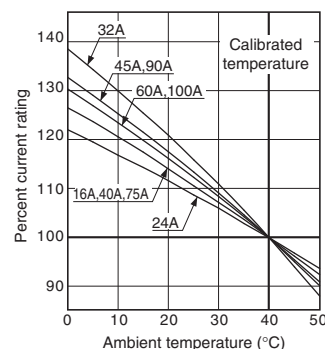
③ : Line side interpole barriers are supplied as standard. (Front connection only)

Ⓜ : For the extension bars, please place the order separately in parts.

Time/Current characteristic curves



Ambient Compensating Curves



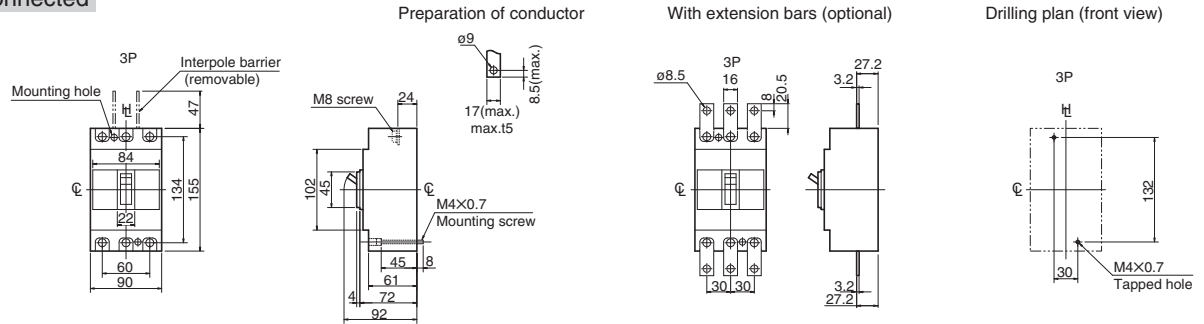
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
3											
	Left pole	Toggle	Right pole								

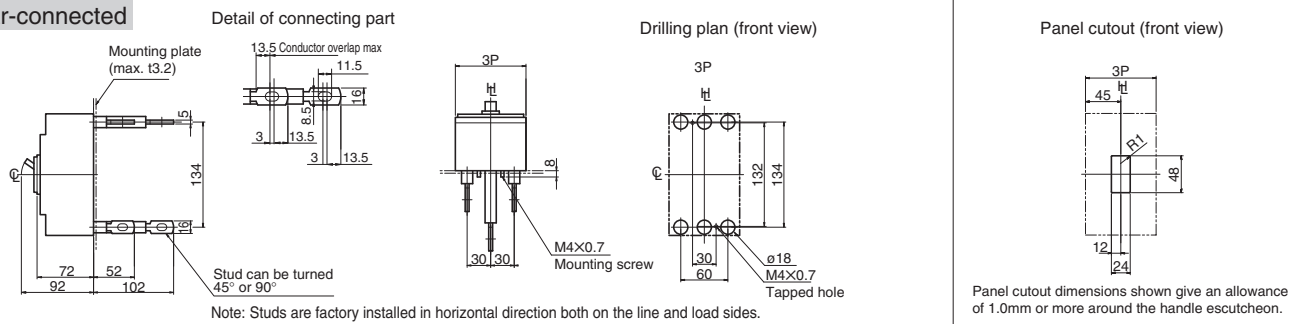
Outline dimensions (mm)

S100-NM

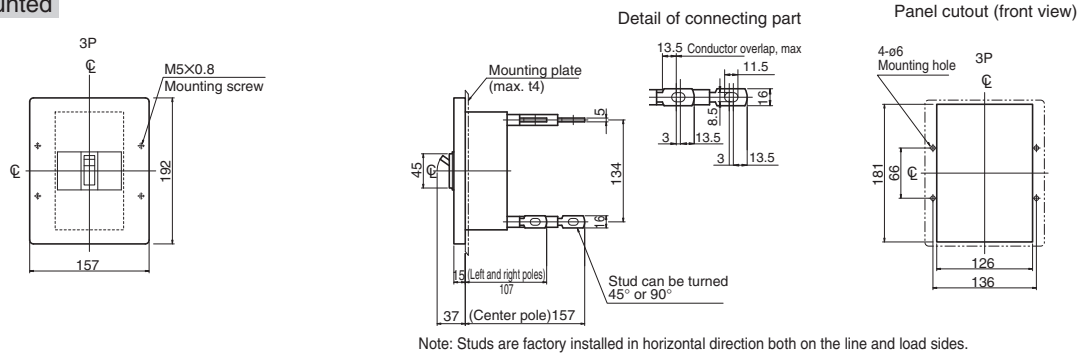
Front-connected



Rear-connected



Flush-mounted





7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(225A Frame)

S225-NM

Ratings and Specifications

Type

Number of poles

■ Ratings

Motor rated capacity (kW)

and breaker rated current (A)

Calibrated at 40 °C

S225-NM

3

(A)	(kW)	
	200/220V	400/440V
125	30	—
150	37	75
175	45	90
225	55	110

Note: Select an appropriate one depending on the total load current of the motor operator.

Rated insulation voltage [U_i] V

690

Rated impulse withstand voltage [U_{imp}] kV

8

■ Rated breaking capacity, kA

NK AC 690V

$I_{cu}/I_{cs}(sym)$ 450V 25/25

240V 65/65

DC 250V

IEC 60947-2 AC 440V 25/25

$I_{cu}/I_{cs}(sym)$ 415V 35/35

380V 35/35

240V 65/65

DC 250V

Weight (● marked standard type) kg

1.5

■ Connections and Mountings

Front-connected (FC) Terminal screws

With extension bars

Rear-connected (RC) Bolt studs

Flat bar studs

Plug-in (PM) For switchboards Standard (PMC)

High-performance (PMB)

For distribution boards (PMC)

Flush-mounted (FP) With flat bar studs

Draw-out type (DR)

TemPlug70 (PG)

TemPlug45B (PG4)

DIN rail mount

Clip-in chassis mount

■ Accessories (optional) Symbol

Motor operator M C ●

External operating Breaker-mounted H B ●

handle Door-mounted (variable depth) H P ●

Toggle extension H A —

Mechanical interlock Slide type M S ●

Toggle holder H H ●

Toggle lock H L ●

Terminal cover For front-connected C F ●

For rear-connected and plug-in C R ●

Interpole barrier B A ● ③

Terminal block for lead T F ●

Door flange D F ●

■ Standard specifications

Overcurrent trip mechanism Thermal-magnetic

Trip button (color) Yes (Red)

Handle position indication (ON: Red, OFF: Green) Yes

Suitability for isolation Yes

CE marking Yes

Notes:

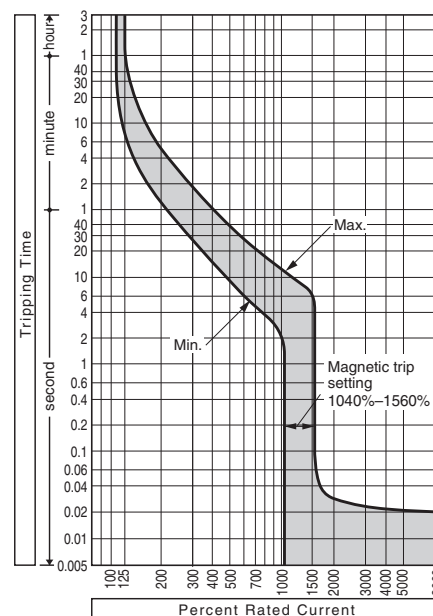
● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.

● : "yes" or "available". — : "no" or "not available".

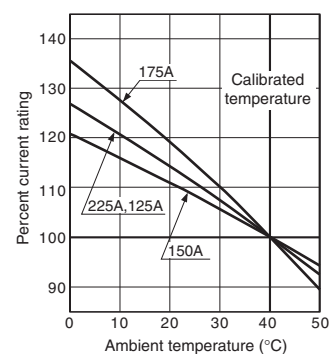
③ : Line side interpole barriers are supplied as standard. (Front connection only)

Ⓜ : For the extension bars, please place the order separately in parts.

Time/Current characteristic curves



Ambient Compensating Curves

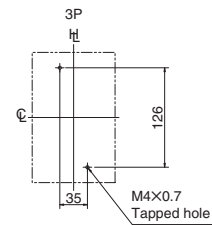
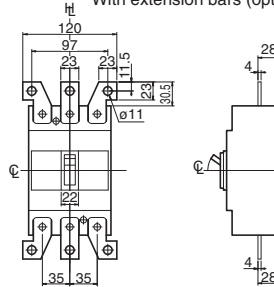
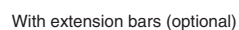
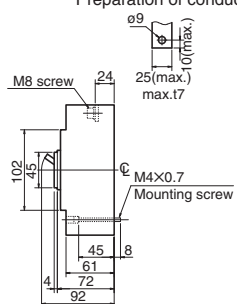
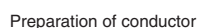
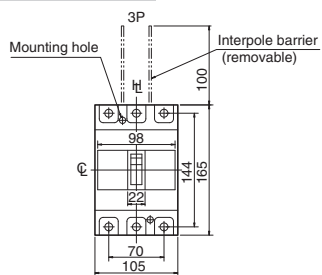


Combinations of Internally Mounted Accessories (Optional)

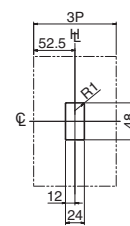
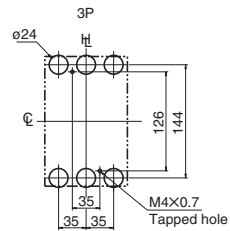
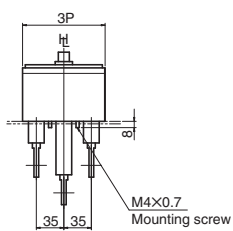
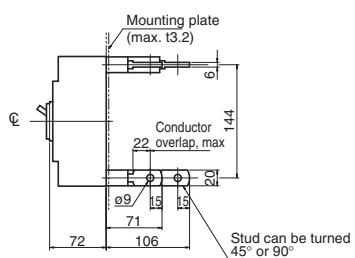
Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
3											

S225-NM

Front-connected



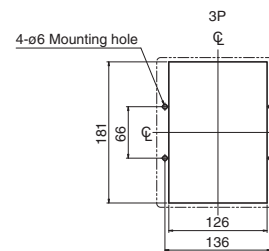
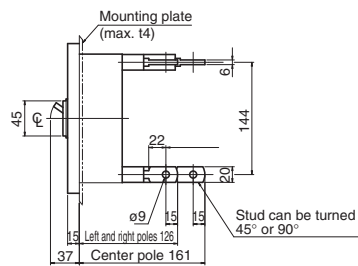
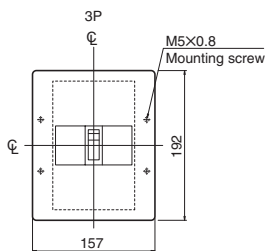
Rear-connected



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

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Flush-mounted



Note: Studs are factory installed in horizontal direction both on the line and load sides.



7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(100A Frame)

S100-NN

Ratings and Specifications

Type	S100-NN				
Number of poles	3	4			
■ Ratings					
Rated current, A	100				
Rated insulation voltage [U _i] V	690				
Rated operational voltage V	AC		690		
	DC		250		
Rated short circuit making capacity, kA peak	3.6				
Rated short time withstand current, kA	2 (0.3sec)				
Rated impulse withstand voltage [U _{imp}] kV	8				
■ Performance					
Utilization category	AC	690V	AC-23A		
IEC 60947-3	DC	250V	DC-22A		
Upstream breaker ②	S100-NF				
Weight (● marked standard type) kg	1.1	1.4			
■ Connections and Mountings					
Front-connected (FC)	Terminal screws		●		
	With extension bars		○ ⑤		
Rear-connected (RC)	Bolt studs		—		
	Flat bar studs		○		
Plug-in (PM)	For switchboards		○ —		
	Standard (PMC)		○		
	High-performance (PMB)		○ —		
	For distribution boards (PMC)		○ —		
Flush-mounted (FP)	With flat bar studs		○		
Draw-out type (DR)			—		
TemPlug70 (PG)			○ —		
TemPlug45B (PG4)			—		
DIN rail mount			○		
Clip-in chassis mount			—		
■ Accessories (optional)		Symbol			
Motor operator	M C		●		
External operating handle	Breaker-mounted		●		
	Door-mounted (variable depth)		●		
Toggle extension	H A		—		
Mechanical interlock Slide type	M S		●		
Toggle holder	H H		●		
Toggle lock	H L		●		
Terminal cover	For front-connected		●		
	For rear-connected and plug-in		●		
Interpole barrier	B A		● ③		
Terminal block for lead	T F		●		
Door flange	D F		●		
■ Standard specifications					
Trip button (color)	Yes (Red)				
Handle position indication (ON: Red, OFF: Green)	Yes				
Suitability for isolation	Yes				
CE marking	Yes				

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

● : "yes" or "available".

— : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

② : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

⑤ : For the extension bars, please place the order separately in parts.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AL	UV
▲											
▲											
Legend: Toggle, Left pole, Right pole											

S100-NN

7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(125A Frame)

S125-SN

Ratings and Specifications

Type	S125-SN					
Number of poles	3	4	3	4		
■ Ratings						
Rated current, A	100		125			
Rated insulation voltage [U_i] V	690		690			
Rated operational voltage V	AC		690			
	DC		250			
Rated short circuit making capacity, kA peak	2.8		2.8			
Rated short time withstand current, kA	2 (0.3sec)		2 (0.3sec)			
Rated impulse withstand voltage [U_{imp}] kV	6		6			
■ Performance						
Utilization category	AC	690V	AC-23A	AC-23A		
IEC 60947-3	DC	250V	DC-22A	DC-22A		
Upstream breaker 29			S125-SF	S125-SF		
Weight (● marked standard type) kg	0.7	0.9	0.7	0.9		
■ Connections and Mountings						
Front-connected (FC)	Terminal screws	●	●			
	With extension bars	○ 53	○ 53			
Rear-connected (RC)	Bolt studs	—	—			
	Flat bar studs	○	○			
Plug-in (PM) For switchboards	Standard (PMC)	○ —	○ —			
	High-performance (PMB)	—	—			
	For distribution boards (PMC)	○ 58 —	○ 58 —			
Flush-mounted (FP) With flat bar studs	○	○				
Draw-out type (DR)	—	—				
TemPlug70 (PG)	—	—				
TemPlug45B (PG4)	—	—				
DIN rail mount	○ 11	○ 11				
Clip-in chassis mount	—	—				
■ Accessories (optional) Symbol						
Motor operator	M C	—	—			
Externally mounted	External operating handle	Breaker-mounted H B	●	●		
	Door-mounted (variable depth) H P	●	●			
Toggle extension	H A	—	—			
Mechanical interlock 9 Slide type	M S	●	●			
Toggle holder	H H	●	●			
Toggle lock	H L	●	●			
Terminal cover	For front-connected C F	●	●			
	For rear-connected and plug-in C R	●	●			
Interpole barrier	B A	● ③	● ③			
Terminal block for lead	T F	●	●			
Door flange	D F	●	●			
■ Standard specifications						
Trip button (color)	Yes (Red)		Yes (Red)			
Handle position indication (ON: Red, OFF: Green)	Yes		Yes			
Suitability for isolation	Yes		Yes			
CE marking	Yes		Yes			

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

● : "yes" or "available".

— : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

⑨ : The mechanical interlock is not applicable to the draw-out type (DR).

11 : Provided with DIN rail adaptor.

²⁹ : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

53 : For the extension bars, please palce the order separately in parts.

58 : Specify PMD when the internal accessories are fitted.

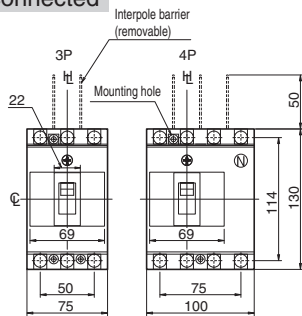
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AL	UV
Draw-out											
Left pole Right pole Toggle											

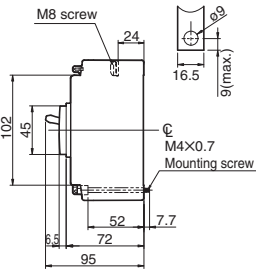
Outline dimensions (mm)

S125-SN

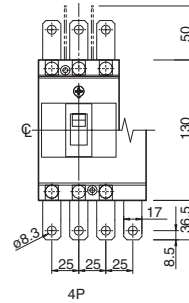
Front-connected



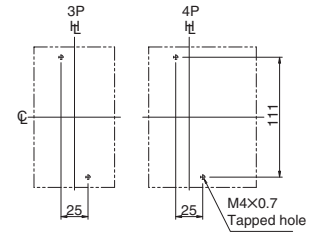
Preparation of conductor



With extension bars (optional)

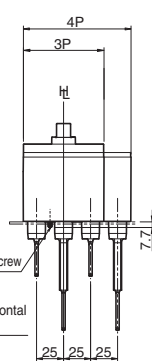
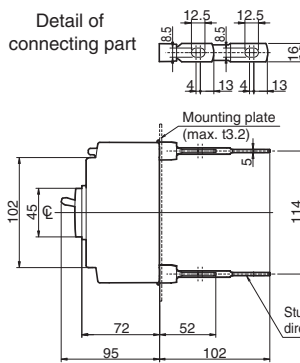


Drilling plan (front view)

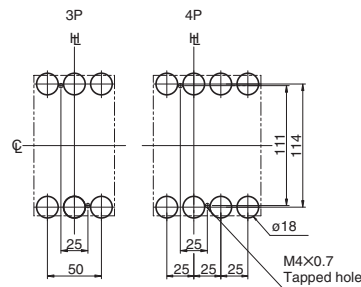


Rear-connected

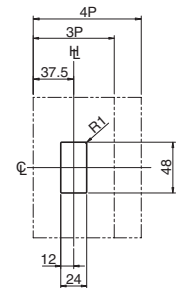
Detail of connecting part



Drilling plan (front view)



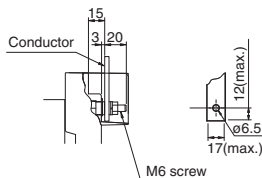
Panel cutout (front view)



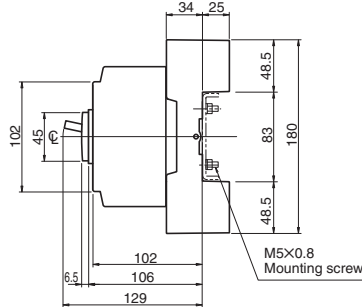
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Plug-in (Standard)

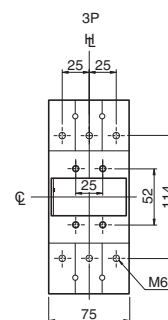
Detail of connecting part



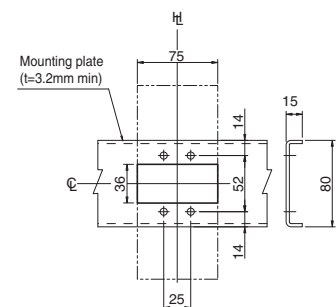
Preparation of conductor



Mounting base (rear view)

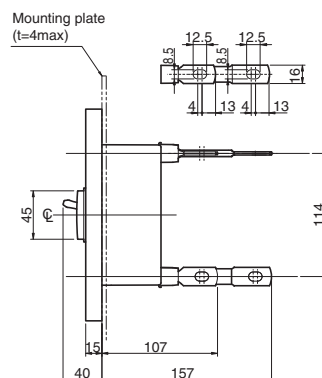


Drilling plan (front view)

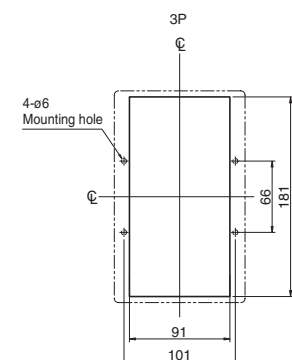


Flush-mounted

Detail of connecting part



Drilling plan (front view)





7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(125A Frame)

S125-NN

Ratings and Specifications

Type	S125-NN					
Number of poles	3	4				
■ Ratings						
Rated current, A	125					
Rated insulation voltage [U _i] V	690					
Rated operational voltage V	AC		690			
	DC		250			
Rated short circuit making capacity, kA peak	3.6					
Rated short time withstand current, kA	2 (0.3sec)					
Rated impulse withstand voltage [U _{imp}] kV	8					
■ Performance						
Utilization category	AC	690V	AC-23A			
IEC 60947-3	DC	250V	DC-22A			
Upstream breaker ②	S125-NF					
Weight (● marked standard type) kg	1.1	1.4				
■ Connections and Mountings						
Front-connected (FC)	Terminal screws					
	With extension bars					
Rear-connected (RC)	Bolt studs					
	Flat bar studs					
Plug-in (PM)	For switchboards		Standard (PMC)			
			High-performance (PMB)			
	For distribution boards (PMC)					
Flush-mounted (FP)	With flat bar studs					
Draw-out type (DR)						
TemPlug70 (PG)						
TemPlug45B (PG4)						
DIN rail mount						
Clip-in chassis mount						
■ Accessories (optional)		Symbol				
Externally mounted	Motor operator	M C	●			
	External operating handle	Breaker-mounted	H B	●		
		Door-mounted (variable depth)	H P	●		
	Toggle extension		H A	—		
	Mechanical interlock	Slide type	M S	●		
	Toggle holder		H H	●		
	Toggle lock		H L	●		
	Terminal cover	For front-connected	C F	●		
		For rear-connected and plug-in	C R	●		
	Interpole barrier		B A	● ③		
	Terminal block for lead		T F	●		
	Door flange		D F	●		
■ Standard specifications						
Trip button (color)	Yes (Red)					
Handle position indication (ON: Red, OFF: Green)	Yes					
Suitability for isolation	Yes					
CE marking	Yes					

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

● : "yes" or "available".

— : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

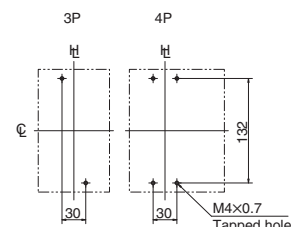
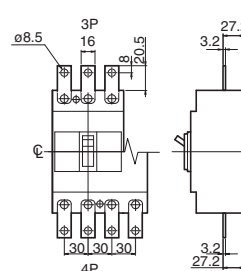
② : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

⑤ : For the extension bars, please place the order separately in parts.

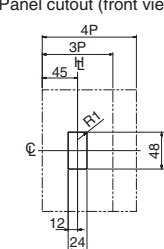
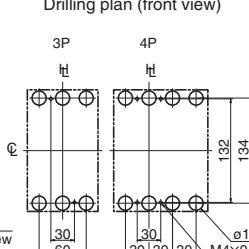
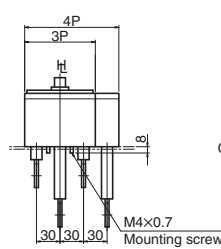
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX AL	AX SH	AX UV	AL SH	AL UV	AX AL SH	AX AL UV
Left pole	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle
Right pole	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle

Drilling plan (front view)

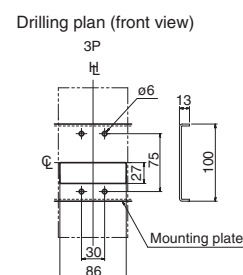
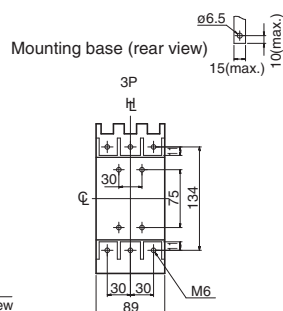


Panel cutout (front view)

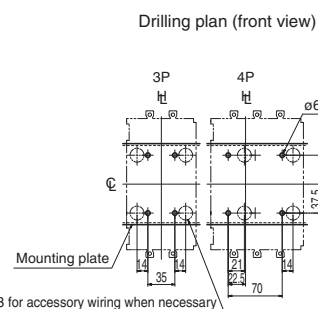
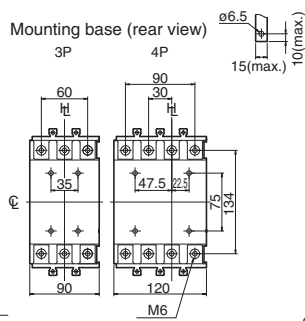


Note: Studs are factory installed in horizontal direction both on the line and load sides.

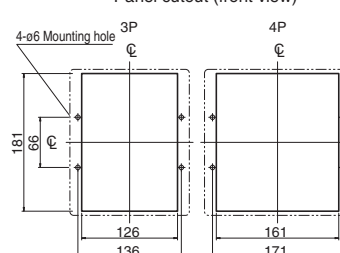
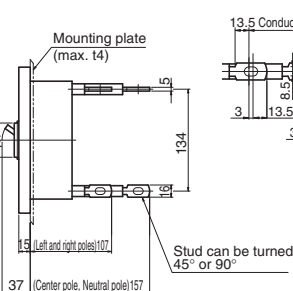
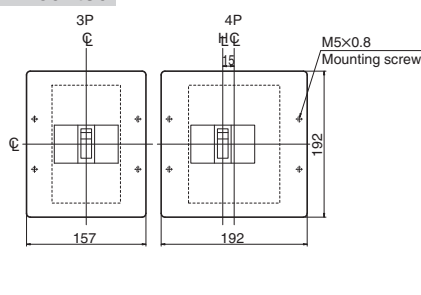
Preparation of conductor



Preparation of conductor



Panel cutout (front view)



Note: Studs are factory installed in horizontal direction both on the line and load sides.

7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(250A Frame)

S250-SN

Ratings and Specifications

Type	S250-SN					
Number of poles	3	4	3	4		
■ Ratings						
Rated current, A	225		250			
Rated insulation voltage [U_i] V	690		690			
Rated operational voltage V	AC		690			
	DC		250			
Rated short circuit making capacity, kA peak	6		6			
Rated short time withstand current, kA	3 (0.3sec)		3 (0.3sec)			
Rated impulse withstand voltage [U_{imp}] kV	8		8			
■ Performance						
Utilization category	AC	690V	AC-23A			
IEC 60947-3	DC	250V	DC-22A			
Upstream breaker ²⁹			S250-SF			
Weight (● marked standard type) kg	1.5	1.9	1.5	1.9		
■ Connections and Mountings						
Front-connected (FC)	Terminal screws	●	●			
	With extension bars	○ ⁵³	○ ⁵³			
Rear-connected (RC)	Bolt studs	—	—			
	Flat bar studs	○	○			
Plug-in (PM)	For switchboards	○	○			
	Standard (PMC)	—	—			
	High-performance (PMB)	—	—			
For distribution boards (PMC)						
Flush-mounted (FP)	With flat bar studs	○	○			
Draw-out type (DR)		—	—			
TemPlug70 (PG)		○	○			
TemPlug45B (PG4)		—	—			
DIN rail mount		—	—			
Clip-in chassis mount		—	—			
■ Accessories (optional) Symbol						
Externally mounted	Motor operator	M C	●	●		
	External operating handle	Breaker-mounted H B	●	●		
	Door-mounted (variable depth)	H P	●	●		
	Toggle extension	H A	—	—		
	Mechanical interlock	Slide type M S	●	●		
	Toggle holder	H H	●	●		
	Toggle lock	H L	●	●		
	Terminal cover	For front-connected C F	●	●		
		For rear-connected and plug-in C R	●	●		
	Interpole barrier	B A	● ^③	● ^③		
Standard specifications	Trip button (color)		Yes (Red)	Yes (Red)		
	Handle position indication (ON: Red, OFF: Green)		Yes	Yes		
	Suitability for isolation		Yes	Yes		
CE marking			Yes	Yes		

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

● : "yes" or "available".

— : "no" or "not available".

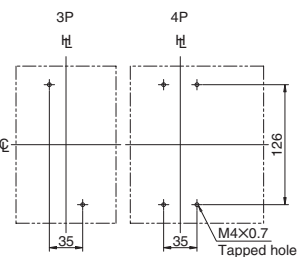
③ : Line side interpole barriers are supplied as standard. (Front connection only)

²⁹ : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.⁵³ : For the extension bars, please place the order separately in parts.

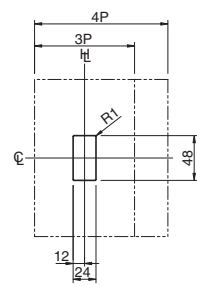
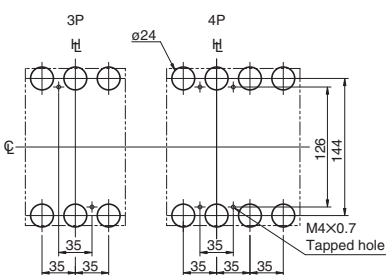
Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AL	UV
AX											
Left pole											
Right pole											

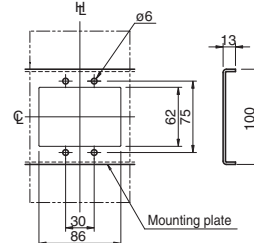
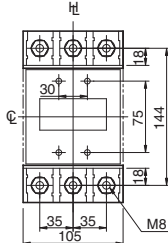
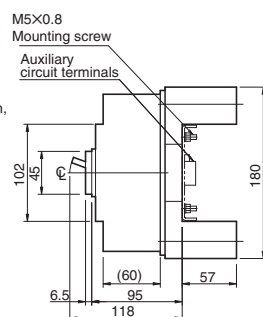
Drilling plan
(front view)



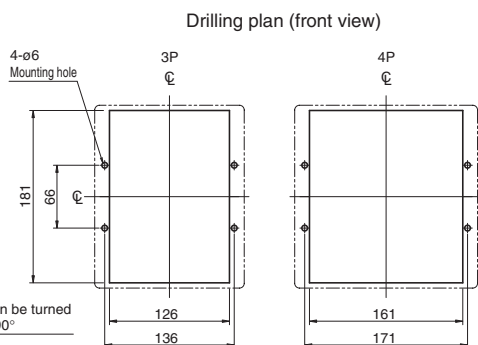
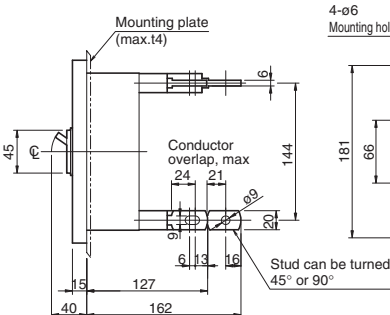
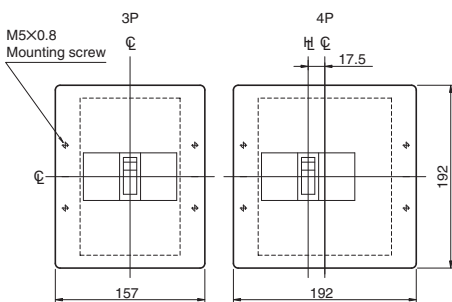
Panel cutout (front view)



Drilling plan
(front view)



M5X0.8
Mounting screw





7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(400A Frame)

S400-NN

Ratings and Specifications

Type			S400-NN				
Number of poles			3	4			
Ratings							
Rated current, A			400				
Rated insulation voltage [U _i] V			690				
Rated operational voltage V			AC	690			
			DC	250			
Rated short circuit making capacity, kA peak			9				
Rated short time withstand current, kA			5 (0.3sec)				
Rated impulse withstand voltage [U _{imp}] kV			8				
Performance							
Utilization category	AC	690V	AC-23A				
IEC 60947-3	DC	250V	DC-22A				
Upstream breaker ②			S400-NF				
Weight (● marked standard type) kg			4.2	5.6			
Connections and Mountings							
Front-connected (FC)	Terminal screws		●				
	With extension bars		○ (BAR)				
Rear-connected (RC)	Bolt studs		—				
	Flat bar studs		○				
Plug-in (PM)	For switchboards	Standard (PMC)	○	—			
		High-performance (PMB)	○				
	For distribution boards (PMC)		—				
Flush-mounted (FP)	With flat bar studs		○				
Draw-out type (DR)			▲				
TemPlug70 (PG)			○	—			
TemPlug45B (PG4)			—				
DIN rail mount			—				
Clip-in chassis mount			—				
Accessories (optional)		Symbol					
Externally mounted	Motor operator		M C	●			
	External operating handle	Breaker-mounted	H B	●			
		Door-mounted (variable depth)	H P	●			
	Toggle extension		H A	●			
	Mechanical interlock⑨ Slide type		M S	●			
	Toggle holder		H H	●			
	Toggle lock		H L	●			
	Terminal cover	For front-connected	C F	●			
		For rear-connected and plug-in	C R	●			
	Interpole barrier		B A	● ③			
	Terminal block for lead		T F	●			
	Door flange		D F	●			
Standard specifications							
Trip button (color)			Yes (Red)				
Handle position indication (ON: Red, OFF: Green)			Yes				
Suitability for isolation			Yes				
CE marking			Yes				

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

▲ : Semi-standard.

● : "yes" or "available".

— : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

⑨ : The mechanical interlock is not applicable to the draw-out type (DR).

② : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	UV
Left pole											
Right pole											

[illegible]

Stud can be turned 45° or 90°

Mounting plate

102

90

97

107

127.5

8

288

260

13

[illegible]

Technical drawing of the front view of a cooling plate. The drawing shows a rectangular plate with a central horizontal slot. The top part of the plate has a width of 90 mm and a height of 45 mm. The bottom part has a width of 90 mm and a height of 45 mm. The central slot has a width of 90 mm and a height of 214 mm. The total height of the plate is 228 mm. The top part is labeled "3P HLT" and the bottom part is labeled "4P HLT". A "Groove for dissipating heat generated by eddy current" is indicated on the right side. A "Tapped hole" is indicated on the left side. The bottom right corner has a dimension of 6.35 mm.

Drilling plan (front view)

Technical drawing of the front view of a rectangular box. The drawing shows a central rectangular opening with a smaller rectangular feature inside it. Dimensions are indicated with arrows and numbers: 116 (width of the central opening), 260 (height of the central opening), 282 (total height of the box), 51 (width of the inner feature), 140 (width of the box body), and 148 (total width of the box). Labels 'H' and 'C' are placed near the top and left edges respectively. There are also small diamond-shaped symbols and arrows pointing downwards from the top edge.

M8 Mounting screw

Conductor width, max. 35

M10screw

20

23 47 35

Detail of connecting part

M5 Mounting screw

Conductor width, max. 30

[illegible]

7-65



7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(630A Frame)

S630-GN

Ratings and Specifications

Type	S630-GN			
Number of poles	3	4		
■ Ratings				
Rated current, A	630			
Rated insulation voltage [U_i] V	690			
Rated operational voltage V	690			
	AC			
	DC	250		
Rated short circuit making capacity, kA peak	17			
Rated short time withstand current, kA	10 (0.3sec)			
Rated impulse withstand voltage [U_{imp}] kV	8			
■ Performance				
Utilization category	AC 690V	AC-23A		
IEC 60947-3	DC 250V	DC-22A		
Upstream breaker ²⁹		S630-NF		
Weight (● marked standard type) kg	8.0	11.0		
■ Connections and Mountings				
Front-connected (FC) Terminal screws	—			
With extension bars	●			
Rear-connected (RC) Bolt studs	—			
Flat bar studs	○			
Plug-in (PM) For switchboards Standard (PMC)	○	—		
High-performance (PMB)	○			
For distribution boards (PMC)	—			
Flush-mounted (FP) With flat bar studs	○			
Draw-out type (DR)	▲			
TemPlug70 (PG)	○	—		
TemPlug45B (PG4)	—			
DIN rail mount	—			
Clip-in chassis mount	—			
■ Accessories (optional)	Symbol			
Motor operator	M C	●		
External operating handle	Breaker-mounted H B	●		
Door-mounted (variable depth)	H P	●		
Toggle extension ⁹	H A	●		
Mechanical interlock ⁹ Slide type	M S	●		
Toggle holder ⁹	H H	●		
Toggle lock ⁹	H L	●		
Terminal cover For front-connected ⁹	C F	●		
For rear-connected and plug-in	C R	●		
Interpole barrier ⁹	B A	● ③		
Terminal block for lead ⁹	T F	●		
Door flange ⁹	D F	●		
■ Standard specifications				
Trip button (color)	Yes (Red)			
Handle position indication (ON: Red, OFF: Green)	Yes			
Suitability for isolation	Yes			
CE marking	Yes			

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

▲ : Semi-standard.

● : "yes" or "available".

— : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

⑨ : Not applicable to the draw-out type (DR).

²⁹ : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	AL
	AL				SH	UV				SH	UV
Left pole	Toggle										
Right pole											

Drilling plan (front view)

3P 4P

ASL

70 70

126 117

M8 Tapped hole

[illegible]

Note: Studs are factory installed in horizontal direction both on the line and load sides.

A diagram showing a rectangular area defined by dashed lines. Inside this area is a smaller rectangle. The width of the outer rectangle is labeled $4P$ at the top. The width of the inner rectangle is labeled $3P$ at the top. The height of the inner rectangle is labeled 53 at the bottom. The label ASL is positioned to the left of the inner rectangle. The label 92 is positioned to the right of the inner rectangle.

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

Technical drawing of the ASL connector assembly. The drawing shows two views: a side view and a top view. The side view shows the connector with dimensions 18, 21, 47, 45, 126, 117, 107, 127.5, 80.5, 145, 80, 4, 8, 62, and 30. The top view shows the connector with dimensions 18, 21, 47, 45, 126, 117, 107, 127.5, 80.5, 145, 80, 4, 8, 62, and 30. The drawing includes labels for 'Connecting part', 'Toggle extension (removable)', 'ASL', 'M16 screw', 'Conductor width, max. 40', 'Auxiliary circuit terminals', and 'M10 Mounting screw'.

Technical drawing of a three-phase ASL (Asynchronous Synchronous Limiter). The drawing includes a top view and a side view. The top view shows a rectangular device with three phases (3P) and a central ASL component. Dimensions include a total width of 210 mm, a central width of 140 mm, and a height of 90 mm. The side view shows a total height of 303 mm, with individual component heights of 30 mm, 32 mm, 18 mm, 76 mm, 67 mm, 32 mm, and 18 mm.

[illegible]

Technical drawings of the Trip button (red) showing front and side views with dimensions.

Front View (Left):

- Overall width: 268
- Overall height: 343
- Mounting hole diameter: 3P
- ASL (Automatic Stop Limit) dimension: 4.5

Side View (Right):

- Overall width: 338
- Overall height: 343
- Mounting hole diameter: 4P
- ASL (Automatic Stop Limit) dimension: 4.5
- Internal dimension: 35

Labels:

- Mounting hole
- ASL
- Trip button (red)

[illegible]

Note: Studs are factory installed in horizontal direction both on the line and load sides.



7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(800A Frame)

S800-NN

Ratings and Specifications

Type	S800-NN				
Number of poles	3	4			
■ Ratings					
Rated current, A	800				
Rated insulation voltage [U _i] V	690				
Rated operational voltage V	AC	690			
	DC	250			
Rated short circuit making capacity, kA peak	17				
Rated short time withstand current, kA	10 (0.3sec)				
Rated impulse withstand voltage [U _{imp}] kV	8				
■ Performance					
Utilization category	AC	690V	AC-23A		
IEC 60947-3	DC	250V	DC-22A		
Upstream breaker ⑳			S800-NF		
Weight (● marked standard type) kg	8.0	11.5			
■ Connections and Mountings					
Front-connected (FC)	Terminal screws		—		
	With extension bars		●		
Rear-connected (RC)	Bolt studs		—		
	Flat bar studs		○		
Plug-in (PM)	For switchboards	Standard (PMC)	○	—	
		High-performance (PMB)	○		
	For distribution boards (PMC)		—		
Flush-mounted (FP)	With flat bar studs		○		
Draw-out type (DR)			▲		
TemPlug70 (PG)			—		
TemPlug45B (PG4)			—		
DIN rail mount			—		
Clip-in chassis mount			—		
■ Accessories (optional)		Symbol			
Motor operator		M C	●		
External operating handle	Breaker-mounted	H B	●		
	Door-mounted (variable depth)	H P	●		
Toggle extension ⑨		H A	●		
Mechanical interlock ⑨ Slide type		M S	●		
Toggle holder ⑨		H H	●		
Toggle lock ⑨		H L	●		
Terminal cover	For front-connected ⑨	C F	●		
	For rear-connected and plug-in	C R	●		
Interpole barrier ⑨		B A	● ③		
Terminal block for lead ⑨		T F	●		
Door flange ⑨		D F	●		
■ Standard specifications					
Trip button (color)			Yes (Red)		
Handle position indication (ON: Red, OFF: Green)			Yes		
Suitability for isolation			Yes		
CE marking			Yes		

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

▲ : Semi-standard.

● : "yes" or "available".

— : "no" or "not available".

③ : Line side interpole barriers are supplied as standard. (Front connection only)

⑨ : Not applicable to the draw-out type (DR).

㉔ : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX AL	AX SH	AX UV	AL SH	AL UV	AX AL SH	AX AL UV
4											
3											

S800-NN

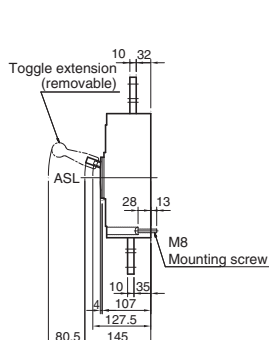
Technical drawings of the ASL connector showing front and side views with dimensions and labels.

Front View (Left):

- Dimensions: 170 (width), 140 (width of bottom section), 210 (total width), 40 (height of bottom section), 13 (height of top section), 3P (pitch), 0.73 (pitch).
- Labels: ASL, Trip button (red).

Front View (Right):

- Dimensions: 170 (width), 105 (width of bottom section), 175 (width of bottom section), 280 (total width), 110 (height of top section), 90 (height of middle section), 141 (height of middle section), 132 (height of middle section), 80 (height of bottom section), 12 (height of bottom section), 8 (height of bottom section).
- Labels: Interpole barrier (removable), 4P, Mounting hole, ASL, Conductor overlap, max.

[illegible]

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

g-in (Standard)

Detail

3P

170

51

210

90

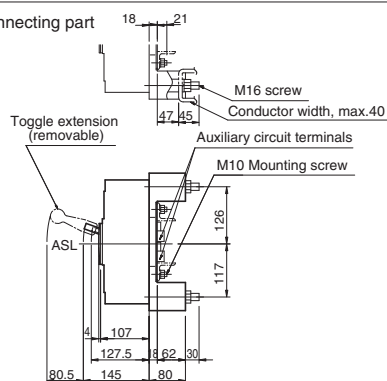
141

156

147

ASL

Trip button (red)

[illegible]

Technical drawings of the ASL and 4P test specimens. The ASL specimen is 100 mm long with a 3P load configuration. The 4P specimen is 170 mm long with a 4P load configuration. Both specimens have a central hole and are supported at the ends. Dimensions are given in mm.

Technical drawings of the Trip button (red) showing front and side views with dimensions and labels.

Front View Dimensions:

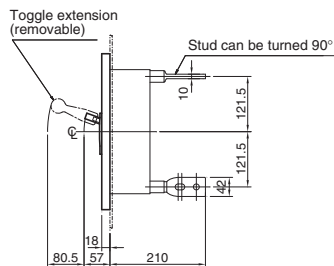
- Overall width: 268
- Overall height: 338
- Mounting hole diameter: $\varnothing 4.5$
- Terminal: 3P
- Slot width: 4.5

Side View Dimensions:

- Overall width: 35
- Overall height: 338
- Mounting hole diameter: $\varnothing 4.5$
- Terminal: 4P
- Slot width: 4.5

Labels:

- Mounting hole
- ASL
- Trip button (red)



Note: Studs are factory installed in horizontal direction both on the line and load sides.



7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(1250A Frame)

S1250-NN

Ratings and Specifications

Type	S1250-NN					
Number of poles	3	4				
■ Ratings						
Rated current, A	1250					
Rated insulation voltage [U _i] V	690					
Rated operational voltage V	AC	690				
	DC	250				
Rated short circuit making capacity, kA peak	32					
Rated short time withstand current, kA	15 (0.3sec)					
Rated impulse withstand voltage [U _{imp}] kV	8					
■ Performance						
Utilization category	AC	690V	AC-23A			
IEC 60947-3	DC	250V	DC-22A			
Upstream breaker 29			S1250-NE			
Weight (● marked standard type) kg			18.2	23.4		
■ Connections and Mountings						
Front-connected (FC)	Terminal screws	—				
	With extension bars	●				
Rear-connected (RC)	Bolt studs	—				
	Flat bar studs	○				
Plug-in (PM) For switchboards	Standard (PMC)	○				
	High-performance (PMB)	—				
	For distribution boards (PMC)	—				
Flush-mounted (FP) With flat bar studs	○					
Draw-out type (DR)	▲					
TemPlug70 (PG)	—					
TemPlug45B (PG4)	—					
DIN rail mount	—					
Clip-in chassis mount	—					
■ Accessories (optional)		Symbol				
Externally mounted	Motor operator	M C	●			
	External operating handle	Breaker-mounted	H B	●		
		Door-mounted (variable depth)	H P	●		
	Toggle extension	H A	● 24			
	Mechanical interlock9	Slide type	M S	●		
	Toggle holder	H H	●			
	Toggle lock	H L	—			
	Terminal cover	For front-connected	C F	●		
		For rear-connected and plug-in	C R	—		
	Interpole barrier	B A	● 3			
	Terminal block for lead	T F	●			
	Door flange	D F	●			
■ Standard specifications						
Trip button (color)			Yes (Red)			
Handle position indication (ON: Red, OFF: Green)			Yes			
Suitability for isolation			Yes			
CE marking			Yes			

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

▲ : Semi-standard.

● : "yes" or "available".

— : "no" or "not available".

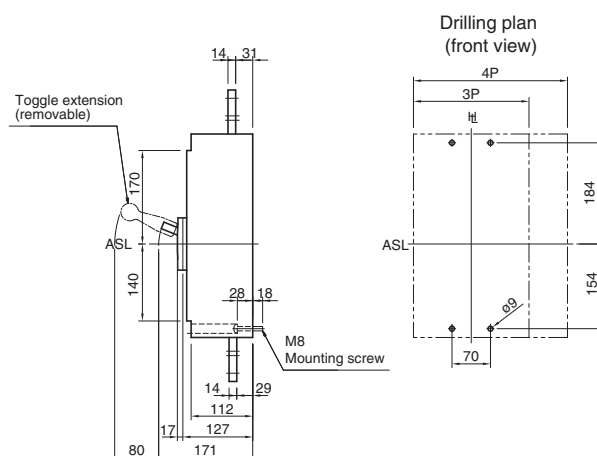
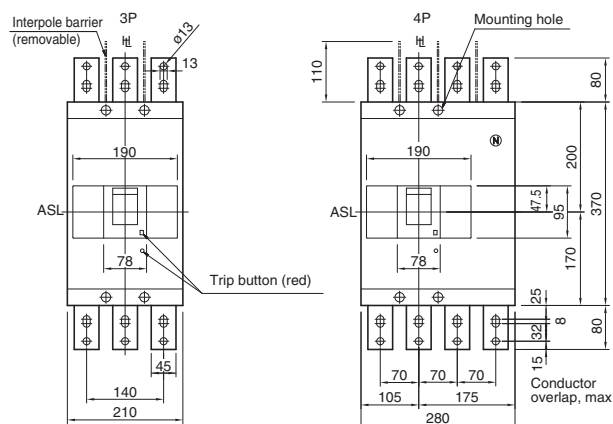
³ : Line side interpole barriers are supplied as standard. (Front connection only)⁹ : The mechanical interlock is not applicable to the draw-out type (DR).²⁴ : One is supplied with every five breakers. Please specify if more are required.²⁹ : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

Combinations of Internally Mounted Accessories (Optional)

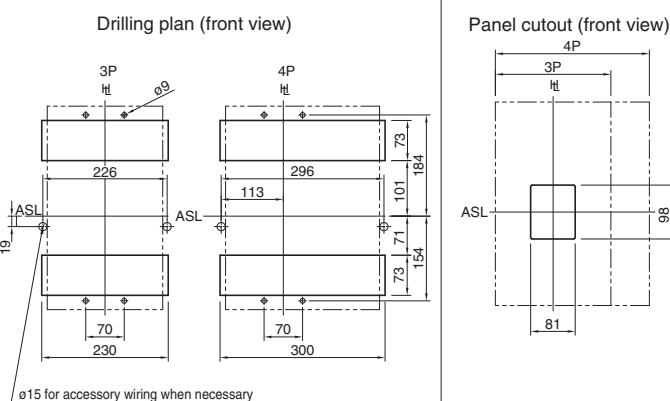
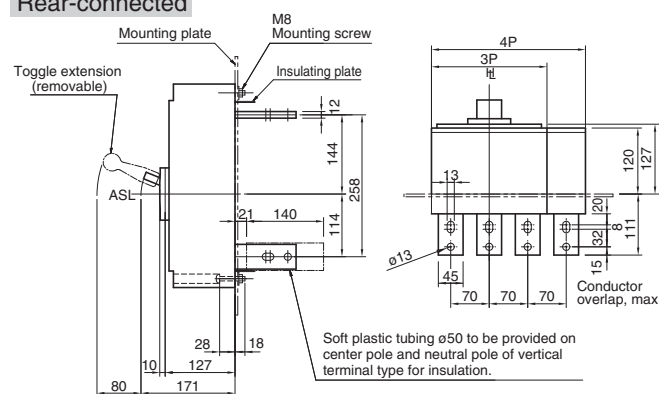
Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip	AX	SH	UV	SH	UV	AX	AL
Δ/□											
Legend: Toggle, Left pole, Right pole											

S1250-NN

Front-connected



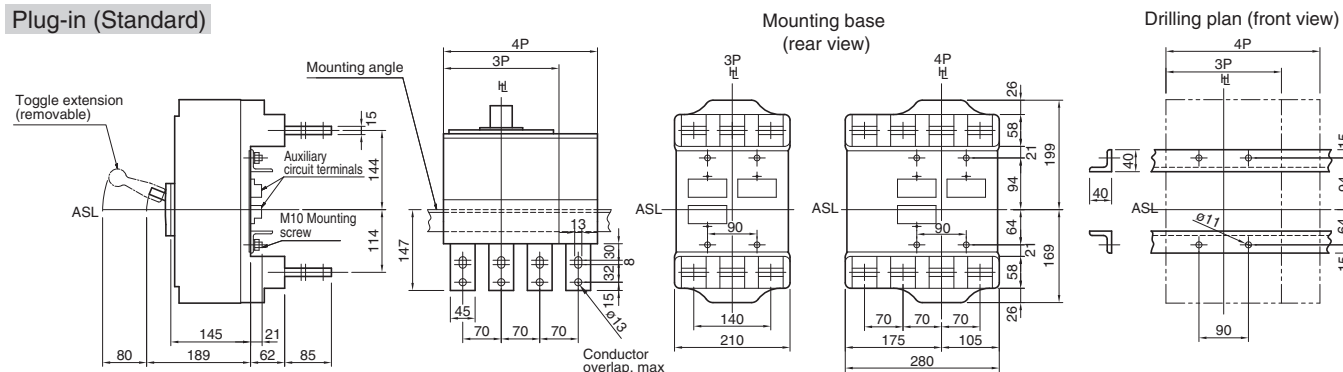
Rear-connected



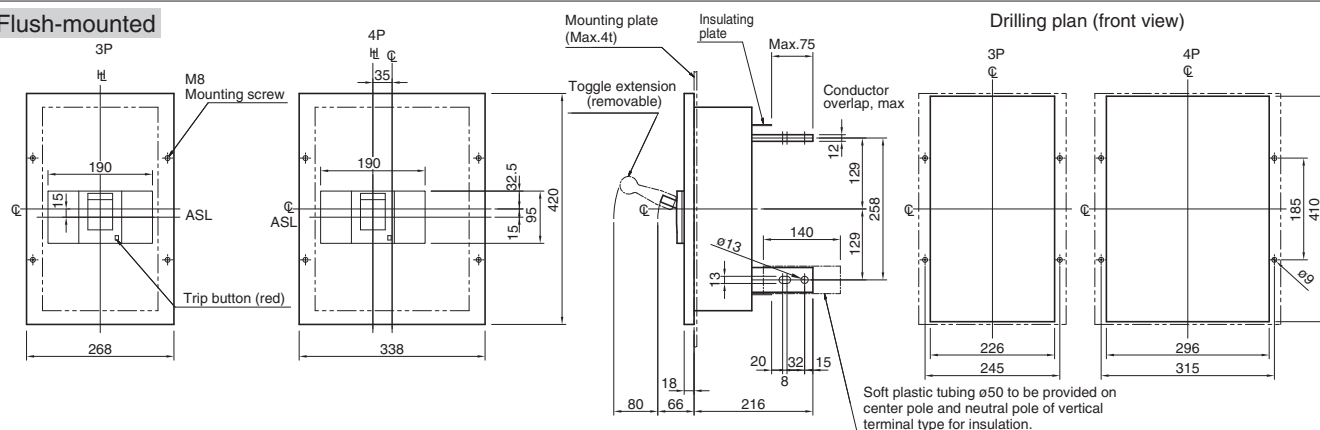
Note: Studs are factory installed in horizontal direction both on the line and load sides.

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

Plug-in (Standard)



Flush-mounted



Note: Studs are factory installed in horizontal direction both on the line and load sides.

7



7

Characteristics and Outline Dimensions *TemBreak2*

Molded Case Circuit Breakers

(1600A Frame)

S1600-NN

Ratings and Specifications

Type	S1600-NN						
Number of poles	3	4					
■ Ratings							
Rated current, A	1600						
Rated insulation voltage [U_i] V	690						
Rated operational voltage V	AC	690					
	DC	250					
Rated short circuit making capacity, kA peak	45						
Rated short time withstand current, kA	20 (0.3sec)						
Rated impulse withstand voltage [U_{imp}] kV	8						
■ Performance							
Utilization category	AC	690V	AC-23A				
IEC 60947-3	DC	250V	DC-22A				
Upstream breaker 29			S1600-NE				
Weight (● marked standard type) kg	24.9		32.9				
■ Connections and Mountings							
Front-connected (FC)	Terminal screws	—					
	With extension bars	○					
Rear-connected (RC)	Bolt studs	—					
	Flat bar studs	●					
Plug-in (PM)	For switchboards	Standard (PMC)	—				
		High-performance (PMB)	—				
		For distribution boards (PMC)	—				
Flush-mounted (FP)	With flat bar studs		○				
Draw-out type (DR)			○				
TemPlug70 (PG)			—				
TemPlug45B (PG4)			—				
DIN rail mount			—				
Clip-in chassis mount			—				
■ Accessories (optional)		Symbol					
Externally mounted	Motor operator	M C	●				
	External operating handle	Breaker-mounted	H B	●			
		Door-mounted (variable depth)	H P	●			
	Toggle extension	H A	● 24				
	Mechanical interlock 9	Slide type	M S	●			
	Toggle holder	H H	●				
	Toggle lock	H L	—				
	Terminal cover	For front-connected	C F	—			
		For rear-connected and plug-in	C R	—			
	Interpole barrier	B A	● 3				
	Terminal block for lead	T F	●				
	Door flange	D F	●				
■ Standard specifications							
Trip button (color)			Yes (Red)				
Handle position indication (ON: Red, OFF: Green)			Yes				
Suitability for isolation			Yes				
CE marking			Yes				

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

● : "yes" or "available".

— : "no" or "not available".

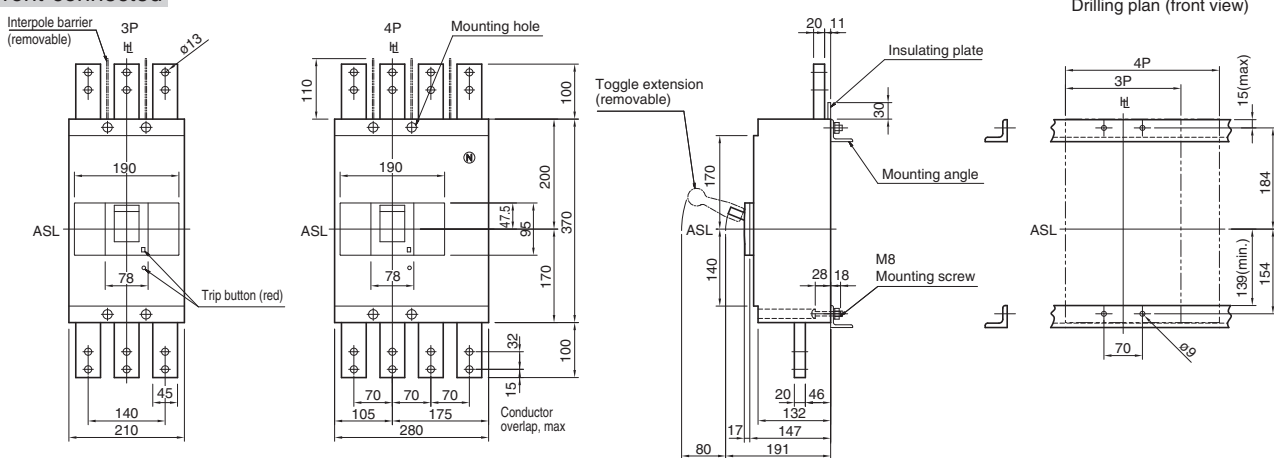
³ : Line side interpole barriers are supplied as standard. (Front connection only)⁹ : The mechanical interlock is not applicable to the draw-out type (DR).²⁴ : One is supplied with every five breakers. Please specify if more are required.²³ : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

Combinations of Internally Mounted Accessories (Optional)

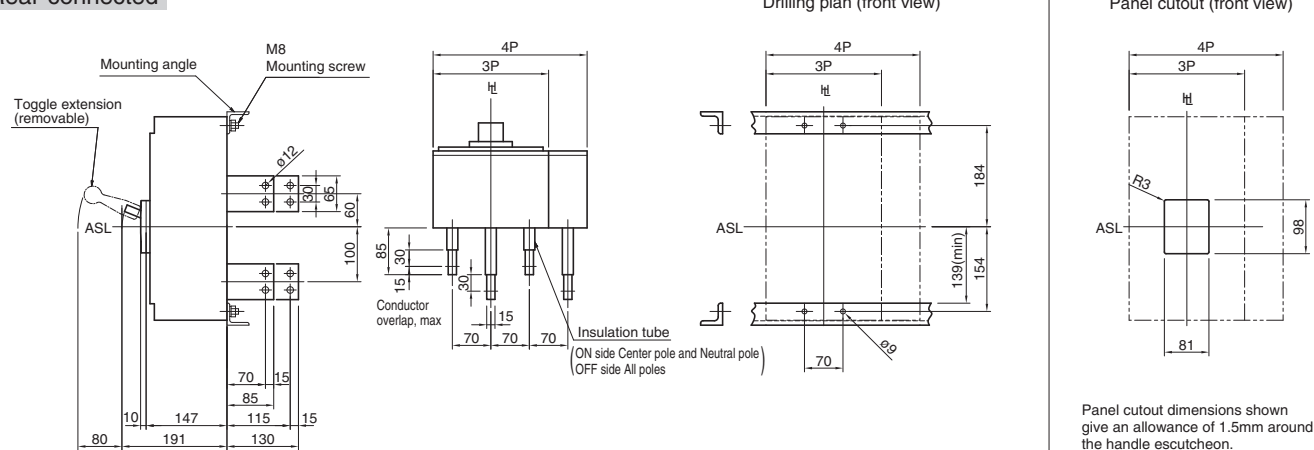
Poles	3				4				5			
	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX	
Auxiliary switch	□	□	□	■	□	□	□	□	□	□	□	
	□	□	□	■	□	□	□	□	□	□	□	
Alarm switch	□	□	□	■	□	□	□	□	□	□	□	
	□	□	□	■	□	□	□	□	□	□	□	
Shunt trip	□	□	□	■	□	□	□	□	□	□	□	
	□	□	□	■	□	□	□	□	□	□	□	
Under voltage trip	□	□	□	■	□	□	□	□	□	□	□	
	□	□	□	■	□	□	□	□	□	□	□	
Toggle	□	□	□	■	□	□	□	□	□	□	□	
	□	□	□	■	□	□	□	□	□	□	□	
Left pole												
Right pole												

S1600-NN

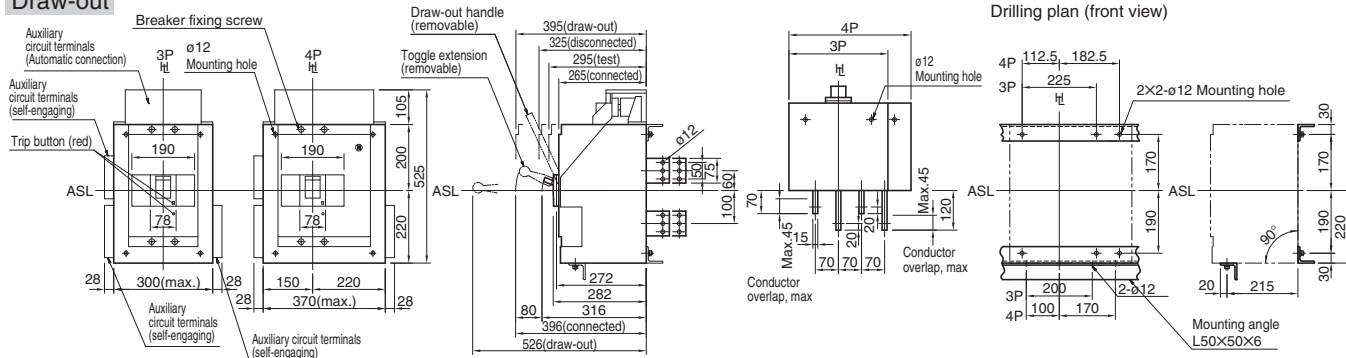
Front-connected



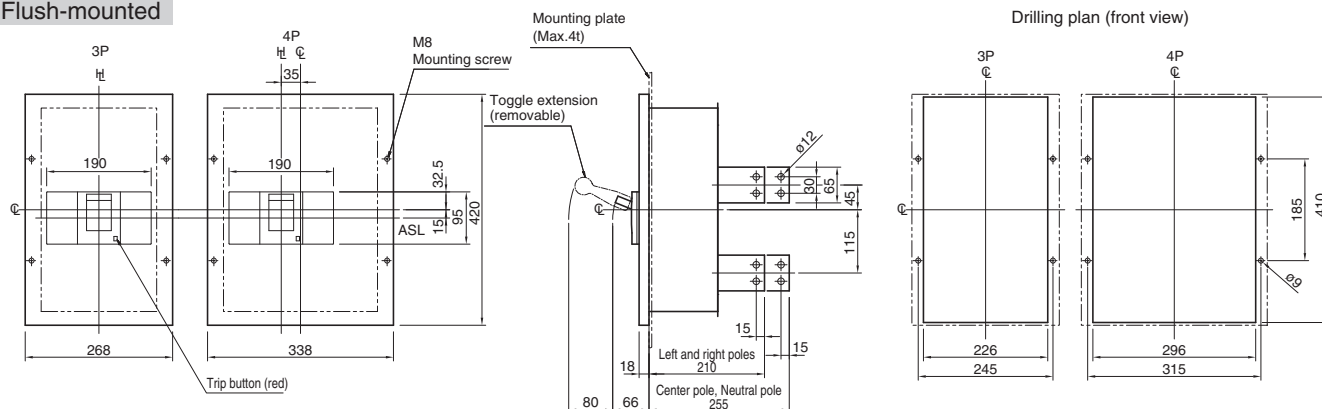
Rear-connected



Draw-out



Flush-mounted





Molded Case Circuit Breakers **Electronic** (1000A • 1200A Frame)

TL-1000NE, TL-1200NE

Time/Current characteristic curves

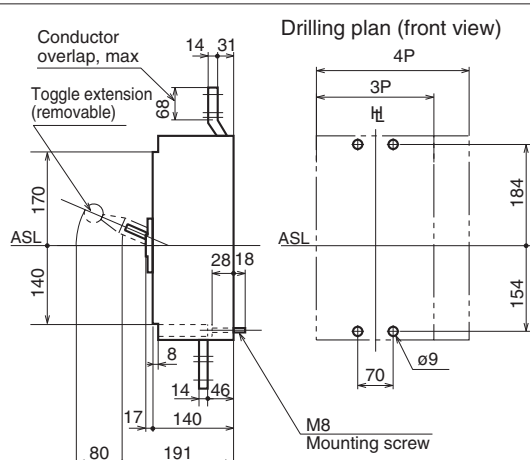
Figure 1 is a graph showing the tripping time (Y-axis, logarithmic scale from 0.005 to 4 hours) versus the percent rated current of base current (I/I_T) (X-axis, linear scale from 50 to 3000%). The graph displays two sets of curves for thermal protection, labeled TL-1200NE and TL-1000NE. The TL-1200NE curves are for 600A/ I_T Setting and 1200A/ I_T Setting. The TL-1000NE curves are for 1000A/ I_T Setting and 500A/ I_T Setting. The curves show that tripping time decreases as the percent rated current increases. An inset diagram illustrates a three-phase motor circuit with current transformers (I_1, I_2, I_3) and thermal relays (T_1, T_2, T_G) connected in a delta configuration.

Type	TL-1000NE	TL-1200NE
CT rated current (A) (I_{CT})	1000	1250
Long time-delay pick-up current (A) (I_1)	500, 600, 700, 800, 900, 1000	600, 700, 800, 1000, 1200
Long time-delay time settings (S) (T_1)	(5–10–15–20–30) at (I_1) x 600% current Setting tolerance $\pm 20\%$	
Short time-delay pick-up current (A) (I_2)	(I_1) x 200, 400, 600, <u>800</u> , 1000% Setting tolerance $\pm 15\%$	
Short time-delay time settings (S) (T_2)	Opening time (0.1, 0.15, <u>0.2</u> , 0.25, 0.3) in the definite time-delay. Total clearing time is +50ms and resettable time –20ms for the time-delay settings	
Instantaneous trip pick-up current (A) (I_3)	Continuously adjustable from (I_{CT}) x 300 ~ <u>1200</u> %. Setting tolerance $\pm 20\%$	
Pre-trip alarm pick-up current (A) (I_P) (optional)	(I_1) x 70, 80, <u>90</u> , 100% Setting tolerance $\pm 10\%$	
Pre-trip alarm time setting (S) (T_P) (optional)	40 fixed definite time-delay. Setting tolerance $\pm 10\%$	
Ground fault trip pick-up current (A) (I_G) (optional) 64	Continuously adjustable from (I_{CT}) x <u>10</u> ~ 40% Setting tolerance $\pm 15\%$	
Ground fault trip-time setting (S) (T_G) (optional) 64	Opening time (0.1, 0.2, 0.3, 0.4, <u>0.8</u>) in the definite time-delay. Total clearing time is +50ms and resettable time –20ms for the time-delay settings	

Notes:
 ● : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ▲ : Semi-standard. ● : "yes" or "available". — : "no" or "not available". ③ : Line side interpolate barriers are supplied as standard. (Front connection only) ⑨ : The mechanical interlock is not applicable to the draw-out type (DR). 16 : Optional pretrip alarm or ground fault trip function available on request. 23 : at 460V AC. 24 : One is supplied with every five breakers. Please specify if more are required. 26 : Ground fault trip can not be equipped with Pre-trip alarm.

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip *	AX AL	AX SH	AX UV	AL SH	AL UV	AX AL SH	AX AL UV
4+1+0											
	NOTE: * The UV Controller is installed externally when provided with AC UV.										

TL-1000NE, TL-1200NE



Technical drawing of a vertical terminal block assembly, showing side and front views with dimensions and labels.

Labels:

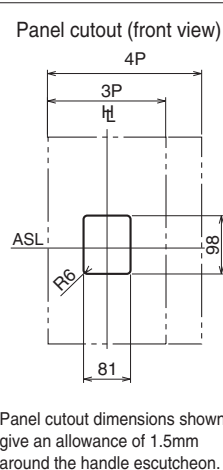
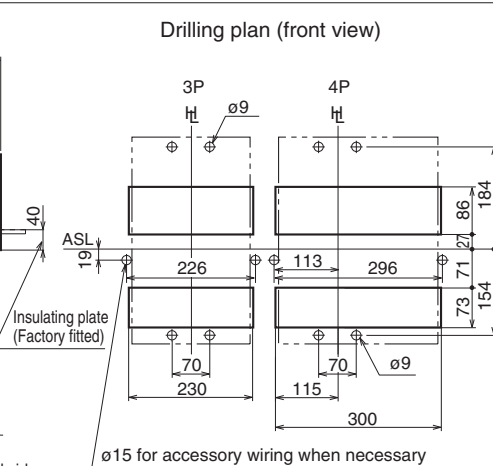
- M8 Mounting screw
- Conductor overlap, max
- ASL
- Mounting plate

Dimensions:

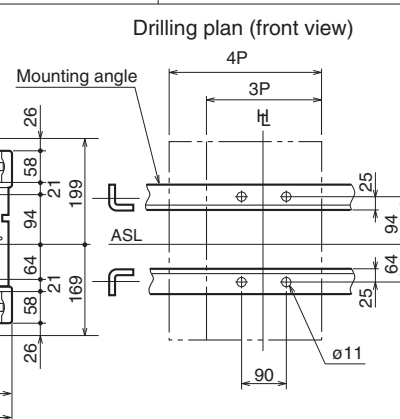
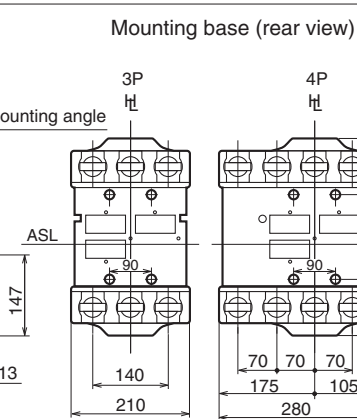
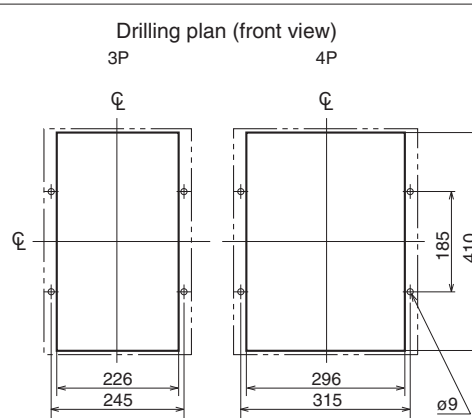
- 18 (Mounting screw offset)
- 12 (Terminal offset)
- 13 (Terminal width)
- 140 (Terminal pitch)
- 114 (Terminal offset)
- 184 (Terminal height)
- 111 (Terminal height)
- 75 (Terminal height)
- 8 (Terminal height)
- 15 (Terminal height)
- 30 (Terminal height)
- 45 (Terminal height)
- 70 (Terminal pitch)
- 70 (Terminal pitch)
- 70 (Terminal pitch)
- 4P (Pitch)
- 3P (Pitch)
- 13 (Terminal width)

Notes:

- Soft plastic tubing $\phi 50$ to be provided on center pole and neutral pole of vertical terminal type for insulation.



Note: Studs are factory installed in horizontal direction both on the line and load sides.

[illegible]

Note: Studs are factory installed in horizontal direction both on the line and load sides.



7

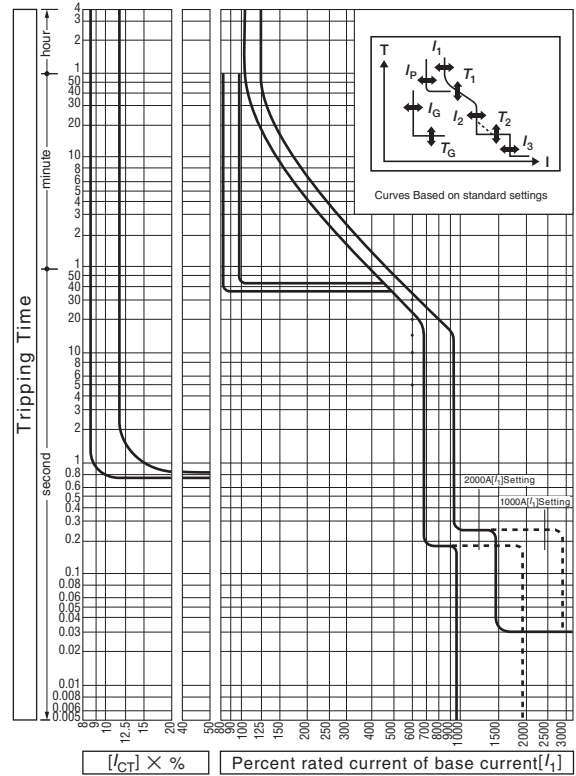
Characteristics and Outline Dimensions **TemBreak**

Molded Case Circuit Breakers **Electronic** (2000A Frame)

XS2000NE

Ratings and Specifications

Time/Current characteristic curves



Type		XS2000NE				
Number of poles		3	4			
■ Ratings						
Rated current, A		(Adjustable)				
Calibrated at 45°C		1000	1600			
		1200	1800			
		1400	2000			
Rated insulation voltage [U _i] V		690				
Rated impulse withstand voltage [U _{imp}] kV		8				
■ Rated breaking capacity, kA						
NK	AC	690V	—			
		450V	85/— ⑬			
		240V	—			
		250V	—			
IEC60947-2	AC	690V	45/42			
		500V	65/50			
		440V	85/65			
		415V	85/65			
I _{cu} /I _{cs} (sym)		380V	100/75			
		240V	125/94			
		DC	250V	—		
		125V	—			
■ Rated short time withstand current, kA		42 (0.3sec)				
Weight (● marked standard type) kg		54.0	67.0			
■ Connections and Mountings						
Front-connected (FC)	Terminal screws	—				
	With extension bars	○				
Rear-connected (RC)	Bolt studs	—				
	Flat bar studs	●				
Plug-in (PM)	For switchboards Standard (PMC)	—				
	High-performance (PMB)	—				
	For distribution boards (PMC)	—				
Flush-mounted (FP)	With flat bar studs	○				
Draw-out type (DR)		○				
TemPlug70 (PG)		—				
TemPlug45B (PG4)		—				
DIN rail mount		—				
Clip-in chassis mount		—				
■ Accessories (optional)		Symbol				
Externally mounted	Motor operator	M C	●			
	External operating handle	H B	—			
	Door-mounted (variable depth)	H P	—			
	Toggle extension	H A	● ②			
	Mechanical interlock⑨ Slide type	M S	●			
	Toggle holder	H H	—			
	Toggle lock	H L	●			
	Terminal cover For front-connected	C F	—			
	For rear-connected and plug-in	C R	—			
	Interpole barrier	B A	—			
Internally mounted	Terminal block for lead	T F	●			
	Door flange	D F	●			
■ Standard specifications						
Overcurrent trip mechanism		Electronic ⑯				
Trip button (color)		Yes (Red)				
Handle position indication (ON: Red, OFF: Green)		Yes				
Suitability for isolation		Non				
CE marking		Non				

Notes:

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering. ● : "yes" or "available". — : "no" or "not available". ② : Supplied as standard.
⑨ : The mechanical interlock is not applicable to the draw-out type (DR). 13 : at 500V AC.
16 : Optional pretrip alarm or ground fault trip function available on request.
64 : Ground fault trip can not be equipped with Pre-trip alarm.

Overcurrent tripping characteristics

CT rated current (A) (I _{CT})	2000
Long time-delay	1000, 1200, 1400, 1600, 1800, 2000
pick-up current (A) (I ₁)	
Long time-delay	(5–10–15–20–30) at (I ₁) x 600% current
time settings (S) (T ₁)	Setting tolerance ±20%
Short time-delay	(I ₁) x 200, 400, 600, 800, 1000%
pick-up current (A) (I ₂)	Setting tolerance ± 15%
Short time-delay	Opening time (0.1, 0.15, 0.2, 0.25, 0.3) in the definite time-delay. Total clearing time is +50ms and resettable time –20ms for the time-delay settings
time settings (S) (T ₂)	
Instantaneous trip	Continuously adjustable from (I _{CT}) x 300 ~ 1200%.
pick-up current (A) (I ₃)	Setting tolerance ±20%
Pre-trip alarm pick-up current (A) (I _P) (optional)	(I ₁) x 70, 80, 90, 100%
Pre-trip alarm time setting (S) (T _P) (optional)	40 fixed definite time-delay. Setting tolerance ±10%
Ground fault trip pick-up current (A) (I _G) (optional) 64	Continuously adjustable from (I _{CT}) x 10 ~ 40%
Setting tolerance ±15%	
Ground fault trip-time setting (S) (T _G) (optional) 64	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 –20ms for the time-delay settings

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

Combinations of Internally Mounted Accessories (Optional)

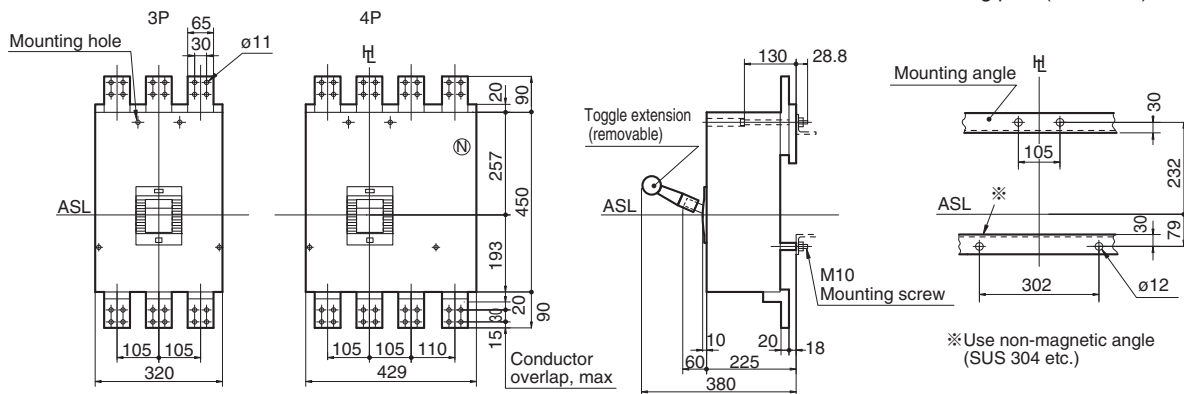
Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip *	AX	SH	UV	SH	UV	AX	UV
Δ-UV											
	Left pole	Right pole									

NOTE: * The UV Controller is installed externally when provided with AC UV.

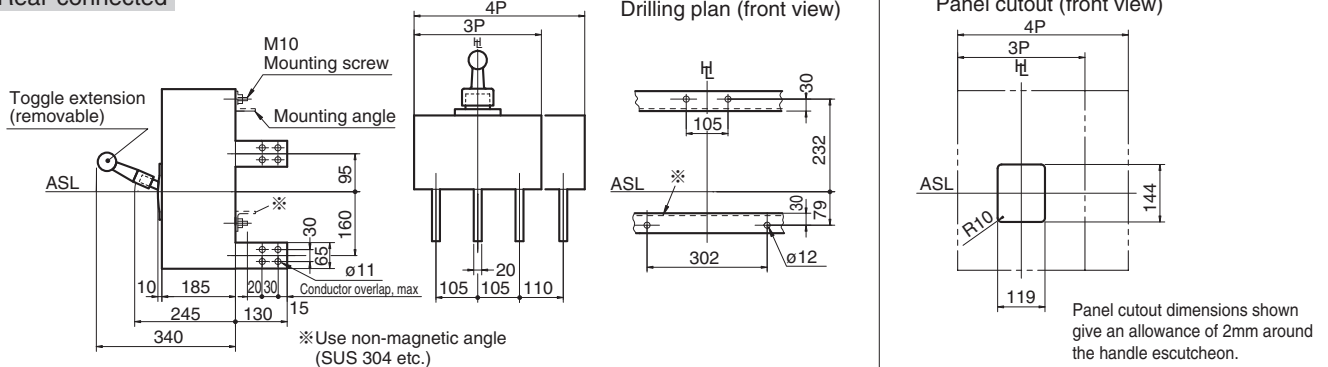
Outline dimensions (mm)

XS2000NE

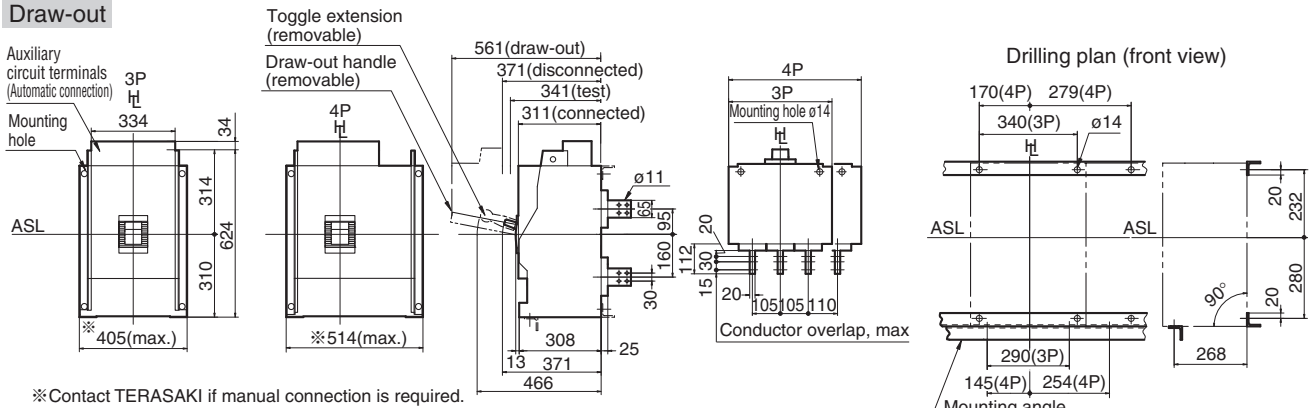
Front-connected



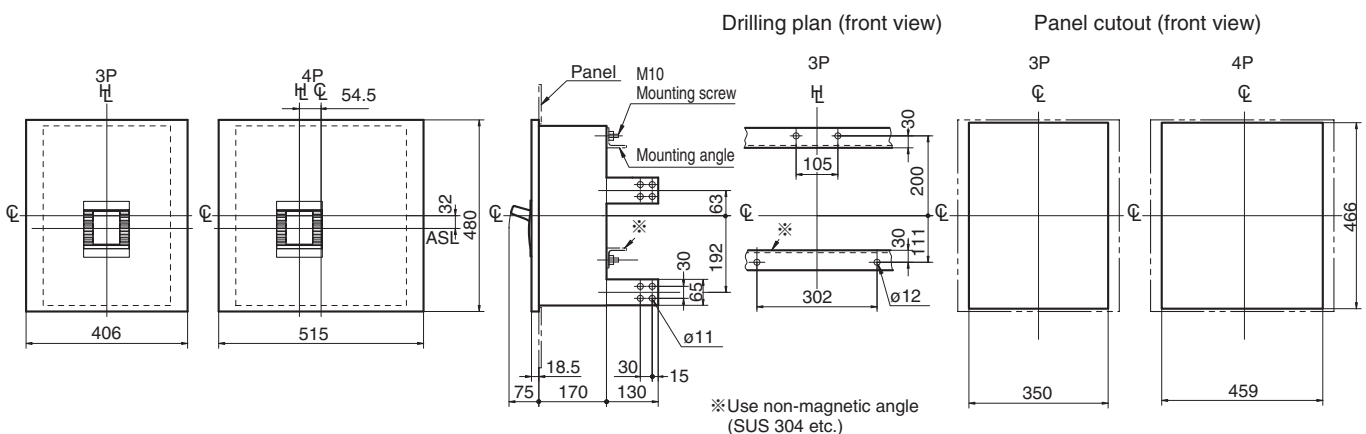
Rear-connected



Draw-out



Flush-mounted





7

Characteristics and Outline Dimensions **TemBreak**

Molded Case Circuit Breakers

(2000A Frame)

XS2000NN

Ratings and Specifications

Type		XS2000NN				
Number of poles		3	4			
■ Ratings						
Rated current, A		2000				
Rated insulation voltage [U_i] V		690				
Rated operational voltage V	AC	690				
	DC	250				
Rated short circuit making capacity, kA peak		90				
Rated short time withstand current, kA		35 (0.3sec)				
Rated impulse withstand voltage [U_{imp}] kV		8				
■ Performance						
Max switching current A		AC 12000				
IEC 60947-2 Ann.L CBI-Y		DC 5000				
Endurance	Number of operating cycles with current	500				
	Number of operating cycles without current	2500				
Upstream breaker (OCPD) ②		XS2000NE				
Weight (● marked standard type) kg		51.8	64.8			
■ Connections and Mountings						
Front-connected (FC)	Terminal screws	—				
	With extension bars	○				
Rear-connected (RC)	Bolt studs	—				
	Flat bar studs	●				
Plug-in (PM)	For switchboards	—				
	Standard (PMC)	—				
	High-performance (PMB)	—				
For distribution boards (PMC)		—				
Flush-mounted (FP) With bolt studs		○				
Draw-out type (DR)		○				
TemPlug70 (PG)		—				
TemPlug45B (PG4)		—				
DIN rail mount		—				
Clip-in chassis mount		—				
■ Accessories (optional)		Symbol				
Externally mounted	Motor operator	M C	●			
	External operating handle	Breaker-mounted H B	—			
	Door-mounted (variable depth) H P	● ③				
	Toggle extension	H A	● ②			
	Mechanical interlock③ Slide type	M S	●			
	Toggle holder	H H	—			
	Toggle lock	H L	●			
	Terminal cover	For front-connected C F	—			
		For rear-connected and plug-in C R	—			
	Interpole barrier	B A	—			
	Terminal block for lead	T F	●			
	Door flange	D F	●			
■ Standard specifications						
Trip button (color)		Yes (Red)				
Handle position indication (ON: Red, OFF: Green)		Yes				
Suitability for isolation		Non				
CE marking		Non				

Notes:

● : Standard. This configuration used unless otherwise specified.

○ : Optional standard. Specify when ordering.

● : "yes" or "available".

— : "no" or "not available".

② : Supplied as standard.

③ : The mechanical interlock is not applicable to the draw-out type (DR).

④ : Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.

⑤ : Fixed depth, not adjustable.

Combinations of Internally Mounted Accessories (Optional)

Poles	AX	AL	SH	UV	AX	AX	AX	AL	AL	AX	AX
	Auxiliary switch	Alarm switch	Shunt trip	Under voltage trip *	AX	SH	UV	SH	UV	AX	AL
Draw-out											
Toggle											

NOTE: * The UV Controller is installed externally when provided with AC UV.

Mounting angle

ASL

g screw

ø12

※ Use non-magnetic angle (SUS 304 etc.)

Technical drawing of a panel cutout. The drawing shows a rectangular panel with a square cutout. The overall width is labeled $4P$ and the overall height is labeled 144 . The cutout is positioned such that the distance from the left edge to the cutout is $3P$. The distance from the bottom edge to the cutout is labeled 119 . A fillet radius $R10$ is indicated at the bottom-left corner of the cutout. The text "ASL" is on the left, and "Panel cutout" is on the right.

Technical drawings of two square panels, labeled 3P and 4P, showing dimensions and mounting points.

Panel 3P:

- Width: 350
- Height: 350
- Mounting points: 3P (top center), 4P (bottom center), 3P (left center), 4P (right center)

Panel 4P:

- Width: 459
- Height: 466
- Mounting points: 3P (top center), 4P (bottom center), 3P (left center), 4P (right center)



7

Characteristics and Outline Dimensions

Molded Case Circuit Breakers

(50A Frame)

TB-5S

Ratings and Specifications

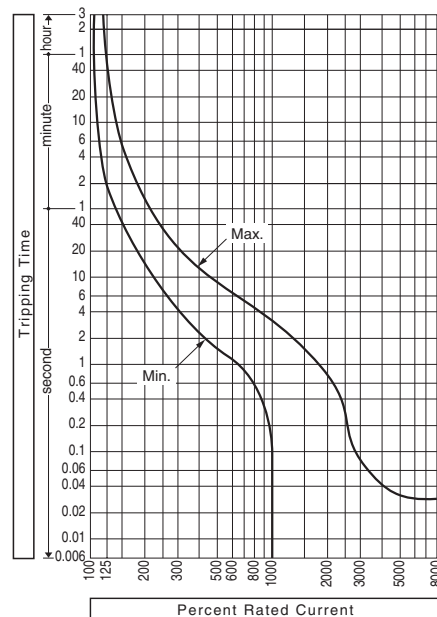
Type		TB-5S			
Number of poles		2			
Ratings					
Rated current, A		10 30			
Calibrated at 45°C		15 40			
		20 50			
Rated voltage V		460			
		125			
Rated breaking capacity, kA					
NK		5 ④			
(sym)		42			
		5			
Weight kg		0.34			
Connecting scheme					
Front-connected both on the line and load sides		●			
Plug-in on the line side and front-connected on the load side		—			
Plug-in both on the line and load sides		—			
Mounting scheme (optional)					
Clip-in chassis		●			
Mounting base for single-row installation		—			
Mounting base for branched-into-dual-rows installation		—			
Accessories (optional)		Symbol			
Toggle holder		H H	●		
Toggle lock		H L	—		
Toggle cap		H C	—		
Interpole barrier		B A	●		
Standard specifications					
Overcurrent trip mechanism		Thermal-magnetic			
Trip button (color)		Non			
Handle position indication (ON: Red, OFF: Green)		Non			
Suitability for isolation		Non			
CE marking		Non			

Notes:

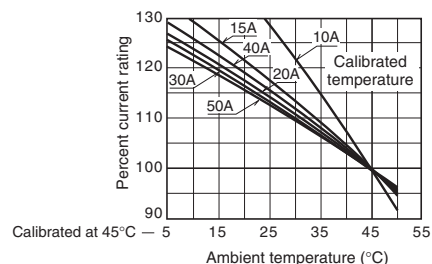
- : "yes" or "available".
- : "no" or "not available".

④ : 2.5kA for 10A.

Time/Current characteristic curves

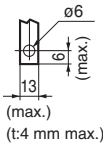
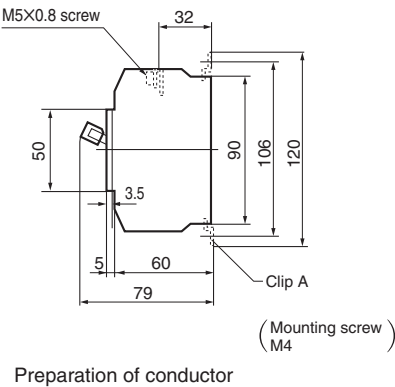
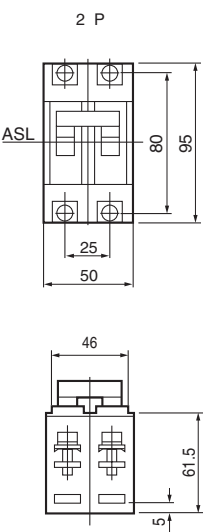


Ambient Compensating Curves

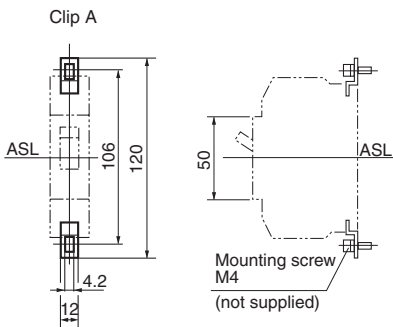


Outline dimensions (mm)

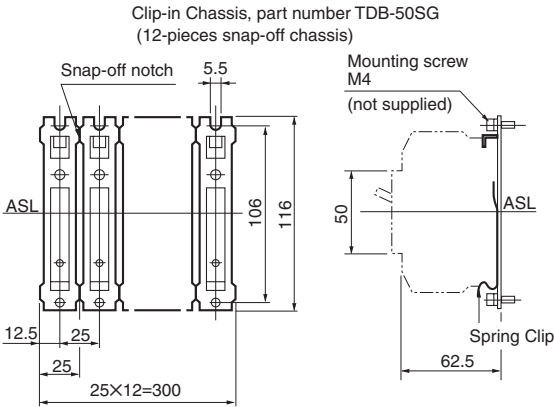
TB-5S



Clip and Clip-in chassis



" NOTE: Clips A are supplied with breakers, 2 pieces/pole.
For multi-pole installation, clip-to-clip distance is 25 mm.



NOTE: 1. Clip-in chassis is notched between every two pieces to adjust number of pieces to number of breaker poles. (Bend once or twice to snap off.)

2. Screw clip-in chassis down at 4 or 5 pole intervals.



7

Characteristics and Outline Dimensions

Molded Case Circuit Breakers

(50A Frame)

TB-5P

Ratings and Specifications

Type	TB-5P			
Number of poles	2			
■ Ratings				
Rated current, A	10 30			
Calibrated at 45°C	15 40			
	20 50			
Rated voltage V	460			
	DC 125			
■ Rated breaking capacity, kA				
NK	5 ④④			
(sym)	42			
	5			
Weight kg	0.28			
■ Connecting scheme				
Front-connected both on the line and load sides				
Plug-in on the line side and front-connected on the load side	●			
Plug-in both on the line and load sides				
■ Mounting scheme (optional)				
Clip-in chassis				
Mounting base for single-row installation	● ④⑦			
Mounting base for branched-into-dual-rows installation	● ④⑦			
■ Accessories (optional)				
	Symbol			
Toggle holder	H H			
Toggle lock	H L			
Toggle cap	H C			
Interpole barrier	B A			
■ Standard specifications				
Overcurrent trip mechanism	Thermal-magnetic			
Trip button (color)	Non			
Handle position indication (ON: Red, OFF: Green)	Non			
Suitability for isolation	Non			
CE marking	Non			

Notes:

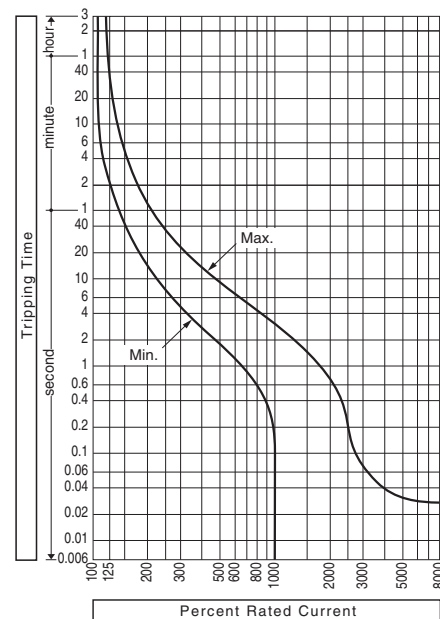
● : "yes" or "available".

— : "no" or "not available".

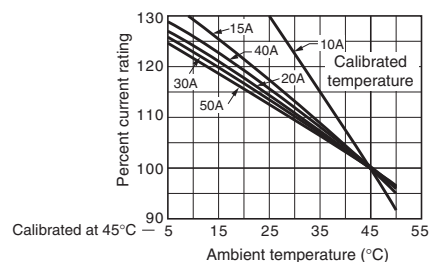
④④ : 2.5kA for 10A.

④⑦ : Specify the branch bars when ordering. See page 7-86, 87 for details.

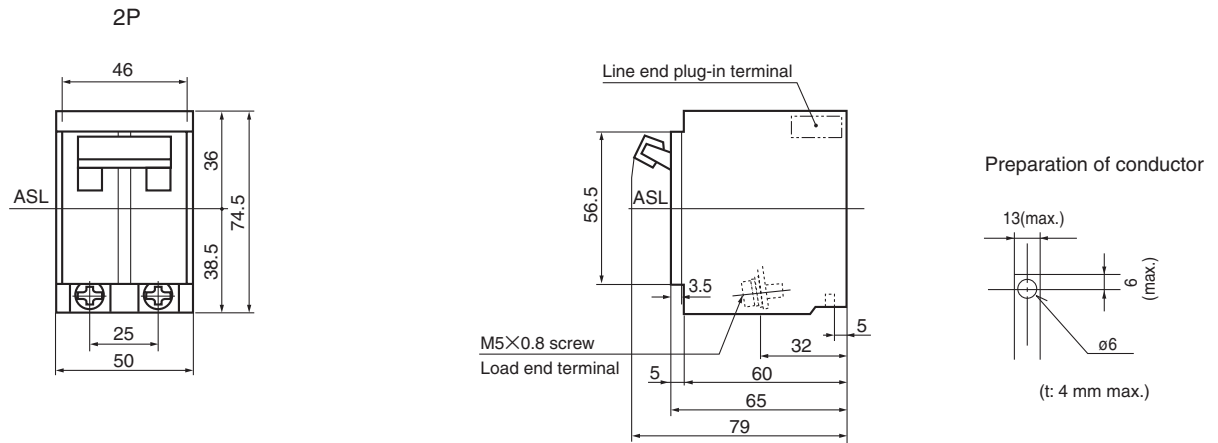
Time/Current characteristic curves



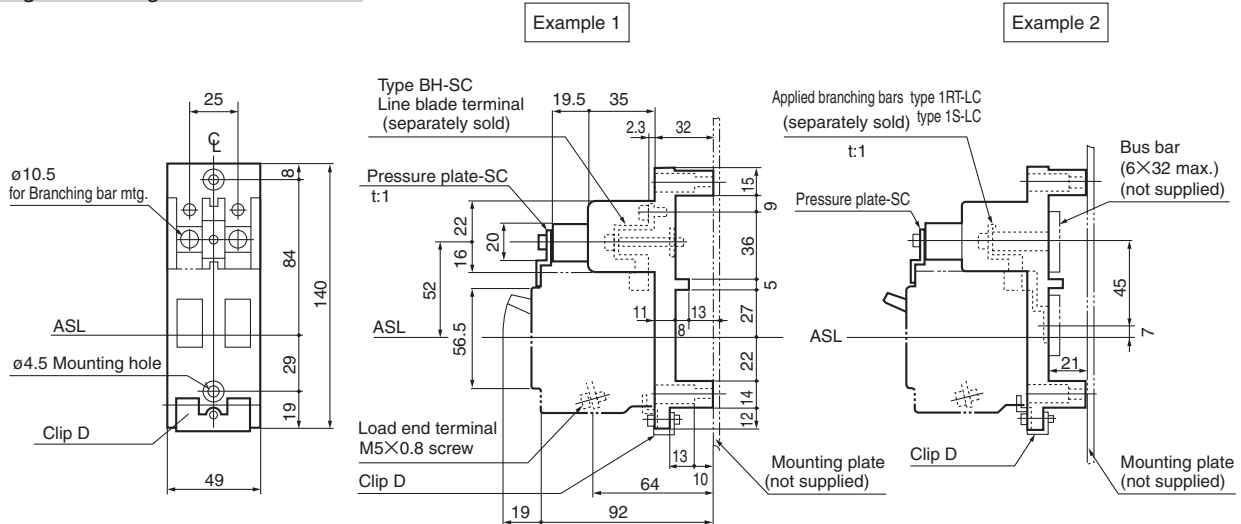
Ambient Compensating Curves



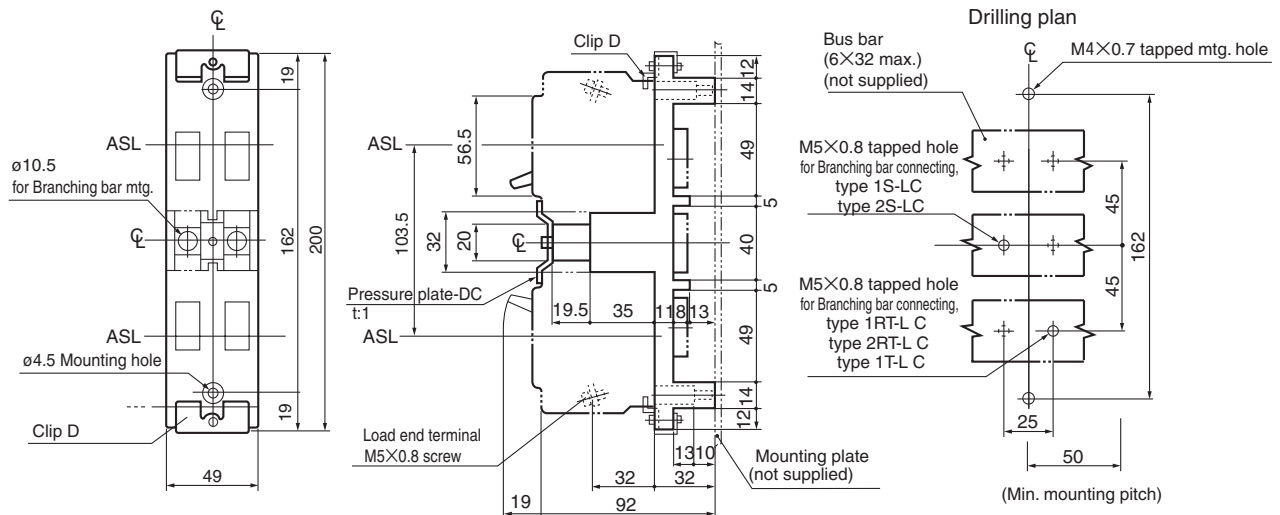
Outline dimensions (mm)

TB-5P


Single mounting base-TDB-50PC



Double mounting base-TDA-50PC





7

Characteristics and Outline Dimensions

Molded Case Circuit Breakers

(50A Frame)

TB-5D

Ratings and Specifications

Type		TB-5D			
Number of poles		2			
Ratings					
Rated current, A		10 30			
Calibrated at 45°C		15 40			
		20 50			
Rated voltage V		250			
		125			
AC					
DC					
Rated breaking capacity, kA					
NK		5 ④④			
(sym)		42			
AC 250 V					
DC 125 V					
Weight kg		5			
		0.28			
Connecting scheme					
Front-connected both on the line and load sides		—			
Plug-in on the line side and front-connected on the load side		—			
Plug-in both on the line and load sides		●			
Mounting scheme (optional)					
Clip-in chassis		—			
Mounting base for single-row installation		● ④⑦			
Mounting base for branched-into-dual-rows installation		● ④⑦			
Accessories (optional)		Symbol			
Toggle holder		H H	●		
Toggle lock		H L	—		
Toggle cap		H C	—		
Interpole barrier		B A	●		
Standard specifications					
Overcurrent trip mechanism		Thermal-magnetic			
Trip button (color)		Non			
Handle position indication (ON: Red, OFF: Green)		Non			
Suitability for isolation		Non			
CE marking		Non			

Notes:

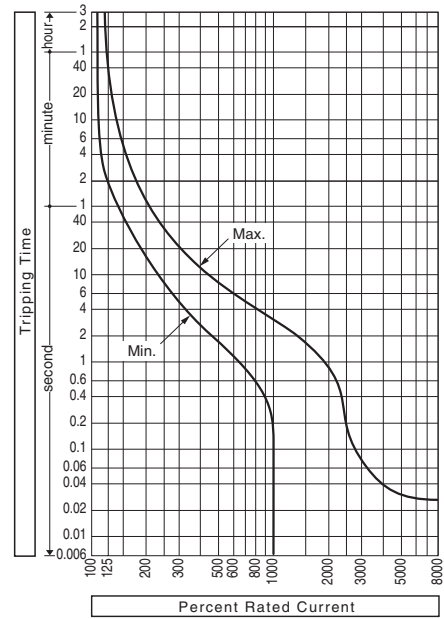
● : "yes" or "available".

— : "no" or "not available".

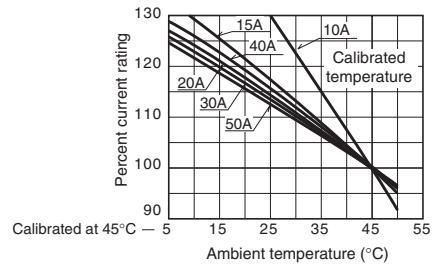
④④ : 2.5kA for 10A.

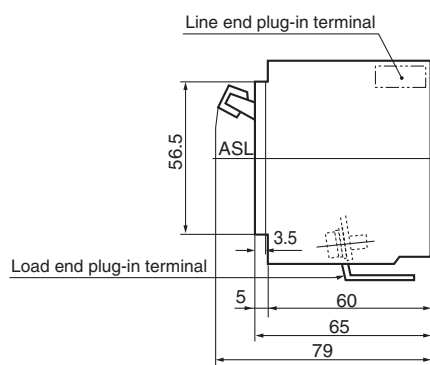
④⑦ : Specify the branch bars when ordering. See page 7-86, 87 for details.

Time/Current characteristic curves

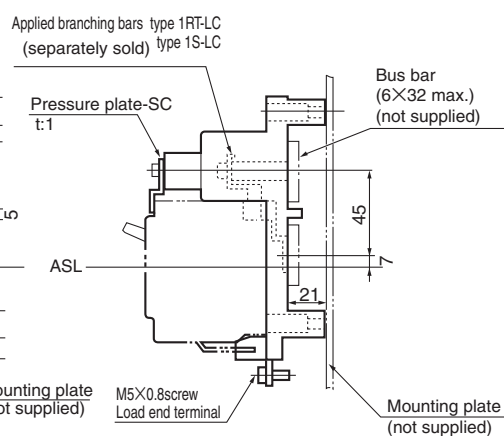


Ambient Compensating Curves

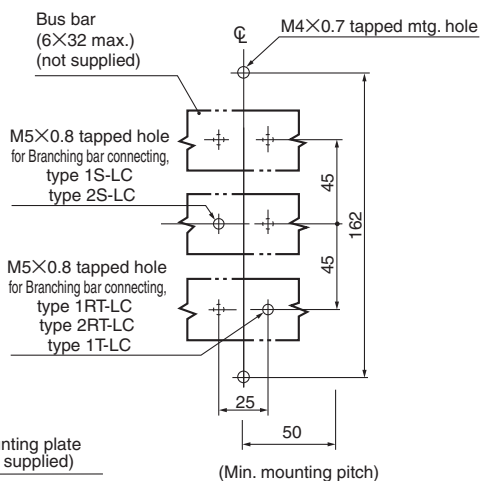


TB-5D

Example 2



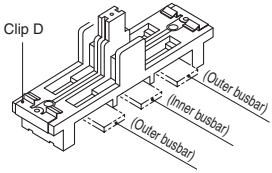
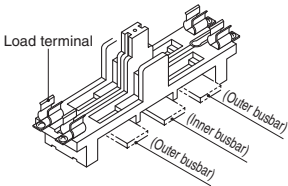
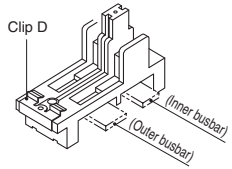
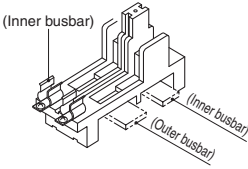
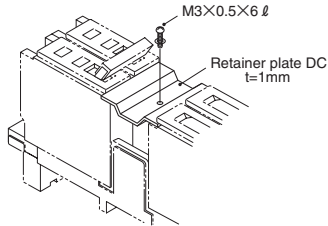
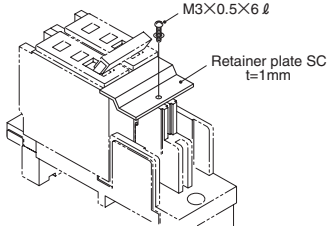
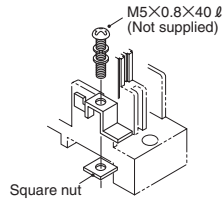
7



Molded Case Circuit Breakers

TB-5P, TB-5D

■ Mounting bases, branching bars and other accessories

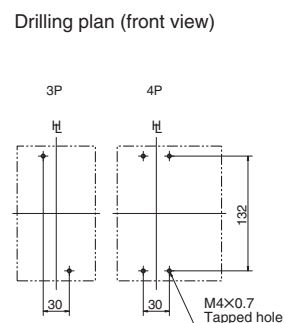
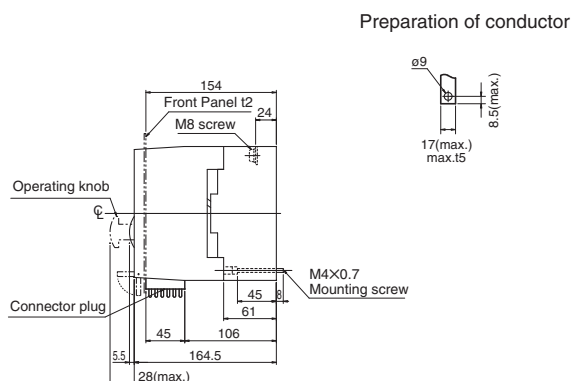
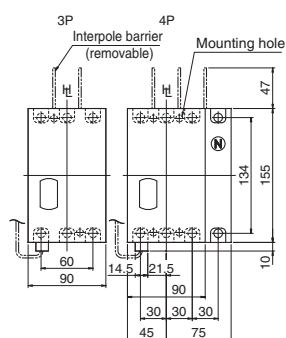
Mounting bases for dual-row installation (for four circuits)		
Type	Applicable breaker	Outline
TDA-50PC	TB-5P	
TDA-50DC	TB-5D	
Mounting bases for single-row installation (for two circuits)		
Type	Applicable breaker	Outline
TDB-50PC	TB-5P	
TDB-50DC	TB-5D	
Accessories		
Name	Outline	
Retainer plate DC		
Retainer plate SC		
Braided line terminal BH-SC		

Branching bars		
Application	Type	Arrangement
Two branches from outer busbar	2RT-LC	
Two branches from inner busbar	2S-LC	
One branch from inner busbar	1S-LC	
One branch from outer busbar	1RT-LC	
One branch from outer busbar in opposite direction	1T-LC	

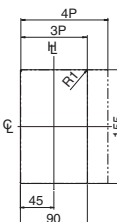
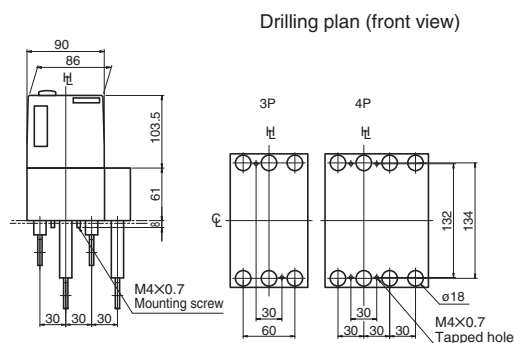
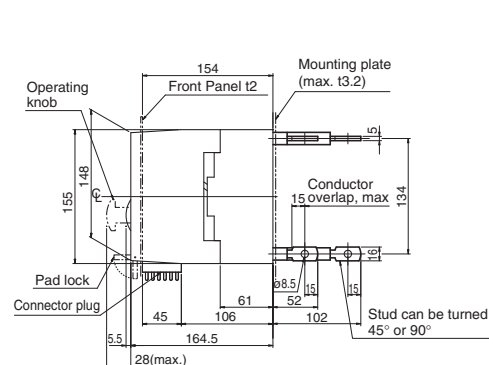
Motor operators

Outline dimensions (mm) (Type T2MC12) S50-GF, S100-NF, S100-GF, S100-NM, S100-NN, S125-NF, S125-GF, S125-NN

Front-connected

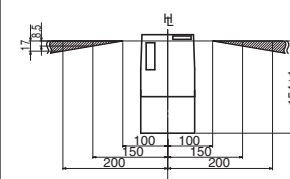
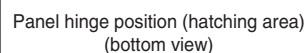
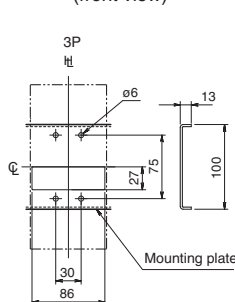
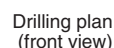
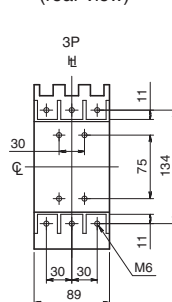
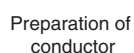
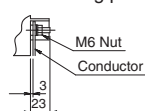
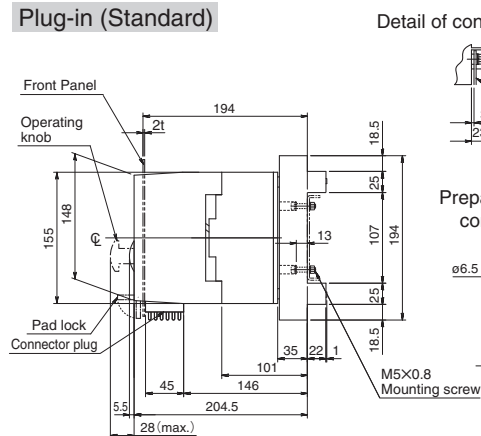


Rear-connected

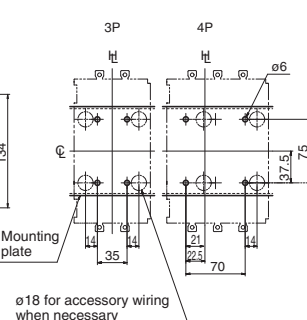
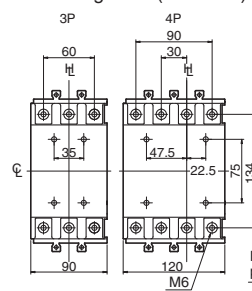
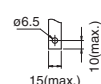
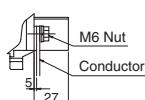
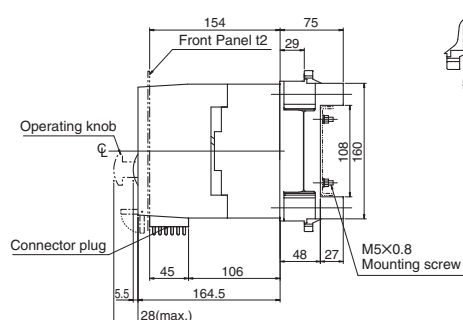
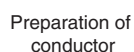
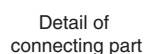


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Plug-in (Standard)



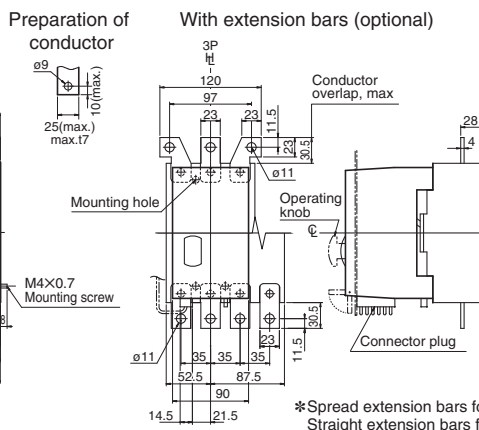
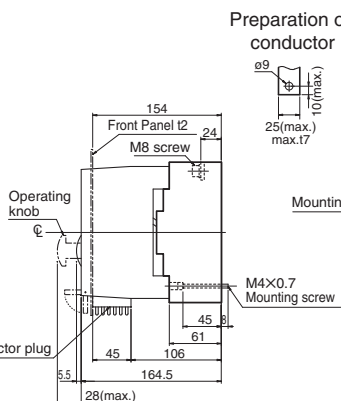
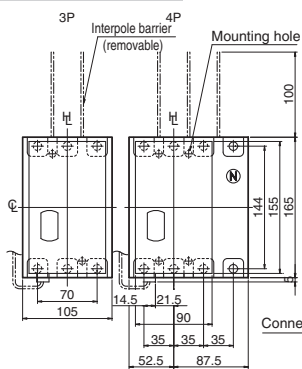
Plug-in (High-performance)



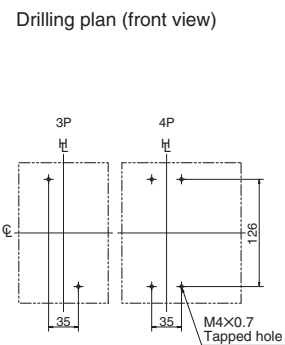
Outline dimensions (mm) (Type T2MC25)

S225-NF, S225-GF, S225-NM, S250-NF, S250-GF

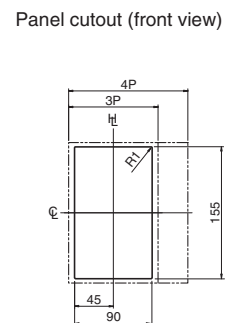
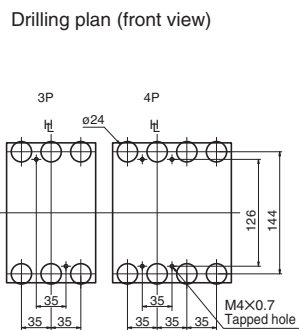
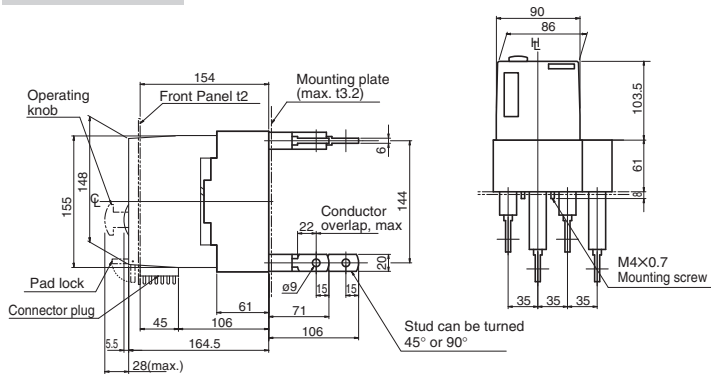
Front-connected



*Spread extension bars for 3 poles.
Straight extension bars for 4 poles.

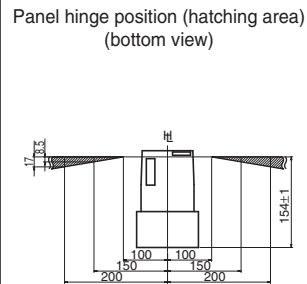
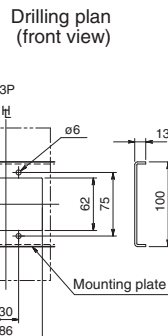
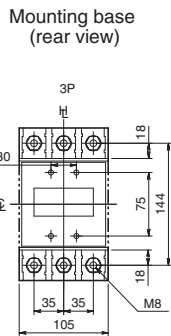
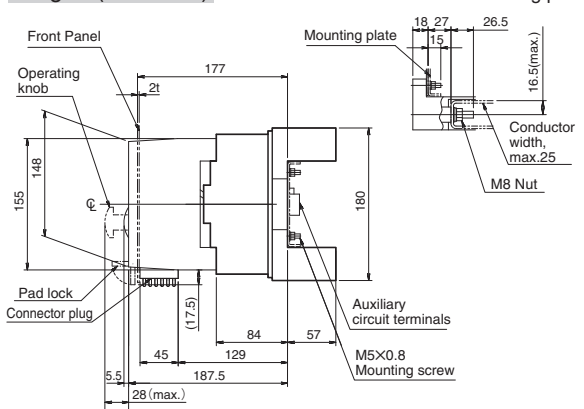


Rear-connected

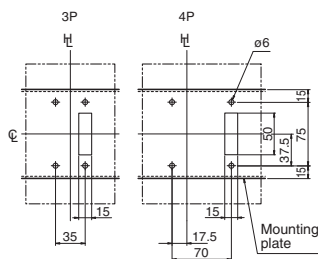
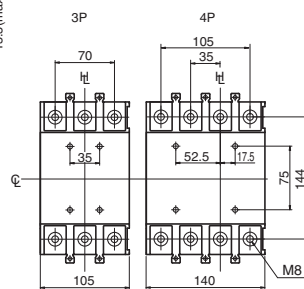
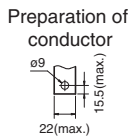
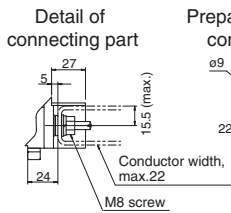
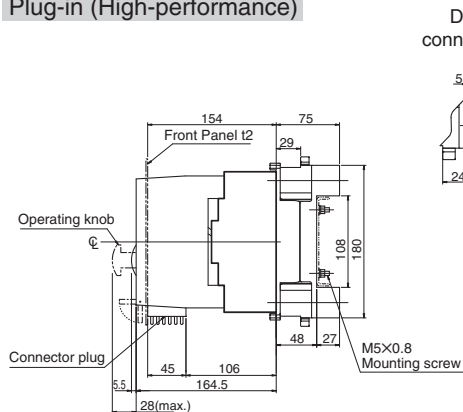


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Plug-in (Standard)



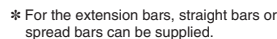
Plug-in (High-performance)



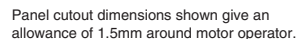
Motor operators

E250-SF, S250-SF, S250-SN

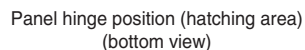
Drilling plan (front view)



Panel cutout (front view)

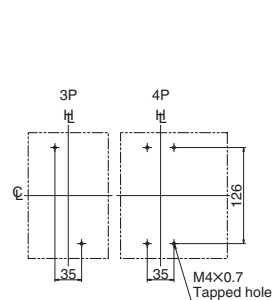
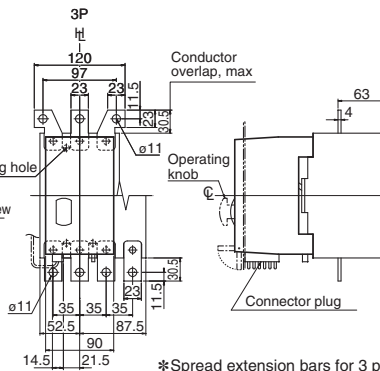
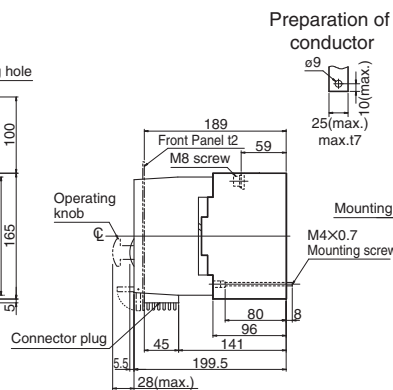
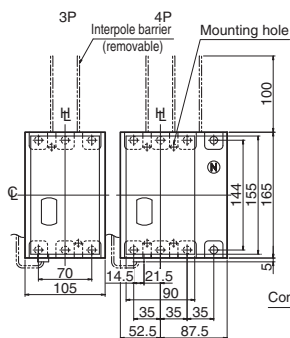


Drilling plan
(front view)



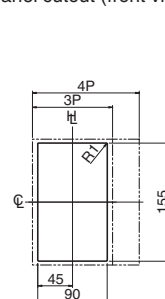
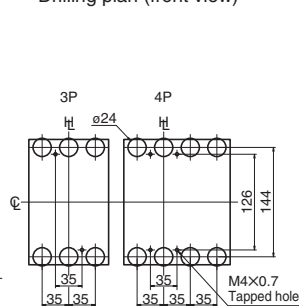
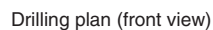
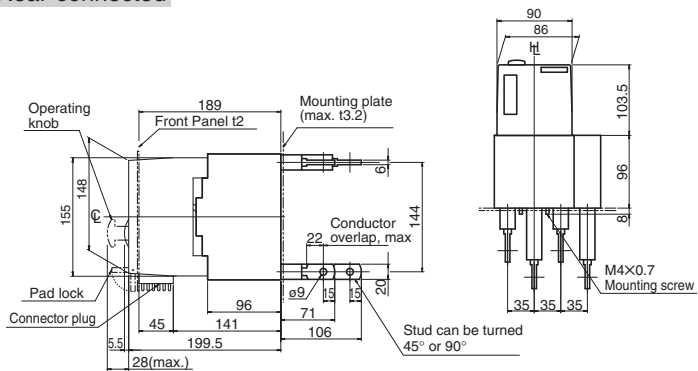
H100, H125, H225, L100, L125, L225, S225-GE

Front-connected



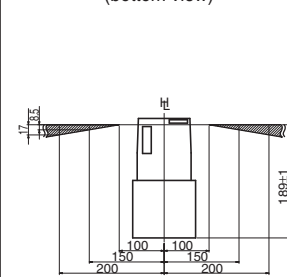
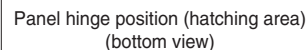
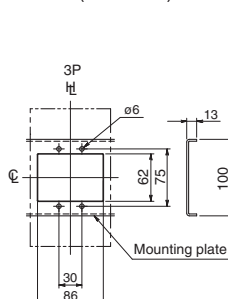
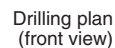
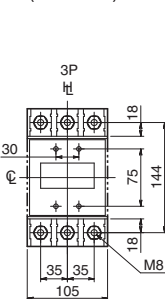
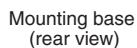
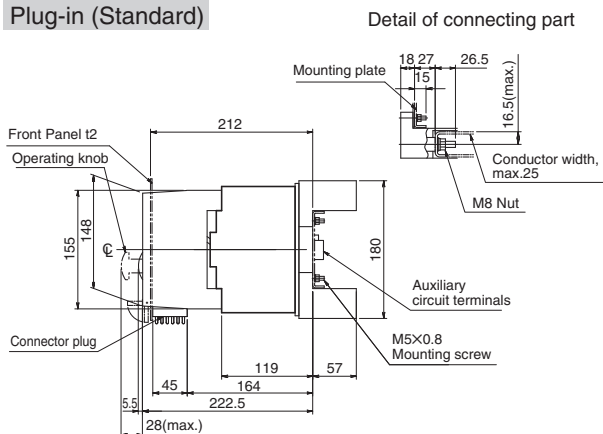
*Spread extension bars for 3 poles.
Straight extension bars for 4 poles.

Rear-connected

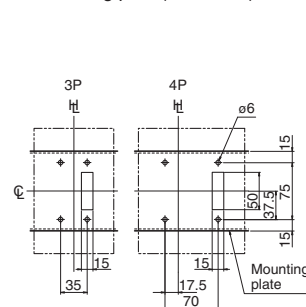
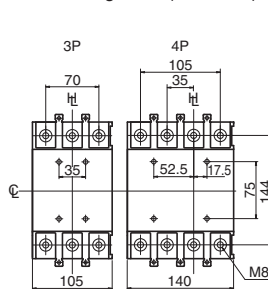
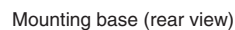
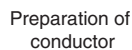
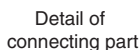
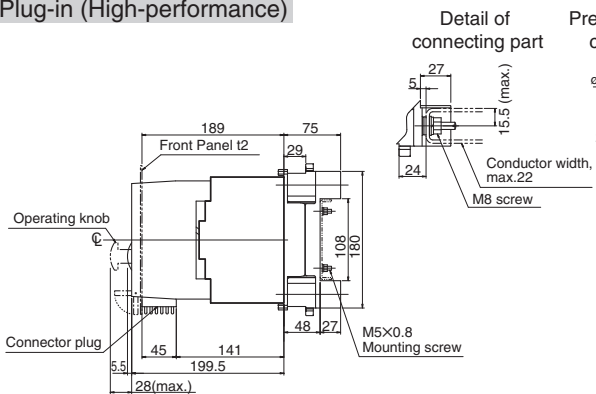


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Plug-in (Standard)



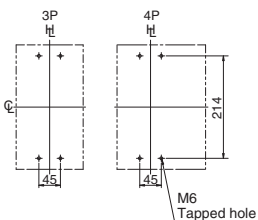
Plug-in (High-performance)



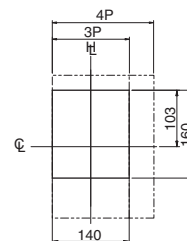
Motor operators

\$400

Drilling plan (front view)



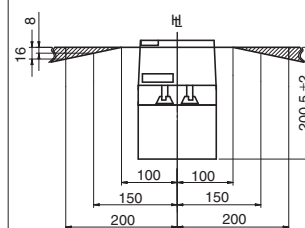
Panel cutout (front view)



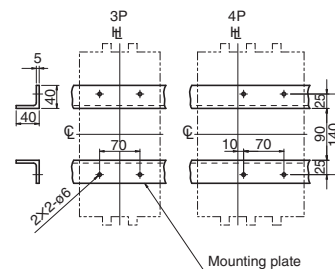
Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Drilling plan
(front view)

Panel hinge position (hatching area)
(bottom view)

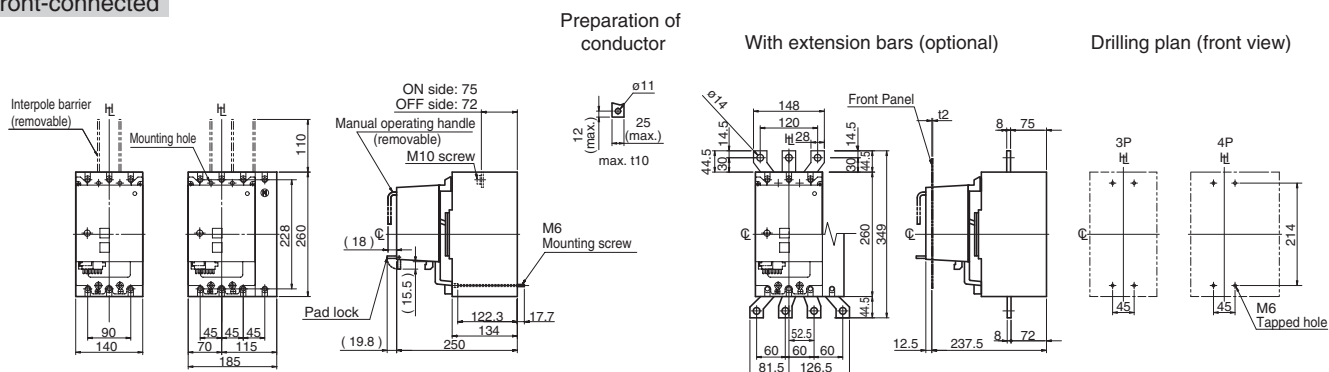


Drilling plan (front view)

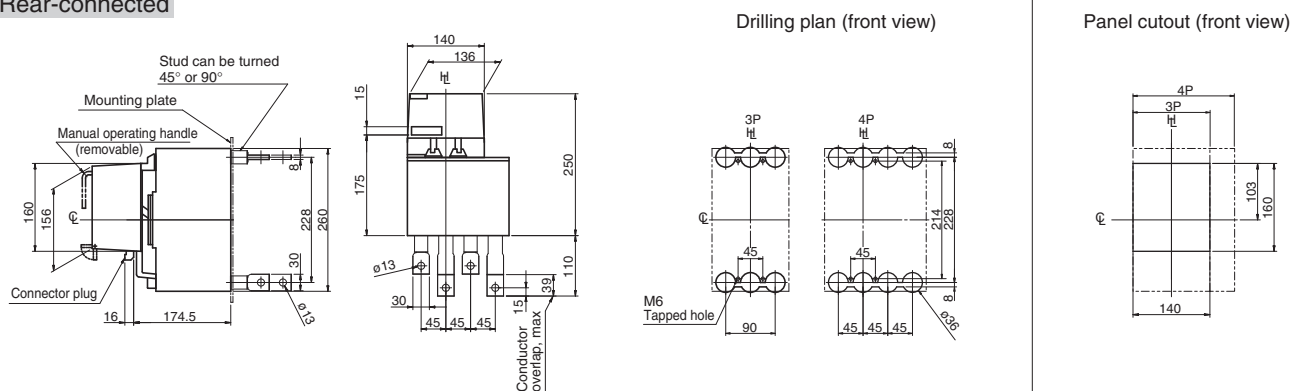


H400, L400

Front-connected



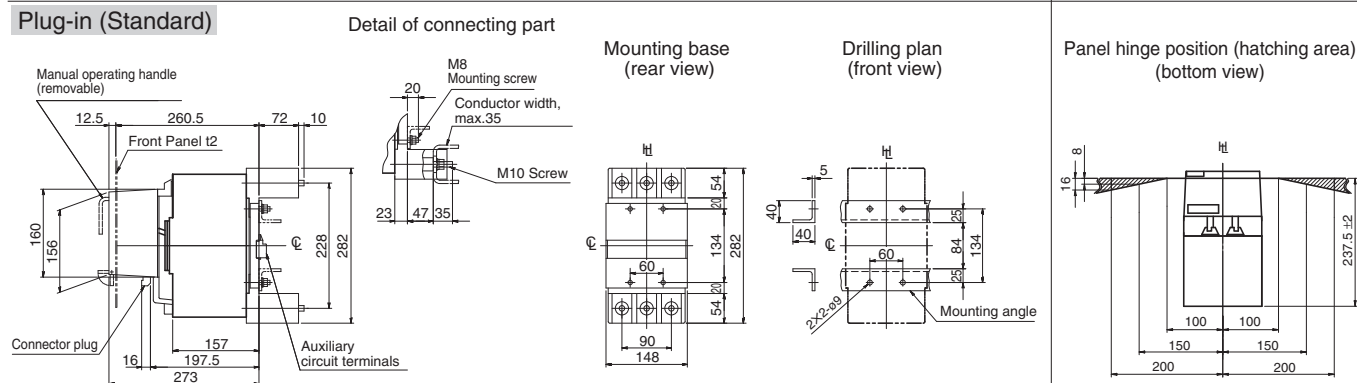
Rear-connected



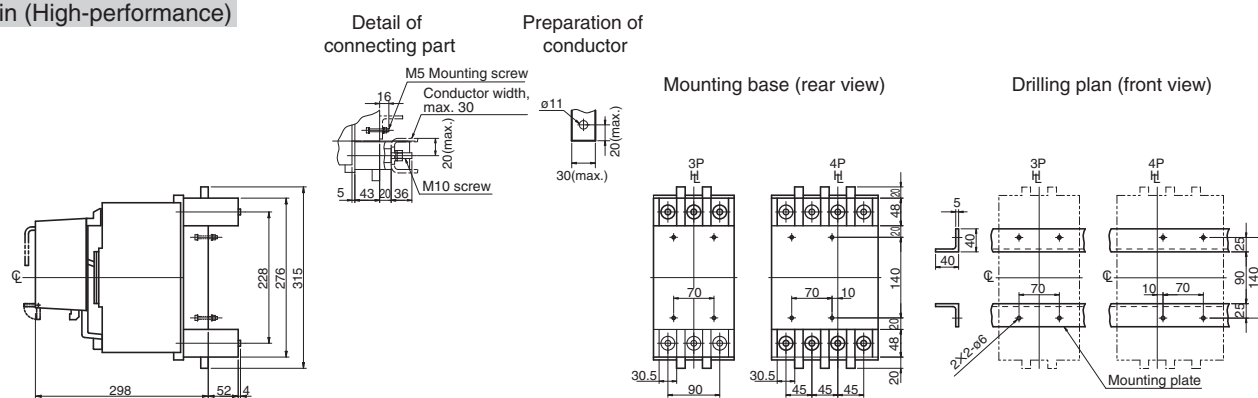
Note: Studs are factory installed in horizontal direction both on the line and load sides.

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

Plug-in (Standard)



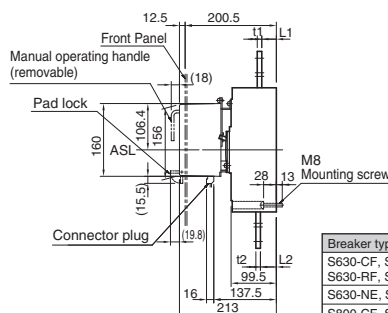
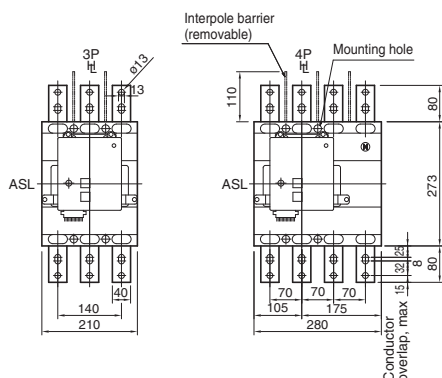
Plug-in (High-performance)



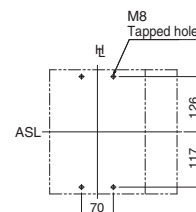
Motor operators

\$630, \$800

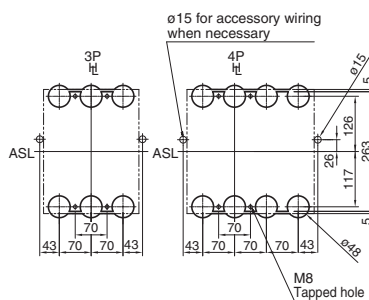
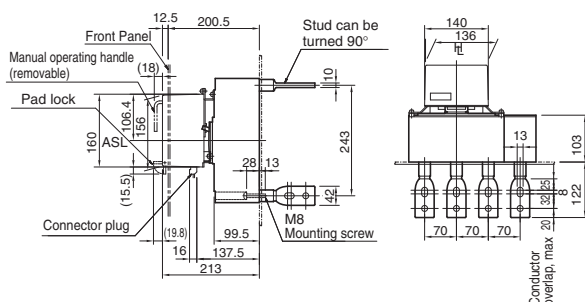
Drilling plan (front view)



Breaker type	t1	t2	L1	L2
S630-CF, S630-NF	8	8	32	34
S630-RF, S630-PF, S630-GN	8	8	32	36
S630-NE, S630-RE, S630-PE	8	8	32	36
S800-CF, S800-NF	10	10	32	35
S800-RF, S800-PF, S800-NN	10	10	32	35
S800-NE, S800-RE, S800-PE	10	10	32	36

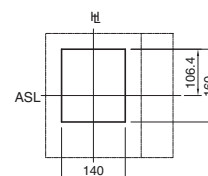


Drilling plan (front view)



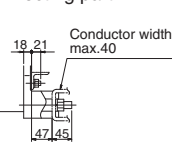
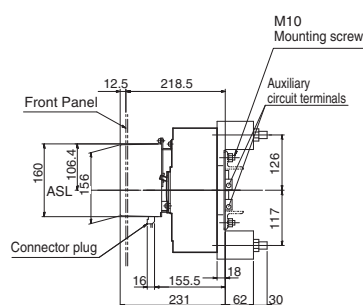
Note: Studs are factory installed in horizontal direction both on the line and load sides.

Panel cutout (front view)

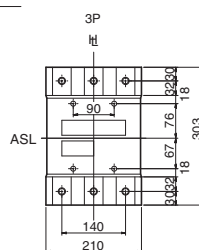


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

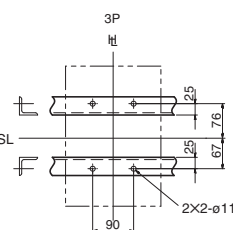
Detail of
connecting part



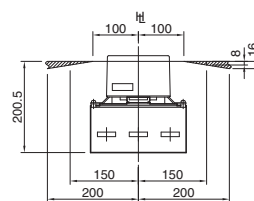
Mounting base
(rear view)



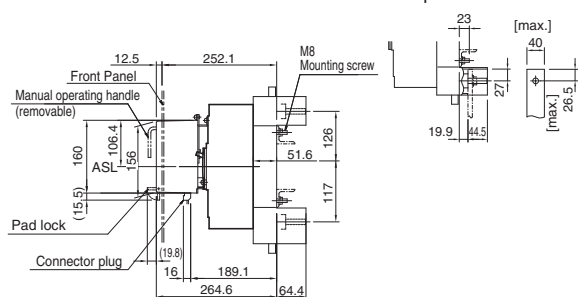
Drilling plan
(front view)



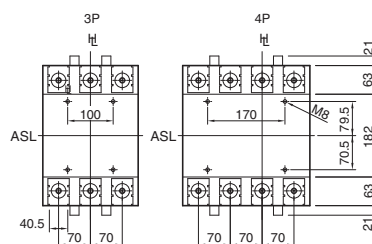
Panel hinge position (hatching area)
(bottom view)



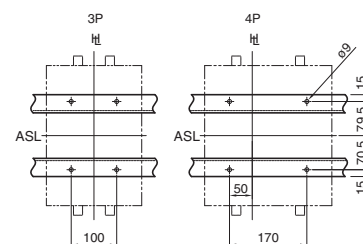
Detail of connecting part and Preparation of conductor



Mounting base (rear view)



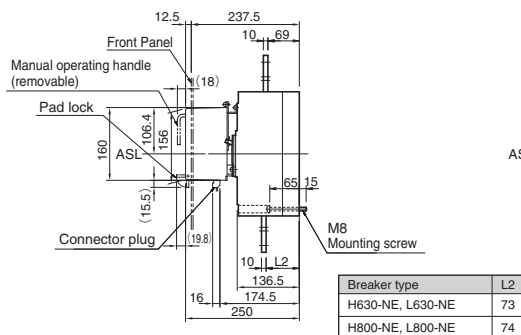
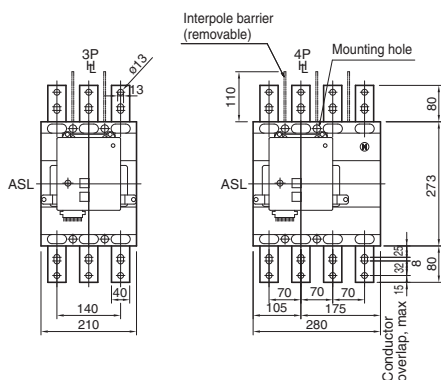
Drilling plan (front view)



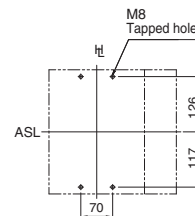
Outline dimensions (mm) (Type T2MC80)

H630, H800, L630, L800

Front-connected

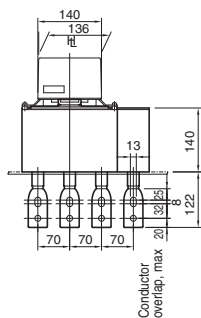
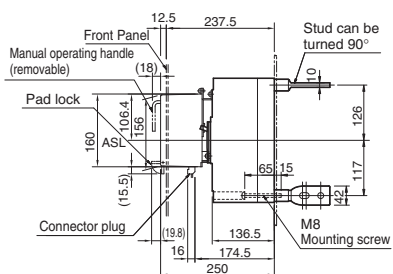


Drilling plan (front view)

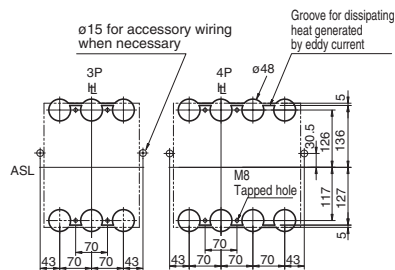


Breaker type	L2
H630-NE, L630-NE	73
H800-NE, L800-NE	74

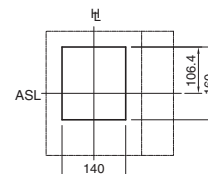
Rear-connected



Drilling plan (front view)



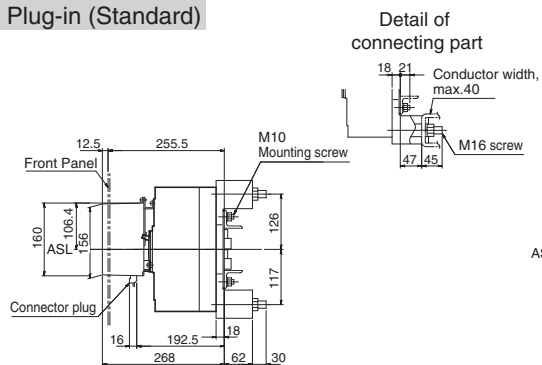
Panel cutout (front view)



Note: Studs are factory installed in horizontal direction both on the line and load sides.

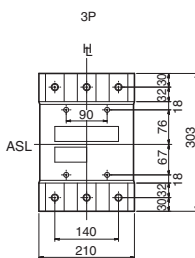
Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Plug-in (Standard)

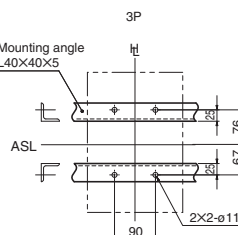


Detail of
connecting part

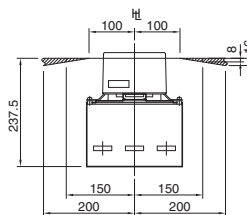
Mounting base
(rear view)



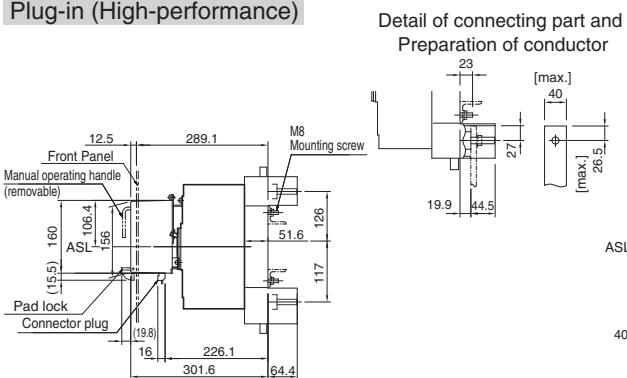
Drilling plan
(front view)



Panel hinge position (hatching area)
(bottom view)

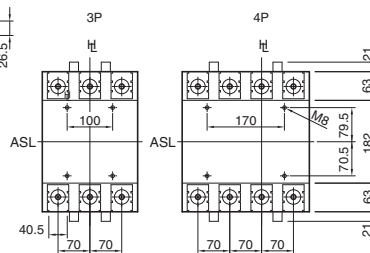


Plug-in (High-performance)

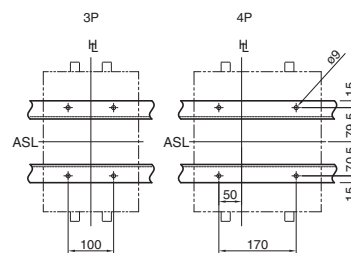


Detail of connecting part and Preparation of conductor

Mounting base (rear view)



Drilling plan (front view)



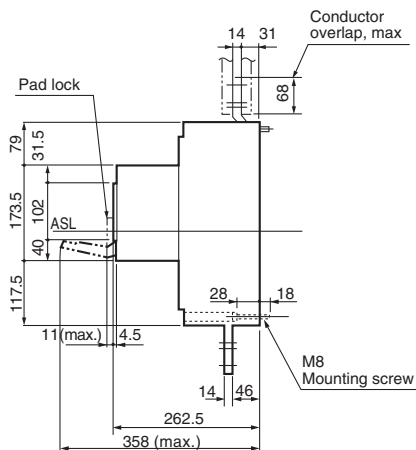
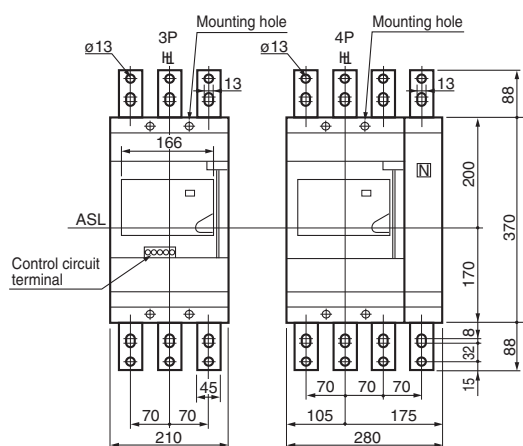
7 Characteristics and Outline Dimensions

Motor operators

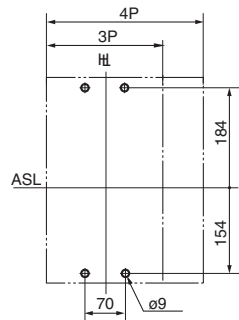
Outline dimensions (mm) (Type XMD9)

TL-1000NE, TL-1200NE

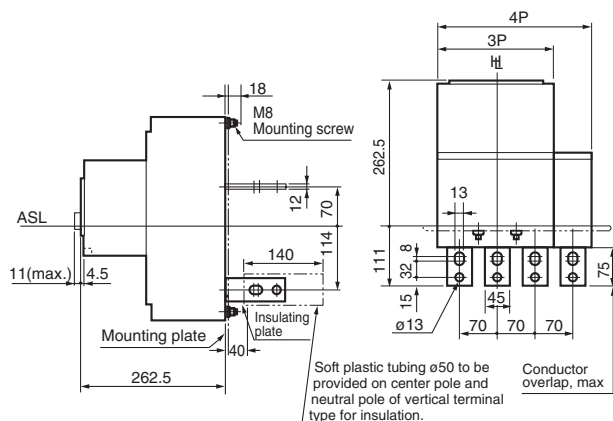
Front-connected



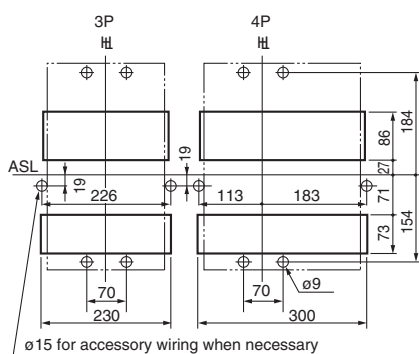
Drilling plan (front view)



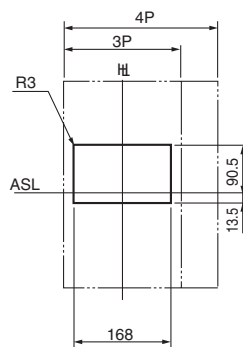
Rear-connected



Drilling plan (front view)



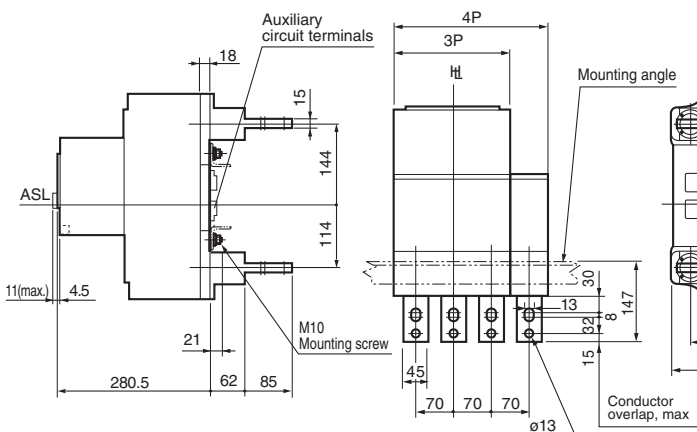
Panel cutout (front view)



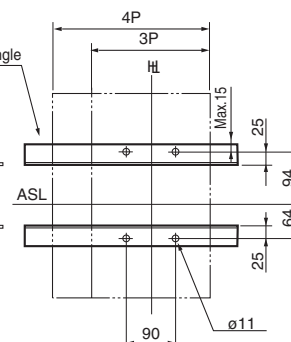
Note: Studs are factory installed in horizontal direction both on the line and load sides.

Plug-in (Standard)

Mounting base (XDM8)



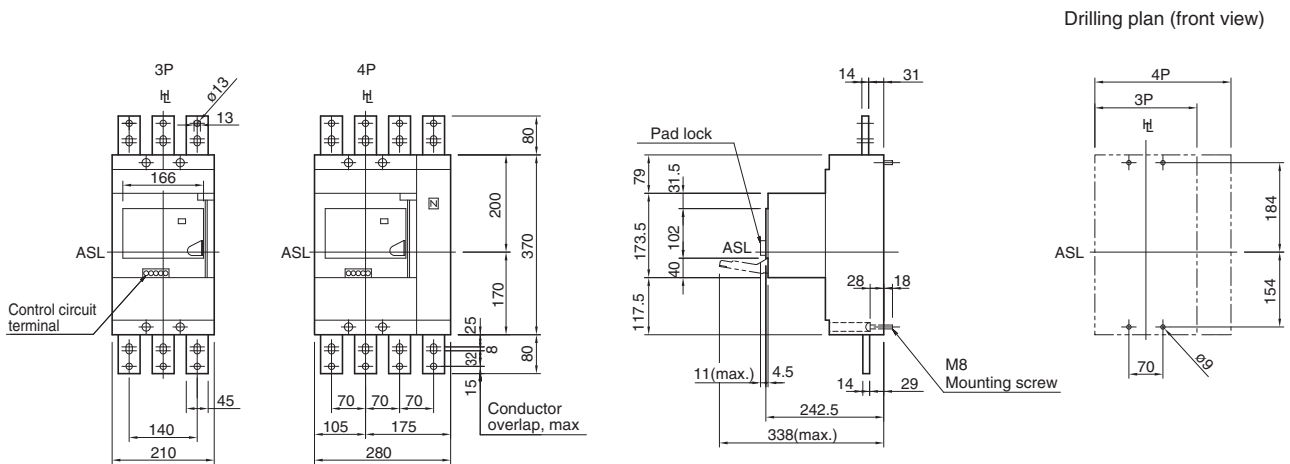
Drilling plan (front view)



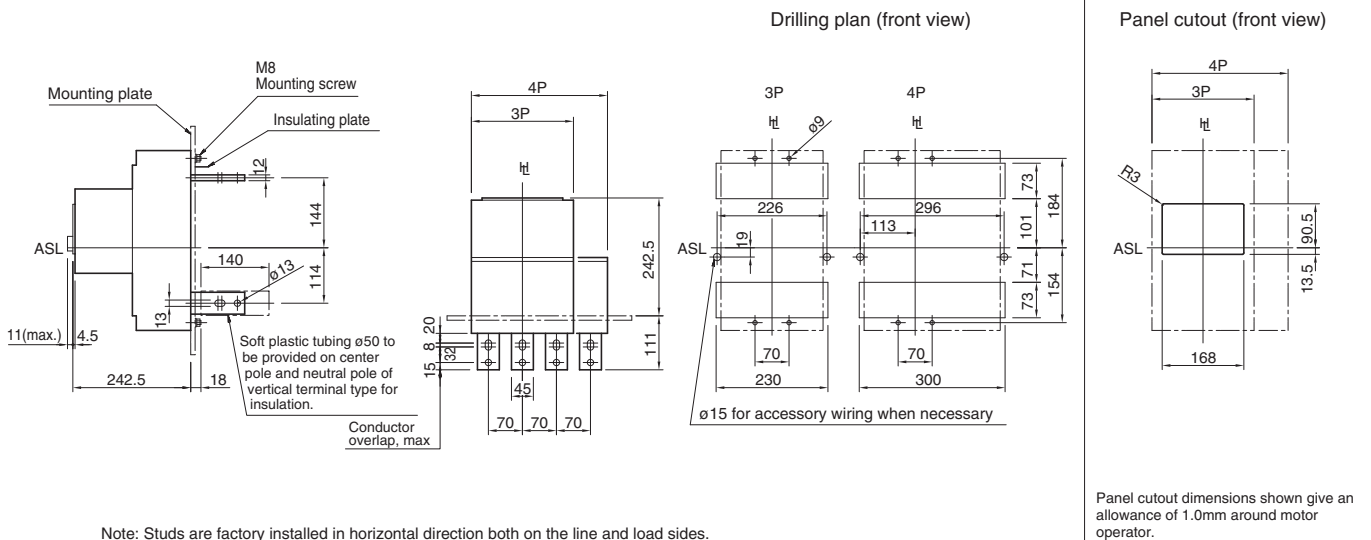
Outline dimensions (mm) (Type T2MCX6)

S1250-NE, S1250-GE, S1250-NN

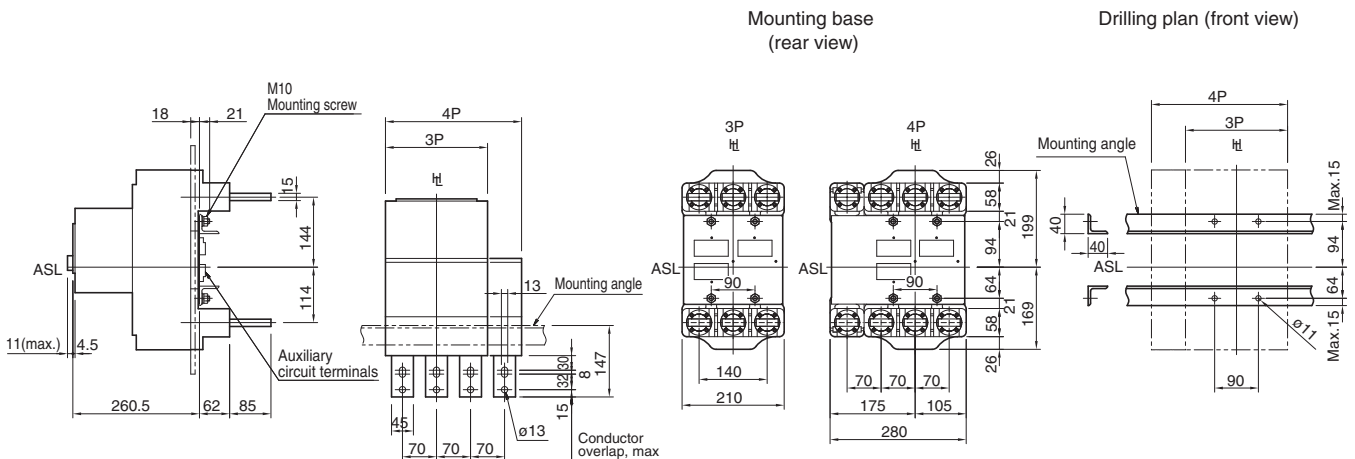
Front-connected



Rear-connected



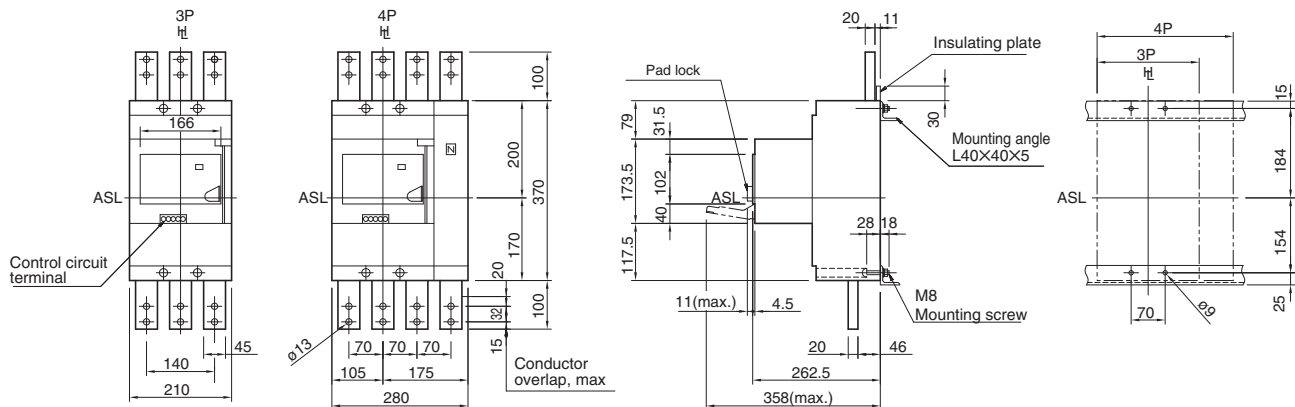
Plug-in (Standard)



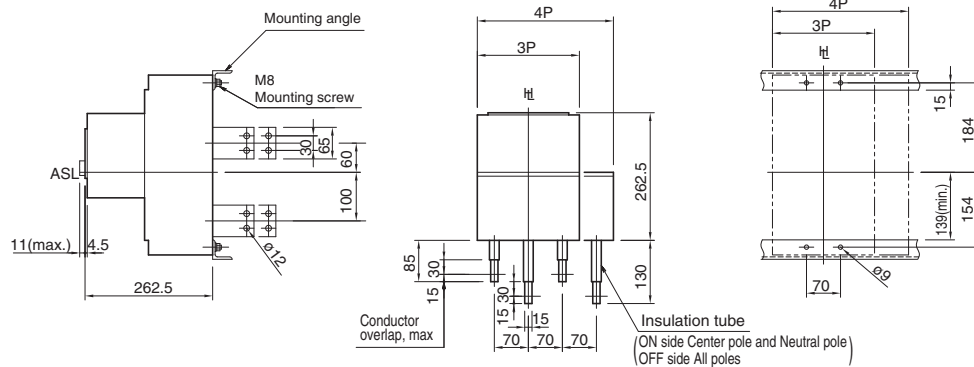
Motor operators

S1600-NE, S1600-NN

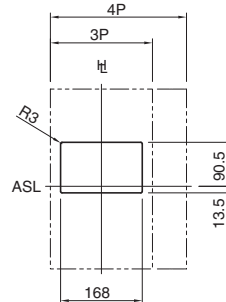
Drilling plan (front view)



Drilling plan (front view)

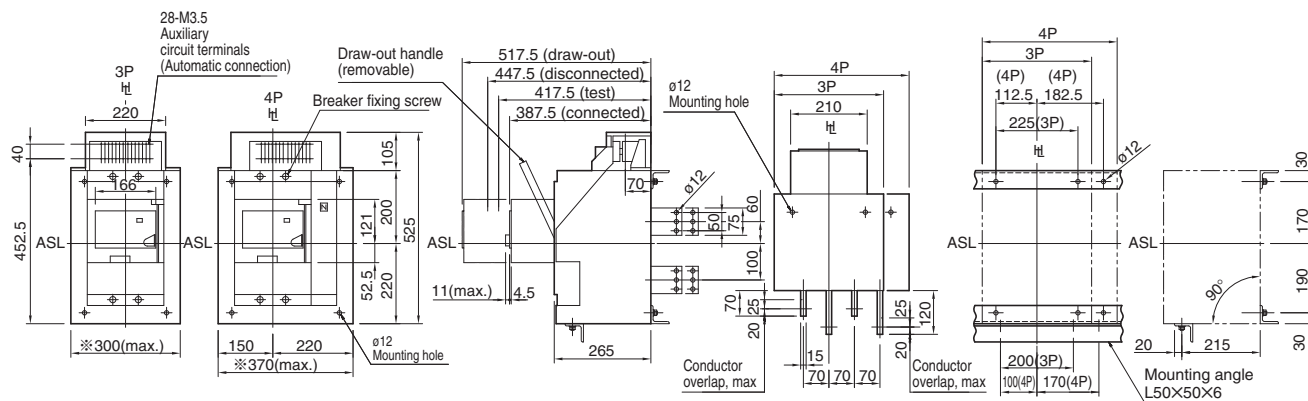


Panel cutout (front view)



Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

Drilling plan (front view)

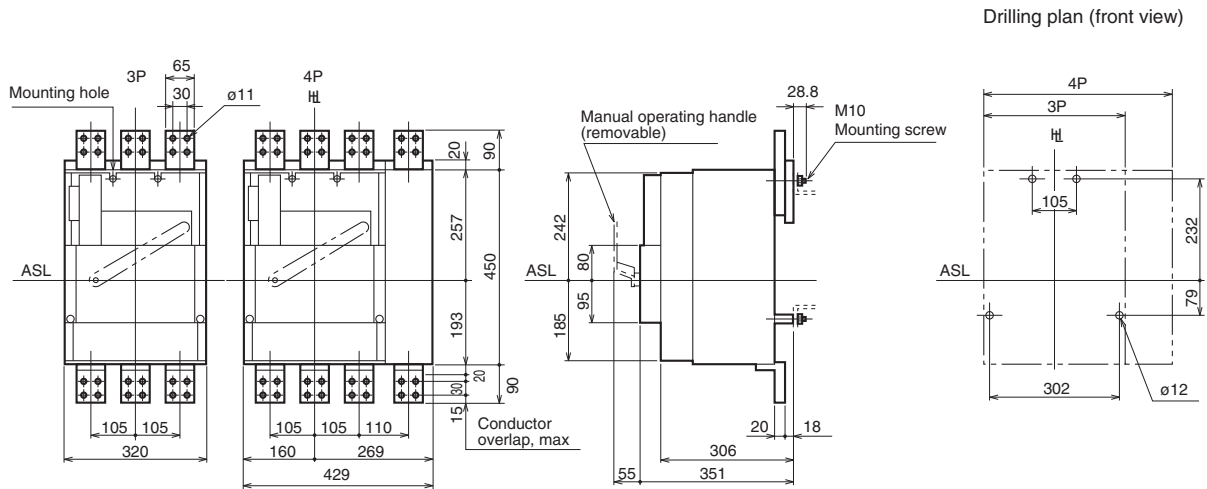


※Contact TERASAKI if manual connection is required.

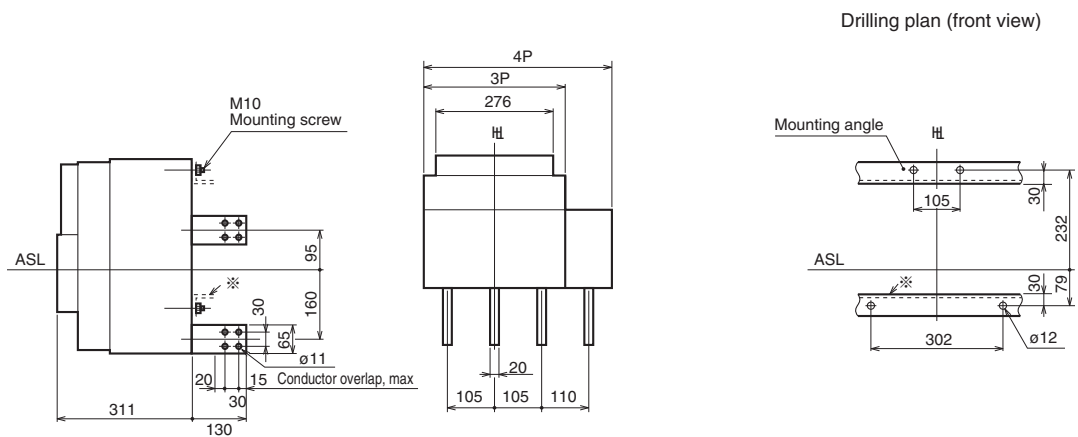
Outline dimensions (mm) (Type XMB10)

XS2000NE, XS2000NN

Front-connected

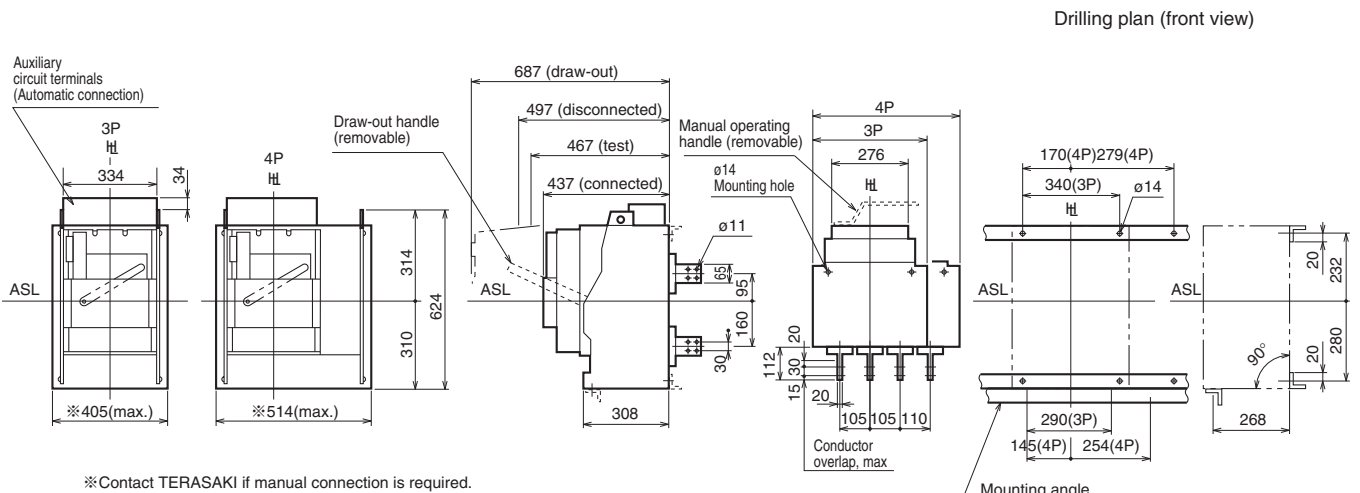


Rear-connected



※ Use non-magnetic angle (SUS 304 etc.)

Draw-out



※ Contact TERASAKI if manual connection is required.

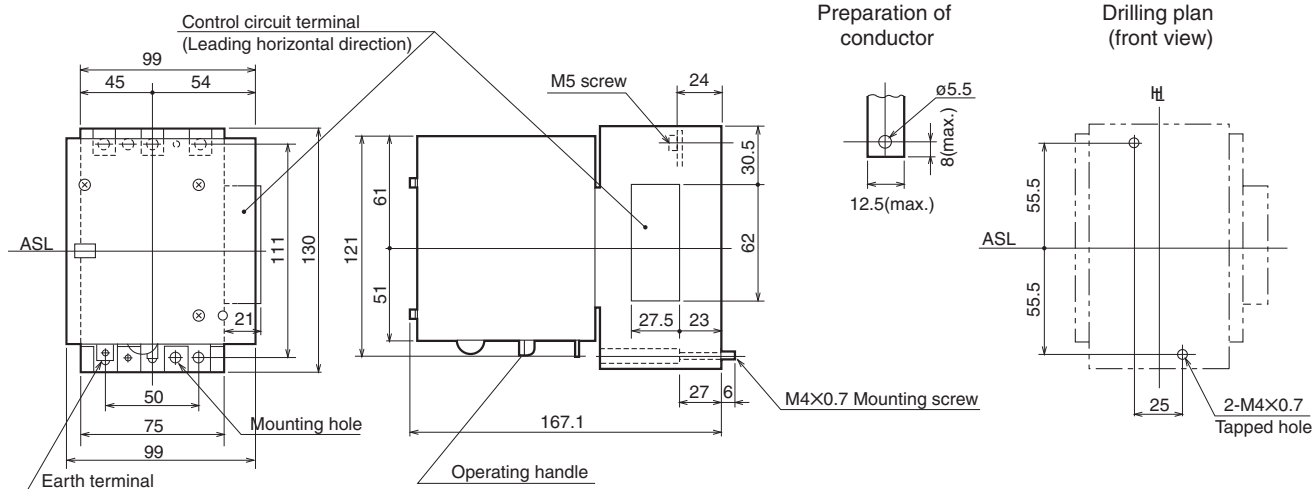
7 Characteristics and Outline Dimensions

Motor operators

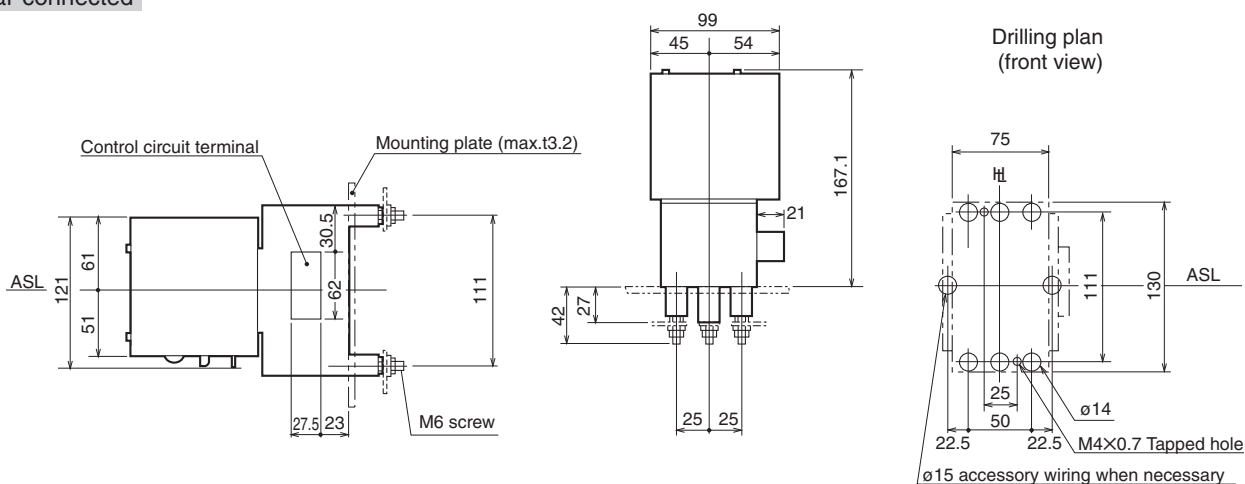
Outline dimensions (mm) (Type XMB1)

E50-SF

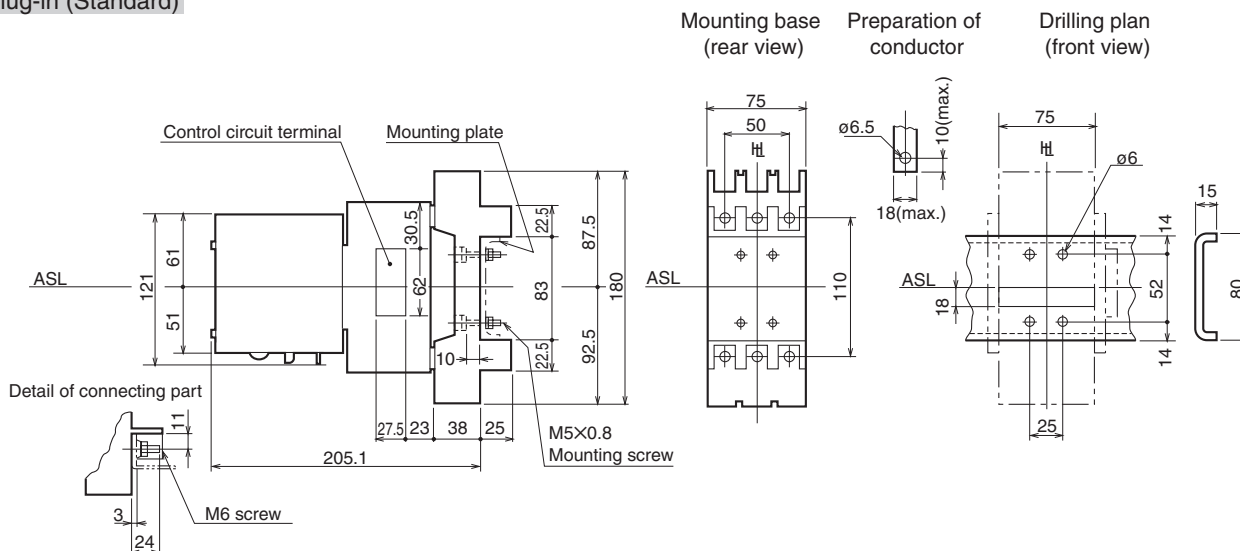
Front-connected



Rear-connected



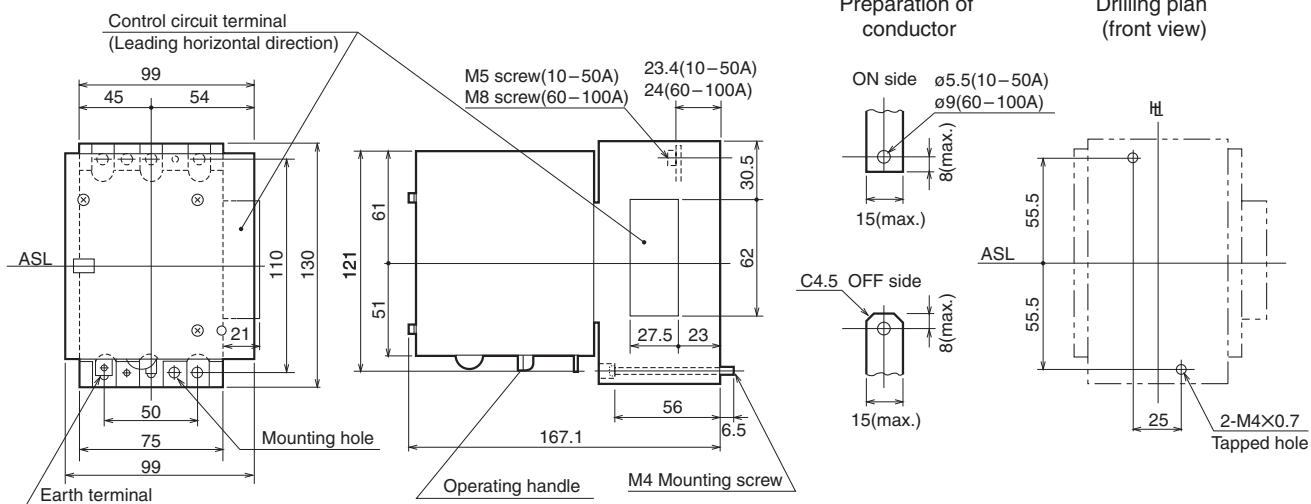
Plug-in (Standard)



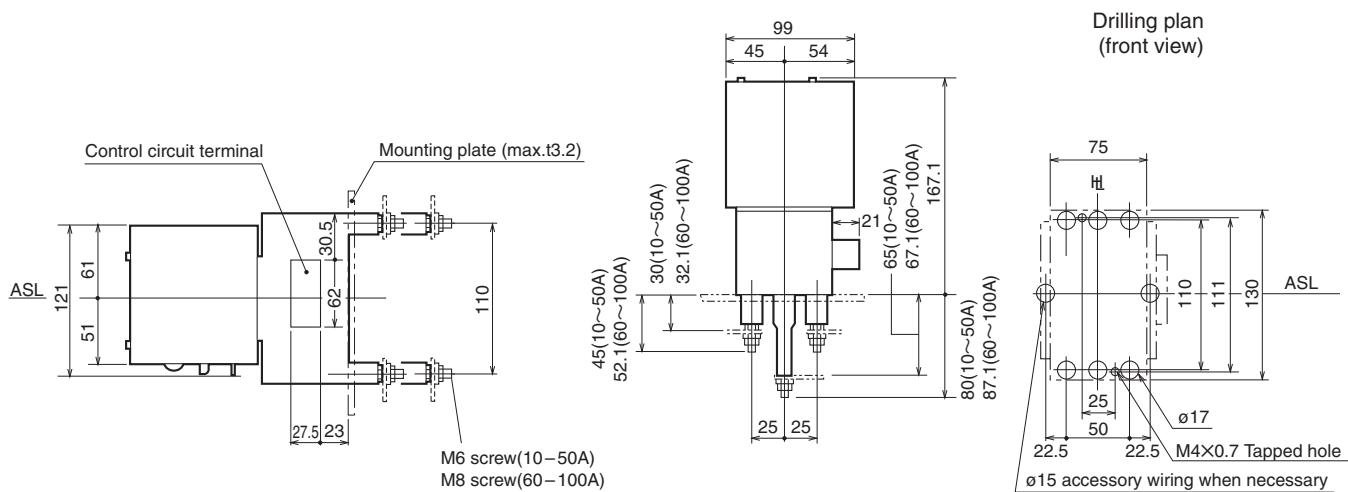
Note: Above outline dimensions are for AC operated Motor operators. For DC Motor, contact us for details.

E100-SF

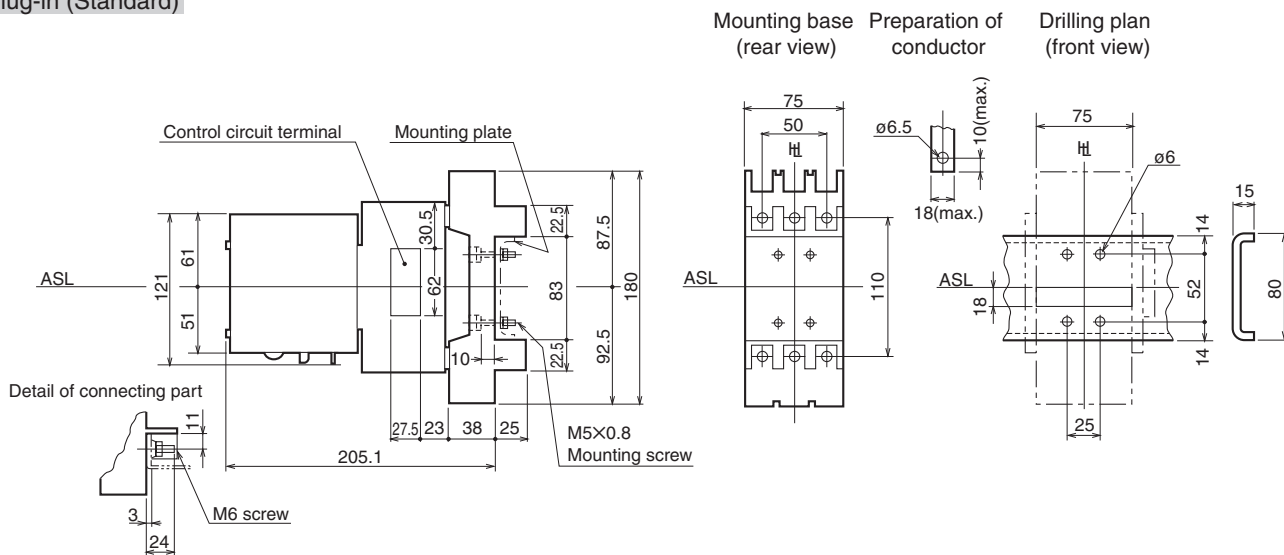
Front-connected



Rear-connected



Plug-in (Standard)



Note: Above outline dimensions are for AC operated Motor operators. For DC Motor, contact us for details.

8

Handling and maintenance

1	Transportation and storage	8-2
2	Environmental operating conditions	8-2
3	Installation and connection	8-2
4	Maintenance and inspection	8-4

8

Handling and maintenance

1 Transportation and storage 2 Environmental operating conditions 3 Installation and connection

1 Transportation and storage

■ Storage Precautions

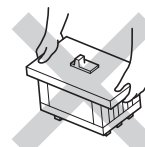
- Avoid corrosive gases:
Do not leave the breakers in an atmosphere of hydrogen sulfide or ammonia gas.
- Avoid humidity:
Do not leave the breakers in high humidity for a long period.
- Avoid direct sunlight:
Do not expose the breakers to direct sunlight for a long period.
- Avoid dust:
Keep the breakers in the ON position and covered against dust during storage.
- Storage temperature: -20 to $+60^{\circ}\text{C}$

■ Transportation Precautions

- Handle and transport with care:
- Hold by the breaker body:



Do not drop the breakers during transportation. Carefully pack the breakers before transportation. Take due measures against moisture and gas absorption of the breakers during long transportation.



Be sure to hold the breaker by its body during handling and transportation. Holding the breaker by a lead wire, terminal cover, stud or flash plate may result in the breaker being dropped, damaged and/or failed.

2 Environmental operating conditions

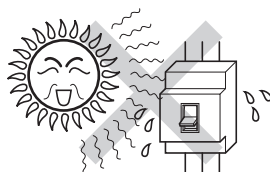
Use the breakers in the following environmental conditions:

Ambient temperature	-5°C to $+45^{\circ}\text{C}$. The average ambient temperature over a period of 24 hours must not exceed 35°C
Humidity	85% or less, no condensation
Vibration/Shock	No unusual vibration and mechanical shock
Altitude	2,000 m max
Atmosphere	No excessive water vapor, oil vapor, dust, salt or corrosive substances. No sudden change in temperature. Non-condensing

3 Installation and connection

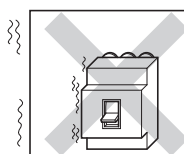
■ Installation Precautions

- Avoid direct sunlight:



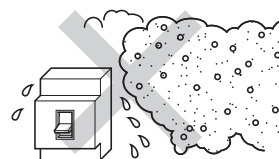
Install the breakers in an area that is not exposed to direct sunlight. Otherwise, the breakers may malfunction due to a temperature rise.

- Avoid vibration and shock:



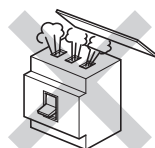
If installing the breakers in an area that is exposed to vibration or shock, use cushions to relieve vibration or shock applied to the breakers.

- Avoid dust and chippings:



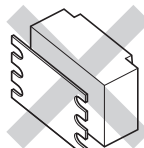
Take measures so that the breakers are not directly exposed to rainwater, oil, dust or chippings. Pay special attention to electrically conductive particles such as iron chippings that can enter the breakers. House the breakers in enclosures during use.

- Do not block the arc gas exhaust ports:



Do not block the arc gas exhaust ports. Doing so may deteriorate the breaking capacity. Ensure due insulation distance (arc space) between current carrying parts and grounded metal members in the vicinity of the exhaust ports. See page 5-20 for instructions regarding insulation distance.

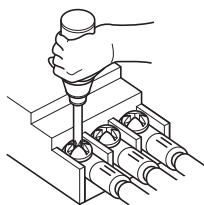
- Do not remove the back cover:



Do not remove the base back cover or thread locking compound.

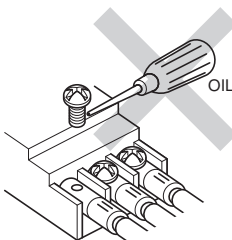
■ Connection Precautions

• Tighten to a proper torque:



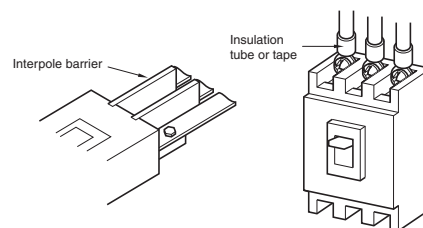
Undertightening terminal screws may result in overheat or malfunction and overtightening in damage to the mold. Tighten the screws to the specified torques. See pages 5-16 to 5-19 for proper tightening torques. Use screwdrivers suited to the size and type of screws.

• Never lubricate threads:



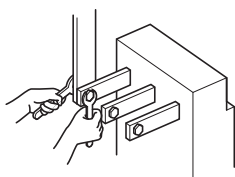
Do not lubricate screw threads. Doing so will decrease the frictional resistance, resulting in looseness and overheat.

• Insulate exposed live parts:



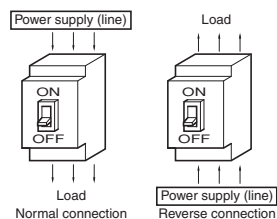
Electrically and positively insulate bare live parts of front-connected breakers using interpole barriers, terminal covers, insulation tube and/or insulation tape.

• Do not deform studs:



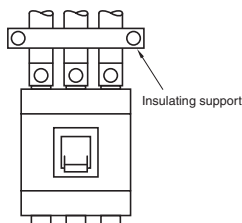
Tighten the conductor connections of rear-connected or plug-in breakers so that the studs do not suffer deformation due to excessive force.

• Normal connection of power supply and load is preferable:



It is preferable in principle that the breaker is in normal connection. If reverse connection is necessary, refer to page 5-22.

• Firmly secure pole conductors in parallel with each other:



Install connecting conductors so that they are in parallel with each other. Firmly secure or tie the conductors by insulating support in case they are acted upon by an electromagnetic force, the strength of which depends on the magnitude of fault current. See the table to the right.

Electromagnetic force acted per meter of conductor

Conventional rated current kA (Power factor)	Electromagnetic force (three-phase short-circuit)	
	N	
	Conductor clearance: 10 cm	Conductor clearance: 20 cm
10 (0.4)	490	245
18 (0.3)	1880	940
25 (0.2)	4430	2215
35 (0.2)	8690	4345
42 (0.2)	12520	6260
50 (0.2)	17740	8870
65 (0.2)	29980	14990
85 (0.2)	51270	25635
100 (0.2)	70960	35480
125 (0.2)	110870	55435

1. Initial inspection

After installing the breakers, inspect them according to the table shown below before energizing them for the first time. Make sure that the breakers are not energized before starting the inspection.

Check item	Criterion
1. Packing material debris, iron chippings, electrical wire debris or other electrically conductive foreign matter	Must have been completely removed.
2. Cracks of or damage to the cover and base	Must not have occurred.
3. Terminal screws and conductor clamping screws	Must have been tightened to the torques specified on pages 5-16 to 5-19.
4. Insulation resistance	Must be 5 megohms or higher when measured with a 500V megger.
5. Rated voltage and circuit voltage	Must be identical or within the permitted range.

■ Caution on dielectric withstand test voltage

Perform the dielectric withstand test according to the table shown below. Make sure that the test voltage does not exceed the upper limits specified in the table.

(Units in voltage)

Main circuit	Auxiliary or control circuit (Note 1)		
Rated insulation voltage	Test voltage (ac rms)	Rated insulation voltage of operating circuit	Test voltage (ac rms)
$U_i \leq 300$	2000	$U_{is} \leq 60$	1000 (Note 2)
$300 < U_i \leq 690$	2500	$60 < U_{is} \leq 600$	$2 U_{is} + 1000$ (1500 min)

Notes: 1. Between terminal group and ground only

2. Isolate DC 24 V motors from the control circuit. Dielectric withstand voltage: AC 500 V or AC 1000V.

2. Periodic Inspection

Periodic inspection is needed to maintain the optimum performance of the breakers and prevent malfunctions. Perform the first inspection one month after the system is put into commission and subsequently, at periodic intervals depending on the operating conditions.

■ Guidelines for inspection intervals

Operating conditions	Installation location	Examples	Guidelines for inspection intervals
Typical	1 Where the ambient air is always clean and dry.	Dustproof and air-conditioned electrical installation rooms	Every 2 or 3 years before 10 years since installation
			Every year after 10 years since installation
			Every 6 months after 15 years since installation
	2 Indoors where dust is low and corrosive gases are not present.	Switchboards or enclosures in electrical installation rooms not dustproof nor air-conditioned	Every year before 10 years since installation Every 6 months after 10 years since installation Every month after 15 years since installation
Harsh	1 Where sulfur dioxide, hydrogen sulfide, chloride and/or high-humidity gases are present and dust is low.	Geothermal power plants sewage treatment plants, steelmaking plants, papermaking plants or pulp making plants	Every 6 months before 5 years since installation Every month after 5 years since installation
	2 Where dust and/or corrosive gases are severe, making it impossible for people to stay in for a long time.	Chemical plants, quarries or mines.	Every month

■ Check items

Make sure that the breakers are not energized before starting the inspection.

Check item	Criterion	Remedy
1. Terminal screws	Must not be loosened.	If loosened, retighten to the torque specified on pages 5-16 to 5-19.
2. Terminals and their vicinities	Must be free of dust and oil.	If not, clean with a cleaner. Wipe with a clean cloth.
3. Cracks of or damage to the cover and base	Must not have occurred.	If cracks or damage is found, replace.
4. Operating mechanism	Must work smoothly.	If not, replace or contact us.
5. Discoloration or overheat signs of terminals and/or base	Must not be present by visual inspection.	If present, replace. (Discoloration of silver coating to a certain degree proves no problem).
6. Insulation resistance	Must be 5 megohms or higher when measured with a 500V megger.	If not, replace.

3. Inspection and action after interruption of fault current

When a breaker trips to interrupt a fault current, check the breaker to determine if it can be reused or must be replaced.

1. If arc gas exhaust ports are kept clean and no anomaly is found, the breaker can be reused.
2. If arc gas exhaust ports are blackened by soot, the breaker may be reused provided that the insulation resistance is 5 MΩ or higher, live parts including terminals are not overheated during energization and no other anomaly is found.
If the insulation resistance is lower than 5 megohms, perform the dielectric withstand test of the breaker. If the test shows that the breaker still has the specified dielectric strength, the breaker may be reused provided that live parts including terminals are not overheated. It is strongly recommended, however, that the breaker be reused for a limited duration of time and be replaced with new one as early as possible.
 - The dielectric withstand test is to be done according to the description on page 8-4.
3. If the handle and arc gas exhaust ports are heavily blackened by soot and molten metal grains are found around the ports, replace the breaker with new one.

4. Operation durability

The operation durability of breakers depends on their frame size. Larger the frame size is, the lower the operation durability is. IEC 60947-2 specifies the operation durability of breakers as shown in the table blow. Breakers are a protection tool and unlike electromagnetic relays, are originally inappropriate for frequent switching operation.

Admissible number of operation cycles of molded case circuit breakers

1	2	3	4	5
Rated current, A (Note 1)	Number of operation cycles per hour (Note 2)	Number of operation cycles		
		Not energized	Energized (Note 3)	Total
$I_n \leq 100$	120	8500	1500	10000
$100 < I_n \leq 315$	120	7000	1000	8000
$315 < I_n \leq 630$	60	4000	1000	5000
$630 < I_n \leq 2500$	20	2500	500	3000
$2500 < I_n$	10	1500	500	2000

Notes: 1. Max value applicable to respective frame size
 2. Min value. This may be increased by agreement. If the value is increased, the test report must state so specifically.
 3. The breakers must be kept closed at each operation cycle for a duration of time sufficient for the current to be established. The duration, however, does not need to be longer than two seconds.

5. Troubleshooting guide

Take an appropriate action according to the following table when a trouble occurs:

■ Troubles in breakers

Category	Symptom	Possible cause	Remedy/Action
Overheat	○Overheat of terminals	○Looseness of terminal screws or conductor clamping screws	○Retighten.
	○Burnout of terminal insulation	○Increase in contact resistance of contactors	○Replace.
		○Contact failure between stud conductor and terminal (due to looseness of screws or foreign matter)	
	○Overheat (exceeding 70°C) of breaker molded case	○Increase in contact resistance of contactors ○Looseness of interior parts ○Increase in current density due to disconnection of braided wire ○High-frequency distortion of load current	○Replace. ○Improve distortion factor.
Continuity failure	○Abnormal voltage on load side	○Excessive wear of contactors ○Foreign matter between contactors ○Damage to current carrying parts (due to excessively frequent switching or corrosive gases) ○Oxidation membrane on contact surface. (oxide film)	○Replace if breaker condition is not recovered after 10 times operation.
Inoperativeness	○Closing not allowed	○Breaker is kept in tripped state, i.e., is not reset.	○Reset.
	○Resetting not allowed	○UVT is not excited.	○Energize.
		○Bimetal is not enough cooled after tripping due to overcurrent.	○Cool down before resetting.
		○Bimetal is deformed e.g. by corrosion. ○Admissible number of operation cycles is exceeded and service life has expired. (SHT or UVT was frequently used for tripping). ○Mechanical failure	○Replace.
Nuisance tripping	○Tripping occurring while rated current is still not reached	○Ambient temperature too high (exceeding 40°C)	○Reduce ambient temperature e.g. through ventilation.
		○Overheat due to looseness of terminal screws	○Retighten.
		○Overheat of interior parts	○Replace.
		○Vibration and/or shock	○Use cushions or the like to dampen vibration and shock.
		○Incompatible frequency (for thermal-magnetic breakers with CT)	○Replace to match frequency.
		○High-frequency distortion of load current	○Reduce load current or change current rating.
		○Conductor size smaller than specified	○Use larger size conductors or change current rating.
		○Electromagnetic-induced noise (for electronic breakers)	○Isolate noise source.
	○Tripping due to starting current	○Excessive surge (for electronic breakers)	○Isolate surge source.
		○Inrush starting current	○Change instantaneous trip pickup current or replace with breaker having larger current rating.
		○Switching operation of star-delta starter	
		○Start of inching (resulting in instantaneous tripping)	
No response to overcurrent	○No tripping at trip pickup current	○Starting current too high (resulting in long-delayed tripping)	○Replace with breaker having larger current rating.
		○Starting time too long (resulting in long-delayed tripping)	
		○Short-circuit in motor	○Repair or replace motor.
		○Erroneous connection of control circuit for SHT or UVT	○Check connection.
		○Failure in coordination with an upstream current-limiting fuse or breaker	○Review coordination.
		○Ambient temperature too low	○Check compensation current.
		○Incompatible frequency	○Match frequency.

■ Troubles in accessories

Category	Symptom	Possible cause	Remedy/Action
Failure of accessories	○Failure of motor operator	○Wiring mistakes in control circuit	○Check and correct wiring.
		○Continuous on/off operations due to wiring mistakes in control circuit	
		○Voltage drop due to insufficient capacity of power supply cable	○Use larger size cable.
		○Insufficient power supply capacity of control circuit	○Increase power supply capacity.
		○Closing/opening/resetting not allowed due to improper stroke adjustment of operation mechanism	○Return to Terasaki for stroke readjustment.
	○Failure of SHT	○Supply-voltage drop due to insufficient current carrying capacity of control circuit	○Increase current carrying capacity.
		○Supply-voltage drop due to insufficient current carrying capacity	○Increase power supply capacity.
		○Coil burnout due to continuous excitations, improper coil ratings, failure or fusion of anti-burnout contacts, etc.	○Return to Terasaki or replace.
	○Failure of UVT	○Remanence	○Repair or replace.
		○Improper stroke adjustment	
	○Failure of auxiliary and/or alarm switches	○Fusion or burnout of microswitch contacts due to their improper ratings	○Return to Terasaki or replace. Load to microswitch contacts will be relieved e.g through auxiliary relays.
		○Improper adjustment of microswitches	○Return to Terasaki for repair.

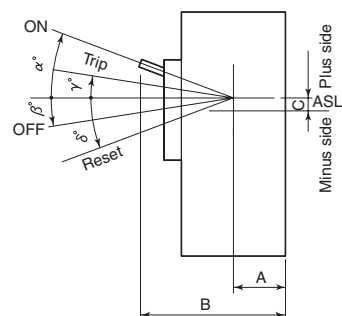
9

Appendix

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2	Mounting positions for trip button	9-3
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1 Handle operation and dimensions

Molded Case Circuit Breakers



Frame (A)	Breaker	Ref. figure	Operation angle				Dimensions							Operation effort			
			ON	OFF	Trip	Reset	A	B	C	D	E	F	G	OFF	ON	N	Radius of rotation
			α°	β°	γ°	δ°								ON	OFF	Reset	
50	E50-SF,E50-CM	1	17	7	6.5	12	32.8	87	+3	6	7	10	15.5	19.6	9.8	39.2	54.2
	S50-SF	2	12.7	10.4	2	13.2	40.6	95	-2	7.4	7.8	13	22.8	44.1	37.2	78.4	54.5
	S50-GF	2	19.2	16.5	4.1	19	26	92	0	6.8	9.3	13	20.4	22.0	28.0	68.0	66.0
100	E100-SF	1	17	7	6.5	12	32.8	87	+3	6	7	10	15.5	19.6	9.8	39.2	54.2
	S100-NF,S100-GF	2	19.2	16.5	4.1	19	26	92	0	6.8	9.3	13	20.4	22.0	28.0	68.0	66.0
	S100-NM,S100-NN																
125	H100-NF,L100-NF	2	19.2	16.5	4.1	19	61	127	0	6.8	9.3	13	20.4	25.0	36.0	76.0	66.0
	S125-SF,S125-SN	2	12.7	10.4	2	13.2	40.6	95	-2	7.4	7.8	13	22.8	44.1	37.2	78.4	54.5
	S125-NF,S125-GF,S125-NN	2	19.2	16.5	4.1	19	26	92	0	6.8	9.3	13	20.4	22.0	28.0	68.0	66.0
225 250	H125-NF,L125-NF	2	19.2	16.5	4.1	19	61	127	0	6.8	9.3	13	20.4	25.0	36.0	76.0	66.0
	S225-NF,S225-GF,S225-NM	2	19.2	16.5	4.1	19	26	92	0	6.8	9.3	13	20.4	25.0	36.0	76.0	66.0
	S225-GE,H225-NF,L225-NF	2	19.2	16.5	4.1	19	61	127	0	6.8	9.3	13	20.4	25.0	36.0	76.0	66.0
400	E250-SF,S250-SF,S250-SN	2	11.8	13.2	3.8	16.2	40.5	95	0	7.4	7.2	13	21.1	53.0	57.0	91.0	54.4
	S250-NF,S250-GF	2	19.2	16.5	4.1	19	26	92	0	6.8	9.3	13	20.4	25.0	36.0	76.0	66.0
	S400-CF,S400-NF	3	19.8	19.3	-3.5	22.5	53.6	145	+2.8	14	9	34	39.5	110	115	125	91.4
630	S400-NE,S400-NN																
	S400-GF,S400-GE																
	S400-PF,S400-PE																
800	H400-NE,L400-NE	3	19.8	19.3	-3.5	22.5	90.6	182	+2.8	14	9	34	39.5	110	115	125	91.4
	S630-CF,S630-NF,S630-RF	3	20	18	2	22	53.7	145	+5	13	11	40	39.5	140	140	170	91.3
	S630-PF,S630-NE,S630-RE																
1000	S630-PE,S630-GN																
	H630-NE,L630-NE	3	20	18	2	22	90.7	145	+5	13	11	40	39.5	140	140	170	91.3
	S800-CF,S800-NF,S800-RF	3	20	18	2	22	53.7	145	+5	13	11	40	39.5	140	140	170	91.3
1200	S800-PF,S800-NE,S800-RE																
	S800-PE,S800-GN																
	H800-NE,L800-NE	3	20	18	2	22	90.7	145	+5	13	11	40	39.5	140	140	170	91.3
1600	TL-1000NE	1	22	4	3	9	93.5	191	-2.8	11	12.5	40	30	157	118	343	98.3
	TL-1200NE	1	22	4	3	9	93.5	191	-2.8	11	12.5	40	30	157	118	343	98.3
	S1250-NE,S1250-GE,S1250-NN	2	22	4	12	9	73.5	171	-2.8	11	12.5	40	30	157	294	343	98.3
2000	S1600-NE,S1600-NN	2	22	4	12	9	93.5	191	-2.8	11	12.5	40	30	157	294	343	98.3
	XS2000NE,XS2000NN	1	18.3	10	7.7	15.3	100	245	+2	20.5	24	60	42.5	382	322	559	146

注①：機種によりφ中心線適用となります。7章の外形図をご参照ください。

2 Mounting positions for trip button

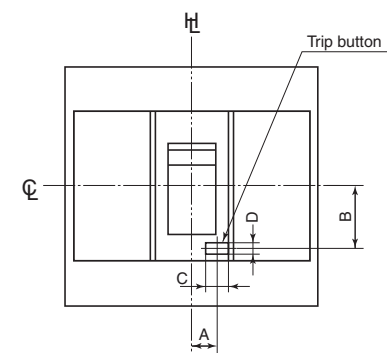


Fig. 1

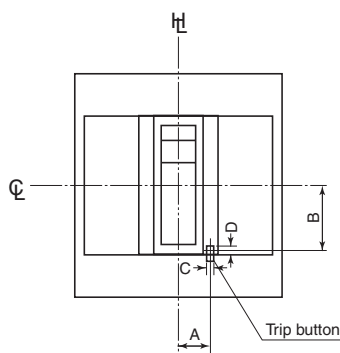


Fig. 2

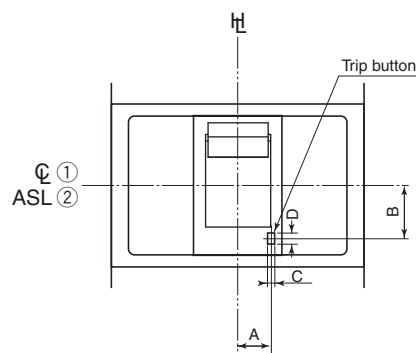


Fig. 3

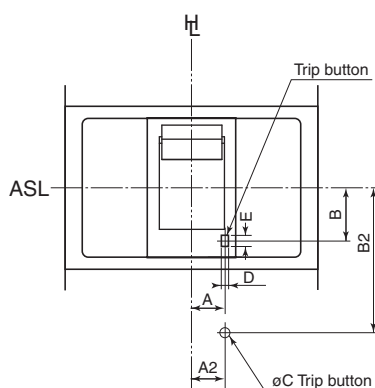


Fig. 4

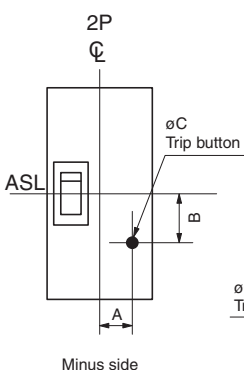


Fig. 5

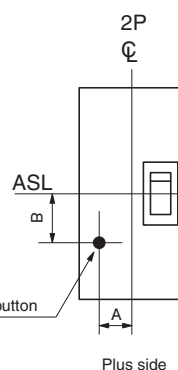


Fig. 6

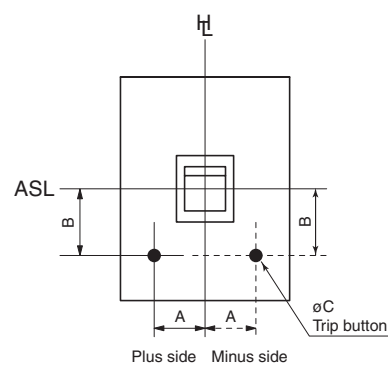


Fig. 7

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

Frame	Breaker	Ref. figure	Trip button						
			A	B	C	D			
50	S50-SF	1	7.6	18.8	6.9	3.4			
	S50-GF	2	13.8	20.4	3.3	4.3			
100	S100-NF,S100-GF	2	13.8	20.4	3.3	4.3			
	S100-NM,S100-NN								
	H100-NF,L100-NF	2	17.2	20.4	3.3	4.3			
125	S125-SF,S125-SN	1	7.6	18.8	6.9	3.4			
	S125-NF,S125-GF,S125-NN	2	13.8	20.4	3.3	4.3			
	H125-NF,L125-NF	2	17.2	20.4	3.3	4.3			
225 250	S225-NF,S225-GF,S225-NM	2	17.2	20.4	3.3	4.3			
	H225-NF,L225-NF,S225-GE	2	17.2	20.4	3.3	4.3			
	E250-SF,S250-SF,S250-SN	1	10.9	18.6	6.4	4.8			
	S250-NF,S250-GF	2	17.2	20.4	3.3	4.3			
400	S400-CF,S400-NF	3①	21.6	37.2	5.3	6.6			
	S400-NE,S400-NN								
	S400-GF,S400-GE								
	S400-PF,S400-PE								
	H400-NE,L400-NE	3①	21.6	37.2	5.3	6.6			
630	S630-CF,S630-NF,S630-RF	3②	21.8	33	5.3	6.6			
	S630-PF,S630-NE,S630-RE								
	S630-PE,S630-GN								
	H630-NE,L630-NE	3②	21.8	33	5.3	6.6			
800	S800-CF,S800-NF,S800-RF	3②	21.8	33	5.3	6.6			
	S800-PF,S800-NE,S800-RE								
	S800-PE,S800-GN								
	H800-NE,L800-NE	3②	21.8	33	5.3	6.6			
Frame	Breaker	Ref. figure	Trip button						
			A	B	A2	B2	C	D	E
1250③	S1250-NE,S1250-GE,S1250-NN	4	30	37.5	31	70.5	6	6	8
1600③	S1600-NE,S1600-NN	4	30	37.5	31	70.5	6	6	8

Notes: 1. 400AF apply C Handle Centre Line.

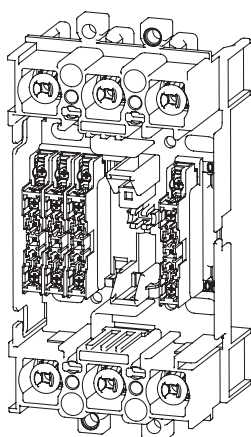
2. 630AF and 800AF apply ASL Arrangement Standard Line.

3. 2 trip buttons are equipped.

Frame	Breaker	Ref. figure	Trip button		
			A	B	C
50	E50-SF, E50-CM	2P	5	-19	28
		3P	7	-31.5	28
100	E100-SF	2P	6	+20	28
		3P	7	-31.5	28
1000	TL-1000NE	7	0	72.5	6
1200	TL-1200NE	7	0	72.5	6
2000	XS2000NE, XS2000NN	7	+39	126	6

9 Appendix

3 Standard arrangement for plug-in type auxiliary circuit terminals (PMB)



Auxiliary circuit terminals are of self-engaging type.

Shown in the table below are standard terminal arrangements as seen from the front of the plug-in base for high-performance type.

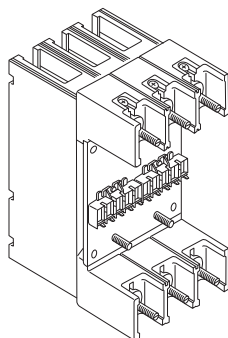
Contact us for non-standard arrangements.

Terminal screw: M3.5

Suitable wire size: 0.5 ~ 0.75 mm²

Breaker	S100-NF S100-GF S125-NF S125-GF	S50-GF S100-NF, S100-GF, S100-NN S125-NF, S125-GF	H100-NF, L100-NF H125-NF, L125-NF S225-NF, S225-GF, H225-NF L225-NF, S225-GE S250-NF, S250-GF	S400-CF, S400-NF, S400-NE S400-GF, S400-GE, S400-NN S400-PF, S400-PE, H400-NE, L400-NE S630-CF, S630-NF, S630-RF, S630-PF S630-NE, S630-RE, S630-PE, S630-GN S800-CF, S800-NF, S800-RF, S800-PF S800-NE, S800-RE, S800-PE, S800-NN H630-NE, L630NE, H800-NE, L800NE
	2P	3P, 4P	3P, 4P	3P, 4P
Number of auxiliary circuit terminals (Max allowable)				
Arrangement 1				
Arrangement 2				
Arrangement 3				
Arrangement 4				

4 Standard arrangement for plug-in type auxiliary circuit terminals (PMC)



Five auxiliary circuit terminals (self-engaging) constitute a terminal block.

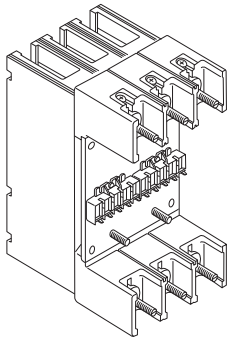
Shown in the table below are standard terminal arrangements as seen from the rear of the plug-in base for standard type.

Contact us for non-standard arrangements.

Breaker	S50-SF, S125-SF	S50-SF, S125-SF S125-SN	E250-SF, S250-SF S250-SN
	2P	3P	3P
Number of auxiliary circuit terminals (Max allowable)			
Arrangement 1	C1 C2	AXc1AXa1AXb1C1C2	AXc1AXa1AXb1C1C2
		ALc1ALa1ALb1C1C2	ALc1ALa1ALb1C1C2
Arrangement 2	D1 D2	AXc1AXa1AXb1D1D2	AXc1AXa1AXb1D1D2
		ALc1ALa1ALb1D1D2	ALc1ALa1ALb1D1D2
Arrangement 3	AXc1AXa1AXb1	AXc1AXa1AXb1ALc1ALa1	AXc1AXa1AXb1ALc1ALa1
	ALc1ALa1ALb1		
Arrangement 4			

9 Appendix

4 Standard arrangement for plug-in type auxiliary circuit terminals (PMC)



Five auxiliary circuit terminals (self-engaging) constitute a terminal block.

Shown in the table below are standard terminal arrangements as seen from the rear of the plug-in base for standard type.

Contact us for non-standard arrangements.

* If the number of auxiliary circuit terminals (self-engaging) is insufficient for E50-SF, E50-CM and E100-SF lead wires are to be used along with the auxiliary circuit terminals. Please state the accessories for which lead wires are used, when ordering.

Breaker	E50-SF E100-SF	E50-SF E50-CM E100-SF	S50-GF, S100-NF S100-GF, S100-NN H100-NF, L100-NF S125-NF, S125-GF S125-NN, H125-NF L125-NF, S225-NF S225-GF, H225-NF L225-NF, S225-GE S250-NF, S250-GF	S400-CF, S400-NF, S400-GF, S400-NN S400-NE, S400-GE, S400-PF, S400-PE H400-NE, L400-NE	
	2P	3P	3P	3P	
Number of auxiliary circuit terminals (Max allowable)					
Arrangement 1	AXc1 AXa1 AXb1	AXc1 AXa1 AXb1 U1 U2	AXc1 AXa1 AXb1 C1 C2	AXc1 AXa1 AXb1 AXc2 AXa2 AXb2  C1 C2	
	ALc1 ALa1 ALb1	ALc1 ALa1 ALb1 U1 U2	ALc1 ALa1 ALb1 C1 C2	AXc1 AXa1 AXb1 ALc1 ALa1 ALb1  C1 C2	
Arrangement 2	 U1 U2	AXc1 AXa1 AXb1 P1 P2 *2	AXc1 AXa1 AXb1 D1 D2	AXc1 AXa1 AXb1 AXc2 AXa2 AXb2  D1 D2	
	 P1 P2	ALc1 AXa1 AXb1 P1 P2 *2	ALc1 ALa1 ALb1 D1 D2	AXc1 AXa1 AXb1 ALc1 ALa1 ALb1  D1 D2	
Arrangement 3	 S1 S2	AXc1 AXa1 AXb1 S1 S2	AXc1 AXa1 AXb1 ALc1 ALa1	AXc1 AXa1 AXb1 PALa PALb  OP1 OP2 C1 C2	
		ALc1 ALa1 ALb1 S1 S2		AXc1 AXa1 AXb1 PALa PALb  OP1 OP2 D1 D2	

	S630-CF, S630-NF, S630-RF, S630-PF S630-NE, S630-RE, S630-PE, S630-GN S800-CF, S800-NF, S800-RF, S800-PF S800-NE, S800-RE, S800-PE, S800-NN H630-NE, L630-NE, H800-NE, L800-NE S1250-NE, S1250-GE, S1250-NN	TL-1000NE, TL-1200NE
	3P	3P, 4P
	AXc1 AXa1 AXb1 ALc1 ALa1 ALb1 OP1 OP2 D1 D2 *1 AXc2 AXa2 AXb2 PALc PALa	AXc1 AXa1 AXb1 ALc1 ALa1 ALb1 OP1 OP2 U1 U2 *1 AXc2 AXa2 AXb2 PALc PALa
	AXc1 AXa1 AXb1 ALc1 ALa1 ALb1 OP1 OP2 C1 C2 *1 AXc2 AXa2 AXb2 PALc PALa	AXc1 AXa1 AXb1 ALc1 ALa1 ALb1 OP1 OP2 P1 P2 *1 *2 AXc2 AXa2 AXb2 PALc PALa
		AXc1 AXa1 AXb1 ALc1 ALa1 ALb1 OP1 OP2 S1 S2 *1 *2 AXc2 AXa2 AXb2 PALc PALa

*1 : If the OCR controller is installed separately, substitute OS1 and OS2 for OP1 and OP2 and connect these terminals to the controller terminals having the same numbers.

*2 : If the UVT controller is installed separately, substitute UC1 and UC2 for P1 and P2 and connect these terminals to the controller terminals having the same numbers.

5 Internal resistance and power consumptions of breakers

Molded Case Circuit Breakers

Frame (A)	Breaker	Rated current (A)	Internal resistance, mΩ (Note 1) • Per pole		Power consumption, W (Note 2) • Per pole	
			Front- connected	Plug-in	Front- connected	Plug-in
50	E50-SF	10	15.9	16.2	1.6	1.6
		15	5.7	6	1.3	1.4
		20	4.7	5	1.9	2
		30	3.5	3.8	3.2	3.4
		40	2	2.3	3.2	3.7
		50	1.6	1.9	4	4.8
	S50-SF	15	8.63	8.75	1.94	1.97
		20	8.63	8.75	3.45	3.5
		30	3.18	3.3	2.86	2.97
		40	2.72	2.84	4.35	4.54
		50	2.69	2.81	6.73	7.03
		15	15	15.3	3.38	3.44
	S50-GF	20	15	15.3	6.0	6.12
		30	8	8.27	7.2	7.44
		40	1.8	2.07	2.88	3.31
		50	1.8	2.07	4.5	5.18
	TB-5S	10	6.56	—	0.656	—
		15	5.05	—	1.14	—
		20	4.16	—	1.66	—
		30	2.44	—	2.2	—
		40	1.73	—	2.77	—
		50	1.5	—	3.75	—
	TB-5P Plug-in for Line Front connection for Load	10	6.76	—	0.676	—
		15	5.25	—	1.18	—
		20	4.36	—	1.74	—
		30	2.64	—	2.38	—
		40	1.93	—	3.09	—
		50	1.70	—	4.25	—
	TB-5D	10	—	6.96	—	0.696
		15	—	5.45	—	1.23
		20	—	4.56	—	1.82
		30	—	2.84	—	2.56
		40	—	2.13	—	3.41
		50	—	1.90	—	4.75
100	E100-SF	10	15.9	16.2	1.6	1.6
		15	5.7	6	1.3	1.4
		20	4.7	5	1.9	2
		30	3.5	3.8	3.2	3.4
		40	2	2.3	3.2	3.7
		50	1.6	1.9	4	4.8
		60	1.2	1.5	4.3	5.4
		75	1.1	1.4	6.2	7.9
		100	1	1.3	10	13
		15	15	15.3	3.38	3.44
	S100-NF, S100-GF	20	15	15.3	6	6.12
		30	8.0	8.27	7.2	7.44
		40	1.8	2.07	2.88	3.31
		50	1.8	2.07	4.5	5.18
		60	1.3	1.57	4.68	5.65
		75	0.8	1.07	4.5	6.02
		100	0.8	1.07	8	10.7
		15	23.5	23.6	5.29	5.31
		20	23.5	23.6	9.4	9.44
		30	11.9	12	10.7	10.8
	H100-NF, L100-NF	40	1.99	2.13	3.18	3.41
		50	1.99	2.13	4.98	5.33
		60	1.62	1.76	5.83	6.34
		75	0.97	1.11	9.7	6.24
		100	0.97	1.11	9.7	11.1
	S100-NM	16	15	—	3.84	—
		24	8	—	4.61	—
		32	1.8	—	1.84	—
		40	1.8	—	2.88	—
		45	1.8	—	3.65	—
		60	1.3	—	4.68	—
		75	0.8	—	4.5	—
		90	0.8	—	6.48	—
		100	0.8	—	8	—
		15	8.63	8.75	1.94	1.97
125	S125-SF	20	8.63	8.75	3.45	3.5
		30	3.18	3.3	2.86	2.97
		40	2.72	2.84	4.35	4.54
		50	2.69	2.81	6.73	7.03
		60	2.14	2.26	7.70	8.14
		75	1.42	1.54	7.99	8.66
		100	0.93	1.05	9.3	10.5
		125	0.84	0.96	13.13	15
		125	0.8	1.07	12.5	16.7
		125	0.97	1.11	15.2	17.3
	S125-NF, S125-GF	125	0.47	0.61	7.34	9.53
		150	0.47	0.61	10.58	13.73
		175	0.26	0.4	7.96	12.25
		200	0.26	0.4	10.4	16
		225	0.26	0.4	13.16	20.25
	S225-GE	125	0.35	0.49	5.47	7.66
		150	0.35	0.49	7.88	11
		175	0.35	0.49	10.7	15
		200	0.35	0.49	14	19.6
		225	0.35	0.49	17.7	24.8
	H225-NF, L225-NF	125	0.57	0.71	8.91	11.09
		150	0.57	0.71	12.83	15.98
		175	0.36	0.5	11.03	15.31
		200	0.36	0.5	14.4	20
		225	0.36	0.5	18.23	25.31
	S225-NM	125	0.47	—	7.34	—
		150	0.47	—	10.58	—
		175	0.26	—	7.96	—
		200	0.26	—	10.4	—
		225	0.26	—	13.16	—

Frame (A)	Breaker	Rated current (A)	Internal resistance, mΩ (Note 1) • Per pole		Power consumption, W (Note 2) • Per pole	
			Front- connected	Plug-in	Front- connected	Plug-in
250	E250-SF, S250-SF	125	0.45	0.59	7.03	9.22
		150	0.45	0.59	10.13	13.28
		175	0.35	0.49	10.72	15.01
		200	0.35	0.49	14.00	19.60
		225	0.26	0.4	13.16	20.25
		250	0.26	0.4	16.25	25.00
		250	0.26	0.4	16.3	25
		125	0.49	0.54	7.66	8.44
		150	0.49	0.54	11.03	12.15
		175	0.24	0.29	7.35	8.88
	S250-NF, S250-GF	200	0.24	0.29	9.6	11.6
		225	0.24	0.29	12.15	14.68
		250	0.24	0.29	15	18.13
		300	0.14	0.19	12.6	17.1
		350	0.14	0.19	17.15	23.28
		400	0.14	0.19	22.4	30.4
	S400-PF	250	0.24	0.29	15	18.13
		300	0.14	0.19	12.6	17.1
		350	0.14	0.19	17.15	23.28
		400	0.14	0.19	22.4	30.4
	S400-NE, S400-GE	125	0.13	0.18	2.03	2.8
		150	0.13	0.18	2.93	4.1
		175	0.13	0.18	3.98	5.5
		200	0.13	0.18	5.2	7.2
		225	0.13	0.18	6.58	9.1
		250	0.13	0.18	8.13	11.3
		300	0.13	0.18	11.7	16.2
		350	0.13	0.18	15.93	22.1
		400	0.13	0.18	20.8	28.8
	H400-NE, L400-NE	250	0.19	0.23	11.9	14.4
		300	0.19	0.23	17.1	20.7
		350	0.19	0.23	23.2	28.2
		400	0.19	0.23	30.4	36.8
630	S630-CF, S630-NF, S630-RF	500	0.11	0.12	27.5	30
		600	0.11	0.12	39.6	43.2
		630	0.11	0.12	43.7	47.6
	S630-NE, S630-RE	250	0.08	0.09	5	5.63
		300	0.08	0.09	7.2	8.1
		350	0.08	0.09	9.8	11
		400	0.08	0.09	12.8	14.4
		500	0.08	0.09	20	22.5
		600	0.08	0.09	28.8	32.4
		630	0.08	0.09	31.8	35.7
	H630-NE, L630-NE, S630-PE	250	0.1	0.12	6.3	7.5
		300	0.1	0.12	9	10.8
		350	0.1	0.12	12.3	14.7
		400	0.1	0.12	16	19.2
		500	0.1	0.12	25	30.0
		600	0.1	0.12	36	43.2
		630	0.1	0.12	39.69	47.6
	S800-CF, S800-NF, S800-RF	700	0.09	0.11	44.1	53.9
		800	0.09	0.11	57.6	70.4
	S800-NE, S800-RE, S800-PE	350	0.08	0.1	9.8	12.3
		400	0.08	0.1	12.8	16
		450	0.08	0.1	16.2	20.3
		500	0.08	0.1	20	25
		600	0.08	0.1	28.8	36
		700	0.08	0.1	39.2	49
		800	0.08	0.1	51.2	64
	H800-NE, L800-NE	350	0.1	0.12	12.3	14.7
		400	0.1	0.12	16	19.2
		450	0.1	0.12	20.3	24.3
		500	0.1	0.12	25	30
		600	0.1	0.12	36	43.2
		700	0.1	0.12	49	58.8
		800	0.1	0.12	64	76.8
1000	TL-1000NE	500	0.045	0.06	11.3	15
		600	0.045	0.06	16.2	21.6
		700	0.045	0.06	22.1	29.4
		800	0.045	0.06	28.8	38.4
		900	0.045	0.06	36.5	48.6
		1000	0.045	0.06	45	60
1200	TL-1200NE	600	0.045	0.06	16.2	21.6
		700	0.045	0.06	22.1	29.4
		800	0.045	0.06	28.8	38.4
		1000	0.045	0.06	45	60
		1200	0.045	0.06	64.8	86.4

MEMO

Handwriting practice area with horizontal dotted lines.



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Safety Notice

Carefully read instruction manual to ensure proper installation, connection, operation, handling and maintenance of the product.

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