



MOLDED-CASE CIRCUIT BREAKERS & EARTH-LEAKAGE CIRCUIT BREAKERS

Changes for the Better

World Super
WS
Series



Mitsubishi Electric Corporation's Fukuyama Works, which produces these products, is certified as meeting the ISO 14001:2004 environmental management system standard.

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This material has been prepared for those who use the products for manufacturing assemblies, for holding electric works, for holding maintenance and for the others acquainted with electric expertise including those who operate the products (final users).

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Caution

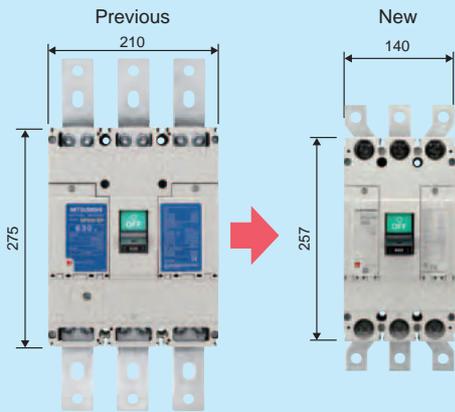
The manual covers the product specifications for selecting an appropriate low-voltage breaker. There is the "HANDLING AND MAINTENANCE" describing how to handle the products. To use the products, separately request the "HANDLING AND MAINTENANCE", for correct operation.

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(A more rational and easier breakers selections)		
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(http://global.MitsubishiElectric.com/lvs)		

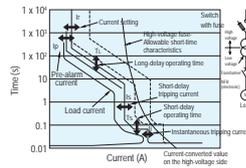
Full range of MITS (30A to 16

High-Performance

Downsizing of 630AF, New Digital ETR



Volume **60% downsized**

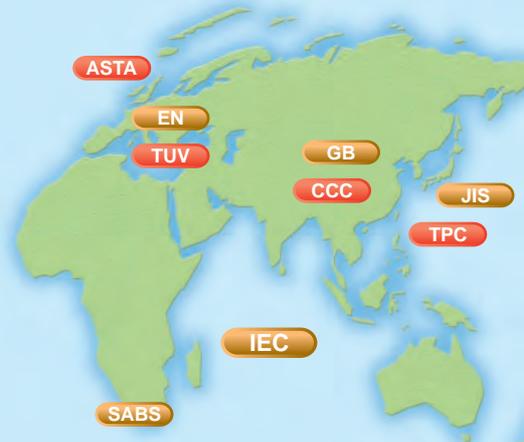


New Digital ETR

Glo

Compliance with w

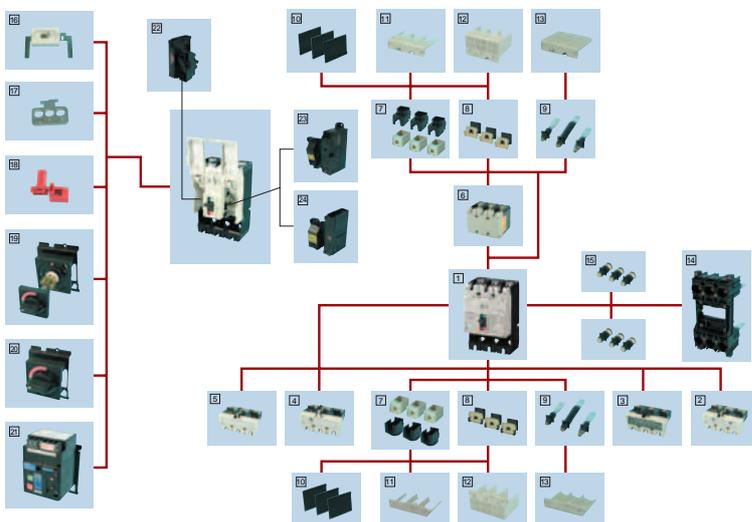
MITSUBISHI World Super Series



Best Solution

Plenty of accessories, Easy installation

250AF (Type "SGW, HGW, RGW, UGW") Product Skelton



World Super
W/S
Series

UBISHI WS Series (00A frame)

Global

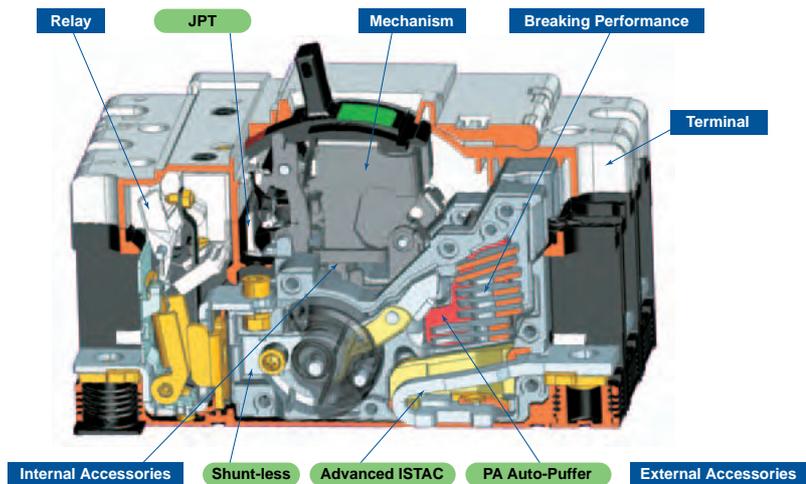
Complies with worldwide standards

Designed for Global Application



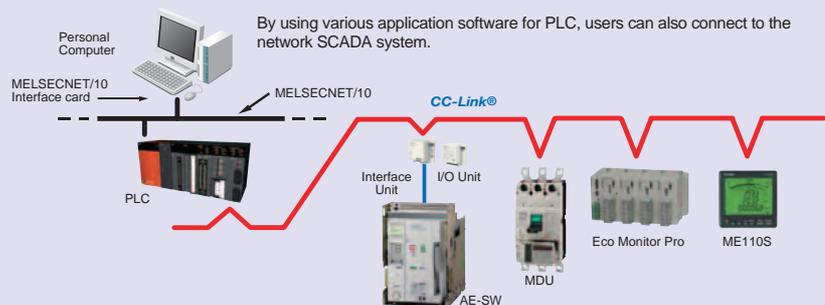
Reliable

High reliability, Best performance



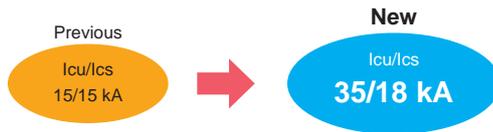
Intelligent

Measuring and communicating

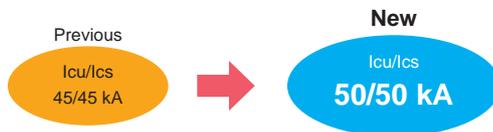


400AF, 630AF & 800AF models easier to use

- 630AF models downsized to the size of 400AF model, contributing to compact panels and simplification of design.
- MCCB-AC/DC common use (excl. Electronic trip type)
3-pole:available up to 400VDC, 4-pole:available up to 500VDC (NF400-SW, NF630-SW)
- Improved breaking capacity at 690VAC (NF400-HEW, NF630-HEW)

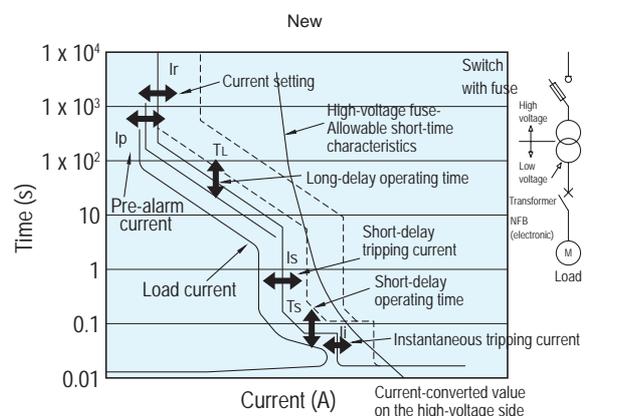
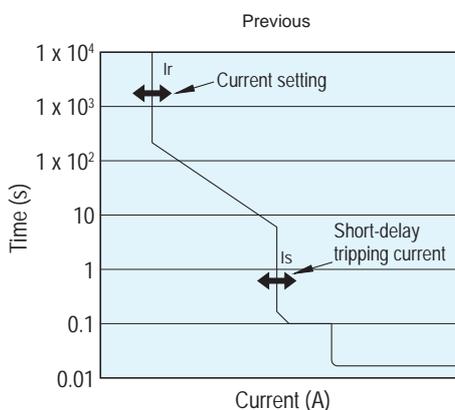
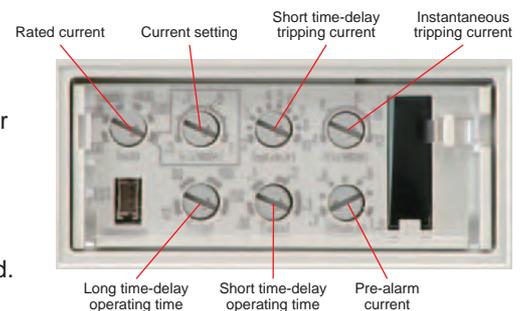


- Improved breaking capacity at 400/415VAC (NF400-SEW, NF630-SW/SEW, NF800-SEW)



NEW Digital ETR (Electronic Trip Relay) for NF1000-SEW, NF1250-SEW & NF1600-SEW

- Installed digital ETR same as Electronic relay for under 800AF
 - Multi adjustment available (Long time delay, short time delay, Instantaneous, pre-alarm characteristics):easier coordination with upper breakers.
 - Pre-alarm equipped as Standard:LED turned on when load current exceeds pre-alarm setting current.
 - Suitable for use as a main breaker:isolation conformity to IEC Standard.



Technology for WS Series

Relay

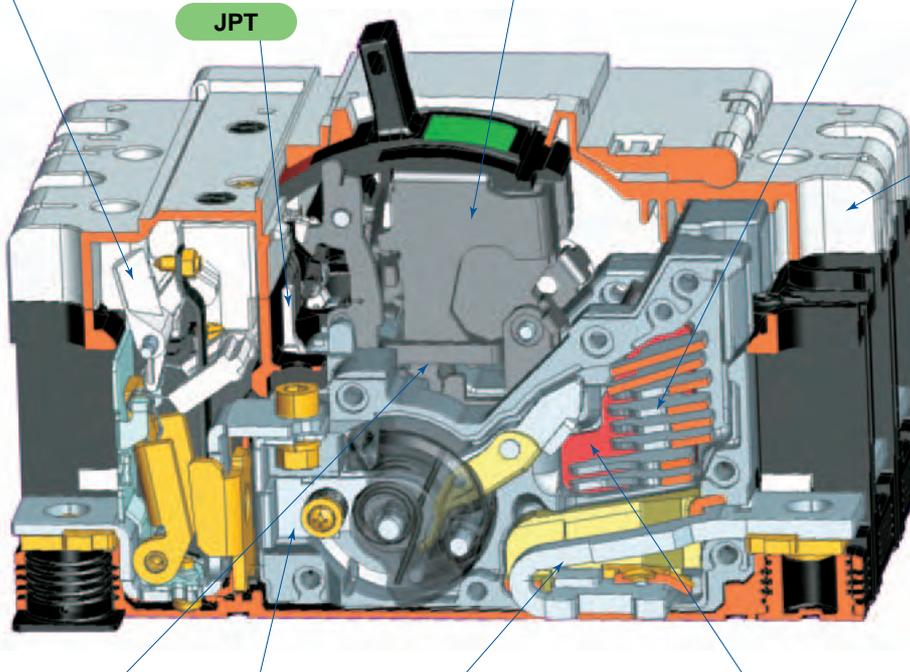
- Relay-unit Thermal type & Electronic type
- AC/DC common use
- Thermal adjustable range is expanded.

Mechanism

- Isolation suitability
- Class II insulation
- Increased operating cycles

Breaking Performance

- Increased Icu
- High voltage
- Ics=100% Icu



Terminal

- IP20 Mold-cover Finger protection
- Front compression terminal
⇔ Box terminal ⇔ Rear ⇔ PM

Internal Accessories

- Cassette-type accessories
- Wide range of Rated Voltage

Shunt-less

Advanced ISTAC

PA Auto-Puffer

External Accessories

- Electric operators
 - ① High speed type
 - ② Isolation suitability
- IP20 PM with Safety Device
- Handle Lock Device
- R/V handle
- IP40 Terminal cover

[PA Auto-Puffer]

Polymer Ablation type Auto-Puffer [Adopted on SGW, HGW, RGW, UGW]

[JPT]

Jet Pressure Trip Mechanism [Adopted on SGW, HGW, RGW, UGW]

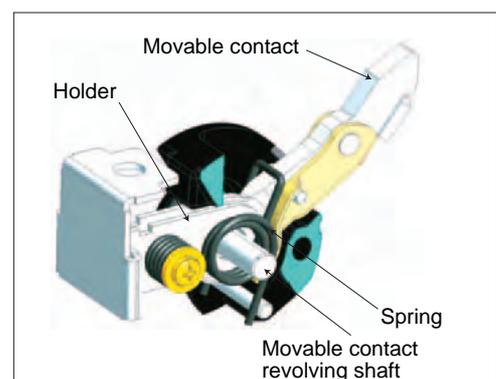
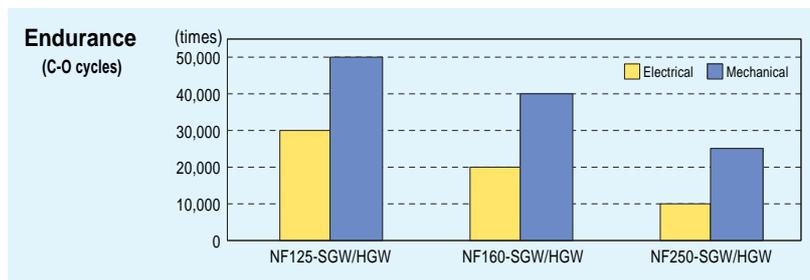
[Advanced ISTAC]

Advanced Impulsive Slot-Type Accelerator [Adopted on SGW, HGW, RGW, UGW]

[Shunt-less]

Shunt-less Current Flow Technology [Adopted on SGW, HGW, RGW, UGW]

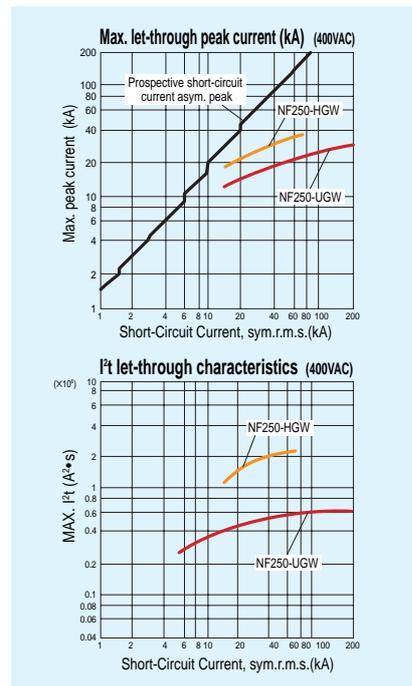
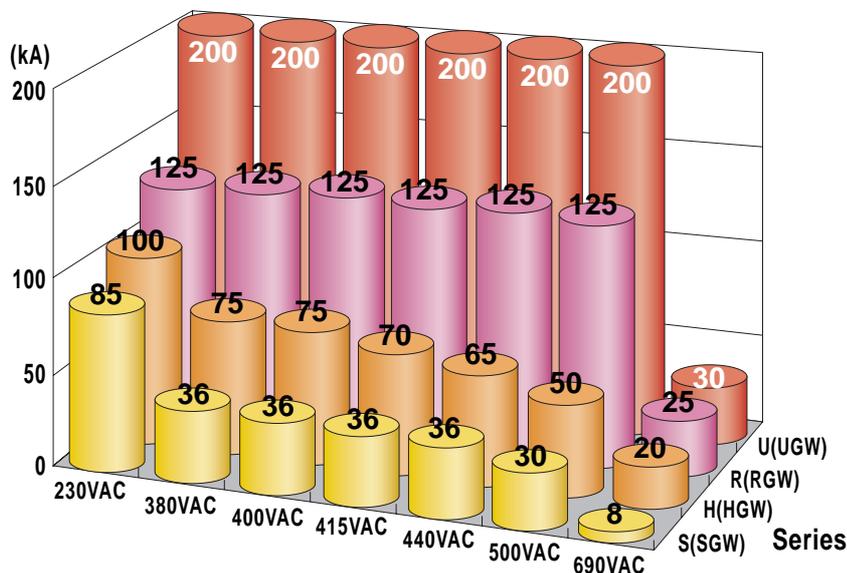
Double plates conductors hold the movable conductor without flexible wires. This shunt-less structure achieves the increased operating cycles.



During revolution the movable contact is constantly in contact with the holder, maintaining current flow.

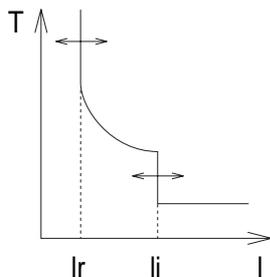
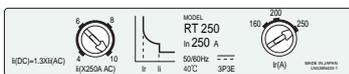
■ Best performance of SGW / HGW / RGW / UGW

Breaking Capacity I_{cu}/I_{cs}



■ 2 types of Relay for SGW / HGW / RGW / UGW

Thermal Adjustable Relay



Rating	In(A)	25	40	63	100	125	160	250
Type	NF250-SGW/HGW						●	●
	NF160-SGW/HGW						●	
	NF125-SGW/HGW	●	●	●	●	●		
		Hi						
		Lo						

Overload Protection (Thermal)		16-25	25-40	40-63	63-100	80-125	125-160	160-250
Tripping threshold I _r (A)								
Neutral protection ^(note 1)	4P3E	No Protection						
	4P4E	1 × I _r						

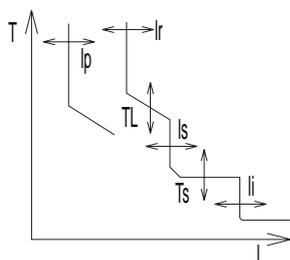
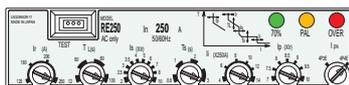
Short-Circuit Protection (Magnetic)		Fixed	Adjustable
Tripping threshold I _{li}		10×I _n (AC), 13×I _n (DC)	4 to 10×I _n (AC), 5.2 to 13×I _n (DC)

Note: (1) The type 4P3E is standard. If the type 4P4E is required, specify the type 4P4E separately and explicitly.



Thermal type unit

Electronic Relay



Rating	In(A) (40C)	32	63	100	125	160	250
Type	NF250-SGW/HGW						●
	NF160-SGW/HGW						●
	NF125-SGW/HGW	●	●	●	●	●	
		Hi					
		Lo					

Overload Protection		16-32	32-63	63-100	75-125	80-160	125-250
Tripping threshold I _r (A)							
LTD	Tripping time TL(s)	12-60-80-100 step adjustable (at 2 × I _r)					
	Neutral protection (Selectable)	0-1 × I _r (Step adjustable)					

Short-Circuit Protection		2-2.5-3-3.5-4-5-6-7-8-10 × I _r step adjustable
STD	Pickup current I _s	
	Tripping time T _s (s)	0.06-0.1-0.2-0.3 step adjustable (at 1.5 × I _s)
INST	Tripping threshold I _{li}	4 to 14 × I _n continuous adjustable

Pre-Alarm (for Indication)		0.7-0.75-0.8-0.85-0.9-0.95-1.0 × I _r step adjustable
PAL	Pickup current I _p	
	Operating time T _p	TL/2

Indicator (LED)		Lights at 0.7 × I _r
70%-LED (green)		
PAL-LED (orange)		Flashes at I _p and Lights at over T _p
Over-LED (red)		Lights at 1.15 × I _r



Electronic type unit

Internal Accessories

Internal accessories become easier to use by adopting a cassette type. Common use of different voltages realizes the major reduction in types.

The UVT for ELCB is also available. Time delay type variations have also been expanded, offering a wide range of applications.

	Previous models	WS Series (New)
SHT voltage	AC (V) (24), (48), 100-120, 200-240, 380-450, (440-550)	24-48, 100-240, 380-550
	DC (V) (12), (24), (36), (48), 100, (110), (125), (220)	12, 24-36, 36-48, 100-125, 220-250
UVT voltage	AC (V) 100-110, (100-120), 200-220, (220-240), (380-415), 400-440, (440-480), (500-550)	24/48, 100-110/120-130, 200-220/230-250, 380-415/440-480, 500-550/690
	DC (V) (24), (48), 100, (110)	24/48, 100/110, 110/125

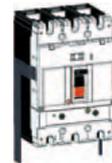
3 Way Lead Wire (Selectable)



Vertical Lead-wire Terminal Block (SHT)



Lead-wire to Line side



Flying Lead-wire

* Cassette-type Accessories

Cassette-type accessories give greater flexibility when upgrading circuits.

Easier ordering and one-touch simple installation become possible. The insulation function increases its safety.

Fits all breaker series

The alarm switch (AL), auxiliary switch (AX), shunt trip (SHT), and undervoltage trip (UVT) all come as cassette-type accessories to suit all breaker series.



1. Push the trip button (PTT)



2. Loosen the front cover screws



3. Open the front cover



4. Install the accessories



5. Close the front cover and tighten the screws.

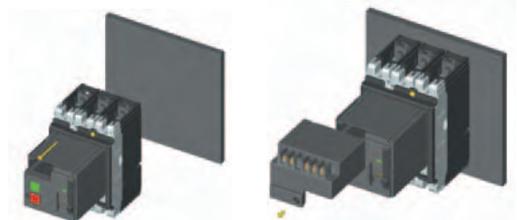
External Accessories

High-speed Motor Device

Motor devices for 125-250AF become easier to use: contributing to the simple installation.

- * Adoption of a spring charge mechanism for high-speed operation (0.05~0.1seconds)
- * Swift and simple installation by tightening only two screws.

Power Supply Module



External Handle

Adoption of a safer and easy to operate handle.

- * Complying with protection degree IP65.
- * Isolation function achieved through combination with the breaker unit.
- * Structured to allow relay adjustments after installation as well.
- * Equipped with cylinder key (option) to prevent false operation.



V-Handle



R-Handle

IP-20PM with Safety Device [Adopted on SGW, HGW]

Specialized for 3-and4-pole use (2 pole incompatible).

- * Complies with the protection degree IP20.
 - * Safety device supplied as an option.
 - * May be connected with up to nine leads (for PLT).
 - * May be modified from front connection to rear connection. (Note: Modification by end users not authorized)
- IP20: Finger protection.



(IP-20PM)

Product design which pursues greater ease of use by wide variations

IP-20 Terminal Connection

With the SGW, HGW, connection safety has been increased.

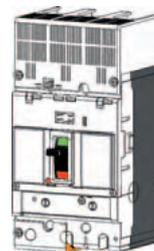
* Standard IP-20 protection degree ensured.



Terminal Cover

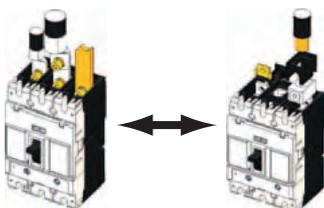
Major improvements have been achieved in front connection terminal safety.

* With terminal covers, IP40 protection degree is ensured.
(Type "SGW, HGW, RGW, UGW")



Variable Connections

Compatible with various connection methods. Solderless terminals are now built inside the breaker contrary to the conventional style where terminals were built outside.



Maximum connecting Cable of 185mm² (SGW/HGW).
(Note: Certain models have externally attached terminals)

IEC Rail Mounting for 32, 63AF

The 32,63AF includes installation hooks to IEC rails, greatly simplifying installation works.

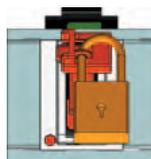


Handle Locks

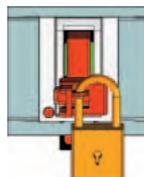
With the WS Series, ON/OFF locking is possible with the padlock.

Up to three padlocks may be attached.

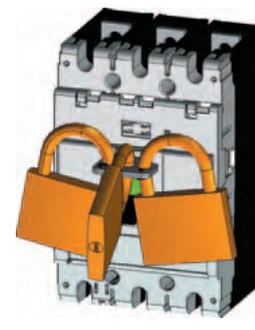
* Customers are requested their own padlocks.



ON Lock



OFF Lock

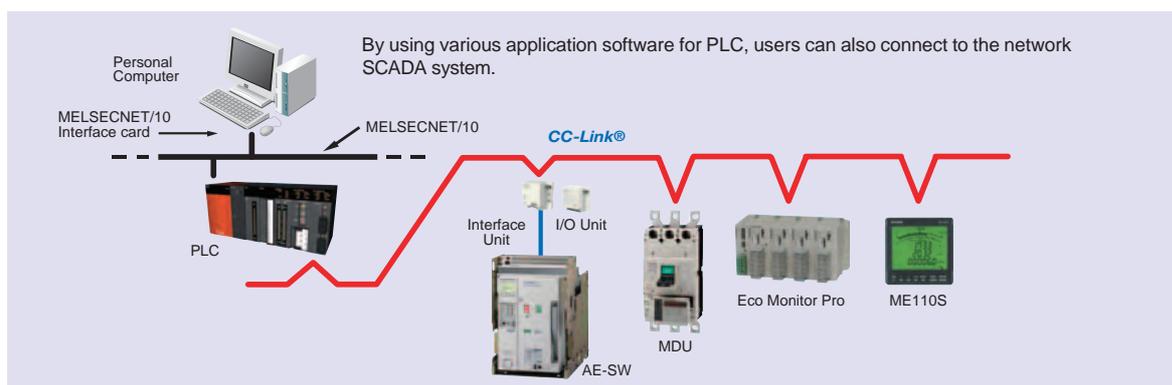


OFF Lock with 3 Padlock
(Type "SGW, HGW, RGW, UGW")

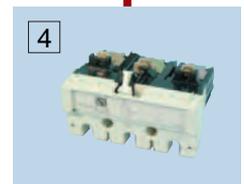
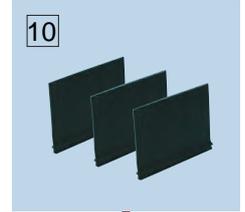
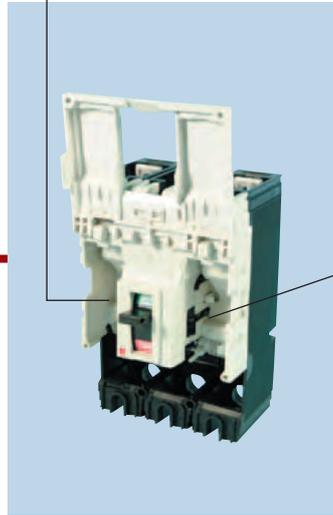
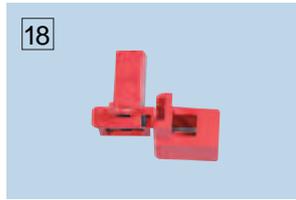
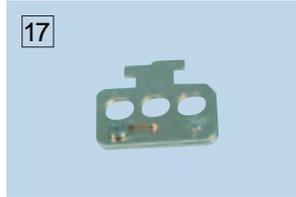
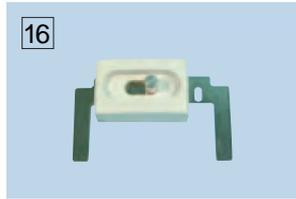
Intelligent

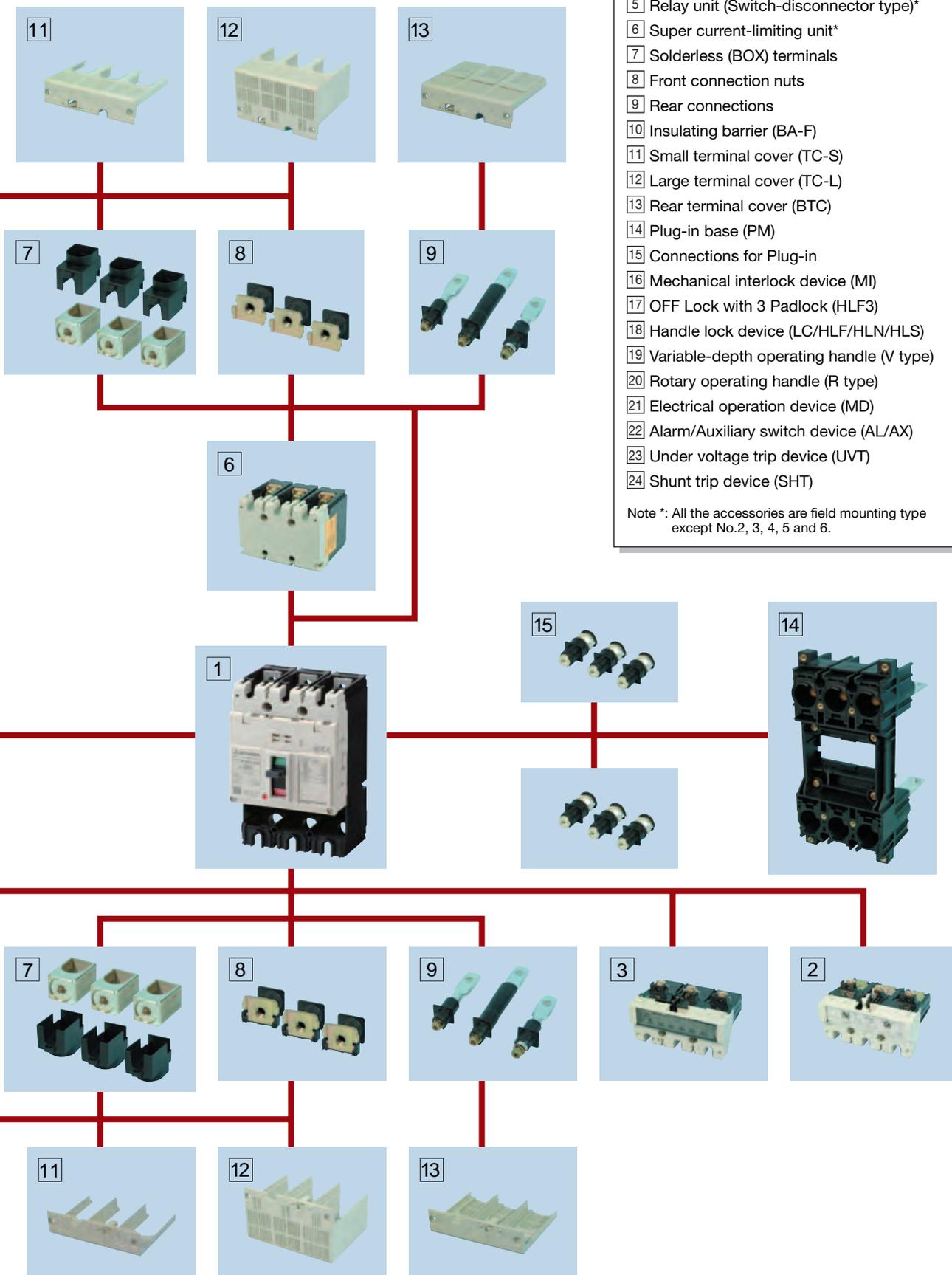
Measuring and communicating

- MDU (Measuring Display Unit) with NF 250-800AF
- Small and white measuring unit
- Measuring data can be transmitted to PC or PLC through **CC-Link**
- AL / AX with **CC-Link** transmission
- Improved accuracy(Electric energy): $\pm 2.5\%$ of rated value $\rightarrow \pm 2.5\%$ of true value



Product Skelton

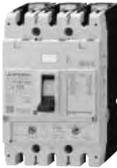
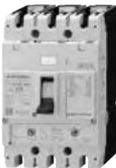




- 1 MCCB
 - 2 Relay unit (Thermal type) (RT)*
 - 3 Relay unit (Electronic type) (RE)*
 - 4 Relay unit (Magnetic only type) (RM)*
 - 5 Relay unit (Switch-disconnector type)*
 - 6 Super current-limiting unit*
 - 7 Solderless (BOX) terminals
 - 8 Front connection nuts
 - 9 Rear connections
 - 10 Insulating barrier (BA-F)
 - 11 Small terminal cover (TC-S)
 - 12 Large terminal cover (TC-L)
 - 13 Rear terminal cover (BTC)
 - 14 Plug-in base (PM)
 - 15 Connections for Plug-in
 - 16 Mechanical interlock device (MI)
 - 17 OFF Lock with 3 Padlock (HLF3)
 - 18 Handle lock device (LC/HLF/HLN/HLS)
 - 19 Variable-depth operating handle (V type)
 - 20 Rotary operating handle (R type)
 - 21 Electrical operation device (MD)
 - 22 Alarm/Auxiliary switch device (AL/AX)
 - 23 Under voltage trip device (UVT)
 - 24 Shunt trip device (SHT)
- Note *: All the accessories are field mounting type except No.2, 3, 4, 5 and 6.

1. Series Configuration and List of Product Models

Series Configuration

Molded-case circuit breakers			
NF-C Economy type	NF-S Standard type	NF-H High-performance type	NF-U Current limiting-type ultra breaker
			

Earth-leakage circuit breakers			
NV-C Economy type	NV-S Standard type	NV-H High-performance type	NV-U Ultra current-limiting type
			

Motor-protection breakers
<p>MB Motor breaker</p> 

Circuit protectors		
CP30-BA	CP-B	CP-S
For equipment		
		

Miniature circuit breakers								
BH	BH-P	BH-S	BH-PS	BH-D6	BH-DN	BV-D	BV-DN	KB-D
NEMA-type for consumer unit				DIN-series for general consumer unit				
								

List of Product Models

Series	Frame A	32 (30)	63	125 (100)	160	250	400	630	800	1000	1250	1600
Molded-case circuit breaker	NF-C Economy type	NF30-CS	NF63-CW	NF125-CW		NF250-CW	NF400-CW	NF630-CW	NF800-CEW			
	NF-S Standard type	NF32-SW	NF63-SW	NF125-SW	NF160-SW	NF250-SW	NF400-SW	NF630-SW	NF800-SDW	NF1000-SEW	NF1250-SEW	NF1600-SEW
				NF125-SGW	NF160-SGW	NF250-SGW	NF400-SGW	NF630-SEW	NF800-SEW		NF1250-SDW	NF1600-SDW
	NF-H High-performance type	NF32-SW	NF63-HW	NF125-HW	NF160-HW	NF250-HW	NF400-HW	NF630-HEW	NF800-HEW			
NF125-HGW				NF160-HGW	NF250-HGW	NF400-REW	NF630-REW	NF800-REW				
NF-U Ultra current-limiting type				NF125-RGW NF125-UGW		NF250-RGW NF250-UGW	NF400-UEW		NF800-UEW		NF1250-UR	
Earth-leakage circuit breaker	NV-C Economy type	NV30-CS	NV63-CW	NV125-CW		NV250-CW	NV400-CW	NV630-CW				
	NV-S Standard type	NV32-SW	NV63-SW	NV125-SW		NV250-SW	NV400-SW	NV630-SW	NV800-SEW			
						NV250-SEW	NV400-SEW	NV630-SEW				
	NV-H High-performance type	NV32-SW	NV63-HW	NV125-HW		NV250-HW	NV400-HEW	NV630-HEW	NV800-HEW			
					NV250-HEW	NV400-REW						
NV-U Ultra current-limiting type				NV125-RW		NV250-RW						
Motor protection breaker	MB Motor breaker	MB30-CS	MB50-CW	MB100-SW		MB225-SW						
		MB30-SW	MB50-SW									

UL listed products	
NF-UL UL489 Listed Molded-case circuit breaker	NV-UL Earth-leakage protector UL489 Listed Molded-case circuit breaker
	
	(Details will be available upon request.)

Series	Frame A	50	100	150	225	250	400	600
UL listed products	UL489 Listed Molded-case circuit breaker	NF50-SWU	NF100-CWU NF100-SWU	NF-SFW	NF225-CWU	NF-SJW NF-HJW	NF-SKW	NF-SLW
	Earth-leakage protector UL489 Listed Molded-case circuit breaker (Details will be available upon request.)	NV50-SWU	NV100-SWU		NV225-CWU	NV-SKW		

Miniature Circuit Breakers

AF	60	100
BH	BH	
	BH-P	
	BH-S	—
	BH-PS	—

DIN Series

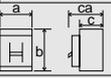
AF	63 and less
MCB	BH-D6
	BH-DN
RCCB	BV-D
RCBO	BV-DN
Isolating switch	KB-D

Circuit Protectors

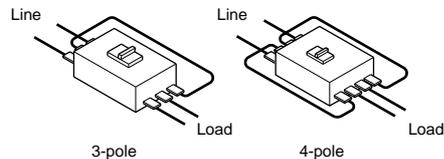
AF	30 and less
CP	CP30-BA
	CP-B
	CP-S

2. Detailed Specifications

Molded-Case Circuit Breakers

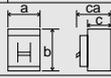
Series	C series		S series		C series		S series		H series		C series			
Frame Size	30		32		63		63		63		125			
Photo														
Type name	NF30-CS		NF32-SW		NF63-CW		NF63-SW		NF63-HW		NF125-CW			
Rated current In (Amp.)	3 5 10 15 20 30		3 4 (5) 6 10 (15) 16 20 25 (30) 32		3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63		3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63		10 (15) 16 20 25 (30) 32 40 50 (60) 63		50 (60) 63 (75) 80 100 125			
Rated ambient temperature (°C)	40		40		40		40		40		40			
Number of poles	2 3		2 3		2 3		2 3 4		2 3 4		2 3			
Rated insulation voltage Ui (V)	500		600		600		600		690		600			
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC (50/60Hz)	690V	-	-	-	-	-	2.5/1	-	-	-		
			525V	-	-	-	-	-	-	-	-	-		
			500V	-	2.5/1	2.5/1	2.5/1	7.5/4	7.5/4	7.5/4	7.5/4	7.5/4		
			440V	-	2.5/1	2.5/1	2.5/1	7.5/4	10/5	10/5	10/5			
			415V	1.5/1.5	2.5/1	2.5/1	2.5/1	7.5/4	10/5	10/5	10/5			
		400V	1.5/1.5	5/2	5/2	5/2	7.5/4	10/5	10/5	10/5				
		380V	1.5/1.5	5/2	5/2	5/2	7.5/4	10/5	10/5	10/5				
		230V	2.5/2 (240V)	7.5/4	7.5/4	7.5/4	15/8	25/13	30/15	30/15				
		DC	250V	2.5/1 *4	-	2.5/1 *4	-	7.5/4 *4	-	7.5/4 *4	-	7.5/4 *1		
		300V	-	-	-	-	-	-	-	-	-			
Suitability for isolation	-		●		●		●		●		●			
Utilization category	A		A		A		A		A		A			
Reverse connection (terminals unmarked)	-		●		●		●		●		●			
Rated impulse withstand voltage Uimp (kV)	4		6		6		6		6		8			
Pollution degree	2		2		2		2		2		3			
Number of operating cycles	without current	440V-In/2	10,000	10,000	10,000	15,000	15,000	15,000	10,000	10,000	10,000	10,000		
		440V-In	6,000 (415V)	6,000	6,000	6,000	8,000	8,000	6,000	6,000	6,000	6,000		
		690V-In/2	-	-	-	-	-	-	-	-	-	-		
		690V-In	-	-	-	-	-	-	-	-	-	-		
Overall dimensions (mm)		a	45	67.5	50	75	50	75	100	50	75	100	60	90
		b	96	130	130	130	130	130	130	130	130	130	130	
		c	52	68	68	68	68	68	68	68	68	68	68	
		ca	67	90	90	90	90	90	90	90	90	90	90	
		Mass of front-face type (kg)	0.25	0.35	0.4	0.55	0.45	0.6	0.45	0.6	0.7	0.45	0.6	0.7
Installation and connections	Fixed	Front	Screw terminal	●	●	●	●	●	●	●	●	●	●	
		Solderless (box) terminal (SL)	-	-	-	-	-	-	-	-	-	-	-	
		Busbar terminal	-	-	-	-	-	-	-	-	-	-	-	
	Plug-in	Rear	(B)	●	●	●	●	●	●	●	●	●	●	
		Rear	(PM)	-	-	-	-	-	-	-	-	-	-	
		Rear/front IP20	(PM-IP)	-	-	-	-	-	-	-	-	-	-	
IEC 35mm rail	Mounting hook (option)	●	●	●	●	●	●	●	●	●	●	●		
Adapter (option)	-	-	-	-	-	-	-	-	-	-	-	-		
Cassette-type accessories (option) *5	Alarm switch	(AL)	●	●	●	●	●	●	●	●	●	●		
	Auxiliary switch	(AX)	●	●	●	●	●	●	●	●	●	●		
	Shunt trip	(SHT)	-	-	-	-	-	-	-	-	-	-		
	Undervoltage trip (UVT)	Non-Synchronous Closing (UVT-N)	-	-	-	-	-	-	-	-	-	-		
		Synchronous Closing (UVT-S)	-	-	-	-	-	-	-	-	-	-		
Accessories' connection (option)	with Lead-wire terminal block	(SLT)	●	●	●	●	●	●	●	●	●	●		
	with Internal terminal type	(INT)	-	-	-	-	-	-	-	-	-	-		
	with Flying leads	-	-	-	-	-	-	-	-	-	-	-		
Built-in accessories (option)	Pre-alarm (contact output) *3	(PAL)	-	-	-	-	-	-	-	-	-	-		
	Overcurrent trip alarm *3	(OAL)	-	-	-	-	-	-	-	-	-	-		
	Cylinder key lock	[Available soon]	-	-	-	-	-	-	-	-	-	-		
External accessories (option)	Enclosure	Dustproof	(S)	●	●	●	●	●	●	●	●	●	●	
		(I)	-	-	-	-	-	-	-	-	-	-		
		Waterproof	(W)	-	-	●	●	-	●	-	●	-	●	
	Electrical operation device	(MD)	-	-	-	-	-	-	-	-	-	-	-	
		(MI)	-	-	-	-	-	-	-	-	-	-	-	
		Mechanical interlock	-	-	-	-	-	-	-	-	-	-	-	
	Handle lock device	Handle lock	(HL)	●	●	●	●	●	●	●	●	●	●	
		(HL-S)	●	●	●	●	●	●	●	●	●	●		
	Lock cover	(LC)	●	●	●	●	●	●	●	●	●	●		
	External operating handle	Door mounting	(V)	-	-	●	●	-	●	-	●	-	●	
		(S)	-	-	●	●	●	●	●	●	●	●		
		Mounted on breaker	(R)	-	-	-	-	-	-	-	-	-		
	Insulating barrier	Between phase	(BA-F)	-	-	●	●	●	●	●	●	●	●	
		To ground	(BA-G)	-	-	●	●	●	●	●	●	●	●	
		Large	(TC-L)	●	●	●	●	●	●	●	●	●	●	
Terminal cover	Small	(TC-S)	●	●	●	●	●	●	●	●	●	●		
	Transparent	(TTC)	●	●	●	●	●	●	●	●	●	●		
	for rear connection	(BTC)	●	●	●	●	●	●	●	●	●	●		
	for plug-in	(PTC)	-	-	-	-	-	-	-	-	-	-		
Marine approval	L/R	●	●	●	●	●	●	●	●	●	●	●		
	G/L	-	-	●	●	●	●	●	●	●	●	●		
	BV	-	-	●	●	●	●	●	●	●	●	●		
	DNV	-	-	●	●	●	●	●	●	●	●	●		
	ABS	●	●	●	●	●	●	●	●	●	●	●		
Automatic tripping device	Hydraulic-magnetic		Hydraulic-magnetic		Hydraulic-magnetic		Hydraulic-magnetic		Hydraulic-magnetic		Thermal-magnetic			
Trip button	-		Equipped		Equipped		Equipped		Equipped		Equipped			

- Notes *1: Use two poles in the case of three-pole or four-pole products. In addition, wiring as shown to the right allows the three poles to be used for up to 400V DC and the four poles to be used for up to 500V DC.
- *2: Use two poles in the case of three-pole or four-pole products. In addition, wiring as shown to the right allows the three poles to be used for up to 500V DC and the four poles to be used for up to 600V DC.
- *3: Both PAL and OAL is not available. Only one specified.
- *4: Specify if for DC use.
- *5: Cassette-type accessories are not suitable for NF30-CS.

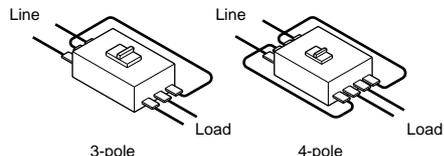


2. Detailed Specifications

Molded-Case Circuit Breakers

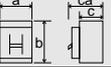
Series		S series						H series									
Frame Size		160						160									
Photo																	
Type name		NF160-SW		NF160-SGW RT		NF160-SGW RE		NF160-HW		NF160-HGW RT		NF160-HGW RE					
Rated current In (Amp.)		125 150 160		125-160		80-160		125 150 160		125-160		80-160					
Rated ambient temperature (°C)		40		40		40		40		40		40					
Number of poles		2 3 4		2 3 4		3 4		2 3 4		2 3 4		3 4					
Rated insulation voltage Ui (V)		690		690		690		690		690		690					
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC (50/60Hz)	690V	-		8/8		8/8		5/3		20/20		20/20			
			525V	-		22/22		22/22		-		35/35		35/35			
			500V	15/8		30/30		30/30		30/8		50/50		50/50			
			440V	25/13		36/36		36/36		50/13		65/65		65/65			
			415V	30/15		36/36		36/36		50/13		70/70		70/70			
			400V	30/15		36/36		36/36		50/13		75/75		75/75			
			380V	30/15		36/36		36/36		50/13		75/75		75/75			
			230V	50/25		85/85		85/85		100/25		100/100		100/100			
			DC	250V		15/8 *1		-		-		40/20 *1		-		-	
300V		-		20/20 *2		-		-		40/40 *2		-					
Suitability for isolation		●		●		●		●		●		●					
Utilization category		A		A		A		A		A		A					
Reverse connection (terminals unmarked)		●		●		●		●		●		●					
Rated impulse withstand voltage Uimp (kV)		6		8		8		6		8		8					
Pollution degree		2		3		3		2		3		3					
Number of operating cycles		without current		12,000		40,000		40,000		12,000		40,000		40,000			
				440V-In/2		4,000		30,000		30,000		4,000		30,000		30,000	
		with current		440V-In		4,000		20,000		20,000		4,000		20,000		20,000	
				690V-In/2		-		1,000		1,000		1,000		1,000		1,000	
				690V-In		-		1,000		1,000		1,000		1,000		1,000	
Overall dimensions (mm)				a		105 140		105 140		105 140		105 140		105 140			
				b		165		165		165		165		165			
				c		68		86		86		68		86		86	
				ca		92		110		110		92		110		110	
				Mass of front-face type (kg)		1.3 1.5 1.9		2.0 2.6		2.0 2.6		1.3 1.5 1.9		2.0 2.6		2.0 2.6	
Installation and connections		Fixed		Front		Screw terminal		●		●		●		●			
				Solderless (box) terminal (SL)		●		●		●		●		●			
				Busbar terminal		-		-		-		-		-			
		Plug-in		Rear		(B)		●		●		●		●			
				Rear		(PM)		●		●		●		●			
				Rear/front IP20		(PM-IP)		●		●		●		●			
IEC 35mm rail		Mounting hook (option)		-		-		-		-		-					
		Adapter (option)		-		-		-		-		-					
Cassette-type accessories (option)		Alarm switch		(AL)		●		●		●		●					
		Auxiliary switch		(AX)		●		●		●		●					
		Shunt trip		(SHT)		●		●		●		●					
		Undervoltage trip (UVT)		Non-Synchronous Closing (UVT-N)		●		●		●		●					
		Synchronous Closing (UVT-S)		-		-		-		-							
Accessories' connection (option)		with Lead-wire terminal block		(SLT)		●		●		●		●					
		with Internal terminal type		(INT)		●		●		●		●					
		with Flying leads		-		-		-		-		-					
Built-in accessories (option)		Pre-alarm (contact output) *3		(PAL)		●		●		●		●					
		Overcurrent trip alarm *3		(OAL)		-		-		-		-					
		Cylinder key lock <small>[Available soon]</small>		-		-		-		-		-					
External accessories (option)		Enclosure		Dustproof		(S)		●		●		●		●			
				(I)		-		-		-		-		-			
				Waterproof		(W)		●		●		●		●			
		Electrical operation device		(MD)		●		●		●		●		●			
				(MI)		●		●		●		●		●			
				(HL)		●		●		●		●		●			
		Handle lock device		Handle lock		(HL-S)		●		●		●		●			
				(LC)		●		●		●		●		●			
		External operating handle		Door mounting		(V)		●		●		●		●			
				(S)		●		●		●		●		●			
				Mounted on breaker		(R)		●		●		●		●			
				(F)		●		●		●		●					
		Insulating barrier		Between phase		(BA-F)		●		●		●		●			
				To ground		(BA-G)		●		●		●		●			
				Large		(TC-L)		●		●		●		●			
Terminal cover		Small		(TC-S)		●		●		●		●					
		Transparent		(TTC)		●		●		●		●					
		for rear connection		(BTC)		●		●		●		●					
		for plug-in		(PTC)		●		●		●		●					
Marine approval		L/R		-		-		-		-		-					
		G/L		-		-		-		-		-					
		BV		-		-		-		-		-					
		DNV		-		-		-		-		-					
		ABS		-		-		-		-		-					
Automatic tripping device		Thermal-magnetic		Thermal-magnetic		Electronic		Thermal-magnetic		Thermal-magnetic		Electronic					
Trip button		Equipped		Equipped		Equipped		Equipped		Equipped		Equipped					

Notes *1: Use two poles in the case of three-pole or four-pole products.
 In addition, wiring as shown to the right allows the three poles to be used for up to 400V DC and the four poles to be used for up to 500V DC.
 *2: Use two poles in the case of three-pole or four-pole products.
 In addition, wiring as shown to the right allows the three poles to be used for up to 500V DC and the four poles to be used for up to 600V DC.
 *3: Both PAL and OAL is not available. Only one specified.

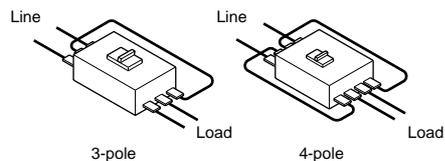


2. Detailed Specifications

Molded-Case Circuit Breakers

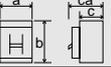
Series			C series	S series			H series	
Frame Size			400	400			400	400
Photo								
Type name			NF400-CW	NF400-SW	NF400-SEW	NF400-HEW	NF400-REW	
Rated current In (Amp.)			250 300 350 400	250 300 350 400	200~400 adjustable	200~400 adjustable	200~400 adjustable	
Rated ambient temperature (°C)			40	40	40	40	40	
Number of poles			2 3	2 3 4	3 4	3 4	3	
Rated insulation voltage Ui (V)			690	690	690	690	690	
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC (50/60Hz)	690V	—	10/10(5/5) *1	10/10(5/5) *1	35/18	—
			500V	15/8	30/30(25/25) *1	30/30(25/25) *1	50/50	70/35
			440V	25/13	42/42(36/36) *1	42/42(36/36) *1	65/65	125/63
			415V	36/18	45/45(36/36) *1	50/50(36/36) *1	70/70	125/63
			400V	36/18	45/45(36/36) *1	50/50(36/36) *1	70/70	125/63
			380V	40/20	50/50(42/42) *1	50/50(42/42) *1	70/70	125/63
			230V	50/25	85/85(65/65) *1	85/85(65/65) *1	100/100	150/75
DC			250V	20/10 *4	40/40 *4	—	—	
Suitability for isolation \rightarrow *			●	●	●	●	●	
Utilization category			A	A	B	B	B	
Rated short-time withstand current Icw (kA)			—	—	5	5	5	
Reverse connection (terminals unmarked)			●	●	●	●	●	
Rated impulse withstand voltage Uimp (kV)			8	8	8	8	8	
Pollution degree			3	3	3	3	3	
Overall dimensions (mm)				a: 140, b: 257, c: 103, ca: 134	a: 140, b: 257, c: 103, ca: 155	a: 185, b: 257, c: 103, ca: 155	a: 140, b: 257, c: 103, ca: 155	a: 140, b: 257, c: 103, ca: 155
Mass of front-face type (kg)			4.7 5.5	4.9 5.7 7.5	6.5 8.3	6.5 8.3	6.5	
Installation and connections	Fixed	Front	Screw terminal	●	●	●	●	●
		Solderless (box) terminal (SL)	●	●	●	●	●	
		Busbar terminal	●	●	●	●	●	
		Rear	(B)	●	●	●	●	●
Plug-in	Rear	(PM)	●	●	●	●	●	
	Rear/front IP20	(PM-IP)	—	—	—	—	—	
Cassette-type accessories (option)	Alarm switch	(AL)	●	●	●	●	●	
	Auxiliary switch	(AX)	●	●	●	●	●	
	Shunt trip	(SHT)	●	●	●	●	●	
	Undervoltage trip (UVT)	Non-Synchronous Closing (UVT-N) Synchronous Closing (UVT-S)	●	●	●	●	●	
Accessory's connection (option)	with Lead-wire terminal block	(SLT)	●	●	●	●	●	
	with Internal terminal type	(INT)	—	—	—	—	—	
	with Flying leads	—	—	—	—	—		
Built-in accessories (option)	Pre-alarm (contact output) *3	(PAL)	—	—	● *2	● *2	● *2	
	Overcurrent trip alarm *3	(OAL)	—	—	—	—	—	
	Trip indicator	(TI)	—	—	●	●	●	
External accessories (option)	Enclosure	Dustproof	(S)	—	—	—	—	—
		(I)	●	●	●	●	●	
		Waterproof	(W)	●	●	●	●	●
	Electrical operation device	Motor-operated type	(MD)	●	●	●	●	●
		Spring-charge type	(MDS)	●	●	●	●	●
	Mechanical interlock	(MI)	●	●	●	●	●	
	Handle lock device	Handle lock	(HL)	●	●	●	●	●
		(HL-S)	●	●	●	●	●	
	Lock cover	(LC)	—	—	—	—	—	
	External operating handle	Door mounting	(V)	●	●	●	●	●
		Mounted on breaker	(S)	●	●	●	●	●
		(R)	●	●	●	●	●	
	Insulating barrier	Between phase	(BA-F)	●	●	●	●	●
		To ground	(BA-G)	●	●	●	●	●
		Large	(TC-L)	●	●	●	●	●
Terminal cover	Small	(TC-S)	—	—	—	—	—	
	Transparent	(TTC)	●	●	●	●	●	
	for rear connection	(BTC)	●	●	●	●	●	
	for plug-in	(PTC)	●	●	●	●	●	
Marine approval	L/R	—	●	—	●	—	●	
	G/L	—	●	—	●	—	●	
	BV	—	●	—	●	—	●	
	DNV	—	—	—	—	—	—	
	ABS	—	—	—	—	—	—	
Automatic tripping device			Thermal-magnetic	Thermal-magnetic	Electronic	Electronic	Electronic	
Trip button			Equipped	Equipped	Equipped	Equipped	Equipped	

Notes *1: In case of solderless terminal, interrupting capacity reduces: (/).
 *2: Solid state relay output is option . Please specify if other output is necessary. (Standard type is thus SLT equipped.)
 *3: Both PAL and OAL is not available. Only one specified.
 *4: Use two poles in the case of three-pole or four-pole products.
 In addition, wiring as shown to the right allows the three poles to be used for up to 400V DC and the four poles to be used for up to 500V DC.



2. Detailed Specifications

Molded-Case Circuit Breakers

Series	C series		S series		H series			
Frame Size	800		800		800			
Photo								
Type name	NF800-CEW	NF800-SDW	NF800-SEW	NF800-HEW	NF800-REW			
Rated current In (Amp.)	400-800 adjustable	(700) 800	400-800 adjustable	400-800 adjustable	400-800 adjustable			
Rated ambient temperature (°C)	40	40	40	40	40			
Number of poles	3	2	3 4	3 4	3			
Rated insulation voltage Ui (V)	690	-	690	690	690			
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC (50/60Hz)	690V	-	10/10	15/15	-	
			500V	18/9	-	30/30	50/50	70/35
			440V	36/18	-	42/42	65/65	125/63
			415V	36/18	-	50/50	70/70	125/63
			400V	36/18	-	50/50	70/70	125/63
			380V	40/20	-	50/50	70/70	125/63
			230V	50/25	-	85/85	100/100	150/75
		DC	250V	-	40/40 *4	-	-	
Suitability for isolation \rightarrow *	●	●	●	●	●			
Utilization category	B	A	B	B	B			
Rated short-time withstand current low (kA)	9.6	-	9.6	9.6	9.6			
Reverse connection (terminals unmarked)	●	●	●	●	●			
Rated impulse withstand voltage Uimp (kV)	8	8	8	8	8			
Pollution degree	3	3	3	3	3			
Overall dimensions (mm)		a	210	210	210 280	210 280	210	
		b	275	275	275	275	275	
		c	103	103	103	103	103	
		ca	155	155	155	155	155	
		ca'	155	155	155	155	155	
Mass of front-face type (kg)	10.9	9	10.9 14.2	10.9 14.2	10.9			
Installation and connections	Fixed	Front	Screw terminal	●	●	●	●	●
			Solderless (box) terminal (SL)	●	●	●	●	●
			Busbar terminal	●	●	●	●	●
			Rear (B)	●	●	●	●	●
Plug-in	Rear	(PM)	●	●	●	●	●	
		Rear/front IP20 (PM-IP)	-	-	-	-	-	
Cassette-type accessories (option) *5	Alarm switch	(AL)	●	●	●	●	●	
		Auxiliary switch (AX)	●	●	●	●	●	
		Shunt trip (SHT)	●	●	●	●	●	
		Undervoltage trip (UVT)	●	●	●	●	●	
		Non-Synchronous Closing (UVT-N) / Synchronous Closing (UVT-S)	●	●	●	●	●	
Accessory's connection (option)	with Lead-wire terminal block	(SLT)	●	●	●	●	●	
		with Internal terminal type (INT)	-	-	-	-	-	
		with Flying leads	●	●	●	●	●	
Built-in accessories (option)	Pre-alarm (contact output) *3	(PAL)	● *2	-	● *2	● *2	● *2	
		Overcurrent trip alarm *3 (OAL)	-	-	-	-	-	
		Trip indicator (TI)	●	●	●	●	●	
External accessories (option)	Enclosure	Dustproof	(S)	●	●	●	●	●
			(T)	●	●	●	●	●
			Waterproof (W)	●	●	●	●	●
	Electrical operation device	Motor-operated type	(MD)	●	●	●	●	●
			Spring-charge type (MDS)	●	●	●	●	●
	Mechanical interlock	Handle lock device	(MI)	●	●	●	●	●
			(HL)	●	●	●	●	●
	Lock cover	Handle lock	(HL-S)	●	●	●	●	●
			(LC)	-	-	-	-	-
	External operating handle	Door mounting	(V)	●	●	●	●	●
			(S)	●	●	●	●	●
			(R)	●	●	●	●	●
	Insulating barrier	Mounted on breaker	(F)	●	●	●	●	●
			Between phase (BA-F)	●	●	●	●	●
			To ground (BA-G)	●	●	●	●	●
Terminal cover	Large	(TC-L)	●	●	●	●	●	
		Small (TC-S)	-	-	-	-	-	
		Transparent (TTC)	●	●	●	●	●	
		for rear connection (BTC)	●	●	●	●	●	
			for plug-in (PTC)	-	-	-	-	
Marine approval	L/R	(L/R)	●	-	●	-	●	
		(G/L)	●	-	●	-	●	
		(BV)	●	-	●	-	●	
		(DNV)	●	-	●	-	●	
		(ABS)	●	-	●	-	●	
Automatic tripping device	Electronic	Thermal-magnetic	Electronic	Electronic	Electronic			
Trip button	Equipped	Equipped	Equipped	Equipped	Equipped			

- Notes *1: In case of solderless terminal, interrupting capacity reduces: (/).
 *2: Solid state relay output is option. Please specify if other output is necessary. (Standard type is thus SLT equipped.)
 *3: Both PAL and OAL is not available. Only one specified.
 *4: Specify if for DC use.
 *5: Cassette-type accessories are not suitable for NF1000-SW, NF1250-SW, NF1250-SDW, NF1600-SW, and NF1600-SDW.

2. Detailed Specifications

Earth-Leakage Circuit Breakers

Series	C series	S series	C series	S series	H series	C series
Frame size	30	32	63	63	63	125
Photo						
Type name	NV30-CS	NV32-SW	NV63-CW	NV63-SW	NV63-HW	NV125-CW
Rated current In (Amp.)	5 10 15 20 30	(5) 6 10 (15) 16 20 25 (30) 32	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(15) 16 20 25 (30) 32 40 50 (60) 63	(60) 63 (75) 80 100 125
Rated ambient temperature (°C)	40	40	40	40	40	40
Number of poles	3	3	3	3	3	3
Rated operational voltage Ue (AC V)	100-230	100-440 Multi-voltage type	100-440 Multi-voltage type	100-440 Multi-voltage type	100-440 Multi-voltage type	100-440 Multi-voltage type
High-speed type	Rated current sensitivity IΔn (mA)	30	30, 100-200-500 Selectable	30, 100-200-500 Selectable	30, 100-200-500 Selectable	30, 100-200-500 Selectable
	Max. operating time at 5IΔn (s)	0.04	0.04	0.04	0.04	0.04
Time-delay type	Rated current sensitivity IΔn (mA)	-	-	-	-	(100-200-500) Selectable
	Max. operating time at 2IΔn (s)	-	-	-	-	(0.45-1.0-2.0) Selectable
	Inertial non-operating time at 2IΔn (s)	-	-	-	-	(0.1-0.5-1.0)
Earth-leakage indication system		Button	Button	Button	Button	Button
Rated short-circuit breaking capacity (kA) IEC60947-2 (Icu/Ics)	AC440V	-	5/2	2.5/1	7.5/4	10/5
	AC400V	-	5/2	5/2	7.5/4	10/5
	AC230V	2.5/2	10/5	7.5/4	15/8	25/13
Number of operating cycles	without current	10,000	10,000	10,000	15,000	15,000
	with current	440V-In/2 440V-In	6,000 (230V) 6,000 (230V)	6,000 6,000	15,000 8,000	15,000 8,000
Overall dimensions (mm)	a	67.5	75	75	75	90
	b	96	130	130	130	130
	c	52	68	68	68	68
	ca	67	90	90	90	90
Mass of front-face type (kg)	0.4	0.6	0.65	0.65	0.65	1.0
Installation and connections	Fixed	Front	Screw terminal	●	●	●
		Solderless (box) terminal (SL)	-	-	-	-
		Busbar terminal	-	-	-	-
	Plug-in	Rear (B)	●	●	●	●
		Rear/front IP20 (PM-IP)	-	-	-	-
IEC 35mm rail	Mounting hook (option)	-	●	●	●	
Adapter (option)	-	-	●	●	●	
Cassette-type accessories (option) *2	Alarm switch (AL)	●	●	●	●	
	Auxiliary switch (AX)	●	●	●	●	
	Shunt trip (SHT)	-	-	-	-	
	Undervoltage trip (UVT)	Non-synchronous closing (UVT-N) Synchronous closing (UVT-S)	-	●	●	●
Built-in accessories (option)	Insulation switch (MG)	●	●	●	●	
	Earth-leakage trip alarm (EAL)	-	●	●	●	
	Test button module (TBM)	-	●	●	●	
	Pre-alarm-contact output (PAL)	-	-	-	-	
Accessories connection (option)	Cylinder key lock [Available soon]	-	-	-	-	
	with Lead-wire terminal block (SLT)	●	●	●	●	
External accessories (option)	Enclosure	Dustproof (S)	●	●	●	
		(I)	-	●	●	
		Waterproof (W)	-	●	●	
	Electrical operation device (MD)	-	-	-	-	
	Mechanical interlock (MI)	-	●	●	●	
	Handle lock device	Handle lock	(HL)	-	●	●
			(HL-S)	-	●	●
	Lock cover (LC)	●	●	●	●	
	External operating handle	Door mounting	(V)	-	●	●
			(S)	-	●	●
		Mounted on breaker	(R)	-	●	●
			(F)	-	●	●
	Insulating barrier	Between phase (BA-F)	-	●	●	
		To ground (BA-G)	-	●	●	
	Terminal cover	Large (TC-L)	●	●	●	
Small (TC-S)		●	●	●		
Transparent (TTC)		●	●	●		
for rear connection (BTC)		●	●	●		
for plug-in (PTC)	-	●	●			
Automatic tripping device	Hydraulic-magnetic	Hydraulic-magnetic	Hydraulic-magnetic	Hydraulic-magnetic	Hydraulic-magnetic	Thermal-magnetic
Trip button	Equipped *5	Equipped	Equipped	Equipped	Equipped	Equipped
CE marking *7	-	△	△	△	△	△

Note *1: 125A rated current is 3p only.

*2: Cassette-type accessories are not acceptable for NV30-CS.

*3: Standard type is thus SLT equipped.

*4: In case of ampere rating 15A and 16A, time-delay type is not available.

*5: Included in AL (type) only.

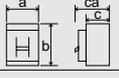
*6: Rated operational voltage of time-delay type is for 200-440V.

*7: Specify if for CE marking. In case of the CE marking article of 250A Frame or less, outside sizes differ.

Rated operational voltage	Available voltage range
100 - 230V	80-253V
100 - 440V	80-484V
200 - 440V	160-484V

2. Detailed Specifications

Earth-Leakage Circuit Breakers

Series	C series		S series		H series	
Frame size	400		400		400	
Photo						
Type name	NV400-CW		NV400-SW		NV400-SEW	
Rated current In (Amp.)	250 300 350 400		250 300 350 400		200~400 adjustable	
Rated ambient temperature (°C)	40		40		40	
Number of poles	3		3		3 4	
Rated operational voltage Ue (AC V) *3	100~440 Multi-voltage type		100~440 Multi-voltage type		100~440 Multi-voltage type	
High-speed type	Rated current sensitivity IΔn (mA) (30) 100·200·500 Selectable		(30) 100·200·500 Selectable		(30) 100·200·500 Selectable	
	Max. operating time at 5IΔn (s)		0.04		0.04	
Time-delay type	Rated current sensitivity IΔn (mA) (100·200·500) Selectable		(100·200·500) Selectable		(100·200·500) Selectable	
	Max. operating time at 2IΔn (s) (0.45·1.0·2.0) Selectable		(0.45·1.0·2.0) Selectable		(0.45·1.0·2.0) Selectable	
	Inertial non-operating time at 2IΔn (s) (0.1·0.5·1.0)		(0.1·0.5·1.0)		(0.1·0.5·1.0)	
Earth-leakage indication system			Button		Button	
Rated short-circuit breaking capacity (kA) IEC60947-2 (Icu/Ics)	AC440V		25/13		42/42(36/36) *1	
	AC400V		36/18		50/50(36/36) *1	
	AC230V		50/25		85/85(65/65) *1	
Suitability for isolation ↔			●		●	
Overall dimensions (mm)			a	140	140	140 185
			b	257	257	257
			c	103	103	103
			ca	134	155	155
Mass of front-connection type (kg)			6.1		6.4 7.1 8.9	
Installation and connections	Fixed	Front	Screw terminal	●	●	●
			Solderless (box) terminal (SL)	●	●	●
	Rear		Busbar terminal	●	●	●
			(B)	●	●	●
Plug-in	Rear	(PM)	●	●	●	
	Rear/front IP20	(PM-IP)	●	●	●	
Cassette-type accessories (option)	Alarm switch		(AL)	●	●	
	Auxiliary switch		(AX)	●	●	
	Shunt trip		(SHT)	●	●	
	Undervoltage trip (UVT)	Non-synchronous closing (UVT-N)		●	●	
Synchronous closing (UVT-S)		●	●			
Built-in accessories (option)	Insulation switch		(MG)	●	●	
	Earth-leakage trip alarm		(EAL)	●	●	
	Test button module		(TBM)	●	●	
	Pre-alarm-contact output		(PAL)	●	● *2	
	Overcurrent trip alarm *3		(OAL)	●	●	
Accessories connection (option)	with Lead-wire terminal block		(SLT)	●	●	
	with Flying leads			●	●	
External accessories (option)	Enclosure	Dustproof	(S)	●	●	
			(I)	●	●	
		Waterproof	(W)	●	●	
	Electrical operation device		(MD)	●	●	
	Mechanical interlock		(MI)	●	●	
	Handle lock device	Handle lock	(HL)	●	●	
			(HL-S)	●	●	
	Lock cover		(LC)	●	●	
	External operating handle	Door mounting	(V)	●	●	
			(S)	●	●	
		Mounted on breaker	(R)	●	●	
	(F)		●	●		
	Insulating barrier	Between phase	(BA-F)	●	●	
			(BA-G)	●	●	
		To ground	(BA-G)	●	●	
Terminal cover	Large	(TC-L)	●	●		
		(TC-S)	●	●		
	Small	(TC-S)	●	●		
		(TC-S)	●	●		
Transparent	(TTC)	●	●			
	for rear connection	(BTC)	●	●		
	for plug-in	(PTC)	●	●		
Automatic tripping device			Thermal-magnetic		Electronic	
Trip button			Equipped		Equipped	
CE marking *4			△		△	

Note *1: In case of solderless terminal, interrupting capacity reduces: (/)

*2: Solid state relay output is option. Please specify if order output is necessary. (Standard type is thus SLT equipped.)

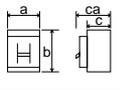
*3: Rated operational voltage of time-delay type is for 200-440V.

*4: Specify if for CE marking.

Rated operational voltage	Available voltage range
100 - 440V	80~484V
200 - 440V	160~484V

2. Detailed Specifications

Motor-Protection Breakers

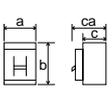
Frame A		30			50			100			225										
Type name		MB30-CS			MB30-SW			MB50-CW			MB50-SW			MB100-SW			MB225-SW				
Rated current I _n (Amp.) Rated motor capacity: kW Reference ambient temperature 40°C (45°C for marine applications)	A	200/220V	400/440V	A	200/220V	400/440V	A	200/220V	400/440V	A	200/220V	400/440V	A	200/220V	400/440V	A	200/220V	400/440V			
		kW	kW		kW	kW		kW	kW		kW	kW		kW	kW		kW	kW			
		32	7.5	15	32	7.5	15	45	11	22	7.1	1.5	–	100	–	55	225	55	110		
		25	5.5	11	25	5.5	11	40	–	18.5	5	–	2.2	90	22	45	200	–	–		
		16	3.7	7.5	16	3.7	7.5	32	7.5	15	4	0.75	1.5	63	15	30	175	45	90		
		(12)	–	5.5	12	–	5.5	25	5.5	11	2.5	0.4	–	45	11	22	150	37	75		
		10	2.2	–	10	2.2	–	16	3.7	7.5	2	–	0.75	(40)	–	19	125	30	–		
		(8)	–	3.7	8	–	3.7	12	–	5.5	1.4	0.2	–	32	7.5	15					
		7.1	1.5	–	7.1	1.5	–	10	2.2	–	1.2	–	0.4	(25)	5.5	11					
		(5)	–	2.2	5	–	2.2	8	–	–	0.8	–	–	(12.5)	–	5.5					
	4	0.75	1.5	4	0.75	1.5	8	–	3.7	–	–	–									
	2.5	0.4	–	2.5	0.4	–															
	(2)	–	0.75	2	–	0.75															
	1.4	0.2	–	1.4	0.2	–															
	(1.2)	–	0.4	1.2	–	0.4															
	(0.8)	–	–	0.8	–	–															
Number of poles		2 (for single phase) 3			3			3			3			3			3				
Rated insulation voltage U _i (V)		500			500			500			500			500			500				
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC	440V	1.5/1.5 (415V)			2.5/1			2.5/1			7.5/4			25/13			25/13		
			400V	1.5/1.5 (380V)			5/2			5/2			7.5/4			30/15			30/15		
			230V	2.5/2 (240V)			7.5/4			7.5/4			15/8			50/25			50/25		
Overall dimensions (mm)		a	45	67.5	75	75	75	75	90	105											
		b	96			130			130			130			165						
		c	52			68			68			68			68						
		ca	67			90			90			90			92						
Mass of front-connection type (kg)		0.25 0.35			0.55			0.55			0.55			0.95			1.5				
Connection method	Front connection (F)	● Crimp contact			● Crimp contact			● Crimp contact			● Crimp contact			● Crimp contact			● Crimp contact				
	Rear connection (B)	● Round stud (assembled in)			● Round stud			● Round stud			● Round stud			● Flat stud			● Flat stud				
	Plug-in (PM)	–			●			●			●			●			●				

Remark: The products of which rated current is parenthesized will be produced when an order is placed.

2. Detailed Specifications

UL Listed Products

2

Frame A		100	225	50	100	150	250		400	600			
Type name		NF100-CWU	NF225-CWU	NF50-SWU	NF100-SWU	NF-SFW	NF-SJW	NF-HJW	NF-SKW	NF-SLW			
Photo													
Rated current In (Amp.) at ambient temperature 40°C (IEC30°C)		50 60 75 100	125 150 175 200 225	(3) 5 10 15 20 30 40 50	15 20 30 40 50 60 75 100	15 20 30 40 50 60 70 80 90 100 110 125 150	(125) (150) 175 200 225 250	125 150 175 200 225 250	250 300 350 400	500 600			
Number of poles		2 3	3	2 3	2 3	3	3	3	3	3			
Rated short-circuit breaking capacities (kA)	UL 489	AC	Rated voltage (V AC)		240	240	240	480Y/277	600Y/347	600Y/347	600Y/347	600Y/347	600Y/347
			600Y/347V	-	-	-	-	14	14	18	20	20	
			480V	-	-	-	-	35	35	50	35	35	
			480Y/277V	-	-	-	22	35	35	50	-	-	
	JIS C 8201-2 IEC 60947-2 (Icu/Ics)	AC	Rated insulation voltage Ui (V)		600	600	600	690	690	690	690	690	690
			690V	-	-	-	8/4	8/8	8/8	15/15	10/10 (5/5) (*5)	10/10	
			500V	7.5/4	10/5	7.5/4	18/9	30/30	30/30	36/36	30/30 (25/25) (*5)	30/30	
			440V	10/5	15/8	7.5/4	25/13	36/36	36/36	50/50	42/42 (36/36) (*5)	42/42	
			415V	10/5	18/9	7.5/4	30/15	36/36	36/36	50/50	45/45 (36/36) (*5)	45/45	
			400V	10/5	18/9	7.5/4	30/15	36/36	36/36	50/50	45/45 (36/36) (*5)	45/45	
			380V	10/5	18/9	7.5/4	30/15	36/36	36/36	50/50	50/50 (42/42) (*5)	50/50	
			230V	30/15	35/18	15/8	50/25	85/85	85/85	100/100	85/85 (65/65) (*5)	85/85	
DC	250V *3	7.5/4	10/5	-	15/8	20/20	20/20	20/20	-	-			
Compatible to AC/DC *1		●	●	-	●	●	●	●	●	-	-		
Suitability for isolation		●	●	●	●	●	●	●	●	●	●		
Reverse connection		●	●	●	●	●	●	●	●	●	●		
Overall dimensions (mm)		a	60 90	105	50 75	60 90	105	105	105	140	210		
		b	150	165	150	150	185	185	185	257	275		
		c	68	68	68	68	86	86	86	103	103		
		ca	90	92	90	90	110	110	110	155	155		
Mass of front-connection type (kg)		0.7 0.95	1.5	0.45 0.6	0.7 0.95	2.0	2.0	2.0	5.7	9.6			
Connection method	Front connection	Screw terminal (F)	●	●	●	●	●	●	●	-	-		
		Solderless terminal (box) (SL)	●	-	-	●	●	●	●	●	●		
		Busbar terminal (BAR)	●	●	●	●	●	●	●	●	●		
Accessories #2 (option)	Alarm switch (AL)	●	●	●	●	●	●	●	●	●			
	Auxiliary switch (AX)	●	●	●	●	●	●	●	●	●			
	Shunt trip (SHT)	●	●	●	●	●	●	●	●	●			
	Under-voltage trip (UVT)	●	●	●	●	●	●	●	●	●			
	Vertical lead-wire terminal unit (SLT)	●	●	●	●	●	●	●	●	●			
External accessories #2 (option)	Mechanical interlock (MI)	●	●	●	●	●	●	●	●	●			
	Handle lock device (HL)	●	●	●	●	●	●	●	●	●			
	Operating handle	F	●	●	●	●	●	●	●	●	●		
		S	●	●	●	●	●	●	●	●	●		
		V	- ●	●	- ●	- ●	●	●	●	●	●		
	Insulating barrier (IB)	●	●	●	●	●	●	●	●	●	●		
	Terminal cover	Large (TC-L)	●	●	●	●	●	●	●	●	●		
Small (TC-S)		-	- *4	-	-	-	-	-	-	-			
IEC 35mm rail fixture		-	-	Supplied standardly	-	-	-	-	-	-			
Automatic tripping device		Thermal-magnetic	Thermal-magnetic	Hydraulic-magnetic	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic adjustable	Thermal-magnetic adjustable	Thermal-magnetic	Thermal-magnetic adjustable			
Trip button		Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped			
TÜV type approval		●	●	●	●	●	●	●	●	●			

Notes: *1 The trip action characteristics differ between AC and DC for products that are compatible to both AC and DC.

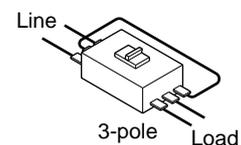
*2 Specifications for products with a CE mark differ from those for general-purpose products. Details will be available upon request.

*3 Use two poles among the three poles in the case of three-pole products. In addition, wiring as shown to the right allows the models of NF100-CWU, NF100-SWU and NF225-CWU to be used for up to 400 V DC and the models of NF-SFW, NF-SJW, and NF-HJW to be used for up to 500 V DC.

*4 The standard configuration contains a protection cover and adopts the IP20 (finger protection) structure.

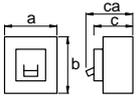
*5 In case of solderless terminal, interrupting capacity reduces: (I).

Remark: The products of which rated current is parenthesized will be produced when an order is placed. The operating characteristics of breakers are different between AC and DC (JIS and IEC only).

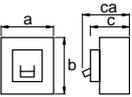


2. Detailed Specifications

Miniature Circuit Breakers

Type		BH			BH-P			
Frame (A)		70	100	100	70	100	100	
Photo								
Number of poles		1	2	3	1	2	3	
Rated current (A) at ambient temperature 40° C		70	70,100	70,100	70	70,100	70,100	
Rated voltage (V)		AC	230/400			230/400		
		DC	125			125		
Breaking capacity (kA) sym.	IEC 60898	AC230/400V	3	—		3	—	
		AC400V	—	3		—	3	
	—	DC125V	1			1		
Type of instantaneous operation		Type C (5 In <, <10 In)						
Dimensions (mm)		a	25	50	75	25	50	75
		b	95			74		
		c	57.5			60.5		
		ca	77.5			79		
Mass (kg)		0.16	0.32	0.48	0.13	0.26	0.38	
Connection *1		Clamp terminal			Plug-in (line) Clamp (load)			
								
Automatic tripping device		Thermal, magnetic						
Optional accessories	Terminal cover	●			—			
	Mounting plate	●			—			
	Terminal base	—			●			
	Lock cover	●			●			
Approved by		—	LR, GL, NK	—	—	LR, BV, AB, GL, NK	—	

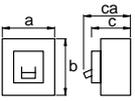
*1. If required Solderless terminal can be supplied.
(BH : Line and Load side, BH-P : Load side only)

Type		BH-S M3			BH-S M6			
Photo								
Number of poles		1	2	3	1	2	3	
Rated current (A) at ambient temperature 40°C		5,10,15,20,(25), 30,40,50,60	10,15,20,(25), 30,40,50,60	15,20,(25), 30,40,50,60	5,10,15,20,(25), 30,40,50,60	10,15,20,(25), 30,40,50,60	15,20,(25), 30,40,50,60	
Rated voltage (V)		AC	230/400	400	400	230/400	400	
		DC	—	125	—	—	125	—
Breaking capacity (kA) sym.	IEC 60898	AC230/400V	3	—		6	—	
		AC400V	—	3		—	6	
	—	DC125V	—	1	—	—	1	—
Type of instantaneous operation		Types B,C,D *2						
Dimensions (mm)		a	25	50	75	25	50	75
	b	95			95			
	c	57.5			57.5			
	ca	76			76			
Mass (kg)		0.15	0.32	0.50	0.15	0.32	0.50	
Connection *1		Clamp terminal						
								
Automatic tripping device		Thermal, magnetic						
Optional accessories	Terminal cover	●						
	Mounting plate	●						
	Handle lock	●						
	Lock cover	—						
Approved by		—						

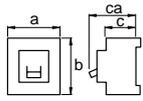
* 1. If required Solderless terminal can be supplied (Line and Load side)
 * 2. Type B (3 In <, ≤ 5 In), Type C (5 In <, ≤ 10 In), Type D (10 In <, ≤ 20 In)

2. Detailed Specifications

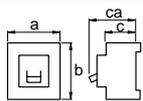
Miniature Circuit Breakers

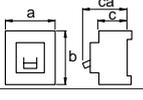
Type		BH-PS M3			BH-PS M9			
Photo								
Number of poles		1	2	3	1	2	3	
Rated current (A) at ambient temperature 40°C		10,15,20, 30,40,50,60	10,15,20, 30,40,50,60	15,20, 30,40,50,60	6,10,16,20,(25), 32,40,50,60	10,16,20,(25), 32,40,50,60	10,16,20,(25), 32,40,50,60	
Rated voltage (V)		AC	230/400	400	400	230/400	400	
		DC	—	125	—	—		
Breaking capacity (kA) sym.	IEC 60898	AC230/400V	3	—		9	—	
		AC400V	—	3		—	9	
		DC125V	—	1	—		—	
Type of instantaneous operation		Types B,C,D *						
Dimensions (mm)		a	25	50	75	25	50	75
		b	81.5			81.5		
		c	60.5			60.5		
		ca	79			79		
Mass (kg)		0.15	0.32	0.50	0.15	0.32	0.50	
Connection		Plug-in (line)			Clamp (load)			
								
Automatic tripping device		Thermal, magnetic						
Optional accessories	Terminal cover	—						
	Terminal base	●						
	Lock cover	—						
	Handle lock	●						
Approved by		—			LR			

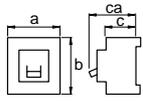
* Type B (3 In <, ≤ 5 In), Type C (5 In <, ≤ 10 In), Type D (10 In <, ≤ 20 In)

MCB		BH-D6 (IEC 60898)					BH-DN (IEC 60898)
Photo							
Number of poles		1	2	3	4 (3+N)	2 (1+N)	2 (1+N)
Rated current (A) at ambient temperature 30°C		6,10,13,16,20,25,32,40,50,63	6,10,13,16,20,25,32,40,50,63	6,10,13,16,20,25,32,40,50,63	6,10,13,16,20,25,32,40,50,63	6,10,13,16,20,25,32,40	6,10,16,20
Rated voltage (VAC)		230/400	400	400	400	230	230
Breaking capacity (kA) sym. (IEC60898)		6					4.5
Tripping characteristics		Type B, C, D *				Type B, C *	Type C
Dimensions (mm) 	a	18	36	54	72	36	18
	b			87			88
	c			44			44
	ca			70			70
Mass (kg)		0.15	0.30	0.45	0.6	0.30	0.12
Connection		Solderless					
Automatic tripping device		Thermal, magnetic					
Optional accessories	Insulating barrier	—	1 pc	2 pcs	3 pcs	1 pc	—

* Type B (3n<, ≤5In), Type C (5In<, ≤10In), Type D (10In<, ≤20In)

RCCB		BV-D (IEC 61008)	
Photo			
Number of poles		2(1+N)	4(3+N)
Rated current (A) at ambient temperature 30°C		25, 40, 63	
Rated voltage (VAC)		230	230/400
Rated current sensitivity IΔn (mA)		30, 300	
Max. operating time (s) at 5IΔn		0.04	
Pulsating current sensitivity		Type AC	
Rated conditional short-circuit current (kA)		6	
Dimensions (mm) 	a	36	72
	b		85
	c		44
	ca		70
Mass (kg)		0.2	0.35
Connection		solderless	

RCBO		BV-DN (IEC 61009)	
Photo			
Number of poles		2 (1+N)	
Rated current (A) at ambient temperature 30°C		6,10,16,20,25,32	
Rated voltage (VAC)		230	
Rated current sensitivity IΔn (mA)		30,100,300	
Max. operating time (s) at 5IΔn		0.04	
Pulsating current sensitivity		Type AC	
Breaking capacity (kA) sym. (IEC61009)		4.5	
Tripping characteristics		Type C *	
Dimension (mm) 	a	36	
	b	88	
	c	44	
	ca	70	
Mass (kg)		0.19	
Connection		Solderless	
Automatic tripping device		Thermal, magnetic	
Option		Over voltage release (280V±5%)	

Isolating switch		KB-D (IEC 60947-3)			
Photo					
Number of poles		1	2	3	4 (3+N)
Utilization category		AC22A class			
Rated current (A) at ambient temperature 30°C		32, 63, 80			
Rated voltage (VAC)		230	400		
Short time withstand current (A)		20 × In, 1s			
Short-circuit making capacity (A)		20 × In			
Dimensions (mm) 	a	18	36	54	72
	b			87	
	c			44	
	ca			70	
Mass (kg)		0.09	0.18	0.27	0.36
Connection		Solderless			
Optional accessories	Insulating barrier	—	1 pc	2 pcs	3 pcs

2. Detailed Specifications

ELRs and ZCTs

Earth-Leakage relays

Type		Interchangeable leakage relay (Note 1)									
		Electrical self-hold type				Mechanical self-hold type					
Hole diameter mm		NV-ZBA		NV-ZSA		NV-ZHA		NV-ZLA			
Model name of ZCT combined (Note 5)	15	ZT15B	–	ZT15B	–	ZT15B	–	ZT15B	–		
	30	ZT30B	–	ZT30B	–	ZT30B	–	ZT30B	–		
	40	ZT40B	–	ZT40B	–	ZT40B	–	ZT40B	–		
	60	–	ZT60B	–	ZT60B	–	ZT60B	–	ZT60B		
	80	–	ZT80B	–	ZT80B	–	ZT80B	–	ZT80B		
	100	–	ZT100B	–	ZT100B	–	ZT100B	–	ZT100B		
Photo											
Phase line type		3φ4W, 3φ3W, 1φ3W, 1φ2W									
Control voltage AC V		JIS		120 • 240 selectable		120 • 240 selectable 240 • 415 selectable		–			
		UL/JIS (Note 2) UL/CE (Note 3)		–		–		120 • 240 selectable 240 • 440 selectable		120 • 240 selectable 240 • 440 selectable 480	
JIS	High speed type	Rated sensitivity current mA		30 100 • 200 • 500 selectable	100 • 200 • 500 selectable	30 100 • 200 • 500 selectable	100 • 200 • 500 selectable	–			
		Max. operating time s		0.1		0.1		–			
	Delay type	Rated sensitivity current mA		100 • 200 • 500 selectable		100 • 200 • 500 selectable (200 • 500 • 1000 selectable)		–			
		Operating time s (Note 4)		0.3 • 0.8 • 1.6 selectable		0.3 • 0.8 • 1.6 selectable		–			
UL/JIS	High speed type	Rated sensitivity current mA		–		–		30 50			
		Max. operating time s		–		–		0.1			
	Delay type	Rated sensitivity current mA		–		–		100 • 200 • 500 selectable			
		Max. operating time s (Note 4)		–		–		0.1 • 0.45 • 1.0 selectable			
UL/CE	High speed type	Rated sensitivity current mA		–		–		30 • 50 • 100 selectable			
		Max. operating time s at 5IΔn		–		–		0.04			
	Delay type	Rated sensitivity current mA		–		–		100 • 300 • 500 selectable 300 • 500 • 1000 selectable			
		Max. operating time s at 2IΔn (Note 4)		–		–		0.45 • 1.0 selectable			
Earth-leakage indication		Electric type (LED)		Mechanical type (button)		Electric type (LED)		Mechanical type (button)			
Resetting method		Push button or control power switch off		Push button (combined with earth-leakage indicator)		Push button or control power switch off		Push button (combined with earth-leakage indicator)			
Built-in contact	Configuration		1c		1a1c		1a1c		1a1c		
	Continuous current capacity A		5		5		5		5		
	Contact capacity A		cosφ=1		cosφ=0.4 L/R=0.007		cosφ=1		cosφ=0.4 L/R=0.007		
			120VAC	5	2	120VAC	5	2	120VAC	5	3
		240VAC	5	2	240VAC	3	2	240VAC	3	2	
		24VDC	5	2	415VAC	2	1	24VDC	5	2	
					30VDC	4	3	480VAC	1	1	
					100VDC	0.4	0.4	30VDC	3	3	
					200VDC	0.2	0.2	Use auxiliary relay for AC415V contact.			
Connection		Front		● Clamp terminal		● Clamp terminal		○ Clamp terminal		○ Clamp terminal	
		Rear		–		○ Clamp terminal		○ Clamp terminal		○ Clamp terminal	
Standard attachment (Front connection)		Mounting screw									
Mass kg		Relay		0.3		0.4		0.4		0.4	
External accessories		Terminal cover		○ (TC-ZBA)		○ (TC-ZSA)		○ (TC-ZSA)(Note 6)		○ (TC-ZSA)(Note 6)	
		Mounting hook for IEC 35mm rail (DIN rail) Fixture		○ (DIN-ZBA)		–		–		–	
Max. consumption VA		3									
Conforming standard	US UL standard (UR certified)		–		–		UL1053 Recognized component (File No.E196562)		UL1053 Recognized component (File No.E196562)		
	Canada CSA standard		–		–		LR103083(Certified No.)		LR103083(Certified No.)		
	European CE marking		–		–		Declaration for conformity IEC60947-2 AnnexB EN60947-2 AnnexB		Declaration for conformity IEC60947-2 AnnexB EN60947-2 AnnexB		

- Note (1) Interchangeable leakage relay can be freely combined with relay and our ZCT. However, 30mA sensitivity product (excluding NV-ZHA/ZLA) can be combined with only ZT15B, ZT30B and ZT40B.
- (2) Indicates control voltage of UL. These are products indicating UL, CSA and JIS together. For voltage indication in JIS, 100-200V changeover for 120-240V changeover, 200-415V changeover for 240-440V changeover, 460V for 480V are described together. When ordering, specify "UL/JIS".
- (3) Indicates control voltage of UL. These are products indicating UL, CSA and CE together. For voltage indication in CE, 120-230V changeover for 120-240V changeover, 230-440V changeover for 240-440V selectable are described together. When ordering, specify "UL/CE".
- (4) When the operating time are 0.3 and 0.45 seconds, 0.8 and 1.0 seconds, and 1.6 seconds, the relay operates between 0.15 and 0.45, between 0.6 and 1.0 seconds and between 1.2 and 2.0 seconds respectively.
- (5) Can be combined with interchangeable ZCT with primary conductor. Refer to the next page for detail.
- (6) It's not UL-certified.

- Remark (1) Relays with rate shown in the () in the space for rate are manufactured by your order.
- (2) CE marking is for self-statement for the purpose of interrupting NF when ground-fault occurs by combining with our NF with CE marking (voltage tripping device).

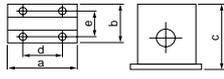
(3) NV-ZBA/ZSA

Control voltage	Available voltage range	Example of applicable circuit voltage
120V	80-126V	100 • 110V • 120V
240V	160-252V	200 • 220 • 240V
415V	320-484V	400 • 415 • 440V

(4) NV-ZHA/ZLA

Control voltage	Available voltage range	Example of applicable circuit voltage
120V	80-132V	100 • 110 • 120V
240V	160-264V	200 • 220 • 230 • 240V
440V	304-484V	380 • 400 • 415 • 440V
480V	368-528V	460 • 480V

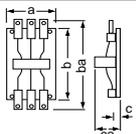
Interchangeable ZCT

Type	ZT15B	ZT30B	ZT40B	ZT60B	ZT80B	ZT100B
Aperture diameter (mm)	15	30	40	60	80	100
Mass (kg)	0.2	0.4	0.6	2.0	2.6	3.3
Rated short time current	50 (peak value)					
 Dimensions (mm)	a	48	68	85	140	185
	b	52	52	52	90	90
	c	70	90	100	150	169
	d	25	50	50	100	100
	e	40	40	40	70	70

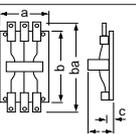
ZCT aperture diameter and permissible wire size

	ZCT aperture diameter (mm)	15	30	40	60	80	100
		Max. permissible 600V rated wire size in mm ² (current in amperes)					
1φ2w	Polyvinyl chloride insulated wire	14 (88)	60 (217)	150 (395)	325 (650)	600 (992)	800 (1185)
	Cross-linked polyethylene insulated cable	2 (33)	38 (190)	60 (260)	250 (655)	400 (870)	600 (1140)
1φ3w 3φ3w	Polyvinyl-chloride insulated wire	8 (61)	38 (162)	100 (298)	250 (556)	500 (842)	725 (1095)
	Cross-linked polyethylene insulated cable	2 (33)	22 (135)	60 (260)	200 (560)	325 (760)	600 (1140)
3φ4w	Polyvinyl-chloride insulated wire	8 (61)	38 (162)	100 (298)	150 (395)	325 (650)	600 (992)
	Cross-linked polyethylene insulated cable	—	14 (105)	38 (190)	100 (365)	250 (655)	400 (870)

Interchangeable ZCTs with primary conductors

Type	ZTA600A	ZTA1200A	ZTA2000A	
Number of poles	3			
Rated voltage (VAC)	600			
Rated short time current (kA)	100 (peak value)			
	a	227	227	360
	b	256	298	250
	ba	366	444	594
	c	42	78	79
	ca	125	176	214

ELRs with a ZCT with primary conductors

Frame (A)	600	1200	2000	3200	
Type	ZBA	Interchangeable ELR and interchangeable ZCTs with primary conductors			NV-ZBA3200
	ZSA				NV-ZSA3200
	ZHA				NV-ZHA3200
	ZLA				NV-ZLA3200
Number of poles	3				
Rated voltage (VAC)	600				
Rated short time current (kA)	100 (peak value)				
	a	227	227	360	490
	b	256	298	250	320
	ba	366	444	594	868
	c	42	78	79	111
	ca	125	176	214	290
Mass (kg)	6.5	11	27	54	

Specification of ELRs	High-speed type	ZBA	Control voltage (VAC)	Rated current sensitivity (mA)	Max. operating time (s)	Inertial non-operating time (s)
		ZSA	120 • 240*	100 • 200 • 500*	0.1	—
Time-delay type (High-speed • Time-delay type)	ZBA	120 • 240*	100 • 200 • 500*	0.3 • 0.8 • 1.6*	0.1 • 0.5 • 1.1	
	ZSA	120 • 240* 240 • 415*	100 • 200 • 500* (200 • 500 • 1000*)	0.3 • 0.8 • 1.6*	0.1 • 0.5 • 1.1	
	ZHA	120 • 240* 240 • 440*	100 • 200 • 500*	0.1 • 0.45 • 1.0*	— • 0.1 • 0.5	
	ZLA	120 • 240* 240 • 440* 480	100 • 200 • 500* 100 • 300 • 500* 300 • 500 • 1000*	0.1 • 0.45 • 1.0* 0.45 • 1.0* (at 2IΔn)	— • 0.1 • 0.5 0.1 • 0.5 (at 2IΔn)	

* Selectable.

2. Detailed Specifications

Circuit Protectors

CIRCUIT PROTECTORS TYPE CP

Frame (A)		30							
Type		CP30-BA			CP-S				
Photo									
Number of poles		1	2	3	1	2	3		
Rated insulation voltage Ui (V)		250			250				
Rated impulse withstand voltage Uimp (kV)		2.5			2.5				
Rated current (A)		0.1 0.25 0.3 0.5 1 2 3 5 7 10 15 20 30			0.05 0.1 0.25 0.3 0.5 0.75 1 2 2.5 3 5 7 7.5 10 15 20 25 30				
Rated short-circuit capacity (kA)	UL1077 CSA C22.2 No.235 *11	Rated voltage (V)	AC (V)	250			250	–	
			DC (V)	65	125	–	65	–	
		AC	2.5kA at 250V			1.5kA at 250V			
	IEC 60934 EN 60934 GB 17701 *11 (Icn)	Rated insulation voltage Ui (V)	AC	250			250		
			DC	2.5kA at 60V	2.5kA at 120V	–	1kA at 60V	1kA at 120V (1kA at 60V) *7	1kA at 60V
		AC	2.5kA at 230V			1.5kA at 230V 2.5kA at 120V			
	JIS C 4610 (Icn)	Rated insulation voltage Ui (V)	AC	250			250		
			DC	2.5kA at 60V	2.5kA at 120V	–	1kA at 65V	1kA at 125V (1kA at 65V) *7	1kA at 65V
		AC	2.5/2.5kA at 230V			–			
	EN 60947-2 IEC 60947-2 JIS C 8201-2 (Icu/Ics)	Rated insulation voltage Ui (V)	AC	250			–		
			DC	2.5/2.5kA at 60V	2.5/2.5kA at 120V	–	–		
		AC	2.5/2.5kA at 230V			–			
AC-DC common use		●			– *8				
Reverse connection		●			–				
Rated short time current (for switch only type)		–			AC250V 50/60Hz 1500A 0.02s AC125V 50/60Hz 2500A 0.02s DC65V 1000A 0.02s DC125V 1000A 0.02s				
Rated ambient temperature (°C)		40 (T40)			25 (T25)				
Operating characteristics		Instantaneous type (I); Medium type (M), (MD); Slow type (S), (SD); Fast type (F) *2			Instantaneous type (I); Medium type (M), (MD); Slow type (S), (SD); Fast type (F) (FD)				
Mode of tripping		Instantaneous type (I): magnetic only [MO] Medium type (M), (MD) Slow type (S), (SD) : hydraulic-magnetic [HM] Fast type (F)			Instantaneous type (I): magnetic only [MO] Medium type (M), (MD) Slow type (S), (SD) : hydraulic-magnetic [HM] Fast type (F), (FD)				
Method of operation		S-type (IEC60934)							
Trip-free behaviour		Trip-free (IEC60934)							
Mass (kg)		0.08	0.16	0.23	0.06	0.12	0.18		
Accessories	Inertial delay (ID)	● (Medium, Slow type: AC only)			● (Medium, Slow, Fast type:AC only)				
	Alarm switch (AL)	● (1c)			● (1c) *7				
	Auxiliary switch (AX)	● (1c)			● (1c)				
	Shunt trip (SHT)	● (for relay type) *3			● (for parallel and relay type:AC only)				
	Terminal cover (TC)	● *6			–				
	Flushpanel mounting brackets (FP)	●			–				
	Back facing wiring terminal (BT)	● *4, 6			–				
Connection	Main body	20A or less : Screw terminal M4 30A : Screw terminal M5			Male tub terminal 6.3mm (#250) [Screw terminal M4 (series type only)]				
	Alarm switch / Auxiliary switch	Screw terminal M3.5			Male tub terminal 2.8mm (#110)				
	Main body mounting method	Srface, IEC rail mounting Flush panel mounting (option)			Panel mounting				
International standard		UL(cURus), CCC *5			UL(UR) *9, 10				
CE Marking		EN60934 : TUV approval EN60947-2 : Self-declaration *5			EN60934 : TUV approval *10				

- * 1. The 3P products are use for AC only.
- * 2. Contact us for operating characteristics other than those mentioned above.
- * 3. In the pole with a shunt tripping apparatus, an over-current tripping element becomes nothing. (Switched type shunt tripping type)
- * 4. In the case of back wiring terminals, specify if it will be used with ratings 20A or less, or 30A.
- * 5. UL(cURus), CCC, and CE Marking are displayed on standard products.
- * 6. It is recognition of UL(cURus), CCC, and TUV.
- * 7. In case of DC use, only DC65V is available.
- * 8. Specify if for DC use when ordering.
- * 9. Specify when ordering. (In case of CP-S UL, type name is CP-SU.)
- * 10. Connection is male tub terminal only.
- * 11. CP30-BA only.

Remark (1) The non-standard conditions products are also made by your order.
(Low temperature, Moisture-fungus treatment of the 1st kind, Moisture-fungus treatment of the 2nd kind, Corrosion resistive.)
(2) Although buzzing sound may be made if an instantaneous type becomes 80% or more of rated current when it is used by AC, there is no problem on a performance.
Therefore, when used in a quiet environment, please select after taking this point into consideration.
(3) Please use it in a circumference environment without temperature, humidity, dust, corrosive gas, vibration, and impact.
And please do not use it in a circuit with inrush current, and a circuit with harmonics. It may become unnecessary action or trouble.

3. Special Purpose Breakers

Mag Only, DC-Use And DSN-Type

Mag Only (Instantaneous tripping circuit breakers)

Fixed	NF63-CW/SW/HW	AC, DC	Rated current x10
	NF125-CW/SW/HW	AC, DC	
	NF160-SW/HW	AC, DC	
	NF250-CW/SW/HW	AC, DC	
	NF400-CW/SW NF630-CW/SW	AC, DC	
Adjustable	NF125-SGW/HGW NF160-SGW/HGW NF250-SGW/HGW	AC, DC	High: Rated current x10 Low: Rated current x4 (AC) High: Rated current x13 Low: Rated current x5.2 (DC)
	NF800-SEW	AC	High: Rated current x10 Low: Rated current x2
	NF800-SDW	DC	High: 8000A Low: 3200A
	NF1000-SEW NF1250-SEW	AC	High: Rated current x10 Low: Rated current x2
	NF1600-SEW	AC	High: Rated current x10 Low: Rated current x2
	NF1250-SDW NF1600-SDW	DC	High: 8000A Low: 3200A

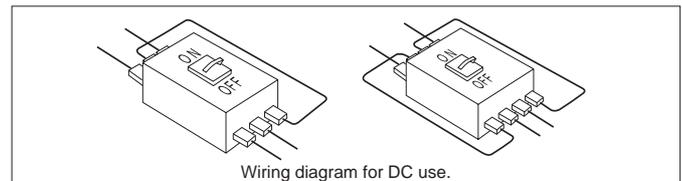
Remarks: 1. The size, weight, accessories, etc., are all identical to the same-designation C, S and H series breakers.
2. For more detail, contact your dealer.

DC-Use MCCBs and DSN-type Switches

Breaking is more difficult with direct currents because the current value never reaches zero. While ordinary DC breakers are suitable for low voltages, special voltage DC breakers are recommended for voltages in excess of 250VDC. Breakers for 550V are all 4-pole models.

The size, shape, drilling plan, accessories, etc., are all identical to the S series of same-designation breakers.

Wiring diagram for DC-usage.



Note: The tripping characteristics will change if the wiring differs from the one shown here.

Type	NF63-SW		NF125-SW		NF160-SW		NF250-SW		NF400-SW		NF630-SW		NF800-SDW		NF1250-SDW		NF1600-SDW	
Number of poles	3		3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4
Rated voltage (VDC)	400		440	550	440	550	440	550	500	600	500	600	500	600	500	600	500	600
Rated breaking capacity (kA) IEC 60947-2 (Icu/Ics)	2/1		10/5		20/5		20/5		40/40		40/40		40/40		40/20		40/20	

Notes: 1: Time constant: 10ms or below.

●DC side

These breakers are designed as thyristor-Leonard system DC-side breakers. They protect the thyristor from short circuiting when there is a power or

communication failure. (Mag-Only breakers can also be used for this role.) Use these breakers in combination with fast fuses for even greater protection.

Type	NF125-SW		NF160-SW		NF250-SW		NF400-SW		NF630-SW		NF800-SDW		NF1250-SDW		NF1600-SDW	
Number of poles	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3
Rated voltage (VDC)	250	440	250	440	250	440	250	440	250	440	250	440	250	440	250	440
Interrupting capacity (kA)	15	10	15	20	15	20	20		20		20		20		20	
Instantaneous trip current (min.)	3 times rated current		3 times rated current		3 times rated current		900A		1000A		1400A		2500A		3200A	

●DSN-type switches

These are standard MCCBs without the automatic tripping element. The tripping capacity is about six times the rated current.

The appearance, size, drilling plan and available accessories are all identical to similar type standard S and C series MCCBs.

Type	DSN30-CS		DSN63-CW		DSN125-CW		DSN250-CW		DSN400-CW		DSN630-CW		DSN800-CW	
Rated current (A)	30		63		125		250		400		630		800	
Number of poles	2	3	2	3	2	3	2	3	2	3	3		3	
Rated voltage (AC/DC)	460/—		500/250		500/250		500/250		600/250		600/250		600/250	
Max. switching current (AC/DC)	180/—		378/155		750/310		1500/625		2400/1000		3780/1575		4800/2000	

Type	DSN32-SW	DSN50-SS	DSN63-SW	DSN125-SW	DSN125-SGW	DSN160-SGW	DSN250-SW	DSN250-SGW	DSN400-SW	DSN630-SW	DSN800-SW	DSN1000-SW	DSN1250-SW	DSN1600-SW
Rated current (A)	32	50	63	125	125	160	250	250	400	630	800	1000	1250	1600
Number of poles	2	3	1	2	3	2	2	3	2	3	3	3	3	3
Rated voltage (AC/DC)	500/250	265/125	500/250	690/250	690/300	690/300	500/250	690/300	690/250	690/250	690/250	690/250	690/250	690/250
Max. switching current (AC/DC)	192/80	300/125	378/155	750/310	750/315	960/400	1500/625	1500/625	2400/1000	3780/1575	4800/2000	6000/2500	7500/3125	9600/4000

2
3

3. Special Purpose Breakers

400Hz-Use, Instantaneous And Generator Protection

400Hz-Use MCCBs

Standard MCCBs cannot be used in 400Hz circuit. When standard MCCBs are used in the high frequency circuit (eq. 400Hz), the instantaneous characteristic will be shifted higher. "400Hz use MCCBs" are recommended to use in 400Hz circuit.

●Specifications

The appearance, size, rated interrupting capacity, drilling plan, accessories, etc., are all identical to the standard S and H series of same-designation breakers.

Type	NF125-SW	NF125-HW	NF250-SW	NF250-HW	NF400-SW	NF400-SEW	NF630-SW ^{*1}	NF630-SEW	NF800-SEW	NF1250-SEW	NF1600-SEW
Rated current (A)	16, 20, 32, 40, 50, 63, 80, 100	16, 20, 32, 40, 50, 63, 80, 100	125, 150, 175, 200	125, 150, 175, 200	225, 250, 300, 350	200-350 adjustable	400, 500	300-500 adjustable	400-600 adjustable	600-800 adjustable	800-1200 adjustable
Number of poles	2 3 4	2 3 4	2 3 4	2 3 4	2 3 4	3 4	3 4	3 4	3 4	3 4	3 4
Rated insulation voltage (V)	690										
Rated breaking capacity (kA) IEC60947-2 (Icu / Ics)	690V	8/4	10/5	—	5/3	10/10	10/10	10/10	10/10	25/13	25/13
	500V	18/9	30/15	15/8	30/8	30/30	30/30	30/30	30/30	65/33	65/33
	440V	25/13	50/25	25/13	50/13	42/42	42/42	42/42	42/42	85/43	85/43
	400V	30/15	50/25	30/15	50/13	45/45	50/50	50/50	50/50	85/43	85/43
230V	50/25	100/50	50/25	100/25	85/85	85/85	85/85	85/85	85/85	125/63	125/63

Note *1. Instantaneous trip current : Rated current x 14 (Fix)

Low-Instantaneous MCCBs

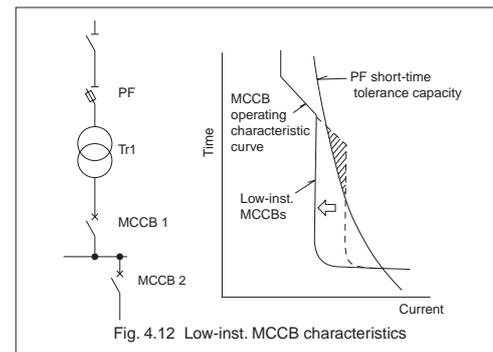
●Low-Inst. MCCBs for Discrimination

When a power fuse (PF) is used for high-voltage protection, make sure that the MCCB on the secondary side is compatible.

Type	NF125-CW	NF125-SW	NF250-CW	NF250-SW	NF400-CW
Number of poles	2 3	2 3 4	2 3	2 3 4	2 3
Rated current (A)	50, 63, 80, 100, 125	16, 20, 32, 40, 50, 63, 80, 100, 125	125, 150, 175, 200, 225, 250	125, 150, 175, 200, 225, 250	250, 300, 350, 400
Instantaneous trip (% of rated current)	600	●	●	●	●
	400	—	—	●	●

Remarks: 1. Ensure compatibility with motor, etc., before use to prevent accidental tripping at start up.
2. Specify rated current and tripping characteristic.
3. There are no short time delay characteristics.

●Specifications



The appearance, size, rated interrupting capacity, accessories, etc., are all identical to the standard instantaneous trip breakers of the same designation.

Generator-Protection MCCBs

These breakers are designed for generator protection.

●Specifications

Type	NF125-SGW	NF125-HGW	NF250-SGW	NF250-HGW	
Number of poles	3	3	3	3	
Rated current (A)	16-32 32-63 63-100 75-125 adjustable	16-32 32-63 63-100 75-125 adjustable	125-250 adjustable	125-250 adjustable	
Instantaneous trip (% of rated current)	300			*1	
Operating time at 150% of rated current (s)	18-28			*1	
Rated insulation voltage (V)	690				
Rated breaking capacity (kA) IEC60947-2 (Icu / Ics)	AC690V	8/8	20/20	8/8	20/20
	AC500V	30/30	50/50	30/30	50/50
	AC440V	36/36	65/65	36/36	65/65
	AC400V	36/36	75/75	36/36	75/75
	AC230V	85/85	100/100	85/85	100/100

*1: These MCCBs operating characteristic must be adjusted as follows.
STD ≤ 3 (Is setting)
LTD: minimum setting (T_L = 12s setting)

3. Special Purpose Breakers

MDU Breakers

Measuring Display Unit (MDU)

- Energy management becomes possible by measurement and display of load current, line voltage, electric power, electric energy, harmonic current (3rd, 5th, 7th, 9th, 11th, 13th, 15th, 17th, 19th, and total) and power factor.
- MDU with pulse output option can output pulse of electric energy.
MDU with CC-Link option can transfer measured data to open network CC-Link.
- When a circuit breaker outputs an alarm, LED on MDU turns on.
PAL : pre-alarm
OVER : over current
- When the circuit breaker has tripped, fault cause and fault current stored in EEPROM. It makes investigation of cause and restoration of power line possible.
- The max. demand value of load current, line voltage, total harmonic current, electric power and electric energy (hourly value), are stored in EEPROM.
And MDU with CC-Link option can store the outbreak time of these. It makes easy finding of peak time of power consumption possible.



NF400-SEP with MDU

Application type		Molded-Case Circuit Breaker			
Type		NF250-SW with MDU	NF400-SEP NF400-HEP with MDU	NF630-SEP NF630-HEP with MDU	NF800-SEP NF800-HEP with MDU
Frame size		250	400	630	800
Rated current In (Amp.)		125, 150, 175, 200, 225, 250	200-400 adjustable	300-630 adjustable	400-800 adjustable
Measured and displayed value	Load current (Present value, demand value, maximum demand value)	○	○	○	○
	Line voltage (Present value, maximum value)	○	○	○	○
	Harmonic current (Present value, demand value, maximum demand value)	○	○	○	○
	Electric power (Present value, demand value, maximum demand value)	○	○	○	○
	Electric energy, electric energy (hourly value), maximum electric energy (hourly value)	○	○	○	○
	Power factor (Present value)	○	○	○	○
	Rated measuring current	250A	400A	630A	800A
	Accuracy of measuring current (Limit deviation tolerance)	±6.25A	±10A	±15.76A	±20A
	Rated measuring voltage	AC440V			
	Accuracy of measuring voltage (Limit deviation tolerance)	±11V			
	Maximum measuring current (Note1.)	500A	800A	1260A	1600A
	Maximum measuring harmonic current (Note1.)	250A	400A	630A	800A
	Maximum measuring voltage (Note1.)	AC690V			
Measurement range of power factor	Lead 0.0~100.0~0.0 Lag(%), The value of power factor is reference value if less than 50%.				
Fault current/cause (Note1.) (Note2.) Overload and short-circuit (Note 3.)	○ The fault cause: "AL" is displayed. The fault current: It displays it up to 10 times the rated current. ("AL switch for the MDU transmission" (option) is necessary.)		○ The fault cause: Overload "L" and short-circuit "SI" are displayed. The fault current: It displays it up to 16 times the maximum rated current.		
Alarm LED indication	PAL, OVER				
Phasing line	3φ3W, 1φ3W (3 poles breaker), 3φ4W (4 poles breaker)				
Electric energy accumulated pulse output (option) (Note3.)	○				
CC-Link transmission (option) (Note3.) (Note4.)	○				
Control power (Allowable voltage range 85~110%)	AC/DC100-240V 12VA (Note5.)				
MDU installation	Breaker mounting	○			
	Panel mounting (Note7.)	○			
Alarm contact output (option)	Pre-alarm (PAL) (Power supply AC/DC100-240V required)	○ PAL			
	Trip indicator (TI) (Power supply AC/DC100-240V required)	–	○ PAL, OAL		

Note1. When the input becomes more than the measurement maximum value, the current, the voltage, the harmonic current, and the fault current display the measurement maximum value. It does the blinking display.

(However, when the fault occurs, the fault cause of and the fault current measurement value do the blinking display though it is less than measurement maximum value.)

When electric power becomes more than the measurement maximum value of or either the current or the voltage becomes more than its measurement maximum value, the electric power does the blinking display.

Note2. Either of overload (L) or short-circuit (SI) is displayed. It doesn't display it at the same time.

Note3. Pulse output option and CC-Link option cannot be attached at the same time.

Note4. When the breaker mounting type of MDU is installed, the version of CC-Link is "Ver.1.10".

When the panel mounting type of MDU is installed, the version of CC-Link cable (FANC-SB) used for the terminal stand from the surface of MDU to the other side is "CC-Link Ver.1.00".

Note5. When control power supplied to MDU, then rushed current transitionally, max. 2Apeak, 1ms (at 240VAC).

Note6. The module (terminal) is attached to the right side of the breaker.

Pre-alarm (PAL) output function can set "Self-holding" or "Auto reset".

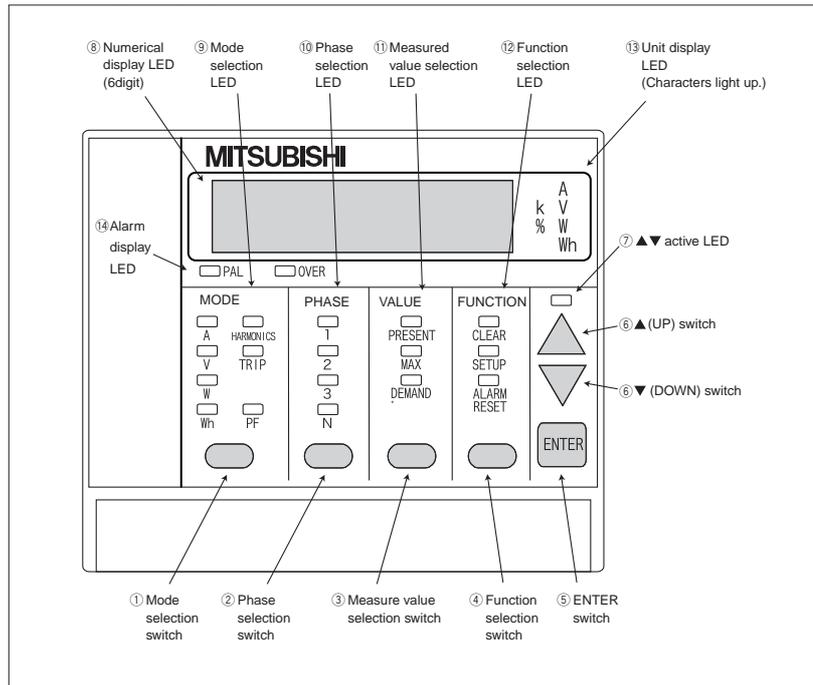
For function of alarm contact output (PAL, OAL), MDU and the circuit breaker must be connected with the mutuality and the control power must be supplied to MDU and alarm contact output module.

Note7. In the case of panel mounting, the part set (the panel holder plate, the screws, the nuts and the MDU connection cable) is packed. And, the MDU connection cable is 2m (standard). (MDU connection cable can be specified by 0.5m, 3m, and as many as 5m.)

3. Special Purpose Breakers

MDU Breakers

Measuring Display Unit



Displayed items and functions are changed by pushing ①~④ switch.

Selected item is shown by LED (below ⑨ - ⑫).

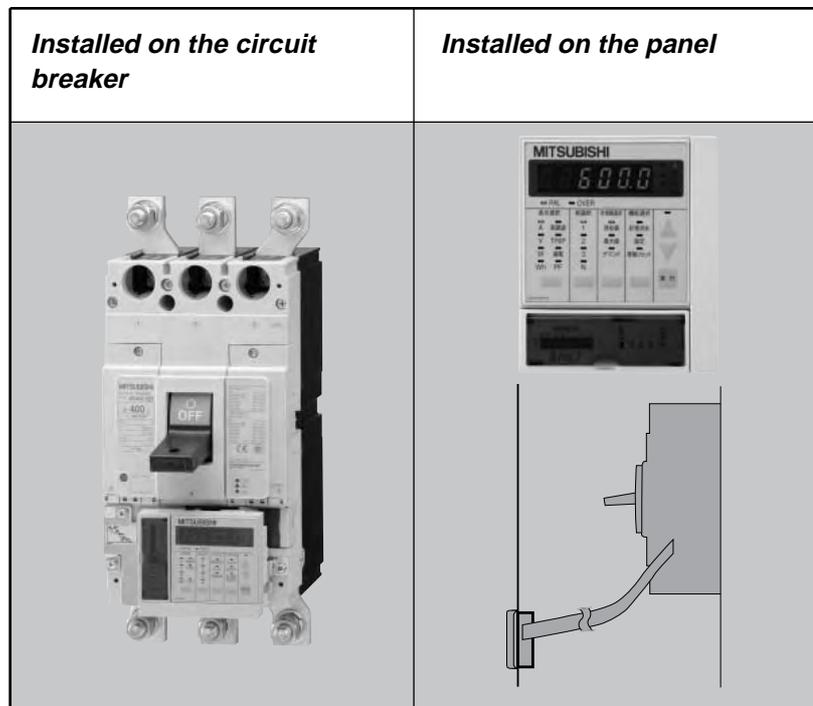
(Ex. Phase selection 1→2→3→N→1...)

▲/▼ switch⑥ is active when adjustment or reset operation is required.

(▲▼ active LED⑦ is turned on)

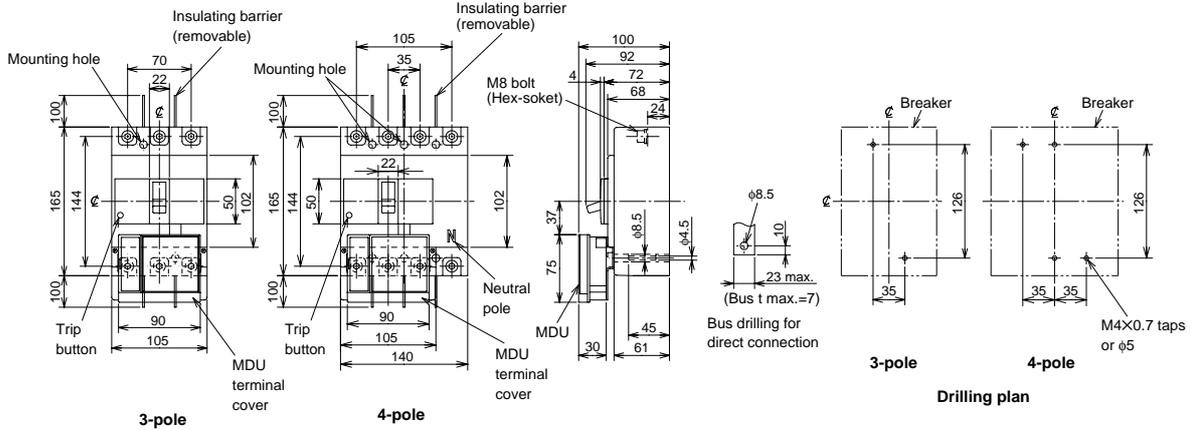
There may be functions which cannot be operated depending upon the specifications.

The invalid function is skipped.

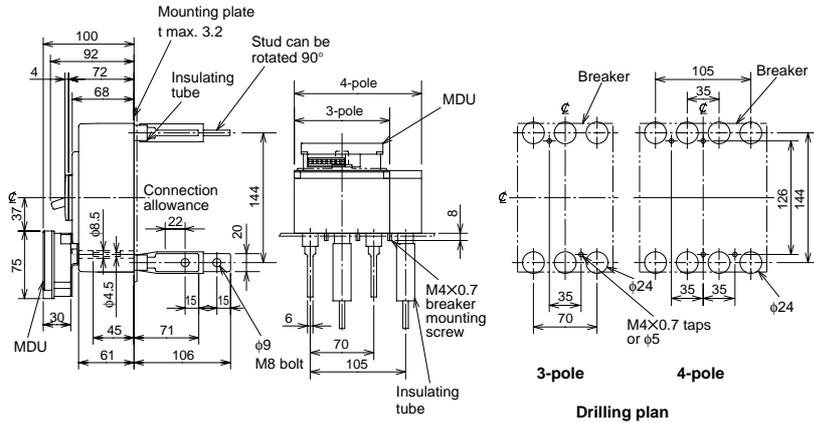


NF250-SW with MDU

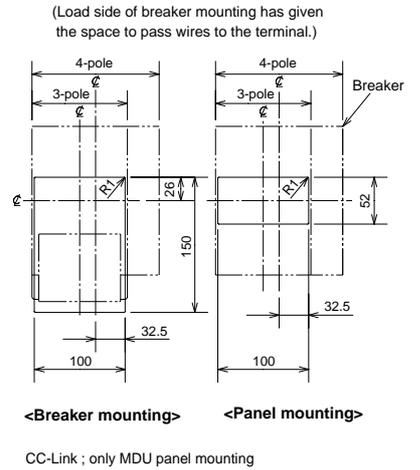
Front-Connection



Rear-Connection

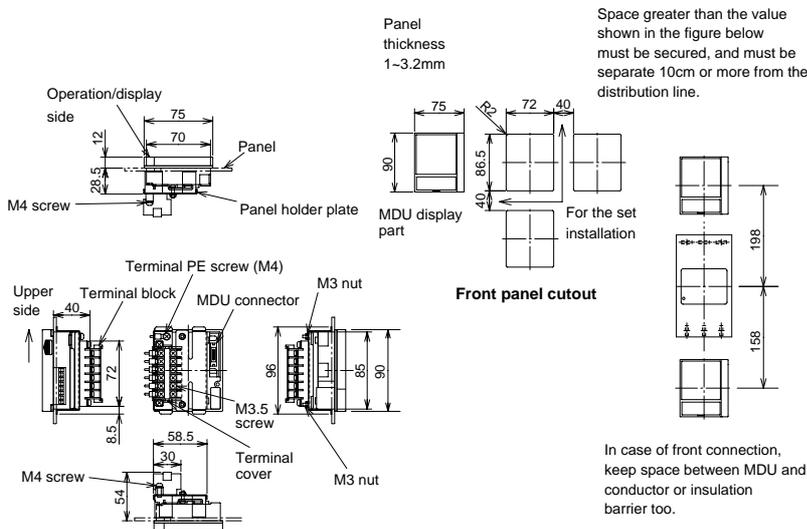


Front-plate cutout



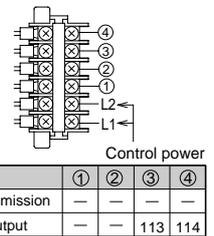
NF250-SW with MDU (No transmission, Pulse output)

MDU panel mounting

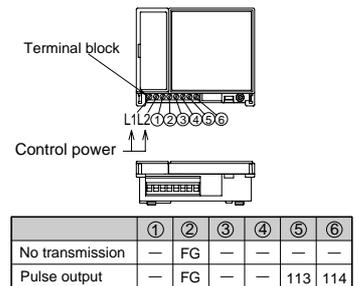


MDU Terminal

<Panel mounting>



<Breaker mounting>

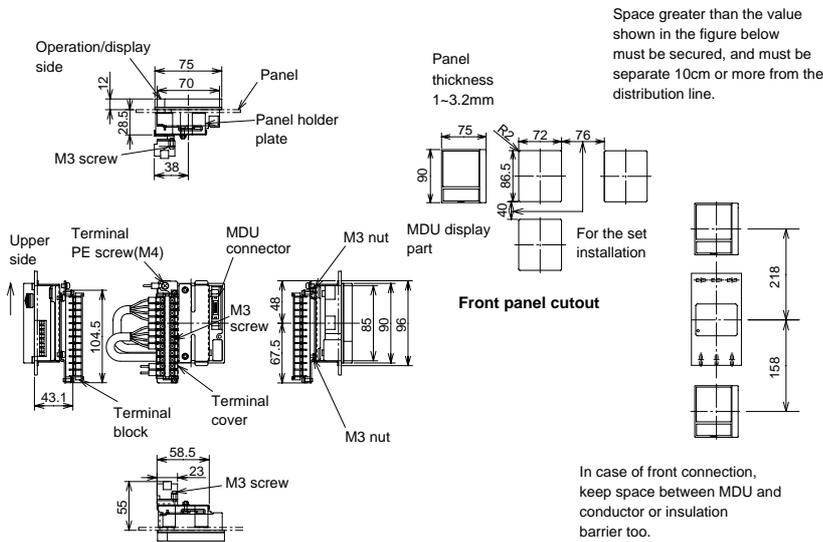


3. Special Purpose Breakers

MDU Breakers

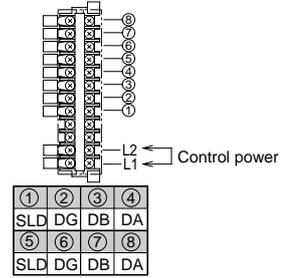
NF250-SW with MDU (CC-Link)

MDU panel mounting MDU is connected with circuit breaker via MDU connection cable.

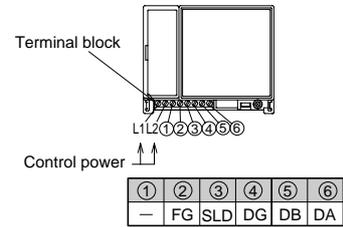


MDU Terminal Figure of the breaker mounting is removed the terminal cover.

<Panel mounting>

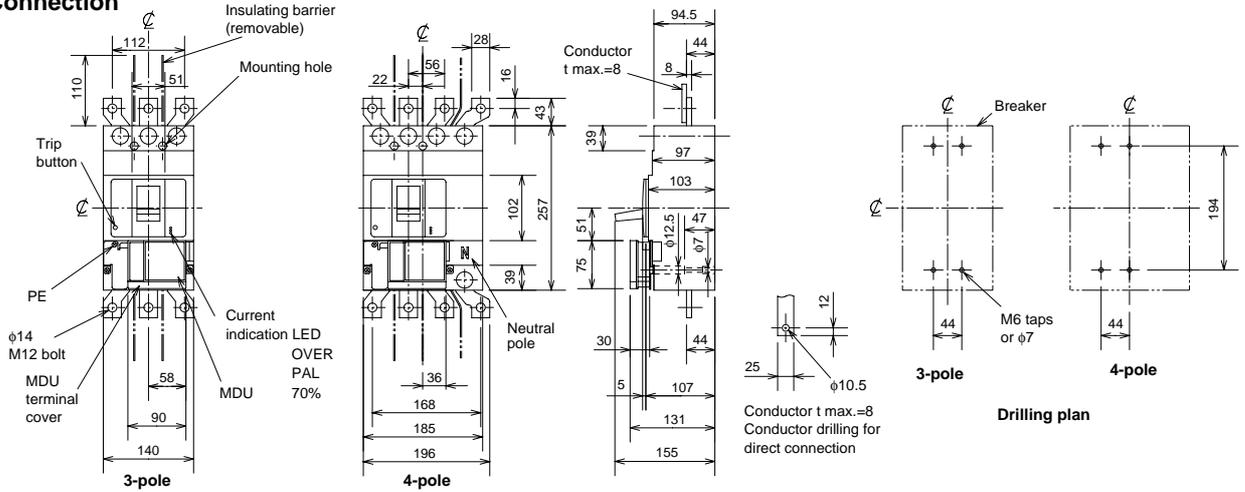


<Breaker mounting>

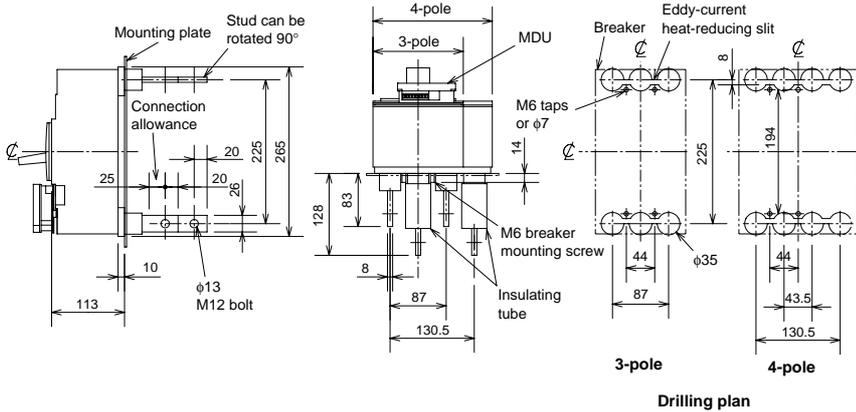


NF400-SEP, NF400-HEP with MDU

Front-Connection



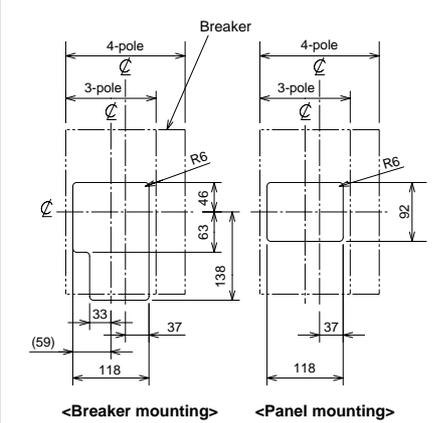
Rear-Connection



Note: The drilling plan is different if insulating barriers are installed.

Front-plate cutout

1mm clearance on each side of handle.
(Load side of breaker mounting has given the space to pass wires to the terminal.)

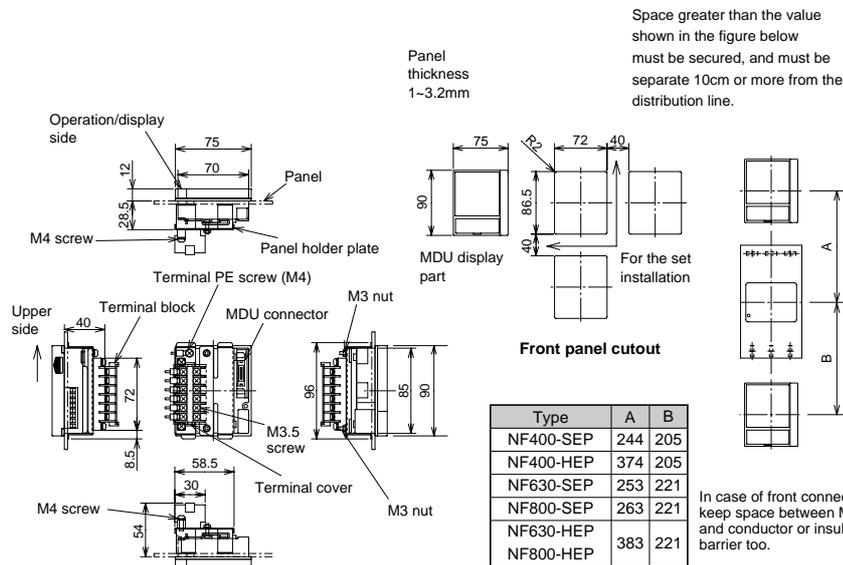


CC-Link ; only MDU panel mounting

NF400-SEP, NF400-HEP, NF630-SEP, NF630-HEP, NF800-SEP, NF800-HEP with MDU (No transmission, Pulse output)

MDU panel mounting

MDU is connected with circuit breaker via MDU connection cable.



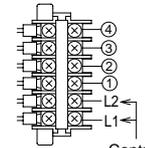
Space greater than the value shown in the figure below must be secured, and must be separate 10cm or more from the distribution line.

In case of front connection, keep space between MDU and conductor or insulation barrier too.

MDU Terminal

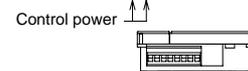
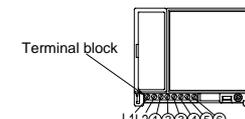
Figure of the breaker mounting is removed the terminal cover.

<Panel mounting>



	①	②	③	④
No transmission	—	—	—	—
Pulse output	—	—	113	114

<Breaker mounting>

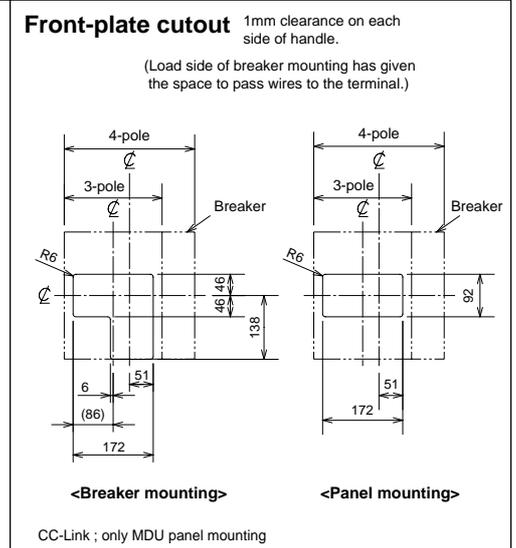
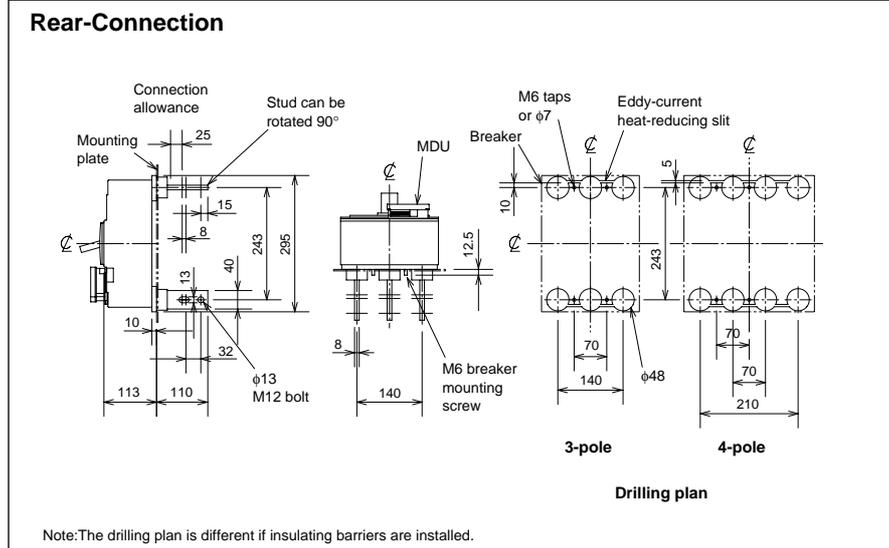
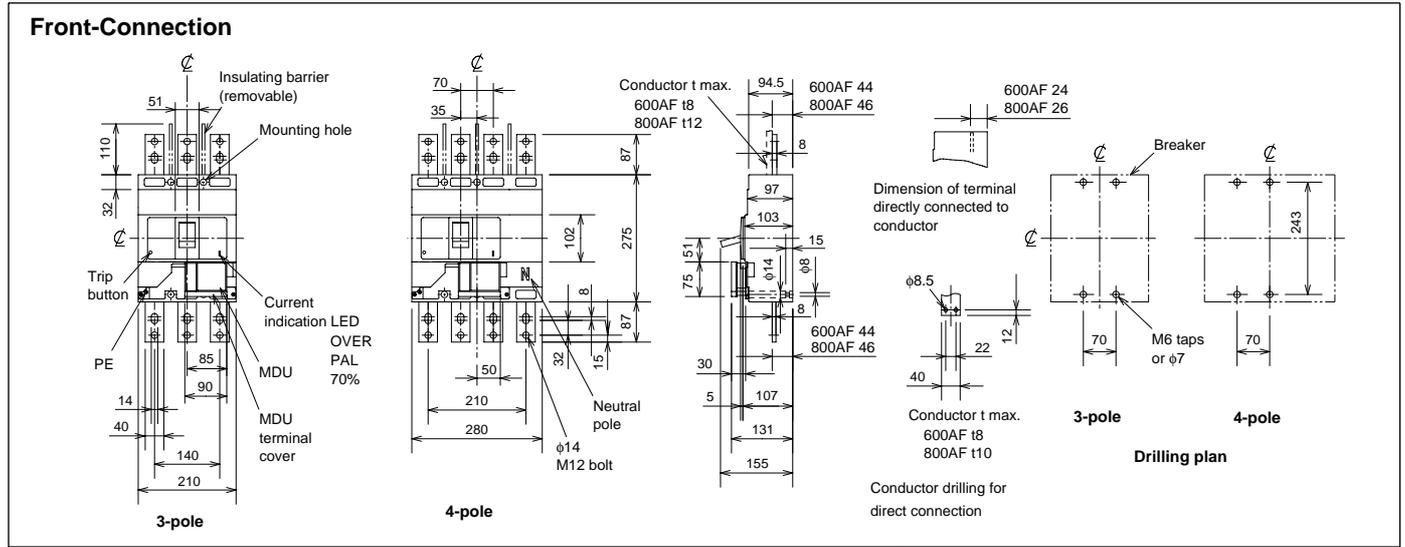


	①	②	③	④	⑤	⑥
No transmission	—	FG	—	—	—	—
Pulse output	—	FG	—	—	113	114

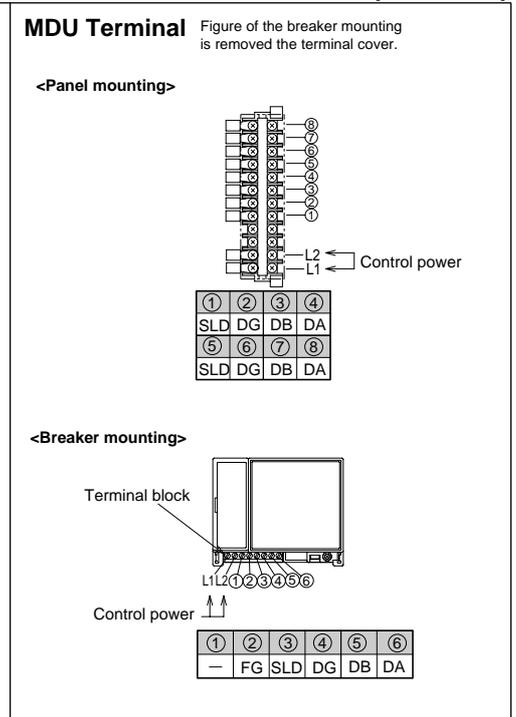
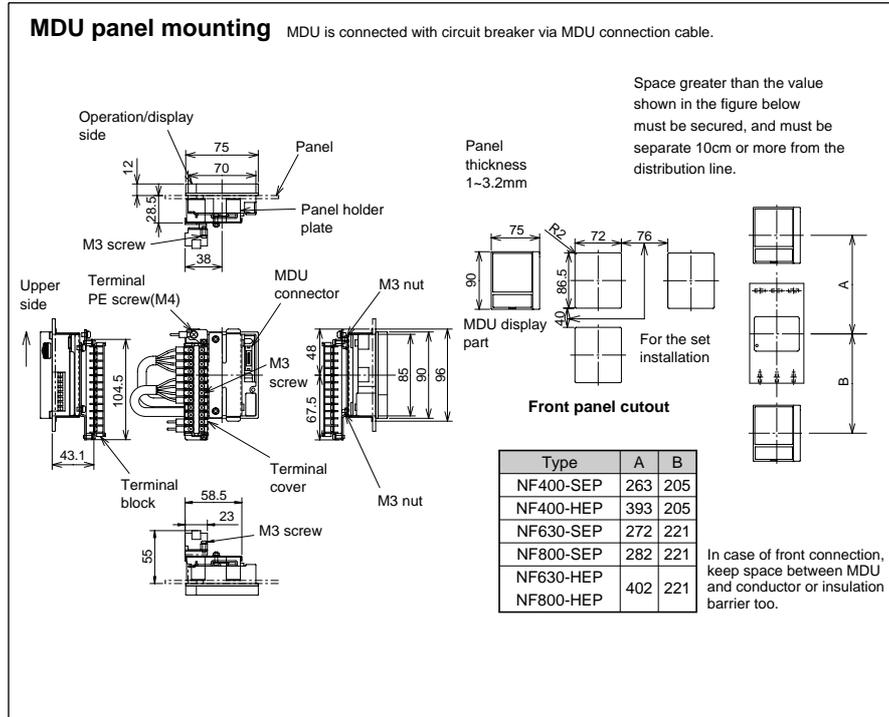
3. Special Purpose Breakers

MDU Breakers

NF630-SEP, NF630-HEP, NF800-SEP, NF800-HEP with MDU



NF400-SEP, NF400-HEP, NF630-SEP, NF630-HEP, NF800-SEP, NF800-HEP with MDU (CC-Link)



4. Connection Method

1. Connection Types

Table 4-1: Connection Types

The front connection model will be delivered unless otherwise specified. Notice, however, that you can convert the front connection model to other types (excluding the plug-in) by using an appropriate connection component, which is separately available.

Connection Method (Abbreviation)	Front connection (F)	Solderless terminal	Rear connection (B)	Plug-in (PM)
Appearance			 *1	

2. Connection Accessories

Table 4-2: List of Connection Accessories

Type name		Solderless terminal (SL)	Rear studs (B-ST)	Plug-in (PM) *1
NF32-SW, NF63-CW/SW/HW	2P		ST-05SW2	PM-05SW2
NF32-SW, MB30-SW, MB50-CW/SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW	3P	-	ST-05SW3	PM-05SW3
NF63-SW/HW	4P		ST-05SW4	PM-05SW4
NV100-SEP/HEP	3P		ST-1SP3	PM-1SP3
NF125-CW/SW	2P	SL-1SW4L *3 SL-1SW4G *4	ST-1SW2	PM-1SW2
NF125-HW			ST-1HW2	PM-1HW2
NF125-CW/SW/HW, MB100-SW, NV125-CW/SW/HW	3P	SL-1SW3L *3 SL-1SW3G *4	ST-1SW3	PM-1SW3
NV125-RW				PM-1UW3
NF125-SW/HW, NV125-SW/HW	4P	SL-1SW4L *3 SL-1SW4G *4	ST-1SW4	PM-1SW4
NF250-CW/SW/HW, NF160-SW/HW	2P	SL-2SW4L *5 SL-2SW4G *6	ST-2SW2	PM-2SW2
NF250-CW/SW/HW, MB225-SW, NF160-SW/HW, NV250-CW/SW/HW/RW/SEW/HEW	3P	SL-2SW3L *5 SL-2SW3G *6	ST-2SW3	PM-2SW3
NV250-RW				ST-2UW3
NF250-SW/HW, NF160-SW/HW, NV250-SW/HW/SEW/HEW	4P	SL-2SW4L *5 SL-2SW4G *6	ST-2SW4	PM-2SW4
NF250-SGW/HGW, NF160-SGW/HGW, NF125-SGW/HGW	2P	SL-2GSW4	ST-2GSW2	PM-2GSWIP2 *2
NF250-RGW/UGW, NF125-RGW/UGW				PM-2GUW2
NF250-SGW/HGW, NF160-SGW/HGW, NF125-SGW/HGW	3P	SL-2GSW3	ST-2GSW3	PM-2GSWIP3 *2
NF250-RGW/UGW, NF125-RGW/UGW				PM-2GUW3
NF250-SGW/HGW, NF160-SGW/HGW, NF125-SGW/HGW	4P	SL-2GSW4	ST-2GSW4	PM-2GSWIP4 *2
NF250-UGW, NF125-UGW				-
NF400-CW/SW	2P	-	ST-4SW2	PM-4SW2
NF400-CW/SW/SEW, NV400-CW/SW/SEW	3P	-	ST-4SW3	PM-4SW3
NF400-HEW/REW, NV400-HEW/REW	3P	-		
NF400-SW/SEW, NV400-SEW	4P	-	ST-4SW4	PM-4SW4
NF400-HEW, NV400-HEW	4P	-		
NF630-CW/SW	2P	-	ST-6SW2	PM-6SW2
NF630-CW/SW/SEW, NV630-CW/SW/SEW	3P	-	ST-6SW3	PM-6SW3
NF630-HEW/REW, NV630-HEW	3P	-		
NF630-SW/SEW, NV630-SEW	4P	-	ST-6SW4	PM-6SW4
NF630-HEW	4P	-		
NF800-SDW	2P	-	ST-8SW2	PM-8SW2
NF800-CEW/SEW, NV800-SEW	3P	-	ST-8SW3	PM-8SW3
NF800-HEW/REW, NV800-HEW	3P	-		
NF800-SEW	4P	-	ST-8SW4	PM-8SW4
NF800-HEW	4P	-		

Notes: *1 You can use the plug-in terminal unit (PM) when the wiring of terminal units is required in advance, and the delivery of both the main body and the components at the same time, which is normal, is not allowed. Furthermore specify the nonuse of plug-in terminal (PM-N) for the connection of circuit breaker.

*2 If safety device is necessary, please require.

*3 Connected wire size: 2.5~25mm²

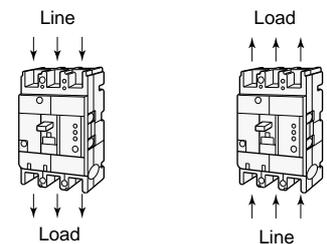
*4 Connected wire size: 25~70mm²

*5 Connected wire size: 14~95mm²

*6 Connected wire size: 70~125mm²

3. Connection of Line and Load

The standard wiring of line and load on the circuit breaker is (a) normal connection shown on the right. Avoid the wiring shown in (b) reverse connection, which may lead to the decrease in breaking performance. However, the reverse connection is allowed for the following models (except NF models with MDU).



Normal connection (a) Reserve connection (b)

Normal and reverse connection methods

NF-C series, NF-S series, NF-H series, NF-U series, MB series, C · S · H series of NV400~800A Frame	Reverse connection is allowed for the standard models.
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3
4

5. Accessories

Internal Accessories

1. Accessories

Table 5-1: Accessories

Internal accessories	Function	Applicable models	Cassette-type of accessories
AL Alarm switch	A switch that electrically indicates the trip status of the circuit breaker.	NF-C-S-H-U, NV-C-S-H-U and MB series	●
AX Auxiliary switch	A switch that electrically indicates the ON-OFF status of the circuit breaker.		●
SHT Shunt trip	A device that electrically trips the circuit breaker from a remote distance. Permissible working voltages are 70 to 110% of the AC rated voltage or 70 to 125% of the DC rated voltage.	NF-C-S-H-U and MB series	●
UVT Undervoltage trip	A device that automatically trips the circuit breaker if the voltage is lowered. Working voltages are 70 to 35% of the UVT rated voltage. When the voltage recovers to 85% or higher, you can reset the device and put into operation.	NF-C-S-H-U, (Note 1) NV-C-S-H-U and MB series	●
EAL Earth-leakage alarm switch	A switch that electrically indicates the trip status of the earth leakage circuit breaker caused by a ground fault. If 250AF and less, This switch is available only for models with the vertical lead-wire terminal unit (SLT).	NV-C-S-H-U	—
TBM Test button module	This module allows you a remote testing by applying a voltage. An external sequence common to SHT can be used. (The standard configuration requires the vertical lead-wire terminal unit (SLT).)	NV-C-S-H-U	—
MG Insulation switch	The incorporation of this switch enables the measurement of insulation resistance between the terminals of the load with the circuit breaker being turned OFF.	NV-C-S-H-U	—
PAL Pre-alarm module	Indicates that the load current exceeds the pre-alarm setting current.	Electronic Types	—
OAL Overcurrent trip alarm switch	Indicates that the breaker has been tripped by overcurrent or short-circuit current.	Electronic Types (SGW, HGW, RGW, UGW)	—

Note: (1) Models NV250-SEW/HEW are excluded.

2. Switch Operation and Rating

Table 5-2: AL Switch Operation

Circuit breaker status	AL switch contact
 OFF or ON	 98/ALa (open) 96/ALb (closed) 95/ALc
 Trip	 98/ALa (closed) 96/ALb (open) 95/ALc

Table 5-3: AX Switch Operation

Circuit breaker status	AX switch contact
 OFF or Trip	 14/AXa (open) 12/AXb (closed) 11/AXc
 ON	 14/AXa (closed) 12/AXb (open) 11/AXc

Table 5-4: EAL Switch Operation

Circuit breaker status	EAL switch contact
Over current, short circuit trip or on or off	250A frame or less EALa (open) EALc
	400A frame or more EALa (open) EALb (closed) EALc
Ground-fault trip	250A frame or less EALa (closed) EALc
	400A frame or more EALa (closed) EALb (open) EALc

Table 5-5: MG Switch Operation

Circuit breaker status	MG switch status
 OFF or Trip	 MG switch (open)
 ON	 MG switch (closed)

Table 5-6: AL-AX-EAL Switch Rating (In case of EAL, 400AF and more)

Switch type	AC			DC		
	Voltage (V)	Current (A)		Voltage (V)	Current (A)	
		Resistive load	Inductive load		Resistive load	Inductive load
S	460	—	—	250	0.2	0.2
	250	3	2	125	0.4	0.4
	125	5	3	30	4	3
V	460	5	2	250	0.3	0.3
	250	10	10	125	0.6	0.6
	125	10	10	30	10	6
X ^{*1}	460	5	2.5	250	5	3
	250	10	10	125	10	6
	125	10	10	30	10	10

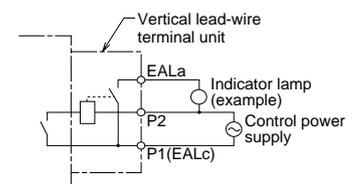
Note: *1. When DC use polarity must be considered.

Please contact us for applications in the field of smaller current values.

Table 5-7: EAL Switch Rating (250AF and less)

Voltage (V)	AC	
	Current A	
	Resistive load	Inductive load
200	3	2
100	3	2

A control power supply (compatible to 100 and 200V AC) is required; see the diagram on the right showing its wiring. (The permissible range of voltage of the control power supply is 80 to 242V AC, and the power requirement is 10VA.)



3. Maximum Number of Internally Mounted Accessories



Table 5-8: Combinations of Accessories

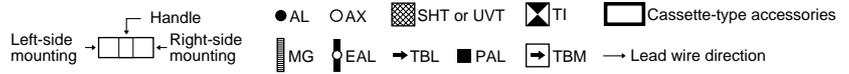
Series		NF-C · S · H · U, MB			NV-C · S · H · U	
Type	NF30-CS MB30-CS	NF32-SW NF63-CW/SW/HW NF125-CW/SW	NF32-SW(3P) NF63-CW/SW/HW(3P) NF125-CW(3P), NF125-SW(3P, 4P) NF125-HW, NF125-SGW/HGW NF125-RGW/UGW NF160-SW/SW/HW/HGW NF250-CW/SW/HW NF250-SGW/HGW NF250-RGW/UGW MB30-SW, MB50-CW/SW MB100-SW, MB225-SW	NV30-CS	NV32-SW NV63-CW/SW/HW NV125-CW/SW/HW NV250-CW/SW/HW NV250-SEW/HEW NV125-RW, NV250-RW	
Poles	2, 3	2	2, 3, 4	3	3, 4	
Accessories	AL					
	AX					
	AL + AX					
	SHT or UVT					
	AL + SHT or UVT					
	AX + SHT or UVT					
	AL + AX + SHT or UVT					
	MG					
	AL + MG					
	AX + MG					
	EAL					
	TBM					
	PAL					

- Notes: (1) Second AX can substitute the AL on the left-pole.
 (2) Models with UVT require a UVT voltage module to be installed on the lead-wire terminal unit. (No such voltage module is required for SHT.) Part of UVT accessories is not of cassette type. (Details will be available upon request.)
 (3) UVTs for left-pole installation can be produced, if specified, for frame current values of 125A (excluding SGW/HGW/RGW/UGW).
 (4) SHT cannot be installed.
 (5) EALs are available only for models with the vertical lead-wire terminal unit (SLT). Specify a control power supply of either 100 or 200 V AC.
 (6) Models NV250-SEW/HEW are not allowed to install the UVT device.
 (7) The standard lead drawing is performed laterally. Load drawing is also available.
 (8) Only the models with an SLT are available. EAL and PAL require a control power supply (shared 100 - 200 VAC). For the 24 VDC TBM only, instruct us of a control voltage. (The standard shared voltage is 100 - 240 VAC/100 - 240 VDC.)
 (9) Models CE marking are not allowed to install the TBM device.

Remarks: (1) Circled numbers indicate the order of installation.
 (2) Accessories of EAL, and TBM can be installed independent of installations of AL, AX, and MG. (Two units among EAL, and TBM cannot be installed at the same time.)

5. Accessories

Internal Accessories



Type	NF-C/S/H	NF400-CW/SW NF400-SEW/HEW/REW NF630-CW/SW NF630-SEW/HEW/REW	NF800-CEW/SDW NF800-SEW/HEW/REW	NF1000-SEW NF1250-SEW NF1600-SEW NF1250-SDW NF1600-SDW
	NF-U	NF400-U EW (3P)	NF400-U EW (4P), NF800-U EW	—
Poles	2, 3, 4			
Switch type	S			V
Accessories	AL		*3	
	AX	① ③ ② ④	① ⑤ ③ ② ⑥ ④	① ③ ② ④ ⑤ ⑥
	SHT or UVT	*1 *2	*1 *2	*2
	AL + AX	*3	*3	*2
	AL + SHT or UVT	*1 *2 *3 *4	*1 *2 *3 *4	*2
	AX + SHT or UVT	*1 *2 *3 *4	*1 *2 *3 *4	*2
	AL + AX + SHT or UVT	*1 *2 *3 *4	*1 *2 *3 *4	*2
	PAL (contact output)	*5	*5	*5
	TI	*6	*6	

The number within the circle shows the order of mounting.

*1. SHT and UVT are right-pole mounting as standard. Please specify if left-pole mounting is required.

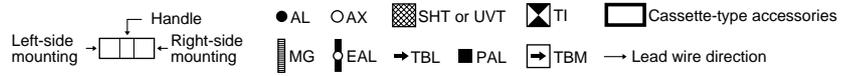
*2. UVT mounting requires a UVT voltage module (SHT requires no such voltage module).

*3. When mounting more than three left-pole mounting devices by SLT, or when mounting a SHT or UVT to the same pole as the AL, AX or AL + AX, a special-order SLT is necessary.

*4. When mounting a UVT to the same pole as the AL, AX, or AL + AX, the UVT voltage module is separate.

*5. SLT-equipped is standard. Control voltage (AC100~200V) is necessary. (In this case, no other accessories can be mounted to the breaker's right pole.)

*6. SLT-equipped is standard. Control voltage (AC100~200V/DC100~200V) is necessary. (In this case, no other accessories can be mounted to the breaker's right pole.)



Type	NV-C/S/H	NV400-CW/SW NV400-SEW/HEW/REW NV630-CW/SW NV630-SEW/HEW	NV800-SEW/HEW
Poles		3, 4	
Switch type		S	
Accessories	AL		*2
	AX		*2
	SHT or UVT	*1	*1
	AL + AX	*2	*2
	AL + SHT or UVT	*1 *2 *3	*1 *2 *3
	AX + SHT or UVT	*1 *2 *3	*1 *2 *3
	AL + AX + SHT or UVT	*1 *2 *3	*1 *2 *3
	MG		
	AL + MG		

The number within the circle shows the order of mounting.

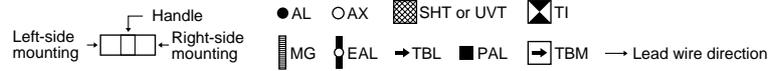
*1. UVT mounting requires a UVT voltage module (SHT requires no such voltage module).

*2. When mounting more than three left-pole mounting devices by SLT, or when mounting a SHT or UVT to the same pole as the AL, AX or AL + AX, a special-order SLT is necessary.

*3. When mounting a UVT to the same pole as the AL, AX or AL + AX, the UVT voltage module is separate.

5. Accessories

Internal Accessories



Type	NV-C/S/H	NV400-CW/SW NV400-SEW/HEW/REW NV630-CW/SW NV630-SEW/HEW	NV800-SEW/HEW	
Poles		3, 4		
Switch type		S		
Accessories	AX + MG			
	AL + AX + MG			
	EAL			
	TBL			
	TBM			
	PAL (contact output)	 Option for NV400-SEW/HEW/REW NV630-SEW/HEW	*1	 Option for NV800-SEW/HEW
	TI	 Option for NV400-SEW/HEW/REW NV630-SEW/HEW	*2	 Option for NV800-SEW/HEW

The number within the circle shows the order of mounting.

1. EAL, TBL, and TBM can be mounted regardless of the number of AL, AX, SHT, UVT and MG accessories. (However, two EALs, TBLs or TBMs cannot be mounted simultaneously.)

2. The PAL's dimensions and specifications change for the NF-C/S and NV-C/S series.

*1. SLT-equipped is standard. Control voltage (AC100-200V) is necessary. (In this case, no other accessories can be mounted to the breaker's right pole.)

*2. SLT-equipped is standard. Control voltage (AC100-200V/DC100-200V) is necessary. (In this case, no other accessories can be mounted to the breaker's right pole.)



Type	NF-C/S/H	NF50-SWU NF100-CWU NF100-SWU	NF50-SWU NF100-CWU NF100-SWU	NF-SFW NF-SJW NF-HJW	NF225-CWU	NF-SKW	NF-SLW	
Poles	2	3			3			
Switch type	S						S	
Accessories	AL							
	AX							
	SHT or UVT	(Note 1)	(Note 1)	(Note 1)	(Note 2)	(Note 2)	(Note 2)	
	AL + AX		(Note 4)	(Note 4)	(Note 4)	(Note 4)	(Note 6)	(Note 6)
	AL + SHT or UVT		(Note 1)	(Note 1)	(Note 2)	(Note 1) (Note 5) (Note 6) (Note 7)	(Note 1) (Note 5) (Note 6) (Note 7)	
	AX + SHT or UVT		(Note 1)	(Note 1)	(Note 2)	(Note 1) (Note 5) (Note 6) (Note 7)	(Note 1) (Note 5) (Note 6) (Note 7)	
	AL + AX + SHT or UVT		(Note 1) (Note 4)	(Note 1) (Note 4)	(Note 2) (Note 4)	(Note 1) (Note 5) (Note 6) (Note 7)	(Note 1) (Note 5) (Note 6) (Note 7)	

- Notes: (1) If a UVT is used, a UVT voltage module is installed on the lead wire terminal block. (The SHT requires no voltage module.)
 (2) If a UVT is used, a UVT voltage module is installed on the lead wire terminal block. (The SHT requires no voltage module.) No cassette is attached to the UVT.
 (3) If a UVT is used, the UVT voltage module is externally installed. (The SHT requires no voltage module).
 (4) The 2nd AX can be installed instead of the AL on the left pole.
 (5) The standard mounting of the SHT and the UVT is performed on the right pole. If mounting on the left pole is required, instruct us. (The UVTs for interlocks are mounted on the left pole.)
 (6) We can manufacture the SLTs used when 3 or more accessories are installed on the left pole and the SLTs used when the AL and the AX are attached on the same pole that is attached with the SHT or the UVT at your order.
 (7) If a UVT is used and an AL, an AX or an AL + an AX are attached to the same pole that is attached with the UVT, the UVT voltage module is separately installed.

Remarks: (1) Encircled numbers show the order of mounting.

5. Accessories

Internal Accessories

4. Shunt Trip (SHT)

Table 5-9: Standard Coil Rating

Series	Cut-off switch	Voltage (V)	Input power requirement (VA) (Note 1)		Operating time (ms) (Note 2)
			AC	DC	
NF-C • S • H • U MB NV-C • S • H • U	Equipped	AC100-240 380-550 (Compatible to 50 and 60Hz.) DC100-125	120	50	15 or less
				60	
		AC100-450/DC100-200 (50 also 60Hz)	100V : 20 200V : 50 330V : 120 450V : 170	100V : 10 200V : 35	5-15
				70	
AC100-120 200-240 380-450 (50 also 60Hz) DC100	200	70	7-15		

Notes: (1) Secure a sufficient input power so that the voltage will not drop below the permissible lower working voltage (70% of the lowest rated voltage).
(2) The operating time denotes the time from when the rated voltage is applied to SHT until when the main contact of the breaker starts to open.

Table 5-10: Coil Ratings (List of manufacturable special voltages)

MCCB type	AC (V)				DC (V)									AC/DC (V)
	24	24-48	48	380-550	12	24	24-36	36	36-48	48	110	125	220-250	24-48
NF-C • S • H • U MB 32(30) • 63A Frame 125A Frame 160 • 250A Frame	-	●	-	-	●	-	●	-	●	-	-	-	●	-
NF400-CW/SW/SEW/HEW/REW, NF630-CW/SW/SEW/HEW/REW NF800-SDW/CEW/SEW/HEW/REW, NF400-UEW, NF800-UEW NV400-CW/SW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW, NV800-SEW/HEW	-	-	-	●	●	-	-	-	-	-	-	-	-	●
NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	●	-	●	-	●	●	-	●	-	●	●	●	-	-

5. Undervoltage Trip (UVT)

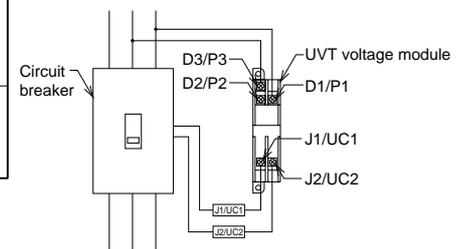
Table 5-11: Coil Rating

Series	Voltage (V) (Note 1)		Input power (VA)	Operating time (ms) (Note 2) (Note 3)
	Standard voltage	Special voltage (note 5)		
250AF and less	AC100-110/120-130 selectable 200-220/230-250 selectable 380-415/440-480 selectable (Note4) DC100/110 selectable	AC24/48 selectable 500-550/600 selectable DC24/48 selectable 110/125 selectable	5	30 or less
NF400-CW/SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW/UEW NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW NV800-SEW/HEW	AC100-110 200-220 400-440 (Note4) DC100	AC110-120 220-240 380-415 440-480 500-550 (Note4) DC24 48 110	5	5-30
NF1000-SEW NF1250-SEW/SDW NF1600-SEW/SDW	AC100-120 200-240 380-450 (Note4) DC100-110	AC24 48 DC24 48 440-480 120-125 500-550 (Note4)	5	5-35

Notes: (1) A desired voltage can be selected by changing the terminal wiring.
(2) The operating time denotes the time from when no voltage is applied to UVT until when the main contact of the breaker starts to open.
(3) Time-delayed types can be produced. Details will be available upon request.
(4) Compatible to 50 and 60Hz
(5) Rated voltage differs according to make and country of manufacture. Please consult your dealer.

● UVT Voltage Module

The UVT voltage module is normally installed on the vertical lead-wire terminal unit (SLT). (A separate-mount type can be produced upon request.)



UVT Voltage Module Wiring Diagram (Lead-Wire Connection)

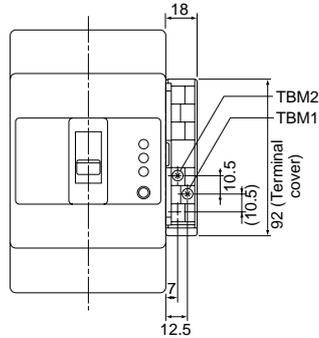
6. Test Button Module (TBM)

- The effect of pressing the test button on the breaker main body is produced while the input control voltage is applied. (Apply the voltage for more than two seconds for the breaker main body of time-delayed NV models.)
- The model with the vertical lead-wire terminal unit (SLT) is standard.

Table 5-12

Series	NV-C • S • H • U
Input rated control voltage (V)	Compatible to AC100-240/DC100-240 (DC24) (Note 1)
Input control power (VA)	1VA or less

Note: (1) The specifications of 100-240V AC/100-240V DC are standard unless otherwise specified. The specifications of 24 V DC are available if requested.



7. Lead-wire Specifications

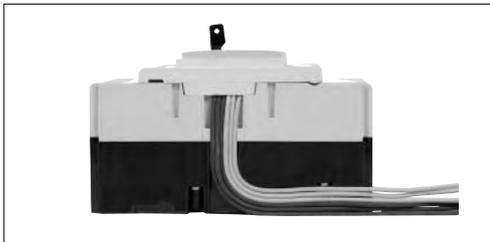
Table 5-13

Type	Size	Length	Marking	Ring-mark example
Heat-resistant wire	0.5mm ²	(Note 1) 450mm	A ring-mark marked by the terminal symbol is attached to each lead-wire.	98/ALa, 96/ALb, 95/ALc C1/S1, C2/S2

Note: (1) The length is 400 mm for the model of four-pole, right-pole installation.

- Lead wires are normally extended laterally.
- Grooves are provided standardly on the side face of the breaker, allowing the extension of the lead wires along them. (Note 1)

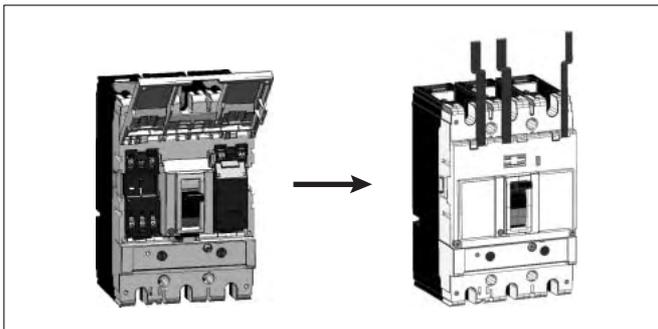
Note: (1) The models of NF125-SGW/HGW/RGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/RGW/UGW, 400Aframe and more are excluded.



8. Internal Terminal Type (INT)

- This unit is an internal accessory that is provided with terminal screws for lead-wire connection.

Remark: (1) Available for the models of NF125-SGW/HGW/RGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/RGW/UGW.



5. Accessories

Internal Accessories

9. Vertical Lead-wire Terminal Block (SLT)

- The circuit breaker can be mounted, being closely fitted to the unit.
- Terminal screws are arranged in a zigzag pattern, and screws can be tightened further after wiring.
- A terminal cover is provided standardly.
- This unit supports the models of front connection, rear connection, and plug-in type (excluding PLT).

■NFB

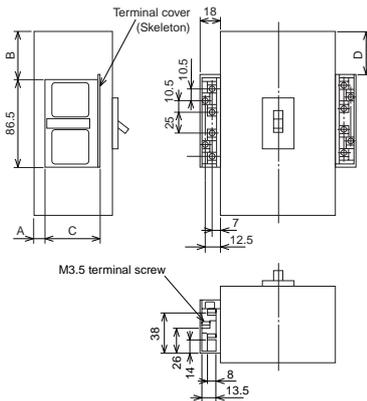


Table 5-14: Summary of Dimensions

Applicable models	A	B	C	D
NF30-CS, MB30-CS	4	4.5	44.5	4.5
NF32-SW, NF63-CW/SW/HW	7	17.5	54	17.5
MB30-SW, MB50-CW/SW				
NF50-SWU	7	27.5	54	27.5
NF125-CW/SW/HW	7	19	54	19
NF100-CWU, NF100-SWU	7	29	54	29
NF125-HGW, NF225-HGW	25	25	54	25
NF-SFW,NF-SJW, NF-HJW	25	35	54	35
NF250-CW/SW/HW, NF225-CWU, NF160-SW/HW	7	37	54	37
NF400-CW/SW/SEW/HEW/REW, NF-SKW, NF630-CW/SW/SEW/HEW/REW	41	79.5	54	79.5
NF800-CEW/SDW/SEW/HEW/REW, NF-SLW		88.5	54	88.5
NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW	62.5	173	52	173
NF400-UEW(3P)	138	119.5	54	119.5
NF400-UEW(4P), NF800-UEW		135.5	54	135.5

Remark: (1) Terminal screw tightening torque M3.5 ... 0.9~1.2N·m

■NV

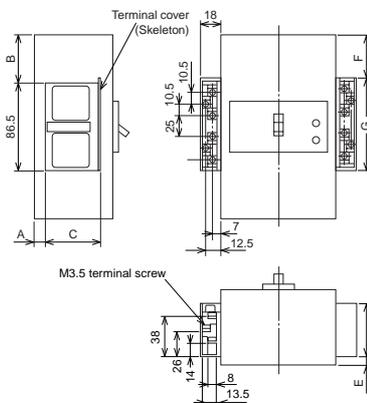


Table 5-15: Summary of Dimensions

Applicable models	A	B	C	D	E	F	G
NV30-CS	4	4.5	44.5	44.5	4	4.5	86.5
NV32-SW, NV63-CW/SW/HW	7	17.5	54	52	7	21.5	92
NV125-CW/SW/HW	7	19	54	54	7	19	86.5
NV250-CW/SW/HW, NV250-SEW/HEW, NV225-CWU	7	37	54	52	2.5	37	92
NV125-RW	7	80	54	54	7	80	86.5
NV250-RW	7	112	54	52	2.5	112	92
NV400-CW/SW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW	41	79.5	54	52	26.5	79.5	92
NV800-SEW/HEW	41	88.5	54	52	26.5	88.5	92

Remarks: (1) Terminal screw tightening torque M3.5 ... 0.9~1.2N·m
(2) Lead-wire terminal block for TBL is attached to right-side.

■14 Terminals SLT

SLT when three and more than three pieces of internal accessories are mounted on left-side.

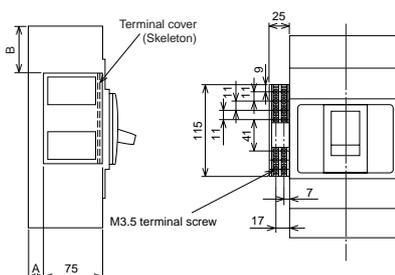


Table 5-16

Applicable models		A	B
NFB	NV		
NF400-CW/SW/SEW	NV400-CW/SW/SEW	20	60
NF400-HEW/REW, NF-SKW	NV400-HEW/REW		
NF630-CW/SW/SEW	NV630-CW/SW/SEW/HEW		
NF630-HEW/REW			
NF400-UEW(3P)	-	117	100
NF800-CEW/SDW/SEW	NV800-SEW/HEW	20	69
NF800-HEW/REW, NF-SLW			
NF1000-SEW, NF1250-SEW/SDW			
NF1600-SEW/SDW		35	154
NF400-UEW(4P), NF800-UEW		117	116

Remark: (1) Terminal screw tightening torque M3.5 ... 0.9~1.2N·m

10. Pre-Alarm Module (PAL)

This module functions to give alarm output when load current exceeds a preset current level and serves for securing continuous power supply and also for preventive maintenance. The electronic breakers with mount digital ETR of 125 to

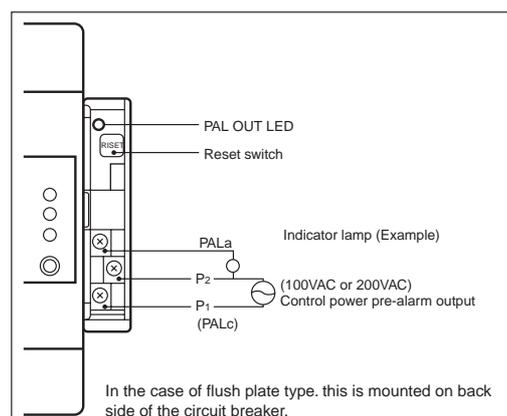
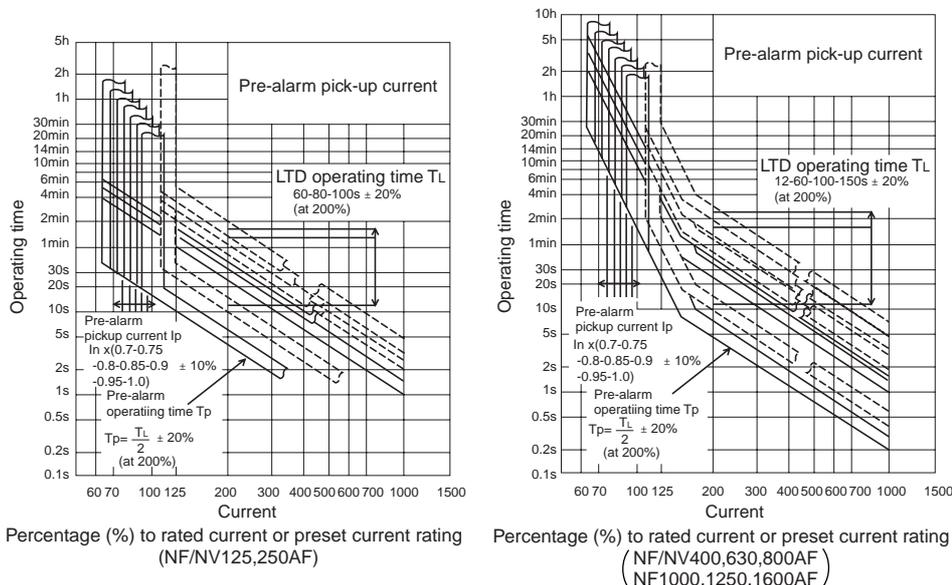
1600AF are provided with this module as an option. (Some modules are with this module as standard equipment.)

Table 5-17

Type	Pre-alarm LED (Auto reset)	Solid state relay (SSR) output-Contactless output (Auto reset)		Pre-alarm module-Contact output (1a)		
		Switching capacity	Switching capacity	(Self-holding)	Switching capacity	Reset system
NF125-SGW/HGW	Standard equipment	Option	24VDC 100-200VAC 20mA	Option	100VAC or 200VAC 2A	Press the reset switch or turn off control power.
NF160-SGW/HGW						
NF250-SGW/HGW						
NV250-SEW/HEW						
NF400-SEW NF400-HEW NF400-REW NF400-UEW NF630-SEW NF630-HEW NF630-REW NF800-CEW NF800-SEW NF800-HEW NF800-REW NF800-UEW NV400-SEW NV400-HEW NV400-REW NV630-SEW NV630-HEW NV800-SEW NV800-HEW NF1000-SEW NF1250-SEW NF1600-SEW	Option	24VDC 100-200VAC 20mA				

- ①Pre-alarm LED The LED starts blinking on the circuit breaker when load current exceeds the preset current, then changes to continuous glowing when pre-alarm output is given.
- ②Solid-state relay output Open the upper cover of the circuit breaker, connect the connector of the lead wire packed together and use it as the lead wire outlet. In this case, only the lead wire outlet of the internal accessories can be attached to the right pole. (For flush plate type, the outlet is manufactured in advanced as a PAL mount.)
- ③Pre-alarm module SLT is attached as standard and is used as the control power source of 100VAC or 200VAC. In this case, no other internal accessories can be attached to the right pole. (Auto resetting is also applicable.)

●Pre-alarm characteristics



5. Accessories

Internal Accessories

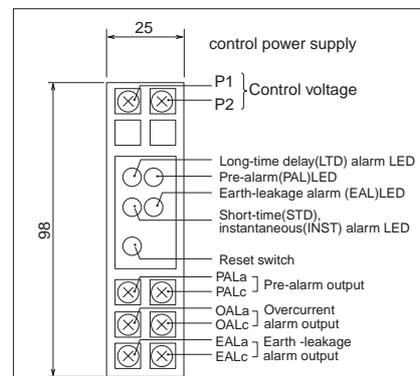
11. Trip Indicator (TI)

When the breaker is tripped, this accessory installed on the right side will display the cause of the trip--either long delay (LTD), short or instantaneous (STD/INST), earth-leakage (EAL) (with earth-leakage breakers only)--on its LED and output an alarm signal. In this case, both LTD and STD/INST are treated as overcurrent trips (OAL) and output signals. Pre-alarm is also output. Again, with this module, it is impossible to connect other internal accessories to the breaker's right side.)

Table 5-18

Type	LED contents
NF400-SEW/HEW/REW/UEW NF630-SEW/HEW/REW NF800-CEW/SEW/HEW/REW/UEW	Long-time delay, Short-time delay, Instantaneous, Pre-alarm
NV400-SEW/HEW/REW, NV630-SEW/HEW NV800-SEW/HEW	Long-time delay, Short-time delay, Instantaneous, Earth-leakage, Pre-alarm

* Requires 100-200VAC control voltage.



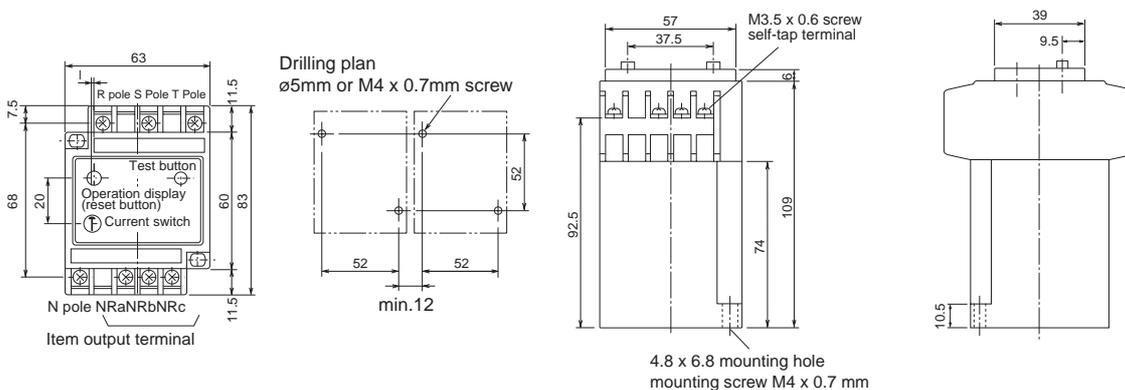
12. 3ø4W Neutral-pole protection Relay (NR)

- In a 3-phase 4-wire circuits, the voltage rise of the circuit by phase failure of a neutral line is detected, and a contact output is taken out.

Table 5-19

Phase/wire type		3 ø 4W				
Rated voltage	VAC	415				
Usable supply voltage	VAC	304-484				
Tripping characteristics	Usable voltage (line voltage)	VAC	380	400	415	440
	Total operating overvoltage (phase voltage) (135% of total phase voltage)	VAC	296	312	323	343
	Total non-operating overvoltage (phase voltage) (120% of total phase voltage)	VAC	263	277	288	305
	Total overvoltage operating time	(s)	1			
	Overvoltage non-operating time	(s)	More than 0.1			
Trip indication method	Button					
Reset method	Reset button (open-phase display use)					
External output contacts	1c					
		AC		DC		
		cos ø			L/R	
	Voltage	1.0	0.4	Voltage	0	0.007
	100, 120V	7A	7A	30V	7A	6A
200, 240V	7A	7A	125V	0.6A	0.6A	
415V	5A	2A	250V	0.3A	0.3A	

Remark: Using with a shunt-trip device (SHT) equipped breaker will improve tripping and phase protection.



5. Accessories

External Accessories

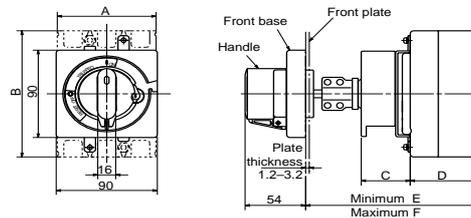
1. V-type Operating Handle

- Appearance (Color N1.5)

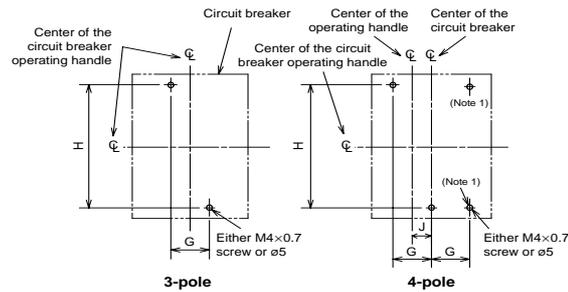


- This handle in conjunction with the breaker main enables the isolation function effective.
- The safety standards of EN Standards (EN60204-1) are satisfied.
- Degrees of protection (IEC60529) IP65 is satisfied standardly.
- OFF-position lock only is available for up to three commercial padlocks (35mm, 40mm).
- A door-lock mechanism allows the door to be opened at OFF-position only.

● Outside Dimension Diagram

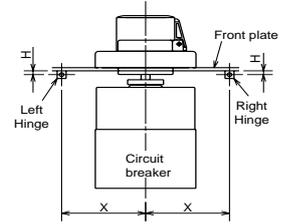


● Mounting-hole Drilling Dimension Diagram



Note 1: The drilling at this position is not required for the models of both V2GSW and V2GSWF.

Center of Hinge and Circuit Breaker



H	X
0 or more	(5H+100) or more

The above illustration shows a view of the hinges and the circuit breaker when viewed from the direction of the load.

● Front Plate Drilling Dimension Diagram

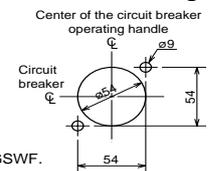


Table 5-20: Summary of Dimensions

Type name	Applicable models	Number of poles	Dimensions (mm)								
			A	B	C	D	E	F	G	H	J
V05SW	NF32-SW, NF63-CW/SW/HW, NV32-SW NV63-CW/SW/HW, MB30-SW	3P	75	130	44	61	154	300	25	111	—
		4P	100								12.5
V05SWF (Note 2)	MB50-CW/SW	3P	75	130	44	61	125	—	30	111	—
		4P	100								12.5
V1SW	NF125-CW/SW/HW, NV125-CW/SW/HW MB100-SW	3P	90	130	44	61	154	518	30	111	—
		4P	120								15
V1SWF (Note 2)	MB100-SW	3P	90	130	44	61	125	—	30	111	—
		4P	120								15
V2SW	NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW NV250-SEW/HEW, MB225-SW	2P, 3P	105	165	46	61	154	518	35	126	—
		4P	140								17.5
V2SWF (Note 2)	NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW NV250-SEW/HEW, MB225-SW	2P, 3P	105	165	46	61	125	—	35	126	—
		4P	140								17.5
V2GSW	NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW	2P, 3P	105	165	46	79	172	536	35	126	—
		4P	140								17.5
V2GSWF (Note 2)	NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW	2P, 3P	105	165	46	79	143	—	35	126	—
		4P	140								17.5

Notes: (1) This hole is not required for two and three poles.

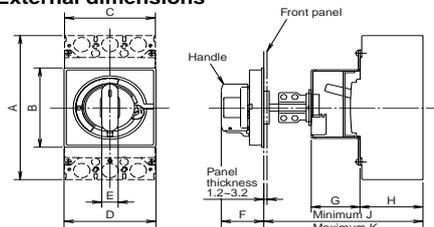
(2) The last letter of "F" of the type designations of V-type operating handles denotes a fixed type.

Remark: (1) You may contact us for details of the V-type operating handle for the U series.

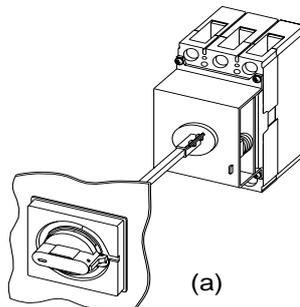
*Equipped with cylinder key (option) to prevent deliberate operation.

- Can be locked in OFF position only.
- The door is locked when ON and can only be opened in OFF position.
- Degrees of protection (in accordance with IEC60529): IP65.

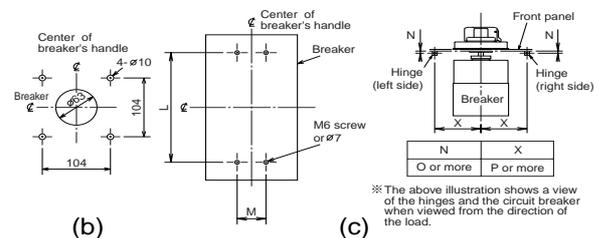
External dimensions



Outview



Drilling plan



※ The above illustration shows a view of the hinges and the circuit breaker when viewed from the direction of the load.

Table 5-21

Type	Breakers type		Fig.	Dimensions (mm)													
	MCCB	ELCB		Outview	Drilling plan	A	B	C	D	E	F	G	H	J	K	L	M
V4SW	NF400-CW, NF400-SW, NF400-SEW NF400-HEW NF630-CW, NF630-SW, NF630-SEW NF630-HEW	—	a	b, c	257	140	140	140	25	62	76	97	217	539	194	44	8N+150
					275	140	210	140	25	62	76	97	217	539	243	70	8N+150
V4SWNV	—	NV400-CW, NV400-SW NV400-SEW, NV400-HEW NV630-CW, NV630-SW NV630-SEW, NV630-HEW	a	b, c	257	140	140	140	25	62	76	97	191	—	194	44	8N+150
V4SWF	NF400-CW, NF400-SW, NF400-SEW NF400-HEW NF630-CW, NF630-SW, NF630-SEW NF630-HEW	—	a	b, c	257	140	140	140	25	62	76	97	191	—	194	44	8N+150
V4SWFNV	—	NV400-CW, NV400-SW NV400-SEW, NV400-HEW NV630-CW, NV630-SW NV630-SEW, NV630-HEW	a	b, c	257	140	140	140	25	62	76	97	191	—	194	44	8N+150
V8SWF	NF800-CEW, NF800-SDW, NF800-SEW NF800-HEW	NV800-SEW, NV800-HEW	a	b, c	275	140	210	140	25	62	76	97	191	—	243	70	8N+150
					275	140	210	140	25	62	76	97	191	—	243	70	8N+150

5. Accessories

External Accessories

2. F-type Operating Handle

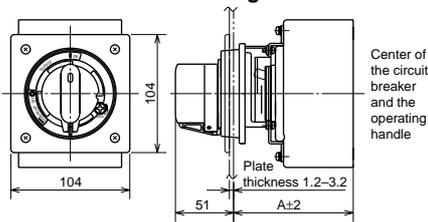
● Appearance (Color N1.5)



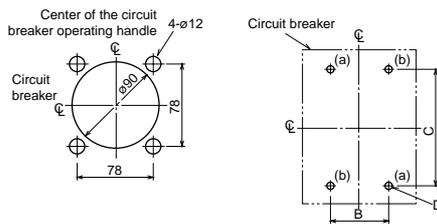
- This handle in conjunction with the breaker enables the isolation function effective.
- The standard model is equipped with a safety device that prevents the circuit breaker from being turned on if the door is open. (If not desired, please specify so.)
- The handle can be locked at either ON or OFF position. (Three padlocks (35mm, 40mm) can be installed. OFF-position lock only specifications are also acceptable.)
- Degrees of protection (IEC60529) IP3X (IP5X with dustproof packing)

Remark: (1) Trip action can be displayed when the circuit breaker trips even if ON-position lock is selected (only in the case of a single padlock (35 mm)).

● Outside Dimension Diagram

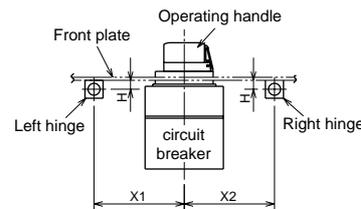


● Drilling Dimension Diagram



Center of Hinge and Circuit Breaker

Left hinge		Right hinge	
H	X ₁	H	X ₂
0 or more	(5H+100) or more	Less than 10	170 or more
		10 or more	(5H+120) or more



The above illustration shows a view of the hinges and the circuit breaker when viewed from the direction of the load.

Table 5-22: Summary of Dimensions

Type name	Applicable models	Number of poles	Dimensions (mm)				Mounting screws
			A*1	B	C	D	
*2 F05SW2P	*3 F05SWR2P	NF32-SW, NF63-CW/SW/HW	105	—	111	Either M4×0.7 screw or ø5	(a) Circuit breaker mounting screws (2 pcs) (b) Handle mounting screws (2 pcs)
*2 F05SW	*3 F05SWR	NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-SW/HW, MB30-SW, MB50-CW/SW		25			
*2 F1SW2P	*3 F1SWR2P	NF125-CW/SW/HW		—			
*2 F1SW	*3 F1SWR	NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW		30			
*2 F2SW	*3 F2SWR	NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW, NV250-SEW/HEW, MB225-SW	107	35	126		
*2 F2GSW	*3 F2GSWR	NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW	125	35	126		

*1. Dimensions of both front connection and rear connection are shown. The plug-in type has a different reference plane for mounting the circuit breaker.

*2. The standard type is equipped with a door-lock mechanism that allows door to be opened only when OFF operation is carried out.

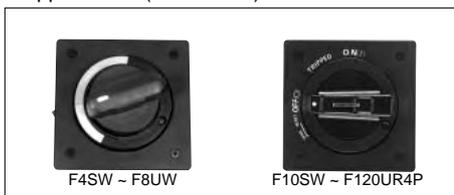
*3. In case of reset opened type use.

Remarks: (1) The test button becomes difficult to press when an operating handle is installed on an NV model. Then, use models with either TBM instead.

(2) Dustproof packings are separately available.

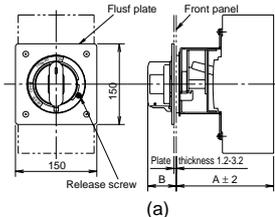
(3) You may consult us for details of the F-type operating handle for the U series.

● Appearance (Color N1.5)

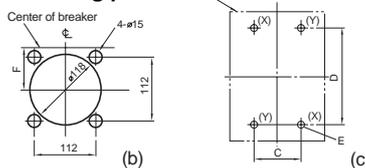


- Includes as standard a safety device which prevents breaker closing as long as the cover is open. (Specify if this safety feature is not required.)
- Indicates the tripping of the breaker even in ON-lock position—but only in cases when a single padlock (35mm, 40mm) is used.
- Degrees of protection (in accordance with IEC60529): IP3X (IP5X with dustproof packing).

● External dimensions

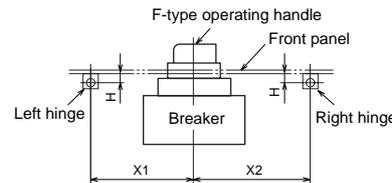


● Drilling plan



Center of Hinge and Circuit Breaker

Left hinge		Right hinge	
H	X ₁	H	X ₂
0 or more	(8H+150) or more	0 or more	(4H+120) or more



The figure above shows the relationship between the hinge and breaker viewed from the load side of the breaker.

Table 5-23

Type	Breaker type	Number of poles	Fig		Dimensions (mm)						Mounting crews	
			External dimensions	Drilling plan	*5 A	B	C	D	E	F		
*6 F4SW	*7 F4SWR	NF400-CW/SW/SEW/HEW/REW, NF630-CW/SW/SEW/HEW/REW	a	b	c	183	53	44	194	M6 screw or ø7	—	(X), (Y) Breaker mounting screws (4 pcs)
*6 F4SWNV	*7 F4SWRNV	NV400-CW/SW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW				280		44	234		20	
*6 F4UW	*7 F4UWR	NF400-UEW				183	70	243	—			
*6 F8SW	*7 F8SWR	NF800-CEW/SDW/SEW/HEW/REW				280	70	290	23.5			
*6 F8SWNV	*7 F8SWRNV	NV800-SEW/HEW				—	—	—	—			
*6 F8UW	*7 F8UWR	NF400-UEW (4P), NF800-UEW				221	50	70	375		M8 screw or ø10	
*7 F10SW	NF1000-SEW, NF1250-SEW/SDW	2P, 3P										
*7 F10SW4P	NF1600-SEW/SDW	4P										

*1. Handles with NV in the product name include a test button.

*2. Dustproof packing is also available as an option.

*3. Other optional handles can also be mounted.

*4. F4SW-F8UW are for isolation purposes.

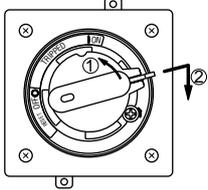
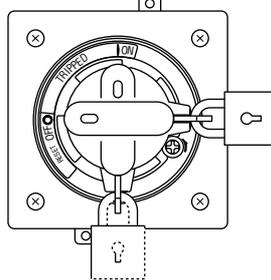
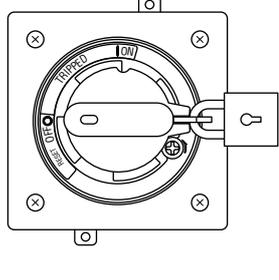
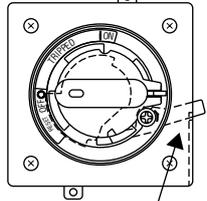
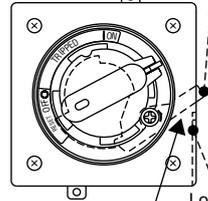
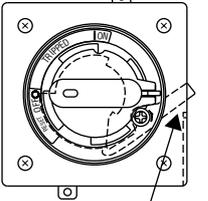
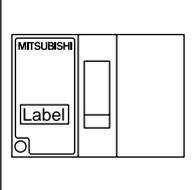
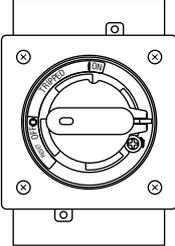
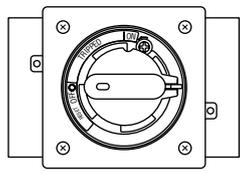
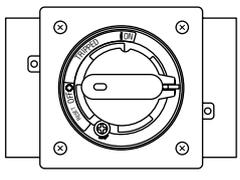
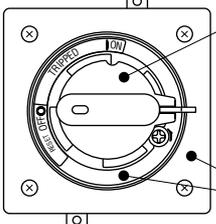
(Specify OFF lock only.)

*5. The figures show the dimensions of the front connection. Some connection and plug-in breakers have a different reference surface for mounting purposes.

*6. The standard type is equipped with a door-lock mechanism that allows the door to be opened only when OFF operation is carried out.

*7. In case of reset opened type use.

Specification explanation for F-type operating handles

Specification	Detailed explanation	Kind		
<p>Handle lock position</p> 	<p>The position where it can lock with the padlock. Can not open, when it use padlock.</p> <p>When OFF-lock, please turn handle in RESET direction.</p>	<p>ON and OFF-position lock</p> 	<p>OFF-position lock only</p> 	
<p>Door opening system</p>	<p>The door can be opened with the operating handle RESET-position or OFF-position. When the operating handle was locked, the panel (door) can not be opened.</p>	<p>RESET-position open</p> <p>OFF-position</p>  <p>RESET-position</p>  <p>Lock lever</p> <p>Lock plate</p>		<p>OFF-position open</p> <p>OFF-position</p>  <p>Lock lever unlocked by lock plate</p>
<p>Mounting direction</p> <p>The top of label is ON side of breaker</p> <p>ON side</p> 	<p>Reconstruction to vertically from horizontally can not be performed.</p>	<p>Vertically type (ON side of breaker is upper)</p> 	<p>Horizontally type (ON side of breaker is left)</p> 	<p>Horizontally type (ON side of breaker is right)</p> 
<p>For emergency</p> <p>*You may consult us for details of emergency</p>	<p>For emergency stop use. (In accordance with EN60204-1)</p>	 <p>Red color</p> <p>Yellow color</p>		

5. Accessories

External Accessories

3. S-type Operating Handle

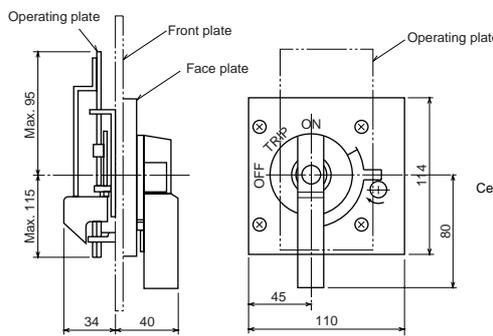
● Appearance (Color N1.5)



- The handle can be locked at either ON or OFF position. (Three padlocks (35mm, 40mm) can be installed. Off-position lock only specifications are also acceptable.)
- Degrees of protection (IEC60529) IP5X

Remark: (1) Trip action can be displayed when the circuit breaker trips even if ON-position lock is selected (only in the case of a single padlock (35 mm)).

● Outside Dimension Diagram



● Front Plate Drilling Dimension Diagram

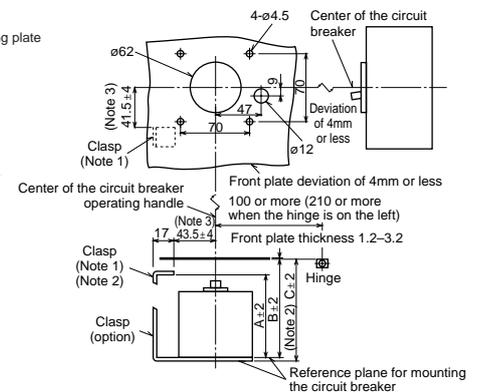


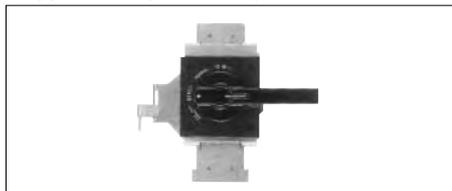
Table 5-24: Summary of Dimensions

Type name	Applicable models	Dimensions (mm)		
		A (Note 4)	B (Note 4)	C (Note 4)
S05SW	NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW, MB30-SW, MB50-CW/SW	87	102	104.5
S1SW	NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, NV125-RW (Note 5)			
S2SW	NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW, NV250-SEW/HEW, MB225-SW, NV250-RW (Note 5)	95	110	112.5
S2GSW	NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW	113	128	130.5

Notes: (1) The clasps are not supplied standardly, and should be prepared by users. Details on dimensions and others will be available upon request.
 (2) When the optional clasp is used.
 (3) The tolerance from the center of ø62 is shown.
 (4) The dimensions of the front-face type are shown. Some of the back-face and plug-in types have a different reference plane for mounting the circuit breaker.
 (5) The front plate drilling dimensions for the U series differ from those shown above. Please consult us for their details.

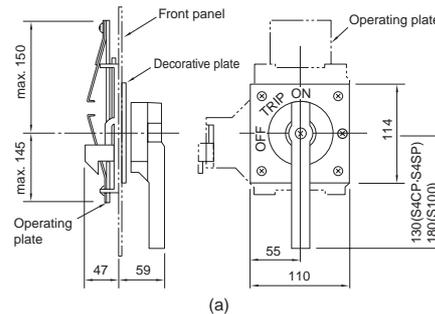
Remark: (1) Reset open-type
 (2) These are not suitable for isolation.

● Appearance (Color N1.5)



- Indicates the tripping of the breaker even in ON-lock position--but only in cases when a single padlock (35mm or 40mm) is used.
- Degrees of protection (in accordance with IEC60529): IP5X.

● External dimensions



● Drilling plan

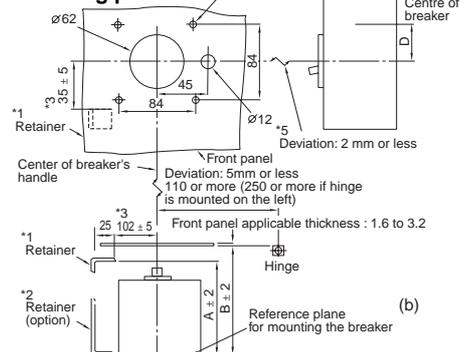


Table 5-25

Type	Breaker type	Fig		Dimensions (mm)			
		External dimensions	Drilling plan	A*4	B*4	C*4	D
S4CW *5	NF400-CW, NV400-CW	a	b	140	156	—	0
S4SW *5	NF400-SW/SEW/HEW/REW, NV400-SW/SEW/HEW/REW, NF630-CW/SW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW/REW, NF800-CEW/SDW/SEW/HEW/REW, NV800-SEW/HEW	a	b	162	178	—	0
	NF400-UEW (3P)			259	275	—	20
	NF400-UEW (4P), NF800-UEW			259	275	—	23.5
S10SW	NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW	a	b	199	215	—	0

Notes: *1. Retainers are not included. They must be provided by the customer.

Remark: (1) Reset open-type

*2. When using optional retainer.

*3. Shows the tolerance for the distance from the center of a 62mm dia. hole.

*4. The figures show the front-connection dimensions. Some rear-connection and plug-in breakers have a different reference surface for mounting purposes.

*5. S4CW and S4SW are for isolation purposes. (Specify OFF lock only.) The tolerance is less than 5mm. It does not conform to isolation purposes, however, if the deviation is more than 2mm.

● Surface plate interlocking fastening (separately available)

Operation handle series	Type	Breaker type		Dimensions (mm)		Drilling diagram and referential diagram
		MCCB	ELCB	A	B	
S-type	TG-S05SW	NF32-SW, NF63-CW/SW/HW, MB30-SW, MB50-CW/SW, NF125-CW/SW/HW, MB100-SW	NV32-SW, NV63-CW/SW/HW, NV125-CW/SW/HW	67	119	
	TG-S1UW	NF125-RGW/UGW	NV125-RW			
	TG-S2SW	NF160-SW/HW, NF250-CW/SW/HW, NF250-SEW/HEW, MB225-SW	NV250-CW/SW/HW, NV250-SEW/HEW			
	TG-S2UW	NF250-RGW/UGW	NV250-RW			
	TG-S2GSW	NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW, NF-SFW, NF-SJW, NF-HJW	-			
	TG-S4CW	NF400-CW	NV400-CW			
	TG-S4SW	NF400-SW/SEW/HEW/REW, NF630-CW/SW/SEW/HEW/REW, NF800-CEW/SDW/SEW/HEW/REW	NV400-SW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW, NV800-SEW/HEW			
	TG-S4UW	NF400-UEW (3P), NF400-UEW (4P), NF800-UEW	-			
	TG-S10	NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW	-			

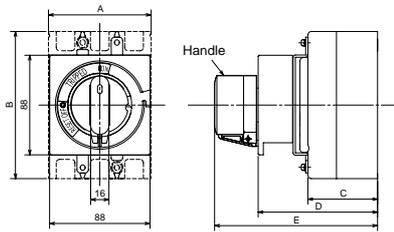
Remark: The clamp for surface plate interlock fastener is common to 2P, 3P and 4P.

4. R-type Operating Handle

- Appearance (Color N1.5)

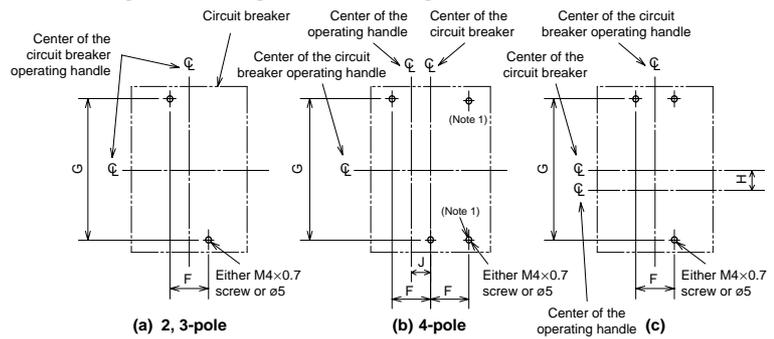


● Outside Dimension Diagram



- This handle in conjunction with the breaker main enables the isolation function effective.
- OFF-position lock only is available for up to three commercial padlocks (ø8).
- Equipped with cylinder key (option) prevent deliberate operation.

● Mounting-hole Drilling Dimension Diagram



Note 1: The drilling at this position is not required for the models of R2GSW.

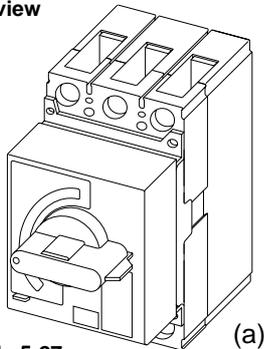
Table 5-26: Summary of Dimensions

Type name	Applicable models	Number of poles	Fig Drilling plan	Dimensions (mm)								
				A	B	C	D	E	F	G	H	J
R1SW	NF125-CW, NF125-SW, NF125-HW NV125-CW, NV125-SW, NV125-HW	3P	a	90	130	61	105	142	30	111	—	—
		4P	b	120								15
R1UW	NV125-RW	3P	c	90	191	61	105	142	30	172	30.5	—
R2SW	NF160-SW, NF160-HW, NF250-CW, NF250-SW, NF250-HW NV250-CW, NV250-SW, NF250-HW, NV250-SEW NV250-HEW	2P, 3P	a	105	165	61	107	144	35	126	—	—
		4P	b	140								17.5
R2UW	NV250-RW	3P	c	105	240	61	107	144	35	201	37.5	—
R2GSW	NF125-SGW, NF125-HGW, NF160-SGW, NF160-HGW, NF250-SGW, NF250-HGW	2P, 3P	a	105	165	79	125	162	35	126	—	—
		4P	b	140								17.5
R2GUW	NF125-RGW, NF125-UGW, NF250-RGW, NF250-UGW	3P	c	105	240	79	125	162	35	201	37.5	—

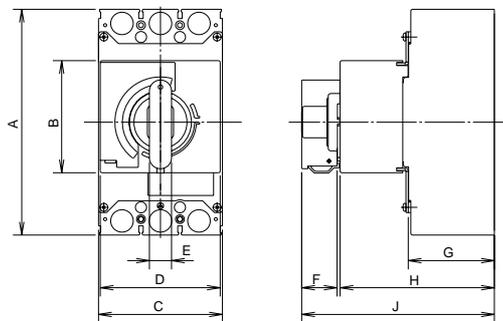
* Equipped with cylinder key (option) to prevent deliberate operation.

- Can be locked in OFF position only.

Outview



External dimensions



Drilling plan

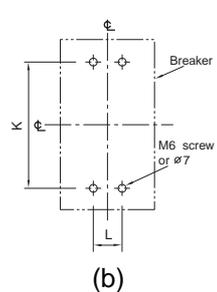


Table 5-27

Type	Breaker type		Fig Outview	Fig Drilling plan	Dimensions (mm)											
	MCCB	ELCB			A	B	C	D	E	F	G	H	J	K	L	M
R4SW	NF400-CW, NF400-SW, NF400-SEW, NF400-HEW NF630-CW, NF630-SW, NF630-SEW, NF630-HEW	—	a	b	257	128	140	140	25	43	97	174	218	194	44	—
R4SWNV	—	NV400-CW, NV400-SW, NV400-SEW, NV400-HEW NV630-CW, NV630-SW, NV630-SEW, NV630-HEW														—
R8SW	NF800-CEW, NF800-SDW, NF800-SEW, NF800-HEW	NV800-SEW, NV800-HEW														275

5. Accessories

External Accessories

Ordering information

V 1)	1 2)	SW 3)	E 4)	F 5)	NV 6)
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1) V : Operating handle type

- V..... Variable-depth handle
- R..... Rotary handle

2) 1 : Frame size of breaker

- 05..... NF32-SW, NF63-CW/SW/HW, MB30-SW, MB50-CW/SW, DSN32-SW, DSN63-CW/SW, NV32-SW, NV63-CW/SW/HW
- 1..... NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, DSN125-CW/SW, NV125-RW
- 2..... NF160-SW/HW, NF250-CW/SW/HW, MB225-SW, NV250-CW/SW/HW/SEW/HEW, DSN250-CW/SW, NV250-RW
- 2G..... NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW, DSN125-SGW, DSN160-SGW, DSN250-SGW, NF125-RGW/UGW, NF250-RGW/UGW
- 4..... NF400-CW/SW/SEW/HEW/REW, DSN400-CW/SW, NV400-CW/SW/SEW/HEW/REW, NF630-CW/SW/SEW/HEW/REW, DSN630-CW/SW, NV630-CW/SW/SEW/HEW
- 8..... NF800-CEW/SDW/SEW/HEW/REW, NV800-SEW/HEW, DSN800-CW/SW

3) SW : Series name

- SW indicate WSS C, S and H series
- UW indicate WSS U series

4) E : For emergency

- Blank..... For general
- E..... For emergency

5) F : Adjustment type of depth (For only V-handle)

- Blank..... Variable type
- F..... Fix type

6) NV : Type of breaker

- NV..... NV type for 400A frame
- Blank..... The other

S 1)	1 2)	SW 3)	A 4)
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1) S : Operating handle type

2) 1 : Frame size of breaker

- 05..... NF32-SW, NF63-CW/SW/HW, MB30-SW, MB50-CW/SW, DSN32-SW, DSN63-CW/SW, NV32-SW, NV63-CW/SW/HW
- 1..... NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, DSN125-CW/SW, NV125-RW
- 2..... NF160-SW/HW, NF250-CW/SW/HW, MB225-SW, NV250-CW/SW/HW/SEW/HEW, DSN250-CW/SW, NV250-RW
- 2G..... NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW, DSN125-SGW, DSN160-SGW, DSN250-SGW
- 4..... NF400-CW/SW/SEW/HEW/REW, DSN400-CW/SW, NV400-CW/SW/SEW/HEW/REW, NF400-UEW, NF630-CW/SW/SEW/HEW/REW, DSN630-CW/SW, DSN800-CW/SW, NF800-CEW/SDW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW, NV800-SEW/HEW, NF400-UEW(4P), NF630-UEW, NF800-UEW

3) SW : Series name

- SW indicate WSS C, S and H series
- CW indicate WSS 400A frame C series

4) A : Handle lock position

- Blank..... ON/OFF position lock
- A..... OFF position lock only

S 1)	10 2)	SW 3)
---------	----------	----------

1) S : Operating handle type

2) 10 : Frame size of breaker

- 10..... NF1000-SS/SSD, NF1250-SS/SSD, NF1600-SS/SSD, NF1250-UR

3) SW : Series name

- SW indicate WSS

F 1)	1 2)	SW 3)	A 4)	R 5)	Y 6)	2P 7)	NV 8)
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1) F : Operating handle type

2) 1 : Frame size of breaker

- 05..... NF32-SW, NF63-CW/SW/HW, MB30-SW, MB50-CW/SW, DSN32-SW, DSN63-CW/SW, NV32-SW, NV63-CW/SW/HW
- 1..... NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, DSN125-CW/SW, NV125-RW
- 2..... NF160-SW/HW, NF250-CW/SW/HW, MB225-SW, NV250-CW/SW/HW/SEW/HEW, DSN250-CW/SW, NV250-RW
- 2G..... NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW, DSN125-SGW, DSN160-SGW, DSN250-SGW, NF125-RGW/UGW, NF250-RGW/UGW
- 4..... NF400-CW/SW/SEW/HEW/REW, DSN400-CW/SW, NV400-CW/SW/SEW/HEW/REW, NF400-UEW, NF630-CW/SW/SEW/HEW/REW, DSN630-CW/SW, NV630-CW/SW/SEW/HEW
- 8..... NF800-CEW/SDW/SEW/HEW/REW, NV800-SEW/HEW, NF400-UEW(4P), NF800-UEW, DSN800-CW/SW

3) SW : Series name

- SW indicate WSS C, S and H series
- UW indicate WSS U series

4) A : Handle lock position

- Blank..... ON/OFF position lock
- A..... OFF position lock only

5) R : Door open position

- Blank..... OFF position open
- R..... RESET position open

6) Y : Mounting direction

- Blank..... Vertically type (ON side of breaker is upper)
- Y..... Horizontally type (ON side of breaker is left)
- Z..... Horizontally type (ON side of breaker is right)

7) 2P : Number of poles

- Blank..... 3 pole and 4 pole
- 2P..... 2 pole

8) NV : Type of breaker

- NV..... NV type for 400 to 800 A frame
- Blank..... The other

F 1)	10 2)	SW 3)	4P 4)
---------	----------	----------	----------

1) F : Operating handle type

2) 10 : Frame size of breaker

- 10..... NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW

3) SW : Series name

- SW indicate WSS

4) 4P : Number of poles

- Blank..... 2 pole and 3 pole
- 4P..... 4 pole

R 1)	1 2)	SW 3)	NV 4)
---------	---------	----------	----------

1) R : Operating handle type

2) 1 : Frame size of breaker

- 1..... NF125-CW/SW/HW, NV125-CW/SW/HW/RW
- 2..... NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/SEW/HW/HEW/RW
- 2G..... NF125-SGW/HGW/RGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/RGW/UGW
- 4..... NF400-CW/SW/SEW/HEW, NF630-CW/SW/SEW/HEW, NV400-CW/SW/SEW/HEW, NV630-CW/SW/SEW/HEW
- 8..... NF800-CEW/SDW/SEW/HEW, NV800-SEW/HEW

3) SW : Series name

- SW indicate WSS C, S and H series
- UW indicate WSS U series

4) NV : Type of breaker

- NV..... NV type for 400 to 630 A frame
- Blank..... The other

5. Terminal Cover

Table 5-28

Breaker type		Large terminal cover (TC-L)	Small terminal cover (TC-S)	Transparent terminal cover (TTC)	Rear terminal cover (BTC)	Plug-in terminal cover (PTC)
NF30-CS, MB30-CS	2P	TCL-03CS2W (43.5×30.5×25)	TCS-03CS2W (43.5×30.5×5)	TTC-03CS2 (43.5×30.5×25)	BTC-03CS2W (43.5×30.5×6.5)	—
NF30-CS, NV30-CS, MB30-CS	3P	TCL-03CS3W (67×30.5×25)	TCS-03CS3W (67×30.5×5)	TTC-03CS3 (67×30.5×25)	BTC-03CS3W (67×30.5×6.5)	—
NF32-SW, NF63-CW/SW/HW	2P	(Note 1) TCL-05SW2W (50×65.5×25)	(Note 1) TCS-05SW2W (50×65.5×5)	(Note 1) TTC-05SW2 (50×65.5×25)	BTC-05SW2W (50×65.5×5)	PTC-05SW2W (50×65.5×6.5)
NF32-SW, NF63-CW/SW/HW NV32-SW, NV63-CW/SW/HW, MB30-SW MB50-CW/SW	3P	(Note 2) TCL-05SW3W (75×65.5×25)	(Note 2) TCS-05SW3W (75×65.5×5)	(Note 2) TTC-05SW3 (75×65.5×25)	BTC-05SW3W (75×65.5×5)	PTC-05SW3W (75×65.5×6.5)
NF125-CW/SW/HW	2P	(Note 1) TCL-1SW2W (60×65.5×40)	(Note 1) TCS-1SW2W (60×65.5×6.5)	(Note 1) TTC-1SW2 (60×65.5×40)	BTC-1SW2W (60×65.5×6.5)	PTC-1SW2W (60×65.5×6.5)
NF125-CW/SW/HW, NV125-CW/SW/HW, NV125-RW, MB100-SW	3P	(Note 2) TCL-1SW3W (90×65.5×40)	(Note 2) TCS-1SW3W (90×65.5×6.5)	(Note 2) TTC-1SW3 (90×65.5×40)	BTC-1SW3W (90×65.5×6.5)	PTC-1SW3W (90×65.5×6.5)
NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW, NV250-SEW/HEW, NV250-RW MB225-SW	2P 3P	(Note 2) TCL-2SW3W (105×65.5×40)	(Note 2) TCS-2SW3W (105×65.5×6.5)	(Note 2) TTC-2SW3 (105×65.5×40)	BTC-2SW3W (105×65.5×6.5)	PTC-2SW3W (105×65.5×6.5)
NF125-SGW/HGW/RGW/UGW, NF160-SGW/HGW NF250-SGW/HGW/RGW/UGW	2P 3P	IP40 TCL-2GSW3W (105×84×40)	TCS-2GSW3W (105×84×6.5)	TTC-2GSW3 (105×84×40)	BTC-2GSW3W (105×84×6.5)	PTC-2GSW3W (105×84×6.5)

Notes: (1) Attach the letter "F" to the end of model designation for models with F-type operating handle. (Those are F-type operating-handle dedicated models, and screws are used for fixing.)
 (2) An F-type operating handle can be installed standardly.
 Remarks: (1) Parenthesized numbers denote the outside dimensions (A×B×C in mm).
 (2) The terminal cover for a four-pole model can be produced upon request.

Table 5-29

Breaker type		Large terminal cover (TC-L)	Transparent terminal cover (TTC)	Rear terminal cover (BTC)	Plug-in terminal cover (PTC)
NF400-CW/SW/SEW/HEW/REW NV400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW	2P, 3P	TCL-4SW3 *3 (171×99.5×110)	TTC-4SW3 (171×104.5×110)	BTC-4SW3 (140×99.5×42)	PTC-4SW3 (140×99.5×42)
NF400-UEW	3P	TCL-4SW3*1 (171×132.5/196.5×110)	—	BTC-4SW3 *1 (140×132.5/196.5×42)	—
NF400-SW/SEW/HEW, NV400-SEW/HEW NF630-SW/SEW/HEW, NV630-SEW	4P	TCL-4SW4 (240×104.5×110)	TTC-4SW4 (240×104.5×110)	BTC-4SW4 *2 (185×97.5×39)	—
NF800-CEW/SDW/SEW/HEW/REW, NV800-SEW/HEW	2P, 3P	TCL-8SW3 (224×103.5×155)	TTC-8SW3 (224×103.5×155)	BTC-8SW3 *2 (210×97.5×32)	—
NF800-UEW	3P	TCL-8UW3 *1 (220×146/194.5×155)	—	BTC-8SW3 *1,*2 (210×146/194.5×32)	—
NF800-SEW/HEW	4P	TCL-8SW4 (294×103.5×155)	TTC-8SW4 (294×103.5×155)	BTC-8SW4 *2 (280×97.5×32)	—
NF400-UEW, NF800-UEW	4P	TCL-8UW4 *1 (290×146/194.5×155)	—	BTC-8SW4 *1,*2 (280×146/194.5×32)	—
NF1000-SEW NF1250-SEW/SDW	2P, 3P	TCL-10SW3 (220×139×150)	—	—	—
NF1000-SEW NF1250-SEW/SDW	4P	TCL-10SW4 (290×139×150)	—	—	—

Remarks: 1. () Shows external dimensions in mm. (A×B×C)
 * 1. Line side/Load side
 * 2. These covers can be mounted on plug-in type.
 * 3. Except for NF400/630-HEW/REW and NV400/630-HEW/REW.

5. Accessories

External Accessories

6. Electrical Operation Device

● 250A Frame and less

Table 5-30: Summary of Model Designations

Applicable models		(Note 1)	NF125-CW(3P) NF125-SW(3P, 4P) NF125-HW	NF160-SW/HW NF250-CW/SW/HW MB225-SW	NF125-SGW/HGW NF160-SGW/HGW NF250-SGW/HGW	NV125-CW/SW/HW	NV250-CW/SW/HW	NV250-SEW/HEW
Rated operating voltage	24V DC		MDSD024-NF1SWE	MDSD024-NF2SWE	MDSD024-NF2GSWE	MDSD024-NV1SWE	MDSD024-NV2SWE	MDSD024-NVE2SWE
	48-60V DC		MDSD060-NF1SWE	MDSD060-NF2SWE	MDSD060-NF2GSWE	MDSD060-NV1SWE	MDSD060-NV2SWE	MDSD060-NVE2SWE
	Compatible to 100-240V AC/100-250V DC		MDSAD240-NF1SWE	MDSAD240-NF2SWE	MDSAD240-NF2GSWE	MDSAD240-NV1SWE	MDSAD240-NV2SWE	MDSAD240-NVE2SWE



Table 5-31: Specifications

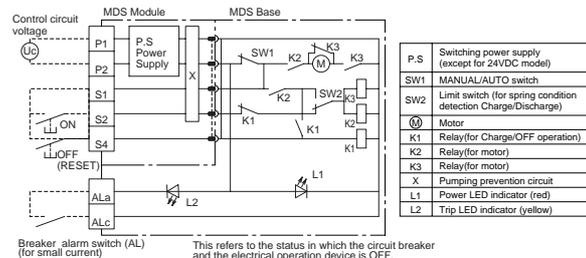
Rated operating voltage (Allowable voltage range 85~110%)		24V DC	48-60VDC	Compatible to 100-240V AC/100-250V DC
Operating time (s)	ON action		0.05~0.1	
	OFF action		0.6 or less	
	Charging action		1.2 or less	
Power requirement (VA)			150	

Note: (1) Place an order of other models in conjunction with the circuit breaker.

Remarks: (1) The standard terminal cover can be used.

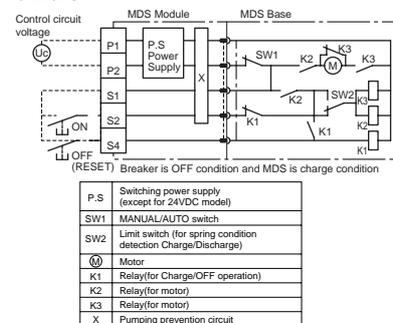
(2) Please contact us for details of the outside dimensions.

MDSD024 -NF2SWE MDSD024 -NV2SWE/NVE2SWE
MDSD060 -NF2SWE MDSD060 -NV2SWE/NVE2SWE
MDSAD240-NF2SWE MDSAD240-NV2SWE/NVE2SWE



Breaker alarm switch (AL) (for small current) This refers to the status in which the circuit breaker and the electrical operation device is OFF.

others



● 400A Frame and more

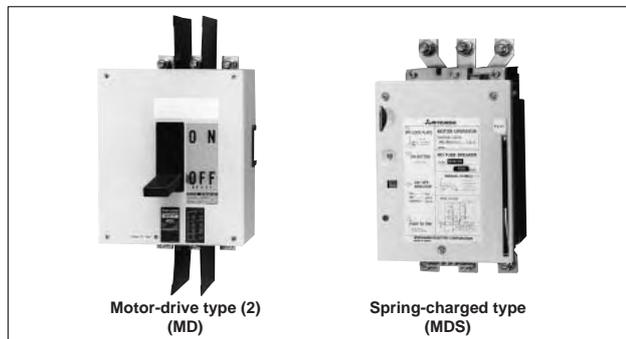


Table 5-32

MCCB type	NF-C series		NF400-CW NF630-CW NF800-CEW	—	NF400-CW NF630-CW NF800-CEW		—	
	NF-S-H series		NF400-SW NF400-SEW/HEW/REW NF630-SW NF630-SEW/HEW/REW NF800-SEW/HEW/REW	NF1000-SEW NF1250-SEW NF1250-SDW NF1600-SEW NF1600-SDW	NF400-SW NF400-SEW/HEW/REW NF630-SW NF630-SEW/HEW/REW NF800-SEW/HEW/REW	NF1000-SEW NF1250-SEW NF1250-SDW NF1600-SEW NF1600-SDW	—	
ELCB type	NF-U, MB series		NF400-UW NF800-UW	—	NF400-UW NF800-UW		—	
	NV-C series		NV400-CW NV630-CW	—	NV400-CW NV630-CW		—	
	NV-S-H series		NV400-SW NV400-SEW/HEW/REW NV630-SEW/HEW NV800-SEW/HEW	—	NV400-SW NV400-SEW/HEW/REW NV630-SEW/HEW NV800-SEW/HEW		—	
MN series		—	—	—		—		
Electrical operation system			Motor-drive type (2)	Motor-drive type (2)	Spring-charged type		Spring-charged type	
Rated operating voltage (V) (Allowable voltage range 85~110%)*1			100/110VDC, 100/110VAC, 200/220VAC (125VDC, 240VAC)					
Operating current (A, rms)*2	DC	100/110V	3.0 (8.0)	4.0 (8.0)	1.0 (3.0)	8	1.0 (3.0)	9
		200/220V	2.0 (4.5)	3.5 (7.0)	0.5 (1.5)	8	0.5 (1.5)	8
	AC	100/110V	4.0 (8.0)	5.0 (10.0)	1.0 (3.0)	10	1.0 (3.0)	10
Operating time (s)	On	Less than 0.3 (self-holding)		Less than 0.3 (self-holding)		0.05		0.07
	Off	Less than 0.3 (self-holding)		Less than 0.3 (self-holding)		Less than 3 (self-holding)		Less than 3 (self-holding)
Required transformer capacity (VA)			400	700	700	700	700	
Endurance voltage (V)			1500					

*1. () voltages are special options and might require an external resistor. For details, consult your dealer.

*2. () shows starting currents.

General precautions for motor-operated electrical MCCBs

- Motor-operated types have intermittent ratings, and therefore they should not be operated more than 10 times consecutively (one on/off counts as an operation).
- The operating voltage should be between 85~110% of the rated control voltage.
- When the breaker is tripped by trip button or breakdown (i.e., overload or short circuit), the breaker will not show that it has been tripped (except for motor-operated type 1 breakers).
- The dielectric strength of the electrical operating circuits is 1500V. When performing a dielectric strength test simultaneously with another device at a voltage over 1500V, the operating circuit terminal should be disconnected.

Electrically Operated MCCBs and ELCBs

Motor-operated type (2)

- Electrical operation
Forward and reverse motor rotation is changed by ball screw to switch the breaker ON and OFF (reset).
- Manual operation
The manual operation handle can be used to switch the breaker ON and OFF directly.
- Cautions during electrical operation
 1. In case the UVT operates and a circuit breaker trips if the breaker has a UVT, the re-closing procedure may differ according to the state of the breaker before tripping.
When the circuit breaker trips while turned ON..... Reset (OFF) -> Turn ON
When the circuit breaker trips while turned OFF..... Turn ON (idle tripping) -> Reset (OFF) -> Turn ON
(If it fails to turn ON (idle tripping), please operate Reset (OFF) and turn ON.)
 2. Do not send ON and OFF signals consecutively. An interval of at least 0.5s is required between each ON and OFF.
 3. For models with auto reset capability, resetting after an NFB trip should be performed after an interval of 0.5s.

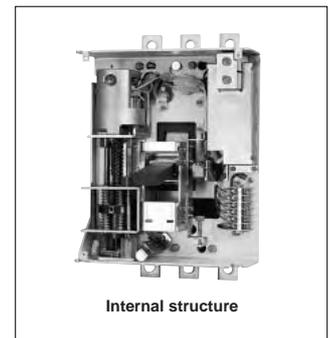
Automatic Reset

- If the breaker is an auto reset type, it contains a built-in alarm switch and the off-control circuit closes when the breaker is tripped. Since the breaker automatically resets itself after tripping, the power is easily restored by switching on the breaker again. With a UVT mounted, however, auto reset may not be possible. In this case, please consult your dealer.

4. The electrical operating device is equipped with a pumping prevention circuit. Although it is possible to set the device to OFF while it is set to ON, it is impossible to return it to ON immediately. To return to ON, first shut off the ON switch, then set it back to ON.
5. Special care is required during electrical operation because the manual operation handle moves at high speed. Also be sure to turn off the circuit power supply when using manual operation.
6. With manual operation, ensure that the handle is fully extended.



Manual operation

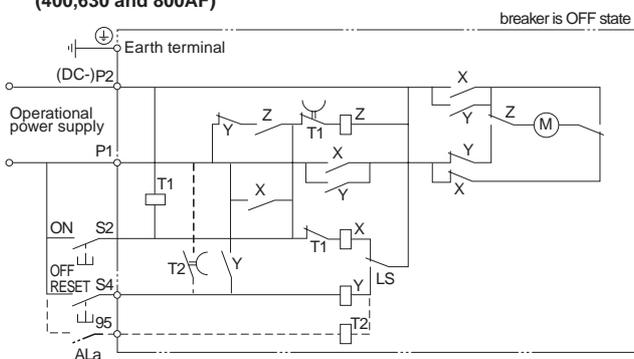


Internal structure

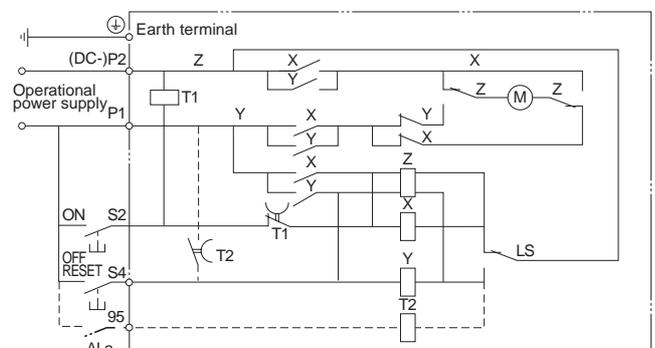
Control circuit

The dotted line shows an additional connection for the automatic-reset type.

(1) Control circuit 1.
(400,630 and 800AF)



(2) Control circuit 2.
(NF1000-SEW to NF 1600-SEW)



- M :Motor
- X :Relay for ON operation
- Y :Relay for OFF operation
- Z :Relay for changing Motor polarity
- T1 :Timer for antipumping
- T2 :Timer for automatic reset
- LS :Limit Switch
- ALa :Alarm switch for automatic reset (a contact)

5. Accessories

External Accessories

Spring-charged type

- **Electrical operation**

When the ON switch is closed, the coil is excited to release the latch mechanism and the force of the closing spring turns the breaker ON instantly.

When the OFF switch is closed, a relay starts the motor which turns the breaker OFF and charges the spring simultaneously.

- **Manual operation**

Pressing the ON button will release the latch mechanism and the force of the closing spring turns the breaker ON instantly.

Pressing the leaf spring, pulling out the manual handle and pumping it back and forth over 10 times will turn the breaker OFF and charge the spring at the same time.

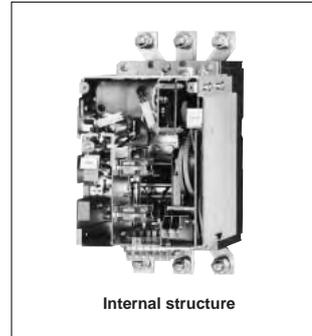
- **Cautions during electrical operation**

Whenever an electrical operation device is to be installed in or removed from the breaker, the breaker must be tripped and the device discharged.

Pushing the TRIP button on an MCCB with an electrical-operation device installed will not trip the breaker in the OFF state. This does not mean the breaker is faulty.

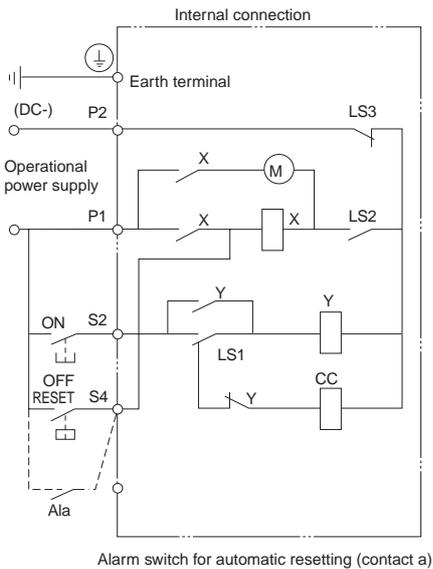
Switching OFF a breaker with an electrical-operation device installed will take 3s. If instant opening is required, install an SHT or UVT to the breaker.

- The breaker contains a built-in pumping-prevention relay.



Control circuit

The dotted line shows an additional connection for the automatic-reset type.



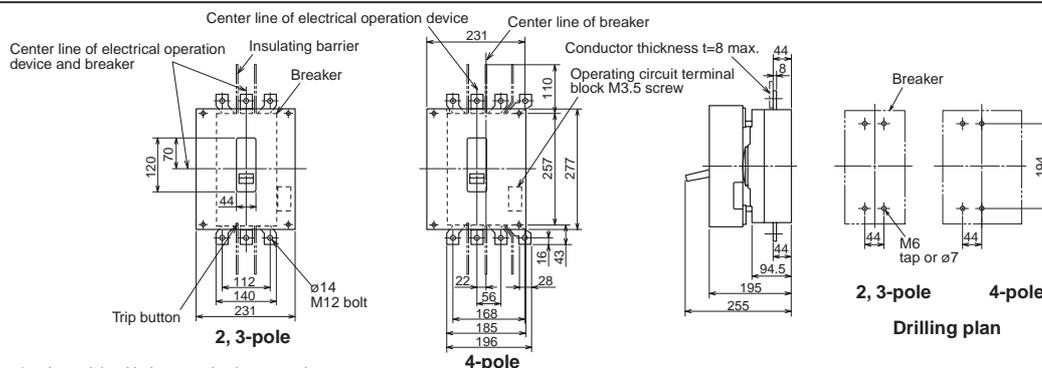
CC.....Coil for making
 Y.....Relay for pumping prevention
 X.....Relay for self-sustaining on OFF side
 LS1...Limit switch interlocking with cam
 LS2...Limit switch interlocking with cam
 LS3...Limit switch interlocking with OFF lock plate
 M.....Motor

5. Accessories

External Accessories

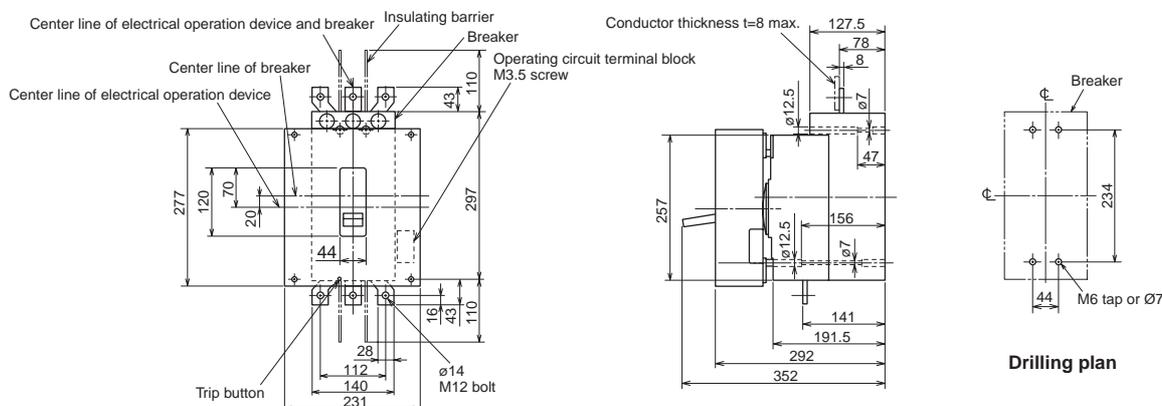
Front connection

● NF400-CW, NF400-SW, NF400-SEW, NF400-HEW, NF400-REW Motor drive type (2)

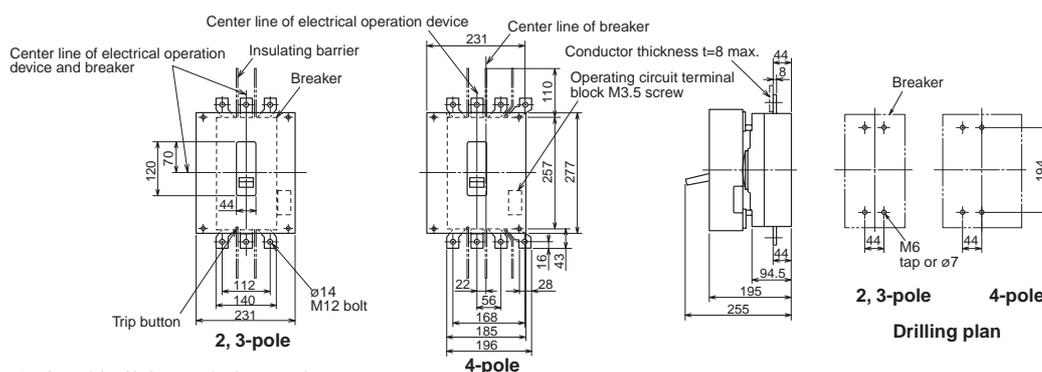


Remark: 2 pole models are 3-pole models with the central pole removed.

● NF400-UEW (3-pole) Motor drive type (2)

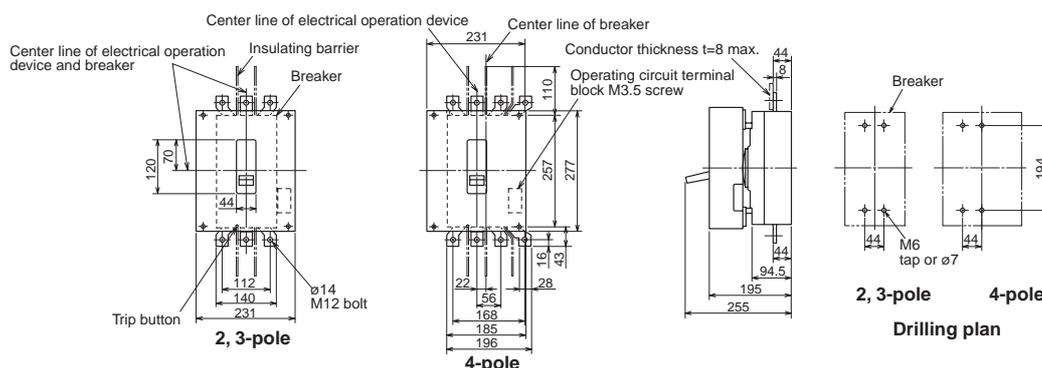


● NV400-CW, NV400-SW, NV400-SEW, NV400-HEW, NV400-REW Motor drive type (2)



Remark: 2 pole models are 3-pole models with the central pole removed.

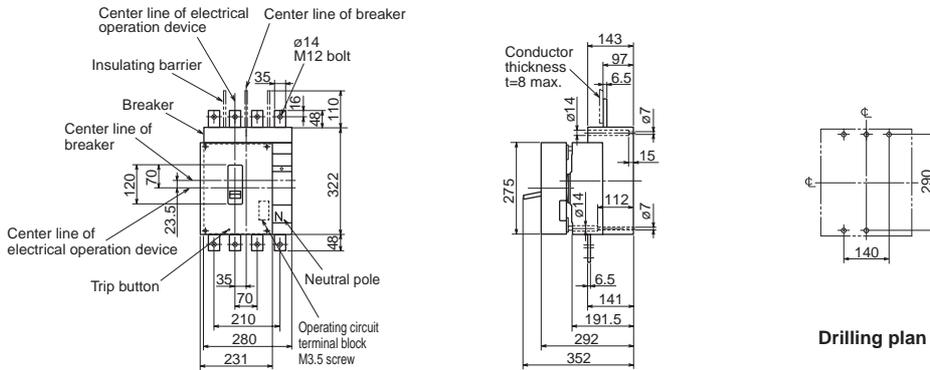
● NF630-CW, NF630-SW, NF630-SEW, NF630-HEW, NF630-REW Motor drive type (2)



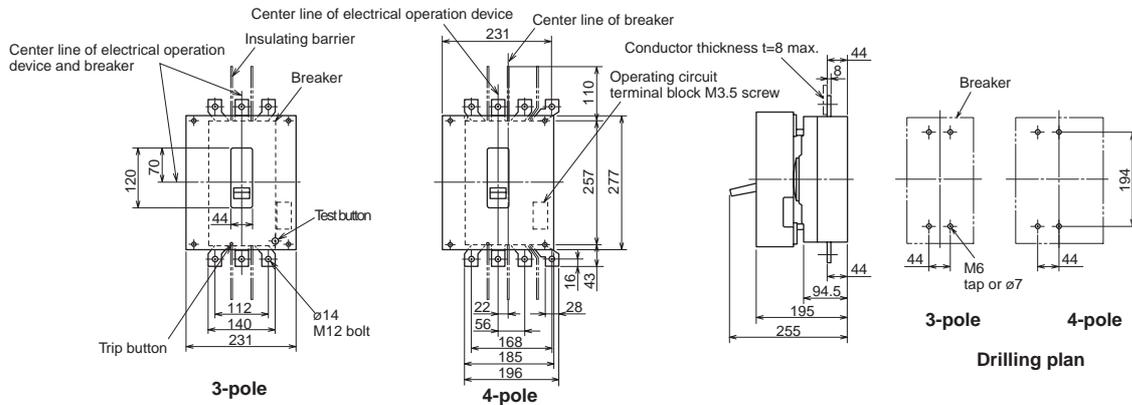
Remark: 2 pole models are 3-pole models with the central pole removed.

Front connection

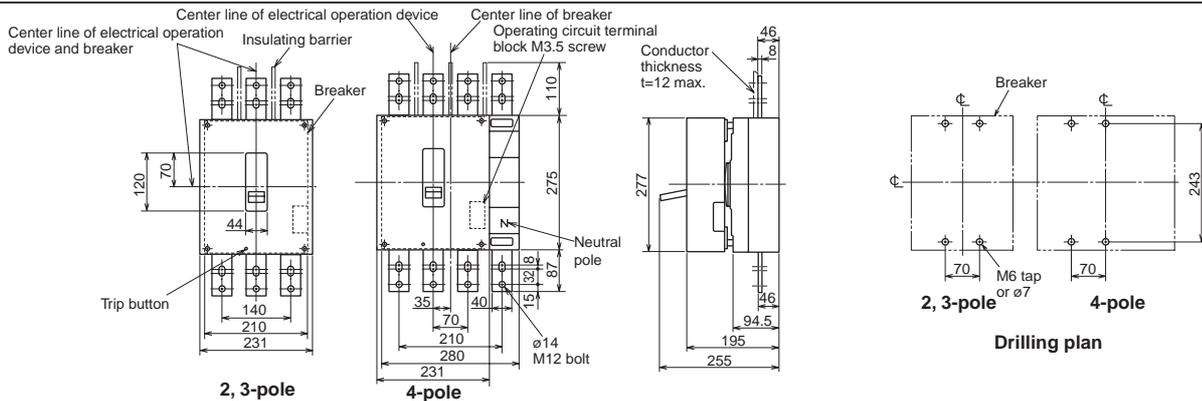
● NF400-UEW 4-pole Motor drive type (2)



● NV630-CW, NV630-SW, NV630-SEW, NV630-HEW Motor drive type (2)

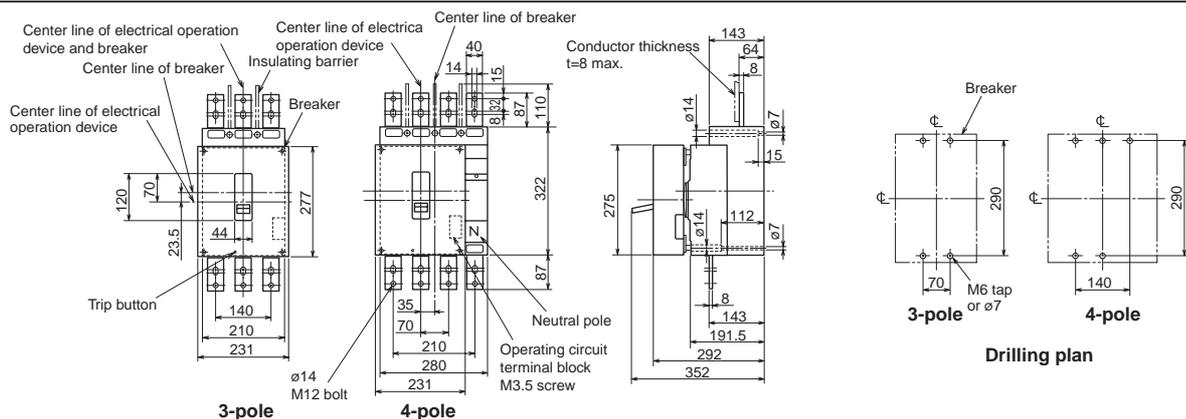


● NF800-CEW, NF800-SDW, NF800-SEW, NF800-HEW, NF800-REW Motor drive type (2)



Remark: 2 pole models are 3-pole models with the central pole removed.

● NF800-UEW Motor drive type (2)



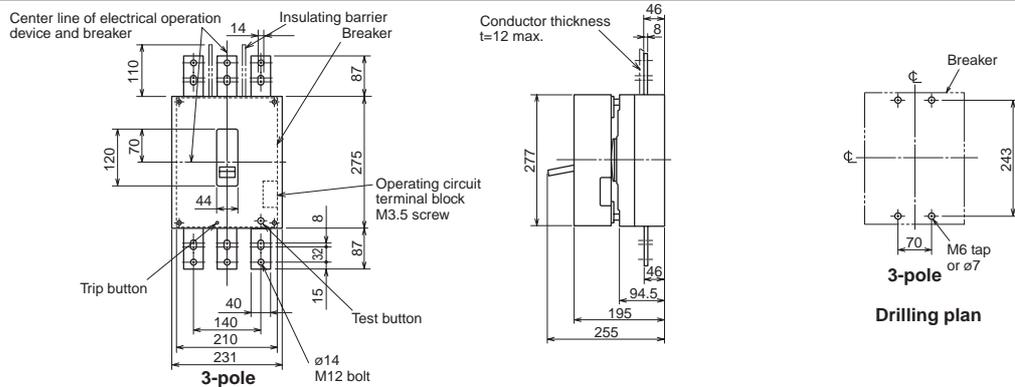
5

5. Accessories

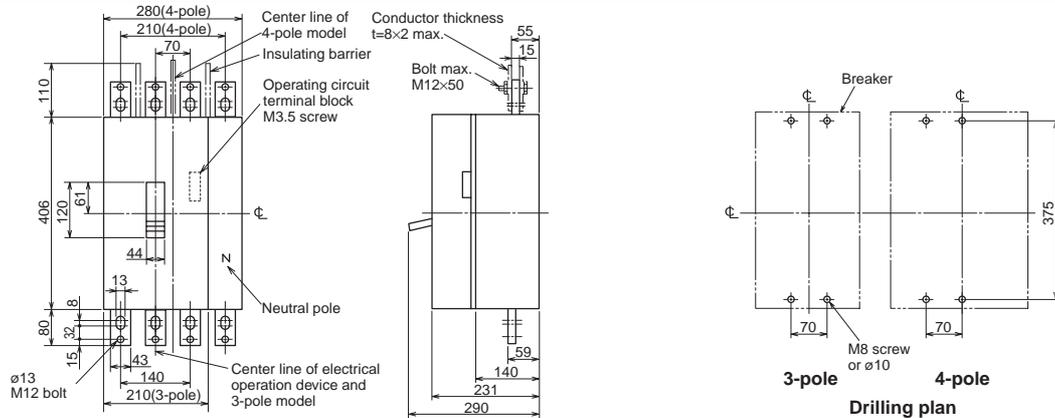
External Accessories

Front connection

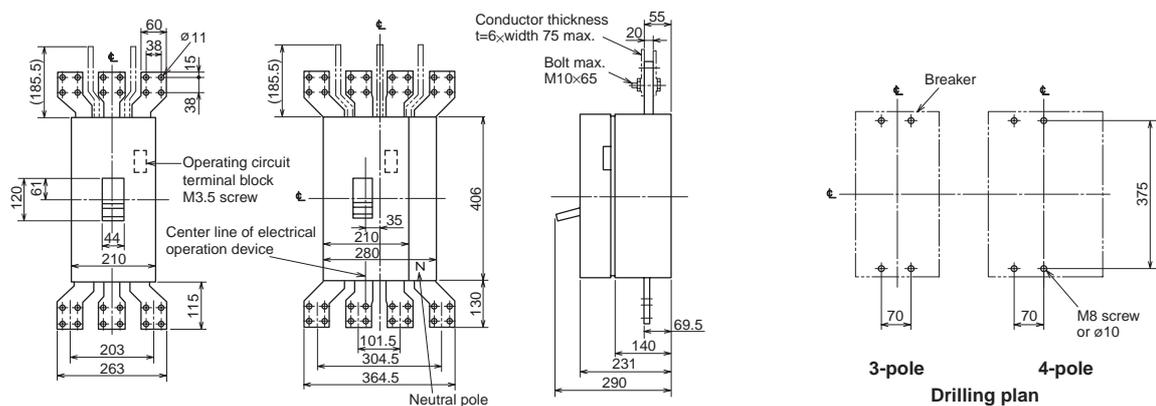
● NV800-SEW, NV800-HEW Motor drive type (2)



● NF1000-SEW, NF1250-SEW, NF1250-SDW Motor drive type (2)

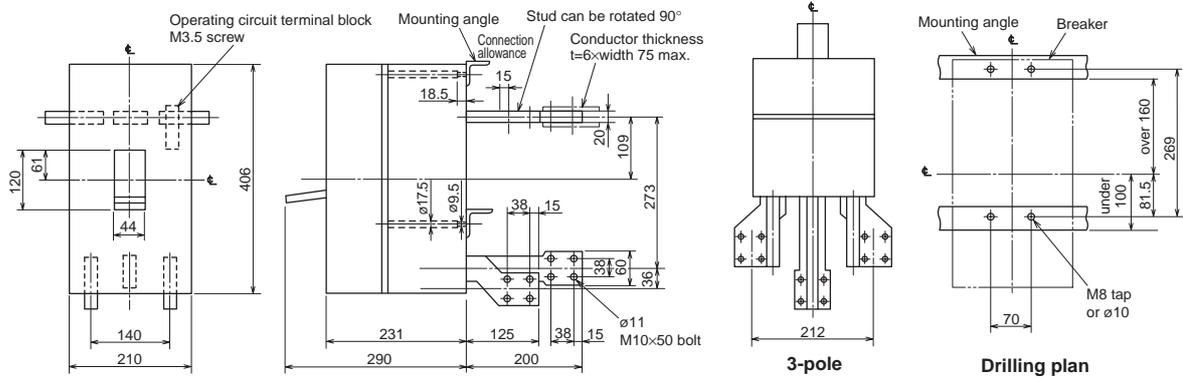


● NF1600-SEW, NF1600-SDW Motor drive type (2)

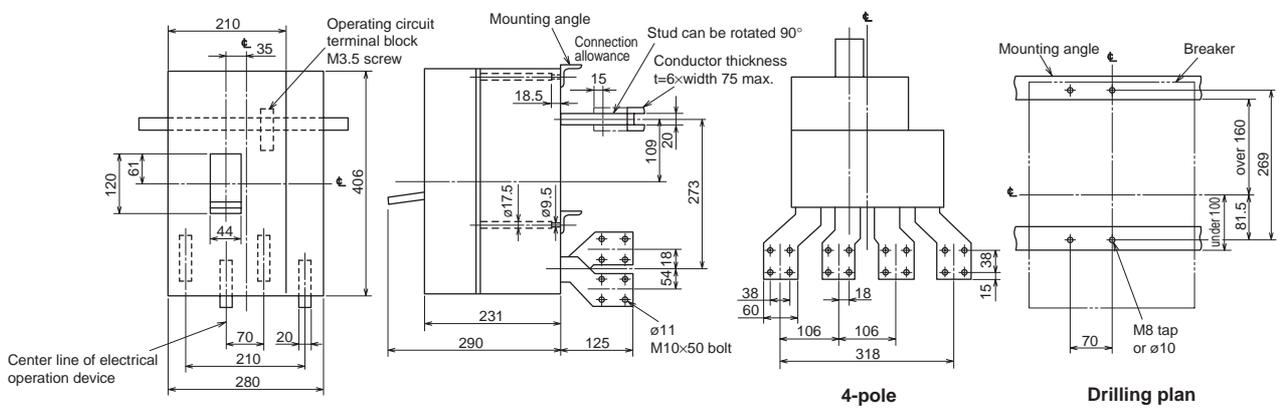


Rear connection

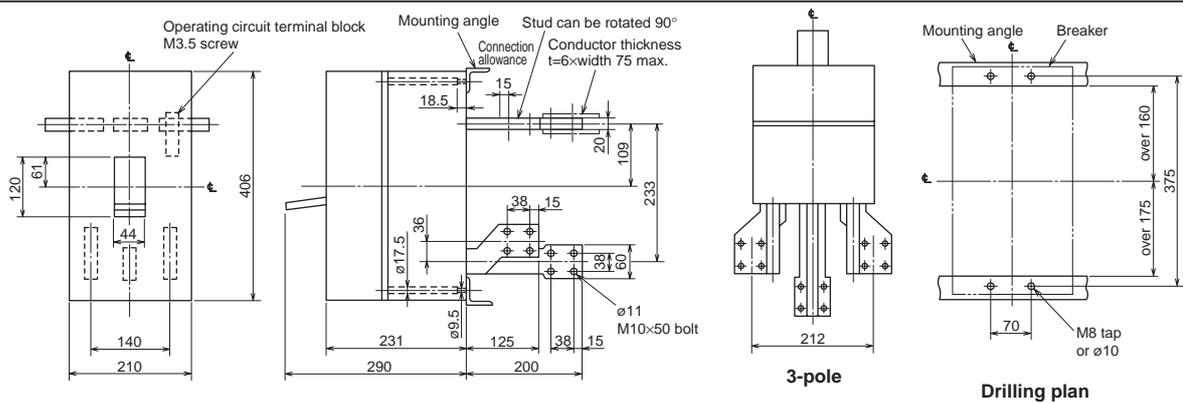
● NF1600-SEW (3-pole) Motor drive type (2)



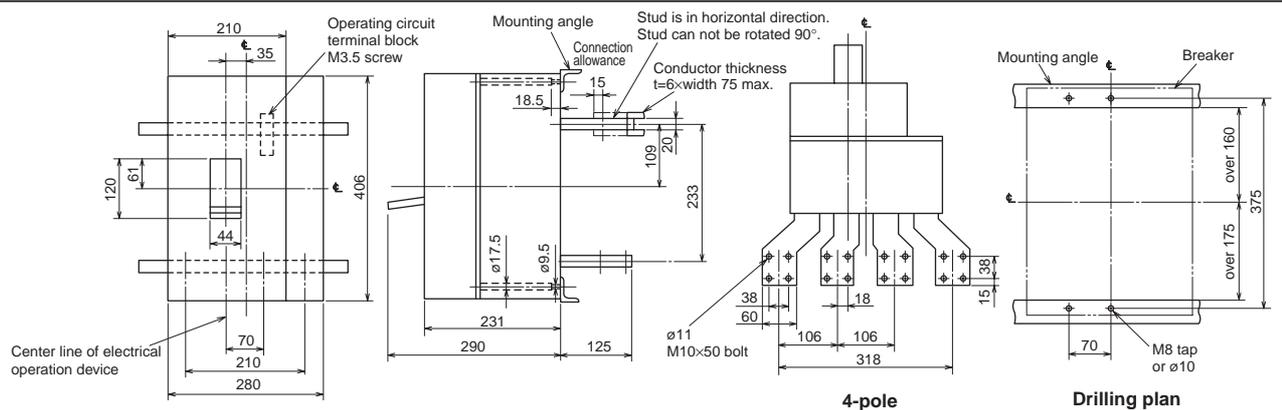
● NF1600-SEW (4-pole) Motor drive type (2)



● NF1600-SDW Motor drive type (2)



● NF1600-SDW (4-pole) Motor drive type (2)



5

5. Accessories

External Accessories

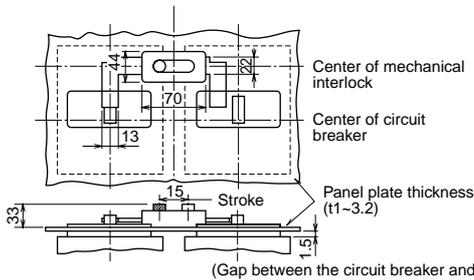
7. Mechanical Interlocks (MI)

Table 5-33

Applicable models	Number of poles	Panel mounting		Direct mount on circuit breaker
		Front connection, Rear connection, Plug-in	Dimension A mm	
NF32-SW, NF63-CW/SW/HW	2P	MI-05SW3	47.5	-
NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW, MB30-SW, MB50-CW/SW	3P		-	MI-05SWFB3
NF63-SW/HW	4P	MI-05SW4	-	-
NF125-CW/SW/HW	2P	MI-05SW3	45	-
NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, NV125-RW	3P			MI-1SWFB3
	4P	MI-1SW4	-	-
NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW, NV250-SEW/HEW, MB225-SW, NV250-RW	2P	MI-05SW3	-	MI-2SWFB3
	3P			-
NF160-SW/HW, NF250-SW/HW, NV250-SW/HW/SEW/HEW	4P	MI-2SW4	-	-
NF125-SGW/HGW/RGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/RGW/UGW	3P	MI-05SW3	-	MI-2GSWFB3
NF125-SGW/HGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/UGW	4P	MI-2SW4	-	-

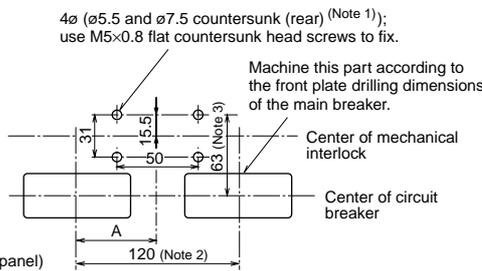
● Outside Dimension Diagram

(Front connection, Rear connection, and Plug-in)



● Drilling Dimension Diagram

(Front connection, Rear connection, and Plug-in)



- Notes: (1) When the panel plate thickness is 2.3 or more, prepare four holes (ø5.5 and ø9.5 countersunk (rear)).
 (2) These are standard dimensions for 2- and 3-pole models, but can be altered upon request.
 (3) The U series have different dimensions. Please contact us for details.

- Remarks: (1) Please contact us for outside dimensions of other models of different specifications.
 (2) These are not isolation-compatible.

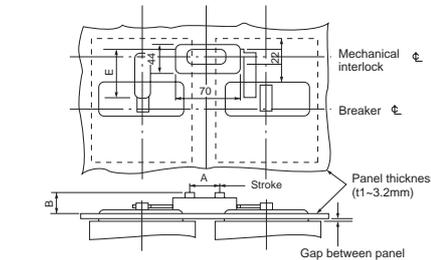
● Front, Rear, Plug-in

With two breakers, use a panel-mounted mechanical interlock for one-way only input. A breaker-mounting mechanical to mount on the breaker main unit can be made to order. Consult your dealer for more details.

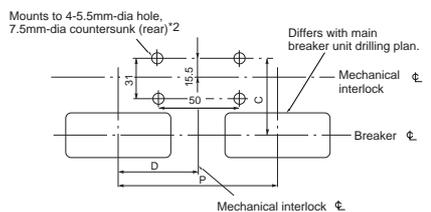
Front, Rear, Plug-in (panel mounting)

Breaker mounting (front)

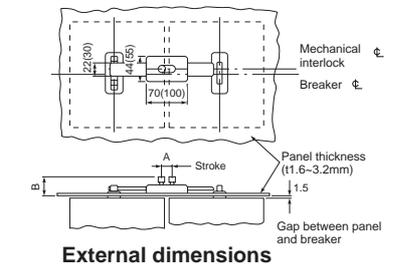
Type	F	G	P
MI-4SWFB3	44	194	190
MI-8SWFB3	70	243	260



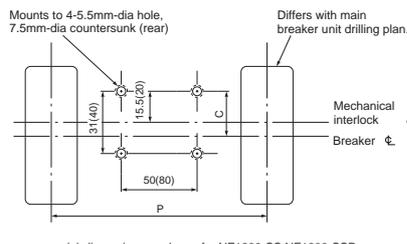
External dimensions



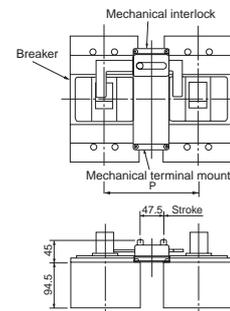
Drilling plan
Fig.1



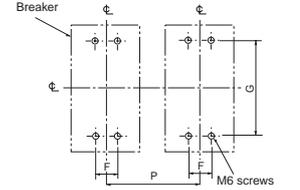
External dimensions



Drilling plan
Fig.2



External dimensions



Drilling plan(breaker mount)
Fig.3

- S1. Above 400AF, use panel thickness $t=1.6-3.2$ mm.
 S2. When the panel thickness is greater than $t=2.3$ mm, use 4-5.5mm-dia 9.5mm dia countersunk (rear).

● Table of Altered Dimensions

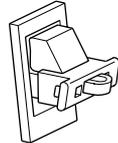
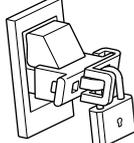
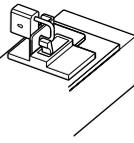
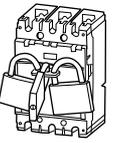
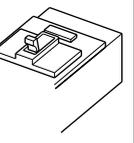
Table 5-34

Breaker type		Pitch (P) *1				Dimensions (mm)						Breaker mount (*4)				
MCCB	ELCB	Standard		Special Standard	Standard	t	A	B	C (*3)	D	E	Fig.	Type	Fig.		
		Type	2P	3P											3P	Type
NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW	MI-4SW3	190	-	210	MI-4SW4	250	(*2)	47.5	33	83.5	-	74	Fig.1	MI-4SWFB3	Fig.3
NF400-UEW(3P)	-	-	190	-	210	MI-8SW4	290									
NF800-CEW/SDW/SEW/HEW/REW NF400-UEW(4P), NF800-UEW	NV800-SEW/HEW	MI-8SW3	220	240	-	MI-8SW4	290	47.5	33	83.5	-	74	Fig.1	MI-8SWFB3	-	
NF1000-SEW, NF1250-SEW/SDW	-	M-10SW3	220	-	-	MI-10SW4	290	2.3	47.5	47	37.5	-	-	Fig.2	-	-
NF1600-SEW/SDW	-	M-16SW3	315	-	-	MI-16SW4	426	65	54.5	39	-	-	Fig.2	-	-	

- *1. Specify the breaker mounting pitch (P)
 *2. No need to specify the panel thickness (t). (Usable panel thickness range: $t=1-3.2$ mm. Above 400AF, use panel thickness $t=1.6-3.2$ mm.)
 *3. For isolation purposes with 400/630/800AF models, keep the C dimension deviation within ± 1 mm.
 *4. Enquire for more details.

8. Handle Lock Devices and Card Holder

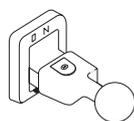
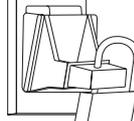
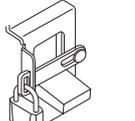
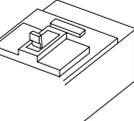
Table 5-35

Description		Lock cover (LC)	Handle lock (HL)	Handle lock (HL-S) (Note 2)	OFF Lock with 3 Padlock	Card holder
Appearance						
NF30-CS, MB30-CS	2P	LC-03CS	HL-05FH	—	—	CH-P No.5
NF30-CS, NV30-CS, MB30-CS	3P					
NF32-SW, NF63-CW/SW/HW	2P					
NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW, MB30-SW, MB50-CW/SW	3P	LC-05SW	(Note 1) HLF-05SW HLN-05SW	HLS-05SW2P HLS-05SW		
NF63-SW/HW	4P					
NF125-CW/SW	2P					
NF125-HW	2P	LC-1SW	(Note 1) HLF-1SW HLN-1SW	HLS-1SW2P HLS-1SW		
NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, NV125-RW	3P					
NF125-SW/HW, NV125-SW/HW	4P					
NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW, NV250-SEW/HEW, MB225-SW, NV250-RW	2P 3P 4P	LC-2SW	(Note 1) HLF-2SW HLN-2SW	HLS-2SW		
NF125-SW/HW, NV125-SW/HW	4P					
NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW, NF125-RGW/UGW, NF250-RGW/UGW	3P, 4P	LC-2GSW	HLF-2GSW (Note 1) HLN-2GSW	HLS-2GSW	HLF3-2GSW	

Notes: (1) HLF types are used for OFF-lock, and HLN types for ON-lock.
(2) HL-S types are used for OFF-lock.

Remark: (1) Users are requested to prepare padlocks for HL and HL-S types. (25mm padlock for HL, and 35mm padlock for HL-S.)

Table 5-36

Product	Handle (HT)	Handle lock (HL)	Handle lock (HL-S)	Card holder
Breaker type				
NF400-CW, NV400-CW	HT-4CW	HL-4CW (*1-2)	HLS-4SW (*1) HLS-4UW (*1) HLS-8SW (*1) HLS-8UW (*3)	CH-P No.3
NF400-SW/SEW/HEW/REW/UEW, NV400-SW/SEW/HEW/REW, NF630-CW/SW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW	HT-4SW	HL-4SW (*1-2)		
NF400-UEW (3P), NF400-UEW (4P), NF800-CEW/SDW/SEW/HEW/REW/UEW, NV800-SEW/HEW				
NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW	HT-10SW	HL (*1)	—	

Remarks:

1. Padlocks for HL and HL-S must be provided by the customer.

*1. Must be ordered with breaker.

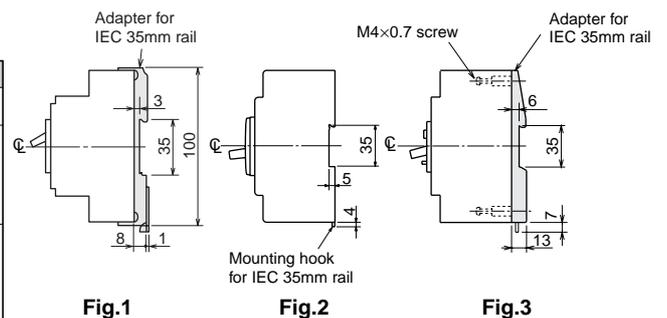
*2. The HL without padlock can be used as a lock cover (LC).

*3. Applicable types are NF400-UEW (4P) and NF800-UEW (3P, 4P).

9. IEC 35mm Rail Mounting Adapters

Table 5-37

Applicable models	Number of poles	Parts number	Outline
NF30-CS, NV30-CS, MB30-CS	2P, 3P	DIN-03CS	Fig.1
NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW, MB30-SW, MB50-CW/SW	2P 3P	DIN-05SW	Fig.2
NF125-CW/SW	2P	DIN-1SW2	Fig.3
	3P		
NF125-HW, NV125-CW/SW/HW, MB100-SW	2P	DIN-1SW3	
	3P		



6. Characteristics and Dimensions

Molded-Case Circuit Breakers and Motor Breakers

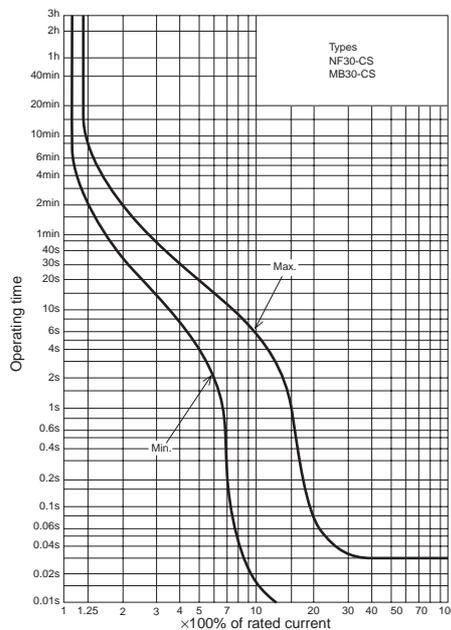
NF30-CS
MB30-CS



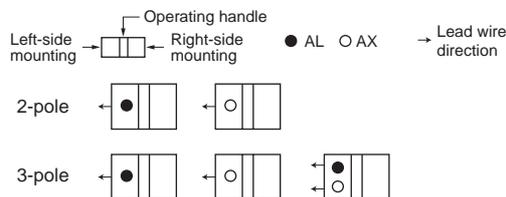
Type NF30-CS

Series		C series		
Frame size		30		
Type name		NF30-CS	MB30-CS	
Rated current I _n (Amp.)		3, 5, 10, 15, 20, 30	(2), (3.2), 4, (5), 6.3, (8), 10, 16	
Number of poles		2	3	
Rated insulation voltage U _i (V)		500		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	—
			500V	—
			415V	1.5/1.5
			380V	1.5/1.5
			240V	2.5/2
Standard Attached Parts (Front connection)		Mounting screw: M4×0.7×20 (2pcs) Small terminal cover 2pcs Only MB30-CS		

Operating Characteristics

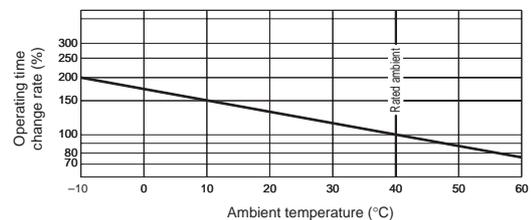


Internal Accessories



Remark: (1) Standard lead wire is drawn from side. However, lead wire drawn by load can be produced upon request.
(2) refer to page 44.

Temperature Characteristics

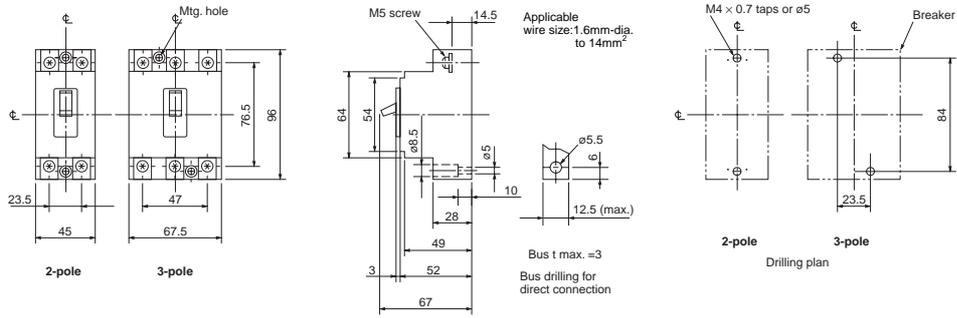


External Accessories

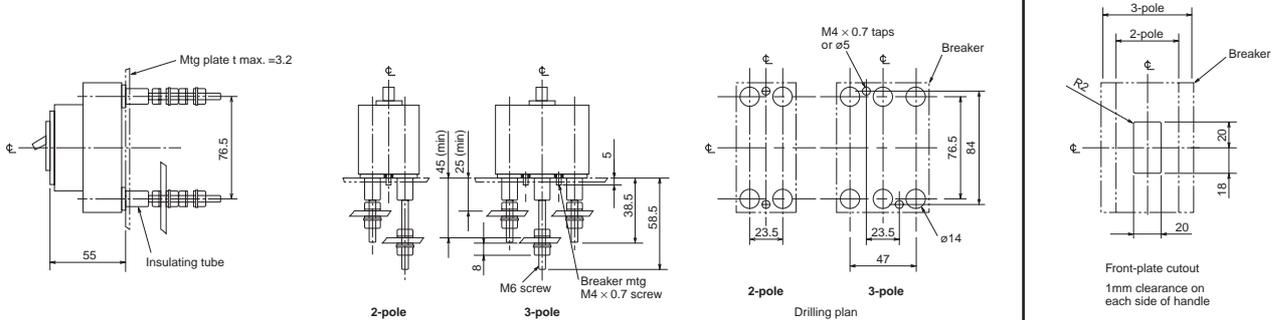
Accessories		Type name	Reference page
Terminal cover	Small	(TC-S) TCS-03CS3W (*1)	60
	Large	(TC-L) TCL-03CS3W (*1)	
	Rear	(BTC) BTC-03CS3W (*1)	
	Skeleton	(TTC) TTC-03CS (*1)	
Handle lock		(HL) HL-05FH	70
Lock cover		(LC) LC03CS	70
Rail mounting adapters		(DIN) DIN-03CS	70

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

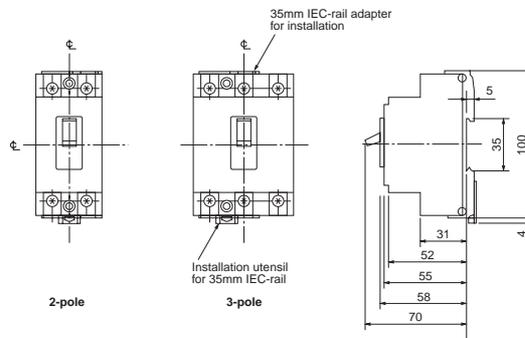
Front connection



Rear connection



IEC Rail Mounting Adapter



6. Characteristics and Dimensions

Molded-Case Circuit Breakers and Motor Breakers

NF32-SW **NF63-CW**
NF63-SW **NF63-HW**
MB30-SW **MB50-CW**
MB50-SW

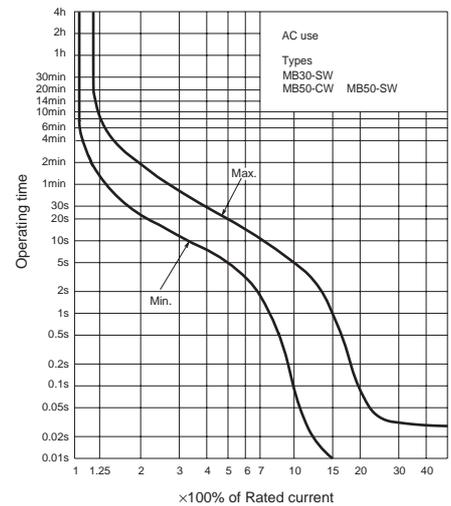
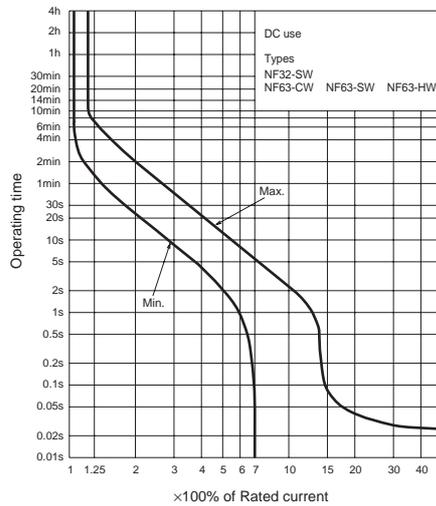
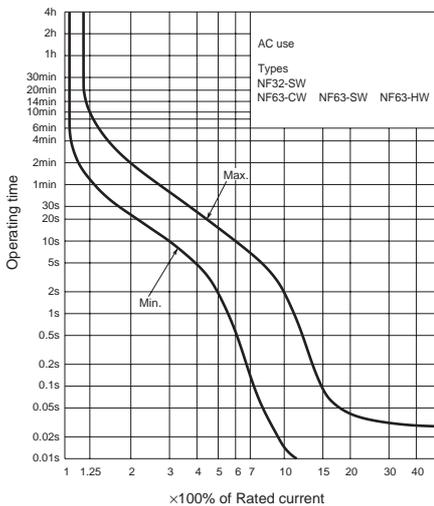


Type NF63-SW

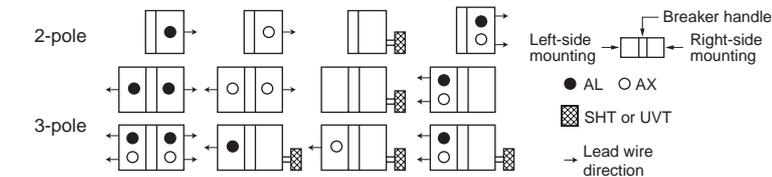
Type name		NF32-SW	NF63-CW	NF63-SW	NF63-HW	MB30-SW	MB50-CW	MB50-SW		
Rated current I _n (Amp.)		3 4 (5) 6 10 (15) 16 20 25 (30) 32	3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	10 (15) 16 20 25 (30) 32 40 50 (60) 63	0.8 1.2 1.4 2 2.5 4 5 7.1 8 10 12 16 25 32	8 10 12 16 25 32 40 45	0.8 1.2 1.4 2 2.5 4 5 7.1		
Number of poles		2*1	3	2*1 3	4	2*1 3 4	3	3		
Rated insulation voltage U _i (V)		600	600	600	690	500	500	500		
Rated short-circuit braking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	—	—	—	2.5/1	—	—	
			500V	2.5/1	2.5/1	7.5/4	7.5/4	—	—	
			440V	2.5/1	2.5/1	7.5/4	10/5	2.5/1	2.5/1	7.5/4
			400V	5/2	5/2	7.5/4	10/5	5/2	5/2	7.5/4
			230V	7.5/4	7.5/4	15/8	25/13	7.5/4	7.5/4	15/8
DC	250V	2.5/1	—	2.5/1	—	7.5/4	—	—		
Standard Attached Parts (Front connection)		Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) (Note) Insulation barrier: (2P: 1pc, 3P: 2pcs, 4P: 3pcs) Note: These are supplied with NF63-SW, NF63-HW, and MB50-SW models.								

*1: Types of DC specifications can be produced upon request.

Operating Characteristics

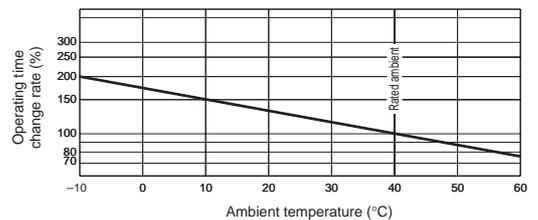


Internal Accessories



Remark: (1) refer to page 44.

Temperature Characteristics



External Accessories

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F05SW (*1)	55	Mechanical interlock	MI MI-05SW3 (*1)	69
	S S05SW	57		Terminal cover	Small TC-S TCS-05SW3W (*1)
	V V05SWF	54	Large TC-L TCL-05SW3W (*1)		
	R —	—	Skeleton TTC TTC-05SW3 (*1)		
HLF-05SW	70	Rear BTC BTC-05SW3W (*1)			
(*2) HL HLN-05SW		Plug-in PTC PTC-05SW3W (*1)			
HL-S HLS-05SW (*1)		IEC 35mm rail mounting adapters (option)	DIN-05SW	70	

Notes: (*1) The designation depends on the number of poles. Refer to the reference page.
(*2) HLF types are used for OFF-lock, and HLN types for ON-lock.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers and Motor Breakers

NF125-CW NF125-SW
NF125-HW MB100-SW

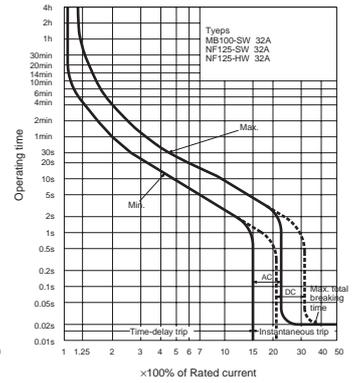
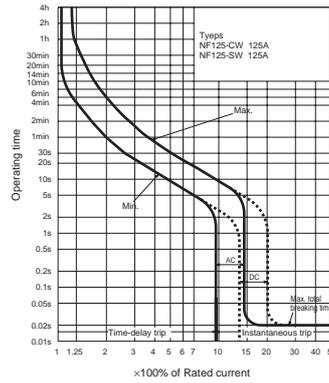
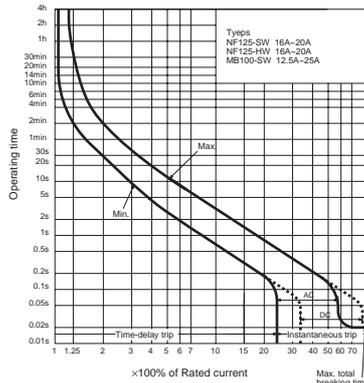
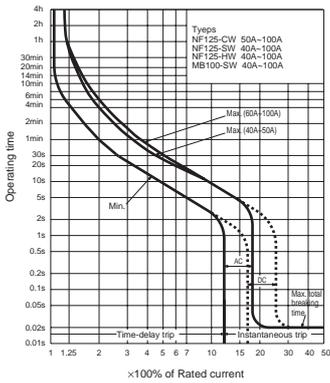


Type NF125-SW

Type name		NF125-CW			NF125-SW			NF125-HW			MB100-SW				
Rated current In (Amp.)		50 (60) 63 (75) 80 100 125			(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125			(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100			(12.5) (16) (25) 32 (40) 45 63 71 90 100				
Number of poles		2 3			2 3 4			2 3 4			3				
Rated insulation voltage Ui (V)		600			690			690			500				
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	-			8/4			10/5			-		
			500V	7.5/4			18/9			30/15			-		
			440V	10/5			25/13			50/25			25/13		
			400V	10/5			30/15			50/25			30/15		
		DC *1	230V	30/15			50/25			100/50			50/25		
			250V	7.5/4			-			15/8			40/20		
			400V	-			7.5/4			-			15/8		
			500V	-			-			15/8			40/20		
Standard Attached Parts (Front connection)		Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) (Note) Insulation barrier: (2P: 1pc, 3P: 2pcs, 4P: 3pcs) Note: These are supplied with NF125-SW, NF125-HW, and MB100-SW models.													

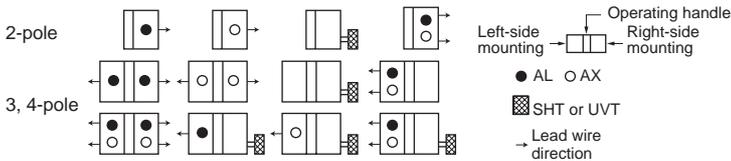
*1: When wired as shown at the bottom of page 13, 3-pole models can be used for up to 400 V DC, and 4-pole models for up to 500 V DC.

Operating Characteristics



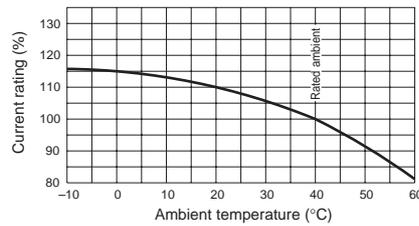
Remark: (1) Only AC characteristics are available for the model MB100-SW.

Internal Accessories



Remark: (1) refer to page 44.

Ambient Compensating Curve



External Accessories

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F1SW (*1)	55	Mechanical interlock	MI MI-05SW3 (*1)	69
	S S1SW	57		Terminal cover	Small TC-S TCS-1SW3W (*1)
	V V1SW (*2)	54	Large TC-L TCL-1SW3W (*1)		
	R R1SW	58	Skeleton TTC TTC-1SW3 (*1)		
HLF-1SW	70	Rear BTC BTC-1SW3W (*1)			
HLN-1SW		Pulg-in PTC PTC-1SW3W (*1)			
HL-S HLS-1SW (*1)(*4)		IEC 35mm rail mounting adapters	DIN-1SW3 (*1)	70	
			Electrical operation device	MDS-NF1SWE (*3)	61

Notes: (*1) The designation depends on the number of poles. Refer to the reference page.
 (*2) Attach the letter "F" to the end of designation for a fixed type.
 (*3) Specify the working voltage. An order should be placed at the same time as an order of circuit breaker main body.
 (*4) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers and Motor Breakers

NF250-CW NF250-SW
 NF250-HW NF160-SW
 NF160-HW MB225-SW

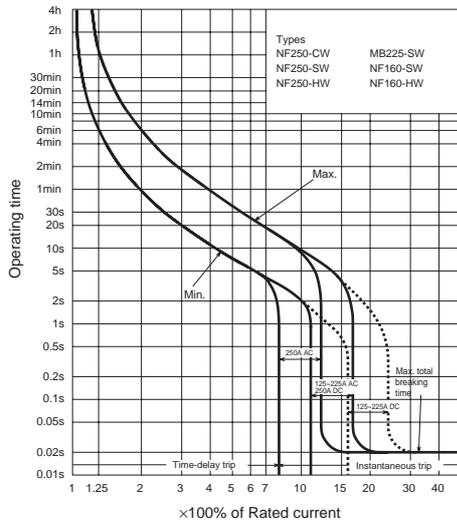


Type NF250-SW

Type name	NF160-SW	NF160-HW	NF250-CW	NF250-SW	NF250-HW	MB225-SW				
Rated current In (Amp.)	125 150 160	125 150 160	(100) 125 150 175 200 225 250	(100) 125 150 175 200 225 250	125 150 175 200 225 250	125 150 175 200 225				
Number of poles	2 3 4	2 3 4	2 3	2 3 4	2 3 4	3				
Rated insulation voltage Ui (V)	690	690	600	690	690	500				
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	–	5/3	–	–			
			500V	15/8	30/8	10/5	15/8	30/8		
			440V	25/13	50/13	15/8	25/13	50/13		
			400V	30/15	50/13	18/9	30/15	50/13		
			230V	50/25	100/25	35/18	50/25	100/25		
			DC	250V	15/8	–	40/20	–	10/5	–
				400V	–	15/8	–	–	40/20	–
500V	–	15/8		–	40/20	–	–			
Standard Attached Parts (Front connection)	Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)									

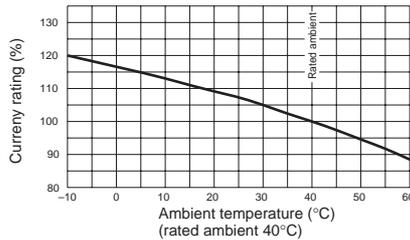
*1: When wired as shown at the bottom of page 13, 3-pole models can be used for up to 400 V DC, and 4-pole models for up to 500 V DC.

Operating Characteristics

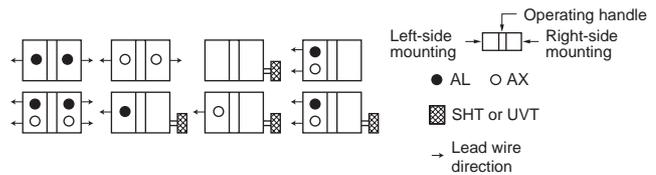


Remark: (1) Only AC characteristics are available for the model MB225-SW.
 (2) refer to page 44.

Ambient Compensating Curve



Internal Accessories

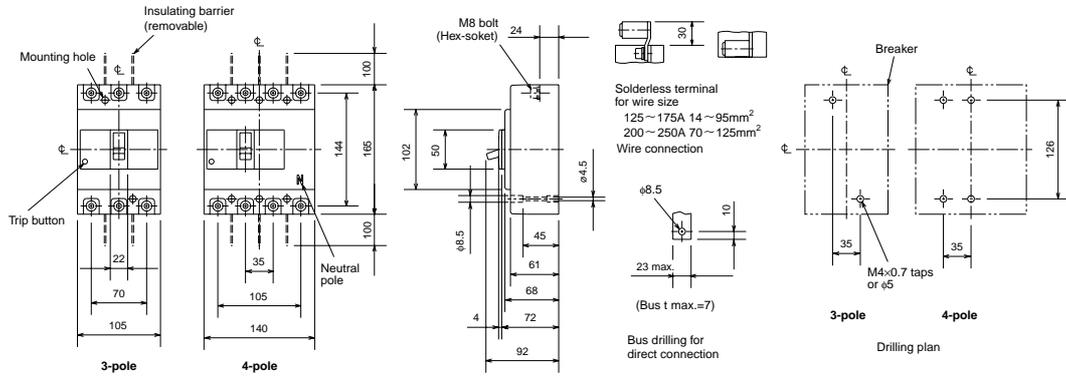


External Accessories

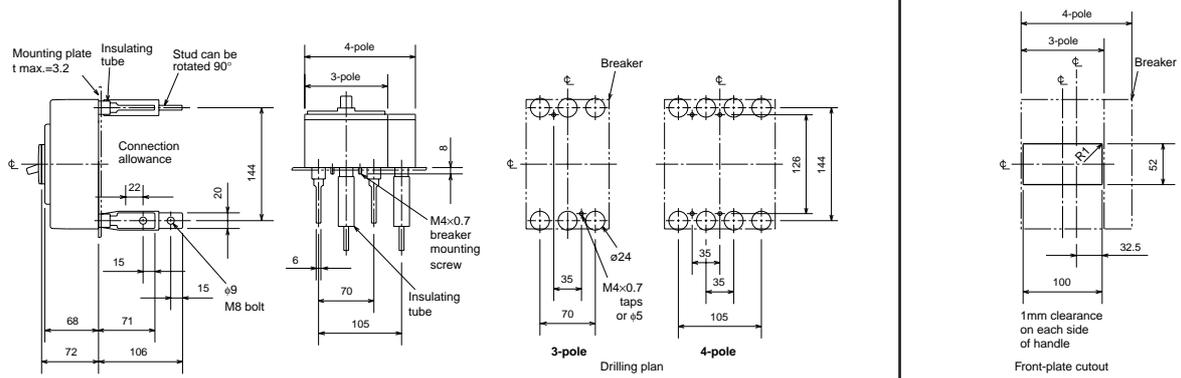
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F2SW	55	Mechanical interlock	MI MI-05SW3 (*1)	69
	S S2SW	57		Terminal cover	Small TC-S TCS-2SW3W (*1)
	V V2SW (*3)	54	Large TC-L TCL-2SW3W (*1)		
	R R2SW	58	Skeleton TTC TTC-2SW3 (*1)		
Plug-in PTC PTC-2SW3W (*1)					
Handle lock device	LC LC-2SW	70	Electrical operation device	MDS-NF2SWE (*2)	61
	(*4) HLF HLF-2SW				
	HLN HLN-2SW				
	HL-S HLS-2SW				

Notes: (*1) The designation depends on the number of poles. Refer to the reference page.
 (*2) Specify the working voltage. An order of MB225-SW should be placed at the same time as an order of circuit breaker main body.
 (*3) Attach the letter "F" to the end of designation for a fixed type.
 (*4) HLF types are used for OFF-lock, and HLN types for ON-lock.

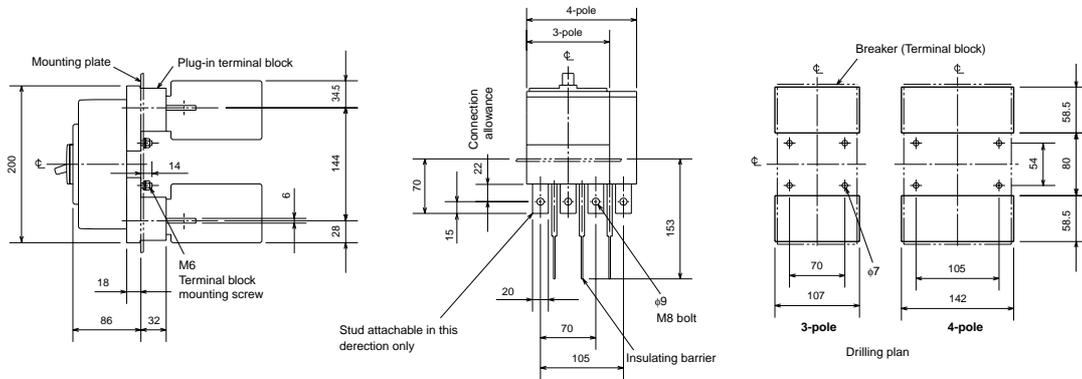
Front connection



Rear connection



Plug-in



- Remarks: 1. 2-pole models are 3-pole models with the central pole removed.
 2. Only 2- and 3-pole models are available for the model of NF250-CW, and only 3-pole models are available for the model of MB225-SW.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

NF250-SGW **NF250-HGW**
NF160-SGW **NF160-HGW**
NF125-SGW **NF125-HGW**



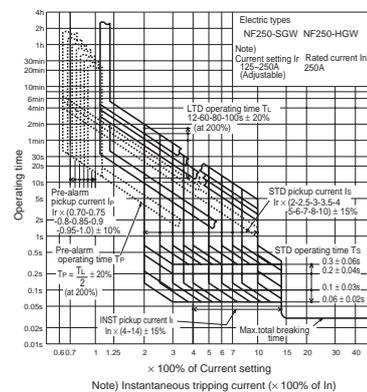
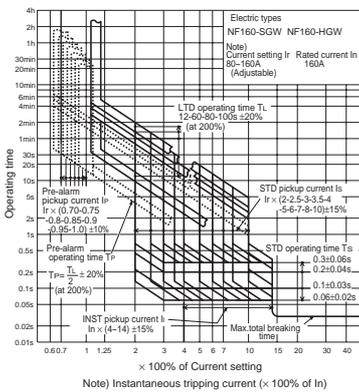
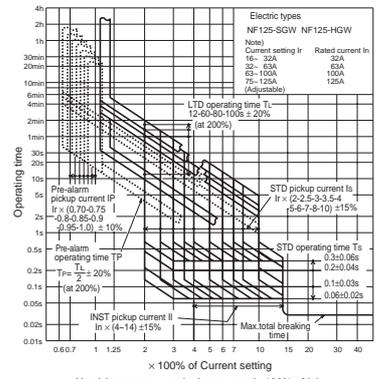
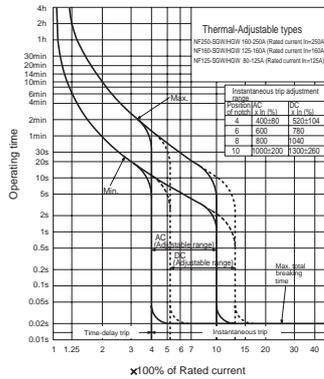
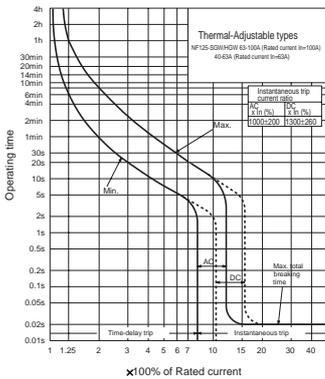
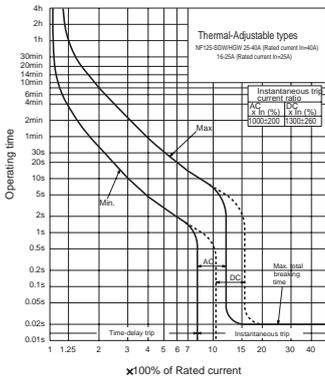
Type NF250-SGW

Type name	NF125-SGW RT	NF125-SGW RE	NF125-HGW RT	NF125-HGW RE	NF160-SGW RT	NF160-SGW RE		
Rated current In (Amp.)	16-25, 25-40, 40-63, 63-100, 80-125	16-32, 32-63, 63-100, 75-125	16-25, 25-40, 40-63, 63-100, 80-125	16-32, 32-63, 63-100, 75-125	125-160	80-160		
Number of poles	2 3 4	3 4	2 3 4	3 4	2 3 4	3 4		
Rated insulation voltage Ui (V)	690	690	690	690	690	690		
Rated short-circuit breaking capacity (kA)	AC	690V	8/8	8/8	20/20	20/20	8/8	8/8
		500V	30/30	30/30	50/50	50/50	30/30	30/30
		440V	36/36	36/36	65/65	65/65	36/36	36/36
		400V	36/36	36/36	75/75	75/75	36/36	36/36
		230V	85/85	85/85	100/100	100/100	85/85	85/85
	DC *1	300V	20/20	-	40/40	-	20/20	-
		500V	-	20/20	-	40/40	-	20/20
600V	-	20/20	-	40/40	-	20/20	-	
Standard Attached Parts (Front connection)	Mounting screw: M4×0.7×73 (4pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)							

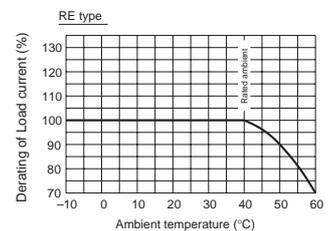
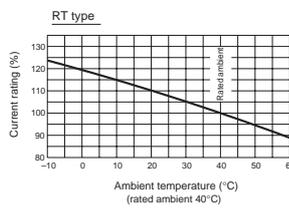
Type name	NF160-HGW RT	NF160-HGW RE	NF250-SGW RT	NF250-SGW RE	NF250-HGW RT	NF250-HGW RE		
Rated current In (Amp.)	125-160	80-160	125-160, 160-250	125-250	125-160, 160-250	125-250		
Number of poles	2 3 4	3 4	2 3 4	3 4	2 3 4	3 4		
Rated insulation voltage Ui (V)	690	690	690	690	690	690		
Rated short-circuit breaking capacity (kA)	AC	690V	20/20	20/20	8/8	8/8	20/20	20/20
		500V	50/50	50/50	30/30	30/30	50/50	50/50
		440V	65/65	65/65	36/36	36/36	65/65	65/65
		400V	75/75	75/75	36/36	36/36	75/75	75/75
		230V	100/100	100/100	85/85	85/85	100/100	100/100
	DC *1	300V	40/40	-	20/20	-	40/40	-
		500V	-	40/40	-	20/20	-	40/40
600V	-	40/40	-	20/20	-	40/40		
Standard Attached Parts (Front connection)	Mounting screw: M4×0.7×73 (4pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)							

*1: Use either 2-pole. When wired as shown at the bottom of page 13, 3-pole models can be used for up to 500 V DC, and 4-pole models for up to 600V DC.

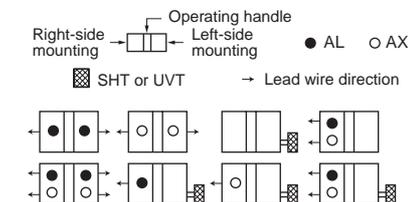
Operating Characteristics



Ambient Compensating Curve



Internal Accessories



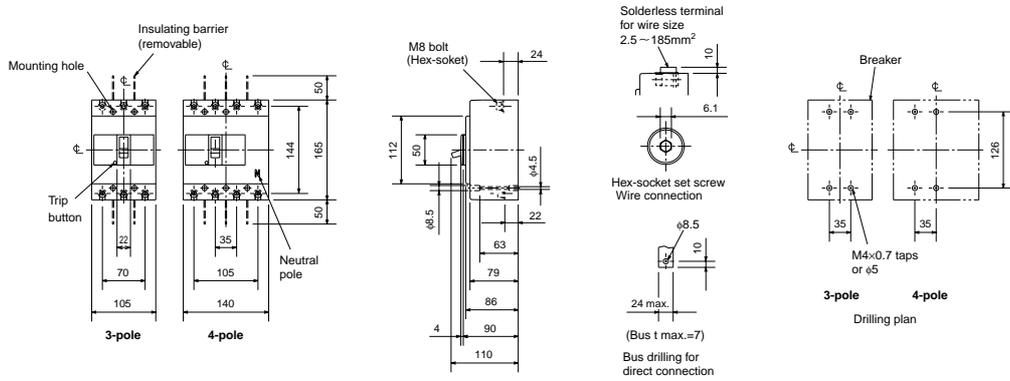
Remark: (1) refer to page 44.

External Accessories

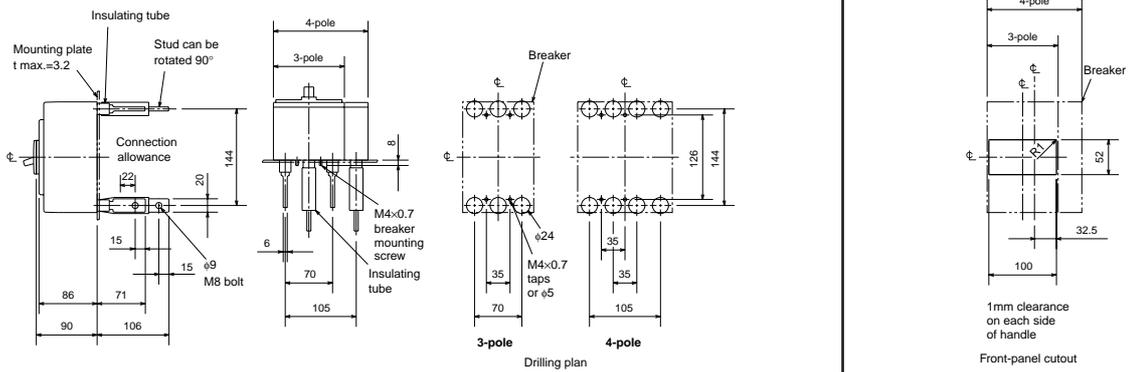
Accessories	Type name	Reference page	Accessories	Type name	Reference page				
Operating handle	F	F2GSW	Mechanical interlock	MI	MI-05SW3 (*1)	69			
	S	S2GSW		Terminal cover	Small		TC-S	TCS-2GSW3W (*1)	
	V	V2GSW (*3)			Large		TC-L	TCL-2GSW3W (*1)	
	R	R2GSW			Skeleton		TTC	TTC-2GSW3 (*1)	60
	LC	LC-2GSW			Rear		BTC	BTC-2GSW3W (*1)	
Handle lock device	(*)2	HLF-2GSW	Plug-in	PTC	PTC-2GSW3W (*1)	61			
	HL	HLN-2GSW	Electrical operation device	MDS-NF2GSWE	(*4)				
	HL-S	HLS-2GSW							
OFF Lock with 3 Padlock	HLF3-2GSW	70							

Notes:
 (*1) The designation depends on the number of poles. Refer to the reference page.
 (*2) HLF types are used for OFF-lock, and HLN types for ON-lock.
 (*3) Attach the letter "F" to the end of designation for a fixed type.
 (*4) Specify the working voltage.

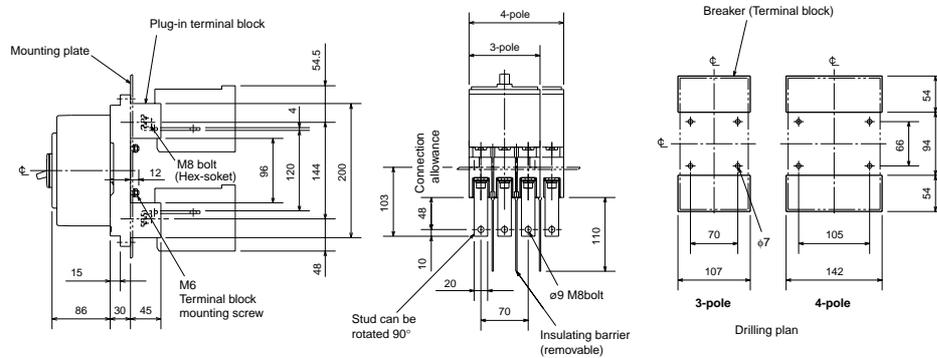
Front connection



Rear connection



Plug-in



Remark: 2-pole models are 3-pole models with the central pole removed.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

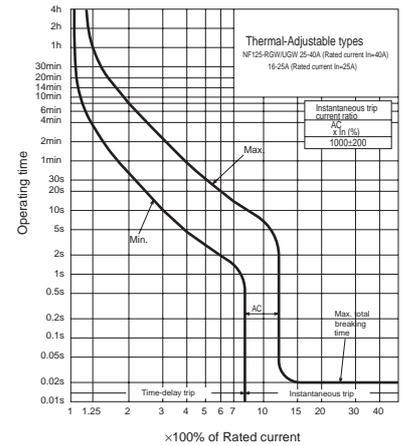
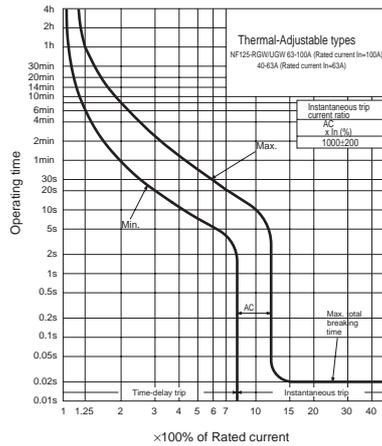
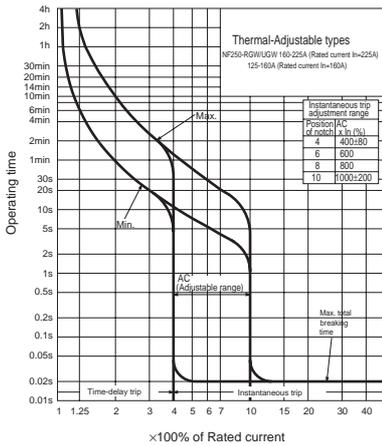
NF250-RGW NF250-UGW
NF125-RGW NF125-UGW



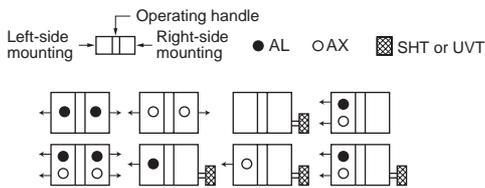
Type NF250-RGW

Type name	NF125-RGW RT	NF125-UGW RT	NF250-RGW RT	NF250-UGW RT			
Rated current In (Amp.)	16-25 25-40 40-63 63-100	16-25 25-40 40-63 63-100	125-160 160-225	125-160 160-225			
Number of poles	2 3	2 3 4	2 3	2 3 4			
Rated insulation voltage Ui (V)	690		690				
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	25/25	30/30	25/25	30/30
			500V	125/125	200/200	125/125	200/200
			440V	125/125	200/200	125/125	200/200
			400V	125/125	200/200	125/125	200/200
			230V	125/125	200/200	125/125	200/200
	DC	300V	-	-	-	-	-
500V	-	-	-	-			
600V	-	-	-	-			
Standard Attached Parts (Front connection)	Mounting screw: M4x0.7x73 (4pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)						

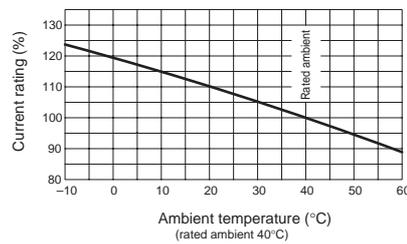
Operating Characteristics



Internal Accessories



Ambient Compensating Curve

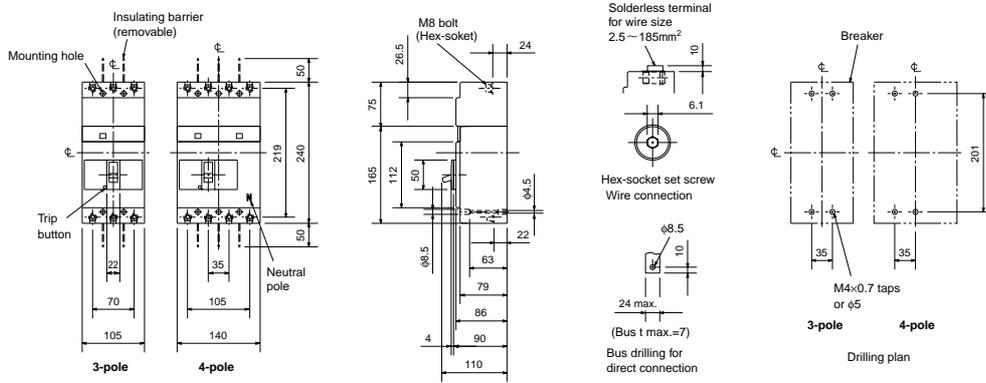


External Accessories

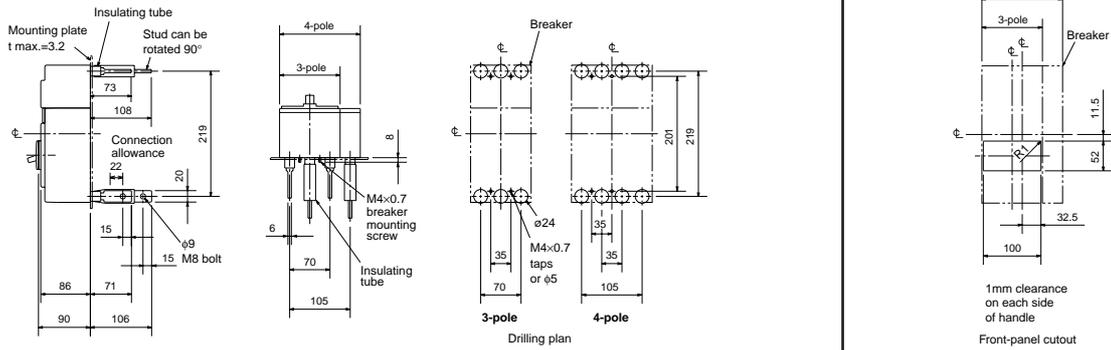
Accessories	Type name	Reference page	Accessories	Type name	Reference page	
Operating handle	F	—	Terminal cover	Small	TC-S TCS-2GSW3W (*1)	60
	S	—		Large	TC-L TCL-2GSW3W (*1)	
	V	V2GUW 54		Skeleton	TTC TTC-2GSW3 (*1)	
	R	R2GUW 58		Rear	BTC BTC-2GSW3W (*1)	
Mechanical interlock	MI	MI-05SW3 (*1) 69		Plug-in	PTC PTC-2GSW3W (*1)	
Electrical operation device	—	—	Handle lock device	LC	LC-2GSW	70
				(*)2 HLF	HLF-2GSW	
				HL-S	HLS-2GSW	

Notes: (*1) The designation depends on the number of poles. Refer to the reference page.
(*2) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.

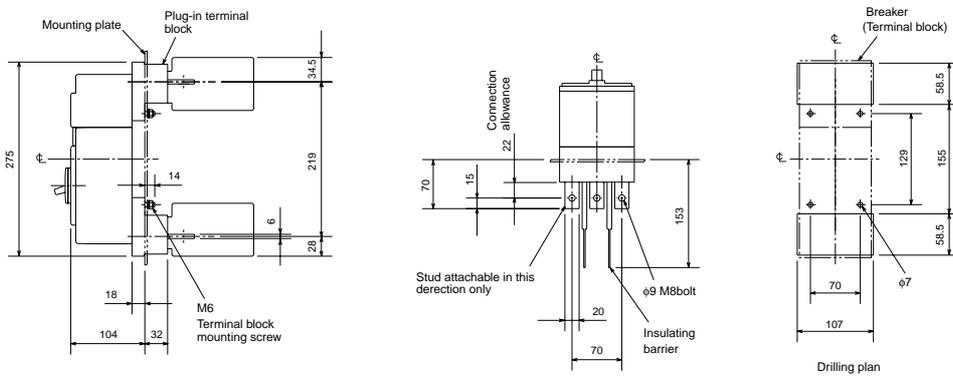
Front connection



Rear connection



Plug-in



Remark: 2-pole models are 3-pole models with the central pole removed.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

NF400-CW NF400-SW

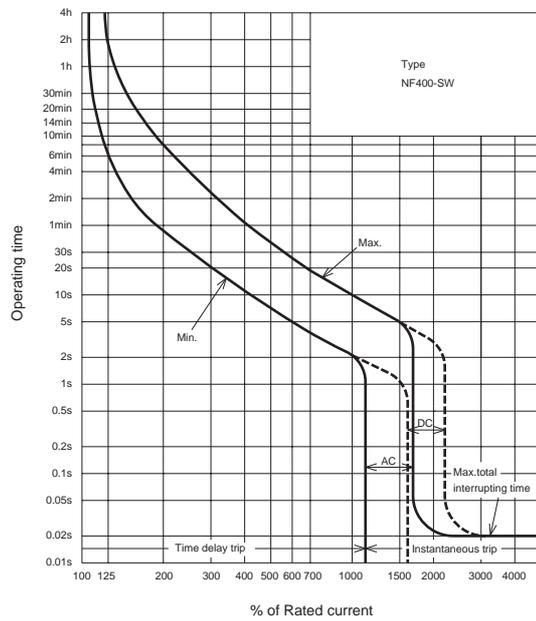
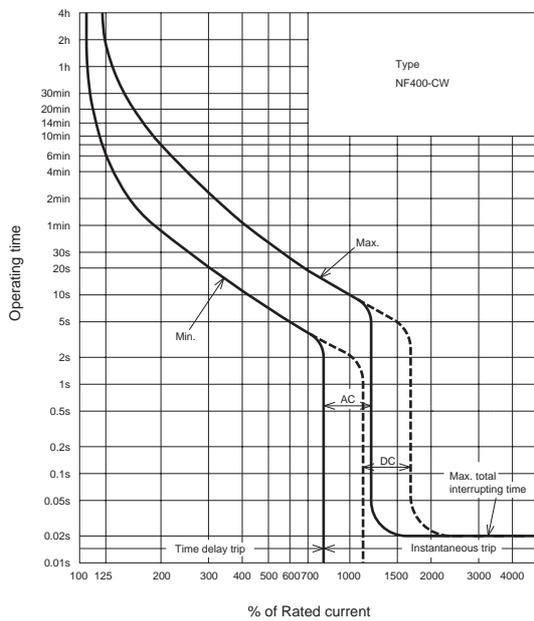


Type NF400-SW

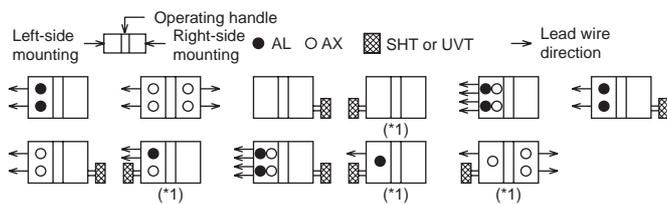
Type name		NF400-CW			NF400-SW				
Rated current In (Amp.)		250 300 350 400							
Number of poles		2 3			2 3 4				
Rated insulation voltage Ui (V)		690			690				
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	-			10/10		
			500V	15/8			30/30		
			440V	25/13			42/42		
		DC(*1)	400V	36/18			45/45		
			230V	50/25			85/85		
			250V	20/10			40/40		
Standard Attached Parts		Front connection	Mounting screw: M6×60 (4pcs) Insulating barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)						
		Rear connection	Mounting screw: M6×72 (4pcs)						

Note: (*1) When wired as shown at the bottom of page 17, 3-pole models can be used for up to 400VDC, and 4-pole models for up to 500VDC.

Operating Characteristics

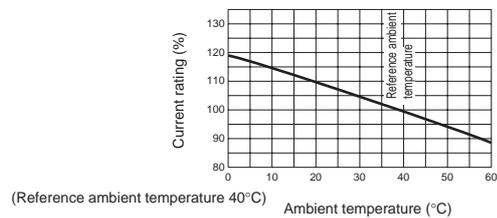


Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: (1) refer to page 45.

Ambient Compensating Curve



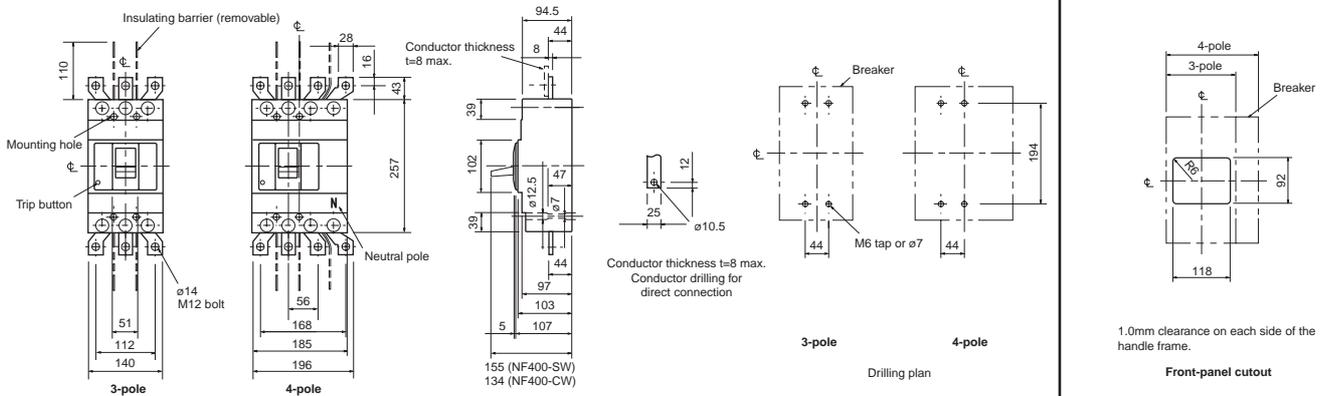
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

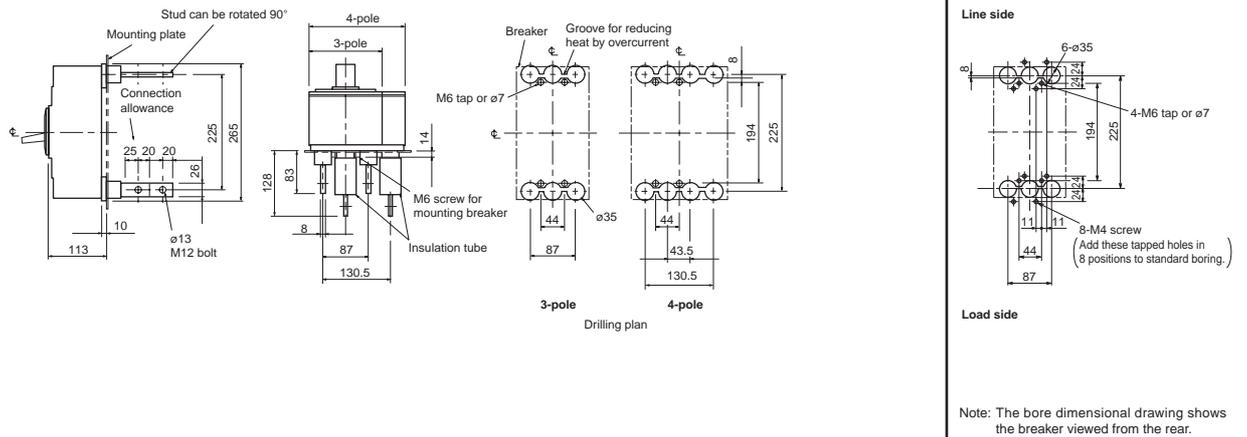
Accessories		Type name	Reference page	Accessories		Type name	Reference page
Operating handle	F	F4SW	55	Terminal cover	Large (TC-L)	TCL-4SW3 (*1)	60
	S	S4CW, S4SW	57		Skeleton (TTC)	TTC-4SW3 (*1)	
	V	V4SWF, V4SW	54		Rear (BTC)	BTC-4SW3 (*1)	
Mechanical interlock (MI)	(MI)	MI-4SW3 (*1)	69	Handle lock device	HL	HL-4CW, HL-4SW	70
Auxiliary handle (HT)	(HT)	HT-4CW, HT4SW	70		HL-S	HLS-4SW	
				Electrical operation device	☆		61

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

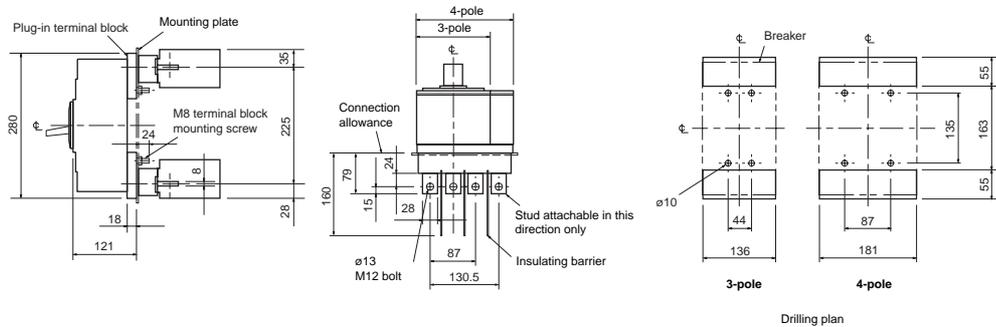
Front connection



Rear connection



Plug-in



Remark: (1) 2-pole models are 3-pole models with the central pole removed.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

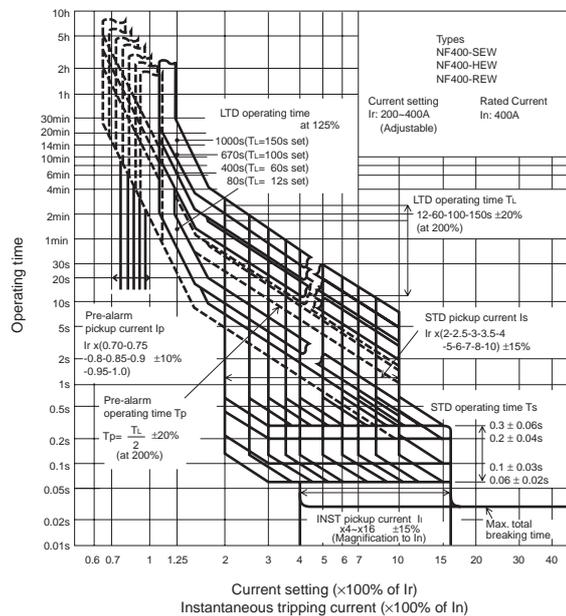
NF400-SEW
NF400-HEW
NF400-REW



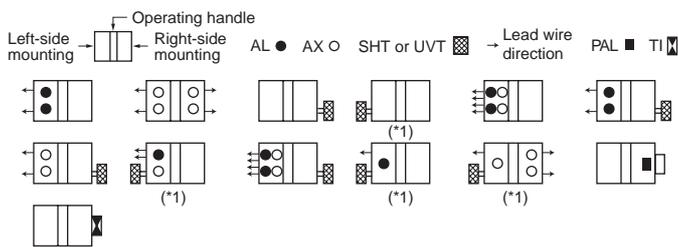
Type NF400-SEW

Type name	NF400-SEW	NF400-HEW	NF400-REW			
Rated current I_n (Amp.)	200-400 adjustable					
Number of poles	3	4	3			
Rated insulation voltage U_i (V)	690	690	690			
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	10/10	35/18	—
			500V	30/30	50/50	70/35
			440V	42/42	65/65	125/63
			400V	50/50	70/70	125/63
			230V	85/85	100/100	150/75
Standard Attached Parts	Front connection	Mounting screw: M6×72 (4pcs) Insulating barrier: (3P: 4pcs, 4P: 6pcs)				
	Rear connection	Mounting screw: M6×85 (4pcs)				

Operating Characteristics

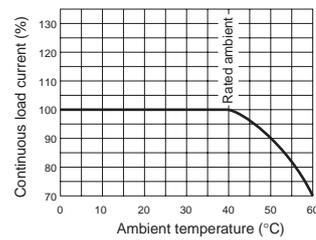


Internal Accessories



Note: (*) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: (1) refer to page 45.

Temperature Characteristics



External Accessories

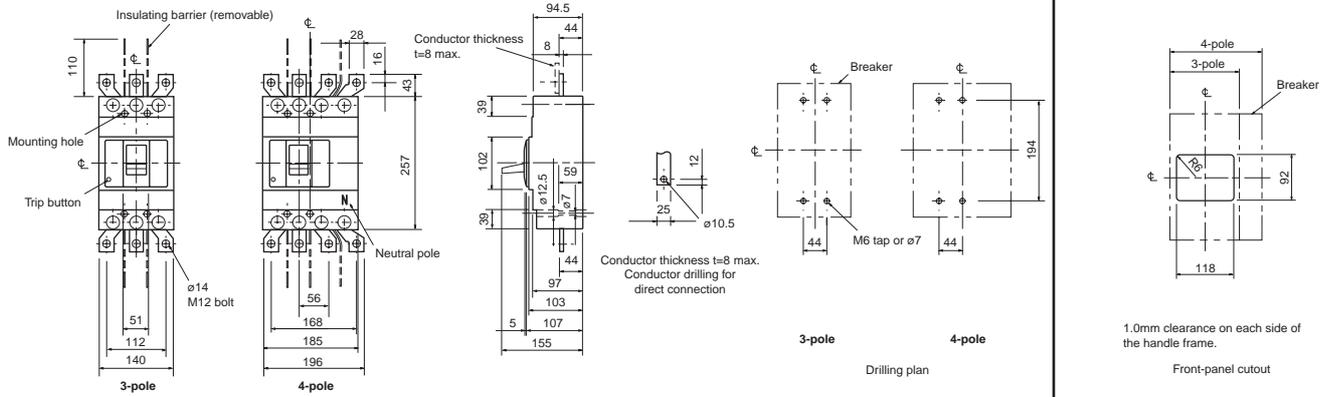
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories	Type name	Reference page	Accessories	Type name	Reference page	
Operating handle	F	F4SW	55	Terminal cover	60	
	S	S4SW	57			
	V	V4SWF, V4SW	54			
Mechanical interlock (MI)	MI-4SW3 (*2)	69	Handle lock device	HL	HL-4SW	70
Auxiliary handle (HT)	HT-4SW	70	HL-S	HLS-4SW		
			Electrical operation device	☆	61	

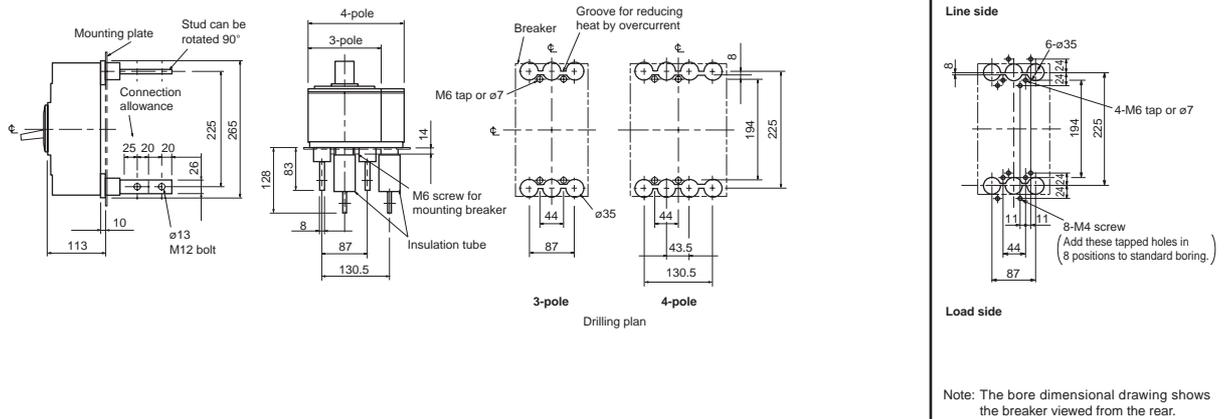
Notes: (*) This is for NF400-SEW.

(*2) The designation depends on the number of poles. Refer to the reference page.

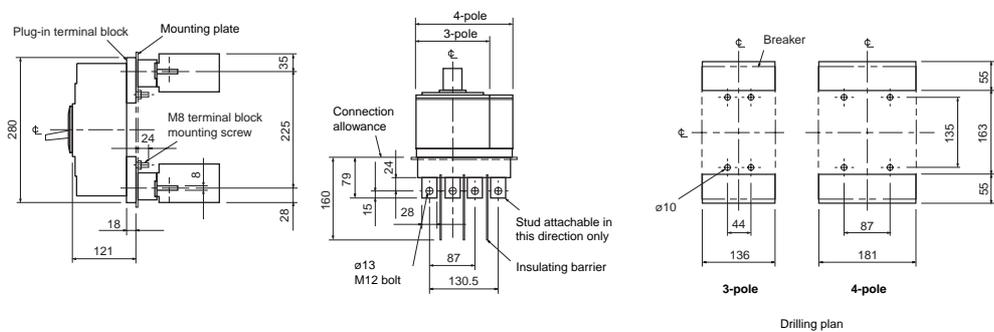
Front connection



Rear connection



Plug-in



6. Characteristics and Dimensions

Molded-Case Circuit Breakers

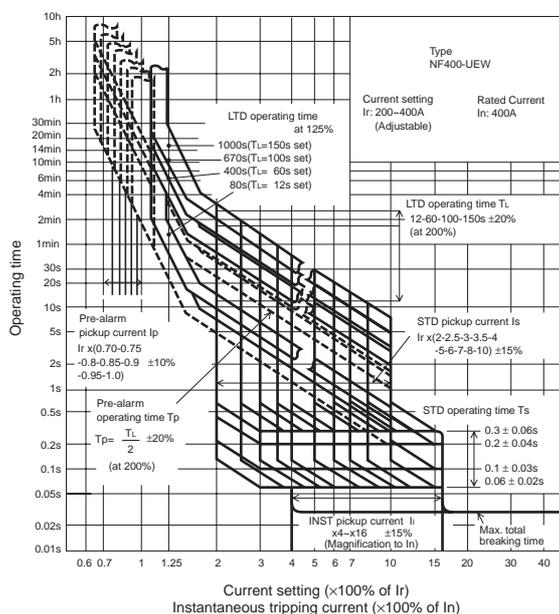
NF400-UEW



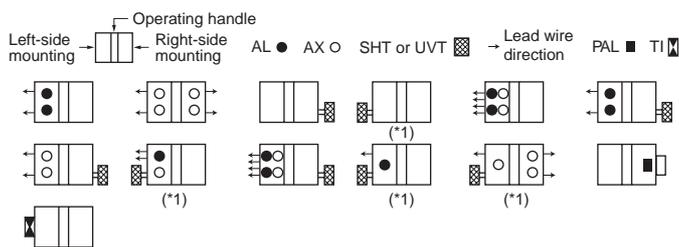
Type NF400-UEW

Type name		NF400-UEW		
Rated current In (Amp.)		200-400 adjustable		
Number of poles		3	4	
Rated insulation voltage Ui (V)		690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	—
			500V	170/170
			440V	200/200
			400V	200/200
			230V	200/200
Standard Attached Parts (4-pole models are provided with auxiliary handle.)		Front connection	Mounting screw: M6×65 (2pcs), M6×174 (2pcs) Insulating barrier: (3P: 4pcs)	
		Rear connection	Mounting screw: M6×72 (2pcs), M6×181 (2pcs)	

Operating Characteristics



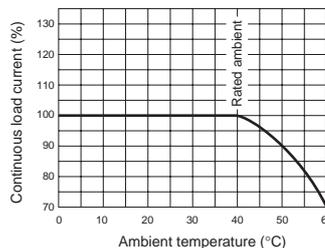
Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.

Remark: (1) Specification of 4-pole model is same as that of NF800-UEW.
(2) refer to page 97.

Current reducing curve



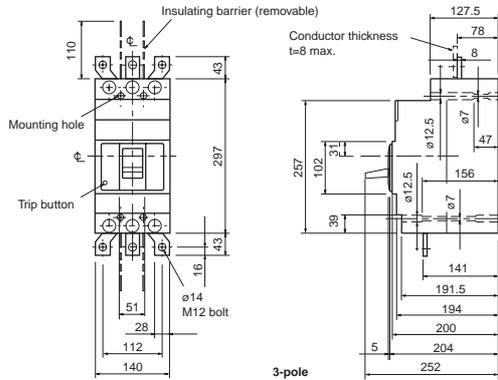
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

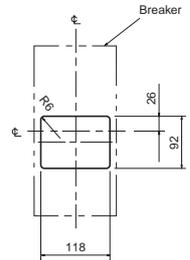
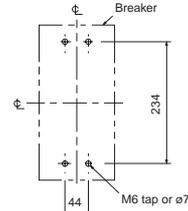
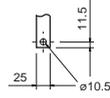
Accessories	Type name	Reference page	Accessories	Type name	Reference page		
Operating handle	F	F4UW (*1)	55	Terminal cover	Large (TC-L)	TCL-4SW3 (*1)	60
	S	S4SW	57			Skeleton (TTC)	—
Mechanical interlock (MI)	MI-4SW3 (*1)	69	Rear	(BTC)	BTC-4SW3 (*1)	60	
Auxiliary handle (HT)	HT-4SW	70		Handle lock device	HL	HL-4SW	70
				HL-S	HLS-4UW		
			Electrical operation device	☆		61	

Note: (*1)The designation depends on the number of poles. Refer to the reference page.

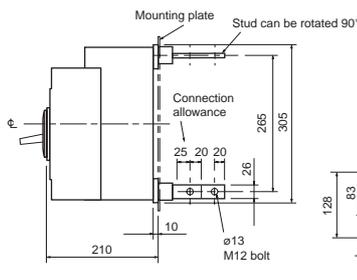
Front connection



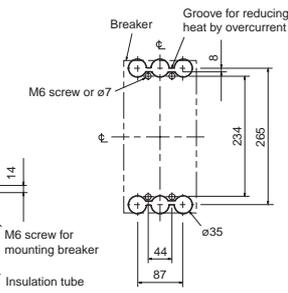
Conductor thickness $t=8$ max.
Conductor drilling for direct connection



Rear connection

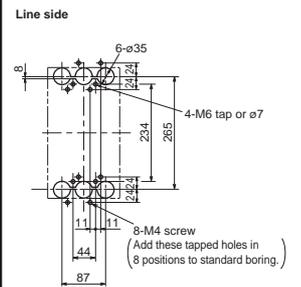


3-pole



Drilling plan

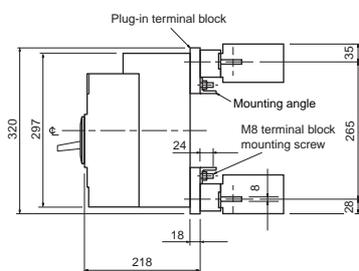
Boring dimensions for rear connection type barriers (3-pole)



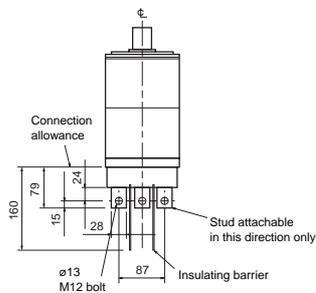
Load side

Note: The bore dimensional drawing shows the breaker viewed from the rear.

Plug-in



3-pole



3-pole
Drilling plan

Note (1): Overall dimension of 4-pole model is same as that of 4-pole model of NF800-UEW. Refer to page 98.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

NF630-CW
NF630-SW

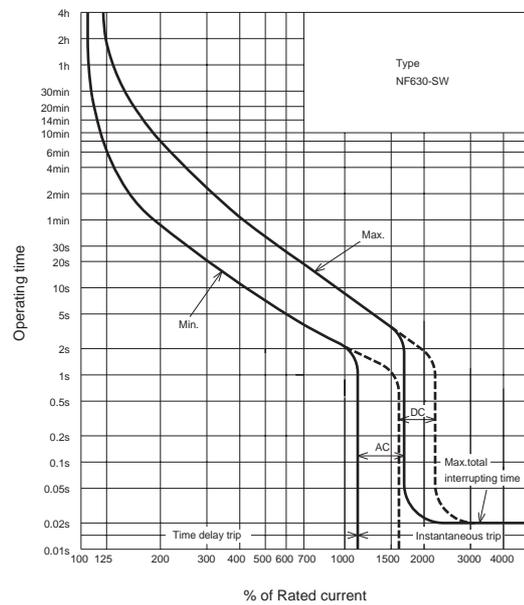
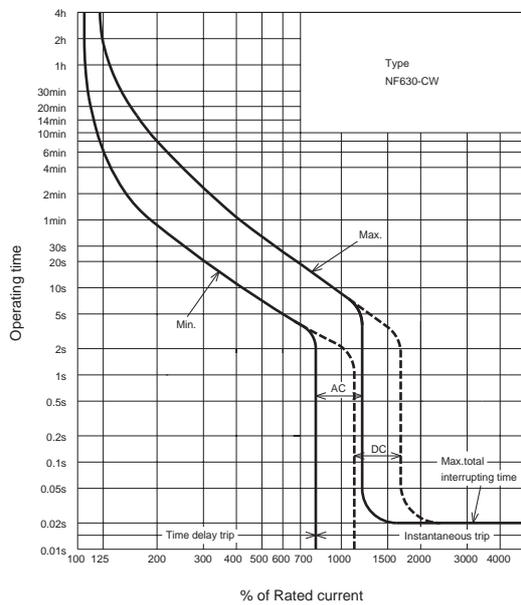


Type NF630-SW

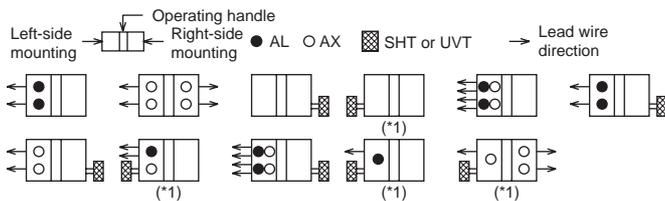
Type name		NF630-CW			NF630-SW		
Rated current In (Amp.)		500 600 630					
Number of poles		2	3	2	3	4	
Retard insulation voltage Ui (V)		690			690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 AC (Icu/Ics)	AC	690V	-			10/10
			500V	18/9			30/30
			440V	36/18			42/42
			400V	36/18			50/50
			230V	50/25			85/85
Standard Attached Parts (4-pole models are provided with auxiliary handle.)	Front connection	Mounting screw: M6×72 (4pcs) Insulating barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)					
		Rear connection	Mounting screw: M6×85 (4pcs)				

Note: (*1) When wired as shown at the bottom of page 17, 3-pole models can be used for up to 400VDC, and 4-pole models for up to 500VDC.

Operating Characteristics

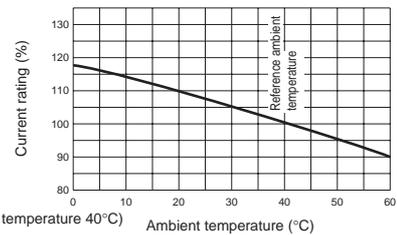


Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: (1) refer to page 45.

Ambient Compensating Curve



(Reference ambient temperature 40°C)

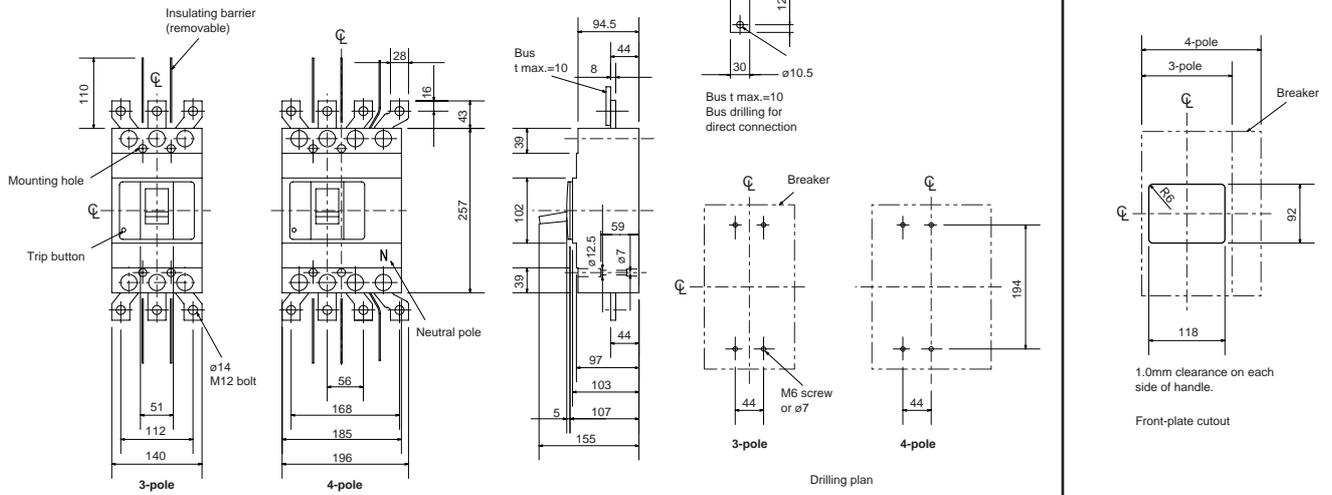
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

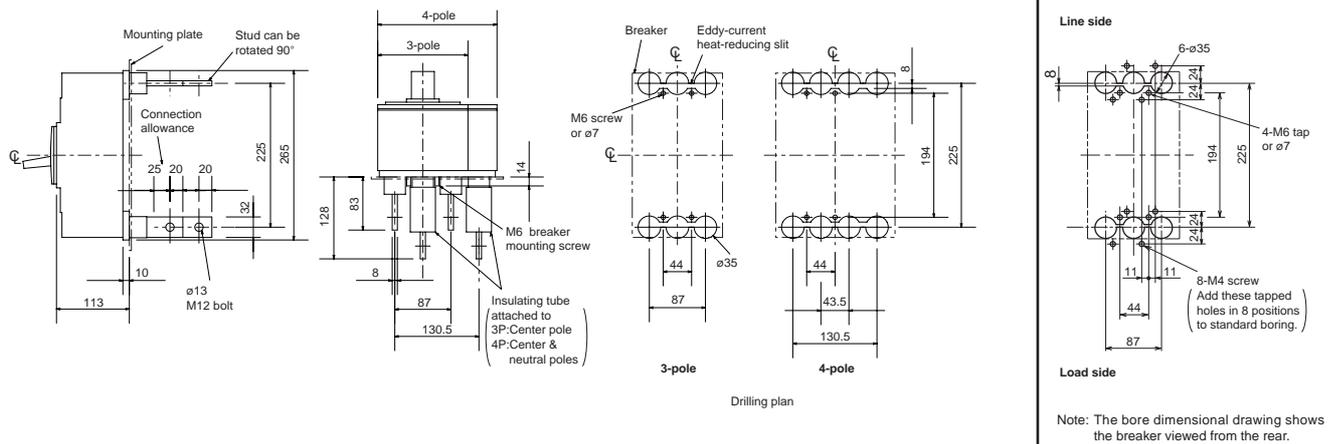
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F4SW	55	Terminal cover	Large (TC-L) TCL-4SW3 (*1)	60
	S S4SW	57		Skeleton (TTC) TTC-4SW3 (*1)	
	V V4SWF, V4SW	54		Rear (BTC) BTC-4SW3 (*1)	
Mechanical interlock (MI)	MI-4SW3 (*1)	69	Handle lock device	HL HL-4SW	70
Auxiliary handle (HT)	HT-4SW	70		HL-S HLS-4SW	
			Electrical operation device	☆	61

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

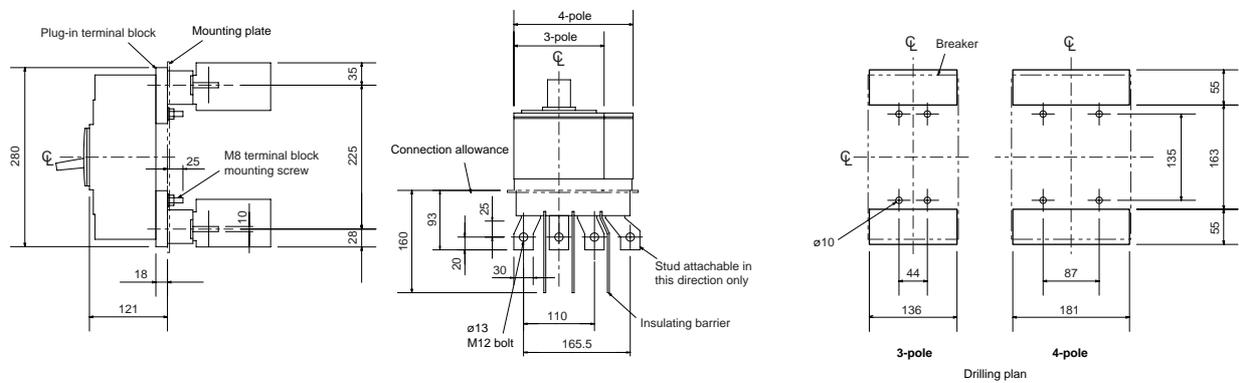
Front connection



Rear connection



Plug-in



Remark: (1) 2-pole models are 3-pole models with the central pole removed.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

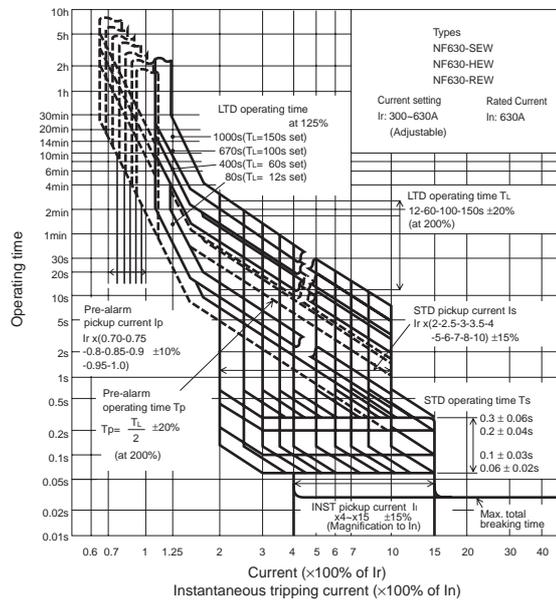
NF630-SEW
NF630-HEW
NF630-REW



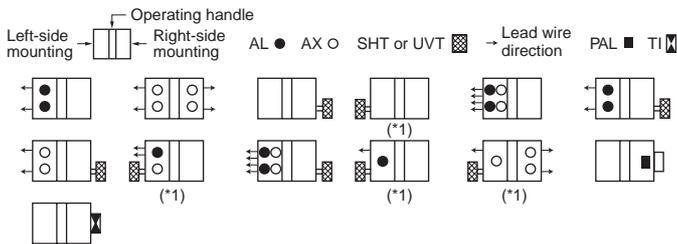
Type NF630-SEW

Type name	NF630-SEW	NF630-HEW	NF630-REW			
Rated current In (Amp.)	300-630 adjustable					
Number of poles	3	4	3			
Rated insulation voltage Ui (V)	690	690	690			
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	10/10	35/18	—
			500V	30/30	50/50	70/35
			440V	42/42	65/65	125/63
			400V	50/50	70/70	125/63
			230V	85/85	100/100	150/75
Standard Attached Parts (4-pole models are provided with auxiliary handle.)	Front connection	Mounting screw: M6×72 (4pcs) Insulating barrier: (3P: 4pcs, 4P: 6pcs)				
	Rear connection	Mounting screw: M6×85 (4pcs)				

Operating Characteristics

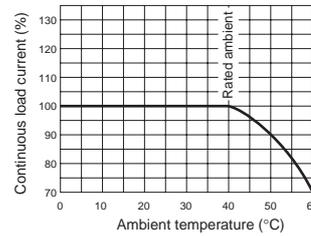


Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: (1) refer to page 45.

Temperature Characteristics



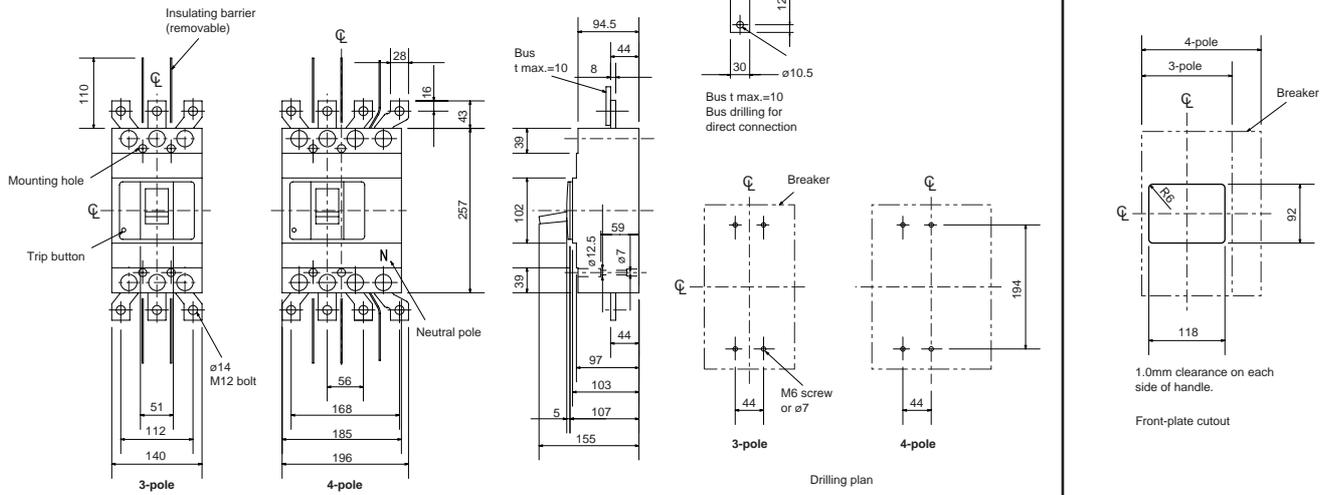
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

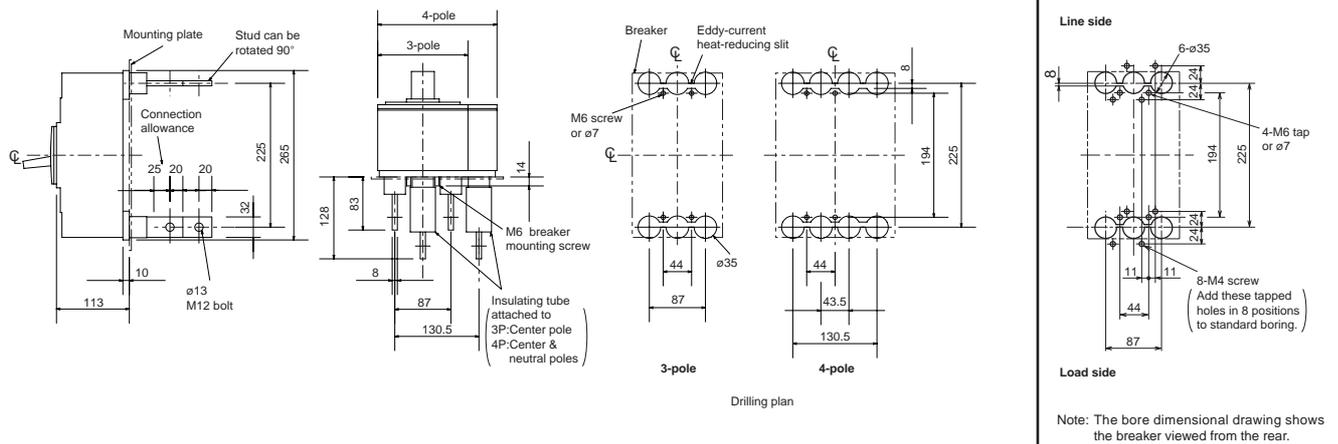
Accessories	Type name	Reference page	Accessories	Type name	Reference page		
Operating handle	F	F4SW	55	Terminal cover	60		
	S	S4SW	57			Large (TC-L)	TCL-4SW3 (*1)
	V	V4SWF, V4SW	54			Skeleton (TTC)	TTC-4SW3 (*1)
Mechanical interlock (MI)	MI-4SW3 (*1)	69	Rear (BTC)	BTC-4SW3 (*1)	70		
Auxiliary handle (HT)	HT-4SW	70	Handle lock device	HL		HL-4SW	
				HL-S	HLS-4SW		
			Electrical operation device	☆	61		

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

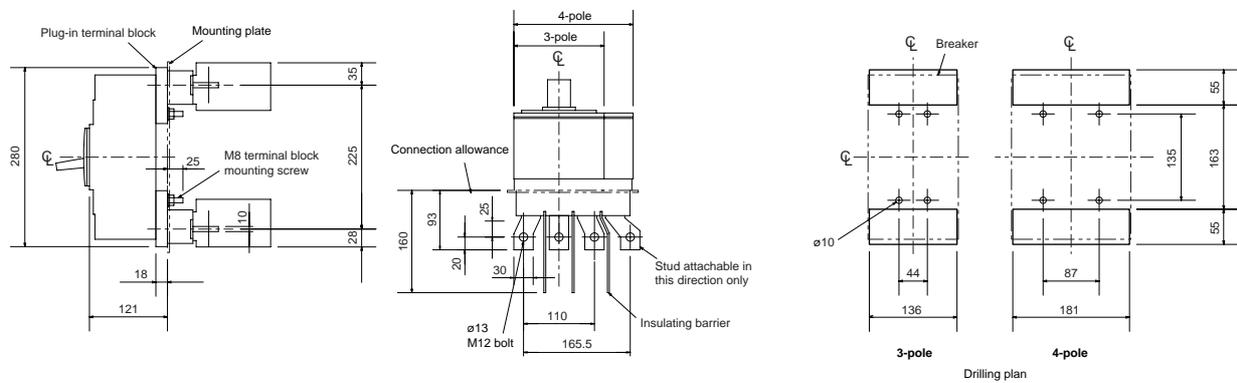
Front connection



Rear connection



Plug-in



6. Characteristics and Dimensions

Molded-Case Circuit Breakers

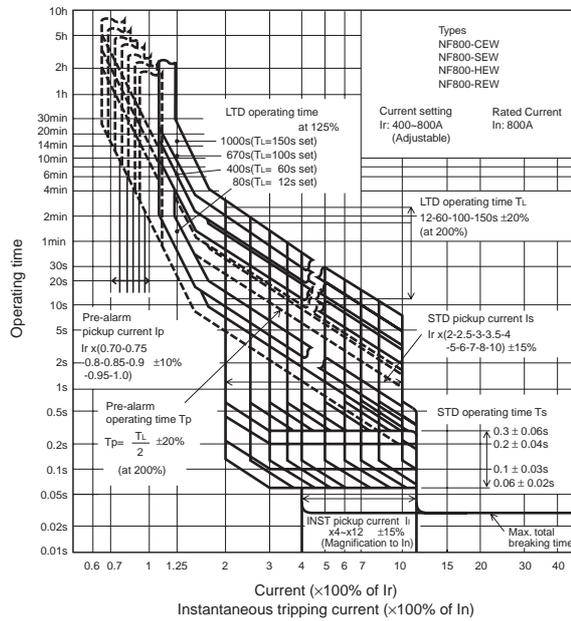
NF800-CEW
NF800-SEW
NF800-HEW
NF800-REW



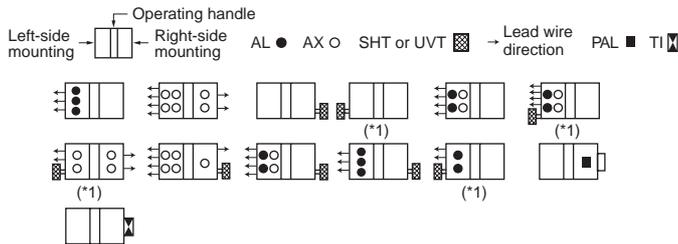
Type NF800-SEW

Type name	NF800-CEW	NF800-SEW	NF800-HEW	NF800-REW			
Rated current In (Amp.)	400-800 adjustable						
Number of poles	3	3	4	3			
Rated insulation voltage Ui (V)	690	690	690	690			
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	—	10/10	15/15	—
			500V	18/9	30/30	50/50	70/35
			440V	36/18	42/42	65/65	125/63
			400V	36/18	50/50	70/70	125/63
			230V	50/25	85/85	100/100	150/75
Standard Attached Parts (4-pole models are provided with auxiliary handle.)	Front connection	Mounting screw: M6×35 (4pcs) Insulating barrier: (3P: 2pcs, 4P: 3pcs)					
	Rear connection	Mounting screw: M6×40 (4pcs)					

Operating Characteristics

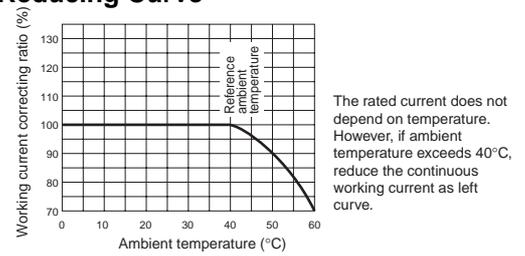


Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: (1) refer to page 45.

Current Reducing Curve



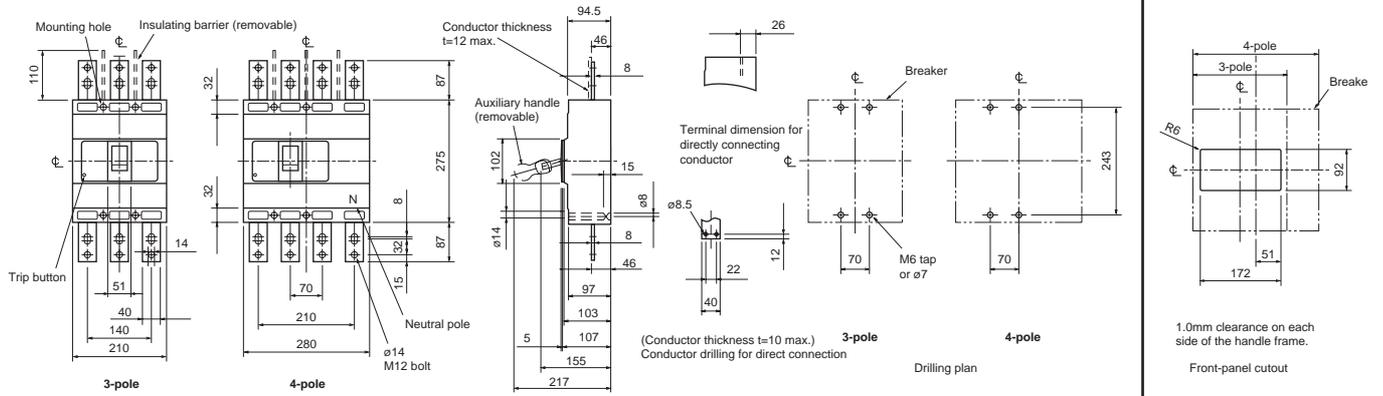
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

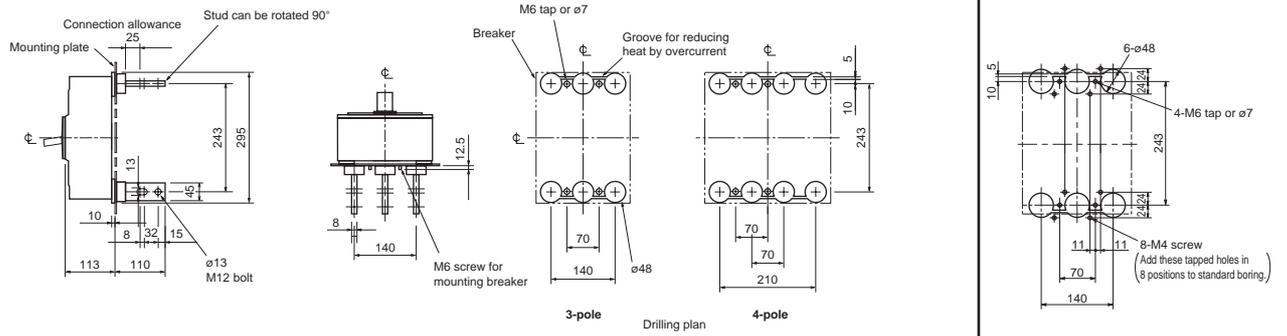
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F8SW	55	Terminal cover	Large (TC-L) TCL-8SW3 (*1)	60
	S S4SW	57		Skeleton (TTC) TTC-8SW3 (*1)	
	V V8SWF, V8SW	54		Rear (BTC) BTC-8SW3 (*1)	
Mechanical interlock (MI)	MI-8SW3 (*1)	69	Handle lock device	HL HL-4SW	70
Auxiliary handle (HT)	HT-4SW	70		HL-S HLS-8SW	
			Electrical operation device	☆	61

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

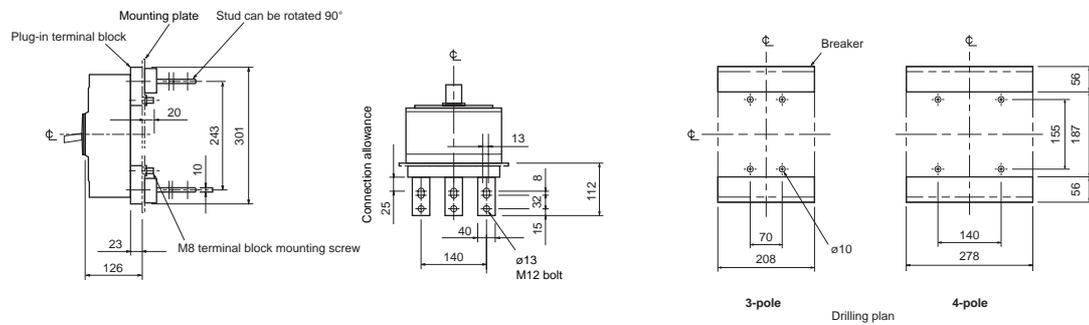
Front connection



Rear connection



Plug-in



6. Characteristics and Dimensions

Molded-Case Circuit Breakers

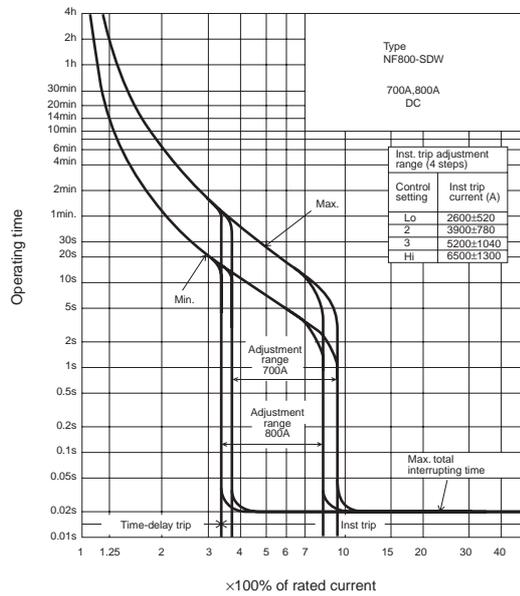
NF800-SDW



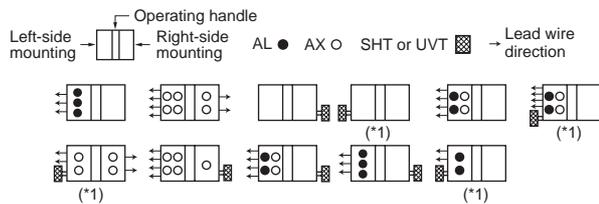
Type NF800-SDW

Type name		NF800-SDW	
Rated current In (Amp.)		(700), 800	
Number of poles		2	
Retard insulation voltage Ui (V)		690	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	DC	250V
	Time constant not larger than 10ms		
Standard Attached Parts (4-pole models are provided with auxiliary handle.)	Front connection	Mounting screw: M6×35 (4pcs) Insulating barrier: (2P: 1pc, 3P: 2pcs, 4P: 3pcs)	
	Rear connection	Mounting screw: M6×40 (4pcs)	

Operating Characteristics

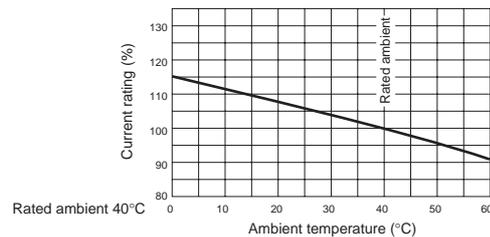


Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: (1) refer to page 45.

Ambient Compensating Curve



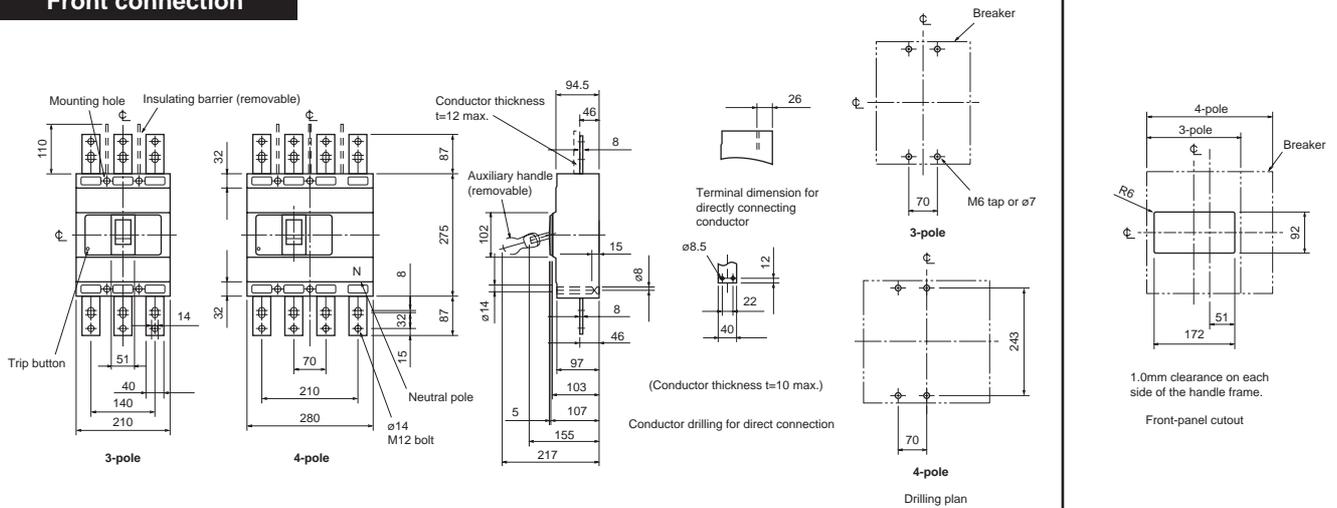
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

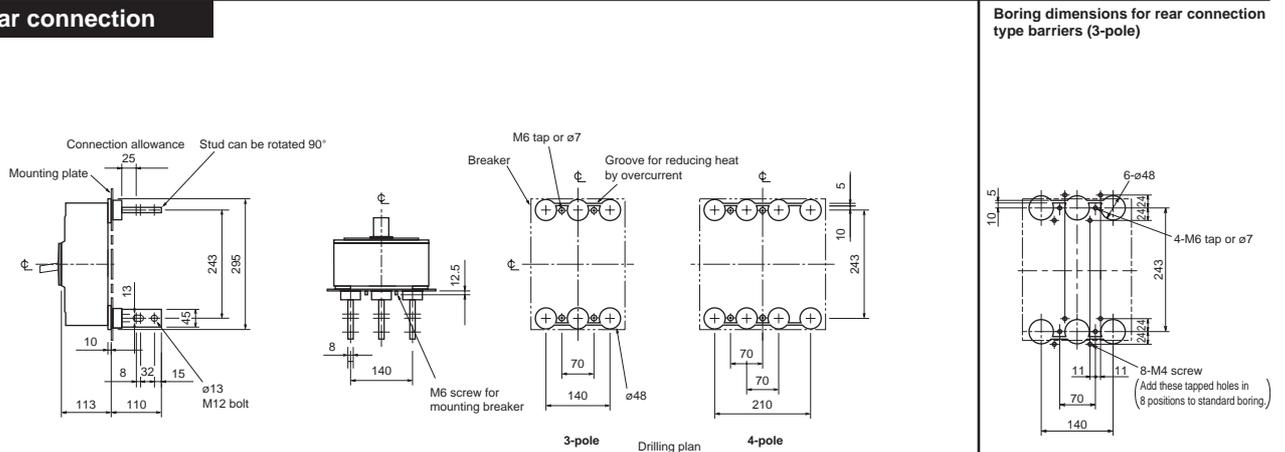
Accessories	Type name	Reference page	Accessories	Type name	Reference page		
Operating handle	F	F8SW	55	Terminal cover	60		
	S	S4SW	57			Large (TC-L)	TCL-8SW3 (*1)
	V	V8SWF, V8SW	54			Skeleton (TTC)	TTC-8SW3 (*1)
Mechanical interlock (MI)	MI-8SW3 (*1)	69	Rear (BTC)	BTC-8SW3 (*1)	70		
Auxiliary handle (HT)	HT-4SW	70	Handle lock device	HL		HL-4SW	
				HL-S	HLS-8SW		
			Electrical operation device	☆	61		

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

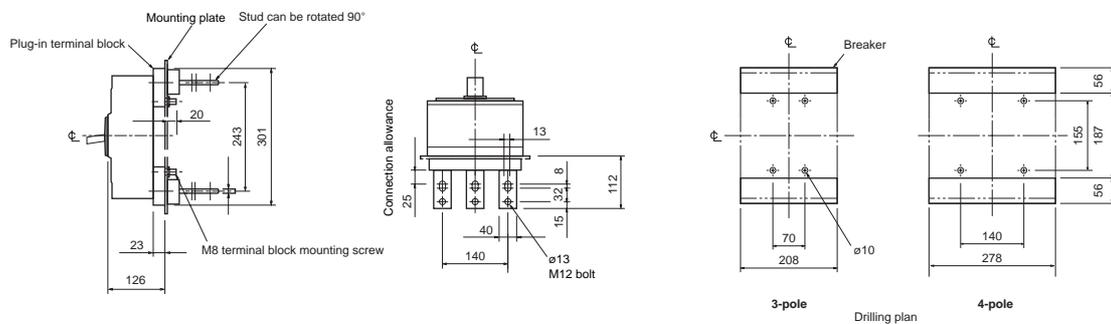
Front connection



Rear connection



Plug-in



Remarks: (1) Standard specification of NF800-SDW is 2-pole model. 3-pole and 4-pole models are available for DC special voltage.
 (2) 2-pole models are 3-pole models with the central pole removed.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

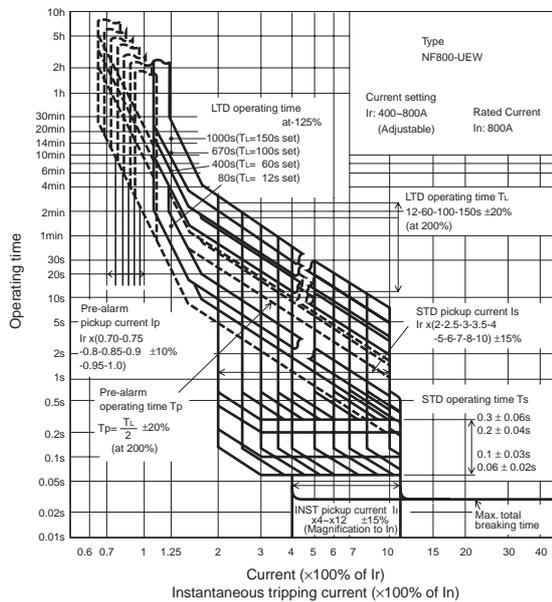
NF800-U EW



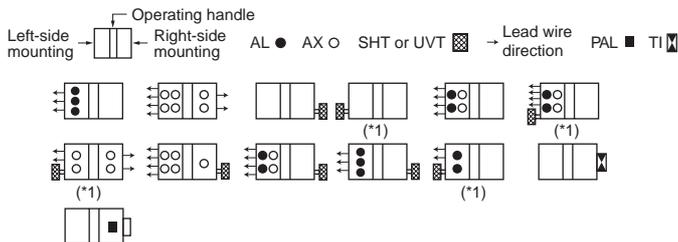
Type NF800-U EW

Type name		NF800-U EW		
Rated current I_n (Amp.)		400-800 adjustable		
Number of poles		3	4	
Retard insulation voltage U_i (V)		690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	35/35
			500V	170/170
			440V	200/200
			400V	200/200
			230V	200/200
Standard Attached Parts (4-pole models are provided with auxiliary handle.)	Front connection	Mounting screw: 3P: M6×35, M6×132 (2pcs each) 4P: M6×35 (3pcs), M6×132 (2pcs) Insulating barrier: (3P: 2pcs, 4P: 3pcs)		
	Rear connection	Mounting screw: 3P: M6×40, M6×137 (2pcs each) 4P: M6×40 (3pcs), M6×137 (2pcs)		

Operating Characteristics

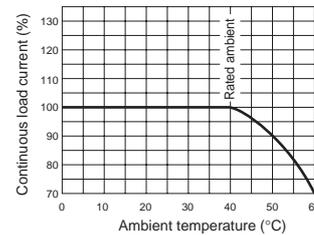


Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: (1) refer to page 45.

Current reducing curve



External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories	Type name	Reference page	Accessories	Type name	Reference page	
Operating handle	F	F8UW(*1)	55	Terminal cover	Large (TC-L) TCL-8UW3 (*1)	60
	S	S4SW	57	Skeleton (TTC)	—	—
	V	—	—	Rear (BTC)	BTC-8SW3 (*1)	60
Mechanical interlock (MI)	MI-8SW3 (*1)	69	Handle lock device	HL	HL-4SW	70
Auxiliary handle (HT)	HT-4SW	70		HL-S	HLS-8UW	
			Electrical operation device	☆	61	

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

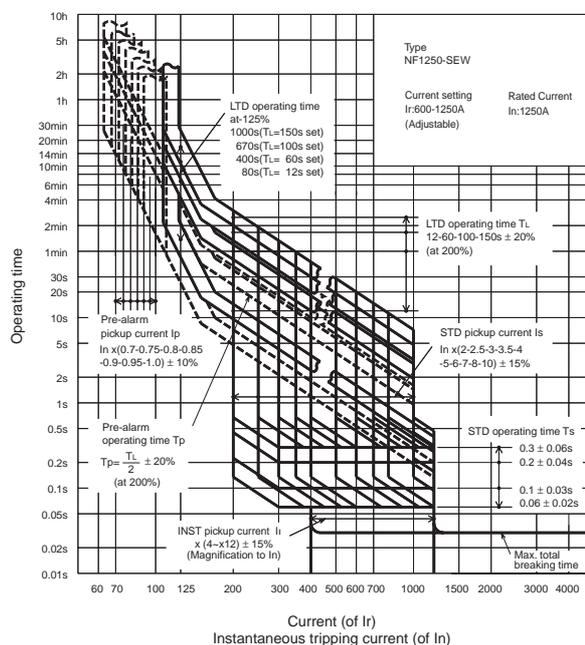
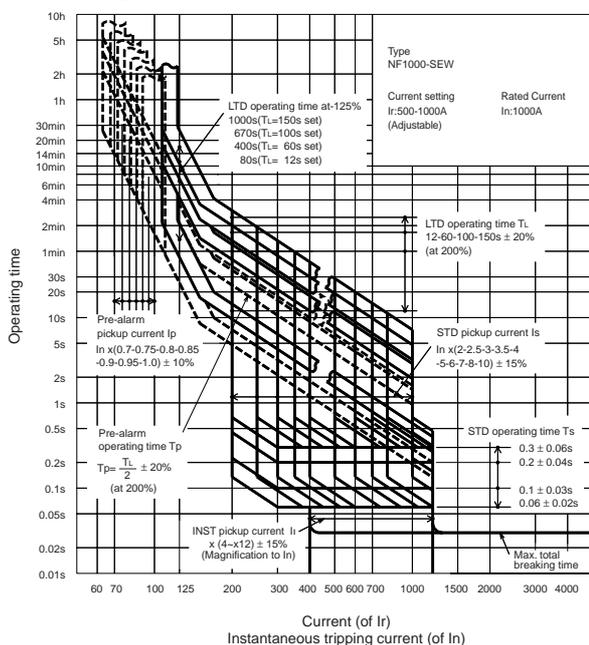
NF1000-SEW NF1250-SEW



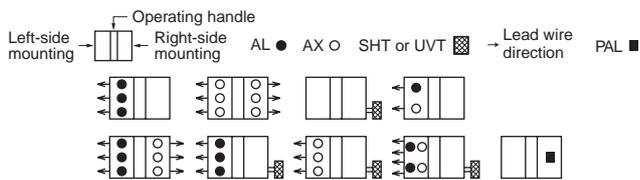
Type NF1250-SEW

Type name		NF1000-SEW	NF1250-SEW		
Rated current In (Amp.)		500-1000 Adjustable	600-1250 Adjustable		
Number of poles		3 4	3 4		
Rated insulation voltage Ui (V)		690			
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	25/13	25/13
			500V	65/33	65/33
			440V	85/43	85/43
			400V	85/43	85/43
			230V	125/63	125/63
Standard Attached Parts		Front connection	Mounting screw: M8×40 (4pcs) Insulating barrier: (3P: 2pcs, 4P: 3pcs) Auxiliary handle: (1pc)		
		Rear connection	Mounting screw: M8×40 (4pcs) Insulating barrier: (3P: 2pcs, 4P: 4pcs) Auxiliary handle: (1pc)		

Operating Characteristics

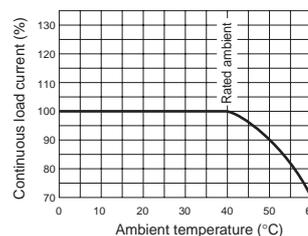


Internal Accessories



Remark: (*1) refer to page 45.

Current reduction curve



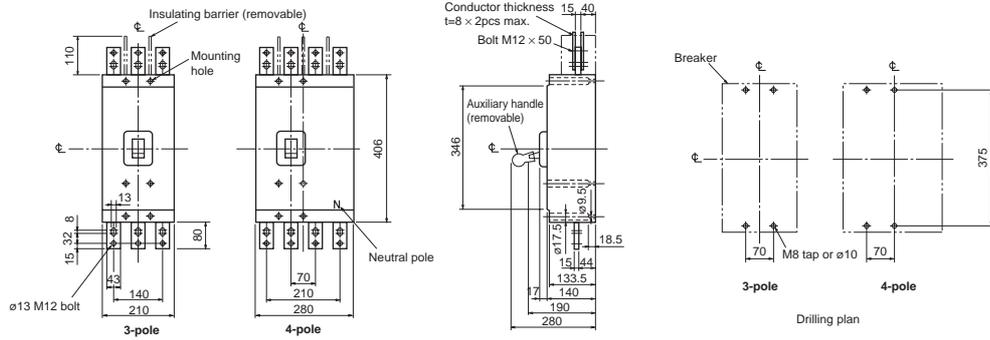
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

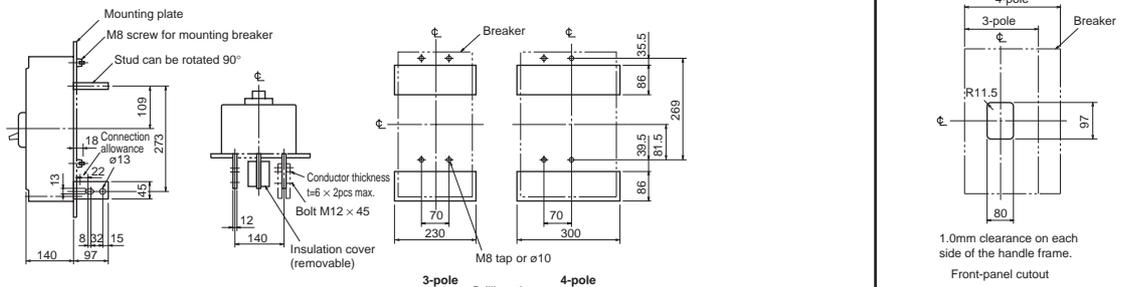
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F10SW (*1)	Auxiliary handle	HT-10SW	70
	S	S10SW	Handle lock (HL)	☆	
Mechanical interlock (MI)	MI	MI-10SW3 (*1)	Large terminal cover (TC-L)	TCL-10SW3 (*1)	60
			Electrical operation device	☆	

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

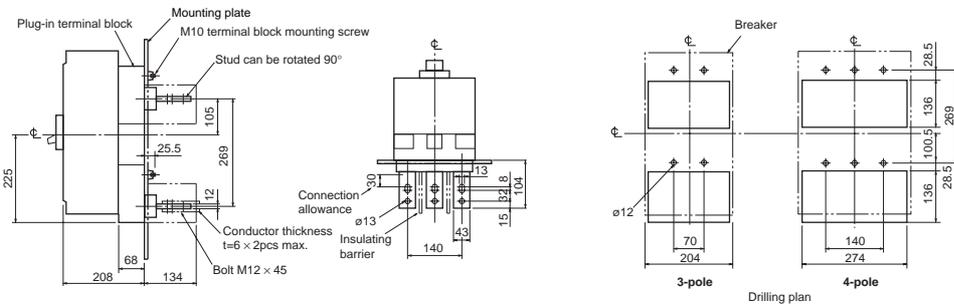
Front connection



Rear connection



Plug-in



6. Characteristics and Dimensions

Molded-Case Circuit Breakers

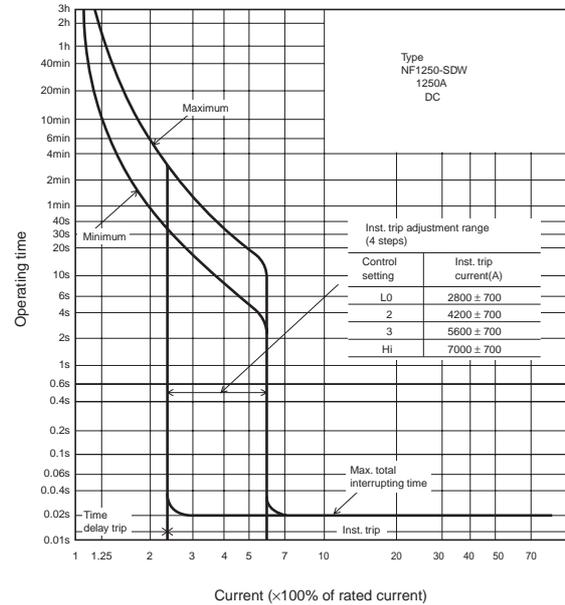
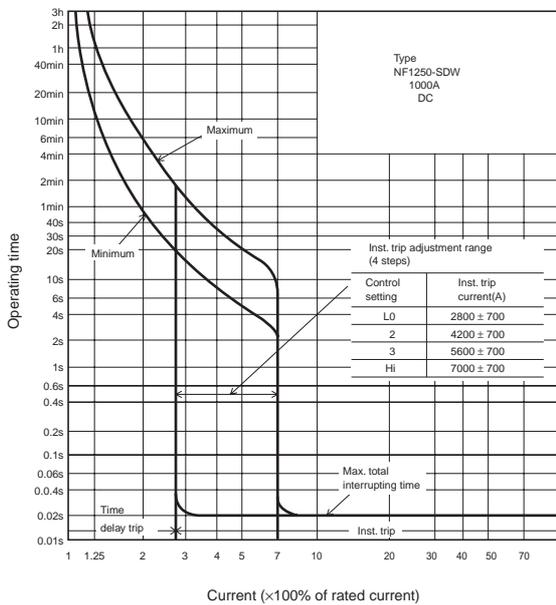
NF1250-SDW



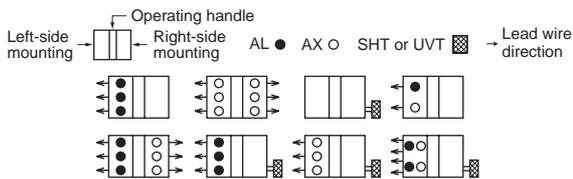
Type NF1250-SDW

Type name		NF1250-SDW	
Rated current I_n (Amp.)		1000, 1250	
Number of poles		2	
Rated insulation voltage U_i (V)		690	
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics) Time constant not larger than 10ms	DC	250V	40/20
Standard Attached Parts	Front connection	Mounting screw: M8 x 40 (4pcs) Insulating barrier: (2P: 1pc, 3P: 2pcs, 4P: 3pcs) Auxiliary handle: (1pc)	
	Rear connection	Mounting screw: M8 x 40 (4pcs) Insulating cover: (3P: 2pcs, 4P: 4pcs) Auxiliary handle: (1pc)	

Operating Characteristics

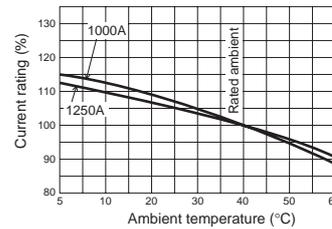


Internal Accessories



Remark: (1) refer to page 45.

Ambient Compensating Curve



External Accessories

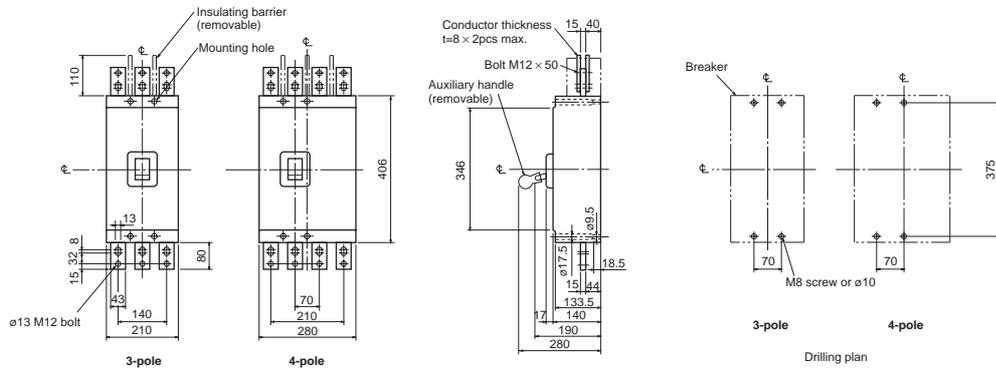
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F10SW (*1)	Auxiliary handle	HT-10SW	70
	S	S10SW	Handle lock (HL)	☆	
Mechanical interlock (MI)	MI-10SW3 (*1)	69	Large terminal cover (TC-L)	TCL-10SW3 (*1)	60
			Electrical operation device	☆	61

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

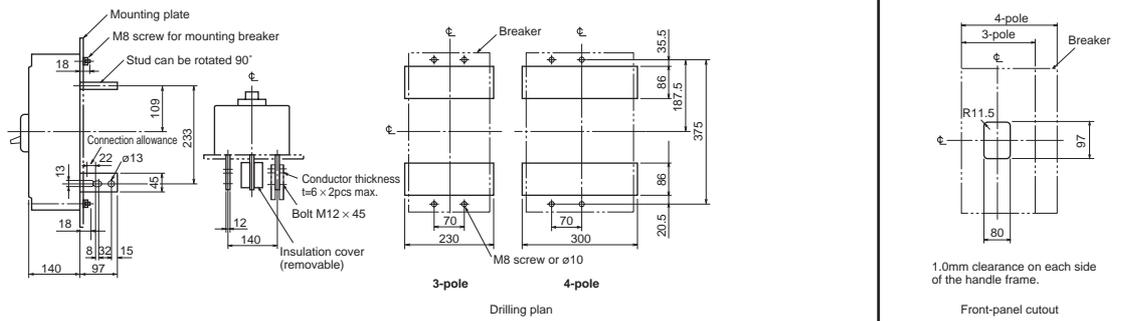
Front connection

Outside dimensions are same as those of NF1000-SEW and NF1250-SEW.



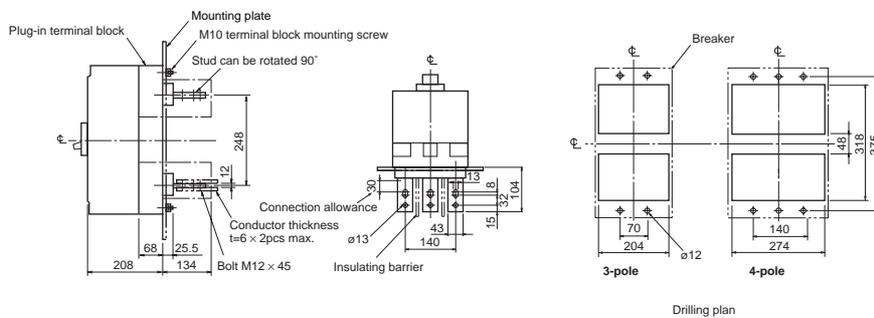
Rear connection

Outside dimensions are different from those of NF1000-SEW and NF1250-SEW.



Plug-in

Outside dimensions are different from those of NF1000-SEW and NF1250-SEW.



Remarks: (1) Standard specifications of NF1250-SDW is 2-pole models. 3-pole and 4-pole models are for DC special voltage.
 (2) 2-pole models are 3-pole models with the central pole removed.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

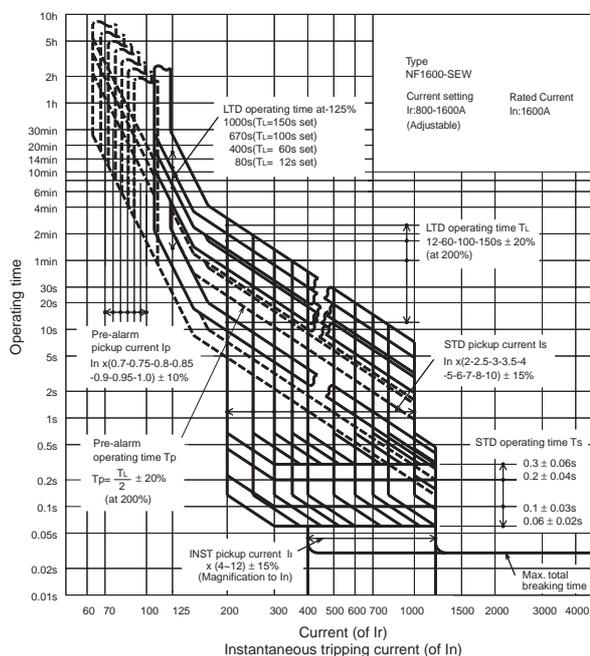
NF1600-SEW



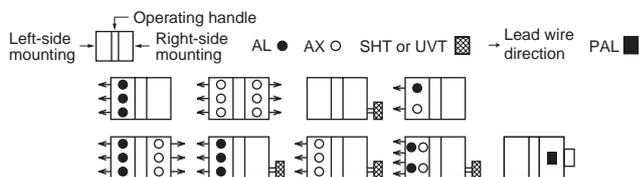
Type NF1600-SEW

Type name		NF1600-SEW		
Rated current I_n (Amp.)		Adjustable 800–1600		
Number of poles		3	4	
Retard insulation voltage U_i (V)		690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (I_{cu}/I_{cs})	AC	690V	25/13
			500V	65/33
			440V	85/43
			400V	85/43
			230V	125/63
Standard Attached Parts	Front connection	Mounting screw: M8 × 40 (4pcs) Insulating barrier: (3P: 2pcs, 4P: 3pcs) Auxiliary handle: (1pc)		
	Rear connection	Mounting screw: M8 × 40 (4pcs) Auxiliary handle: (1pc)		

Operating Characteristics

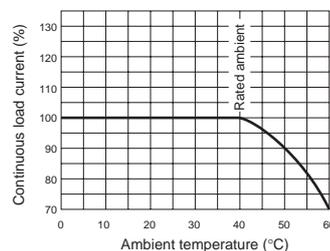


Internal Accessories



Remark: (1) refer to page 45.

Current reducing curve



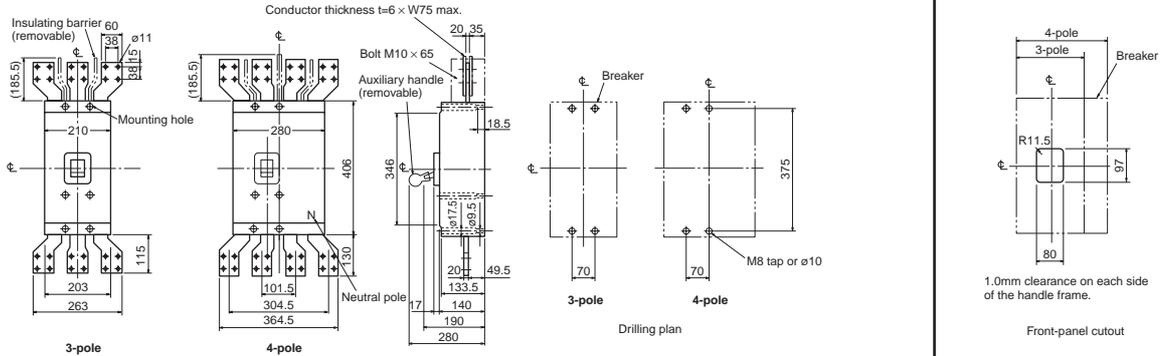
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

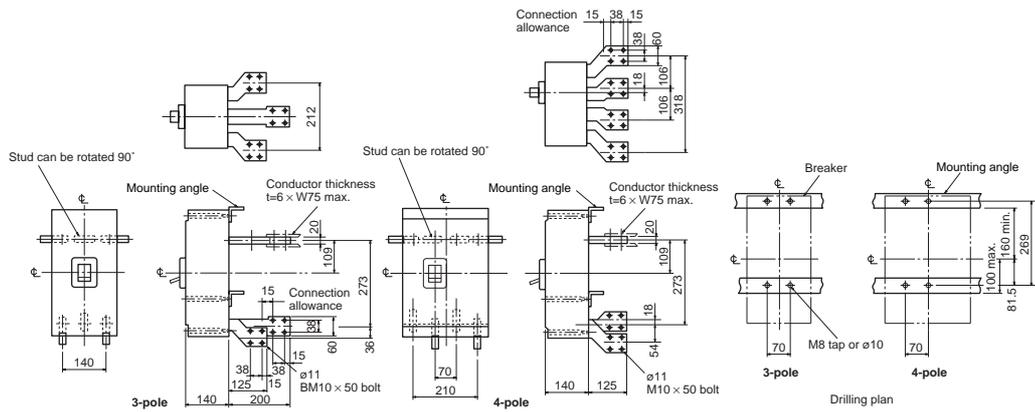
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F10SW (*1)	Auxiliary handle	HT-10SW	70
	S	S10SW	Handle lock (HL)	☆	
Mechanical interlock (MI)	MI-16SW3 (*1)	69	Electrical operation device	☆	61

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

Front connection



Rear connection



6. Characteristics and Dimensions

Molded-Case Circuit Breakers

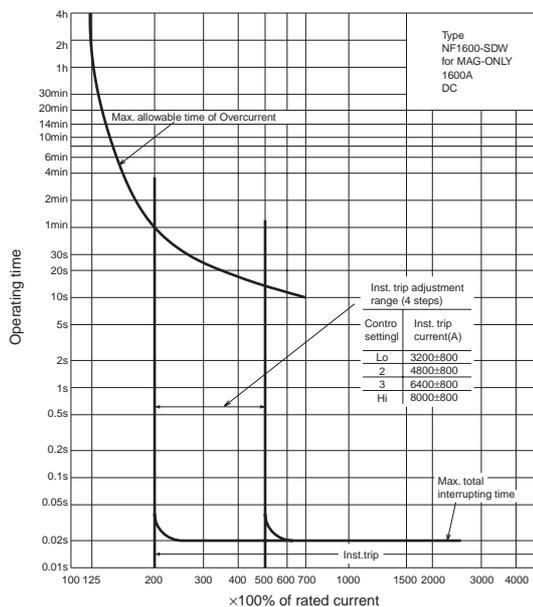
NF1600-SDW



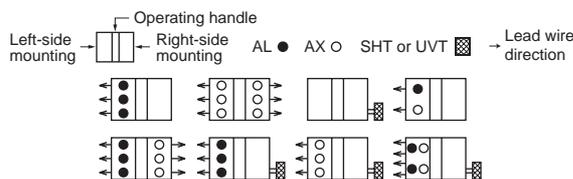
Type NF1600-SDW

Type name		NF1600-SDW	
Rated current In (Amp.)		1600	
Number of poles		2	
Reted insulation voltage Ui (V)		690	
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics) Time constant not larger than 10msec	DC	250V	40/20
Standard Attached Parts	Front connection	Mounting screw: M8 × 40 (4pcs) Insulating barrier: (2P: 1pc, 3P: 2pcs, 4P: 3pcs) Auxiliary handle: (1pc)	
	Rear connection	Mounting screw: M8 × 40 (4pcs) Auxiliary handle: (1pc)	

Operating Characteristics



Internal Accessories



Remark: (1) refer to page 45.

External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F10SW (*1)	Auxiliary handle	HT-10SW	70
	S	S10SW		57	
Mechanical interlock (MI)	MI-16SW3 (*1)	69	Electrical operation device	☆	61

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

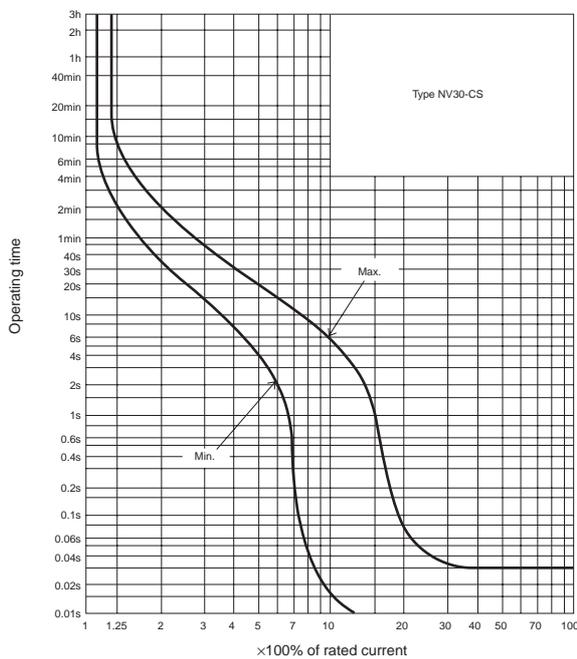
NV30-CS



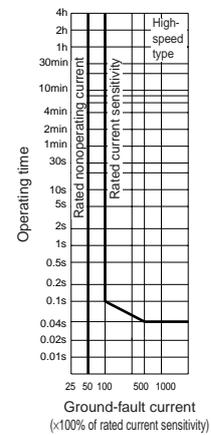
Type NV30-CS

Type name		NV30-CS	
Number of poles		3	
Rated operational voltage Ue (V AC)		100-230 Multi-voltage type	
Rated current In (A)		5 10 15 20 30	
High-speed type	Rated current sensitivity I Δ n (mA)	30	
	Max. operating time at 5I Δ n (s)	0.04	
Time-delay type	Rated current sensitivity I Δ n (mA)	—	
	Max. operating time at 2I Δ n (s)	—	
	Inertial non-operating time at 2I Δ n (s)	—	
Earth-leakage indication system		Button	
Rated short-circuit breaking capacity (kA) IEC 60947-2 Icu/Ics	AC	440V	—
		400V	—
		230V	2.5/2
Standard Attached Parts (Front connection)		Mounting screw: M4 × 0.7 × 20 (2pcs.)	

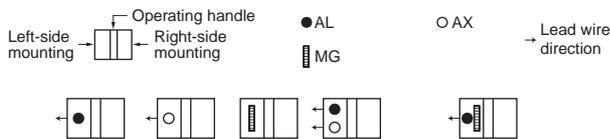
Operating Characteristics



Earth-Leakage Tripping Characteristics

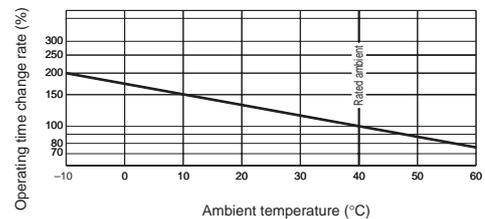


Internal Accessories



Remark: (1) Standard lead wire is drawn from side. However, lead wire drawn by load can be produced upon request.
(2) refer to page 44.

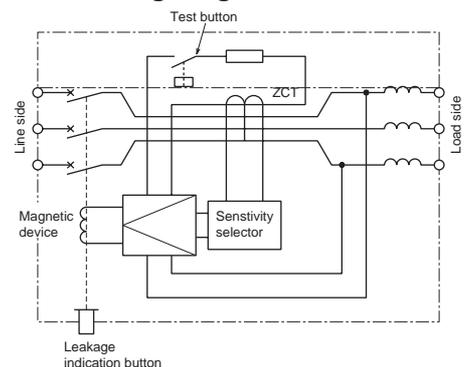
Temperature Characteristics



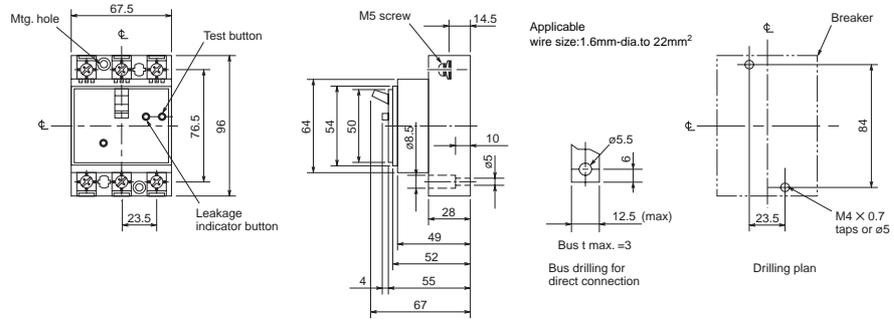
External Accessories

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Lock cover (LC)	LC03CS	70	Small (TC-S)	TCS-03CS3W	60
Rail mounting adapter	DIN-03CS	70	Large (TC-L)	TCL-03CS3W	
Handle lock device	HL-05FH	70	Rear (BTC)	BTC-03CS	
			Skeleton (TTC)	TTC-03CS	

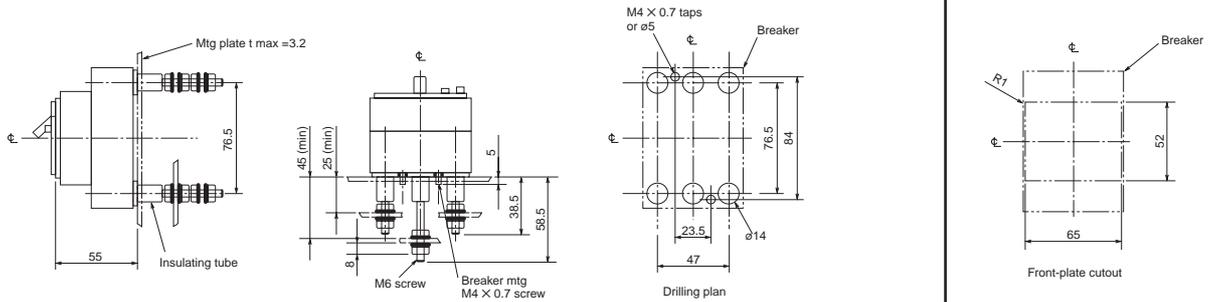
Internal Wiring Diagram



Front connection



Rear connection



6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

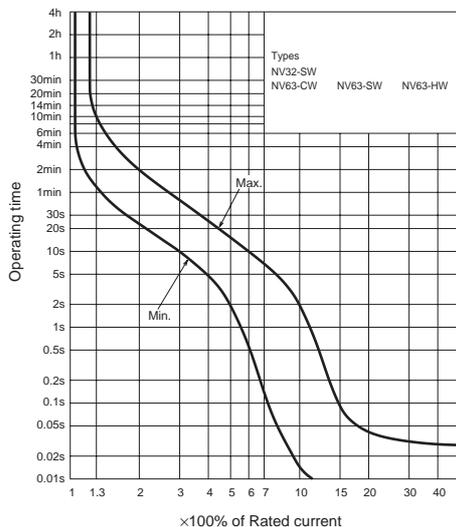
NV32-SW **NV63-CW**
NV63-SW **NV63-HW**



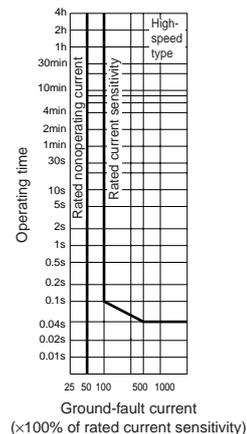
Type NV63-SW

Type name		NV32-SW	NV63-CW	NV63-SW	NV63-HW
Rated current I _n (Amp.)		(5) 6 10 (15) 16 20 25 (30) 32	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(15) 16 20 25 (30) 32 40 50 (60) 63
Number of poles		3	3	3	3
Rated operational voltage U _e (V AC)		100-440	100-440	100-440	100-440
		Multi-voltage type	Multi-voltage type	Multi-voltage type	Multi-voltage type
High-speed type	Rated current sensitivity I _{Δn} (mA)	30,100•200•500 Selectable	30,100•200•500 Selectable	30,100•200•500 Selectable	30,100•200•500 Selectable
	Max. operating time at 5I _{Δn} (s)	0.04	0.04	0.04	0.04
Earth-leakage indication system		Button	Button	Button	Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (I _{cu} /I _{cs})	AC440V	5/2	2.5/1	7.5/4	10/5
	AC400V	5/2	5/2	7.5/4	10/5
	AC230V	10/5	7.5/4	15/8	25/13
Standard Attached Parts (Front connection)		Mounting screw: M4×0.7×55 (2pcs) Insulation barrier: (3P: 2pcs) excluding models of NV63-CW			

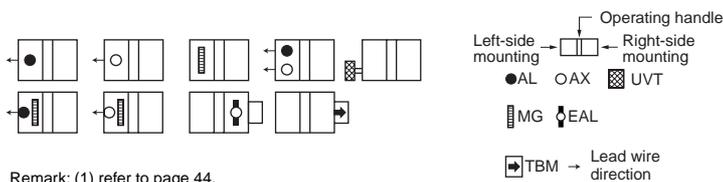
Operating Characteristics



Earth-Leakage Tripping Characteristics

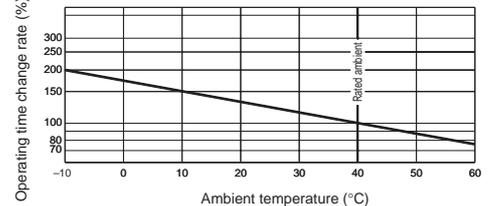


Internal Accessories



Remark: (1) refer to page 44.

Temperature Characteristics

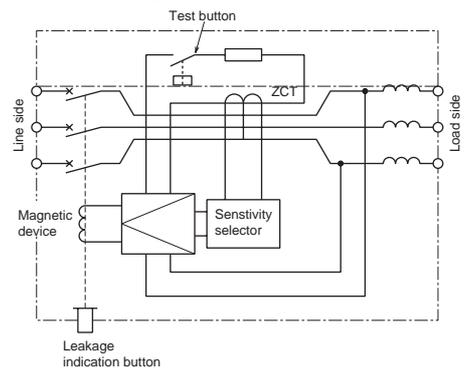


External Accessories

Accessories		Type name	Reference page	Accessories		Type name	Reference page
Operating handle	F	F05SW	55	Mechanical interlock	MI	MI-05SW3 (*1)	69
	S	S05SW	57		Terminal cover	Small	TC-S
	V	V05SWF	54	Large		TC-L	TCL-05SW3W
R	—	—	Skeleton	TTC		TTC-05SW3	60
Rear	BTC	BTC-05SW3W	Plug-in	PTC		PTC-05SW3W	
Handle lock device	LC	LC-05SW	70	IEC 35mm rail mounting adapters		DIN-05SW	70
	(*1) HLF	HLF-05SW					
	HLN	HLN-05SW					
HLS	HLS-05SW						

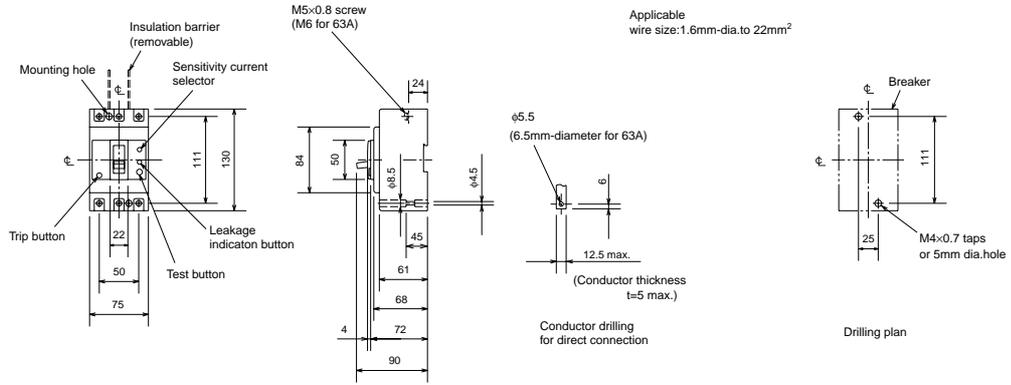
Note: (*1) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.

Internal Wiring Diagram

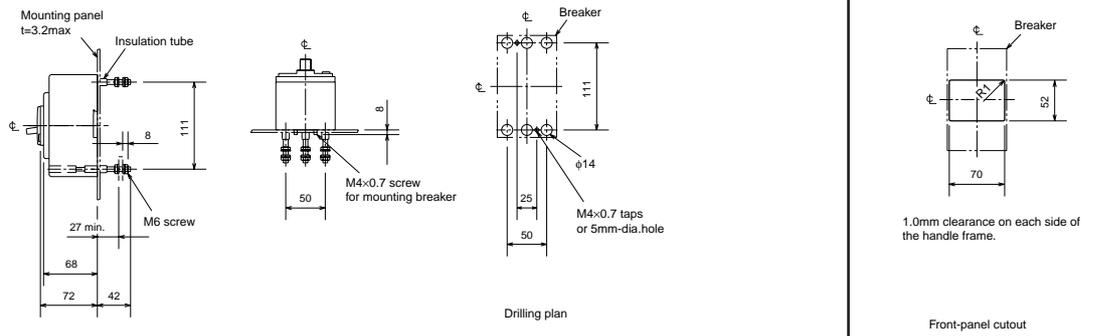


Remark: In case of the CE marking, Internal wiring diagrams differ.

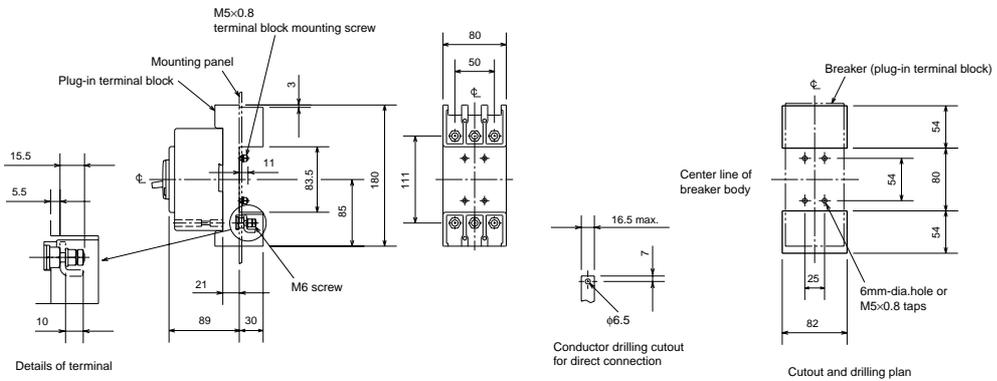
Front connection



Rear connection



Plug-in



Remark: In case of the CE marking, outside sizes differ.

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

NV125-CW NV125-SW NV125-HW



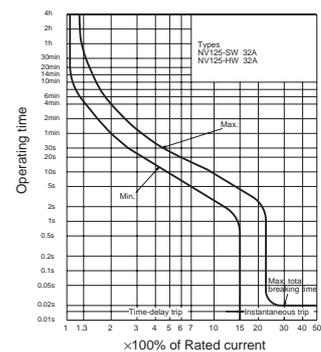
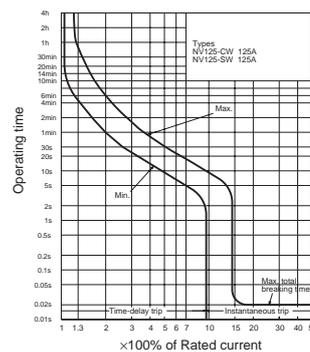
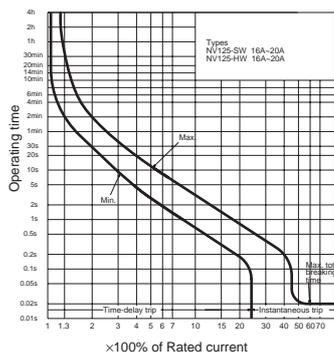
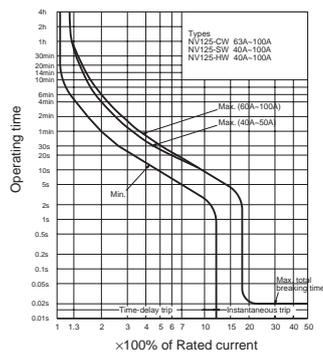
Type NV125-SW

Type name		NV125-CW	NV125-SW	NV125-HW
Rated current I _n (Amp.)		63 (75) 80 100 125	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 (125) ¹	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100
Number of poles		3	3 4	3 4
Rated operational voltage U _e (V AC) (2)		100-440 Multi-voltage type	100-440 Multi-voltage type	100-440 Multi-voltage type
High-speed type	Rated current sensitivity I _{Δn} (mA)	30,100•200•500 Selectable	30,100•200•500 Selectable	30,100•200•500 Selectable
	Max. operating time at 5I _{Δn} (s)	0.04	0.04	0.04
Time-delay type	Rated current sensitivity I _{Δn} (mA)	(100•200•500) Selectable	(100•200•500) Selectable	(100•200•500) Selectable
	Max. operating time at 5I _{Δn} (s)	(0.45•1.0•2.0) Selectable	(0.45•1.0•2.0) Selectable	(0.45•1.0•2.0) Selectable
	Inertial non-operating time at 2I _{Δn} (s)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)
Earth-leakage indication system		Button	Button	Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics)	AC440V	10/5	25/13	50/25
	AC400V	10/5	30/15	50/25
	AC230V	30/15	50/25	100/50
Standard Attached Parts (Front connection)		Mounting screw: M4x0.7x55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 2pcs, 4P: 3pcs) excluding models of NV125-CW		

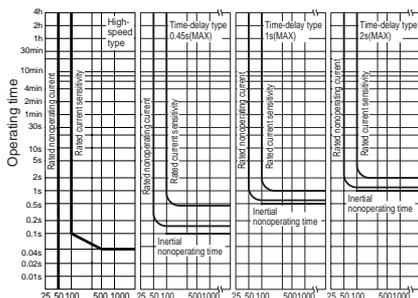
*1: 3P only

Notes: (1) The time-delayed types will be produced when they have the current specifications of 20A or more.
(2) Rated operational voltage of time-delay type is for 200-440V.

Operating Characteristics

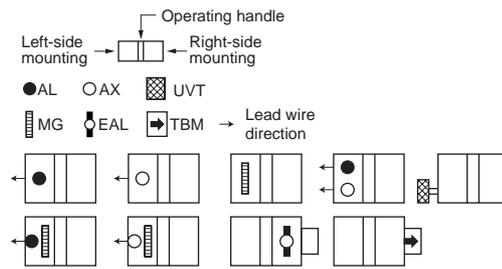


Earth-Leakage Tripping Characteristics



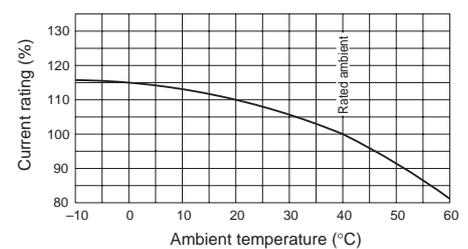
Ground-fault current (% of rated current sensitivity)

Internal Accessories



Remark: (1) refer to page 44.

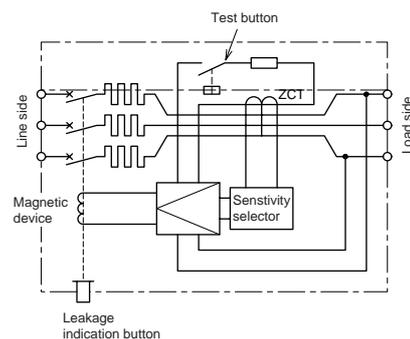
Temperature Characteristics



External Accessories

Accessories	Type name	Reference page	Accessories	Type name	Reference page		
Operating handle	F F1SW	55	Mechanical interlock	MI MI-05SW3 (*4)	69		
	S S1SW	57		Terminal cover	Small TC-S TCS-1SW3W (*4)	60	
	V V1SW (*1)	54			Large TC-L TCL-1SW3W (*4)		
	R R1SW	58			Skeleton TTC TTC-1SW3(*4)		
Handle lock device	LC LC-1SW	70	Rear BTC BTC-1SW3W (*4)		IEC 35mm rail mounting adapters		DIN-1SW (*4)
	(*)2 HLF-1SW		Plug-in PTC PTC-1SW3W (*4)	Electrical operation device		MDS-NV1SWE (*3)	61
	HL HLN-1SW						
	HL-S HLS-1SW						

Internal Wiring Diagram



Remark: In case of the CE marking, Internal wiring diagrams differ.

Notes: (*1) Attach the letter "F" to the end of designation for a fixed type.
(*2) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.
(*3) Specify the working voltage.
(*4) The designation depends on the number of poles. Refer to the reference page.

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

NV250-CW NV250-SW
NV250-HW

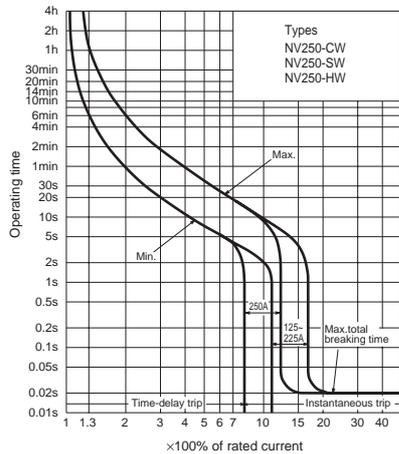


Type NV250-SW

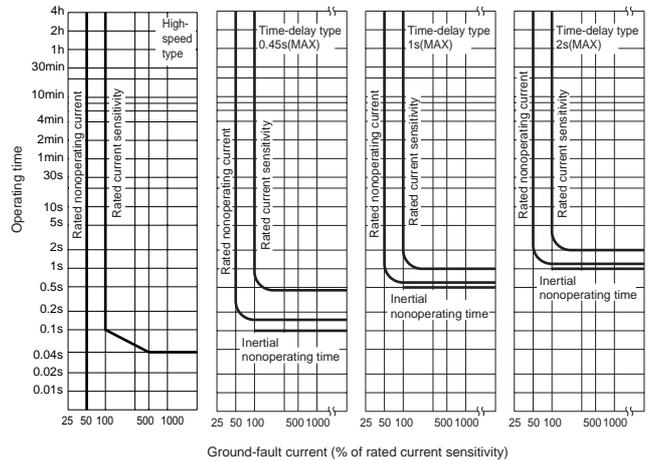
Type name		NV250-CW	NV250-SW	NV250-HW
Rated current In (Amp.)		125 150 175 200 225 250	125 150 175 200 225 250	125 150 175 200 225
Number of poles		3	3 4	3 4
Rated operational voltage Ue (V AC) (1)		100-440 Multi-voltage type	100-440 200-440 Multi-voltage type Multi-voltage type	100-440 200-440 Multi-voltage type Multi-voltage type
High-speed type	Rated current sensitivity $I\Delta n$ (mA)	30, 100•200•500 Selectable	30, 100•200•500 Selectable	30, 100•200•500 Selectable
	Max. operating time at $5I\Delta n$ (s)	0.04	0.04	0.04
Time-delay type	Rated current sensitivity $I\Delta n$ (mA)	(100•200•500) Selectable	(100•200•500) Selectable	(100•200•500) Selectable
	Max. operating time at $5I\Delta n$ (s)	(0.45•1.0•2.0) Selectable	(0.45•1.0•2.0) Selectable	(0.45•1.0•2.0) Selectable
	Inertial non-operating time at $2I\Delta n$ (s)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)
Earth-leakage indication system		Button	Button	Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics)	AC440V	15/8	25/13	50/13
	AC400V	18/9	30/15	50/13
	AC230V	35/18	50/25	100/25
Standard Attached Parts (Front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)		

Note: (1) Rated operational voltage of time-delay type is for 200-440V.

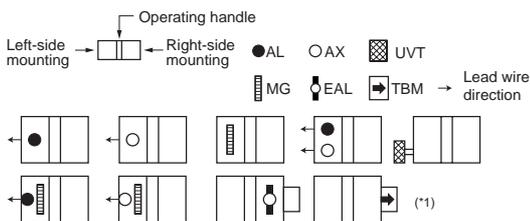
Operating Characteristics



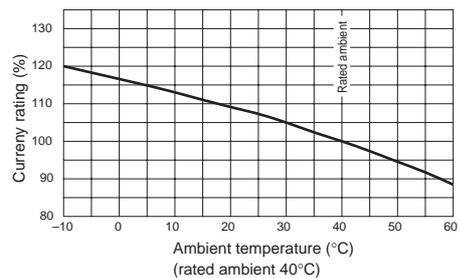
Earth-Leakage Tripping Characteristics



Internal Accessories



Temperature Characteristics

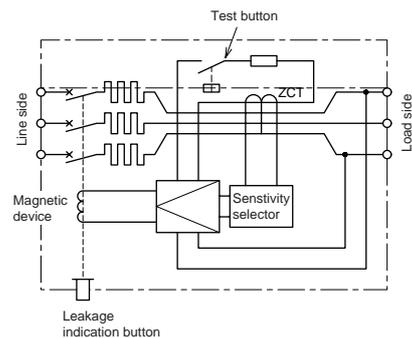


External Accessories

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F2SW	55	Mechanical interlock	MI MI-05SW3 (*3)	69
	S S2SW	57		Terminal cover	Small TC-S TCS-2SW3W (*3)
	V V2SW (*1)	54	Large TC-L TCL-2SW3W (*3)		
	R R2SW	58	Skeleton TTC TTC-2SW3 (*3)		
Handle lock device	LC LC-2SW	70	Rear BTC BTC-2SW3W (*3)	Electrical operation device	MDS-NV2SWE (*4)
	(*)2 HLF-2SW				
	HL HLN-2SW				
HL-S HLS-2SW					

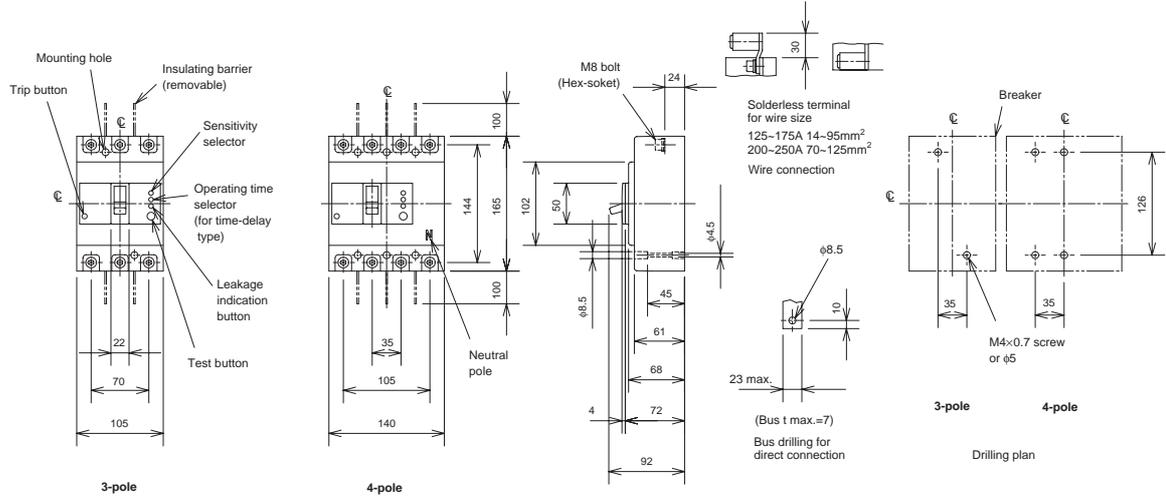
Notes: (*1) Attach the letter "F" to the end of designation for a fixed type.
 (*2) HLF types are used for OFF-lock, and HLN types for ON-lock.
 (*3) The designation depends on the number of poles. Refer to the reference page.
 (*4) Specify the working voltage.
 (*5) NV250-HW model cannot be produced.

Internal Wiring Diagram

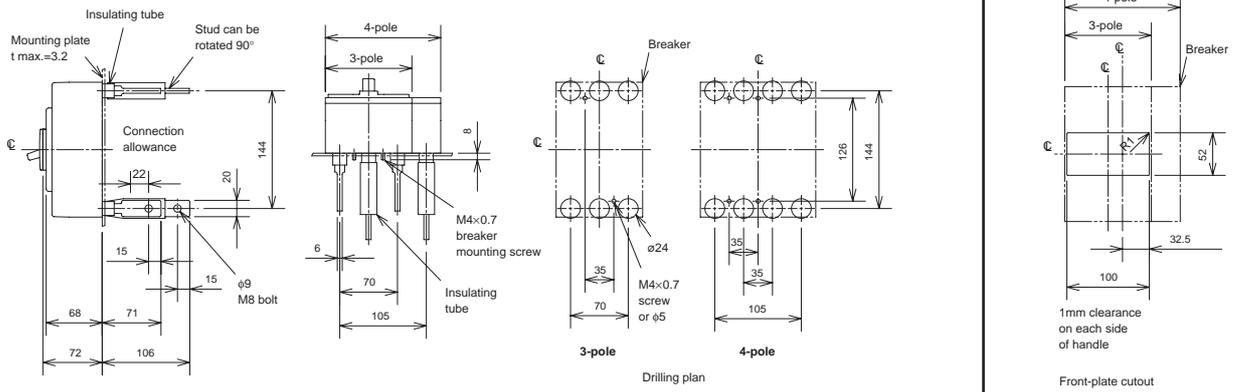


Remark: In case of the CE marking, Internal wiring diagrams differ.

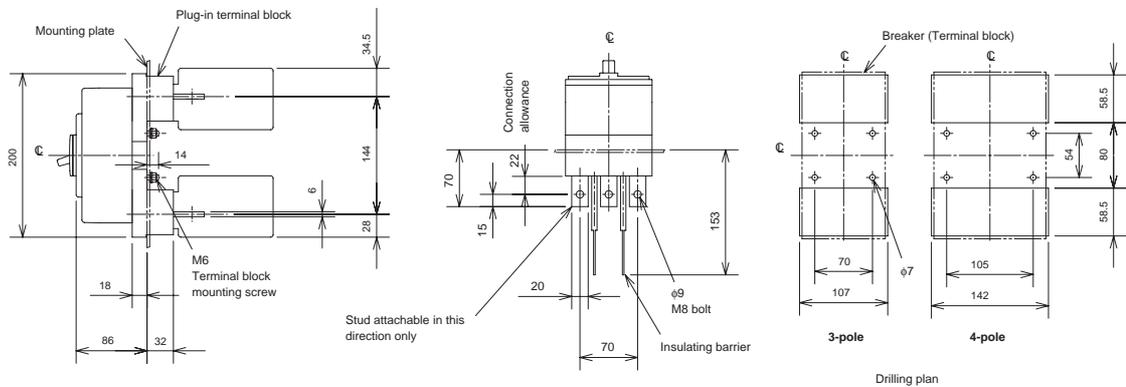
Front connection



Rear connection



Plug-in



Remarks: (1) NV250-CW are available in 3-pole only.
 (2) In case of the CE marking, outside sizes differ.

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

NV250-SEW NV250-HEW

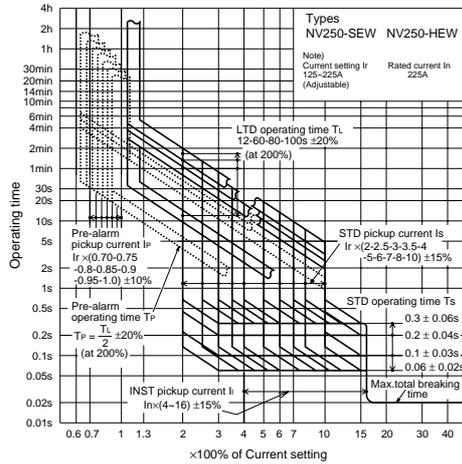


Type NV250-SEW

Type name		NV250-SEW	NV250-HEW
Rated current In (Amp.)		125-225 Adjustable	125-225 Adjustable
Number of poles		3 4	3 4
Rated operational voltage Ue (V AC) (1)		100-440 Multi-voltage type	100-440 Multi-voltage type
High-speed type	Rated current sensitivity IΔn (mA)	(30) 100•200•500 Selectable	(30) 100•200•500 Selectable
	Max. operating time at 5IΔn (s)	0.04	0.04
Time-delay type	Rated current sensitivity IΔn (mA)	(100•200•500) Selectable	(100•200•500) Selectable
	Max. operating time at 5IΔn (s)	(0.45•1.0•2.0) Selectable	(0.45•1.0•2.0) Selectable
	Inertial non-operating time at 2IΔn (s)	(0.1•0.5•1.0)	(0.1•0.5•1.0)
Earth-leakage indication system		Button	Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics)	AC440V	25/13	50/13
	AC400V	30/15	50/13
	AC230V	50/25	100/25
Standard Attached Parts (Front connection)		Mounting screw: M4x0.7x55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 4pc, 4P: 6pcs)	

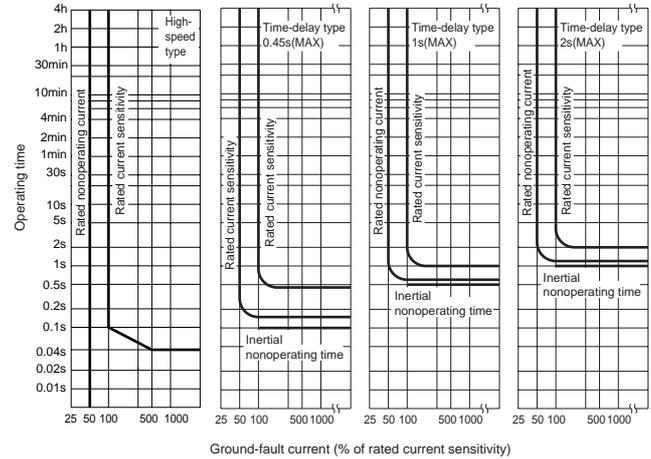
Note: (1) Rated operational voltage of time-delay type is for 200-440V.

Operating Characteristics

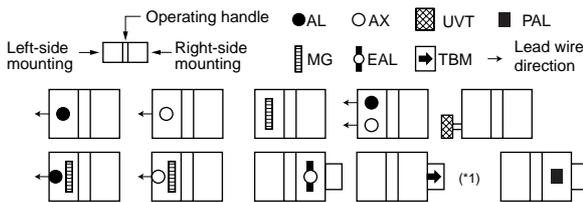


Note) Instantaneous tripping current (×100% of In)

Earth-Leakage Tripping Characteristics

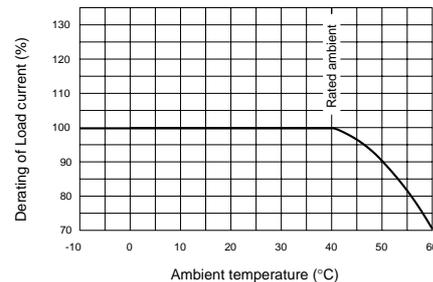


Internal Accessories



Remark: (*1) refer to page 44.

Temperature Characteristics

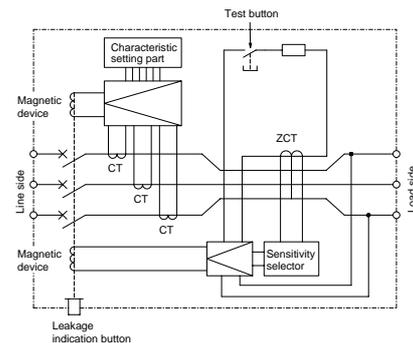


External Accessories

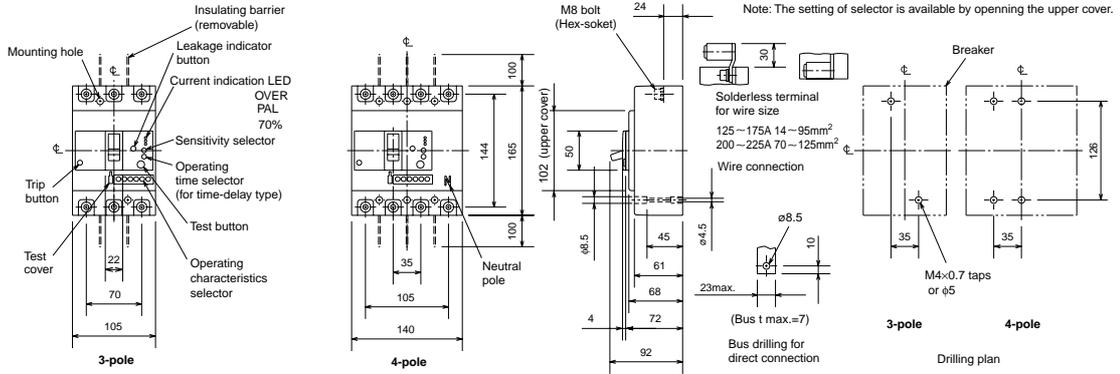
Accessories	Type name	Reference page	Accessories	Type name	Reference page	
Operating handle	F F2SW	55	Mechanical interlock	MI MI-05SW3 (*3)	69	
	S S2SW	57		Terminal cover	Small TC-S TCS-2SW3W (*3)	60
	V V2SW (*1)	54			Large TC-L TCL-2SW3W (*3)	
	R R2SW	58			Skeleton TTC TTC-2SW3 (*3)	
Handle lock device	LC LC-2SW	70	Rear BTC BTC-2SW3W (*3)		Electrical operation device	
	(2) HLF-2SW		Plug-in PTC PTC-2SW3W (*3)			
	HL HLN-2SW					
	HL-S HLS-2SW					

Notes: (*1) Attach the letter "F" to the end of designation for a fixed type.
(*2) HLF types are used for OFF-lock, and HLN types for ON-lock.
(*3) The designation depends on the number of poles. Refer to the reference page.
(*4) Specify the working voltage.
(*5) NV250-HEW model cannot be produced.

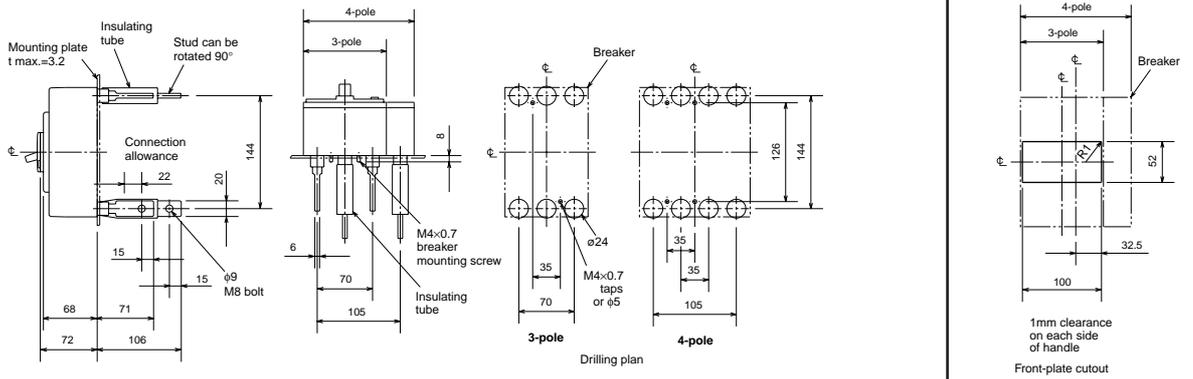
Internal Wiring Diagram



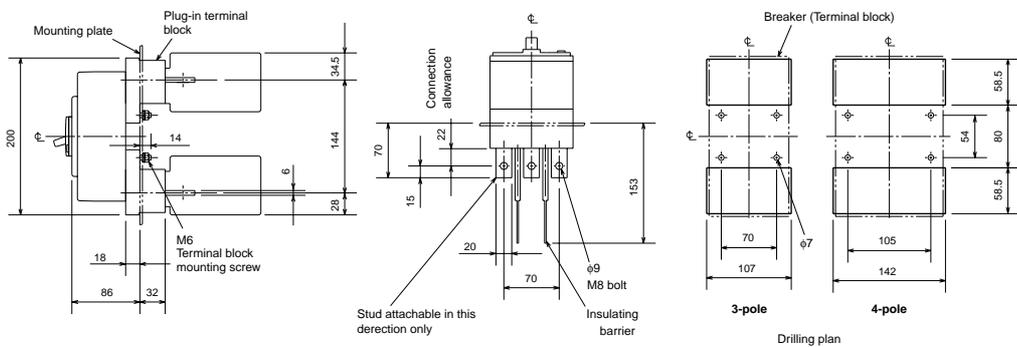
Front connection



Rear connection



Plug-in



6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

NV125-RW

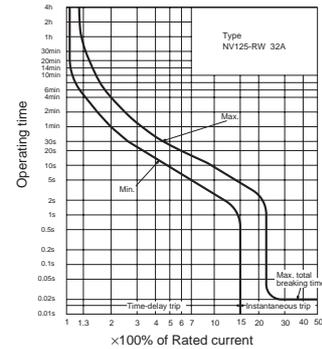
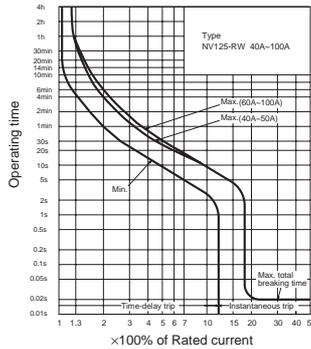
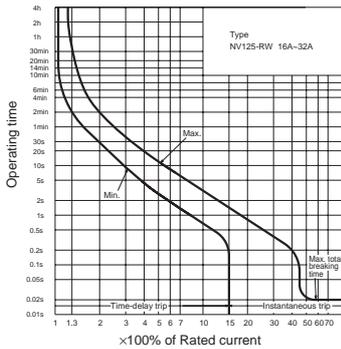


Type NV125-RW

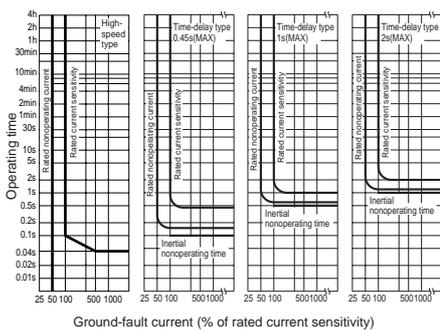
Type name		NV125-RW
Rated current I _n (Amp.)		(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100
Number of poles		3
Rated operational voltage U _e (V AC) (2)		100-440 Multi-voltage type
High-speed type	Rated current sensitivity I _{Δn} (mA)	(30) 100•200•500 Selectable
	Max. operating time at 5I _{Δn} (s)	0.04
Time-delay type	Rated current sensitivity I _{Δn} (mA)	(100•200•500) Selectable
	Max. operating time at 5I _{Δn} (s)	(0.45•1.0•2.0) Selectable
	Inertial non-operating time at 2I _{Δn} (s)	(0.1•0.5•1.0)
Earth-leakage indication system		Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (I _{cu} /I _{cs})	AC440V	125/125
	AC400V	125/125
	AC230V	125/125
Standard Attached Parts (Front connection)		Mounting screw : M4×0.7×73 (4pcs) Insulation barrier : (3P:4pcs, 4P:6pcs)

Notes : (1) The Time-delayed types will be produced when they have the current specifications of 20A or more.
(2) Rated operational voltage of time-delay type is for 200-440V.

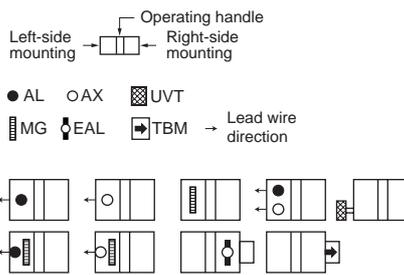
Operating Characteristics



Earth-Leakage Tripping Characteristics

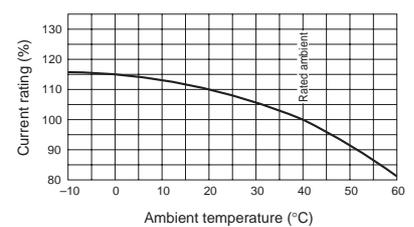


Internal Accessories



Remark: (1) refer to page 44.

Temperature Characteristics

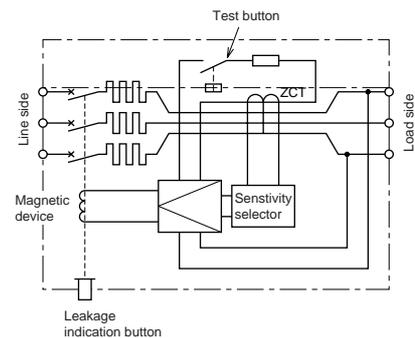


External Accessories

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F1UW	55	Terminal cover	Small TC-S	TCS-1SW3W (*1)
	S S1SW	57		Large TC-L	TCL-1SW3W (*1)
	V V1UW	54		Skeleton TTC	TTC-1SW3 (*1)
	R R1UW	58		Rear BTC	BTC-1SW3W (*1)
Mechanical interlock MI	MI-05SW3 (*1)	69		Plug-in PTC	PTC-1SW3W (*1)
Electrical operation device	—	—	Handle lock device	LC LC-1SW	70
				(*2) HLF HLF-1SW	
				HLN HLN-1SW	
			HL-S HLS-1SW		

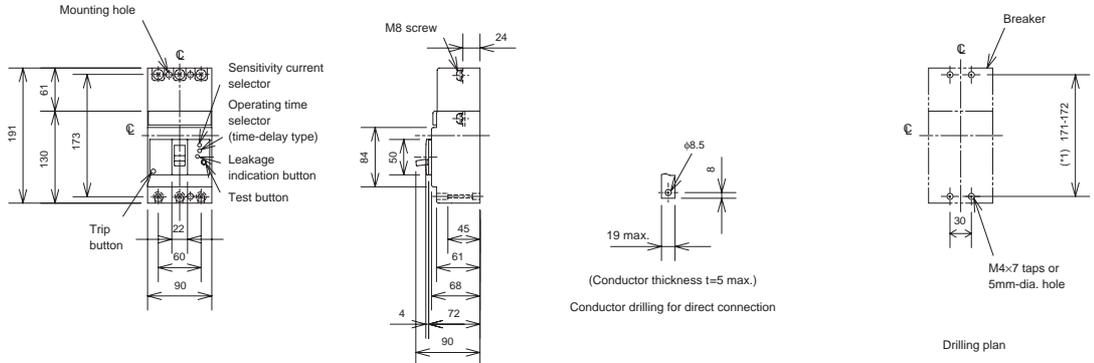
Notes: (*1) The designation depends on the number of poles. Refer to the reference page.
(*2) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.

Internal Wiring Diagram

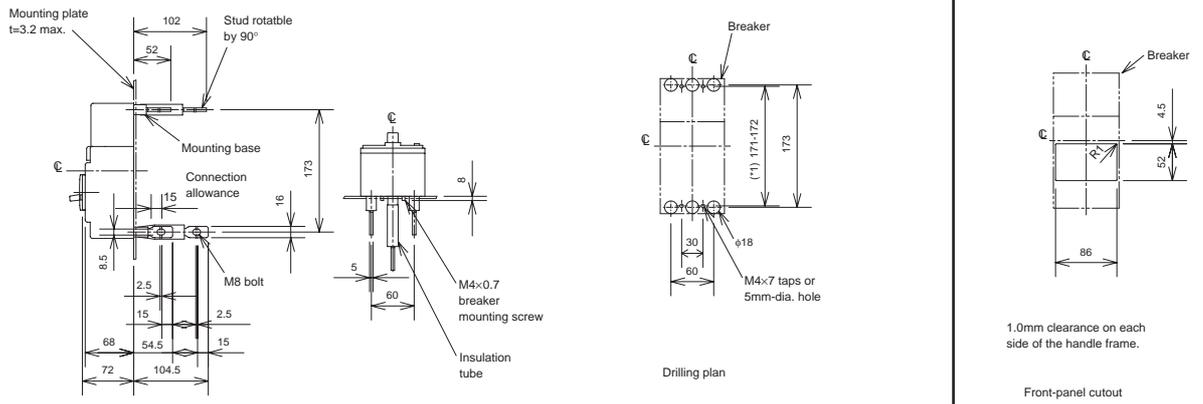


Remark: In case of the CE marking, Internal wiring diagrams differ.

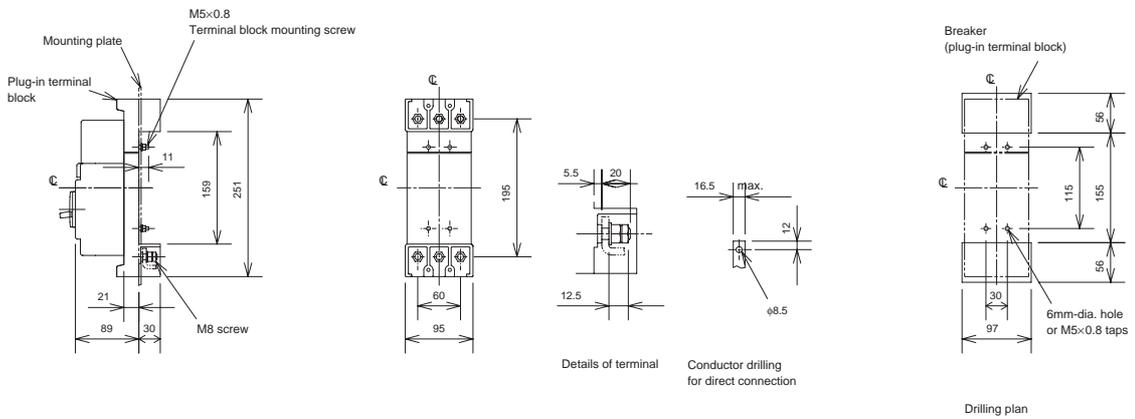
Front connection



Rear connection



Plug-in



Note: (*1) It can respond to the attachment size of 171 and 172 both sides.
 Remark: In case of the CE marking, outside sizes differ.

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

NV250-RW

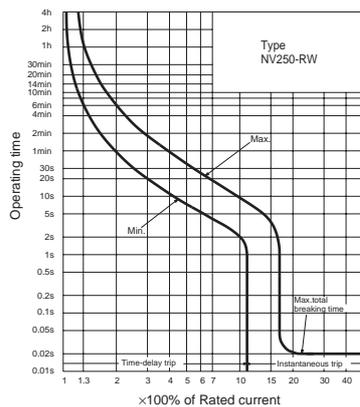


Type NV250-RW

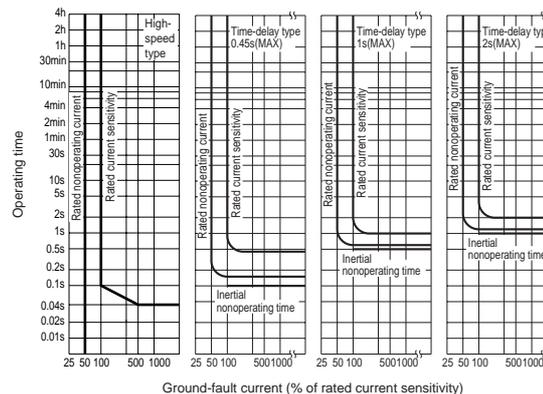
Type name		NV250-RW
Rated current I _n (Amp.)		125 150 175 200 225
Number of poles		3
Rated operational voltage U _e (V AC) (1)		100-440 Multi-voltage type
High-speed type	Rated current sensitivity I _{Δn} (mA)	(30) 100•200•500 Selectable
	Max. operating time at 5I _{Δn} (s)	0.04
Time-delay type	Rated current sensitivity I _{Δn} (mA)	(100•200•500) Selectable
	Max. operating time at 5I _{Δn} (s)	(0.45•1.0•2.0) Selectable
	Inertial non-operating time at 2I _{Δn} (s)	(0.1•0.5•1.0)
Earth-leakage indication system		Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (I _{cu} /I _{cs})	AC440V	125/125
	AC400V	125/125
	AC230V	125/125
Standard Attached Parts (Front connection)		Mounting screw : M4 × 0.7 × 55 (2pcs), M4 × 0.7 × 73 (2pcs) Insulation barrier : (4pcs)

Note: (1) Rated operational voltage of time-delay type is for 200-440V

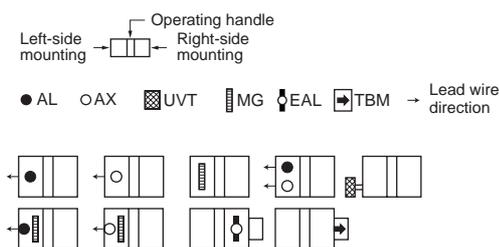
Operating Characteristics



Earth-Leakage Tripping Characteristics

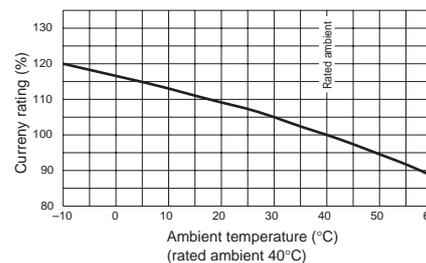


Internal Accessories



Remark: (1) refer to page 44.

Ambient Compensating Curve

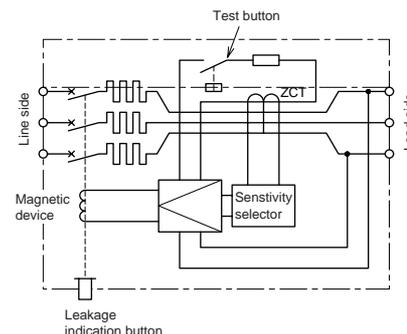


External Accessories

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F2UW	55	Mechanical interlock	MI MI-05SW3 (*1)	69
	S S2SW	57		Terminal cover	Small TC-S TCS-2SW3W (*1)
	V V2UW	54	Large TC-L TCL-2SW3W (*1)		
	R R2UW	58	Skeleton TTC TTC-2SW3 (*1)		
LC LC-2SW	70	Rear BTC BTC-2SW3W (*1)			
HL HLF-2SW		Plug-in PTC PTC-2SW3W (*1)			
HLN HLN-2SW					
HL-S HLS-2SW					
Handle lock device			Electrical operation device	—	—

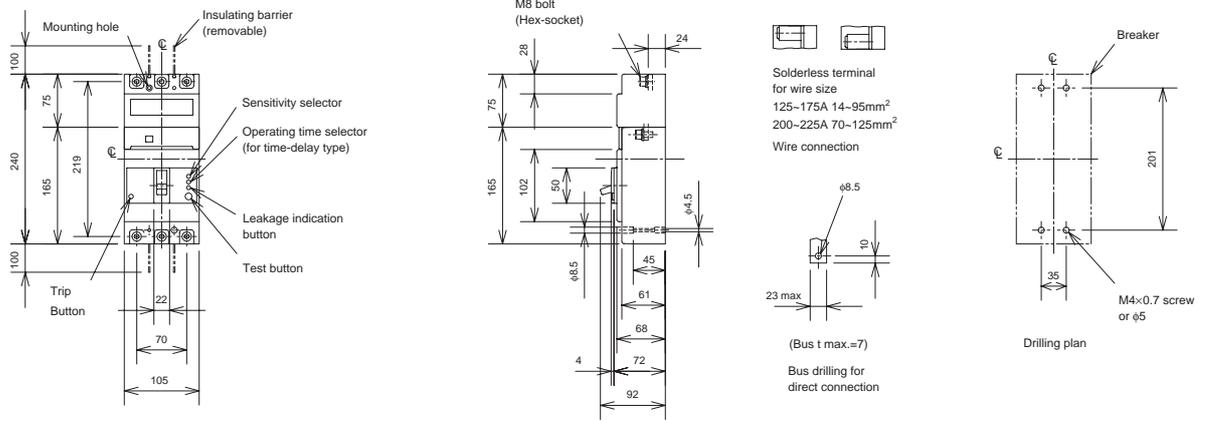
Notes: (*1) The designation depends on the number of poles. Refer to the reference page.
(*2) HLF types are used for OFF-lock, and HLN types for ON-lock.

Internal Wiring Diagram

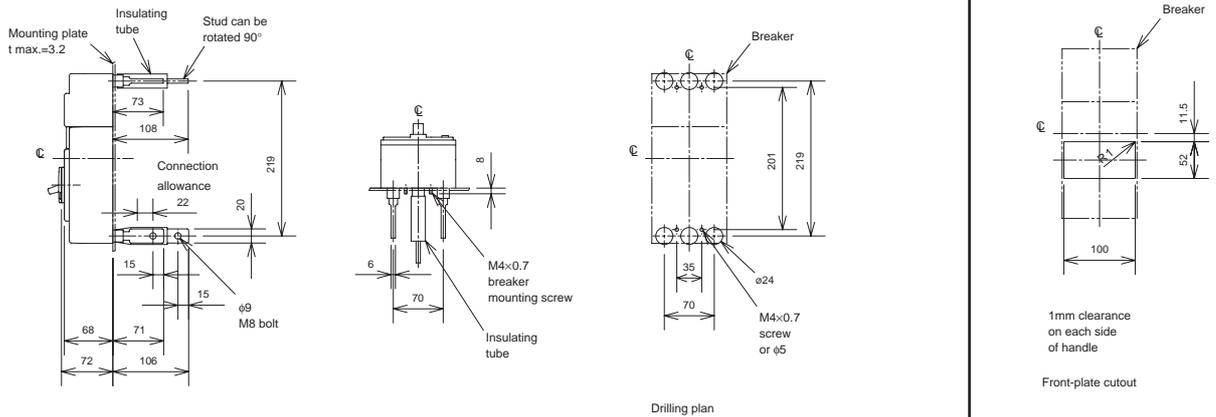


Remark: In case of the CE marking, Internal wiring diagrams differ.

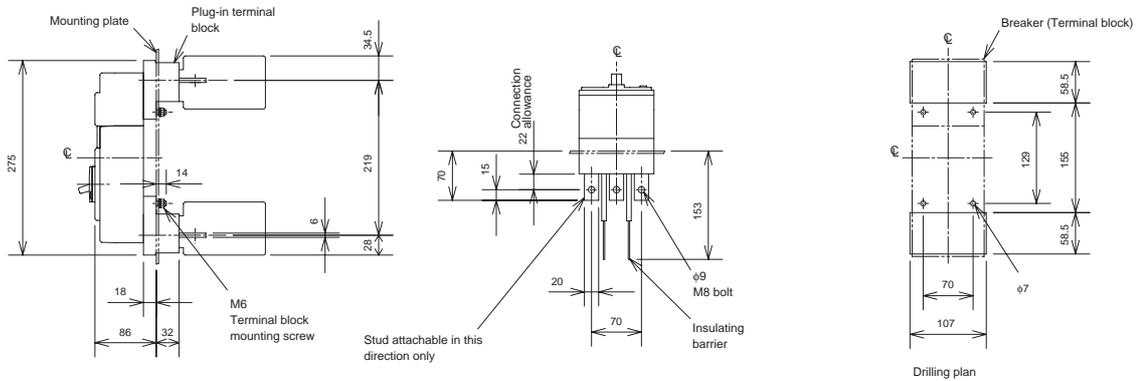
Front connection



Rear connection



Plug-in



Remark: In case of the CE marking, outside sizes differ.

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

NV400-CW NV400-SW

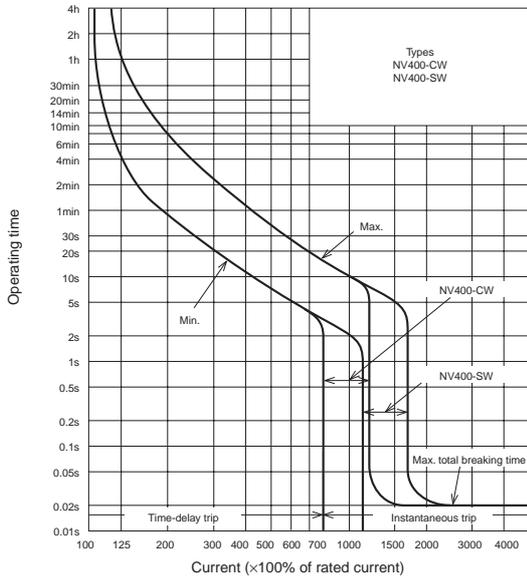


Type NV400-SW

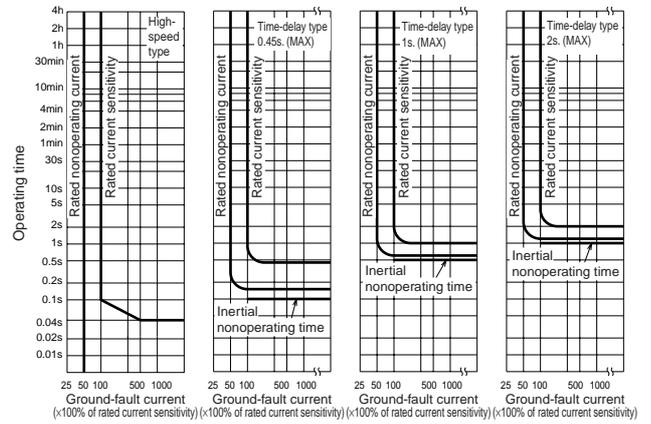
Type name		NV400-CW	NV400-SW
Number of poles		3	
Rated operational voltage Ue (V AC) (1)		100-440 Multi-voltage type	
Rated current In (Amp.)		250 300 350 400	
High-speed type	Rated current sensitivity $I\Delta n$ (mA)	(30) 100 · 200 · 500 Selectable	
	Max. operating time at $5I\Delta n$ (s)	0.04	
Time-delay type	Rated current sensitivity $I\Delta n$ (mA)	(100 · 200 · 500 Selectable)	
	Max. operating time at $2I\Delta n$ (s)	(0.45 · 1.0 · 2.0 Selectable)	
	Inertial non-operating time at $2I\Delta n$ (s)	(0.1 · 0.5 · 1.0)	
Earth-leakage indication system		Button	
Rated short-circuit breaking capacity (kA) IEC60947-2 (Icu/Ics)	AC	440V	25/13 42/42
		400V	36/18 45/45
		230V	50/25 85/85
Standard Attached Parts (Front connection)		Mounting screw: M6×60 (4pcs) Insulation barrier: (4pcs)	

Note: (1) Rated operational voltage of time-delay type is for 200-440V.

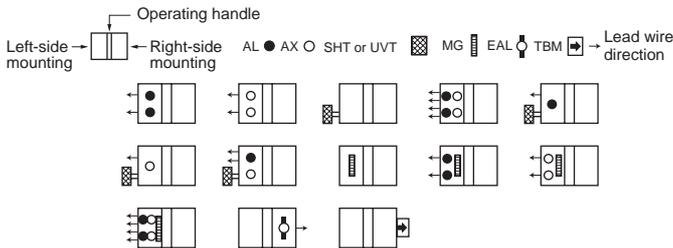
Operating Characteristics



Earth-Leakage Tripping Characteristics



Internal Accessories



Remark: (1) refer to page 46 and 47.

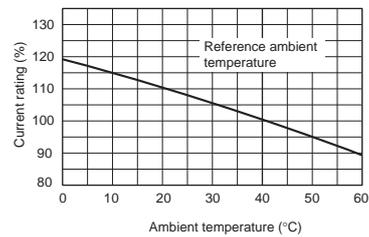
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

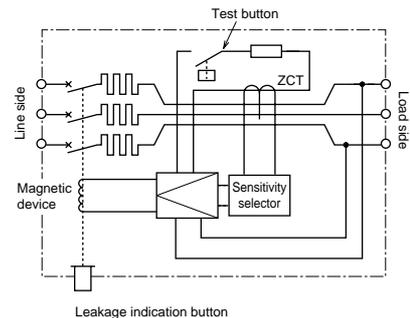
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F4SWNV	55	Large (TC-L)	TCL-4SW3	60
	S S4CW, S4SW	57	Skeleton (TTC)	TTC-4SW3	
	V V4SWNV, V4SWFN	54	Rear (BTC)	BTC-4SW3	
Mechanical interlock (MI)	MI-4SW3 (*1)	69	Handle lock device	HL HL-4CW, HL-4SW	70
Auxiliary handle (HT)	HT-4CW, HT-4SW	70	Electrical operation device	☆	61

Notes: (*1) The designation depends on the number of poles. Refer to the reference page.

Ambient Compensating Curve

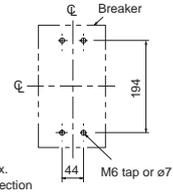
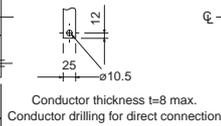
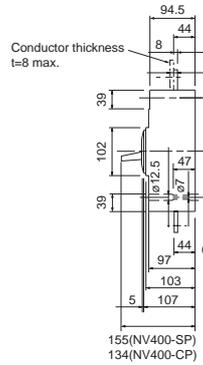
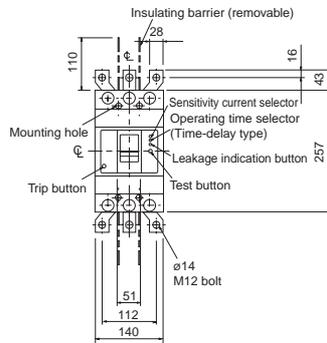


Internal Wiring Diagram

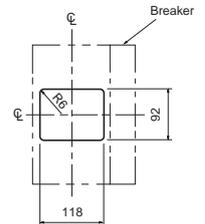


Remark: In case of the CE marking, Internal wiring diagrams differ.

Front connection



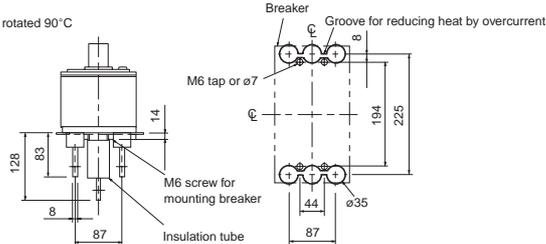
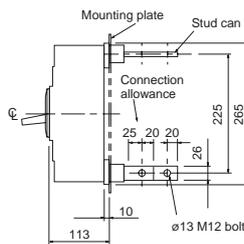
Drilling plan



1.0mm clearance on each side of the handle frame.

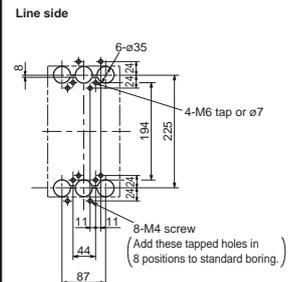
Front-panel cutout

Rear connection



Drilling plan

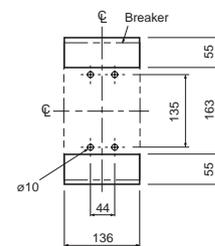
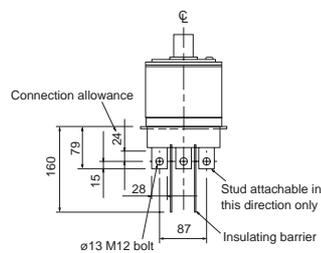
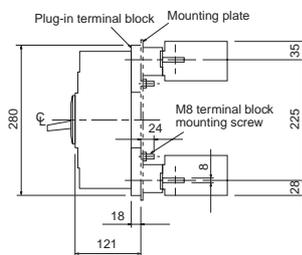
Boring dimensions for rear connection type barriers (3-pole)



Load side

Note: The bore dimensional drawing shows the breaker viewed from the rear.

Plug-in



Drilling plan

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

NV400-SEW
NV400-HEW
NV400-REW

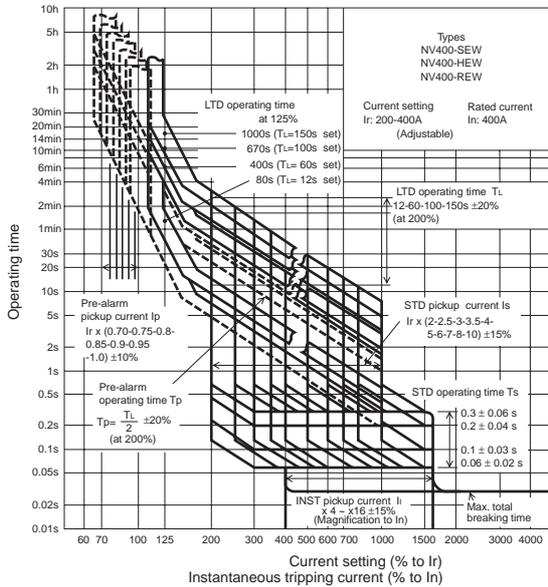


Type NV400-SEW

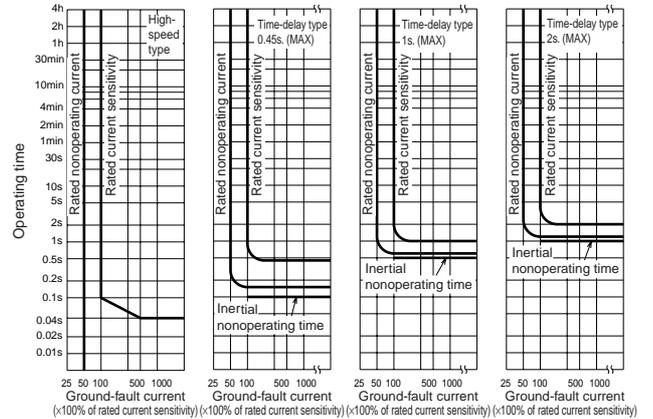
Type name		NV400-SEW		NV400-HEW		NV400-REW	
Number of poles		3	4	3	4	3	
Rated operational voltage Ue (V AC)		100-440 Multi-voltage type					
Rated current In (Amp.)		200-400 adjustable					
High-speed type	Rated current sensitivity IΔn (mA)	(30) 100 · 200 · 500 Selectable					
	Max. operating time at 5IΔn (s)	0.04					
Time-delay type	Rated current sensitivity IΔn (mA)	(100 · 200 · 500 Selectable)					
	Max. operating time at 5IΔn (s)	(0.45 · 1.0 · 2.0 Selectable)					
	Max. inertial non-operating time at 2IΔn (s)	(0.1 · 0.5 · 1.0)					
Earth-leakage indication system		Button					
Rated short-circuit breaking capacity (kA) IEC60947-2 (Icu/Ics)	AC	440V	42/42	65/65	125/63		
		400V	50/50	70/70	125/63		
		230V	85/85	100/100	150/75		
Standard Attached Parts (Front connection)		Mounting screw: M6×72 (4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)					

Note: (1) Rated operational voltage of time-delay type is for 200-440V.

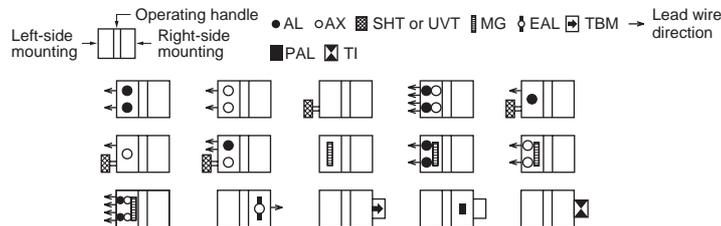
Operating Characteristics



Earth-Leakage Tripping Characteristics

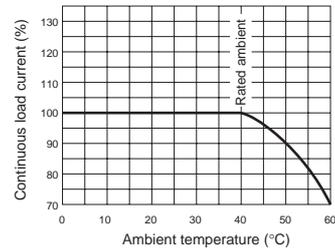


Internal Accessories



Remark: (1) Instead of EAL and TBM, pre-alarm module (PAL) or trip indicator (TI) can be attached.
(2) refer to page 46 and 47.

Current reducing curve



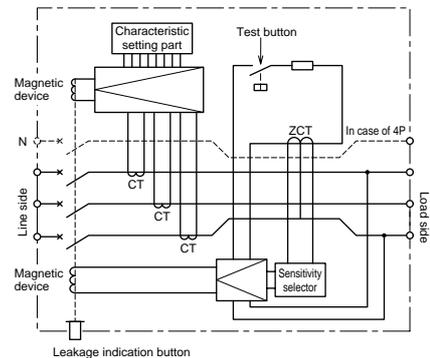
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F4SWNV	55	Large (TC-L)	TCL-4SW3 (*1) (*2)	60
	S S4SW	57	Skeleton (TTC)	TTC-4SW3 (*2)	
	V V4SWNV, V4SWFNV	54	Rear (BTC)	BTC-4SW3 (*1) (*2)	
Mechanical interlock (MI)	MI-4SW3 (*2)	69	Handle lock device	HL HL-4SW	70
Auxiliary handle (HT)	HT-4SW	70	HL-S	HLS-4SW	
			Electrical operation device	☆	61

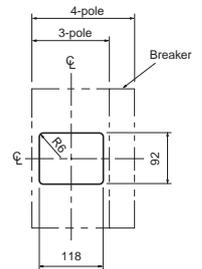
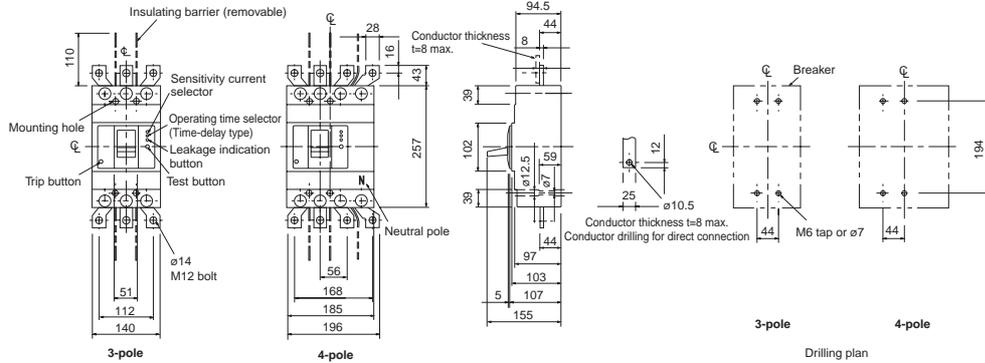
Note: (*1) This is for NV400-SEW.
(*2) The designation depends on the number of poles. Refer to the reference page.

Internal Wiring Diagram



Remark: In case of the CE marking, Internal wiring diagrams differ.

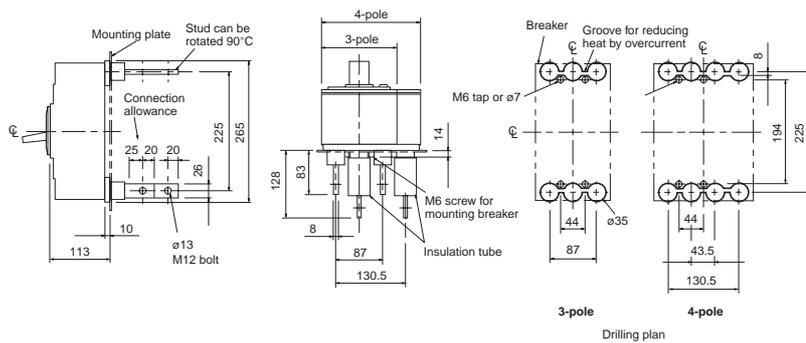
Front connection



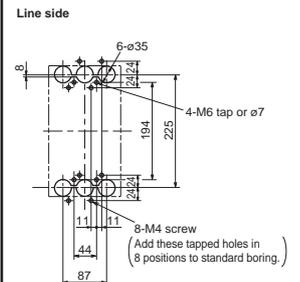
1.0mm clearance on each side of the handle frame.

Front-panel cutout

Rear connection

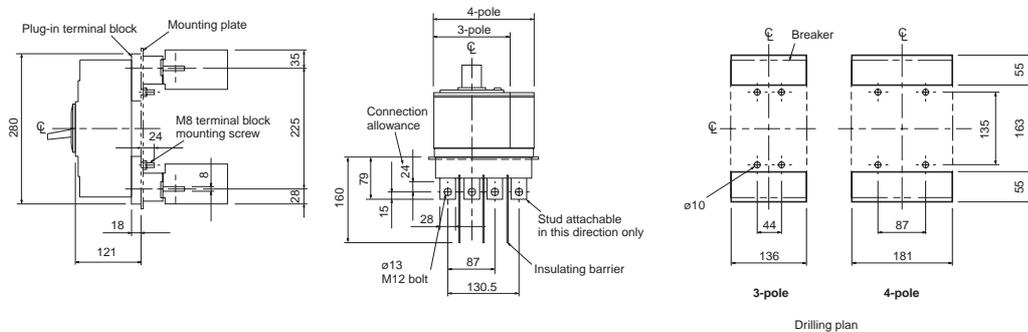


Boring dimensions for rear connection type barriers (3-pole)



Note: The bore dimensional drawing shows the breaker viewed from the rear.

Plug-in



6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

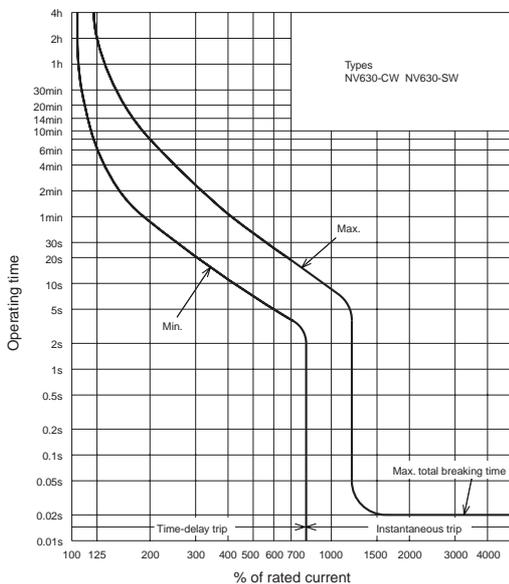
NV630-CW NV630-SW



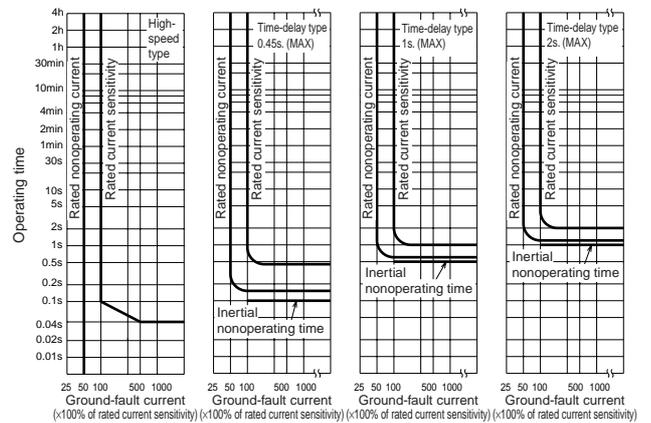
Type NV630-SW

Type name		NV630-CW	NV630-SW
Number of poles		3	
Rated operational voltage Ue (V AC)		100-440 Multi-voltage type	
Rated current In (Amp.)		500 600 630	
High-speed type	Rated current sensitivity IΔn (mA)	100 · 200 · 500 Selectable	
	Max. operating time at 5IΔn (s)	0.04	
Time-delay type	Rated current sensitivity IΔn (mA)	100 · 200 · 500 Selectable	
	Max. operating time at 5IΔn (s)	0.45 · 1.0 · 2.0 Selectable	
	Max. inertial non-operating time at 2IΔn (s)	0.1 · 0.5 · 1.0	
Earth-leakage indication system		Button	
Rated short-circuit breaking capacity (kA) IEC60947-2 (Icu/Ics)	AC	440V	36/18 42/42
		400V	36/18 50/50
		230V	50/25 85/85
Standard Attached Parts (Front connection)		Mounting screw: M6×72 (4pcs) Insulation barrier: (4pcs)	

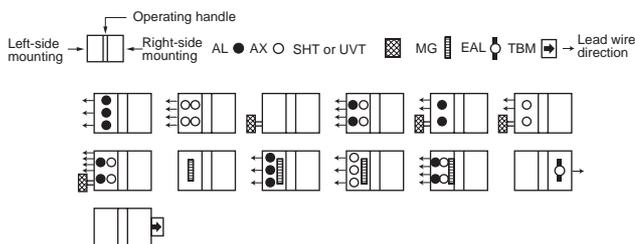
Operating Characteristics



Earth-Leakage Tripping Characteristics



Internal Accessories



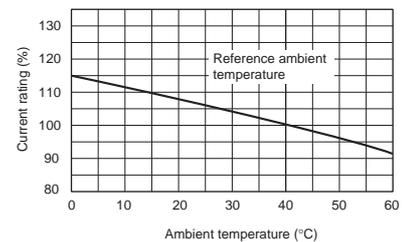
Remark: (1) refer to page 46 and 47.

External Accessories

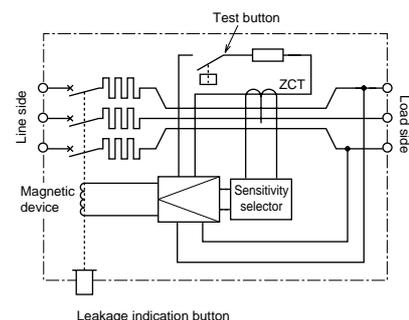
External Accessories (An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F4SWWNV	55	Large (TC-L)	TCL-4SW3	60
	S S4SW	57	Skeleton (TTC)	TTC-4SW3	
	V V4SW, V4SWF	54	Rear (BTC)	BTC-4SW3	
Mechanical interlock (MI)	MI-4SW3	69	Handle lock device	HL HL-4SW	70
Auxiliary handle (HT)	HT-4SW	70	Handle lock device	HLS-HLS-4SW	
			Electrical operation device	☆	61

Ambient Compensating Curve



Internal Wiring Diagram



Remark: In case of the CE marking, Internal wiring diagrams differ.

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

NV630-SEW NV630-HEW

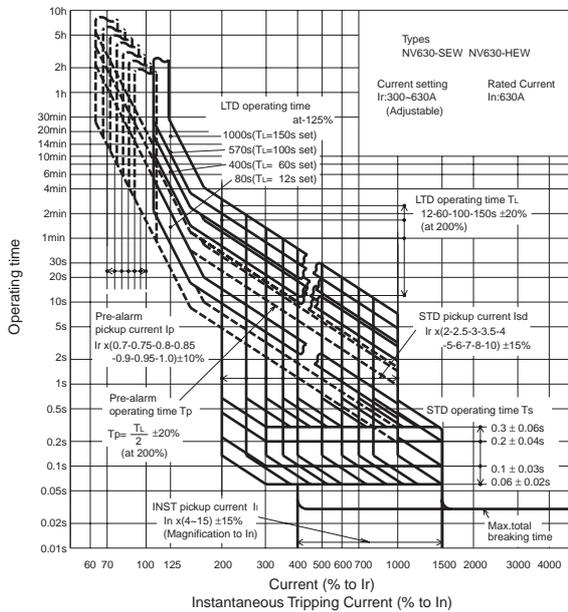


Type NV630-SEW

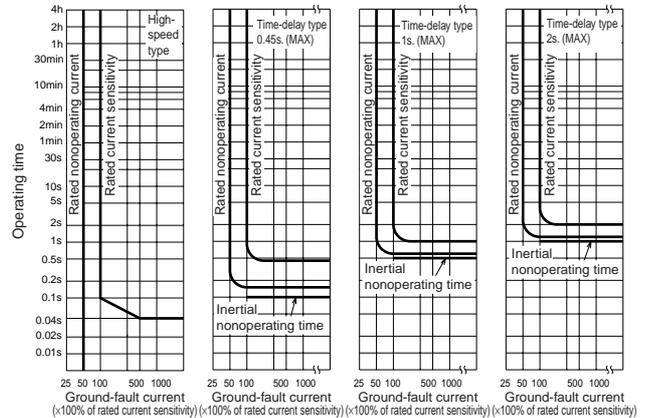
Type name		NV630-SEW	NV630-HEW
Number of poles		3	4
Rated operational voltage Ue (V AC) (*1)		100-440 Multi-voltage type	
Rated current In (Amp.)		300-630 adjustable	
High-speed type	Rated current sensitivity IΔn (mA)	(30) 100 · 200 · 500 Selectable	
	Max. operating time at 5IΔn (s)	0.04	
Time-delay type	Rated current sensitivity IΔn (mA)	(100 · 200 · 500 Selectable)	
	Max. operating time at 5IΔn (s)	(0.45 · 1.0 · 2.0 Selectable)	
	Max. inertial non-operating time at 2IΔn (s)	(0.1 · 0.5 · 1.0)	
Earth-leakage indication system		Button	
Rated short-circuit breaking capacity (kA) IEC60947-2 (Icu/Ics)	AC	440V	42/42
		400V	50/50
		230V	85/85
Standard Attached Parts (Front connection)		Mounting screw: M6×72 (4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)	

Notes: (*1) Rated operational voltage of time-delay type is for 200-440V.

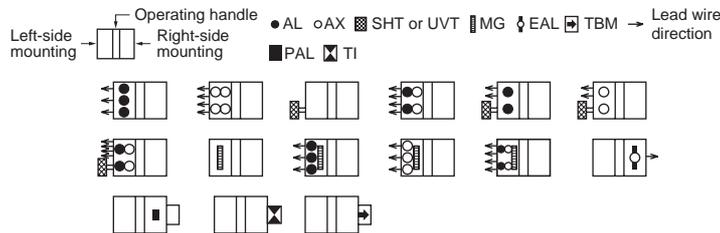
Operating Characteristics



Earth-Leakage Tripping Characteristics



Internal Accessories



Remark: (1) Instead of EAL and TBM, pre-alarm module (PAL) or trip indicator (TI) can be attached.
(2) refer to page 46 and 47.

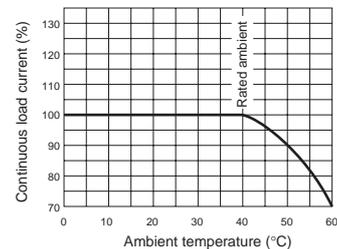
External Accessories

(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

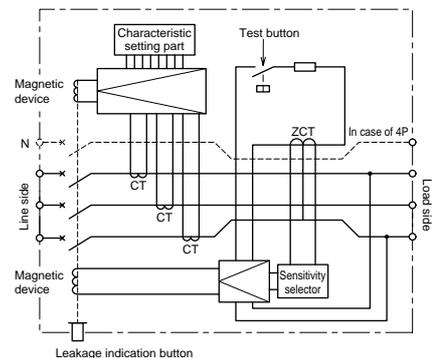
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F4SWNV	55	Terminal cover	Large (TC-L) TCL-4SW3 (*1)	60
	S S4SW	57		Skeleton (TTC) TTC-4SW3 (*1)	
	V V4SWF, V4SW	54		Rear (BTC) BTC-4SW3 (*1)	
Mechanical interlock (MI)	MI-4SW3 (*1)	69	Handle lock device	HL HL-4SW	70
Auxiliary handle (HT)	HT-4SW	70		HL-S HLS-4SW	
			Electrical operation device	☆	61

Note: (*1) The designation depends on the number of poles. Refer to the reference page.

Current reducing curve

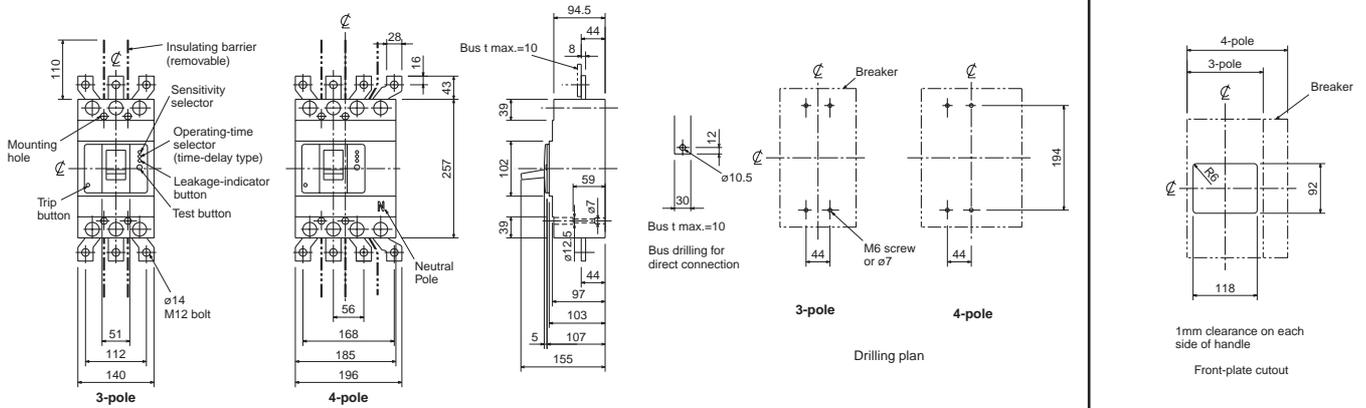


Internal Wiring Diagram

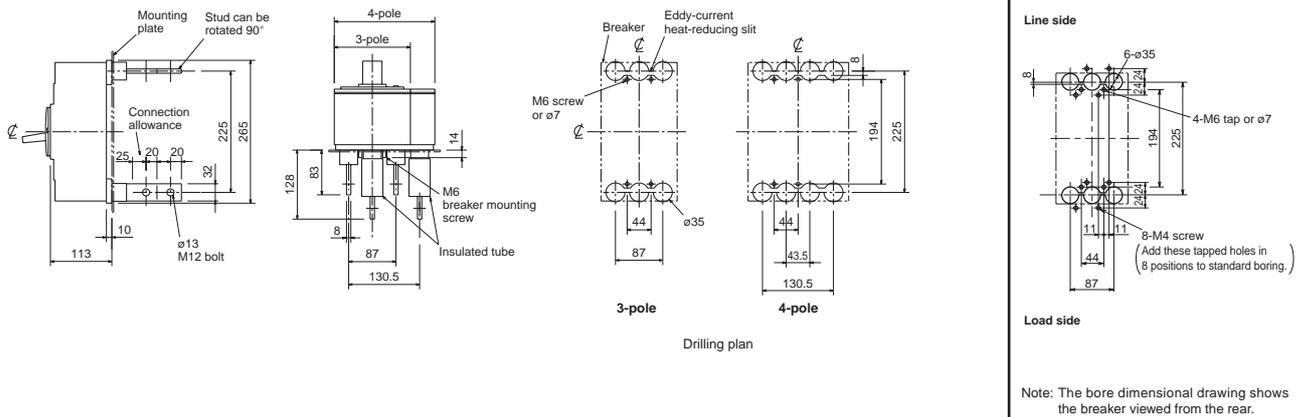


Remark: In case of the CE marking, Internal wiring diagrams differ.

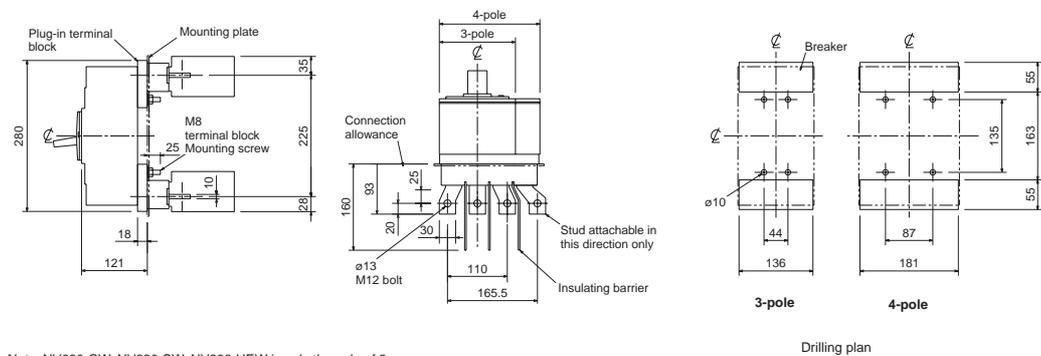
Front connection



Rear connection



Plug-in



Note: NV630-CW, NV630-SW, NV630-HEW is only the pole of 3.

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

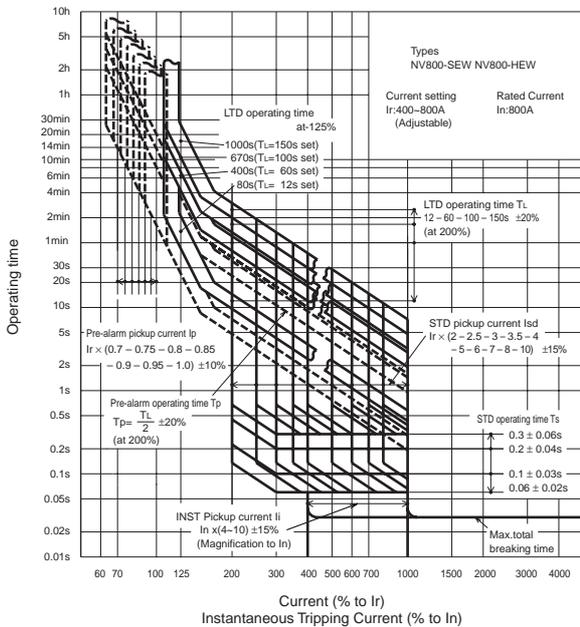
NV800-SEW NV800-HEW



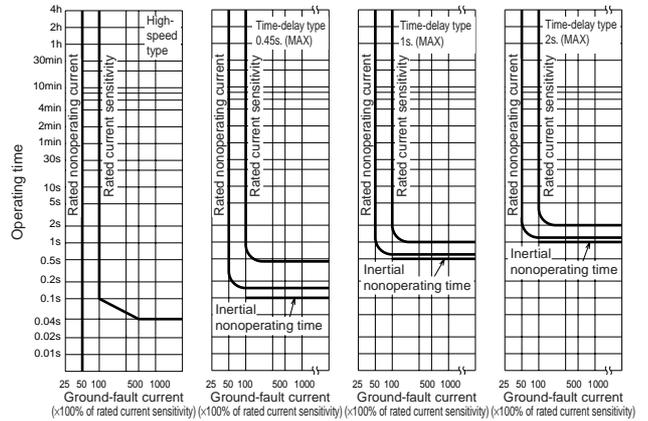
Type NV800-SEW

Type name		NV800-SEW	NV800-HEW	
Number of poles		3		
Rated operational voltage Ue (V AC)		100-440 Multi-voltage type		
Rated current In (Amp.)		400-800 adjustable		
High-speed type	Rated current sensitivity IΔn (mA)	(100 · 200 · 500 Selectable)		
	Max. operating time at 5IΔn (s)	(0.04)		
Time-delay type	Rated current sensitivity IΔn (mA)	100 · 200 · 500 Selectable		
	Max. operating time at 5IΔn (s)	0.45 · 1.0 · 2.0 Selectable		
	Max. inertial non-operating time at 2IΔn (s)	0.1 · 0.5 · 1.0		
Earth-leakage indication system		Button		
Rated short-circuit breaking capacity (kA) IEC60947-2 (Icu/Ics)	AC	440V	42/42	65/65
		400V	50/50	70/70
		230V	85/85	100/100
Standard Attached Parts (Front connection)		Mounting screw: M6x35 (4pcs) Insulation barrier: (2pcs)		

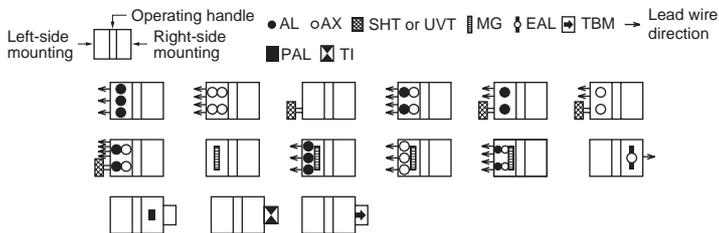
Operating Characteristics



Earth-Leakage Tripping Characteristics



Internal Accessories



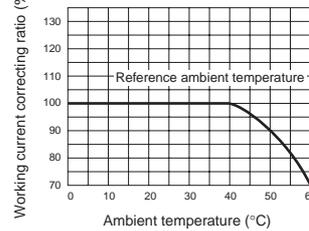
Remark: (1) Instead of EAL and TBM, pre-alarm module (PAL) or trip indicator (TI) can be attached.
(2) refer to page 46 and 47.

External Accessories

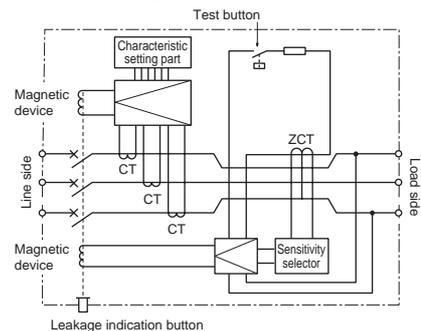
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F F8SWNV	55	Terminal cover	Large (TC-L) TCL-8SW3	60
	S S4SW	57		Skeleton (TTC) TTC-8SW3	
	V V8SWF, V8SW	54		Rear (BTC) BTC-8SW3	
Mechanical interlock (MI)	MI-8SW3	69	Handle lock device	HL HL-4SW	70
				HL-S HLS-8SW	
Auxiliary handle (HT)	HT-4SW	70	Electrical operation device	☆	61

Current reducing curve

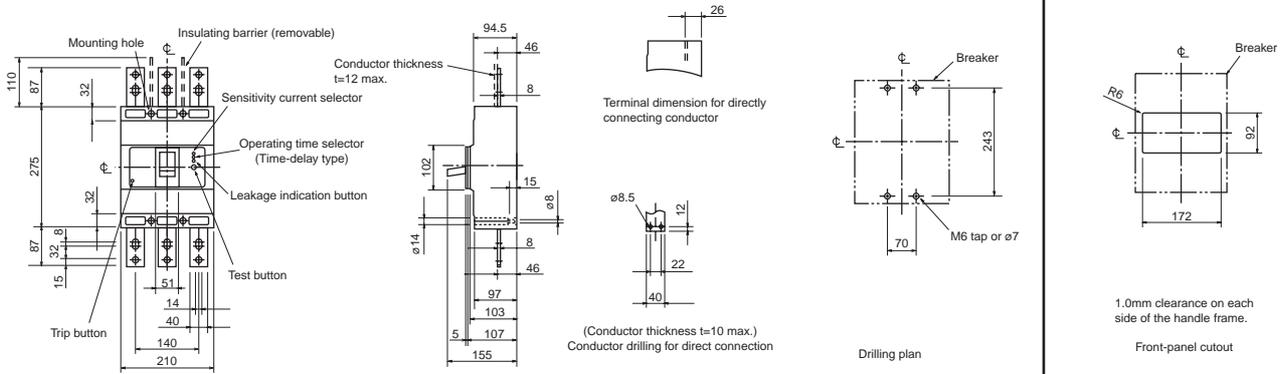


Internal Wiring Diagram

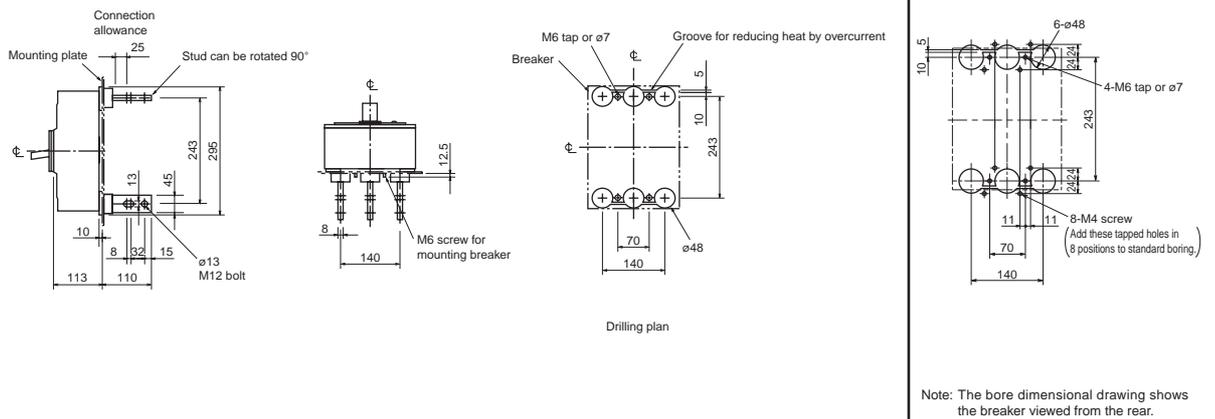


Remark: In case of the CE marking, Internal wiring diagrams differ.

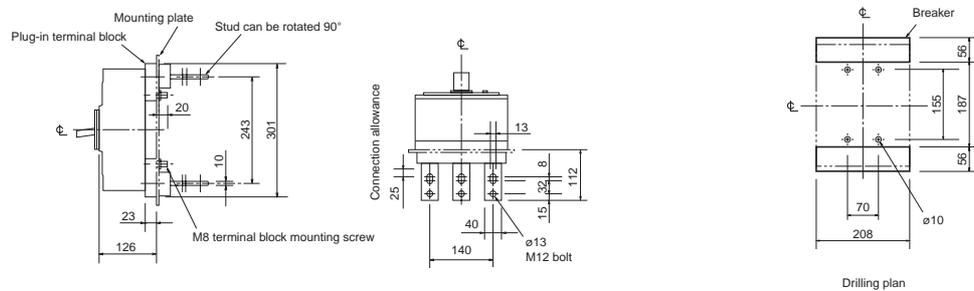
Front connection



Rear connection



Plug-in



6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

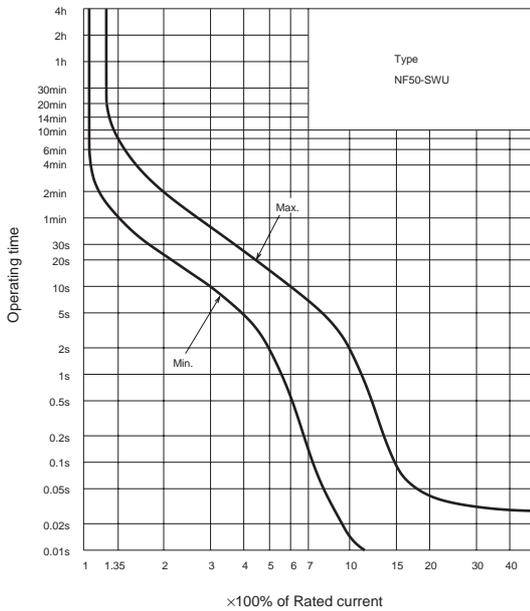
NF50-SWU



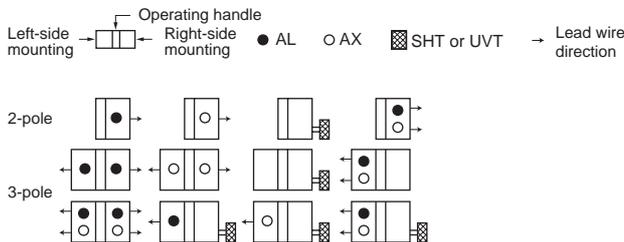
Type NF50-SWU

Type name		NF50-SWU		
Rated current In (Amp.)		(3) 5 10 15 20 30 40 50		
Number of poles		2	3	
Rated short-circuit breaking capacity (kA)	UL489	Rated voltage (AC V)		
		AC	240V	
	IEC 60947-2 JIS C 8201-2 (Icu/Ics)	Rated insulation voltage Ui (V)		
		AC	500V	7.5/4
			440V	7.5/4
400V	7.5/4			
230V	15/8			
Standard attached parts		Mounting screw: M4×0.7×55 (2pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs)		

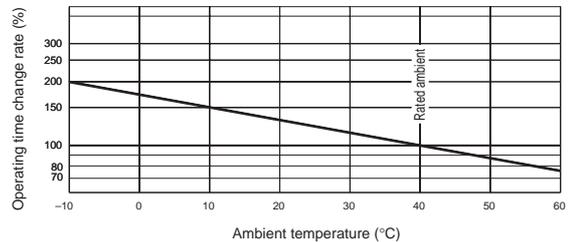
Operating Characteristics



Internal Accessories



Temperature Characteristics

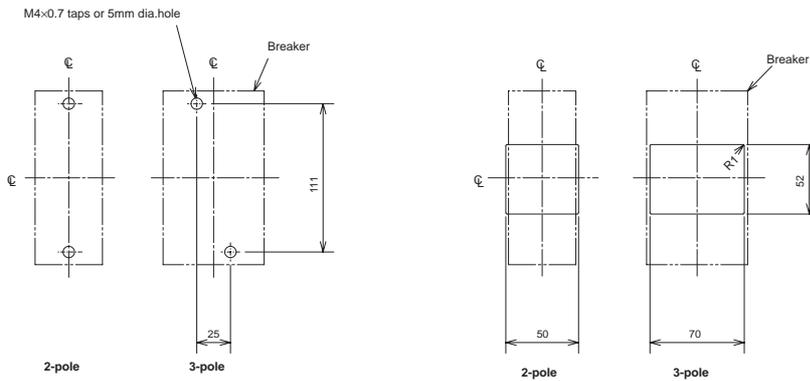
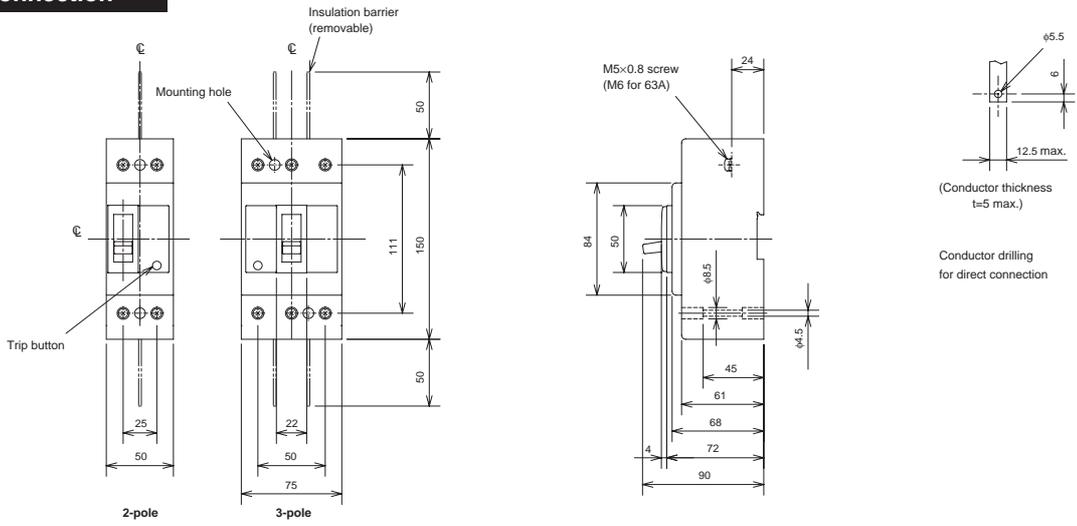


External Accessories

Accessories	Type name	Accessories	Type name
Operating handle	F	Mechanical interlock	MI
	S		MI-05SWU3
	V	Terminal cover	TC-L
HL	TC-L		
Handle lock device	HLF-05SWU	Large	TCL-05SWU2 TCL-05SWU3

Note: (*1) Adjustable types can be produced upon request.

Front connection



1.0mm clearance on each side of the handle frame.

Drilling plan

Front-panel cutout

6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

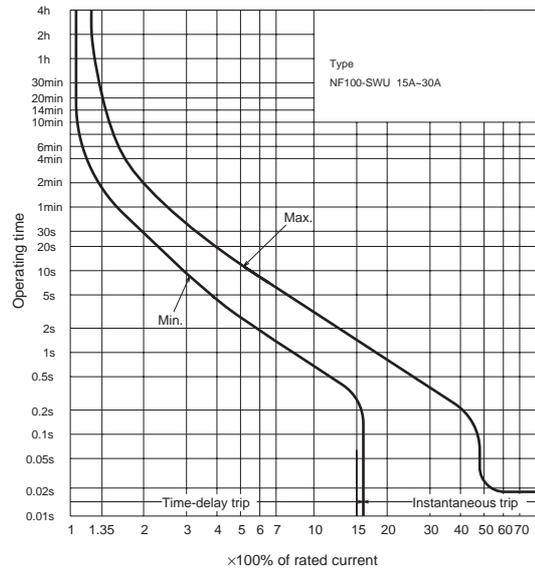
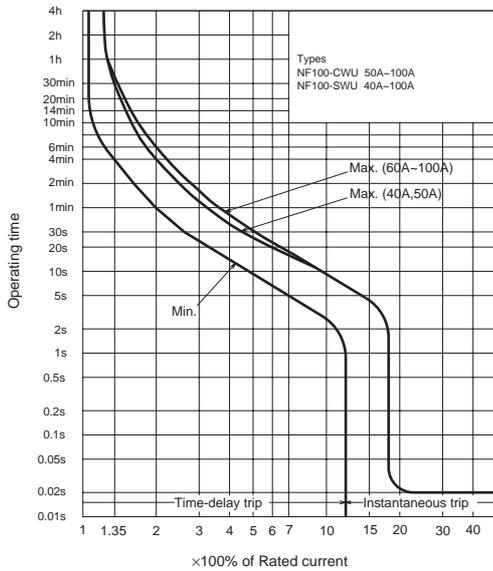
NF100-CWU NF100-SWU



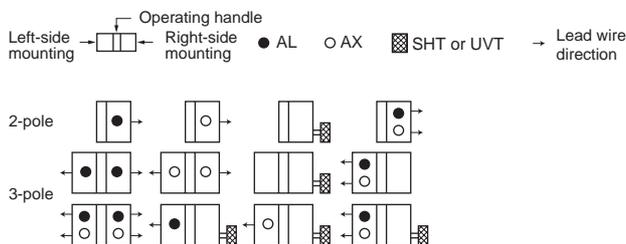
Type NF100-SWU

Type name		NF100-CWU	NF100-SWU		
Rated current I _n (Amp.) at ambient temperature 40°C (IEC30°C)		50 60 75 100	15 20 30 40 50 60 75 100		
Number of poles		2 3	2 3		
Rated short-circuit breaking capacities (kA)	UL 489	Rated voltage (AC V)			
		AC	240	480Y/277	
	IEC 60947-2 JIS C 8201-2 (I _{cu} /I _{cs})	AC	480Y/277V	—	22
			240V	10	35
		DC	690V	—	8/4
			250V	7.5/4	15/8
Standard attached parts		Mounting screw: M4×0.7×55 (2pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs), Insulation board: (1pc)			

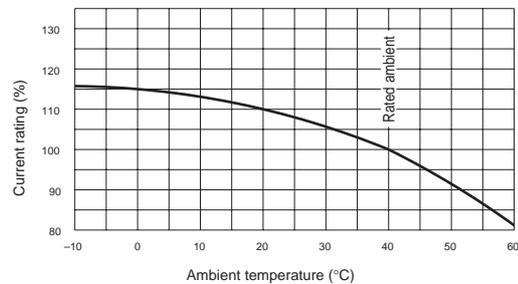
Operating Characteristics



Internal Accessories



Ambient Compensating Curve



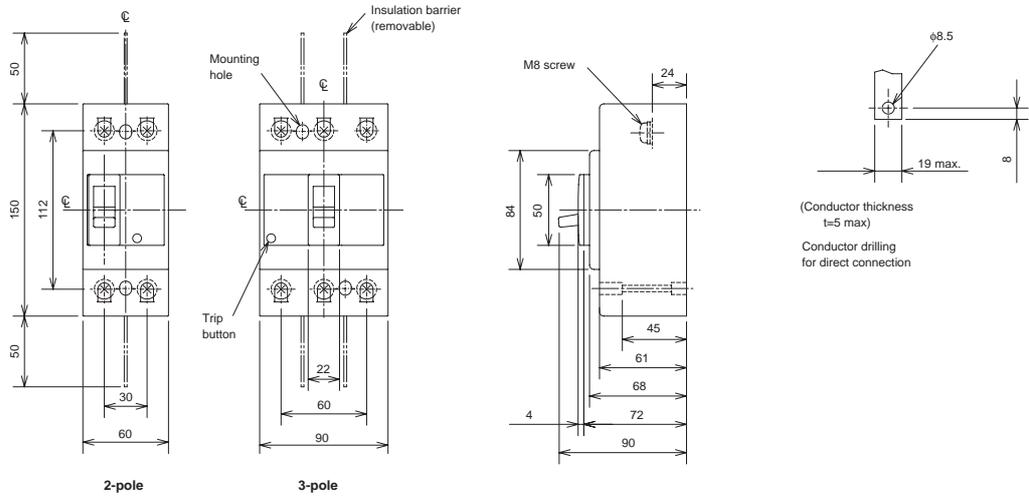
External Accessories

Accessories	Type name	Accessories	Type name
Operating handle	F	F1SWU2P F1SWU	Mechanical interlock MI MI-05SWU3
	S	S1SWU	
	V	V1SWU (*1)	Terminal cover Large TC-L TCL-1SWU2 TCL-1SWU3
Handle lock device	HL	HLF-1SWU	

Note: (*1) Attach the letter "F" to the end of designation for a fixed type.

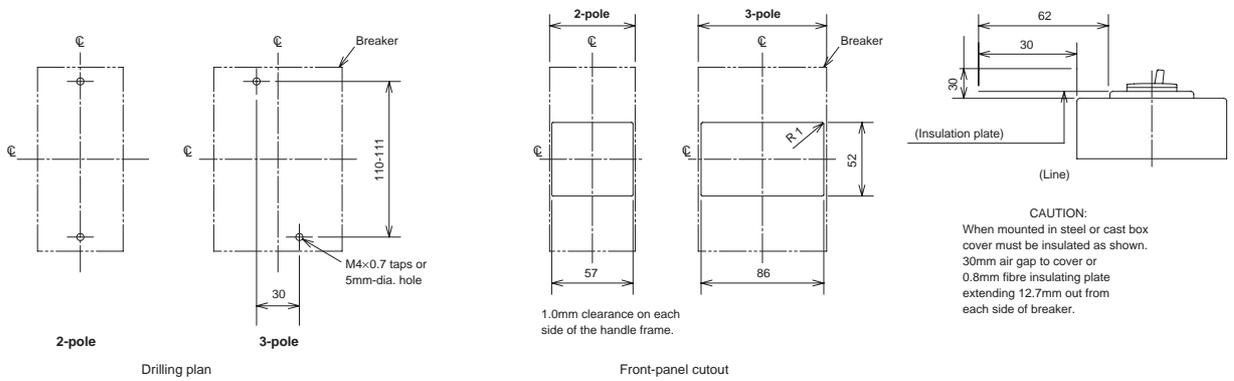
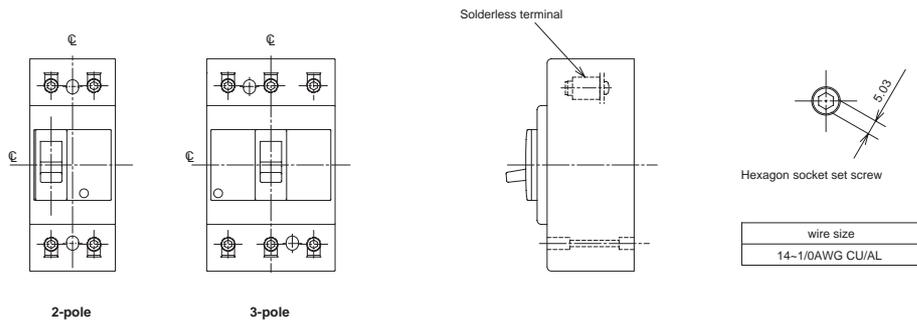
Front connection

(Standard)



Front connection (Solderless terminal)

(Option)



6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

NF225-CWU

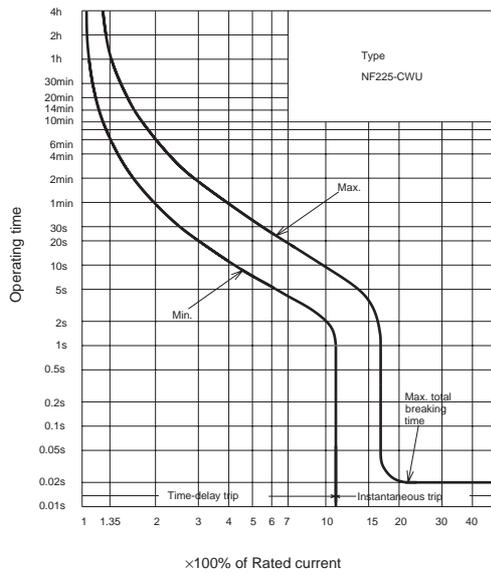


Type NF225-CWU

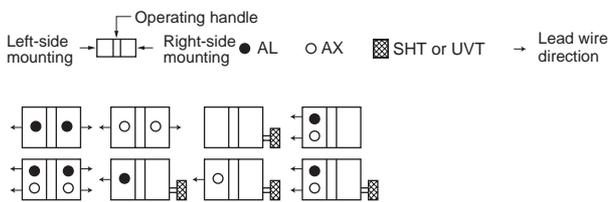
Type name		NF225-CWU		
Rated current I _n (Amp.) at ambient temperature 40°C (IEC30°C)		125 150 175 200 225		
Number of poles		3		
Rated short-circuit breaking capacities (kA)	UL 489	Rated voltage (AC V)		
		AC	240V	
	IEC 60947-2 JIS C 8201-2 (Icu/Ics)	Rated insulation voltage U _i (V)		
		AC	500V	10/5
			440V	15/8
			400V	18/9
DC	230V	35/18		
DC	250V	10/5 (*1)		
Standard attached parts		Mounting screw: M4×0.7×55 (2pcs) Insulation barrier: (4pcs), Terminal cover: (1 set),(*2)		

Notes: (*1) Use either two poles. When wired as shown at the bottom of page 26, the models can be used for up to 400 V DC.
(*2) The standard configuration contains a protection cover and adopts the IP20 (finger protection) structure.

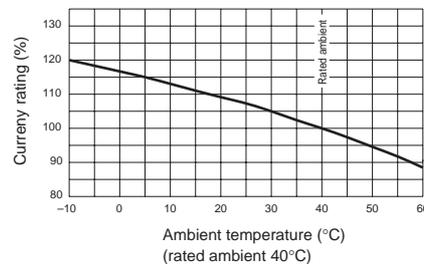
Operating Characteristics



Internal Accessories



Ambient Compensating Curve

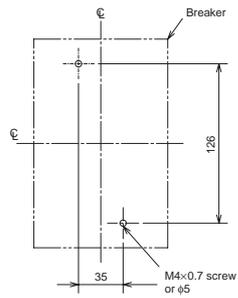
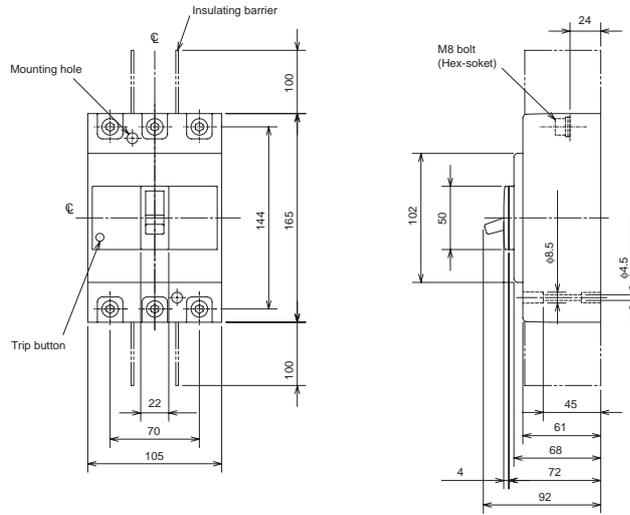


External Accessories

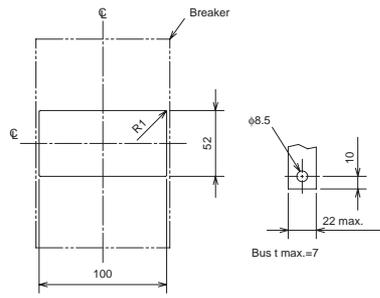
Accessories	Type name	Accessories	Type name
Operating handle	F F2SWU	Mechanical interlock	MI MI-05SWU3
	S S2SWU		Terminal cover
	V V2SWU (*1)		
Handle lock device	HL HLF-2SWU		

Note: (*1) Attach the letter "F" to the end of designation for a fixed type.

Front connection



Drilling plan



Front cover cutout
1mm clearance on
each side of handle

Bus t max.=7
Bus drilling for
direct connection

6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

NF-SFW
NF-SJW
NF-HJW

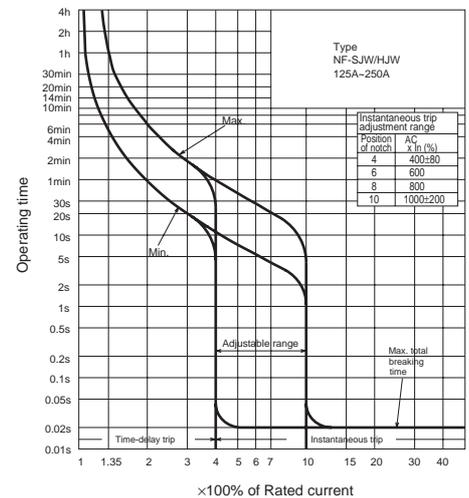
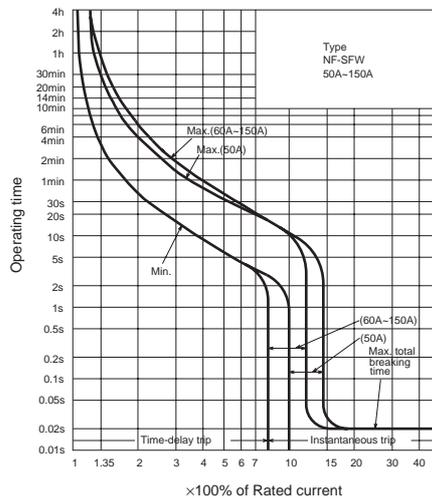
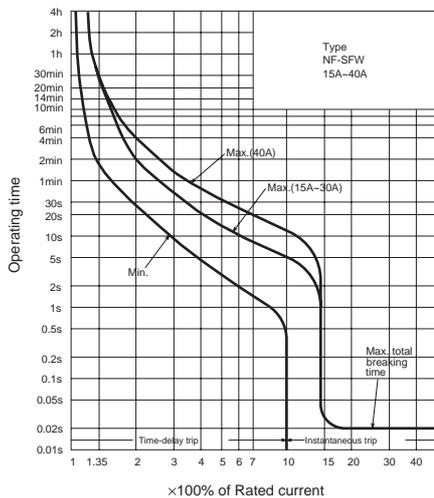


Type NF-SFW

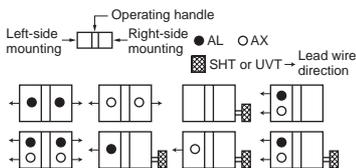
Type name		NF-SFW	NF-SJW	NF-HJW			
Rated current I _n (Amp.) at ambient temperature 40°C (IEC30°C)		15 20 30 40 50 60 70 80 90 100 110 125 150	(125) (150) 175 200 225 250	125 150 175 200 225 250			
Number of poles		3	3	3			
Rated short-circuit breaking capacities (kA)	UL 489	Rated voltage (AC V)		600Y/347			
		AC	600Y/347V	14	14	18	
			480V	35	35	50	
	IEC 60947-2 JIS C 8201-2 (I _{cu} /I _{cs})	AC	240V	65	65	100	
			Rated insulation voltage U _i (V)		690	690	690
			690V	8/8	8/8	15/15	
			500V	30/30	30/30	36/36	
			440V	36/36	36/36	50/50	
		400V	36/36	36/36	50/50		
		230V	85/85	85/85	100/100		
DC	250V (*1)	20/20	20/20	20/20			
Standard attached parts		Mounting screw: M4×0.7×73 (4pcs) Insulation barrier: (4pcs), Insulation board: (1pc)					

Note: (*1) Use either two poles. When wired as shown at the bottom of page 26, the models can be used for up to 500 V DC.

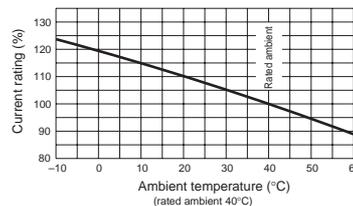
■ Operating Characteristics



■ Internal Accessories



■ Ambient Compensating Curve



Remark: The reference ambient temperature for IEC models is 30°C.

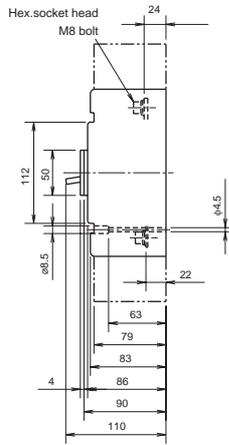
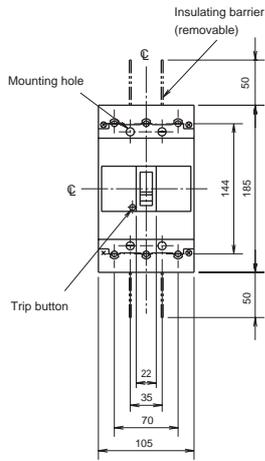
■ External Accessories

Accessories	Type name	Accessories	Type name
Operating handle	F	Mechanical interlock	MI
	S		
	V		
Handle lock device	HL	Terminal cover	Large
	HLF-2GSWU	TC-L	TCL-2GSWU3

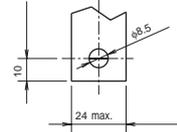
Note: (*1) Attach the letter "F" to the end of designation for a fixed type.

Front connection

(Standard)



CAUTION:
Insulating barriers must be used with uninsulated bus bars or clamp on terminals.



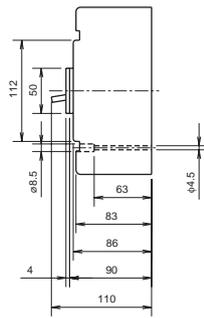
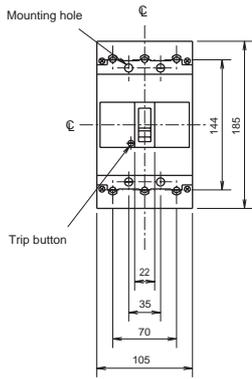
(Conductor thickness t=7max.)

Bus bar drilling for direct connection

4-FRONT

Front connection (Solderless terminal)

(Option)

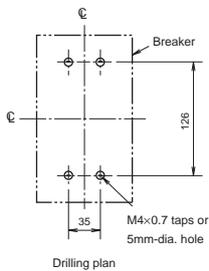


Hexagon socket set screw

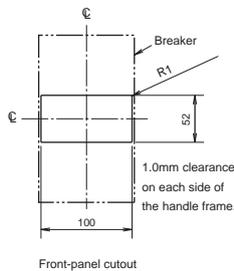


Wire size
14AWG-250MCM CU/AL

3-FRONT

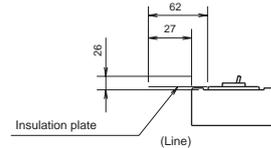


Drilling plan



Front-panel cutout

CAUTION:
When mounted in steel or cast box cover must be insulated as shown.
26mm air gap to cover or extending 12.7mm out from each side of breaker.



5-RIGHT

Outline and dimensions (mm (inch))
Type NF-SFW,NF-SJW,NF-HJW

6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

NF-SKW

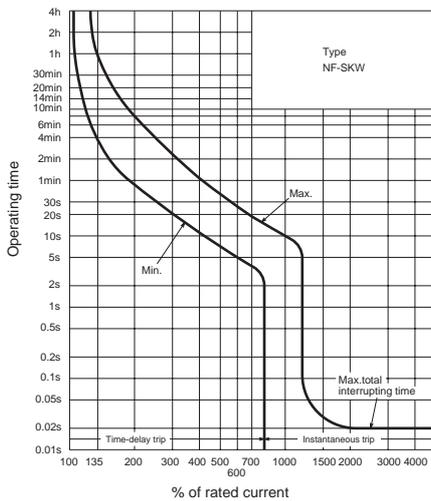


Type NF-SKW

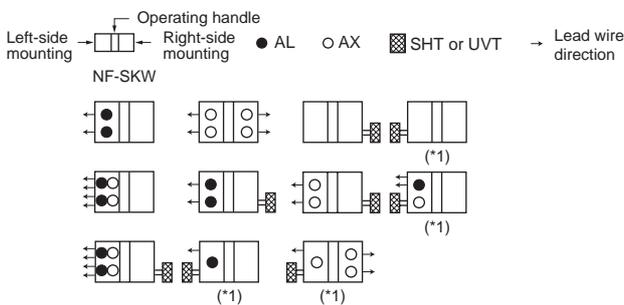
Type name		NF-SKW		
Rated current In (Amp.) at ambient temperature 40°C		250 300 350 400		
Number of poles		3		
Rated short-circuit breaking capacities (kA)	UL 489	Rated voltage (AC V)		
		AC	600Y/347V	20
			480V	35
	240V	65		
	IEC 60947-2 JIS C 8201-2 (Icu/Ics)	Rated insulation voltage Ui (V)		690
		AC	690V	10/10 (5/5) (*1)
500V			30/30 (25/25) (*1)	
440V			42/42 (36/36) (*1)	
400V	45/45 (36/36) (*1)			
230V	85/85 (65/65) (*1)			

Notes: (*1) In case of solderless terminal, interrupting capacity reduces: (/).

Operating Characteristics

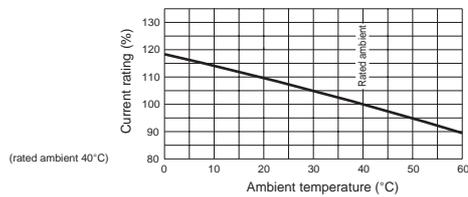


Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.

Ambient Compensating Curve

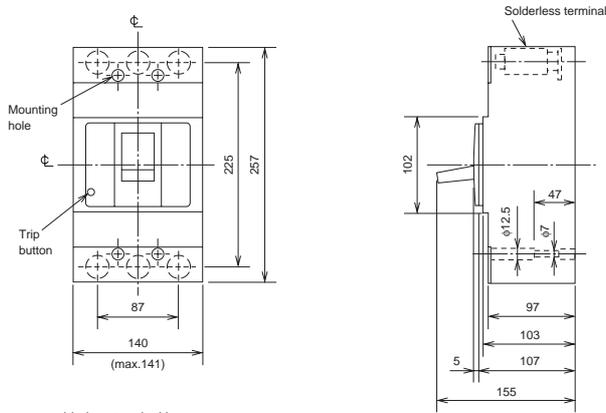


External Accessories

Accessories	Type name	Accessories	Type name
Operating handle	F F4SKW	Terminal cover	Large TC-L TCL-4SKW
	S S4SKW		
	V V4SKW (*1)		
Handle lock device	HL HL-4SP		

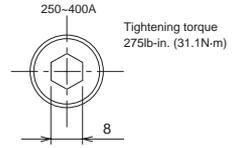
Note: (*1) Attach the letter "F" to the end of designation for a fixed type.

Front connection (Solderless terminal)



Note: Do not remove solderless terminal in any case.
Standard attached parts
Mounting screw:M6×60 (4pcs), Insulating plate: (1pc)

Hexagon socket set screw



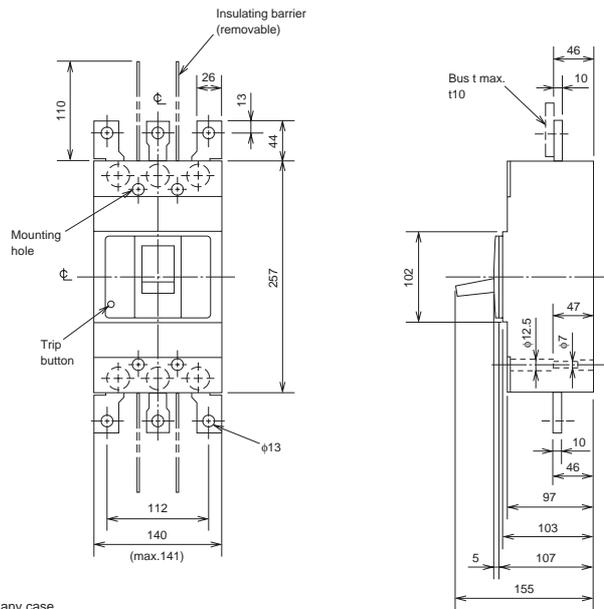
UL

Ampere ratings	Wire size
250A, 300A	250-350MCM CU
250A	350MCM AL
350A, 400A	3/0AWG CU ONLY

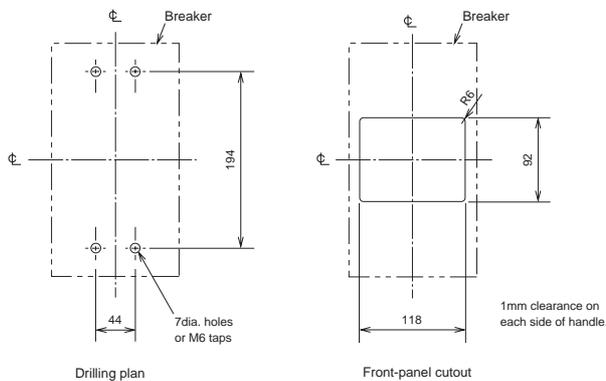
IEC

Ampere ratings	Wire size (IEC 60228)	
	Class 2	Class 5
250A-350A	70-185mm ²	95-185mm ²
400A	150-240mm ²	150-185mm ²

Front connection (Busbar terminal)

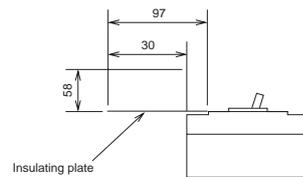


Note: Do not remove busbar terminal in any case.
Standard attached parts
Mounting screw:M6×60 (4pcs), Insulating barrier: (4pcs), Insulating plate: (1pc)



CAUTION

When mounted in steel or cast box cover must be insulated as shown.
58mm air gap to cover or 0.8mm fibre insulating plate extending 12.7mm out from each side of breaker.



(Line)

6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

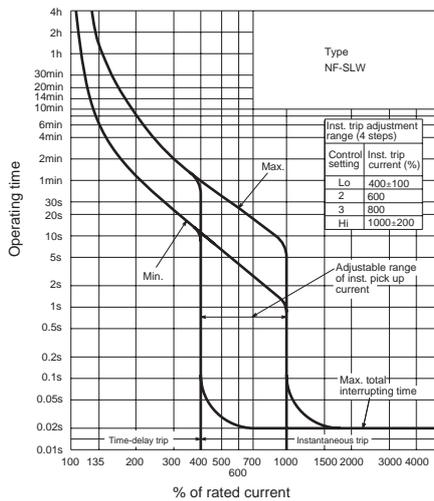
NF-SLW



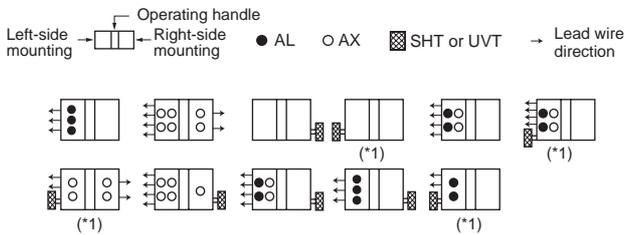
Type NF-SLW

Type name		NF-SLW		
Rated current In (Amp.) at ambient temperature 40°C		500 600		
Number of poles		3		
Rated short-circuit breaking capacities (kA)	UL 489	Rated voltage (AC V)		
		AC	600Y/347V	20
			480V	35
	240V		85	
	IEC 60947-2 JIS C 8201-2 (lcu/lcs)	Rated insulation voltage Ui (V)		690
		AC	690V	10/10
500V			30/30	
440V			42/42	
400V	45/45			
	230V	85/85		

Operating Characteristics

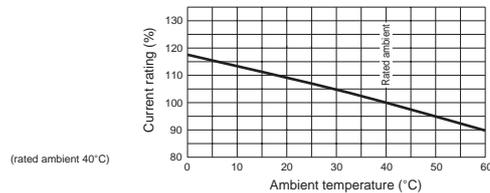


Internal Accessories



Note: (*1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.

Ambient Compensating Curve

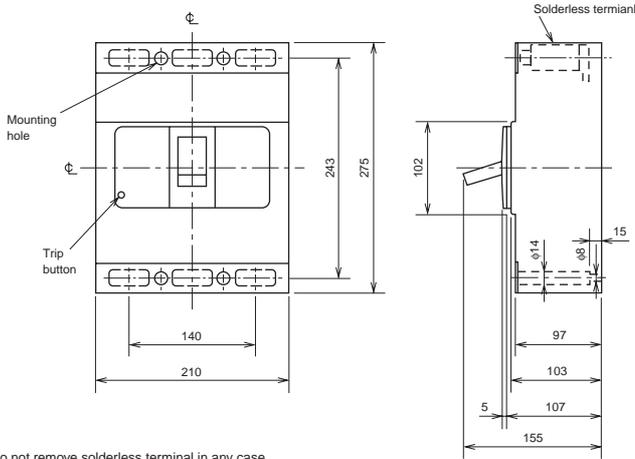


External Accessories

Accessories	Type name	Accessories	Type name	
Operating handle	F	F6SLW	Terminal cover Large	
	S	S4SKW		TC-L
	V	V6SLW (*1)		TCL-6SLW
Handle lock device	HL	HL-4SP		

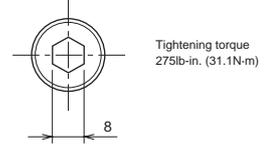
Note: (*1) Attach the letter "F" to the end of designation for a fixed type.

Front connection (Solderless terminal)



Note: Do not remove solderless terminal in any case.
Standard attached parts
Mounting screw:M6×35 (4pcs), Insulating plate: (1pc)

Hexagon socket set screw



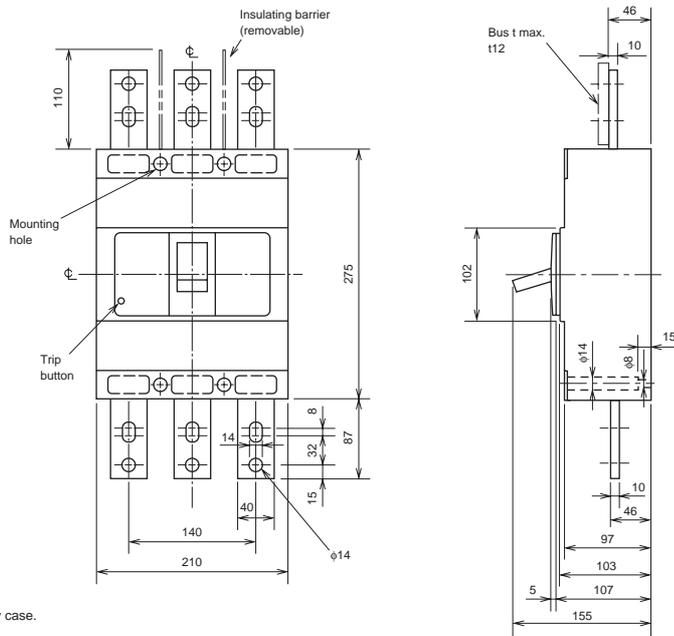
UL

Amperage ratings	Wire size
500A, 600A	250-500MCM CU ONLY

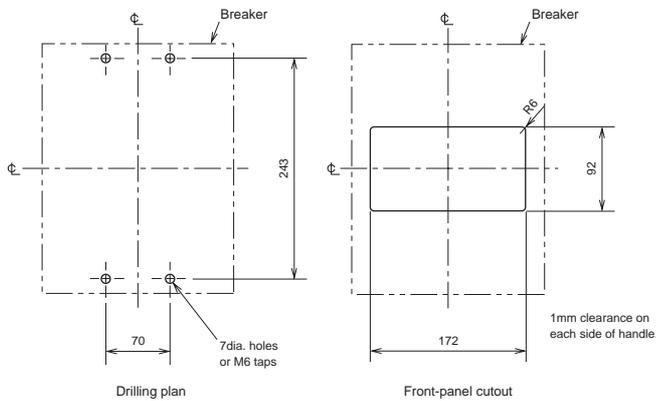
IEC

Amperage ratings	Wire size (IEC 60228)	
	Class 2	Class 5
500A, 600A	95-185mm ²	120-185mm ²

Front connection (Busbar terminal)

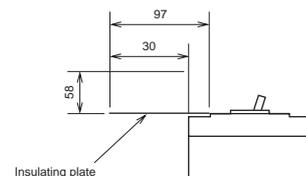


Note: Do not remove busbar terminal in any case.
Standard attached parts
Mounting screw:M6×35 (4pcs), Insulating barrier: (2pcs), Insulating plate: (1pc)



CAUTION

When mounted in steel or cast box cover must be insulated as shown.
58mm air gap to cover or 0.8mm fibre insulating plate extending 12.7mm out from each side of breaker.



(Line)

6. Characteristics and Dimensions

Miniature Circuit Breakers

BH
BH-P



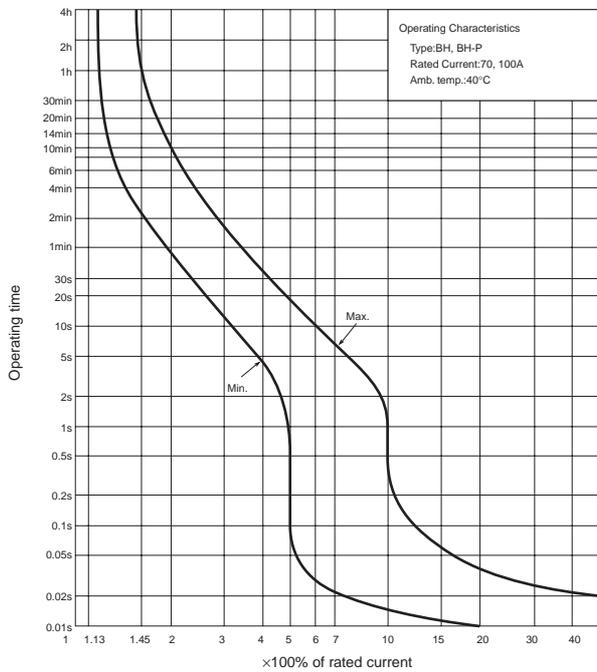
Type BH



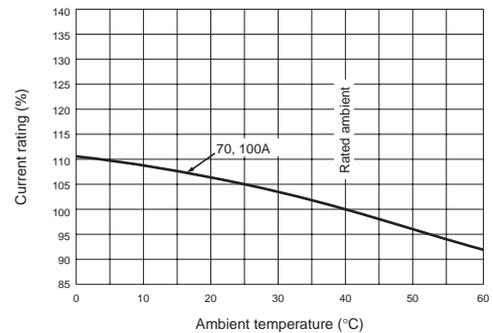
Type BH-P

Type		BH			BH-P		
Number of poles		1	2	3	1	2	3
Rated current (A) at ambient temperature 40°C		70	70, 100	70, 100	70	70, 100	70, 100
Rated voltage (V)		AC			230/400		
		DC			125		
Breaking capacity (kA) sym.	IEC60898	AC230/400V	3	—	3	—	—
	—	AC400V	—	3	—	—	3
	—	DC125V	1			1	

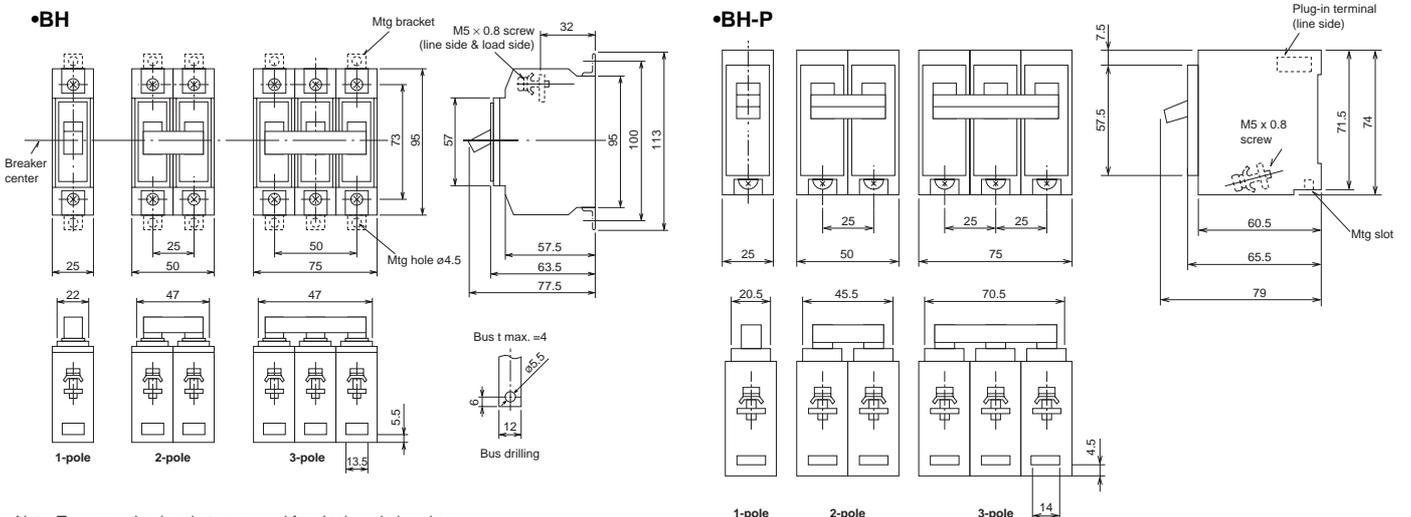
Operating Characteristics



Ambient Compensating Curve



Outside Dimension Diagram



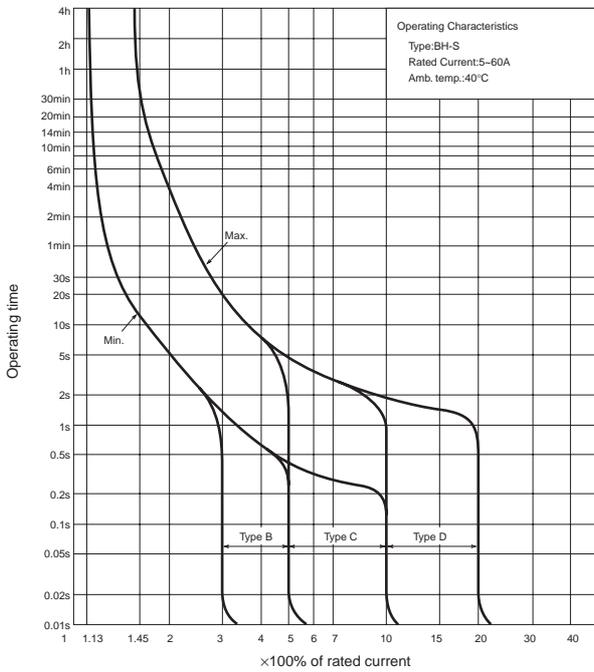
BH-S



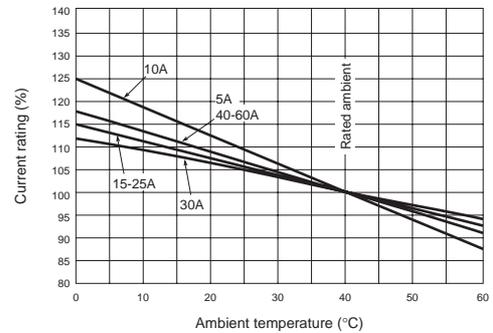
Type BH-S

Type		BH-S M3			BH-S M6		
Number of poles		1	2	3	1	2	3
Rated current (A) at ambient temperature 40°C		5, 10, 15, 20, (25), 30, 40, 50, 60	10, 15, 20, (25), 30, 40, 50, 60	15, 20, (25), 30, 40, 50, 60	5, 10, 15, 20, (25), 30, 40, 50, 60	10, 15, 20, (25), 30, 40, 50, 60	15, 20, (25), 30, 40, 50, 60
Rated voltage (V)		AC 230/400 DC —	400	400	230/400	400	400
Breaking capacity (kA) sym.	IEC60898	AC230/400V	3	—	6	—	—
	—	AC400V	—	3	—	—	6
	—	DC125V	—	1	—	1	—

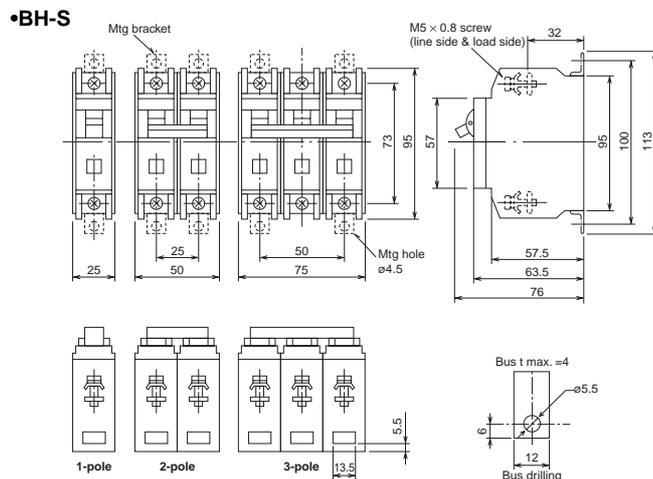
Operating Characteristics



Ambient Compensating Curve



Outside Dimension Diagram



Note: Two mounting brackets are used for single-pole breakers. and four for two-pole and three-pole breakers.

6. Characteristics and Dimensions

Miniature Circuit Breakers

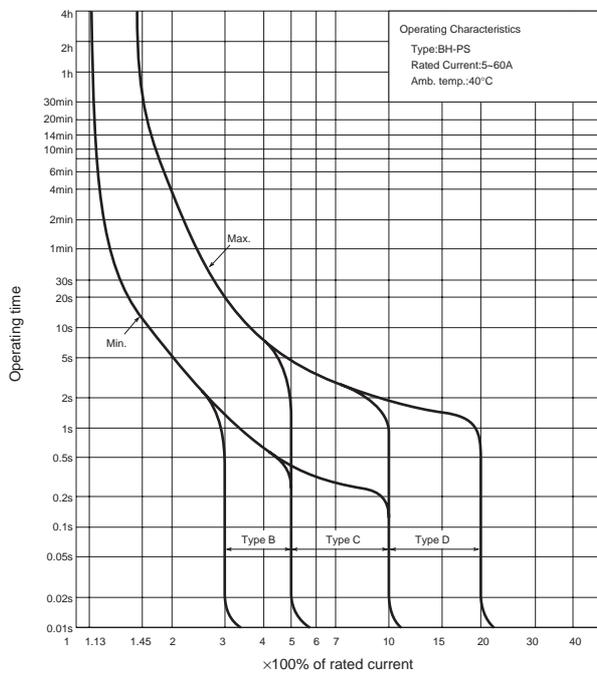
BH-PS



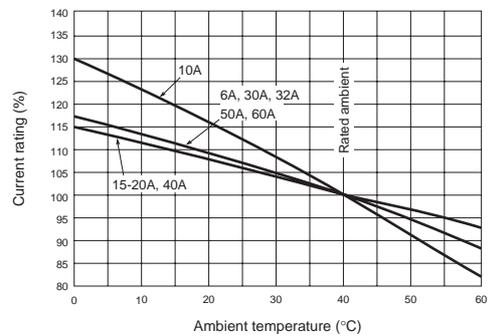
Type BH-PS

Type		BH-PS M3			BH-PS M9		
Number of poles		1	2	3	1	2	3
Rated current (A) at ambient temperature 40°C		10, 15, 20, 30, 40, 50, 60	10, 15, 20, 30, 40, 50, 60	15, 20, 30, 40, 50, 60	6, 10, 16, 20, (25), 32, 40, 50, 60	10, 16, 20, (25), 30, 40, 50, 60	10, 16, 20, (25), 32, 40, 50, 60
Rated voltage (V)		AC	230/400	400	400	230/400	400
		DC	—	125	—	—	
Breaking capacity (kA) sym.	IEC60898	AC230/400V	3	—		9	—
	—	AC400V	—	3		—	9
	—	DC125V	—	1	—	—	

Operating Characteristics

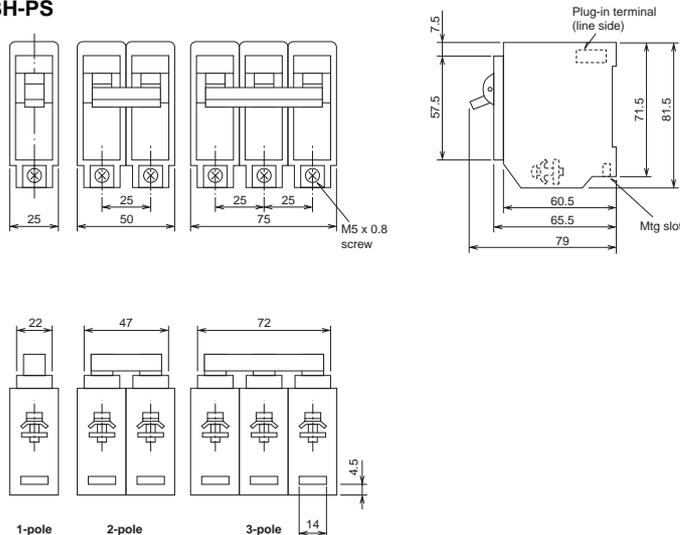


Ambient Compensating Curve



Outside Dimension Diagram

•BH-PS



6. Characteristics and Dimensions

DIN Series

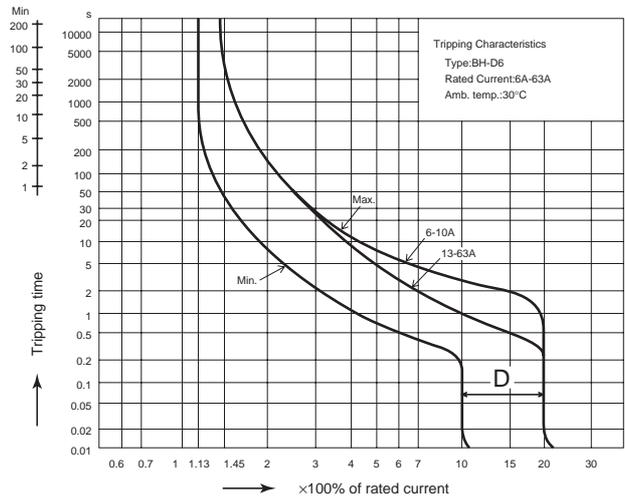
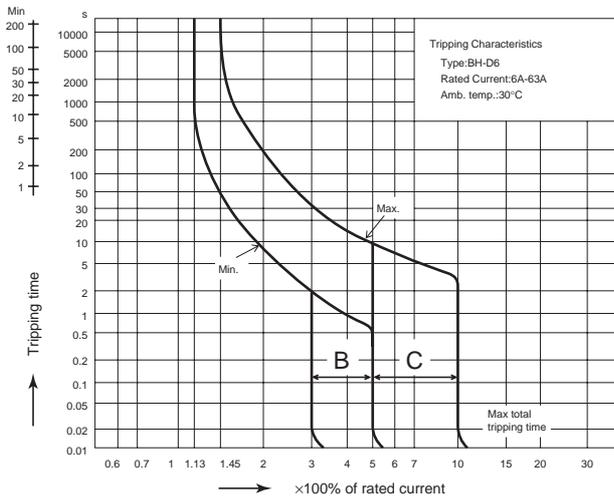
BH-D6



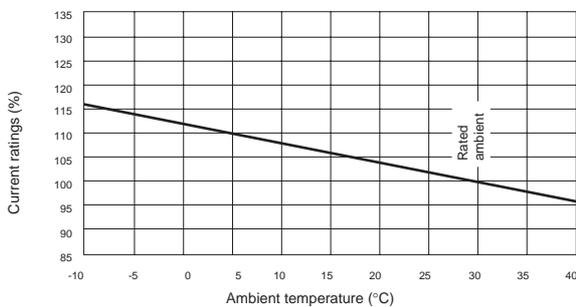
Type BH-D6

MCB	BH-D6 (IEC60898)				
Number of poles	1	2	3	4 (3+N)	2 (1+N)
Rated current (A) at ambient temperature 30°C	6, 10, 13, 16, 20, 25, 32, 40, 50, 63	6, 10, 13, 16, 20, 25, 32, 40, 50, 63	6, 10, 13, 16, 20, 25, 32, 40, 50, 63	6, 10, 13, 16, 20, 25, 32, 40, 50, 63	6, 10, 13, 16, 20, 25, 32, 40
Rated voltage (VAC)	230/400	400	400	400	230
Breaking capacity (kA) sym. (IEC60898)	6				

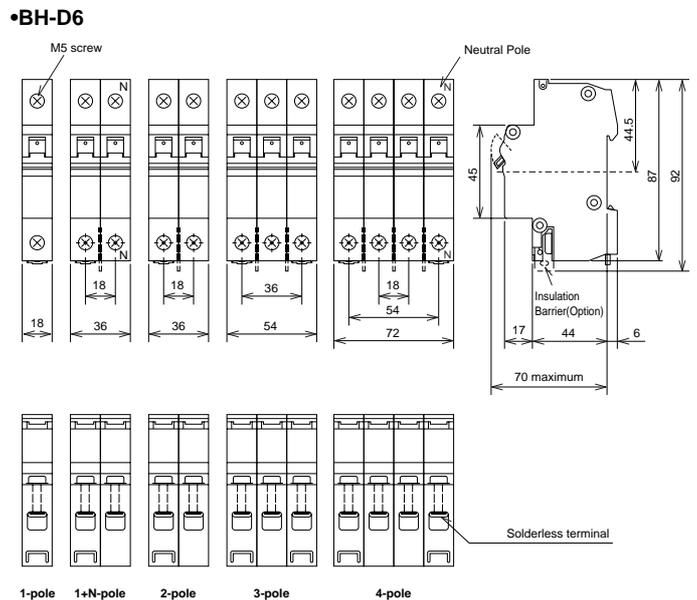
Operating Characteristics



Ambient Compensating Curve



Outside Dimension Diagram



6. Characteristics and Dimensions

DIN Series

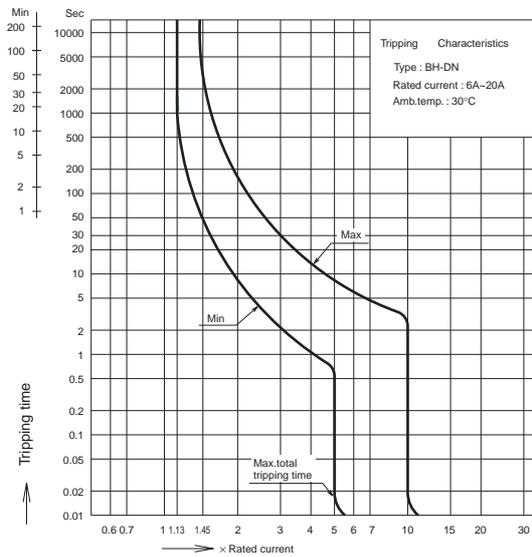
BH-DN



Type BH-DN

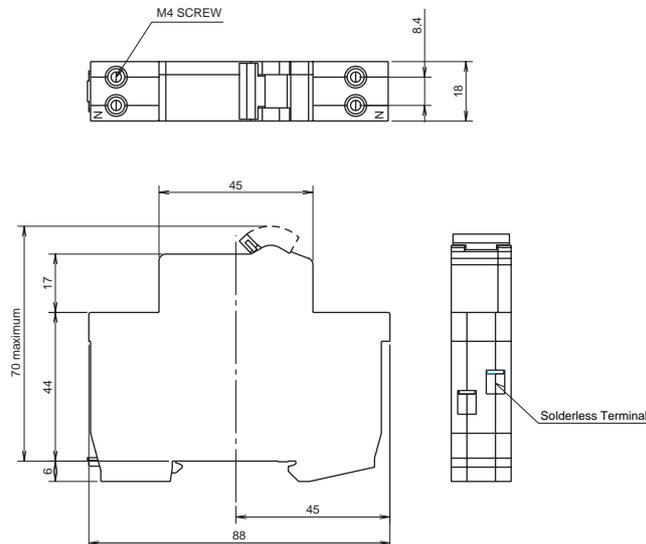
MCB	BH-DN (IEC60898)
Number of poles	2 (1+N)
Rated current (A) at ambient temperature 30°C	6, 10, 16, 20
Rated voltage (VAC)	230
Breaking capacity (kA) sym. (IEC60898)	4.5

Operating Characteristics



Outside Dimension Diagram

•BH-DN



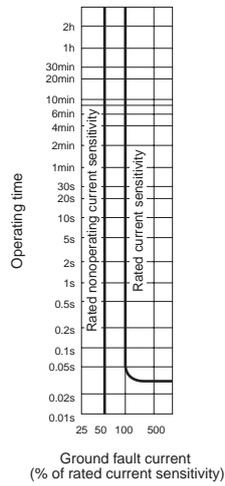
BV-D



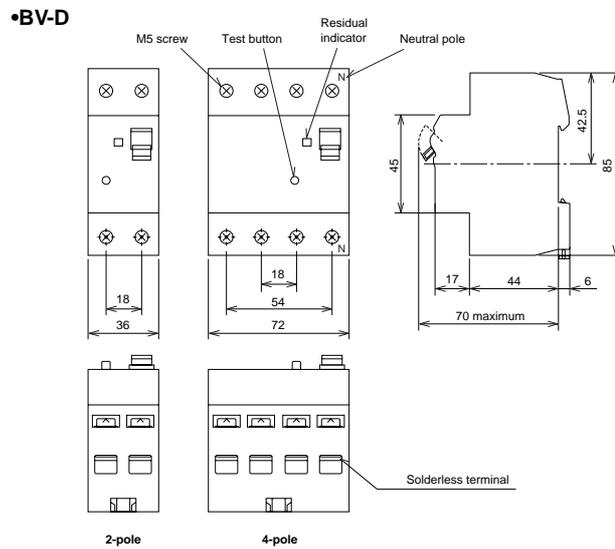
Type BV-D

RCCB	BV-D (IEC61008)	
Number of poles	2 (1+N)	4 (3+N)
Rated current (A) at ambient temperature 30°C	25, 40, 63	
Rated voltage (VAC)	230	230/400
Rated current sensitivity I Δ n (mA)	30, 300	
Max. operating time (sec) at 5I Δ n	0.04	
Pulsating current sensitivity	Type AC	
Rated conditional short-current (kA)	6	

Operating Characteristics



Outside Dimension Diagram



6. Characteristics and Dimensions

DIN Series

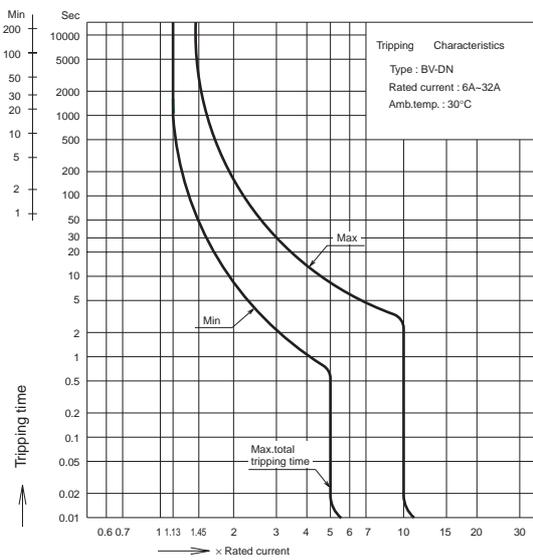
BV-DN



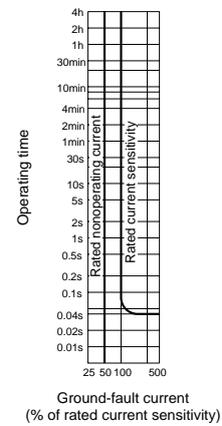
Type BV-DN

RCBO	BV-DN (IEC61009)
Number of poles	2 (1+N)
Rated current (A) at ambient temperature 30°C	6, 10, 16, 20, 25, 32
Rated voltage (VAC)	230
Rated current sensitivity $I\Delta n$ (mA)	30, 100, 300
Max. operating time (sec) at $5I\Delta n$	0.04
Pulsating current sensitivity	Type AC
Breaking capacity (kA) sym (IEC61009)	4.5

Operating Characteristics

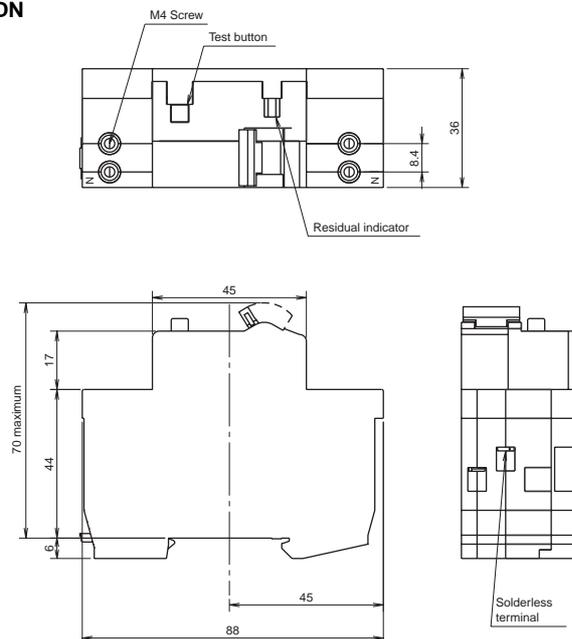


Leakage Tripping characteristics



Outside Dimension Diagram

•BV-DN



KB-D

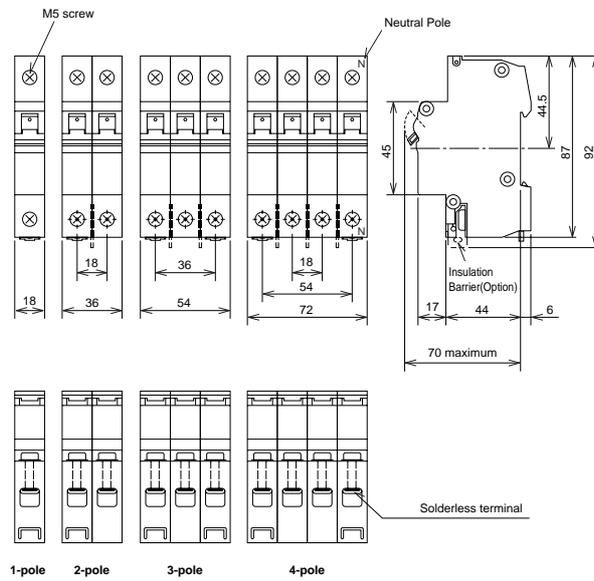


Type KB-D

Isolating switch	KB-D (IEC60947-3)			
Number of poles	1	2	3	4 (3+N)
Utilization category	AC22A class			
Rated current (A) at ambient temperature 30°C	32, 63, 80			
Rated voltage (VAC)	230	400		
Shot time withstand current (A)	20 × I _n , 1s			
Shot-circuit making capacity (A)	20 × I _n			

Outside Dimension Diagram

•KB-D



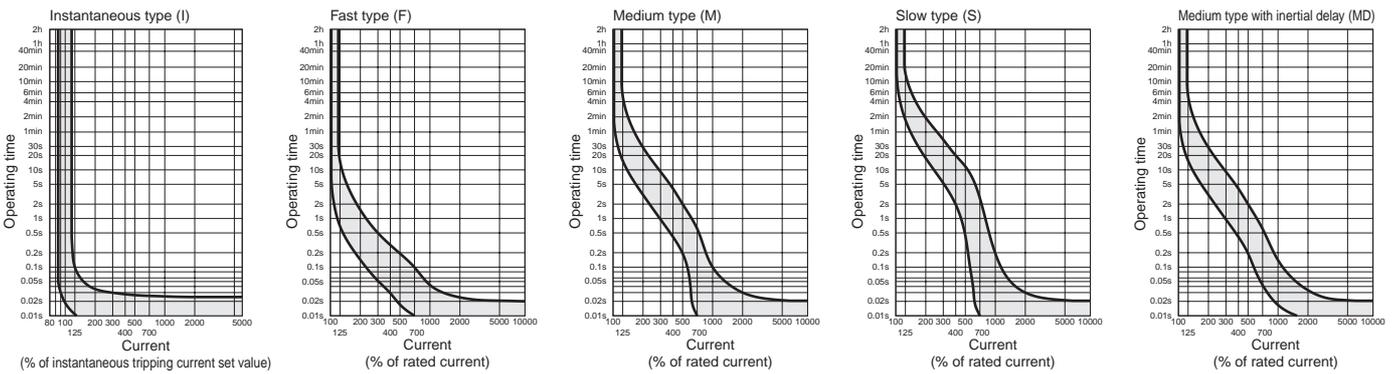
CP-S



Type CP-S

Frame (A)		30			
Type		CP-S			
Number of poles		1	2	3	
Rated impulse withstand voltage U_{imp} (kV)		2.5			
Rated current (A)		0.05, 0.1, 0.25, 0.3, 0.5, 0.75 1, 2, 2.5, 3, 5, 7, 7.5, 10, 15, 20, 25, 30			
Rated short-circuit capacity (kA)	UL1077	Rated voltage (V)	AC (V)	250	—
			DC (V)	65	—
		AC	1.5kA at 250V	—	
	DC	1kA at 65V	—		
	IEC 60934 EN 60934 (Icn)	Rated insulation voltage U_i (V)		250	
		AC	1.5kA at 230V, 2.5kA at 120V		
DC		1kA at 60V	1kA at 120V (1kA at 60V)	1kA at 60V	
JIS C 4610 (Icn)	Rated insulation voltage U_i (V)		250		
	AC	1.5kA at 250V, 2.5kA at 125V			
	DC	1kA at 65V	1kA at 125V (1kA at 65V)	1kA at 65V	
AC-DC common use		—			
Operating characteristics		Instantaneous type (I) Medium type (M),(MD) Slow type (S),(SD) Fast type (F),(FD)			
Mode of tripping		Instantaneous type (I): magnetic only Other type (M, MD, S, SD, F, FD):hydraulic-magnetic			

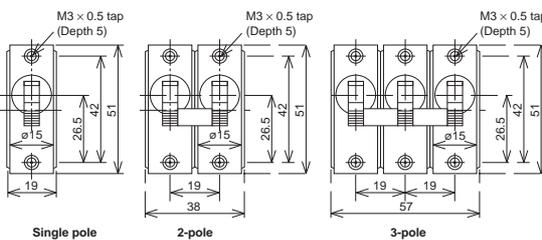
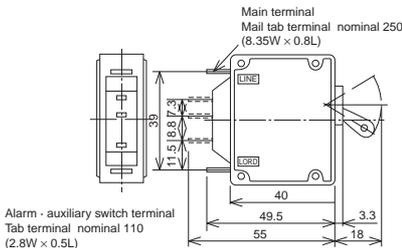
Operating Characteristics



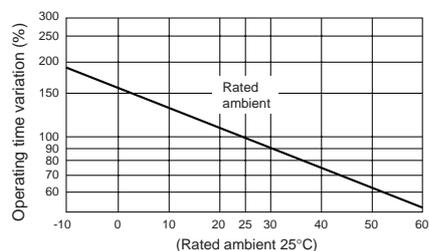
Outside Dimension Diagram

CP-S

Series <With auxiliary switch (AX), With series alarm switch (AL)>
Switch <With switch type auxiliary switch (AX)>

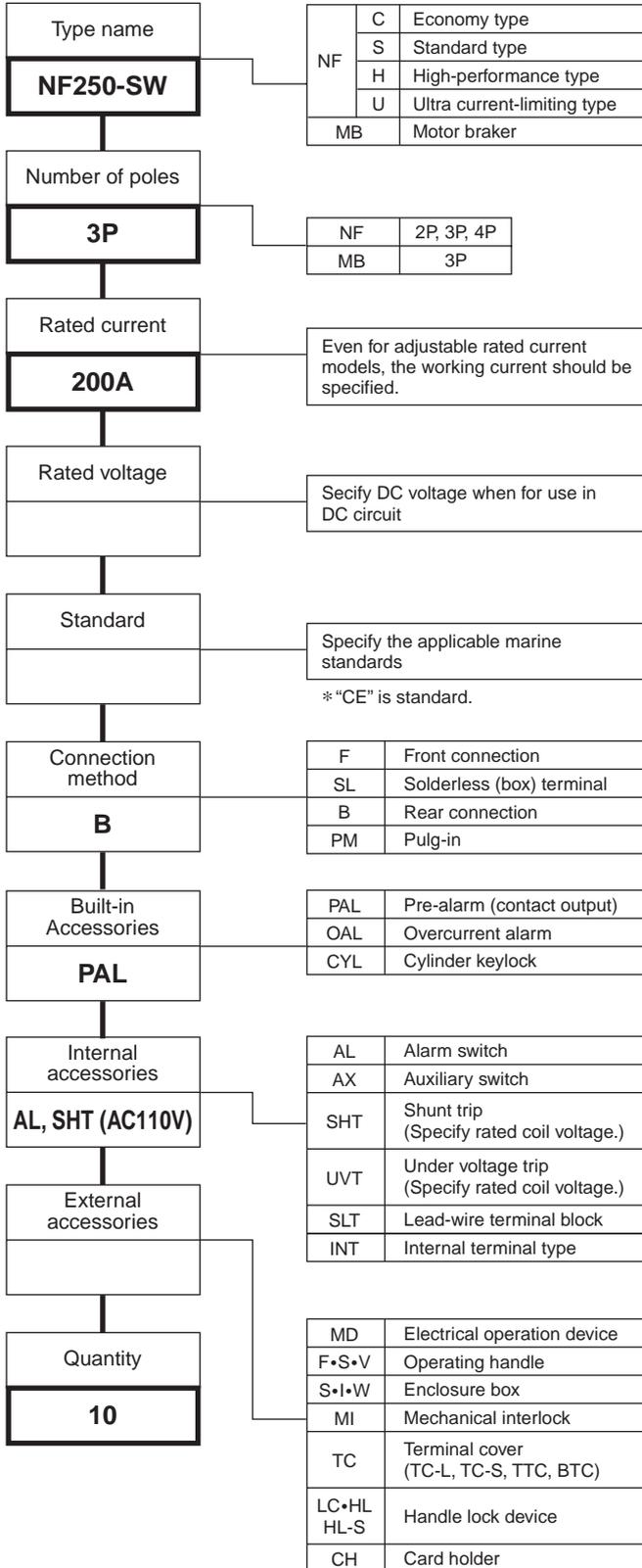


Temperature Characteristics

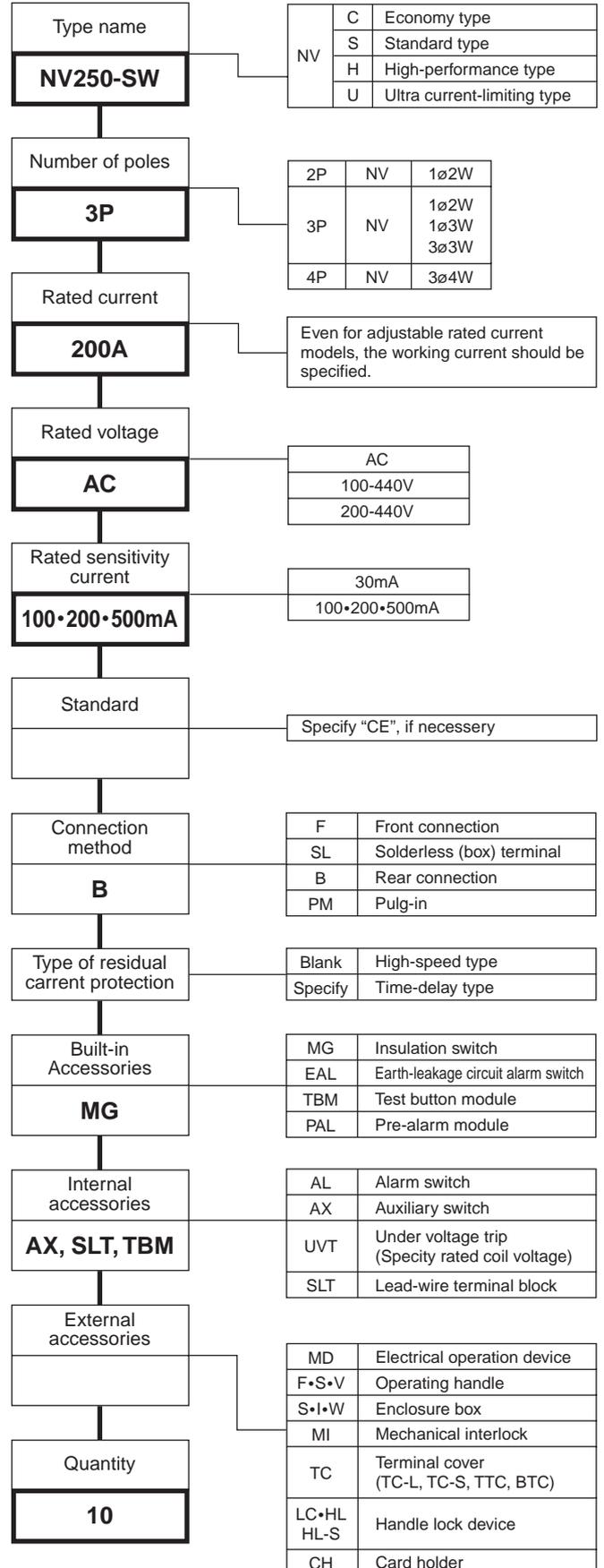


7. Ordering Information

Molded-Case Circuit Breakers



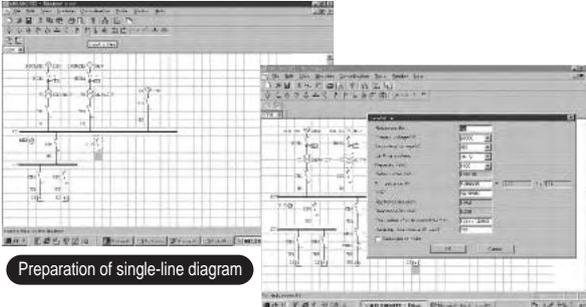
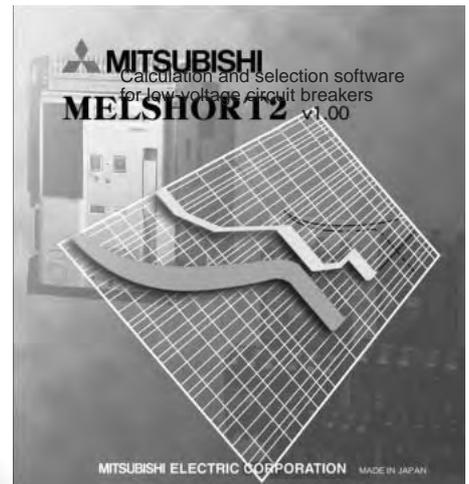
Earth-Leakage Circuit Breakers



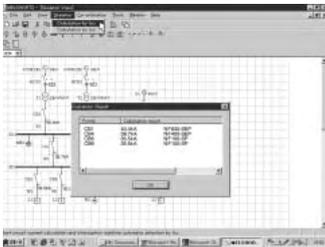
8. Melshort 2

A more rational and easier breakers selections

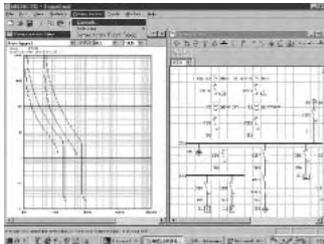
This software program ensures the easy selection of low-voltage circuit breakers according to the required rated breaking capacity and the related equipments



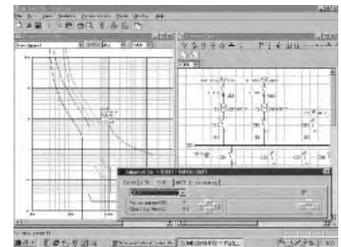
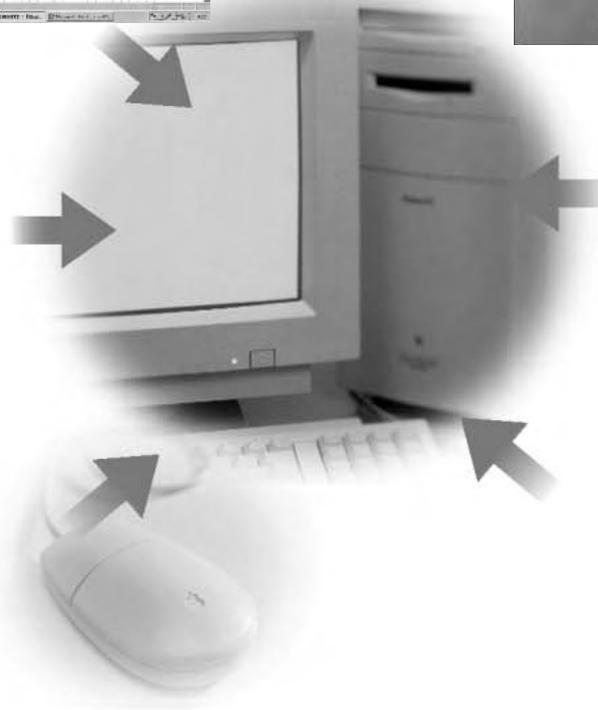
Preparation of single-line diagram



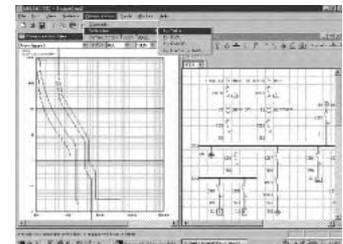
Short-circuit current calculation



Examination of cascade interruption combination



Coordination between high-voltage protection equipments



Examination of selective interruption

Advantages

● Contents of a software

The program's menu allows not only short-circuit current calculations but also the examination of various protection coordination.

- Preparation of single-line connection diagrams.
- Short-circuit calculations.
- Automatic selection of breaker type.
- Selection of breaker type for cascade interruption combination.
- Selection of breaker type for selective interruption combination.
- Examination of coordination between high-voltage protection equipments.
- Protection coordination with motor start current.

■ Selectable products menu

Low-voltage circuit breaker:
MCCBs, ELCBs, ACBs, MCBs, Contactors,
Thermal relays, High-voltage OCRs

● Improvement of selection efficiency

Because the coordination between various protection systems can be examined and breakers can be selected interactively using the personal computer screen, simple, accurate and speedy operation is ensured.

● Maintenance of a software

The user can download the latest software updates by accessing Mitsubishi's LVS home page on the Internet.

<http://www.fukuyama.melco.co.jp/lvs>

■ Personal computer specifications

Operating system: Windows 95/98/NT4.0/2000/XP
CPU: 166 MHz or faster
RAM memory size: min 32 MB
Free hard disk capacity: min 50 MB
Display resolution: min 640 × 480 dots
CD-ROM Drive: Double speed or higher

9. LOW-VOLTAGE SWITCHGEARS TECHNICAL

<http://global.MitsubishiElectric.com/lvs>

Mitsubishi's up to date low-voltage switchgear from a World Wide Web (WWW) browser. Information

Advantages

■ Substantial menu

Wide ranging technical information is classified into 6 groups.

■ Expert oriented information

In addition to catalogs, including previous catalog editions and technical data and other information, users get answers to their technical questions.

■ Enhanced information collection efficiency

By connecting your personal computer to the Internet, you can access the latest information simply and quickly without a need to increase storage space.

Model menu

■ Molded-Case Circuit Breakers (MCCB)

Since 1933, when Japan's first molded case circuit breaker was released, we have continuously provided circuit breakers with monitors to ensure uninterrupted power supplies, the world's first harmonics current proof and surge proof IC earth leakage circuit breakers, and other new products as needed. We have completed a 21st Century progressive super services for the circuit breaker. In doing so, we have focused on urgently required advanced technology and futuristic ease of use.

■ Earth-Leakage Circuit Breakers (ELCB)

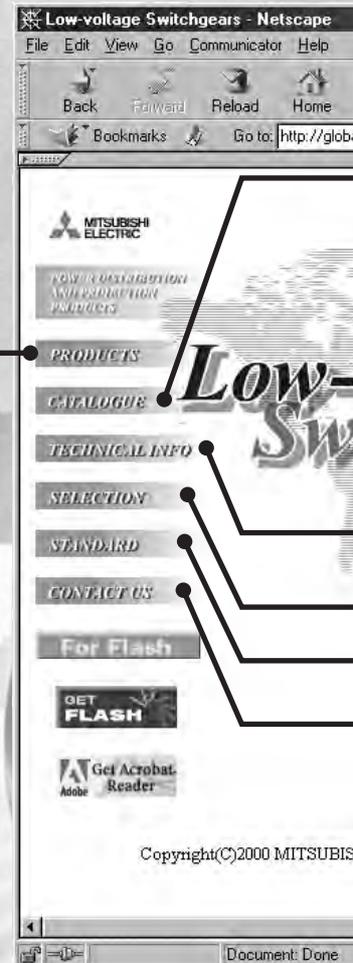
■ Miniature Circuit Breakers (MCB)

■ Circuit Protectors (CP)

Compact, high-performance protectors against short-circuit and overload, and for control circuit operation for electronic equipment, office machinery, and machine tools.

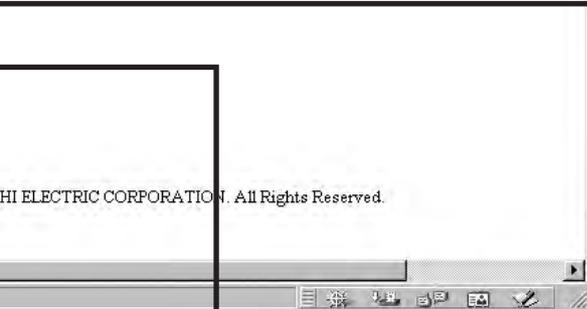
■ Air Circuit Breakers (ACB)

All models have electronic tripping relays ensuring high reliability and excellent performance.



INFORMATION SERVICE VIA THE INTERNET

*technical information is quickly obtained
is continuously updated and supplemented.*



■ Catalogue

- The latest catalogue and old editions are displayed for reading as is.

■ Technical Information

- Access technical and maintenance data on our low-voltage switchgear.

■ Selection (Available soon)

- Downloading to the latest CD-ROM software version (purchased separately) ensuring easy short circuit current calculation of our low-voltage switchgears and type selection. Downloading is available only those who purchase CD-ROM "MELSHORT2" for Mitsubishi selection.

■ Standard

- Access international standards for specific types.

■ Contact us at :

- **Information center**
Our area by area sales centers and contact sites around the world are conveniently located.
- **Technical support questions**
Access information on products, handling, and maintenance of low-voltage switchgear via the Internet.
- **Web problems : Comment**
If you have comments on the technical information service, please contact us via the Internet.

Related site

We provide technical information on products via the Internet as well as low-voltage switch-gear technical information service.

Mitsubishi Electric Corporation M's DINER Home page
---http://www.melco.co.jp/index_e.htm

Mitsubishi Electric Corporation GLOBAL Home page
---<http://www.mitsubishi.com/>

Mitsubishi Electric Europe B.V.-Germany
---<http://www.mitsubishi-automation.com/>

MEMO

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Australia	Mitsubishi Electric Australia Pty. Ltd	348 Victoria Road, Rydalmere, N.S.W. 2116, Australia	+61-2-9684-7586
Belgium	Emac S.A.	Industrialaan 1, B-1702 Groot-Bijgaarden, Belgium.	+32-(0)2-4810211
Chile	RHONA S.A.	Vte. Agua Santa 4211 Casilla 30-D (P.O. Box) Viña Del Mar, Chile	+56-32-320652
China	Mitsubishi Electric Automation (Shanghai) Limited	80 Xin Chang Road 4th Floor Shanghai Intelligence Fortune Leisure Plaza Huang Pu district Shanghai 200003 P.R.China	+86-(0)21-6120-0808
Colombia	Proelectrico Representaciones S.A.	Cra 53 No 29C-73 U.I.C.- Medellín. COLOMBIA.	+57-4-235-00-28
Denmark	Louis Poulsen CO. A/S	Geminivej 32, DK-2670 Greve, Denmark.	+45-(0)43-95-95-95
Egypt	CAIRO ELECTRICAL GROUP	P.O. BOX: 165-11516, Maglis El-Shaab Cairo-Egypt.	+20-2-7961337
Germany	Mitsubishi Electric Europe B.V. German Branch.	Gothaer Strasse 8, 40880 Ratingen, Germany.	+49-(0)2102-4860
Greece	Drepanias Antonios S.A.	52, Arkadias STR.GR 121 32. Peristeri Athens Greece.	+30-1-57-81-599-699
Hong Kong	Mitsubishi Electric Automation (Hong Kong) Limited	10/F Manulife Tower 169 Electric Road North Point. Hong Kong.	+852-28878870
Indonesia	P.T.SAHABAT INDONESIA.	JL Muara Karang Selatan Blok A/Utara No.1 kav. NO.11 P.O. Box 5045/Jakarta/11050. Jakarta Indonesia.	+62-(0)21-6621780
Ireland	Mitsubishi Electric Europe B.V. Irish Branch.	Westgate Business Park, Ballymount, Dublin 24, Ireland.	+353-(0)1-4505007
Italy	Mitsubishi Electric Europe B.V. Italy	C.D.Colleoni-P.Perseo Ing.2, Via Paracelso 12 1-20041 Agrate Brianza (M1)	+390-39-60-531
Israel	GINO INDUSTRIES LTD.	26, Ophir street, IL-32235 Haifa, Israel	+972-(0)4-867 06 56
Korea	MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD.	2 Fl. Dong Seo Game Channel Bldg., 1F 660-11 Deungchon-Dong, Kanguseo-Ku, Seoul, 157-030 Korea	+82-2-3668-6567
Laos	SOCIETE LAO IMPORT-EXPORT	43-47 Lane Xang Road P.O. BOX 2789 VT Vientiane, Laos	+856-21-215043, 21-215110
Lebanon	COMPTOIR D'ELECTRICITE GENERALE-Liban	Cebaco Center-Block A. Autostrade Dora, P.O. BOX: 11-2597 Beirut-Lebanon.	+961-1-240455
Malaysia	mittric Sdn Bhd	12A, Jalan Pemberita U1/49, Temasya Industrial Park, Glenmarie, 40150 Shah Alam, Selangor, Malaysia	+603-5569-3748
Myanmar	PEACE MYANMAR ELECTRIC CO., LTD.	NO. 137/139 Botataung Pagoda Road, Botataung Town Ship 11161, Yangon, Myanmar.	+95-(0)1-202589, 202449, 202590
Nepal	Watt & Volt House Co., Ltd.	KHA 2-65, Volt House Dilli Bazar Post Box: 2108, Kathmandu, Nepal	+977-1-411330
New Zealand	Melco Sales (N.Z.) Ltd.	1 Parliament Street Lower Hutt. New Zealand.	+64-4-569-7350
Norway	SCANELEC	Leirvikasen 43B, N5020 Bergen, Norway.	+47-55-506000
Pakistan	Prince Electric Co.	16 Brandreth Road Lahore 54000. Pakistan.	+92-(0)42-7654342
Philippines	EDISON ELECTRIC INTEGRATED, INC.	24th Fl. Galleria Corporate Center Edsa Cr, Ortigas Ave. Quezon City, Metro Manila. Philippines.	+63-(0)2-643-8691
Poland	MPL Technology Sp zo.o.	ul. Sliczna 36 31-444 Krakow, Poland.	+48-(0)12-632-28-85
Saudi Arabia	CENTER OF ELECTRICAL GOODS	P.O. BOX: 15955, Riyadh 11454, Saudi Arabia.	+966-1-4770149
Singapore	MITSUBISHI ELECTRIC ASIA PTE LTD.	307 Alexandra Road #05-01/02 Mitsubishi Electric Building Singapore 159943	+65-6473-2308
Slovenia	INEA d.o.o.	Ljubljanska 80, SI-61230 Domzale, Slovenia.	+386-(0)17-21 80 00
South Africa	Circuit Breaker Industries LTD.	Private Bag 2016. Isando 1600, Johannesburg, South Africa	+27-11-928-2000
Spain	Mitsubishi Electric Europe B.V. Spanish Branch.	Caretera De Rubi 76-80, 08190 - Sant Cugat Del Valles (Barcelona) Spain	+34-93-595-3131
Sweden	Euro Energy Components AB	Box 103 48 S-434 24 Kungsbcka, Sweden.	+46-(0)300-69 00 40
Switzerland	Trielec A G	Mühentalstrasse 136, 8201 Schaffhausen, Switzerland	+41-(0)52-6258425
Taiwan	Setsuyo Enterprise Co., Ltd.	6F, NO. 105 Wu-Kung 3rd rd., Wu-Ku Hsiang, Taipei Hsien Taiwan	+886-(0)2-2298-8889
Thailand	UNITED TRADING & IMPORT CO. LTD.	77/12 Bumrungruang Road, Klong Mahanak, Pomprab Bangkok 10100.	+66-223-4220-3
The Netherlands	Imtech Marine & Offshore	Postbox 5054, NL-3008 AB-Rotterdam, Netherlands.	+31-(0)10-487 19 11
Turkey	GTS	Fahri Gizden Sokak, Hacıaloglu Apt. No.22/6 TR-80280 Gayrettepe/Istanbul, Turkey.	+90-(0)212-2674011
U.K.	Mitsubishi Electric Europe B.V. UK-Branch.	Travellers Lane, Hatfield, Herts, AL10 8xB, U.K.	+44-(0)1707-276-100
Uruguay	Fierro Vignoli S.A.	P.O. box 20022/Suc Upae, Montevideo. Uruguay.	+598-2-92-08-08
Venezuela	ADESCO C.A.	Lle 8, Calpon Elinsu, La Urbina-EDO, Miranda P.O. BOX 78034 Caracas 1074A., Venezuela	+58-2-241-7634
Vietnam	SA GIANG TECHNO CO., LTD.	47-49 Hoang Sa St., Da Kao Ward, D.1, HCMC	+84-8-910 4763 / 4758 / 4759

Safety Tips : Be sure to read the instruction manual fully before using this product.