Changes for the Better

MITSUBISHI ELECTRIC

MOLDED-CASE CIRCUIT BREAKERS
EARTH-LEAKAGE CIRCUIT BREAKERS

World Super WS Series

Empowering Industries

09 A

INDEX

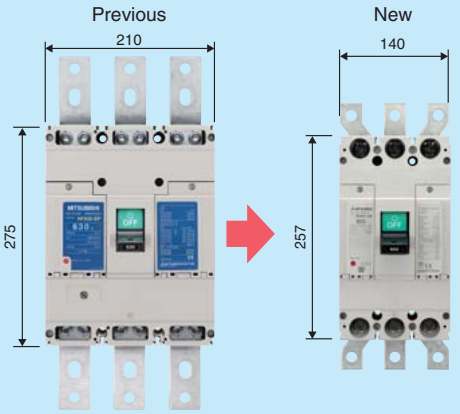
This material has been prepared for those who use the products for manufacturing assemblies, for holding electric works, for holding maintenance and for the others acquainted with electric expertise including those who operate the products (final users).

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.

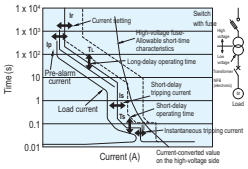
Full range of MITS
(30A to 16

High-Performance

Downsizing of 630AF, New Digital ETR



Volume **60% downsized**



New Digital ETR

Glo

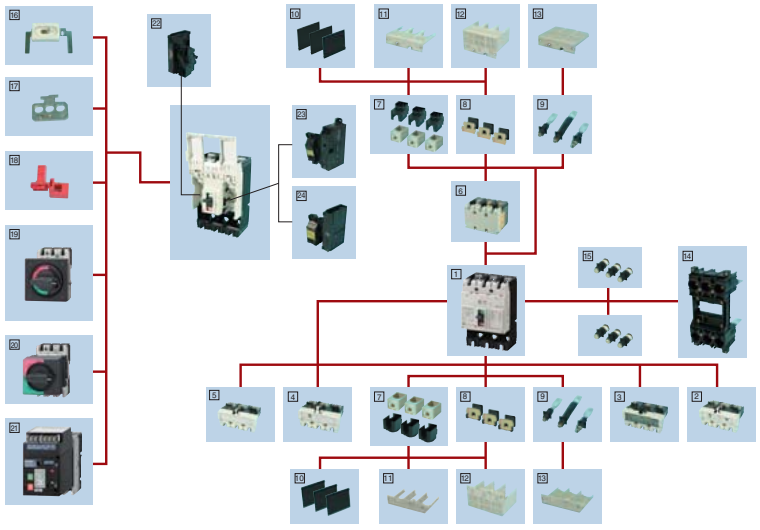
Compliance with w

MITSUBISHI World Super Series

Best Solution

Plenty of accessories, Easy installation

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



World Super WS Series

UBISHI WS Series
00A frame)

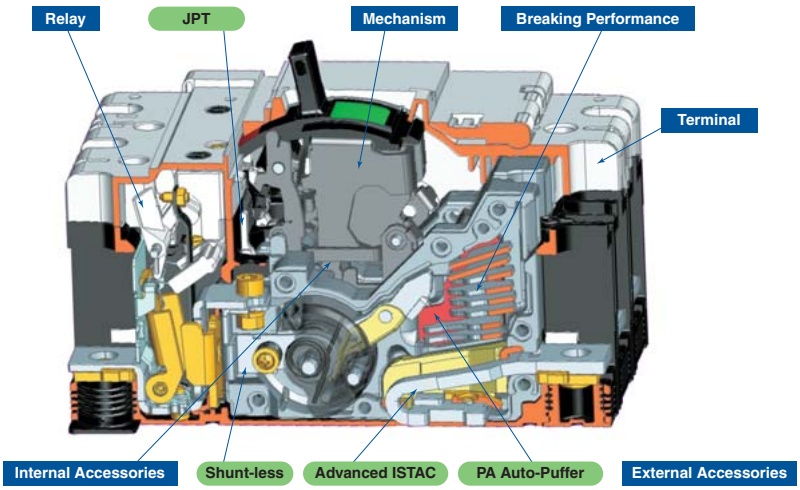
bal

orldwide standards

Designed for Global Application

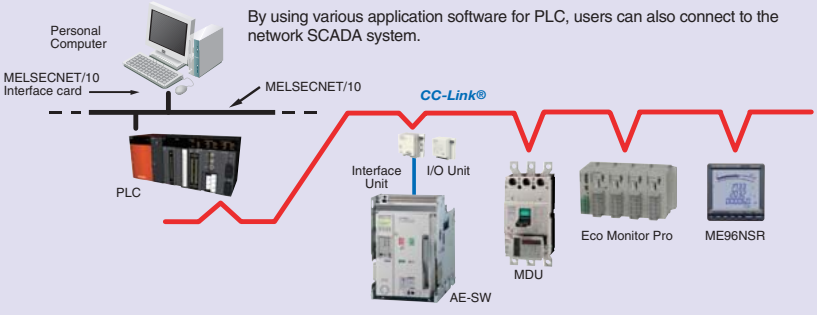
Reliable

High reliability, Best performance



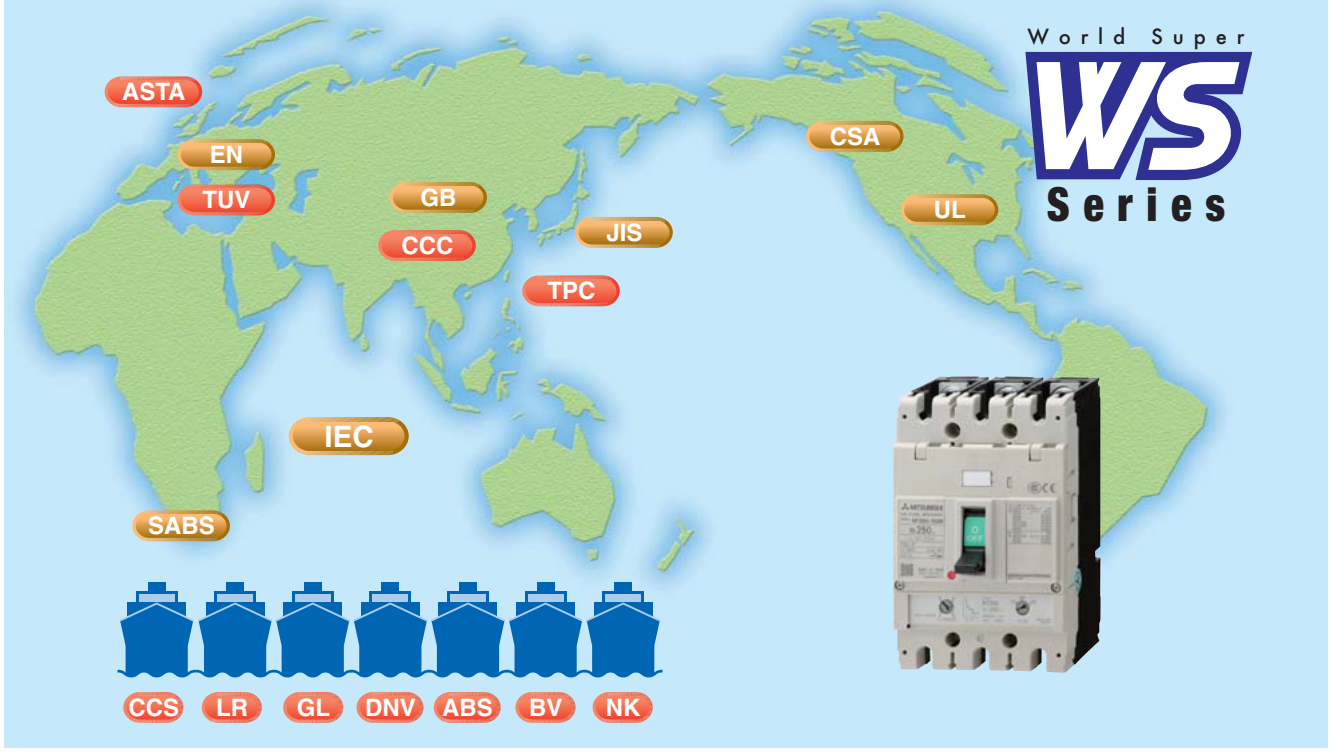
Intelligent

Measuring and communicating



Compliance with worldwide standards

MITSUBISHI World Super Series Designed for Global Application



WS Series International Standard Conformance List

Standards	IEC	JIS	EN	GB	Safety Certification		Marine Approvals						
					UL	CSA	LR	GL	DNV	ABS	BV	NK	CCS
	International	Japan	Europe	China	USA	Canada	UK	Germany	Norway	USA	France	Japan	China

- **Compliance with worldwide standards (IEC/JIS/EN/GB/UL/CSA)**
- **Applicable to marine approvals**
- **New design with Laser Marking**
- **All products with Isolation function**
- **RoHS compliance**

✻ RoHS…The Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment

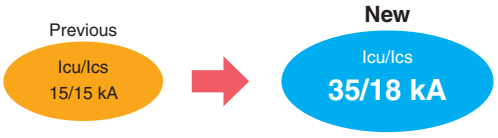
NF250-SGW 3P

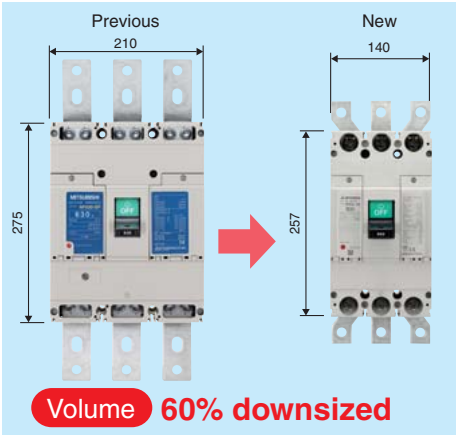
■ Full range of WS Series (up to 1600AF)

	AF	32(30)	63	125	160	250	400	630	800	1000	1250	1600
MCCB	NF-C	NF30-CS	NF63-CW	NF125-CW		NF250-CW	NF400-CW	NF630-CW	NF800-CEW			
	NF-S	NF32-SW	NF63-SW	NF125-SW	NF160-SW	NF250-SW	NF400-SW	NF630-SW	NF800-SEW	NF1000-SEW	NF1250-SEW	NF1600-SEW
				NF125-SGW	NF160-SGW	NF250-SGW	NF400-SEW	NF630-SEW	NF800-SDW		NF1250-SDW	NF1600-SDW
	NF-H		NF63-HW	NF125-HW	NF160-HW	NF250-HW	NF400-HEW	NF630-HEW	NF800-HEW			
				NF125-HGW	NF160-HGW	NF250-HGW	NF400-REW	NF630-REW	NF800-REW			
	NF-U			NF125-RGW		NF250-RGW	NF400-UEW		NF800-UEW			
				NF125-UGW		NF250-UGW						
ELCB	NV-C	NV30-CS	NV63-CW	NV125-CW		NV250-CW	NV400-CW	NV630-CW				
	NV-S	NV32-SW	NV63-SW	NV125-SW		NV250-SW	NV400-SW	NV630-SW	NV800-SEW			
						NV250-SEW	NV400-SEW	NV630-SEW				
	NV-H		NV63-HW	NV125-HW		NV250-HW	NV400-HEW	NV630-HEW	NV800-HEW			
						NV250-HEW	NV400-REW					
	NV-U			NV125-RW		NV250-RW						

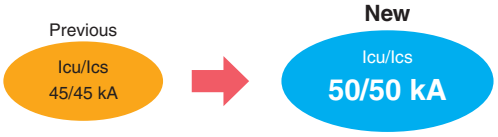
■ 400AF, 630AF & 800AF models easier to use

- 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)



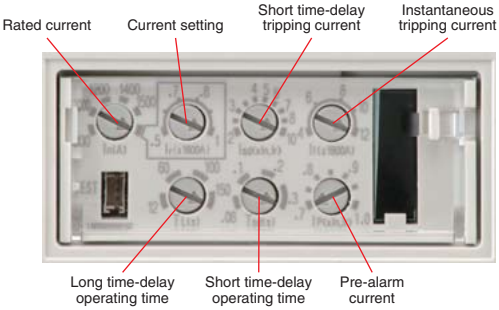


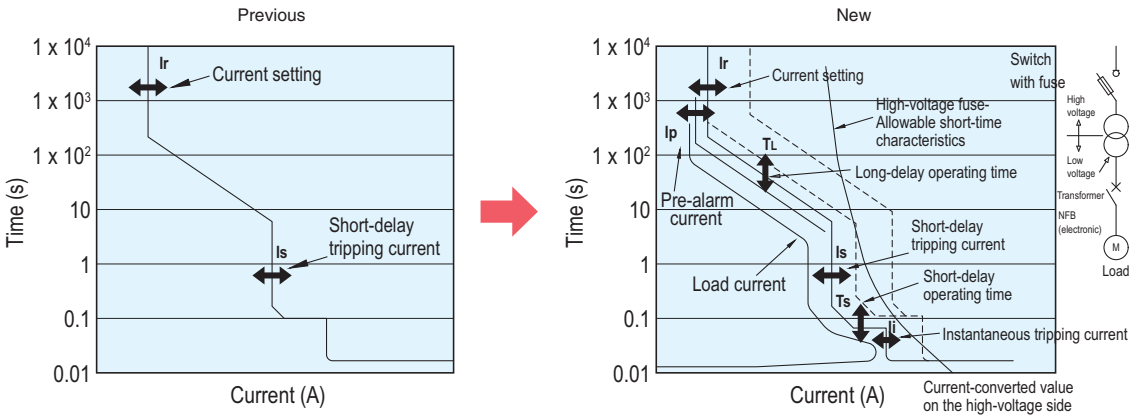
- Improved breaking capacity at 400/415VAC (NF400-SEW, NF630-SW/SEW, NF800-SEW)



■ 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 comformity to IEC Standard.



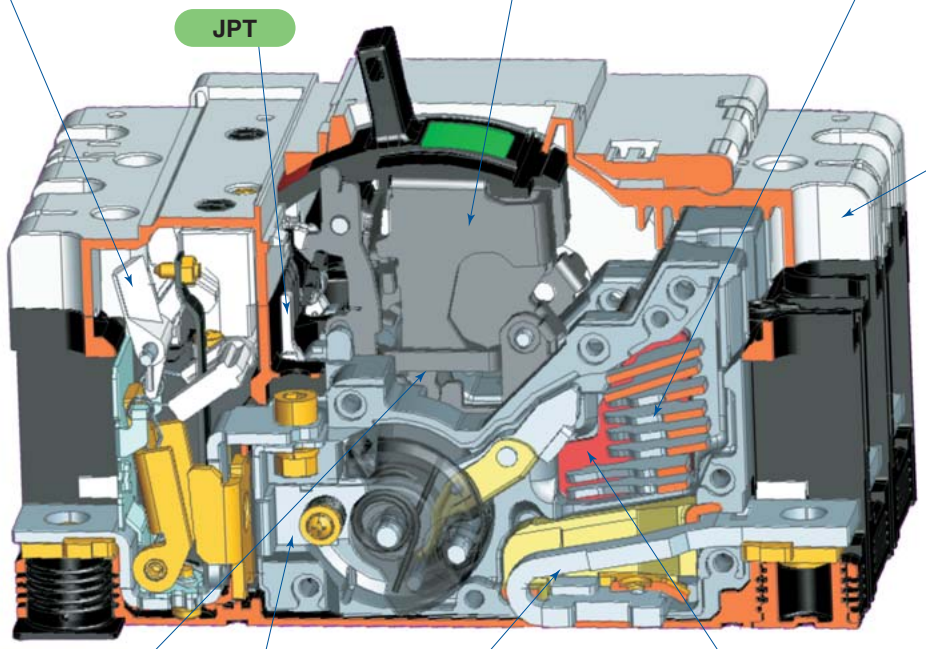


■ Technology for WS Series

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
- F/V handle
- IP40 Terminal cover

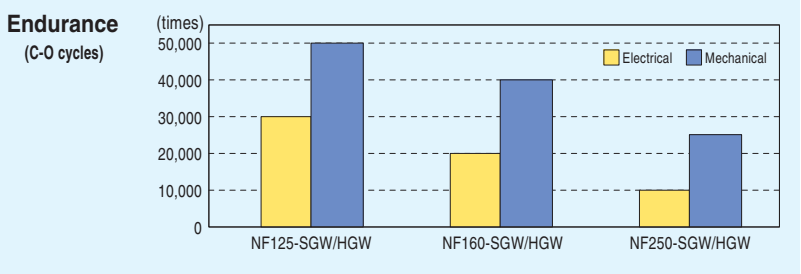
[PA Auto-Puffer]
Polymer Ablation type Auto-Puffer [Adopted on SGW, HGW, RGW, UGW]

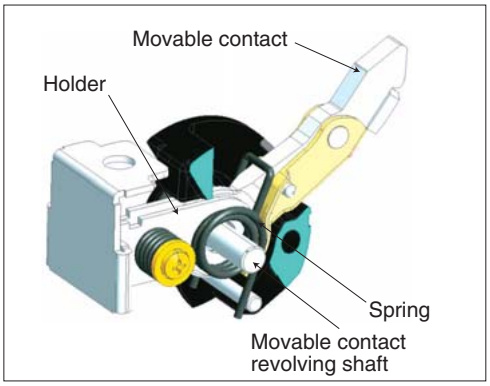
[JPT]
Jet Pressure Trip Mechanism [Adopted on SGW, HGW, RGW, UGW]

[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.

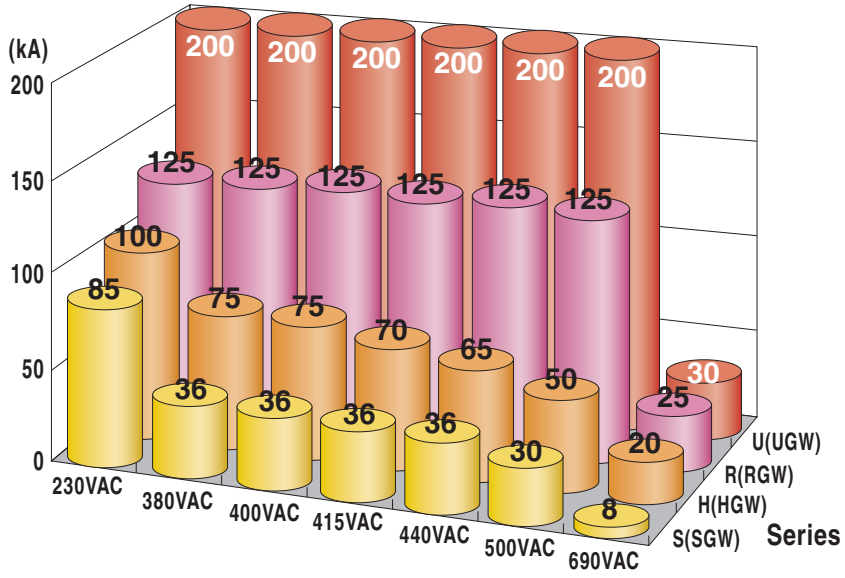


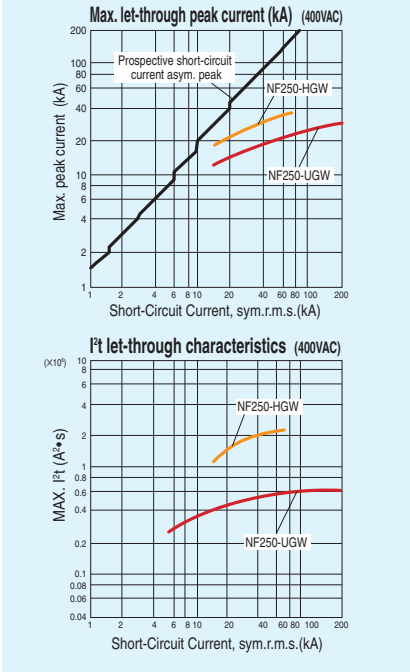


During revolution the movable contact is constantly in contact with the holder, maintaining current flow.

■ Best performance of SGW / HGW / RGW / UGW

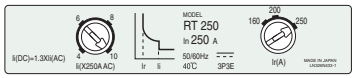
Breaking Capacity Icu/Ics

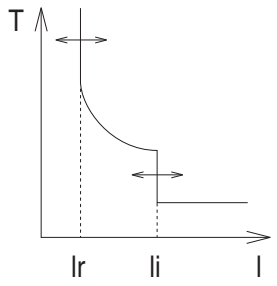




■ 2 types of Relay for SGW / HGW / RGW / UGW

Thermal Adjustable Relay



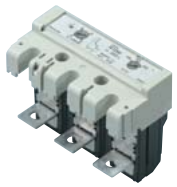


Rating	In(A)		25	40	63	100	125	160	250
Type	NF250-SGW/HGW							●	●
	NF160-SGW/HGW							●	
	NF125-SGW/HGW	Hi			●	●	●		
		Lo	●	●					

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

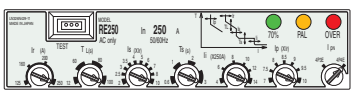
Short-Circuit Protection (Magnetic)		
Tripping threshold Ii	Fixed	Adjustable
	10×In (AC), 13×In (DC)	4 to 10×In (AC), 5.2 to 13×In(DC)

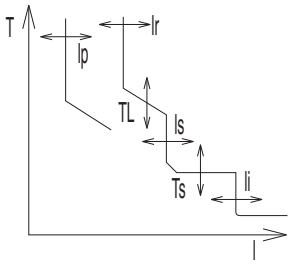
Note (∗1) The type 4P3E is standard. If the type 4P4E is required, specify the type 4P4E separately and explicitly.



Thermal type unit

Electronic Relay





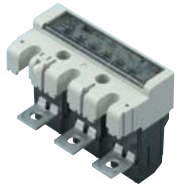
Rating	In(A) (40C)		32	63	100	125	160	250
Type	NF250-SGW/HGW							●
	NF160-SGW/HGW						●	
	NF125-SGW/HGW	Hi		●	●	●		
		Lo	●					

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

Short-Circuit Protection		
STD	Pickup current Is	2-2.5-3-3.5-4-5-6-7-8-10 × Ir step adjustable
	Tripping time Ts(s)	0.06-0.1-0.2-0.3 step adjustable (at 1.5 × Is)
INST	Tripping threshold Ii	4 to 14 × In continuous adjustable

Pre-Alarm (for Indication)		
PAL	Pickup current Ip	0.7-0.75-0.8-0.85-0.9-0.95-1.0 × Ir step adjustable
	Operating time Tp	TL/2

Indicator (LED)	
70%-LED (green)	Lights at 0.7 × Ir
PAL-LED (orange)	Flashs at Ip and Lights at over Tp
Over-LED (red)	Lights at 1.15 × Ir



Electronic type unit

Internal Accessories

The adoption of cassette-type internal accessories simplifies use, and the common use of different voltages realizes a major reduction in the number of types. Additionally, UVTs are now available for ELCBs and time delay types have been expanded, offering a wider range of applications.

		Previous models	WS Series (New)
SHT voltage	VAC	(24), (48), 100-120, 200-240, 380-450, (440-550)	24-48, 100-240, 380-550
	VDC	(12), (24), (36), (48), 100, (110), (125), (220)	12, 24-36, 36-48, 100-125, 220-250
UVT voltage	VAC	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
	VDC	(24), (48), 100, (110)	24/48, 100/110, 110/125

3-way Lead Wire (adjustable)

Vertical lead wire terminal block (SHT)

Lead wire to line side

Flying lead wire

✻ Cassette-type Accessories

Giving greater flexibility when upgrading circuits, cassette-type accessories make ordering easy and enable simple, one-touch installation. Insulation also improves safety.

Compatible with all breaker series

The alarm switch (AL), auxiliary switch (AX), shunt trip (SHT), and undervoltage trip (UVT) all come as cassette-type accessories compatible with 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.

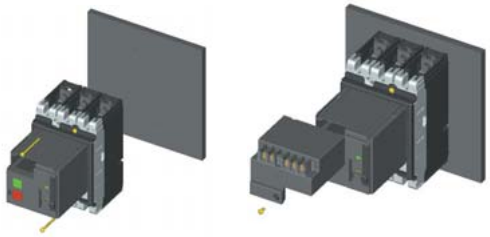
External Accessories

High-speed Motor Device

Motor devices for 125-250AF are now easier to use,contributing to simple installation.

✻ A spring charge mechanism has been adopted for high-speed operation. (0.05～0.1sec)
✻ Installation is fast and simple, only requiring two screws.

Power Supply Module



External Handle

A safer and easy-to-operate handle has been adopted.

✻ Complies with IP65 protection rating standards.
✻ Isolation function achieved through combination with the breaker unit.
✻ Structured to allow relay adjustments after installation as well.
✻ Equipped with a cylinder key (optional) to prevent misuse.

V-Handle

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

Specialized for 3- and 4-pole use (incompatible with 2-pole use).

✻ Complies with IP-20 protection rating standards.
✻ A safety device is optional.
✻ Connectable with up to nine leads (for PLT).
✻ Can be modified from front to rear connection.

(Note: Modification by users is not authorized)
IP20: Finger protection.

(IP-20PM)

Product Design Simplifies Use & Expands Applications

IP20 Terminal Connection

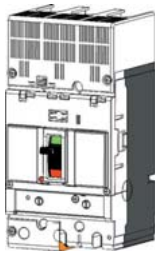
Safety of connections has been increased for SGW and HGW.

✻ Protection rating of IP20 as standard is ensured.

Terminal Cover

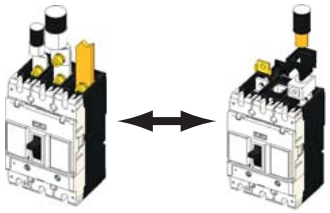
Major improvements have been achieved in front connection terminal safety.

✻ With terminal covers, a protection rating of IP40 is ensured. ("SGW, HGW, RGW, UGW")



Connection Flexibility

Compatible with various connection methods. Solderless terminals are now built into the breaker design the conventional style where terminals are affixed on the outside. Maximum connecting cable size of 185mm² (SGW/HGW). (Note: Certain models have externally attached terminals.)



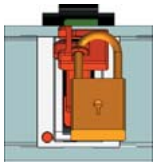
IEC Rail Mounting for 32, 63AF

Installation hooks are included for 32,63AF, markedly simplifying installation work.

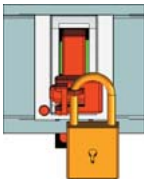
Handle Locks

With the WS Series, ON/OFF locking is possible with the use of a padlock. Up to three padlocks may be attached.

✻ Customers are requested to use their own padlocks.



ON lock



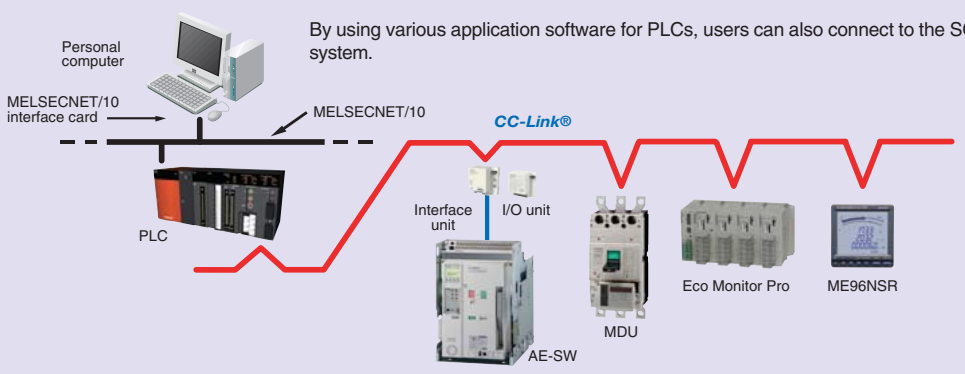
OFF lock

OFF lock with 3 padlocks ("SGW, HGW, RGW, UGW")

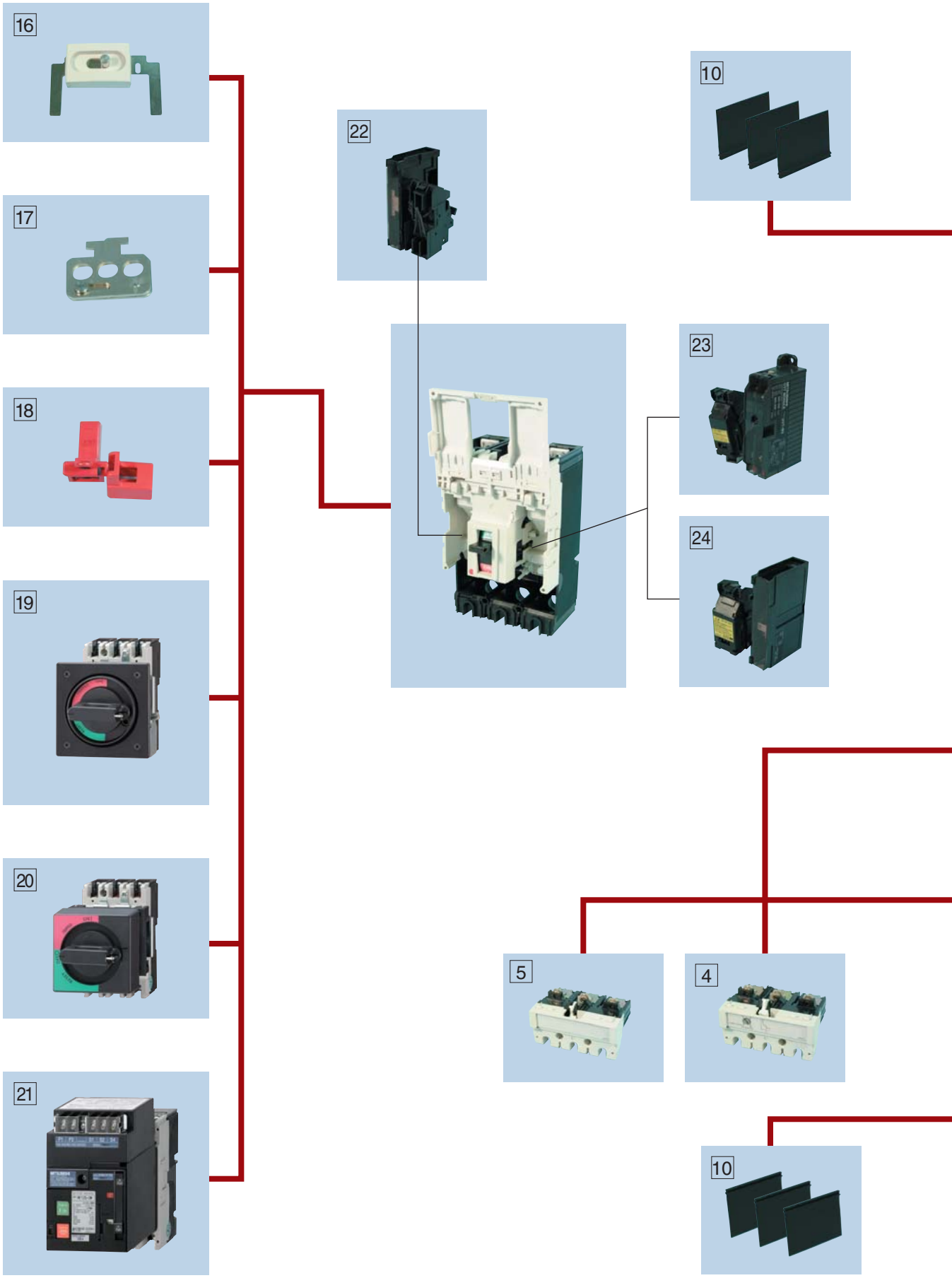
Intelligent Measuring and Communicating

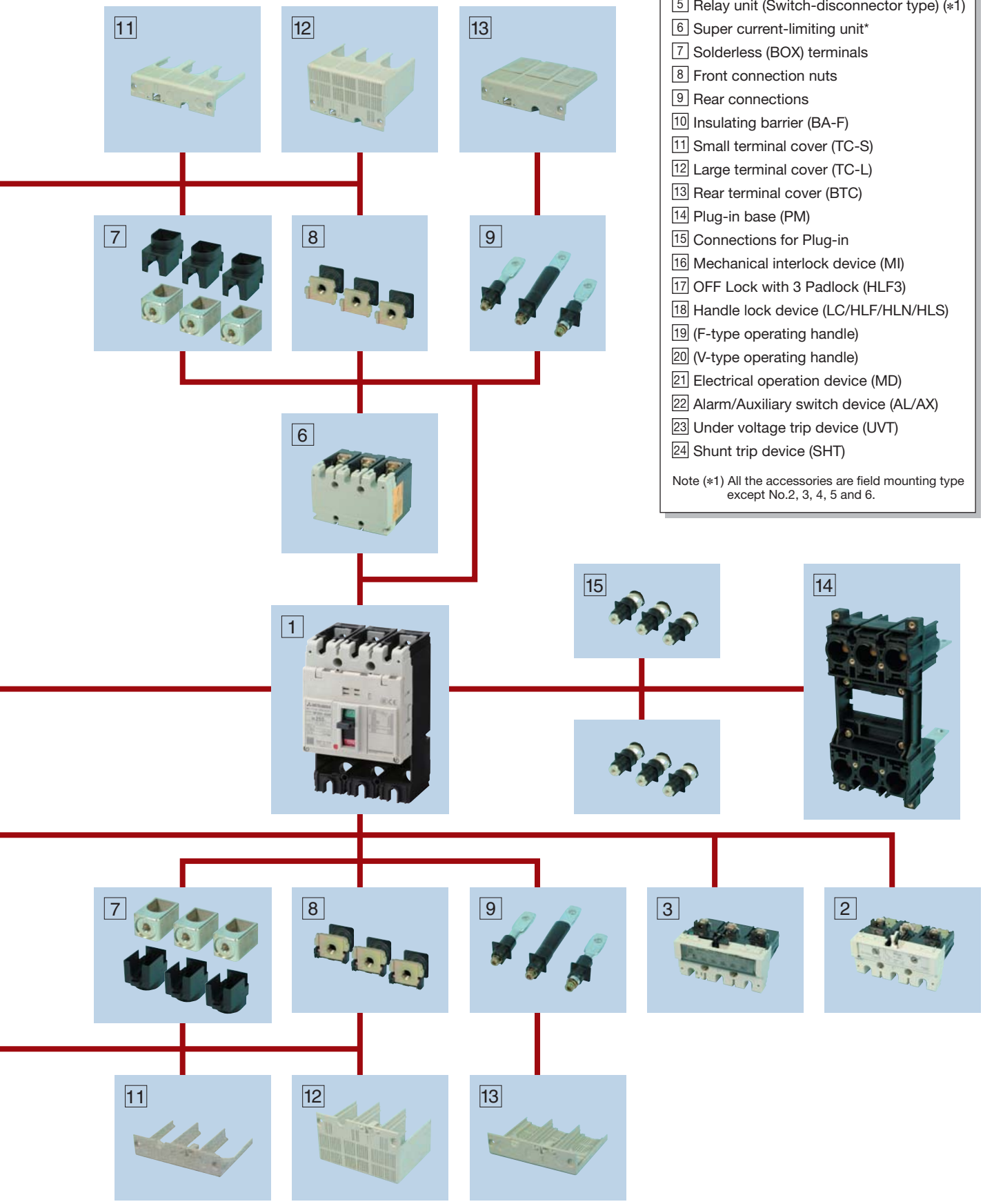
- **MDU (Measuring Display Unit) with NF 250-800AF**
- **Compact, white measuring unit**
- **Measuring data can be transmitted to a PC or a PLC through *CC-Link***
- **AL / AX with *CC-Link* transmission**
- **Improved accuracy(electric current): ±2.5% of rated value → ±2.5% of true value**

By using various application software for PLCs, users can also connect to the SCADA system.



Product Skeleton





1 MCCB
2 Relay unit (Thermal type) (RT) (∗1)
3 Relay unit (Electronic type) (RE) (∗1)
4 Relay unit (Magnetic only type) (RM) (∗1)
5 Relay unit (Switch-disconnector type) (∗1)
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 (F-type operating handle)
20 (V-type operating handle)
21 Electrical operation device (MD)
22 Alarm/Auxiliary switch device (AL/AX)
23 Under voltage trip device (UVT)
24 Shunt trip device (SHT)

Note (∗1) 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
MB Motor breaker


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 breakers — NF-C Economy type	NF30-CS	NF63-CW	NF125-CW		NF250-CW	NF400-CW	NF630-CW	NF800-CEW			
Molded-case circuit breakers — NF-S Standard type / NF-H High-performance 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-SEW	NF630-SEW	NF800-SEW		NF1250-SDW	NF1600-SDW
		NF63-HW	NF125-HW	NF160-HW	NF250-HW	NF400-HEW	NF630-HEW	NF800-HEW			
			NF125-HGW	NF160-HGW	NF250-HGW	NF400-REW	NF630-REW	NF800-REW			
Molded-case circuit breakers — NF-U Ultra current-limiting type			NF125-RGW		NF250-RGW	NF400-UEW		NF800-UEW			
			NF125-UGW		NF250-UGW						
Earth-leakage circuit breakers — NV-C Economy type	NV30-CS	NV63-CW	NV125-CW		NV250-CW	NV400-CW	NV630-CW				
Earth-leakage circuit breakers — NV-S Standard type / NV-H High-performance type	NV32-SW	NV63-SW	NV125-SW		NV250-SW	NV400-SW	NV630-SW	NV800-SEW			
					NV250-SEW	NV400-SEW	NV630-SEW				
		NV63-HW	NV125-HW		NV250-HW	NV400-HEW	NV630-HEW	NV800-HEW			
					NV250-HEW	NV400-REW					
Earth-leakage circuit breakers — NV-U Ultra current-limiting type			NV125-RW		NV250-RW						
Earth-leakage circuit breakers for CE Marking — NV-C Economy type		NV63-CW	NV125-CW		NV250-CW	NV400-CW	NV630-CW				
Earth-leakage circuit breakers for CE Marking — NV-S Standard type / NV-H High-performance type	NV32-SW	NV63-SW	NV125-SW		NV250-SW	NV400-SW	NV630-SW	NV800-SEW			
						NV400-SEW	NV630-SEW				
		NV63-HW	NV125-HW		NV250-HW	NV400-HEW	NV630-HEW	NV800-HEW			
						NV400-REW					
Earth-leakage circuit breakers for CE Marking — NV-U Ultra current-limiting type			NV125-RW		NV250-RW						
Motor-protection breakers — 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.)

UL listed products \ Series \ Frame A	50	100	150	225	250	400	600
UL489 Listed Molded-case circuit breaker	NF50-SWU	NF100-CWU	NF-SFW	NF225-CWU	NF-SJW	NF-SKW	NF-SLW
		NF100-SWU			NF-HJW		
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

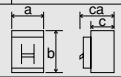
AF	63 and less
MCB	BH-D6
	BH-DN
RCCB	BV-D
RCBO	BV-DN
Isolating switch	KB-D

Circuit Protectors

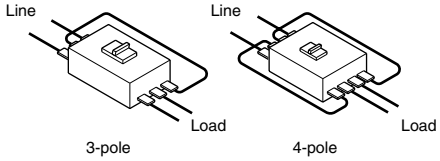
AF	30 and less
CP	CP30-BA
	CP-B
	CP-S

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
Image										
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	7.5/4	7.5/4	7.5/4
				440V	–	2.5/1	2.5/1	7.5/4	10/5	10/5
				415V	1.5/1.5	2.5/1	2.5/1	7.5/4	10/5	10/5
				400V	1.5/1.5	5/2	5/2	7.5/4	10/5	10/5
				380V	1.5/1.5	5/2	5/2	7.5/4	10/5	10/5
				230V	2.5/2 (240V)	7.5/4	7.5/4	15/8	25/13	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			10,000	10,000	10,000	15,000	15,000	10,000
		with current		440V-In/2	6,000 (415V)	6,000	6,000	15,000	15,000	6,000
				440V-In	6,000 (415V)	6,000	6,000	8,000	8,000	6,000
				690V-In/2	–	–	–	–	–	–
				690V-In	–	–	–	–	–	–
Overall dimensions (mm)				a	45 | 67.5	50 | 75	50 | 75	50 | 75 | 100	50 | 75 | 100	60 | 90
				b	96	130	130	130	130	130
				c	52	68	68	68	68	68
				ca	67	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	0.65 | 0.9
Installation and connections	Fixed	Front	Screw terminal		●	●	●	●	●	●
			Solderless (box) terminal (SL)		–	–	–	–	–	●
			Busbar terminal		–	–	–	–	–	–
		Rear		(B)	●	●	●	●	●	●
	Plug-in	Rear		(PM)	–	●	●	●	●	●
		Rear/front IP20		(PM-IP)	–	–	–	–	–	–
	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)	–	–	–	–	–	●
Accessorie'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)	–	–	–	–	–	–
	Overcurrent trip alarm (∗3)			(OAL)	–	–	–	–	–	–
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	Mounted on breaker		(F)	–	●	●	●	●	●
		Door mounting		(V)	–	●	●	●	●	●
				(S)	–	●	●	●	●	●
	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)	–	●	●	●	●	●
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

Note (∗1) Use two poles for three- and four-pole products. If wired as shown on the right, three and four poles can be used for up to 400VDC and 500VDC, respectively.
(∗2) Use two poles for three- and four-pole products. If wired as shown on the right, three and four poles can be used for up to 500VDC and 600VDC, respectively.
(∗3) PAL and OAL are not available together. Only one can be specified.
(∗4) Specify if for DC use.
(∗5) Cassette-type accessories are not compatible with NF30-CS.



	S Series			H Series			U Series	
	125			125			125	
								
	NF125-SW	NF125-SGW RT	NF125-SGW RE	NF125-HW	NF125-HGW RT	NF125-HGW RE	NF125-RGW RT	NF125-UGW RT
	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125	16–25 25–40 40–63 63–100 80–125	16–32 32–63 63–100 75–125	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100	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	16–25 25–40 40–63 63–100
	40	40	40	40	40	40	40	40
	2 3 4	2 3 4	3 4	2 3 4	2 3 4	3 4	2 3	2 3 4
	690	690	690	690	690	690	690	690
	8/4	8/8	8/8	10/5	20/20	20/20	25/25	30/30
	18/5	22/22	22/22	22/11	35/35	35/35	125/125	200/200
	18/9	30/30	30/30	30/15	50/50	50/50	125/125	200/200
	25/13	36/36	36/36	50/25	65/65	65/65	125/125	200/200
	30/15	36/36	36/36	50/25	70/70	70/70	125/125	200/200
	30/15	36/36	36/36	50/25	75/75	75/75	125/125	200/200
	30/15	36/36	36/36	50/25	75/75	75/75	125/125	200/200
	50/25	85/85	85/85	100/50	100/100	100/100	125/125	200/200
	15/8 (∗1)	–	–	40/20 (∗1)	–	–	–	–
	–	20/20 (∗2)	–	–	40/40 (∗2)	–	–	–
	●	●	●	●	●	●	●	●
	A	A	A	A	A	A	A	A
	●	●	●	●	●	●	●	●
	8	8	8	8	8	8	8	8
	3	3	3	3	3	3	3	3
	25,000	50,000	50,000	25,000	50,000	50,000	50,000	50,000
	20,000	40,000	40,000	20,000	40,000	40,000	40,000	40,000
	10,000	30,000	30,000	10,000	30,000	30,000	30,000	30,000
	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	60 90 120	105 140	105 140	90 120	105 140	105 140	105	105 140
	130	165	165	130	165	165	240	240
	68	86	86	68	86	86	86	86
	90	110	110	90	110	110	110	110
	0.7 0.95 1.3	2.0 2.6	2.0 2.6	0.8 0.95 1.3	2.0 2.6	2.0 2.6	3.1	3.1 3.9
	●	●	●	●	●	●	●	●
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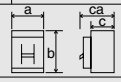
	Thermal-magnetic	Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic
	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

2. Detailed Specifications

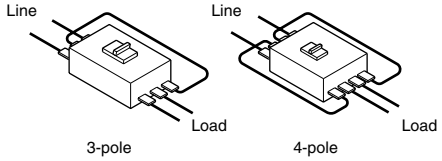
Molded-Case Circuit Breakers

Series					S Series						H Series					
Frame Size					160						160					
Image																
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	
		with current		440V-In/2	4,000		30,000		30,000		4,000		30,000		30,000	
				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	105	140
				b	165		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		–		–		–		–		–		–	
		Rear		(B)	●		●		●		●		●		●	
	Plug-in	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)	–		●		●		–		●		●	
Accessorie'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)	–		–		●		–		–		●	
	Overcurrent trip alarm (∗3)			(OAL)	–		–		●		–		–		●	
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	Mounted on breaker		(F)	●		●		●		●		●		●	
		Door mounting		(V)	●		●		●		●		●		●	
				(S)	●		●		●		●		●		●	
	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)	●		●		●		●		●		●	
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	

Note (∗1) Use two poles for three- and four-pole products. If wired as shown on the right, three and four poles can be used for up to 400VDC and 500VDC, respectively.

(∗2) Use two poles for three- and four-pole products. If wired as shown on the right, three and four poles can be used for up to 500VDC and 600VDC, respectively.

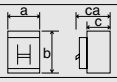
(∗3) PAL and OAL are not available together. Only one can be specified.



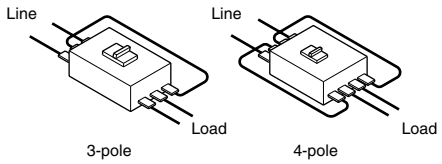
	C Series	S Series			H Series			U Series	
	250	250			250			250	
									
	NF250-CW	NF250-SW	NF250-SGW RT	NF250-SGW RE	NF250-HW	NF250-HGW RT	NF250-HGW RE	NF250-RGW RT	NF250-UGW RT
	(100) 125 150 175 200 225 250	(100) 125 150 175 200 225 250	125–160 160–250	125–250	125 150 175 200 225 250	125–160 160–250	125–250	125–160 160–225	125–160 160–225
	40	40	40	40	40	40	40	40	40
	2 3	2 3 4	2 3 4	3 4	2 3 4	2 3 4	3 4	2 3	2 3 4
	600	690	690	690	690	690	690	690	690
	–	–	8/8	8/8	5/3	20/20	20/20	25/25	30/30
	–	–	22/22	22/22	–	35/35	35/35	125/125	–
	10/5	15/8	30/30	30/30	30/8	50/50	50/50	125/125	200/200
	15/8	25/13	36/36	36/36	50/13	65/65	65/65	125/125	200/200
	18/9	30/15	36/36	36/36	50/13	70/70	70/70	125/125	200/200
	18/9	30/15	36/36	36/36	50/13	75/75	75/75	125/125	200/200
	18/9	30/15	36/36	36/36	50/13	75/75	75/75	125/125	200/200
	35/18	50/25	85/85	85/85	100/25	100/100	100/100	125/125	200/200
	10/5 (∗1)	15/8 (∗1)	–	–	40/20 (∗1)	–	–	–	–
	–	–	20/20 (∗2)	–	–	40/40 (∗2)	–	–	–
	●	●	●	●	●	●	●	●	●
	A	A	A	A	A	A	A	A	A
	●	●	●	●	●	●	●	●	●
	6	6	8	8	6	8	8	8	8
	2	2	3	3	2	3	3	3	3
	8,000	12,000	25,000	25,000	12,000	25,000	25,000	25,000	25,000
	4,000	4,000	15,000	15,000	4,000	15,000	15,000	15,000	15,000
	4,000	4,000	10,000	10,000	4,000	10,000	10,000	10,000	10,000
	–	–	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	–	–	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	105	105 140	105 140	105 140	105 140	105 140	105 140	105	105 140
	165	165	165	165	165	165	165	240	240
	68	68	86	86	68	86	86	86	86
	92	92	110	110	92	110	110	110	110
	1.3 1.5	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	3.1	3.1 3.9
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	–	–	–	–	–	–	–	–	–
	●	●	●	●	●	●	●	●	●
	●	●	–	–	●	–	–	●	● –
	–	–	●	●	–	●	●	–	–
	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	–	–	●	–	–	–	–
	–	–	●	●	–	●	●	●	●
	●	●	●	●	●	●	●	●	●
	–	–	●	●	–	●	●	●	●
	●	●	●	●	●	●	●	●	●
	–	–	–	●	–	–	●	–	–
	–	–	–	●	–	–	●	–	–
	●	● –	–	–	–	–	–	–	–
	●	● –	● –	● –	● –	● –	● –	–	–
	●	● –	● –	● –	● –	● –	● –	–	–
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	–	–	●	●	–	●	●	●	● –
	–	–	●	●	–	●	●	●	● –
	–	–	●	●	–	●	●	●	● –
	–	–	●	●	–	●	●	●	● –
	–	–	●	●	–	●	●	●	● –
	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic
	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

2. Detailed Specifications

Molded-Case Circuit Breakers

Series					C Series	S Series		H Series	
Frame Size					400	400		400	400
Image									
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 ⎓∗					●	●	●	●	●
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	140 | 185	140 | 185	140 | 185	140
				b	257	257	257	257	257
				c	103	103	103	103	103
				ca	134	155	155	155	155
Mass of front-face type (kg)					4.4 | 5.0	4.6 | 5.2 | 6.8	6.0 | 7.6	6.0 | 7.6	6.0
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)	●	●	●	●	●
Accessorie'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)	–	–	–	–	–
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	Mounted on breaker		(F)	●	●	●	●	●
		Door mounting		(V)	●	●	●	●	●
				(S)	●	●	●	●	●
	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)	●	● –	● –	● –	●
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

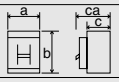
Note (∗1) In case of solderless terminal, breaking capacity decreases to (/).
(∗2) Solid state relay output is option . Please specify if other output is necessary. (Standard type is with SLT equipped.)
(∗3) PAL and OAL are not available together. Only one can be specified.
(∗4) Use two poles for three- and four-pole products. If wired as shown on the right, three and four poles can be used for up to 400VDC and 500VDC, respectively.



	U Series	C Series	S Series		H Series	
	400	630	630		630	630
						
	NF400-UEW	NF630-CW	NF630-SW	NF630-SEW	NF630-HEW	NF630-REW
	200~400 adjustable	500 600 630	500 600 630	300~630 adjustable	300~630 adjustable	300~630 adjustable
	40	40	40	40	40	40
	3 | 4	2 | 3	2 | 3 | 4	3 | 4	3 | 4	3
	690	690	690	690	690	690
	–	–	10/10	10/10	35/18	–
	170/170	18/9	30/30	30/30	50/50	70/35
	200/200	36/18	42/42	42/42	65/65	125/63
	200/200	36/18	50/50	50/50	70/70	125/63
	200/200	36/18	50/50	50/50	70/70	125/63
	200/200	40/20	50/50	50/50	70/70	125/63
	200/200	50/25	85/85	85/85	100/100	150/75
	–	20/10 (∗4)	40/40 (∗4)	–	–	–
	●	●	●	●	●	●
	B	A	A	B	B	B
	5	–	–	7.6	7.6	7.6
	●	●	●	●	●	●
	8	8	8	8	8	8
	3	3	3	3	3	3
	140 | 280	140	140 | 185	140 | 185	140 | 185	140
	297 | 322	257	257	257	257	257
	200	103	103	103	103	103
	252	155	155	155	155	155
	16.2 | 25.4	5.2 | 6.0	5.4 | 6.2 | 8.0	6.5 | 8.3	6.5 | 8.3	6.5
	–	–	–	–	–	–
	–	–	–	–	–	–
	●	●	●	●	●	●
	●	●	●	●	●	●
	● | –	●	●	●	●	●
	–	–	–	–	–	–
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	–	–	–	–	–	–
	●	●	●	●	●	●
	● (∗2)	–	–	● (∗2)	● (∗2)	● (∗2)
	–	–	–	–	–	–
	–	–	–	–	–	–
	–	●	● | –	● | –	–	–
	–	●	● | –	● | –	–	–
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	–	–	–	–	–	–
	●	●	●	●	●	●
	–	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	–	–
	–	–	–	–	–	–
	–	●	●	●	●	●
	●	●	●	●	– ●	–
	● –	●	● –	● –	● –	●
	● –	●	● –	● –	● –	●
	● –	●	● –	● –	● –	●
	– –	–	– –	● –	– –	–
	● –	●	● –	● –	● –	●
	Electronic	Thermal-magnetic	Thermal-magnetic	Electronic	Electronic	Electronic
	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

2. Detailed Specifications

Molded-Case Circuit Breakers

Series					C Series	S Series		H Series	
Frame Size					800	800		800	
Image									
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 (∗3)	–	–	–
Suitability for isolation					●	●	●	●	●
Utilization category					B	A	B	B	B
Rated short-time withstand current Icw (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
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) (∗4)	Alarm switch			(AL)	●	●	●	●	●
	Auxiliary switch			(AX)	●	●	●	●	●
	Shunt trip			(SHT)	●	●	●	●	●
	Undervoltage trip (UVT)		Non-Synchronous Closing	(UVT-N)	●	●	●	●	●
			Synchronous Closing	(UVT-S)	●	●	●	●	●
Accessorie'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) (∗2)				● (∗1)	–	● (∗1)	● (∗1)	● (∗1)
	Overcurrent trip alarm (∗2)			(OAL)	–	–	–	–	–
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	Mounted on breaker		(F)	●	●	●	●	●
		Door mounting		(V)	●	●	●	●	●
				(S)	●	●	●	●	●
	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)	–	–	–	–	–
Marine approval				L/R	●	–	● | –	● | –	●
				G/L	●	–	● | –	● | –	●
				BV	●	–	● | –	● | –	●
				DNV	●	–	● | –	– | –	–
				ABS	●	–	● | –	● | –	●
Automatic tripping device					Electronic	Thermal-magnetic	Electronic	Electronic	Electronic
Trip button					Equipped	Equipped	Equipped	Equipped	Equipped

Note (∗1) Solid state relay output is option . Please specify if other output is necessary. (Standard type is with SLT equipped.)
(∗2) PAL and OAL are not available together. Only one can be specified.
(∗3) Specify if for DC use.
(∗4) Cassette-type accessories are not compatible with NF1000-SW, NF1250-SW, NF1250-SDW, NF1600-SW, and NF1600-SDW.

	U Series	S Series				
	800	1000	1250		1600	
						
	NF800-UEW	NF1000-SEW	NF1250-SEW	NF1250-SDW	NF1600-SEW	NF1600-SDW
	400~800 adjustable	500~1000 adjustable	600~1250 adjustable	1000 1250	800~1600 adjustable	1600
	40	40	40	40	40	40
	3 | 4	3 | 4	3 | 4	2	3 | 4	2
	690	690	690	690	690	690
	35/35	25/13	25/13	–	25/13	–
	170/170	65/33	65/33	–	65/33	–
	200/200	85/43	85/43	–	85/43	–
	200/200	85/43	85/43	–	85/43	–
	200/200	85/43	85/43	–	85/43	–
	200/200	85/43	85/43	–	85/43	–
	200/200	125/63	125/63	–	125/63	–
	–	–	–	40/20 (∗3)	–	40/20 (∗3)
	●	●	●	●	●	●
	B	B	B	A	B	A
	9.6	20	20	–	20	–
	●	●	●	●	●	●
	8	8	8	8	8	8
	3	3	3	3	3	3
	210 | 280	210 | 280	210 | 280	210	210 | 280	210
	322	406	406	406	406	406
	200	140	140	140	140	140
	252	190	190	190	190	190
	27.6 | 33.7	23.5 | 30.7	23.5 | 30.7	22	34.5 | 41.2	32
	–	–	–	–	–	–
	–	–	–	–	–	–
	●	●	●	●	●	●
	●	●	●	●	●	●
	– | –	●	●	–	–	–
	–	–	–	–	–	–
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	–	–	–	–	–	–
	●	●	●	●	●	●
	● (∗1)	● (∗1)	● (∗1)	–	● (∗1)	–
	–	–	–	–	–	–
	–	–	–	–	–	–
	–	● | –	● | –	●	–	–
	–	● | –	● | –	●	–	–
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	–	–	–	–	–
	–	–	–	–	–	–
	●	●	●	●	●	●
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	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●
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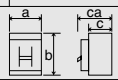
	●	–	–	–	–	–
	–	–	–	–	–	–
	–	● | –	● | –	–	–	–
	–	● | –	● | –	–	–	–
	–	– | –	– | –	–	–	–
	–	– | –	– | –	–	–	–
	–	● | –	● | –	–	–	–
	Electronic	Electronic	Electronic	Thermal-magnetic	Electronic	Magnetic
	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

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
Image										
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) (∗6)					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	30,100•200•500 Selectable
	Max. operating time at 5IΔn (s)				0.04	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	Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed. (Icu/Ics)				AC440V	–	5/2	2.5/1	7.5/4	10/5	10/5
				AC400V	–	5/2	5/2	7.5/4	10/5	10/5
				AC230V	2.5/2	10/5	7.5/4	15/8	25/13	30/15
Number of operating cycles	without current				10,000	10,000	10,000	15,000	15,000	10,000
	with current			440V-In/2	6,000 (230V)	6,000	6,000	15,000	15,000	6,000
				440V-In	6,000 (230V)	6,000	6,000	8,000	8,000	6,000
Overall dimensions (mm)				a	67.5	75	75	75	75	90
				b	96	130	130	130	130	130
				c	52	68	68	68	68	68
				ca	67	90	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		–	●	●	●	●	●
		Rear		(B)	●	●	●	●	●	●
	Plug-in	Rear		(PM)	–	●	●	●	●	●
		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)	–	–	–	–	–	–
Accessorie's 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	Mounted on breaker		(F)	–	●	●	●	●	●
		Door mounting		(V)	–	●	●	●	●	●
				(S)	–	●	●	●	●	●
	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

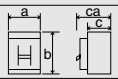
Note (∗1) 125A rated current is for 3P only.
(∗2) Cassette-type accessories are not compatible with NV30-CS.
(∗3) Standard type is with SLT equipped.
(∗4) In case of ampere rating 15A and 16A, time-delay type is not available.
(∗5) Included in AL (type) only.
(∗6) Rated operational voltage of time-delay type is for 200-440V.

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

	S Series	H Series	U Series	C Series	S Series		H Series		U Series
	125	125	125	250	250		250		250
									
	NV125-SW	NV125-HW	NV125-RW	NV250-CW	NV250-SW	NV250-SEW	NV250-HW	NV250-HEW	NV250-RW
	(∗4) (15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125 (∗1)	(∗4) (15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100	(∗4) (15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100	125 150 175 200 225 250	125 150 175 200 225 250 | 125 150 175 200 225	125–225 Adjustable	125 150 175 200 225	125–225 Adjustable	125 150 175 200 225
	40	40	40	40	40	40	40	40	40
	3 | 4	3 | 4	3	3	3 | 4	3 | 4	3 | 4	3 | 4	3
	100–440 Multi-voltage type | 200–440 Multi-voltage type	100–440 Multi-voltage type | 200–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type | 200–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type | 200–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type
	30,100•200•500 Selectable	30,100•200•500 Selectable	(30) 100•200•500 Selectable	30,100•200•500 Selectable	(30) 100•200•500 Selectable	(30) 100•200•500 Selectable	(30) 100•200•500 Selectable	(30) 100•200•500 Selectable	(30) 100•200•500 Selectable
	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)
	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)
	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)
	Button	Button	Button	Button	Button	Button	Button	Button	Button
	25/13	50/25	125/125	15/8	25/13	25/13	50/13	50/13	125/125
	30/15	50/25	125/125	18/9	30/15	30/15	50/13	50/13	125/125
	50/25	100/50	125/125	35/18	50/25	50/25	100/25	100/25	125/125
	25,000	25,000	25,000	8,000	12,000	12,000	12,000	12,000	12,000
	20,000	20,000	20,000	4,000	4,000	4,000	4,000	4,000	4,000
	10,000	10,000	10,000	4,000	4,000	4,000	4,000	4,000	4,000
	90 | 120	90 | 120	90	105	105 | 140	105 | 140	105 | 140	105 | 140	105
	130	130	191	165	165	165	165	165	240
	68	68	68	68	68	68	68	68	68
	90	90	90	92	92	92	92	92	92
	1.1 | 1.4	1.1 | 1.4	1.8	1.7	1.7 | 2.1	1.8 | 2.3	1.7 | 2.1	1.8 | 2.3	3.5
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	–	–	–
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–
	● | –	● | –	–	–	–	–	–	–	–
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	–	–	–	–	–	–	–	–	–
	●	●	●	●	●	–	●	–	●
	●	●	●	–	–	–	–	–	–
	●	●	●	●	●	●	●	●	●
	●	●	●	● (∗3)	● (∗3)	● (∗3)	● (∗3)	● (∗3)	● (∗3)
	●	●	●	● (∗3)	● (∗3)	● (∗3)	● (∗3)	● (∗3)	● (∗3)
	–	–	–	–	–	● (∗3)	–	● (∗3)	–
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	● | –	● | –	–	●	● | –	● | –	–	–	–
	● | –	● | –	–	●	● | –	● | –	● | –	● | –	–
	● | –	● | –	–	●	● | –	● | –	● | –	● | –	–
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●
	● | –	● | –	●	●	●	●	●	●	●
	● | –	● | –	●	●	●	●	●	●	●
	● | –	● | –	●	●	●	●	●	●	●
	● | –	● | –	●	●	●	●	●	●	●
	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Electronic	Thermal-magnetic	Electronic	Thermal-magnetic
	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

2. Detailed Specifications

Earth-Leakage Circuit Breakers

Series					C Series	S Series		H Series
Frame size					400	400		400
Image								
Type name					NV400-CW	NV400-SW	NV400-SEW	NV400-HEW
Rated current In (Amp.)					250 300 350 400	250 300 350 400	200~400 adjustable	200~400 adjustable
Rated ambient temperature (°C)					40	40	40	40
Number of poles					3	3	3 / 4	3 / 4
Rated operational voltage Ue (AC V) (∗3)					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) 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
Time-delay type	Rated current sensitivity IΔn (mA)				(100•200•500 Selectable)	(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)	(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)	(0.1•0.5•1.0)
Earth-leakage indication system					Button	Button	Button	Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed (Icu/Ics)				AC440V	25/13	42/42(36/36) (∗1)	42/42(36/36) (∗1)	65/65
				AC400V	36/18	45/45(36/36) (∗1)	50/50(36/36) (∗1)	70/70
				AC230V	50/25	85/85(65/65) (∗1)	85/85(65/65) (∗1)	100/100
Suitability for isolation					●	●	●	●
Overall dimensions (mm)				a	140	140	140 / 185	140 / 185
				b	257	257	257	257
				c	103	103	103	103
				ca	134	155	155	155
Mass of front-connection type (kg)					5.6	5.9	6.6 / 8.2	6.6 / 8.2
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)	●	●	●	●
Built-in accessories (option)	Insulation switch			(MG)	●	●	●	●
	Earth-leakage trip alarm			(EAL)	●	●	●	●
	Test button module			(TBM)	●	●	●	●
	Pre-alarm-contact output			(PAL)	–	–	● (∗2)	● (∗2)
	Overcurrent trip alarm			(OAL)	–	–	–	–
Accessorie's 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	Mounted on breaker		(F)	●	●	●	●
		Door mounting		(V)	●	●	●	●
				(S)	●	●	●	●
	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					Thermal-magnetic	Thermal-magnetic	Electronic	Electronic
Trip button					Equipped	Equipped	Equipped	Equipped

Note (∗1) In case of solderless terminal, breaking capacity decreases to (/).
(∗2) Solid state relay output is option. Please specify if order output is necessary. (Standard type is with SLT equipped.)
(∗3) Rated operational voltage of time-delay type is for 200-440V.
(∗4) Specify if for CE marking. Type CE marking is only Front connection and Rear connection.

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

	H Series	C Series	S Series		H Series	S Series	H Series
	400	630	630		630	800	800
							
	NV400-REW	NV630-CW	NV630-SW	NV630-SEW	NV630-HEW	NV800-SEW	NV800-HEW
	200~400 adjustable	500 600 630	500 600 630	300~630 adjustable	300~630 adjustable	400~800 adjustable	400~800 adjustable
	40	40	40	40	40	40	40
	3	3	3	3 | 4	3	3	3
	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	100–440 Multi-voltage type	100–440 Multi-voltage type
	100•200•500 Selectable	100•200•500 Selectable	100•200•500 Selectable	100•200•500 Selectable	100•200•500 Selectable	100•200•500 Selectable	100•200•500 Selectable
	0.04	–	–	–	–	–	–
	(100•200•500 Selectable)	(100•200•500 Selectable)	100•200•500 Selectable	(100•200•500 Selectable)	(100•200•500 Selectable)	100•200•500 Selectable	(100•200•500 Selectable)
	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	0.45•1.0•2.0 Selectable	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	0.45•1.0•2.0 Selectable	(0.45•1.0•2.0 Selectable)
	(0.1•0.5•1.0)	(0.1•0.5•1.0)	0.1•0.5•1.0	(0.1•0.5•1.0)	(0.1•0.5•1.0)	0.1•0.5•1.0	(0.1•0.5•1.0)
	Button	Button	Button	Button	Button	Button	Button
	125/63	36/18	42/42	42/42	65/65	42/42	65/65
	125/63	36/18	50/50	50/50	70/70	50/50	70/70
	150/75	50/25	85/85	85/85	100/100	85/85	100/100
	●	●	●	●	●	●	●
	140	140	140	140 | 185	140	210	210
	257	257	257	257	257	275	275
	103	103	103	103	103	103	103
	155	155	155	155	155	155	155
	6.6	6.9	6.9	7.1 | 8.9	7.1	15.3	15.3
	–	–	–	–	–	–	–
	–	–	–	–	–	●	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	● (∗2)	–	–	● (∗2)	● (∗2)	● (∗2)	● (∗2)
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	–	–	–	–	–	–
	–	●	●	● | –	–	●	–
	–	●	●	● | –	–	●	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	●	●	●	–	●	●
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	–	●	●	●	–	●	●
	●	–	–	–	–	–	–
	Electronic	Thermal-magnetic	Thermal-magnetic	Electronic	Electronic	Electronic	Electronic
	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

2. Detailed Specifications

Earth-Leakage Circuit Breakers for CE Marking

Series						S Series	C Series	S Series	H Series	C Series
Frame size						32	63	63	63	125
Image										
Type name						NV32-SW	NV63-CW	NV63-SW	NV63-HW	NV125-CW
Rated current In (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	(60) 63 (75) 80 100 125
Rated ambient temperature (°C)						40	40	40	40	40
Number of poles						3	3	3	3	3
Rated operational voltage Ue (AC V) (∗4)						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)					30,100•200•500 Selectable	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) IEC 60947-2, EN 60947-2 (Icu/Ics)					AC440V	5/2	2.5/1	7.5/4	10/5	10/5
					AC400V	5/2	5/2	7.5/4	10/5	10/5
					AC230V	10/5	7.5/4	15/8	25/13	30/15
Rated impulse withstand voltage Uimp (kV)						6	6	6	6	6
Number of operating cycles			without current			10,000	10,000	15,000	15,000	10,000
			with current		440V-In/2	6,000	6,000	15,000	15,000	6,000
					440V-In	6,000	6,000	8,000	8,000	6,000
Suitability for isolation						●	●	●	●	●
Overall dimensions (mm)					a	75	75	75	75	90
					b	130	130	130	130	130
					c	68	68	68	68	68
					ca	90	90	90	90	90
Mass of front-face type (kg)						0.6	0.65	0.65	0.65	1.0
Installation and connections	Fixed	Front	Screw terminal			●	●	●	●	●
			Solderless (box) terminal (SL)			–	–	–	–	●
			Busbar terminal			●	●	●	●	●
		Rear			(B)	●	●	●	●	● (∗5)
	Plug-in	Rear			(PM)	–	–	–	–	–
	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)	–	–	–	–	●
Built-in accessories (option)	Insulation switch				(MG)	–	–	–	–	–
	Earth-leakage trip alarm				(EAL)	–	–	–	–	–
	Test button module (∗3)				(TBM)	●	●	●	●	●
	Pre-alarm-contact output				(PAL)	–	–	–	–	–
Accessorie's 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	Mounted on breaker			(F)	●	●	●	●	●
		Door mounting			(V)	●	●	●	●	●
					(S)	●	●	●	●	●
	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	Thermal-magnetic
Trip button						Equipped	Equipped	Equipped	Equipped	Equipped
CE marking						●	●	●	●	●

Note (∗1) 125A rated current is for 3P only.
(∗2) In case of ampere rating 15A and 16A, time-delay type is not available.
(∗3) Standard type is with SLT equipped.
(∗4) Rated operational voltage of time-delay type is for 200-440V.
(∗5) In case of ampere rating 125A, rear connection is not available.

Rated operational voltage	Available voltage range
100 - 440V	85~484V
200 - 440V	160~484V

	S Series	H Series	U Series	C Series	S Series	H Series	U Series
	125	125	125	250	250	250	250
							
	NV125-SW	NV125-HW	NV125-RW	NV250-CW	NV250-SW	NV250-HW	NV250-RW
	(∗2) (15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125 (∗1)	(∗2) (15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100	(∗2) (15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100	125 150 175 200 225 250	125 150 175 200 225 250 | 125 150 175 200 225	125 150 175 200 225	125 150 175 200 225
	40	40	40	40	40	40	40
	3 | 4	3 | 4	3	3	3 | 4	3 | 4	3
	100–440 Multi-voltage type | 200–440 Multi-voltage type	100–440 Multi-voltage type | 200–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type | 200–440 Multi-voltage type	100–440 Multi-voltage type | 200–440 Multi-voltage type	100–440 Multi-voltage type
	30,100•200•500 Selectable	30,100•200•500 Selectable	(30) 100•200•500 Selectable	30,100•200•500 Selectable	(30) 100•200•500 Selectable	(30) 100•200•500 Selectable	(30) 100•200•500 Selectable
	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)
	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)
	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)	(0.1•0.5•1.0)
	Button	Button	Button	Button	Button	Button	Button
	25/13	50/25	125/125	15/8	25/13	50/13	125/125
	30/15	50/25	125/125	18/9	30/15	50/13	125/125
	50/25	100/50	125/125	35/18	50/25	100/25	125/125
	6	6	6	6	6	6	6
	25,000	25,000	25,000	8,000	12,000	12,000	12,000
	20,000	20,000	20,000	4,000	4,000	4,000	4,000
	10,000	10,000	10,000	4,000	4,000	4,000	4,000
	●	●	●	●	●	●	●
	90 | 120	90 | 120	90	105	105 | 140	105 | 140	105
	130	130	191	165	165	165	240
	68	68	68	68	68	68	68
	90	90	90	92	92	92	92
	1.1 | 1.4	1.1 | 1.4	1.8	1.7	1.7 | 2.2	1.7 | 2.2	2.7
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	–	–
	● (∗5)	●	●	●	●	●	●
	–	–	–	–	–	–	–
	–	–	–	–	–	–	–
	● | –	● | –	–	–	–	–	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	●	●	●	–	–	–	–
	–	–	–	–	–	–	–
	–	–	–	–	–	–	–
	●	●	–	●	●	●	–
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	● | –	● | –	–	●	● | –	● | –	–
	● | –	● | –	–	●	● | –	● | –	–
	● | –	● | –	–	●	● | –	● | –	–
	●	●	●	●	●	●	●
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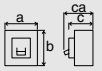
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	● | –	● | –	●	●	●	●	●
	● | –	● | –	●	●	●	●	●
	● | –	● | –	●	●	●	●	●
	– | –	– | –	–	–	–	–	–
	Thermal-magnetic Equipped	Thermal-magnetic Equipped	Thermal-magnetic Equipped	Thermal-magnetic Equipped	Thermal-magnetic Equipped	Thermal-magnetic Equipped	Thermal-magnetic Equipped
	●	●	●	●	●	●	●

2. Detailed Specifications

Earth-Leakage Circuit Breakers for CE Marking

Series					C Series	S Series		H Series
Frame size					400	400		400
Image								
Type name					NV400-CW	NV400-SW	NV400-SEW	NV400-HEW
Rated current In (Amp.)					250 300 350 400	250 300 350 400	200~400 Adjustable	200~400 Adjustable
Rated ambient temperature (°C)					40	40	40	40
Number of poles					3	3	3 | 4	3 | 4
Rated operational voltage Ue (AC V) (∗3)					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) 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
Time-delay type	Rated current sensitivity IΔn (mA)				(100•200•500 Selectable)	(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)	(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)	(0.1•0.5•1.0)
Earth-leakage indication system					Button	Button	Button	Button
Rated short-circuit breaking capacity (kA) IEC60947-2, EN60947-2 (Icu/Ics)				AC440V	25/13	42/42(36/36) (∗1)	42/42(36/36) (∗1)	65/65
				AC400V	36/18	45/45(36/36) (∗1)	50/50(36/36) (∗1)	70/70
				AC230V	50/25	85/85(65/65) (∗1)	85/85(65/65) (∗1)	100/100
Rated impulse withstand voltage Uimp (kV)					8	8	8	8
Number of operating cycles			without current		6,000	6,000	6,000	6,000
			with current	440V-In/2	1,000	1,000	1,000	1,000
				440V-In	1,000	1,000	1,000	1,000
Suitability for isolation					●	●	●	●
Overall dimensions (mm)				a	140	140	140 | 185	140 | 185
				b	257	257	257	257
				c	103	103	103	103
				ca	134	155	155	155
Mass of front-face type (kg)					6.1	6.4	6.6 | 8.2	6.6 | 8.2
Installation and connections	Fixed	Front	Screw terminal		–	–	–	–
			Solderless (box) terminal (SL)		●	●	●	●
			Busbar terminal		●	●	●	●
		Rear		(B)	●	●	●	●
	Plug-in	Rear		(PM)	–	–	–	–
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)	● (∗2)
	Overcurrent trip alarm			(OAL)	–	–	–	–
Accessorie's 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	Mounted on breaker		(F)	●	●	●	●
		Door mounting		(V)	●	●	●	●
				(S)	●	●	●	●
	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					Thermal-magnetic	Thermal-magnetic	Electronic	Electronic
Trip button					Equipped	Equipped	Equipped	Equipped
CE marking					●	●	●	●

Note (∗1) In case of solderless terminal, breaking capacity decreases to (/).
(∗2) Solid state relay output is option. Please specify if order output is necessary. (Standard type is with SLT equipped.)
(∗3) Rated operational voltage of time-delay type is for 200-440V.

Rated operational voltage	Available voltage range
100 - 440V	85~484V
200 - 440V	160~484V

	H Series	C Series	S Series		H Series	S Series	H Series
	400	630	630		630	800	800
							
	NV400-REW	NV630-CW	NV630-SW	NV630-SEW	NV630-HEW	NV800-SEW	NV800-HEW
	200~400 Adjustable	500 600 630	500 600 630	300~630 Adjustable	300~630 Adjustable	400~800 Adjustable	400~800 Adjustable
	40	40	40	40	40	40	40
	3	3	3	3 | 4	3	3	3
	100–440 Multi-voltage type	200–440 Multi-voltage type	200–440 Multi-voltage type	200–440 Multi-voltage type	200–440 Multi-voltage type	200–440 Multi-voltage type	200–440 Multi-voltage type
	100•200•500 Selectable	–	–	–	–	–	–
	0.04	–	–	–	–	–	–
	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	(100•200•500 Selectable)	100•200•500 Selectable	(100•200•500 Selectable)
	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	(0.45•1.0•2.0 Selectable)	0.45•1.0•2.0 Selectable	(0.45•1.0•2.0 Selectable)
	(0.1•0.5•1.0)	(0.1•0.5•1.0)	0.1•0.5•1.0	(0.1•0.5•1.0)	(0.1•0.5•1.0)	0.1•0.5•1.0	(0.1•0.5•1.0)
	Button	Button	Button	Button	Button	Button	Button
	125/63	36/18	42/42	42/42	65/65	42/42	65/65
	125/63	36/18	50/50	50/50	70/70	50/50	70/70
	150/75	50/25	85/85	85/85	100/100	85/85	100/100
	8	8	8	8	8	8	8
	6,000	6,000	6,000	6,000	6,000	4,000	4,000
	1,000	1,000	1,000	1,000	1,000	500	500
	1,000	1,000	1,000	1,000	1,000	500	500
	●	●	●	●	●	●	●
	140	140	140	140 | 185	140	210	210
	257	257	257	257	257	275	275
	103	103	103	103	103	103	103
	155	155	155	155	155	155	155
	6.6	6.9	6.9	7.1 | 8.9	7.1	15.3	15.3
	–	–	–	–	–	–	–
	●	–	–	–	–	●	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	–	–	–	–	–	–
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	● (∗2)	–	–	● (∗2)	● (∗2)	● (∗2)	● (∗2)
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	–	–	–	–	–	–
	–	●	●	● | –	–	●	–
	–	●	●	● | –	–	●	–
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
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	●	●	●	●	●	●	●
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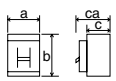
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	–	●	●	●	–	●	●
	–	–	–	–	–	–	–
	●	●	●	●	●	●	●
	–	●	●	●	●	●	●
	–	–	–	–	–	–	–
	Electronic	Thermal- magnetic	Thermal- magnetic	Electronic	Electronic	Electronic	Electronic
	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped
	●	●	●	●	●	●	●

2. Detailed Specifications

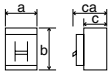
Motor-Protection Breakers

Frame A			30				50				100		225	
Type name			MB30-CS		MB30-SW		MB50-CW		MB50-SW		MB100-SW		MB225-SW	
Rated current In (Amp.) Rated motor capacity: kW Reference ambient temperature 40°C (45°C for marine applications)			A	200/220V kW / 400/440V kW	A	200/220V kW / 400/440V kW	A	200/220V kW / 400/440V kW	A	200/220V kW / 400/440V kW	A	200/220V kW / 400/440V kW	A	200/220V kW / 400/440V 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	71	18.5 / 37	175	45 / 90
			(12)	– / 5.5	12	– / 5.5	25	5.5 / 11	2.5	0.4 / –	63	15 / 30	150	37 / 75
			10	2.2 / –	10	2.2 / –	16	3.7 / 7.5	2	– / 0.75	45	11 / 22	125	30 / –
			(8)	– / 3.7	8	– / 3.7	12	– / 5.5	1.4	0.2 / –	(40)	– / 19		
			7.1	1.5 / –	7.1	1.5 / –	10	2.2 / –	1.2	– / 0.4	32	7.5 / 15		
			(5)	– / 2.2	5	– / 2.2	8	– / 3.7	0.8	– / –	(25)	5.5 / 11		
			4	0.75 / 1.5	4	0.75 / 1.5					(16)	3.7 / 7.5		
			2.5	0.4 / –	2.5	0.4 / –					(12.5)	– / 5.5		
			(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 Ui (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	
		AC 400V	1.5/1.5 (380V)		5/2		5/2		7.5/4		30/15		30/15	
		AC 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		90		105	
		b	96		130		130		130		130		165	
		c	52		68		68		68		68		68	
		ca	67		90		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)		–		●		●		●		●		●	

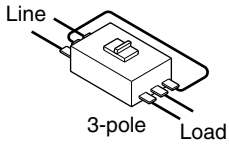
Remark: 1. The products with rated current is parenthesized will be produced when an order is placed.

2. Detailed Specifications

UL Listed Products

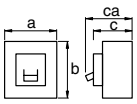
Frame A				100	225	50	100	150	250		400	600
Type				NF100-CWU	NF225-CWU	NF50-SWU	NF100-SWU	NF-SFW	NF-SJW	NF-HJW	NF-SKW	NF-SLW
Image												
Rated current In (Amp.) at ambient temperature 40°C (IEC30°C)				50 60 75 100	125 150 175 200 225	(3) 5 10 15 20 30 40 50	15 20 30 40 50 60 75 100	15 20 30 40 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)		Rated voltage (V AC)		240	240	240	480Y/277	600Y/347	600Y/347	600Y/347	600Y/347	600Y/347
	UL 489	AC	600Y/347V	–	–	–	–	14	14	18	20	20
			480V	–	–	–	–	35	35	50	35	35
			480Y/277V	–	–	–	22	35	35	50	–	–
			240V	10	35	14	35	65	65	100	65	85
	IEC 60947-2 (Icu/Ics)	Rated insulation voltage Ui (V)		600	600	600	690	690	690	690	690	690
		AC	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				●	●	●	●	●	●	●	●	●

Note (∗1) The trip action characteristics differ between AC and DC for products that are compatible with both AC and DC.
(∗2) Specifications for products with a CE mark differ from those for general-purpose products. Details are available upon request.
(∗3) Use two poles for three-pole products. If wired as shown on the right, NF100-CWU, NF100-SWU, and NF225-CWU can be used for up to 400VDC, and NF-SFW, NF-SJW, and NF-HJW can be used for up to 500VDC.
(∗4) The standard configuration includes a protection cover and adopts an IP20-compliant (finger protection) structure.
(∗5) In case of solderless terminal, breaking capacity decreases to (/).
Remark: 1. Products with rated currents in parentheses ( ) are special-order.
The operating characteristics of breakers are different for AC and DC (JIS and IEC only).

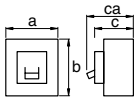


2. Detailed Specifications

Miniature Circuit Breakers

Type			BH			BH-P		
Frame (A)			70	100	100	70	100	100
Image								
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	—	
	IEC 60898	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	—

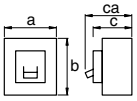
Note (*1) If reguired solderless terminal can be supplied.
(BH : Line and Load side, BH-P : Load side only)

Type			BH-S M3			BH-S M6		
Image								
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	400
		DC	—	125	—	—	125	—
Breaking capacity (kA) sym.	IEC 60898	AC230/400V	3	—		6	—	
	IEC 60898	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			—					

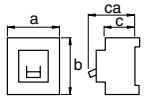
Note (∗1) If required solderless terminal can be supplied. (Line and Load side)
(∗2) Type B (3 In <, ≦ 5 In), Type C (5 In <, ≦10 In), Type D (10 In <, ≦ 20 In)

2. Detailed Specifications

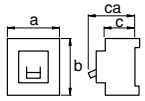
Miniature Circuit Breakers

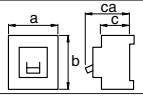
Type			BH-PS M3			BH-PS M9		
Image								
Number of poles			1	2	3	1	2	3
Rated current (A) at ambient temperature 40°C			10,15,20, 30,40,50,60	10,15,20, 30,40,50,60	15,20, 30,40,50,60	6,10,16,20,(25), 32,40,50,60	10,16,20,(25), 32,40,50,60	10,16,20,(25), 32,40,50,60
Rated voltage (V)		AC	230/400	400	400	230/400	400	400
		DC	—	125	—	—		
Breaking capacity (kA) sym.	IEC 60898	AC230/400V	3	—		9	—	
	IEC 60898	AC400V	—	3		—	9	
	—	DC125V	—	1	—	—		
Type of instantaneous operation			Types B,C,D (∗1)					
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		

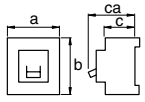
Note (∗1) Type B (3 In <, ≦ 5 In), Type C (5 In <, ≦ 10 In), Type D (10 In <, ≦ 20 In)

MCB		BH-D6 (IEC 60898)					BH-DN (IEC 60898)
Image							
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. (IEC 60898)		6					4.5
Tripping characteristics		Type B, C, D (∗1)				Type B, C (∗1)	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	—

Note (∗1) Type B (3 In <, ≦ 5 In), Type C (5 In <, ≦10 In), Type D (10 In <, ≦ 20 In)

RCCB		BV-D (IEC 61008)	
Image			
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 5IΔ		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) at5IΔn	0.04
Pulsating current sensitivity	Type AC
Breaking capacity (kA) sym. (IEC 61009)	4.5
Tripping characteristics	Type C (∗1)
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)			
Image					
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 relays (∗1)					
			Electrical self-hold type		Mechanical self-hold type		Harmonic surge ready Electrical self-hold type	Harmonic surge ready Mechanical self-hold type
		Hole diameter mm	NV-ZBA		NV-ZSA		NV-ZHA	NV-ZLA
Model name of ZCT combined (∗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
Image								
								
Phase line type			3ϕ4W, 3ϕ3W, 1ϕ3W, 1ϕ2W					
Control voltage AC V		JIS	120 • 240 selectable		120 • 240 selectable 240 • 415 selectable		–	–
		UL/JIS (∗2) UL/CE (∗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) (∗4)	0.3 • 0.8 • 1.6 selectable		0.3 • 0.8 • 1.6 selectable			
		Inertial non-operating time (s) or longer than (s)	0.1 • 0.5 • 1.1		0.1 • 0.5 • 1.1			
UL/JIS	High speed type	Rated sensitivity current mA	–		–		30 50	30 50
		Max. operating time (s)					0.1	0.1
	High speed • Delay type	Rated sensitivity current mA					100 • 200 • 500 selectable	100 • 200 • 500 selectable
		Max. operating time (s) (∗4)					0.1 • 0.45 • 1.0 selectable	0.1 • 0.45 • 1.0 selectable
		Inertial non-operating time (s) or longer than (s)					– • 0.1 • 0.5	– • 0.1 • 0.5
UL/CE	High speed type	Rated sensitivity current mA	–		–		30 • 50 • 100 selectable	30 • 50 • 100 selectable
		Max. operating time (s) at 5IΔn					0.04	0.04
	Delay type	Rated sensitivity current mA					100 • 300 • 500 selectable 300 • 500 • 1000 selectable	100 • 300 • 500 selectable 300 • 500 • 1000 selectable
		Max. operating time (s) at 2IΔn (∗4)					0.45 • 1.0 selectable	0.45 • 1.0 selectable
		Inertial non-operating time (s) at 2IΔn					0.1 • 0.5	0.1 • 0.5
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 (conbined with earth-leakage indicator)		Push button or control power switch off	Push button (conbined 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 120VAC 5 2 240VAC 5 2 24VDC 5 2		cosϕ=1 / cosϕ=0.4 L/R=0.007 120VAC 5 3 240VAC 3 2 415VAC 2 1 30VDC 4 3 100VDC 0.4 0.4 200VDC 0.2 0.2		cosϕ=1 / cosϕ=0.4 L/R=0.007 120VAC 5 2 240VAC 5 2 24VDC 5 2 Use auxiliary relay for AC415V contact.	cosϕ=1 / cosϕ=0.4 L/R=0.007 120VAC 5 3 240VAC 3 2 480VAC 1 1 30VDC 3 3
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) (∗6)	○ (TC-ZSA) (∗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 IEC 60947-2 AnnexB EN 60947-2 AnnexB	Declaration for conformity IEC 60947-2 AnnexB EN 60947-2 AnnexB

Note (∗1) Interchangeable leakage relays can be easily combined with other relays and our ZCT. However, products with 30mA sensitivity (excluding NV-ZHA/ZLA) can only be used in combination with ZT15B, ZT30B and ZT40B.
(∗2) Indicates the UL-standard control voltage. UL, CSA and JIS standards are indicated together. For JIS voltage indications, 100-200V changeover is 120-240V changeover, 200-415V changeover is 240-440V changeover, and 460V and 480V are described together. When ordering, specify "UL/JIS".
(∗3) Indicates the UL-standard control voltage. UL, CSA and CE standards are indicated together. For CE voltage indications, 120-230V changeover is 120-240V changeover, 230-440V changeoever is 240-440V selectable, which are described together. When ordering, specify "UL/CE".
(∗4) When operating times are 0.3 and 0.45sec, 0.8 and 1.0sec and 1.6sec, the relay operates between 0.15 and 0.45sec, 0.6 and 1.0sec and 1.2 and 2.0sec, respectively.
(∗5) Can be combined with an interchangeable ZCT equipped with a primary conductor. Refer to the next page for details.
(∗6) Not UL-certified.

Remark: 1. Relays with rates shown in parentheses ( ) are special-order.
2. The relay complies with CE marking conformity declaration only when used with CE marking type MITSUBISHI MCCB with a voltage tripping device to interrupt current during ground fault.
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	160	185
	b	52	52	52	90	90	90
	c	70	90	100	150	169	190
	d	25	50	50	100	100	100
	e	40	40	40	70	70	70

ZCT aperture diameter and wire size

	ZCT aperture diameter (mm)	15	30	40	60	80	100
		Max. 600V rated wire size in mm^2 (current in amperes)					
1ø2w	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)
1ø3w 3ø3w	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)
3ø4w	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

			Control voltage (VAC)	Rated current sensitivity (mA)	Max. operating time (s)	Inertial non-operating time (s)
Specification of ELRs	High-speed type	ZBA	120 • 240 (∗1)	100 • 200 • 500 (∗1)	0.1	—
		ZSA	120 • 240 (∗1), 240 • 415 (∗1)	100 • 200 • 500 (∗1)		
	Time-delay type (High-speed • Time-delay type)	ZBA	120 • 240 (∗1)	100 • 200 • 500 (∗1)	0.3 • 0.8 • 1.6 (∗1)	0.1 • 0.5 • 1.1
		ZSA	120 • 240 (∗1) 240 • 415 (∗1)	100 • 200 • 500 (∗1) (200 • 500 • 1000 (∗1))	0.3 • 0.8 • 1.6 (∗1)	0.1 • 0.5 • 1.1
		ZHA	120 • 240 (∗1) 240 • 440 (∗1)	100 • 200 • 500 (∗1)	0.1 • 0.45 • 1.0 (∗1)	– • 0.1 • 0.5
				100 • 300 • 500 (∗1) 300 • 500 • 1000 (∗1)	0.45 • 1.0 (∗1) (at 2l∆n)	0.1 • 0.5 (at 2l∆n)
		ZLA	120 • 240 (∗1) 240 • 440 (∗1) 480	100 • 200 • 500 (∗1)	0.1 • 0.45 • 1.0 (∗1)	– • 0.1 • 0.5
				100 • 300 • 500 (∗1) 300 • 500 • 1000 (∗1)	0.45 • 1.0 (∗1) (at 2l∆n)	0.1 • 0.5 (at 2l∆n)

Note (∗1) Selectable.

2. Detailed Specifications

Circuit Protectors

Frame (A)				30					
Type				CP30-BA			CP-S		
Image									
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)	UL 1077 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	–	
		DC		2.5kA at 65V	2.5kA at 125V	–	1kA at 65V	–	
	IEC 60934 EN 60934 GB 17701 (∗11) (Icn)	Rated insulation voltage Ui (V)		250			250		
		AC		250			1.5kA at 230V 2.5kA at 120V		
		DC		2.5kA at 60V	2.5kA at 120V	–	1kA at 60V	1kA at 120V (1kA at 60V) (∗7)	1kA at 60V
	JIS C 4610 (Icn)	Rated insulation voltage Ui (V)		250			250		
		AC		2.5kA at 230V			1.5kA at 250V 2.5kA at 125V		
		DC		2.5kA at 60V	2.5kA at 120V	–	1kA at 65V	1kA at 125V (1kA at 65V) (∗7)	1kA at 65V
	EN 60947-2 IEC 60947-2 JIS C 8201-2-1 Ann1 (Icu/Ics)	Rated insulation voltage Ui (V)		250			–		
		AC		2.5/2.5kA at 230V			–		
		DC		2.5/2.5kA at 60V	2.5/2.5kA at 120V	–	–		
AC-DC common use				●		– (∗1)	– (∗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]			Instantaneous type (I): magnetic only [MO]		
				Medium type (M), (MD) Slow type (S), (SD) : hydraulic-magnetic [HM] Fast type (F)			Medium type (M), (MD) Slow type (S), (SD) : hydraulic-magnetic [HM] Fast type (F), (FD)		
Method of operation				S-type (IEC 60934)					
Trip-free behaviour				Trip-free (IEC 60934)					
Mass (kg)				0.08	0.16	0.23	0.06	0.12	0.18
Accessories	Retractable small terminal cover (TC-S)			● Standard IP20 (front, terminal covers closed) [Certified of TUV]			–		
	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)		
	Large terminal cover (TC-L)			● (∗6)			–		
	Flushpanel mounting brackets (FP)			●			–		
	Back facing wiring termnal (BT)			● (∗4), (∗6)			–		
	Lock cover (LC)			–			●		–
	Accessory terminal cover (TC)			● (∗6)			–		
Connection	Main body			20A or less : Screw terminal M4 30A : Screw termnal 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				EN 60934 : TUV approval EN 60947-2 : Self-declaration (∗5)			EN 60934 : TUV approval (∗10)	Operating characteris is Medium type (M) only. The rated current, 0.3A, 2A, 3A and 7A are not applied.	

Note (∗1) The 3-pole products are for AC use only.
(∗2) Contact us for operating characteristics other than those mentioned above.
(∗3) In poles equipped with a shunt tripping mechanism, the overcurrent tripping element is not operative (switched shunt tripping).
(∗4) For back-face wiring terminals, specify if it will be used with 30A, or 20A or less.
(∗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. Products for non-standard conditions are special order. (Low temperature, 1st and 2nd-degree moisture fungal treatment, corrosion-resistant)
2. Although a buzzing sound may occur when an instantaneous type becomes 80% or more of the rated current for AC use, performance is not effected. Please take this point into consideration when selecting units for use in quiet environments.
3. Please use in environments free of high temperatures, humidity, dust, corrosive gas, vibration, and impact. Also, do not use it in a circuit with inrush current or harmonics. Problems may result.

3. Special-purpose Breakers
Mag Only, DC, and DSN

Mag Only (Instantaneous tripping circuit breakers)

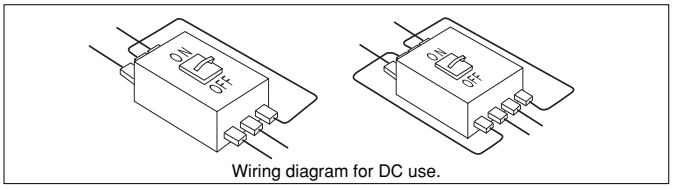
Fixed	NF63-CW/SW/HW	AC, DC	Rated current x10	
	NF125-CW/SW/HW	AC, DC		
	NF160-SW/HW	AC, DC		
	NF250-CW/SW/HW	AC, DC		
	NF400-CW/SW NF630-CW/SW	AC, DC		
Adjustable	NF125-SGW/HGW NF160-SGW/HGW NF250-SGW/HGW	AC, DC	High: Rated current x10 Low: Rated current x4 (AC) High: Rated current x13 Low: Rated current 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	

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

DC MCCBs and DSN 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 breakers with the same designations.

Wiring diagram for DC-usage.



Wiring diagram for DC use.

Remark: 1. 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	

Remark: 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 purpose). 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
Rated breaking capacity (kA) IEC 60947-2 (Icu/Ics)	15/8	10/5	15/8	20/5	15/8	20/5	20/20		20/20		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 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 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		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		63		125			125			160			250			250			400			630		800		1000		1250		1600	
Number of poles	2	3	2	3	2	3	4	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
Rated voltage (AC/DC)	500/250		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		378/155		750/310			750/315			960/400			1500/625			1500/625			2400/1000			3780/1575		4800/2000		6000/2500		7500/3125		9600/4000	

3. Special-purpose Breakers

400Hz, Instantaneous, and Generator Protection

400Hz MCCBs

Standard MCCBs cannot be used in 400Hz circuits. When standard MCCBs are used in high-frequency circuits (eq. 400Hz), the instantaneous characteristics are shifted higher. The 400Hz MCCB is recommended for use in 400Hz circuits.

●Specifications

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

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) IEC 60947-2 (Icu / Ics)	690V	8/4	10/5	–	5/3	10/10	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	30/30	65/33	65/33
	440V	25/13	50/25	25/13	50/13	42/42	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	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 proection, 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	—	—	●	●	●

Remark: 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

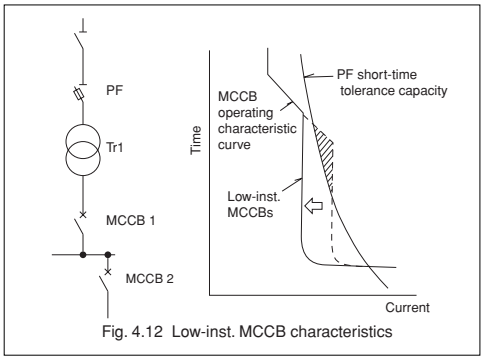


Fig. 4.12 Low-inst. MCCB characteristics

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)	IEC 60947-2 (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

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

Measuring Display Unit (MDU) Breakers

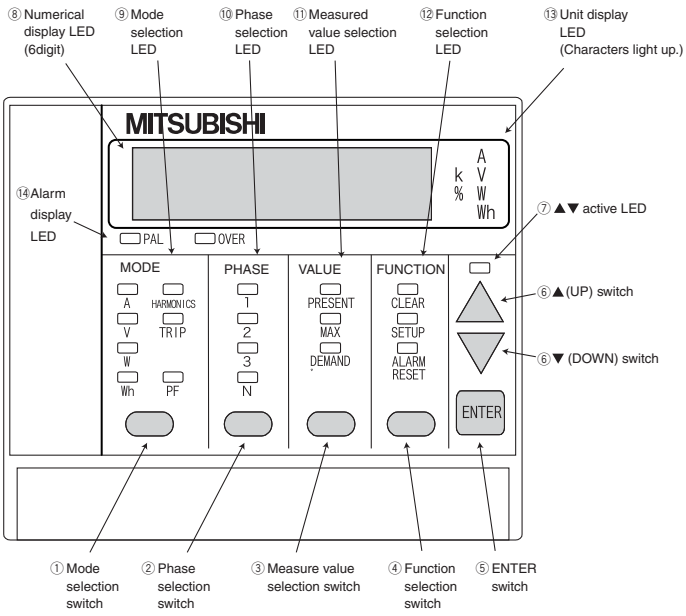
- Energy management is now possible by measuring and displaying load current, line voltage, electric power, electric energy, harmonic current (3rd, 5th, 7th, 9th, 11th, 13th, 15th, 17th, 19th, and total), and power factor.
- Pulse output option displays electric current output.
  CC-link option allows measurement data to be transferred to the CC-link open network.
- When a circuit breaker alarm activates, the LED on the MDU turns on.
  PAL : Pre-alarm
  OVER : Overcurrent
- When the circuit breaker trips, the cause of the fault and fault current are stored in the EEPROM, enabling investigation and restoration of the power line.
- The max. demand values of load current, line voltage, total harmonic current, electric power and current (per hour), are stored in the EEPROM.
  MDUs equipped with the CC-Link option store the time when each item is measured, making it easy to identify peak times of power consumption.

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 (∗1)	500A	800A	1260A	1600A
	Maximum measuring harmonic current (∗1)	250A	400A	630A	800A
	Maximum measuring voltage (∗1)	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 (∗1) (∗2) Overload and short-circuit (∗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) (∗3)		○			
CC-Link transmission (option) (∗3) (∗4)		○			
Control power (Allowable voltage range 85~110%)		AC/DC100-240V 12VA (∗5.)			
MDU installation	Breaker mounting	○			
	Panel mounting (∗7)	○			
Alarm contact output (option) (∗6)	Pre-alarm (PAL) (Power supply AC/DC100-240V required)	○PAL			
	Trip indicator (TI) (Power supply AC/DC100-240V required)	–	○PAL, OAL		

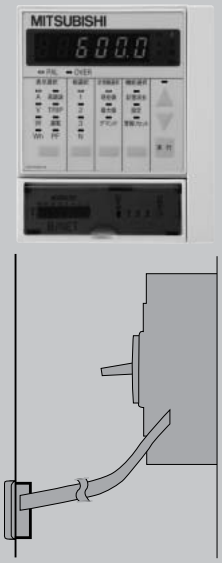
Note (∗1) Maximum measurement values for current, voltage, harmonic current, and fault current are displayed in a flashing format when the input exceeds these values. (When a fault occurs, the cause of the fault and the value for fault current flash despite being less than the maximum measurement value). When electric power exceeds the max. measurement, the value of the current or voltage flashes.
(∗2) Either overload (L) or short-circuit (SI) is displayed. They are not displayed simultaneously.
(∗3) The pulse output option and CC-Link option cannot be attached at the same time.
(∗4) “Ver.1.10” of CC-link is used when the breaker-mounted MDU is installed.
(∗5) When control power is supplied to the MDU, the max. transitional rush current is 2A peak, 1ms (at 240VAC).
(∗6) The pre-alarm (PAL) output function can be set to “Self-holding” or “Auto-reset”. For the alarm contact output (PAL, OAL) to function, the MDU and circuit breaker must be connected, and control power must be supplied to the MDU and alarm contact output module.
(∗7) A set of parts (panel holder plate, screws, nuts, MDU connection cable) is included for panel mounting. The standard length for the MDU connection cable is 2m, but it can be specified to be 0.5m, 3m, or as long as 5m.

Measuring Display Unit



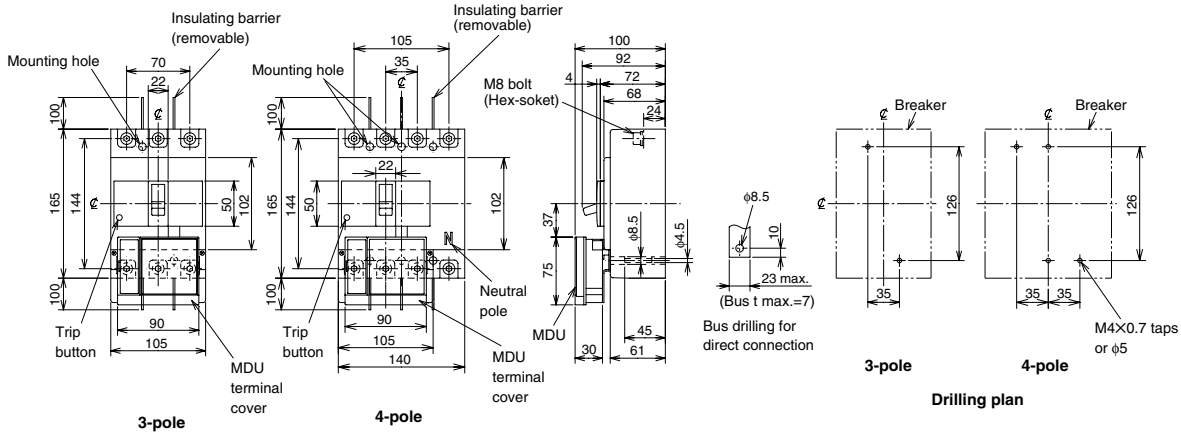
Displayed items and functions are changed by pushing ①~④ switch.
Selected item is shown by LED (below ⑨ - ⑫).
(Ex. Phase selection 1→2→3→N→1…)
▲/▼ switch⑥ is active when adjustment or reset operation is required.
(▲▼ active LED⑦ is turned on)
There may be functions which cannot be operated depending upon the specifications.

The invalid function is skipped.

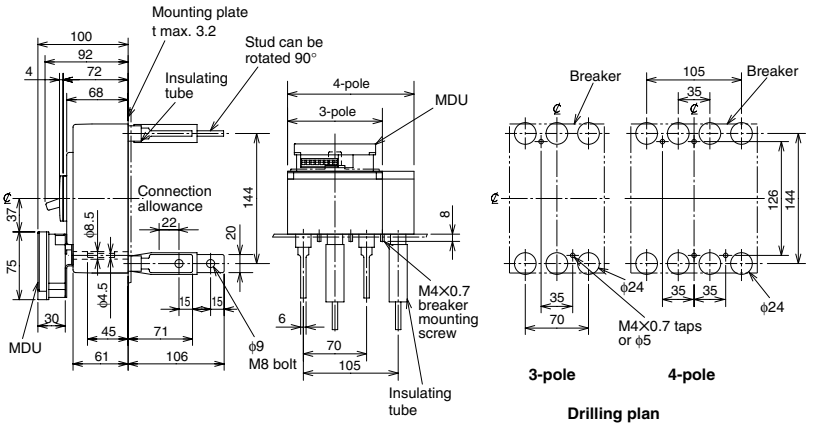
Installed on the circuit breaker	***Installed on the panel***
	

NF250-SW with MDU

Front-Connection



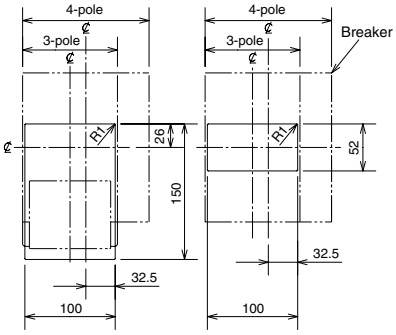
Rear-Connection



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.)

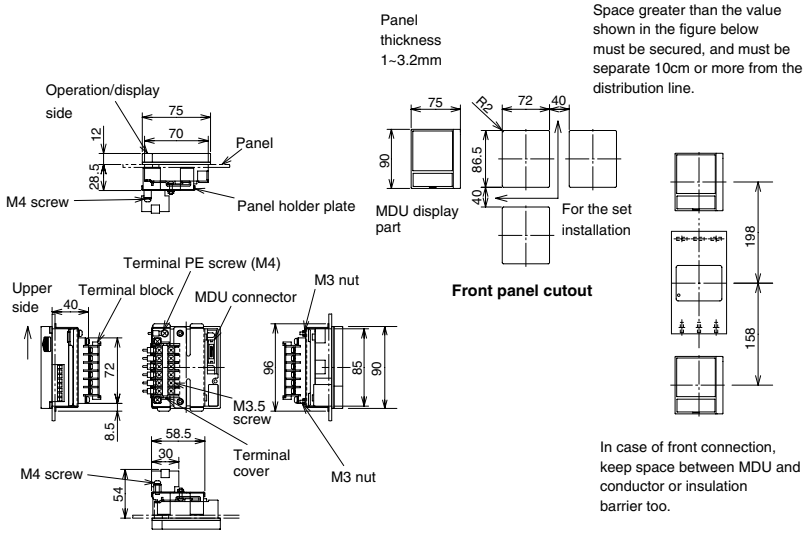


CC-Link ; only MDU panel mounting

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

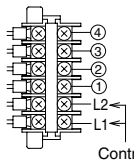
MDU panel mounting

MDU is connected with circuit breaker via MDU connection cable.



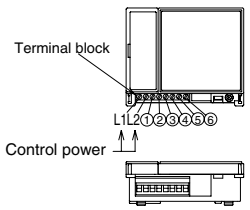
MDU Terminal

<Panel mounting>



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

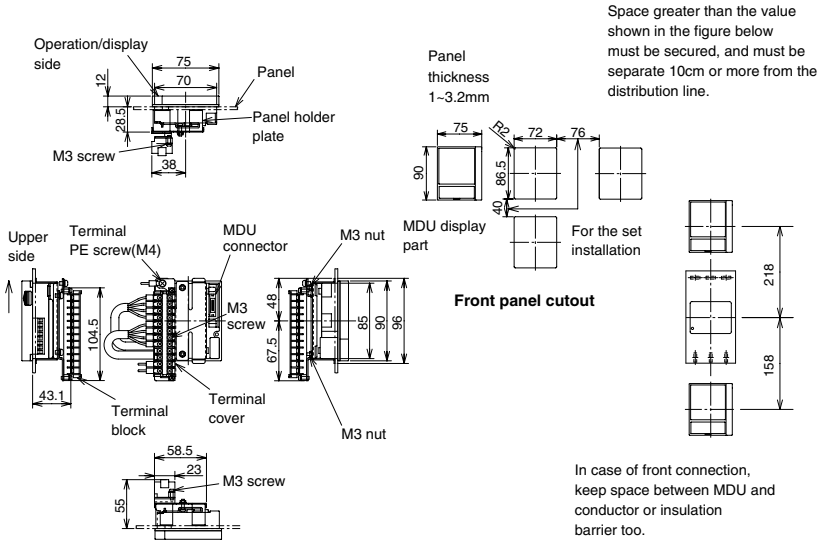
<Breaker mounting>



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

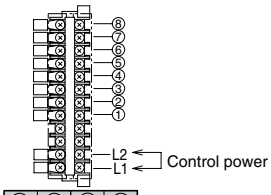
NF250-SW with MDU (CC-Link)

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



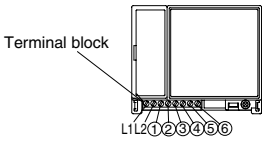
MDU Terminal
Figure of the breaker mounting is removed the terminal cover.

<Panel mounting>



①	②	③	④
SLD	DG	DB	DA
⑤	⑥	⑦	⑧
SLD	DG	DB	DA

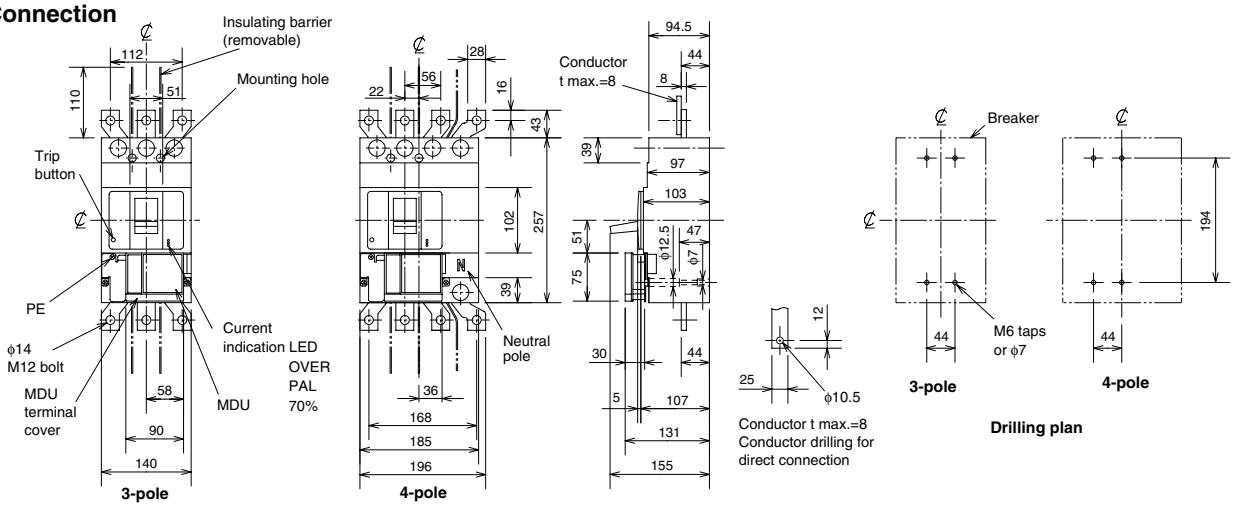
<Breaker mounting>



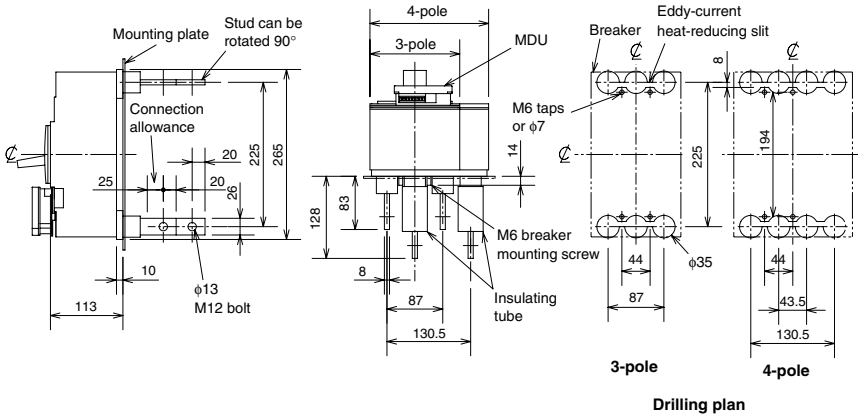
①	②	③	④	⑤	⑥
—	FG	SLD	DG	DB	DA

NF400-SEP, NF400-HEP with MDU

Front-Connection



Rear-Connection

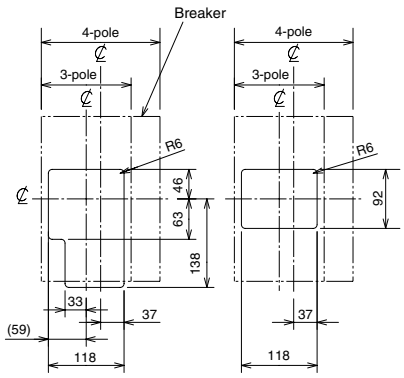


Note:The drilling plan is different if insulating barriers are installed.

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.)

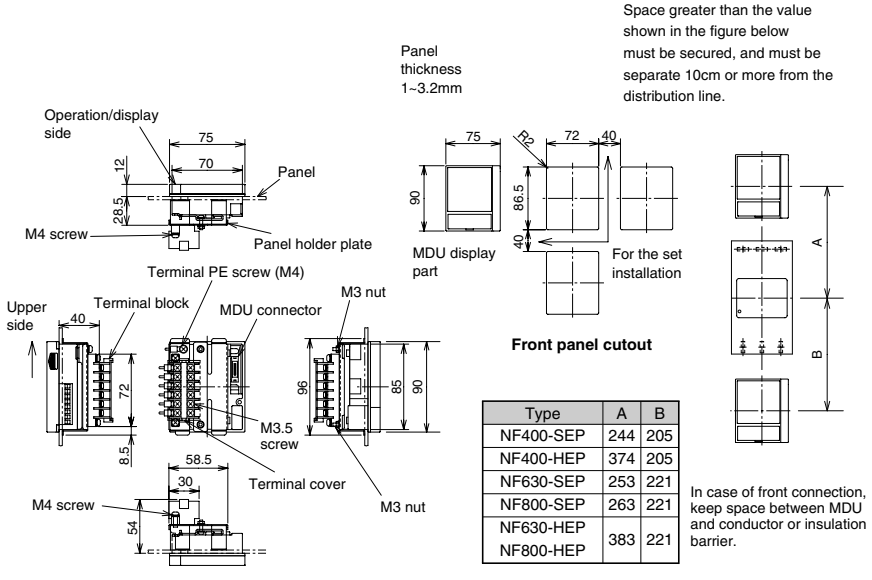


CC-Link ; only MDU panel mounting

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.



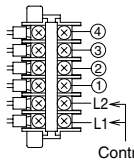
Type	A	B
NF400-SEP	244	205
NF400-HEP	374	205
NF630-SEP	253	221
NF800-SEP	263	221
NF630-HEP NF800-HEP	383	221

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

MDU Terminal

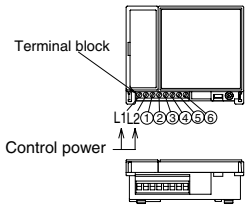
Figure of the breaker mounting is removed the terminal cover.

<Panel mounting>



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

<Breaker mounting>

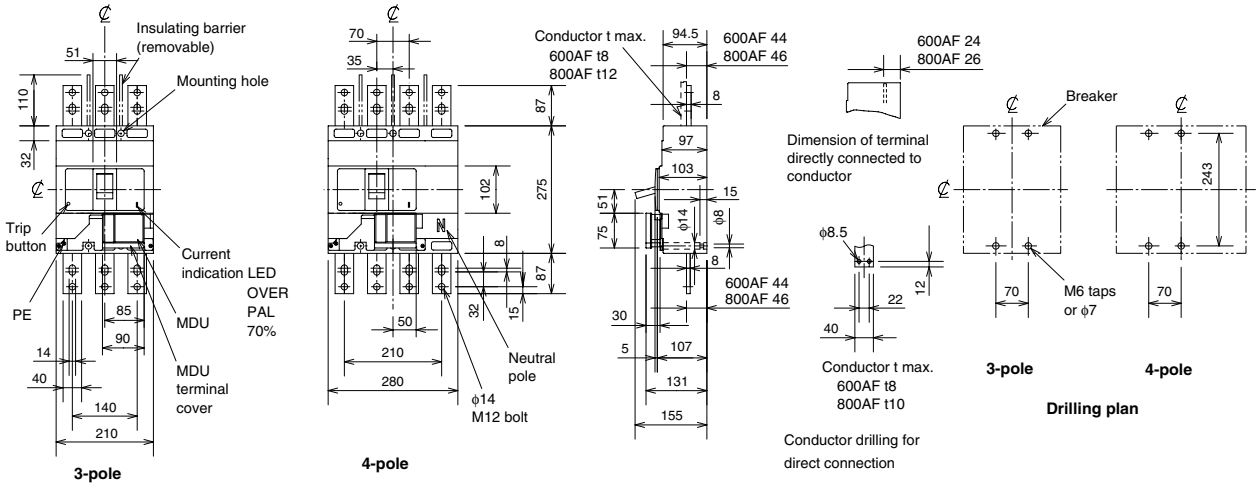


	①	②	③	④	⑤	⑥
No transmission	—	FG	—	—	—	—
Pulse output	—	FG	—	—	113	114

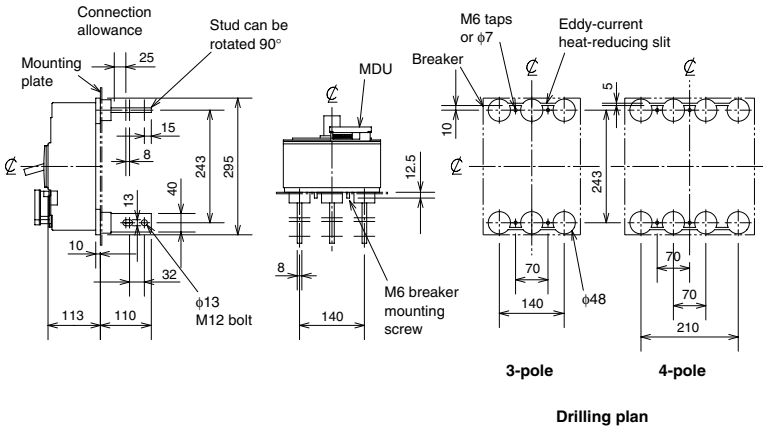
3. Special-purpose Breakers
MDU Breakers

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

Front-Connection



Rear-Connection

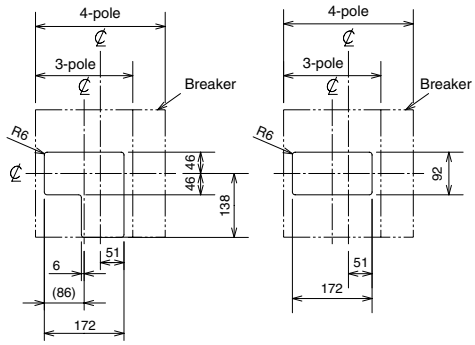


Note:The drilling plan is different if insulating barriers are installed.

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.)

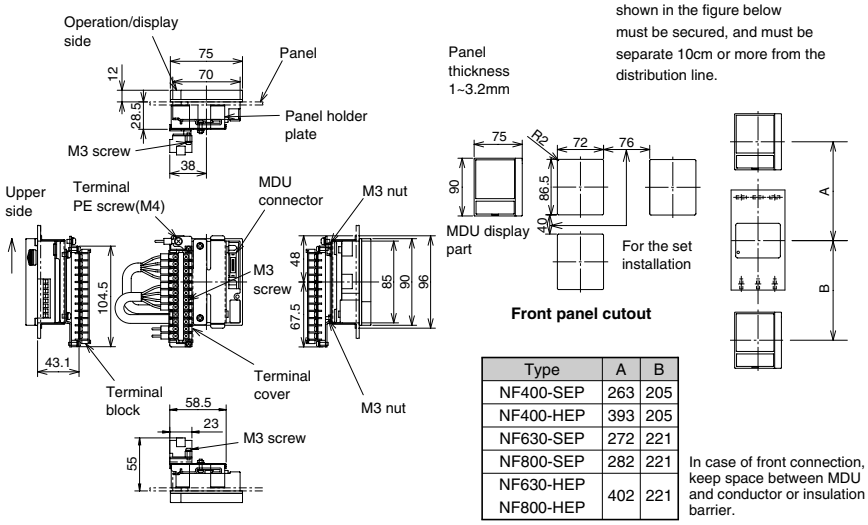


CC-Link ; only MDU panel mounting

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

MDU panel mounting

MDU is connected with circuit breaker via MDU connection cable.



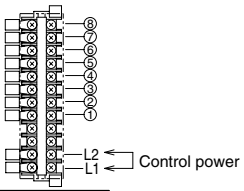
Type	A	B
NF400-SEP	263	205
NF400-HEP	393	205
NF630-SEP	272	221
NF800-SEP	282	221
NF630-HEP NF800-HEP	402	221

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

MDU Terminal

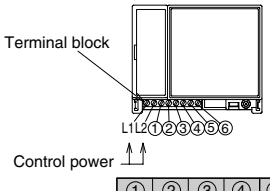
Figure of the breaker mounting is removed the terminal cover.

<Panel mounting>



①	②	③	④
SLD	DG	DB	DA
⑤	⑥	⑦	⑧
SLD	DG	DB	DA

<Breaker mounting>



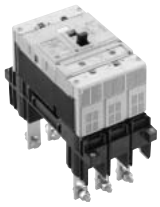
①	②	③	④	⑤	⑥
—	FG	SLD	DG	DB	DA

4. Connection Method

1. Connection Types

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

Table 4-1: Connection Types

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

2. Connection Accessories

Table 4-2: List of Connection Accessories

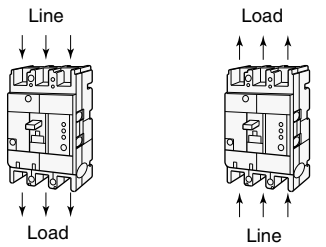
Type name		Solderless terminal (SL)	Rear studs (B-ST)	Plug-in (PM) (∗1)
NF32-SW, NF63-CW/SW/HW	2P	–	ST-05SW2	PM-05SW2
NF32-SW, MB30-SW, MB50-CW/SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW	3P		ST-05SW3	PM-05SW3
NF63-SW/HW	4P		ST-05SW4	PM-05SW4
NF125-CW/SW	2P	SL-1SW4L (∗3) SL-1SW4G (∗4)	ST-1SW2	PM-1SW2
NF125-HW			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		SL-2UW3L (∗5) SL-2UW3G (∗6)	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	–
NF630-CW/SW/SEW, NV630-CW/SW/SEW	3P	–	ST-6SW3	–
NF630-HEW/REW, NV630-HEW	3P			
NF630-SW/SEW, NV630-SEW	4P	–	ST-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			

Note (∗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 non-use of plug-in terminal (PM-N) for the connection of circuit breaker.
(∗2) If safety device is necessary, please order.
(∗3) Connected wire size: 2.5~25mm^2
(∗4) Connected wire size: 25~70mm^2
(∗5) Connected wire size: 14~95mm^2
(∗6) Connected wire size: 70~125mm^2

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).

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.



Normal connection (a) Reserve connection (b)

Normal and reverse connection methods

5. Accessories
Internal Accessories

1. Accessories

Table 5-1: Accessories

Internal accessories		Function	Applicable models	Cassette-type accessories
AL	Alarm switch	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	Electrically indicates the ON-OFF status of the circuit breaker.		●
SHT	Shunt trip	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	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 restart operation.	NF-C·S·H·U, (∗1) NV-C·S·H·U and MB series	●
EAL	Earth-leakage alarm switch	Electrically indicates the trip status of the earth-leakage circuit breaker caused by a ground fault. If 250AF or 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	Allows 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	Enables measurement of insulation resistance between the terminals of the load while circuit breaker is turned OFF.	NV-C·S·H·U	–
PAL	Pre-alarm module	Indicates that the load current exceeds the pre-alarm setting current.	Electronic type	–
OAL	Overcurrent trip alarm switch	Indicates that the breaker has been tripped by overcurrent or short-circuit current.	Electronic type (SGW, HGW, RGW, UGW)	–

Note (∗1) Excludes NV250-SEW/HEW models.

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
Overcurrent, 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 (For EAL, 400AF and higher)

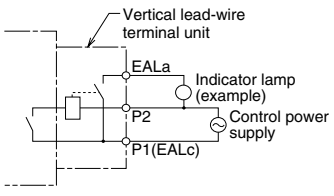
Switch type	AC			DC		
	Voltage (V)	Current (A)		Voltage (V)	Current (A)	
		Resistive load	Inductive load		Resistive load	Inductive load
S	460	–	–	250	0.2	0.2
	250	3	2	125	0.4	0.4
	125	5	3	30	4	3
V	460	5	2	250	0.3	0.3
	250	10	10	125	0.6	0.6
	125	10	10	30	10	6
X (∗1)	460	5	2.5	250	5	3
	250	10	10	125	10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

Note (∗1) When DC polarity must be considered.
Please contact us for applications regarding smaller current values.

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

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

A control power supply compatible with 100 and 200VAC is required; the wiring is shown on the right.
The permissible voltage range is 242VAC, and the power requirement is 10VA.



3. Maximum Number of Internally Mounted Accessories

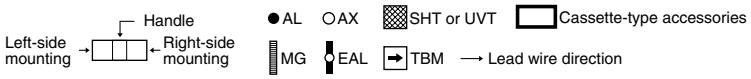


Table 5-8: Combinations of Accessories

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/SGW/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	(∗7)			(∗7)	
	AX	(∗7)			(∗7)	
	AL + AX	(∗7) 3-pole product only		(∗1)	(∗7)	(∗1)
	SHT or UVT		(∗2)	(∗2) (∗3)		(∗2) (∗4) (∗6)
	AL + SHT or UVT			(∗2)		
	AX + SHT or UVT			(∗2)		
	AL + AX + SHT or UVT			(∗1) (∗2)		
	MG					
	AL + MG				(Note 7)	
	AX + MG					
	EAL					(∗5) (∗8)
	TBM					(∗8) (∗9)
	PAL					

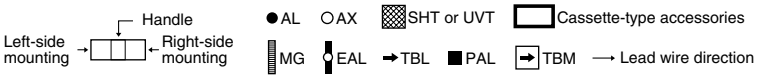
Circled numbers indicate the order of installation.

Note (∗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 are 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 V AC).
For the 24 V DC TBM only, instruct us of a control voltage. (The standard shared voltage is 100 - 240 V AC/100 - 240 V DC.)
(∗9) Models CE marking cannot install the TBM device.

Remark: 1. 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



Series		NF-C · S · H · U		NF-S
Type		NF400-CW/SW NF400-SEW/HEW/REW NF630-CW/SW NF630-SEW/HEW/REW NF400-UEW (3P)	NF800-CEW/SDW NF800-SEW/HEW/REW NF400-UEW (4P), NF800-UEW	NF1000-SEW NF1250-SEW NF1600-SEW NF1250-SDW NF1600-SDW
Poles		2, 3, 4		
Switch type		S		V
Accessories	AL		(∗3)	
	AX		(∗3)	
	SHT or UVT	(∗1) (∗2)	(∗1) (∗2)	(∗2)
	AL + AX	(∗3)	(∗3)	
	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) Option for NF400-SEW/HEW/REW/UEW (3P) NF630-SEW/HEW/REW	(∗5) Option for NF400-UEW (4P) NF800-CEW/SEW/HEW/REW/UEW	(∗5) Option for NF1000-SEW NF1250-SEW NF1600-SEW

Circled numbers indicate the order of installation.

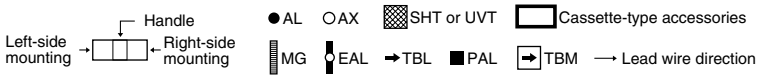
Note (∗1) SHT and UVT are right-pole mounting as standard. Please specify if left-pole mounting is required.

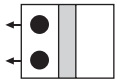
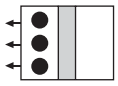
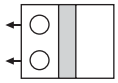
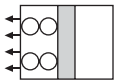
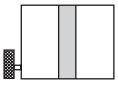
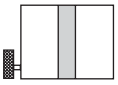
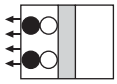
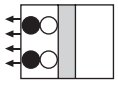
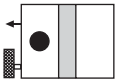
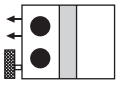
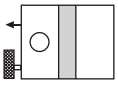
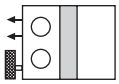
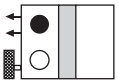
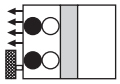
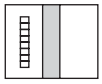
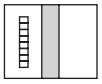
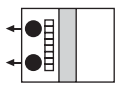
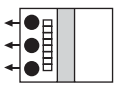
(∗2) UVT mounting requires a UVT voltage module (SHT requires no such voltage module).

(∗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 type 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.

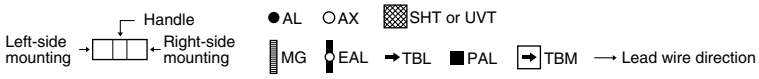
(∗5) SLT-equipped is standard. Control voltage (AC100~200V) is necessary. (In this case, no other accessories can be mounted to the breaker's right pole.)

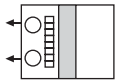
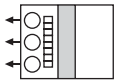
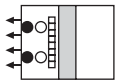
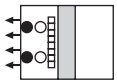
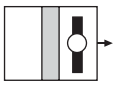
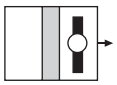
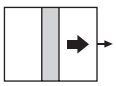
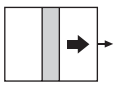
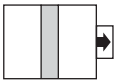
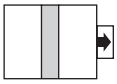


Series		NV-C · S · H	
Type		NV400-CW/SW NV400-SEW/HEW/REW NV630-CW/SW NV630-SEW/HEW	NV800-SEW/HEW
Poles		3, 4	
Switch type		S	
Accessories	AL		(∗2) 
	AX		(∗2) 
	SHT or UVT	(∗1) 	(∗1) 
	AL + AX	(∗2) 	(∗2) 
	AL + SHT or UVT	(∗1) (∗2) (∗3) 	(∗1) (∗2) (∗3) 
	AX + SHT or UVT	(∗1) (∗2) (∗3) 	(∗1) (∗2) (∗3)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

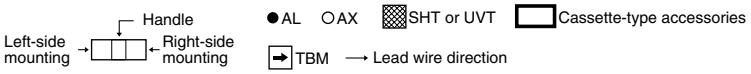
Note (∗1) UVT mounting requires a UVT voltage module (SHT requires no such voltage module).
(∗2) When mounting more than three left-pole mounting devices by SLT, or when mounting a SHT or UVT to the same pole as the AL, AX or AL + AX, a special type SLT is necessary.
(∗3) When mounting a UVT to the same pole as the AL, AX or AL + AX. the UVT voltage module is separate.

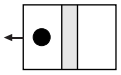
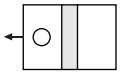
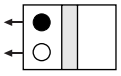
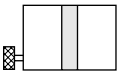
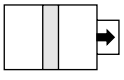
5. Accessories
Internal Accessories



Series		NV-C · S · H	
Type		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)	(∗1)  Option for NV400-SEW/HEW/REW NV630-SEW/HEW	(∗1)  Option for NV800-SEW/HEW

Note (∗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.)
Remark: 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.

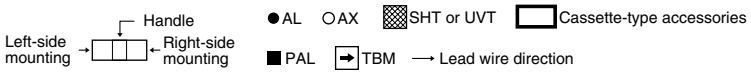


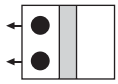
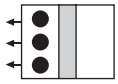
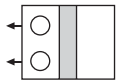
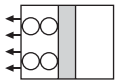
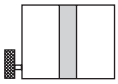
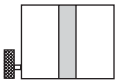
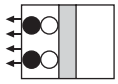
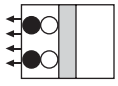
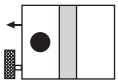
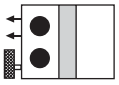
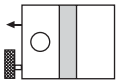
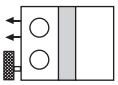
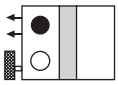
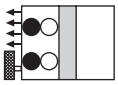
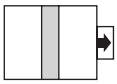
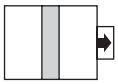
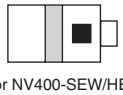
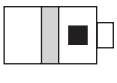
Series		NV-C · S · H · U for CE Marking
Type		NV32-SW NV63-CW/SW/HW NV125-CW/SW/HW NV250-CW/SW/HW NV125-RW, NV250-RW
Poles		3, 4
Accessories	AL	
	AX	
	AL + AX	 (∗1)
	SHT or UVT	 (∗2) (∗3)
	AL + SHT or UVT	
	AX + SHT or UVT	
	AL + AX + SHT or UVT	
	MG	
	AL + MG	
	AX + MG	
	EAL	
	TBM	 (∗4)
	PAL	

Note (∗1) The 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) SHT cannot be installed.
(∗4) Only the models with an SLT are available.
For the 24 V DC TBM only, instruct us of a control voltage. (The standard shared voltage is 100 - 240 V AC/100 - 240 V DC.)
Remark: 1. Accessories of TBM can be installed independent of installations of AL, AX. (TBM cannot be installed at the same time.)

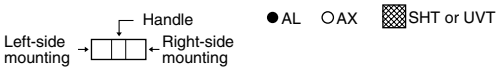
5. Accessories

Internal Accessories



Series		NV-C · S · H for CE Marking	
Type		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) 
	TBM		
	PAL (contact output)	(∗4)  Option for NV400-SEW/HEW/REW NV630-SEW/HEW	(∗4)  Option for NV800-SEW/HEW

Note (∗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.
(∗4) SLT-equipped is standard. Control voltage (AC100-200V) is necessary. (In this case, no other accessories can be mounted ti the breaker's right pole.)
Remark: 1. TBM can be mounted regardless of the number of AL, AX, SHT, UVT accessories. (However, two TBMs cannot be mounted simultaneously.)
2. The PAL's dimensions and specifications change for the NF-C/S and NV-C/S series.



Series		NV-C · S · H for UL Listed					
Type		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						(∗5)
	AX						(∗5)
	SHT or UVT	(∗1)	(∗1)	(∗1)	(∗2)	(∗2)	(∗2)
	AL + AX		(∗3)	(∗3)	(∗3)	(∗5)	(∗5)
	AL + SHT or UVT		(∗1)	(∗1)	(∗2)	(∗1) (∗4) (∗5) (∗6)	(∗1) (∗4) (∗5) (∗6)
	AX + SHT or UVT		(∗1)	(∗1)	(∗2)	(∗1) (∗4) (∗5) (∗6)	(∗1) (∗4) (∗5) (∗6)
	AL + AX + SHT or UVT		(∗1) (∗3)	(∗1) (∗3)	(∗2) (∗3)	(∗1) (∗4) (∗5) (∗6)	(∗1) (∗4) (∗5) (∗6)

Circled numbers indicate the order of installation.

Note (∗1) If a UVT is used, the UVT voltage module is installed on the lead wire terminal block. (The SHT requires no voltage module.)
(∗2) If a UVT is used, the 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) The second AX can be installed instead of the AL on the left pole.
(∗4) The standard mounting of the SHT and the UVT is performed on the right pole. If mounting on the left pole is required, contact us. (The UVTs for interlocks are mounted on the left pole.)
(∗5) 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.
(∗6) 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.

4. Shunt Trip (SHT)

Table 5-9: Standard Coil Rating

Series		Cut-off switch	Voltage (V)	Input power requirement (VA) (∗1)		Operating time (ms) (∗2)
				AC	DC	
NF-C • S • H • U MB NV-C • S • H • U	32(30) • 63A Frame 125A Frame (NF125-SGW/HGW/RGW/UGW are excluded)	Equipped	AC100-240 380-550 (Compatible to 50 and 60Hz.) DC100-125	120	50	15 or less
	160 • 250A Frame NF125-SGW/HGW/RGW/UGW				60	
	400 • 630 • 800 Frame NF400-CW/SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-SDW/CEW/SEW/HEW/REW/UEW NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW, NV800-SEW/HEW		AC100~450/DC100~200 (50 also 60Hz)	100V : 20 200V : 50 330V : 120 450V : 170	100V : 10 200V : 35	5~15
	1000 • 1250 • 1600 Frame NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW		AC100-120 200-240 380-450 (50 also 60Hz) DC100	200	70	7~15

Note (∗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	●	–	●	–	●	●	–	●	–	●	●	●	–	–

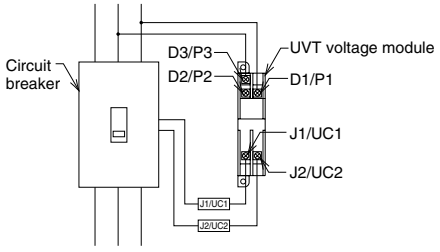
5. Undervoltage Trip (UVT)

Table 5-11: Coil Rating

Series	Voltage (V) (∗1)		Input power (VA)	Operating time (ms) (∗2) (∗3)
	Standard voltage	Special voltage (∗5)		
250AF and less	AC100-110/120-130 selectable 200-220/230-250 selectable 380-415/440-480 selectable (∗4) 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			5	5~30
NF1000-SEW NF1250-SEW/SDW NF1600-SEW/SDW			5	5~35

Note (∗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)

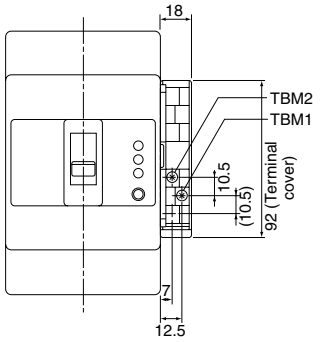
6. Test Button Module (TBM)

- Press the test button on the main body of the breaker while control voltage is applied to test the unit. (The voltage must be applied to the main body of the breaker for more than 2 sec when testing time-delayed NV models.
- All models have a vertical lead terminal unit (SLT) as standard.

Table 5-12

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

Note (∗1) 100-240VAC and 100-240VDC specifications are standard unless otherwise specified. Specifications for 24VDC are available upon request.



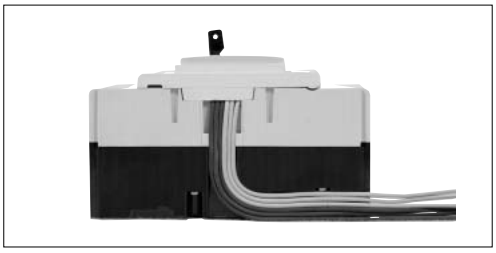
7. Lead-wire Specifications

Table 5-13

Series	Type	Size	Length	Marking	Ring-mark example
800AF and less	Heat-resistant wire	0.5mm²	(∗1) 450mm	A ring-mark with the terminal symbol is attached to each lead wire.	98/ALa, 96/ALb, 95/ALc
1000AF and over		0.75mm²			C1/S1, C2/S2

Note (∗1) 400mm for models with four poles and right-pole installation.

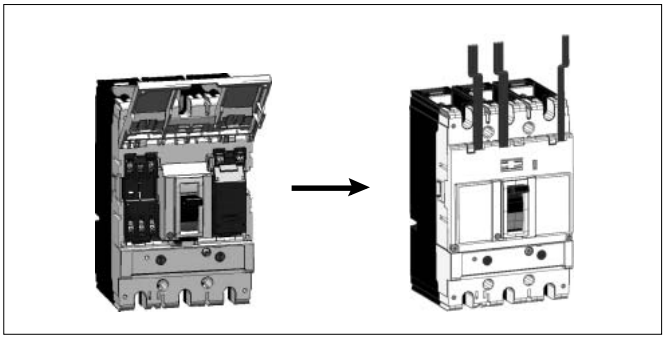
- Lead wires are normally extended laterally.
- Grooves are provided on the side of the breaker for extending lead wires on the side of the breaker (excluding models NF125-SGW/RGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/RGW/UGW, 400AF and higher).



8. Internal Terminal (INT)

- An internal accessory including terminal screws for connecting lead wires.

Remark: 1. Available for NF125-SGW/HGW/RGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/RGW/UGW.



9. Vertical Lead-wire Terminal Block (SLT)

- The circuit beaker 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.
- For models of front connection, rear connection, and plug-in type (excluding PLT).

■NFB

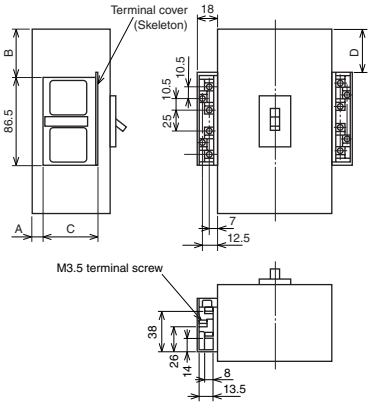


Table 5-14: Summary of Dimensions

Applicable models	A	B	C	D
NF30-CS, MB30-CS	4	4.5	44.5	4.5
NF32-SW, NF63-CW/SW/HW MB30-SW, MB50-CW/SW	7	17.5	54	17.5
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

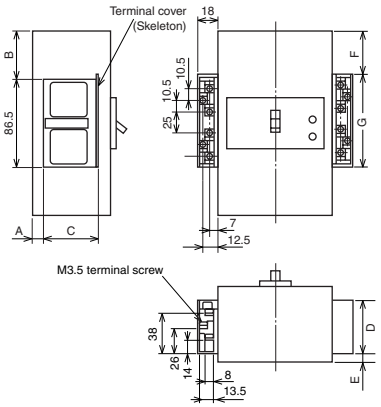


Table 5-15: Summary of Dimensions

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/HW/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

Remark: 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 for three and more than three pieces of internal accessories are mounted on left-side.

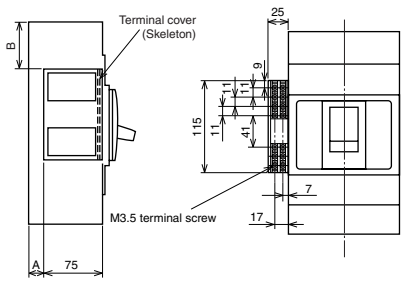


Table 5-16

Applicable models		A	B
NFB	NV		
NF400-CW/SW/SEW NF400-HEW/REW, NF-SKW NF630-CW/SW/SEW NF630-HEW/REW	NV400-CW/SW/SEW NV400-HEW/REW NV630-CW/SW/SEW/HEW	20	60
NF400-UEW(3P)	–	117	100
NF800-CEW/SDW/SEW NF800-HEW/REW, NF-SLW	NV800-SEW/HEW	20	69
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 gives an alarm when the load current exceeds a preset current level, securing a continuous power supply and preventing problems before they occur. Electronic breakers equipped with a digital ETR of 125 to 1600AF are optional (standard for some modules).

Table 5-17

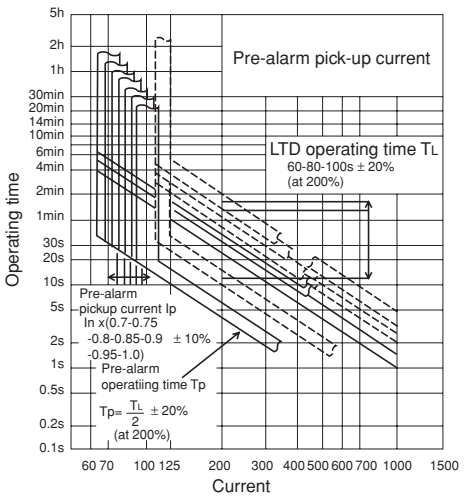
Type	Pre-alarm LED (Auto reset)	Solid-state relay (SSR) output-contact output (Auto reset)		Pre-alarm module-contact output (1a)		
			Switching capacity	(Self-holding)	Switching capacity	Reset system
NF125-SGW/HGW	Standard equipment	Option	24VDC 100-200VAC 20mA	Option	100VAC or 200VAC 2A	Press the reset 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		Option	24VDC 100-200VAC 20mA			
NF1000-SEW NF1250-SEW NF1600-SEW						

①Pre-alarm LED — The LED on the circuit breaker starts flashing when load current exceeds the preset current, then changes to a continuous display when the pre-alarm output is given.

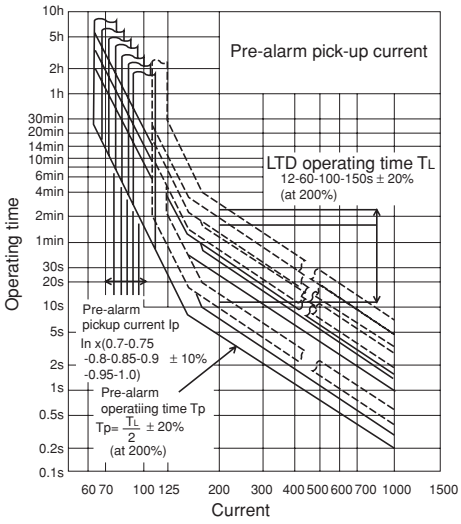
②Solid-state relay output — Open the upper cover of the circuit breaker, connect the lead-wire connector supplied, and use it as the lead wire outlet. In this case, only the lead wire outlet of the internal accessories can be attached to the right pole. (For flush-plate models, the outlet is already installed as a PAL mount.)

③Pre-alarm module — SLT is attached as standard and is used as the control power source of for 100VAC and 200VAC. In this case, no other internal accessories can be attached to the right pole. (Auto resetting is also possible.)

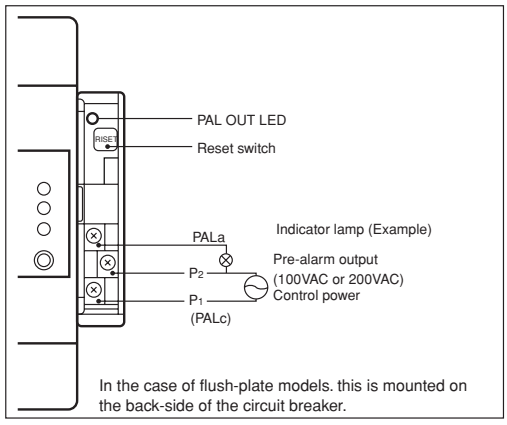
●Pre-alarm characteristics



Percentage (%) to rated current or preset current rating (NF/NV125,250AF)



Percentage (%) to rated current or preset current rating (NF/NV400,630,800AF NF1000,1250,1600AF)



11. 3ø4W Neutral-pole protection Relay (NR)

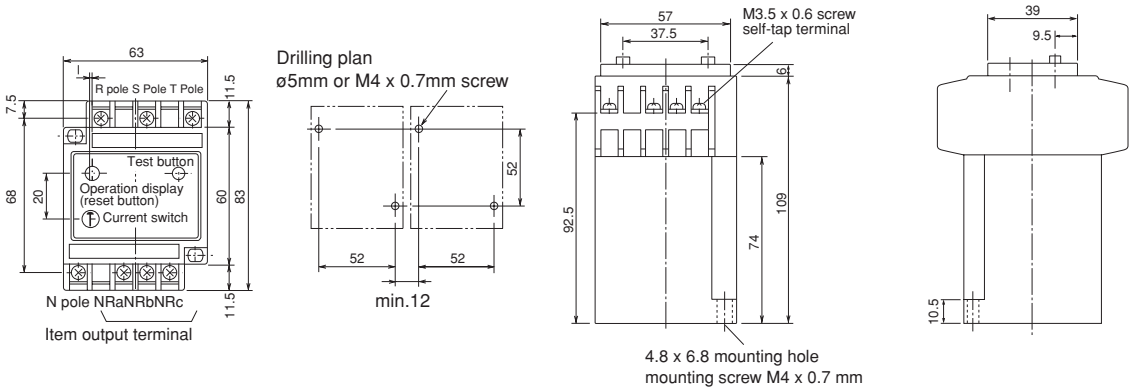
- In a 3-phase 4-wire circuits, the voltage rise of the circuit by phase failure of a neutral line is detected, and a contact output is taken out.

Table 5-18

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			

External output contacts	AC			DC	
	Voltage	cos ø		Voltage	L/R	
		1.0	0.4		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.



1. F-type Operating Handle (Breaker Mount Type)

Attaches to Main Body of Circuit Breaker

- Circuit Breaker-mounted
  Operating handle and control settings are mounted on the circuit breaker body.
- Panel door open state
  Operating handle and control settings are attached on the breaker body.

1. Conforms to EN safety standards (EN 60204-1).
2. Provides a circuit disconnecting (isolating) function in combination with the breaker body.
3. IP54 protection rating (IEC 60529).
4. Compliant with UL489.

Door Lock Mechanism

- Standard products comply with reset open specifications.
- Performing the open (reset) operation is the only way to open the door.
- The panel door can also be opened when set in the ON or OFF position by turning the release screw.

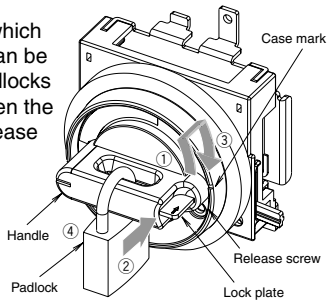
Operation Lock

Standard products comply with OFF lock specifications. To set the operation lock in the OFF position: (For example, in the case of a padlock)

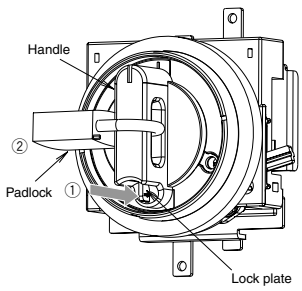
①**Turn the handle in the Reset direction to a position at which the marks on the lock plate and on the case are aligned.**
②**Push the lock plate in.**
③**While pushing the lock plate, return the handle to the OFF position.**
④**Lock by passing the padlock through the hole in the center of the handle.**

Three padlocks (35/40mm) which are commercially available can be installed. Even while the padlocks are installed, you can still open the panel door by turning the release screw.

Note: For 400~800AF, step ③ is not required.



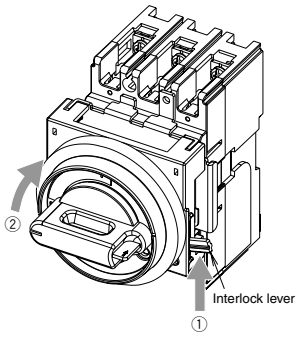
The ON/OFF lock specification enables the operation lock to be set even in the ON position. After pushing the lock plate with the handle in the ON position, attach the padlocks. Even in the case that the breaker has tripped after locking in the ON position, the operating handle displays the trip information.



Note: For under 250AF, use a 35mm padlock (under 70g).
For under 400AF, use a 40mm padlock (under 100g).

Safety Device

The interlock lever prevents the breaker from being turned on while the panel door is open. When the breaker needs to be turned on while the door is open during checkup, turn the handle to the ON position while pushing the interlock lever in the direction of the arrow.



Made-to-order

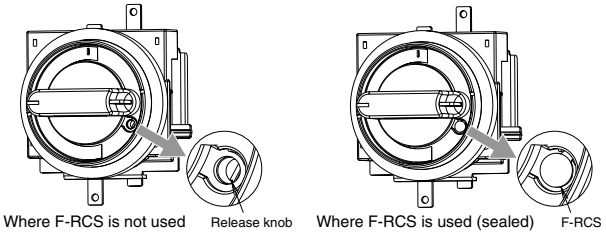
■Breaker mounting direction (Not including UL-listed products)
Even when a breaker is mounted horizontally, units can be made-to-order with the handle operation and ON/OFF indicators the same as standard vertical-mount models, and the same hole dimensions. Left- or right-facing power supply specifications are available for horizontal-mount models.

■Door lock mechanism
OFF-Open specification····· The panel door can be opened in the OFF position.

■Operation lock mechanism
ON/OFF-Lock specification···· Operation lock can be engaged in the ON or OFF position.

Sealing-off the Release Knob

Use the F-RCS release protection device, which is separately available, to prohibit opening the panel by operating the release knob.



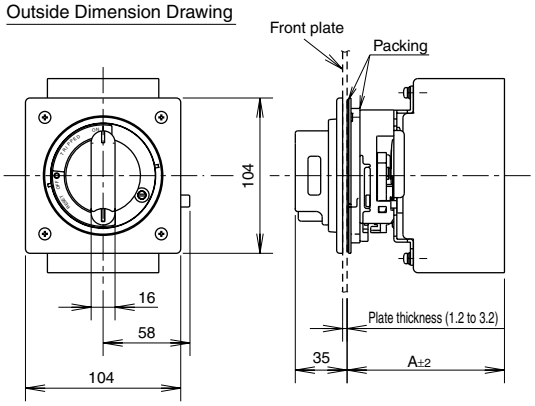
Note: For applicable lock devices, please refer to page 63.

5. Accessories
External Accessories

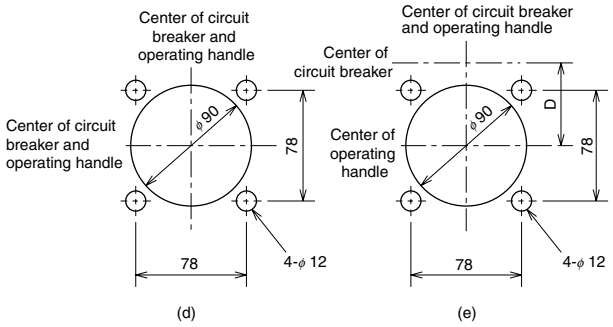
■Outside Dimension Drawing

250A Frame or Smaller

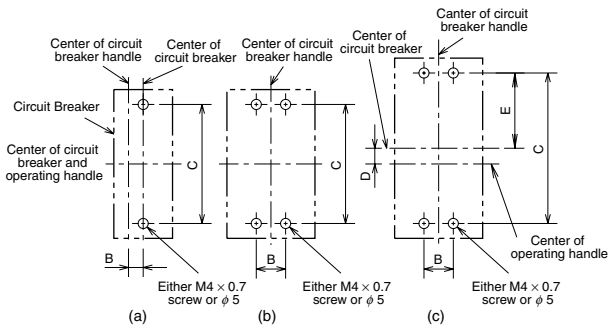
Outside Dimension Drawing



Front Plate Drilling Dimension Drawing

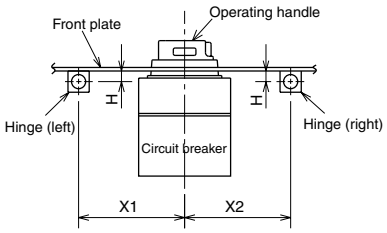


Circuit Breaker Mounting-Hole Drilling Dimension Drawing



Center of Hinge and Circuit Breaker

Left hinge		Right hinge	
H	X1	H	X2
0 or more	(5H+85) or more	Less than 10	170 or more
		10 or more	(5H+120) or more



* The above drawing shows a layout of the hinge and the circuit breaker when viewed from the load side.

■Summary of Dimensions

Table 5-19

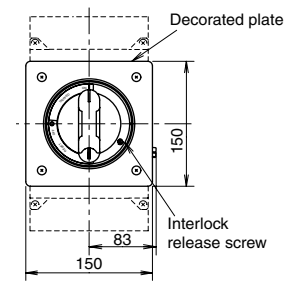
Type names	Applicable models (∗1)				Drilling plans	Dimensions (mm)				
	MCCB	Number of poles	ELCB/MCCB with ground fault protection	Number of poles		A	B	C	D	E
F-05S2, F-05SE2 (∗4)	NF32-SW, NF63-CW, NF63-SW, NF63-HW DSN32-SW, DSN63-CW, DSN63-SW	2	—	—	(a) (d)	105	12.5	111	—	—
F-05S, F-05SE	NF32-SW, NF63-CW, NF63-SW, NF63-HW, MB30-SW, MB50-CW, MB50-SW, DSN32-SW, DSN63-CW, DSN63-SW	3, 4	NV32-SW, NV63-CW, NV63-SW, NV63-HW	2, 3	(b) (d)		25			
F-1S2, F-1SE2 (∗4)	NF125-CW, NF125-SW, DSN125-CW, DSN125-SW	2	—	—	(a) (d)		15			
F-1S, F-1SE	NF125-CW, NF125-SW, MB100-SW, DSN125-CW, DSN125-SW	3, 4	NV125-CW, NV125-SW, NV125-HW	3, 4	(b) (d)		30			
	NF125-HW	2, 3, 4								
F-1U, F-1UE	—	—	NV125-RW	3	(c) (e)			172	30.5	86
F-2S, F-2SE	NF250-CW, NF250-SW, NF250-HW, MB225-SW, DSN250-CW, DSN250-SW	2, 3, 4	NV250-CW, NV250-SW, NV250-HW, NV250-SEW, NV250-HEW	3, 4	(b) (d)	107	35	126	—	—
F-2U, F-2UE	—	—	NV250-RW	3	(c) (e)			201	37.5	100.5
F-2SG, F-2SGE	NF125-SGW, NF125-HGW, NF160-SGW, NF160-HGW, NF250-SGW, NF250-HGW, DSN125-SGW, DSN160-SGW, DSN250-SGW	2, 3, 4	—	—	(b) (d)	125		126	—	—
F-2UG, F-2UGE	NF125-RGW, NF125-UGW, NF250-RGW, NF250-UGW	2, 3, 4	—	—	(c) (e)			201	37.5	100.5
F-05SUL2	NF50-SWU	2	—	—	(a) (d)	105	12.5	111	—	—
F-05SUL		3	NV50-SWU	3	(b) (d)		25			
F-1SUL2	NF100-CWU, NF100-SWU	2	—	—	(a) (d)		15			
F-1SUL		3	NV100-SWU	3	(b) (d)		30			
F-2SUL	NF225-CWU	3	NV225-CWU	3		107	35	126		
F-2SGUL	NF-SFW, NF-SJW, NF-HJW	3	—	—		125				

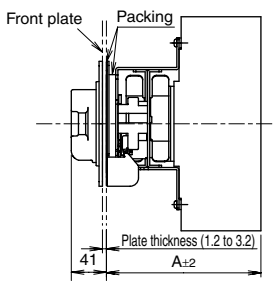
Note (∗1) As for applicable models other than those mentioned above, please contact us.
(∗2) Shows dimensions for front connection and rear connection types. For plug-in types, the reference surface changes.
(∗3) 4-pole plug-in type is a special type. For details, please contact us.
(∗4) When using with a terminal cover, please specify "F" at the end of terminal cover model name. (Special type terminal cover for operating handle with screws.)

■Outside Dimension Drawing

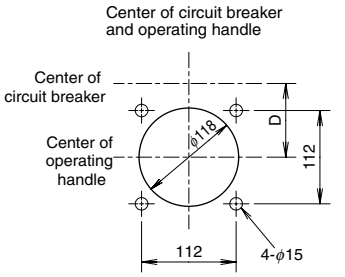
400~800A Frame

Outside Dimension Drawing

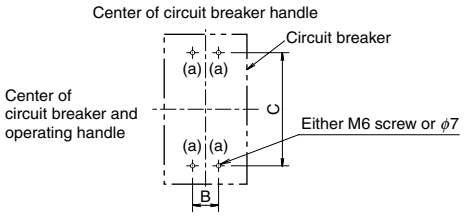




Front Plate Drilling Dimension Drawing

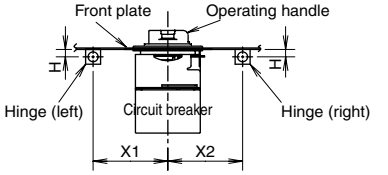


Circuit Breaker Mounting-Hole Drilling Dimension Drawing



Center of Hinge and Circuit Breaker

Left hinge		Right hinge	
H	X1	H	X2
0 or more	(5H+85) or more	0 or more	(4H+120) or more



* The above drawing shows a layout of the hinge and the circuit breaker when viewed from the load side.

■Summary of Dimensions

Table 5-20

Type names	Applicable models (∗1)				Dimensions (mm)			
	MCCB	Number of poles	ELCB/MCCB with ground fault protection	Number of poles	A (∗2)	B	C	D
F-4S, F-4SE	NF400-CW, NF400-SW, NF400-SEW, NF400-HEW, NF400-REW, DSN400-CW, DSN400-SW, NF630-CW, NF630-SW, NF630-SEW, NF630-HEW, NF630-REW, DSN630-CW, DSN630-SW	2, 3, 4	NV400-CW, NV400-SW, NV400-SEW, NV400-HEW, NV400-REW, NV630-CW, NV630-SW, NV630-SEW, NV630-HEW	3, 4	183	44	194	0
F-4U, F-4UE	NF400-UEW	3	—	—	280	44	234	20
F-8S, F-8SE	NF800-CEW, NF800-SDW, NF800-SEW, NF800-HEW, NF800-REW, DSN800-SW	2, 3, 4	NV800-SEW, NV800-HEW	3	183	70	243	0
F-8U, F-8UE	NF800-UEW, NF400-UEW(4P)	3, 4	—	—	280	70	290	23.5
F-4SUL	NF-SKW	3	NV-SKW	3	183	44	194	0
F-6SUL	NF-SLW	3	—	—	183	70	243	0

Note (∗1) As for applicable models other than those mentioned above, please contact us.
(∗2) Shows dimensions for front connection types. For rear connection and plug-in types, the reference surface changes.

■Outside Dimension Drawing

Over 1000A Frame

Outside Dimension Drawing

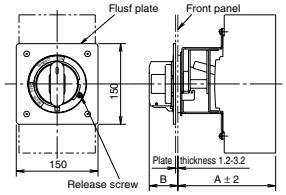
● Appearance (Color N1.5)

F4SW ~ F8UW

F10SW ~ F120UR4P

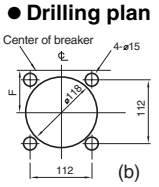
- Includes as standard a safety device which prevents breaker closing as long as the cover is open. (Specify if this safety feature is not required.)
- Indicates the tripping of the breaker even in ON-lock position--but only in cases when a single padlock (35mm, 40mm) is used.
- Degrees of protection (in accordance with IEC 60529): IP3X (IP5X with dustproof packing).

● **External dimensions**

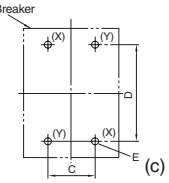


(a)

● **Drilling plan**



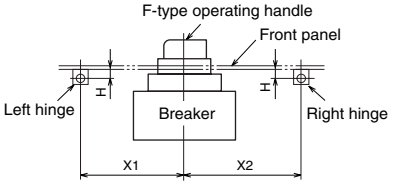
(b)



(c)

Center of Hinge and Circuit Breaker

Left hinge		Right hinge	
H	X1	H	X2
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 5-21

Type	Breaker type	Number of poles	Fig			Dimensions (mm)						Mounting crews
			External dimensions	Drilling plan		(∗5) A	B	C	D	E	F	
F10SW (∗7)	NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	2P, 3P	a	b	c	221	50	70	375	M8 screw or ø10	—	(X), (Y) Breaker mounting screws (4 pcs)
F10SW4P (∗7)		4P										

Note (∗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. (Speify 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.

2. V-type Operating Handle (Door Mount Type)

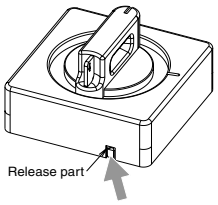
Operating handle attached to the panel door and control settings attached to the breaker body

- The control settings are mounted to the circuit breaker body and the operating handle is mounted on the panel door.
- Panel door open state
  The operating handle is built into the door and the control settings are built into the circuit breaker body.

1. Conforms to EN safety standards (EN 60204-1).
2. Provides a circuit disconnecting (isolating) function in combination with the breaker body.
3. IP54 rating (IEC 60529).
4. Can be mounted on 2-pole breakers.
5. Operating handle for the 3-pole breakers can also be used with the 4-pole breaker.

Door Lock Mechanism

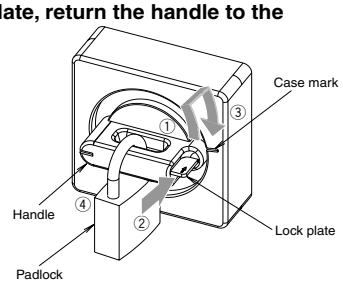
The panel door can be opened in the OFF position. In the ON and TRIP position, the panel door is locked so that it cannot be opened. However, you can still open the panel door in the ON and TRIP position by pushing the release tab in the direction of the arrow using a tool.



Operation Lock

This complies with OFF lock specifications. To set the operation lock in the OFF position: (For example, in the case of a padlock)

①**Turn the handle in the Reset direction to a position at which the marks on the lock plate and on the case are aligned.**
②**Push the lock plate in.**
③**While pushing the lock plate, return the handle to the OFF position.**
④**Lock by passing the padlock through the hole in the center of the handle.**

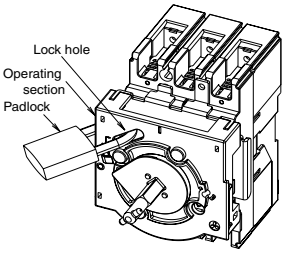


Three padlocks (35/40mm) which are commercially available can be installed.

Note: For 400~800AF, step ③ is not required.

Operation Lock While Panel Door Is Open

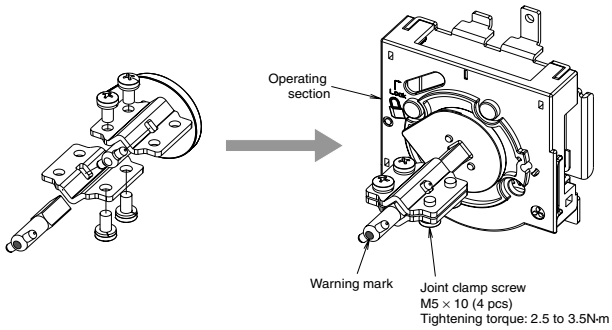
During checkup, etc. while the panel door is open, you can use the operation lock to prevent the breaker from being turned on by accident. Lock by passing a padlock through the lock hole of the operating section of the operating handle.



Adjustable Type

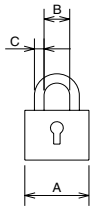
By mounting an adjustment unit V-AD3S or V-AD3L, separately available parts, to the built-in control settings, you can adjust the height between the breaker installation face and the panel door. Cut the shaft of the adjustment unit to fit the height.

Note: This cannot be used for 2-pole breakers. If it is used, it may cause the position display to malfunction.



Operation Lock Devices

(1) Padlock



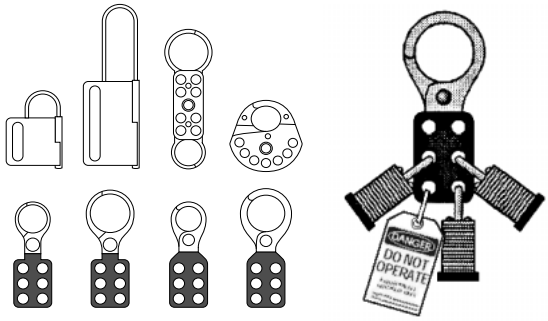
Padlock Dimensions

Use commercially available padlocks. (mm)

Applicable model	A (Nominal size)	B	C
All models	35	19	5
	40	22 or 23	5.5

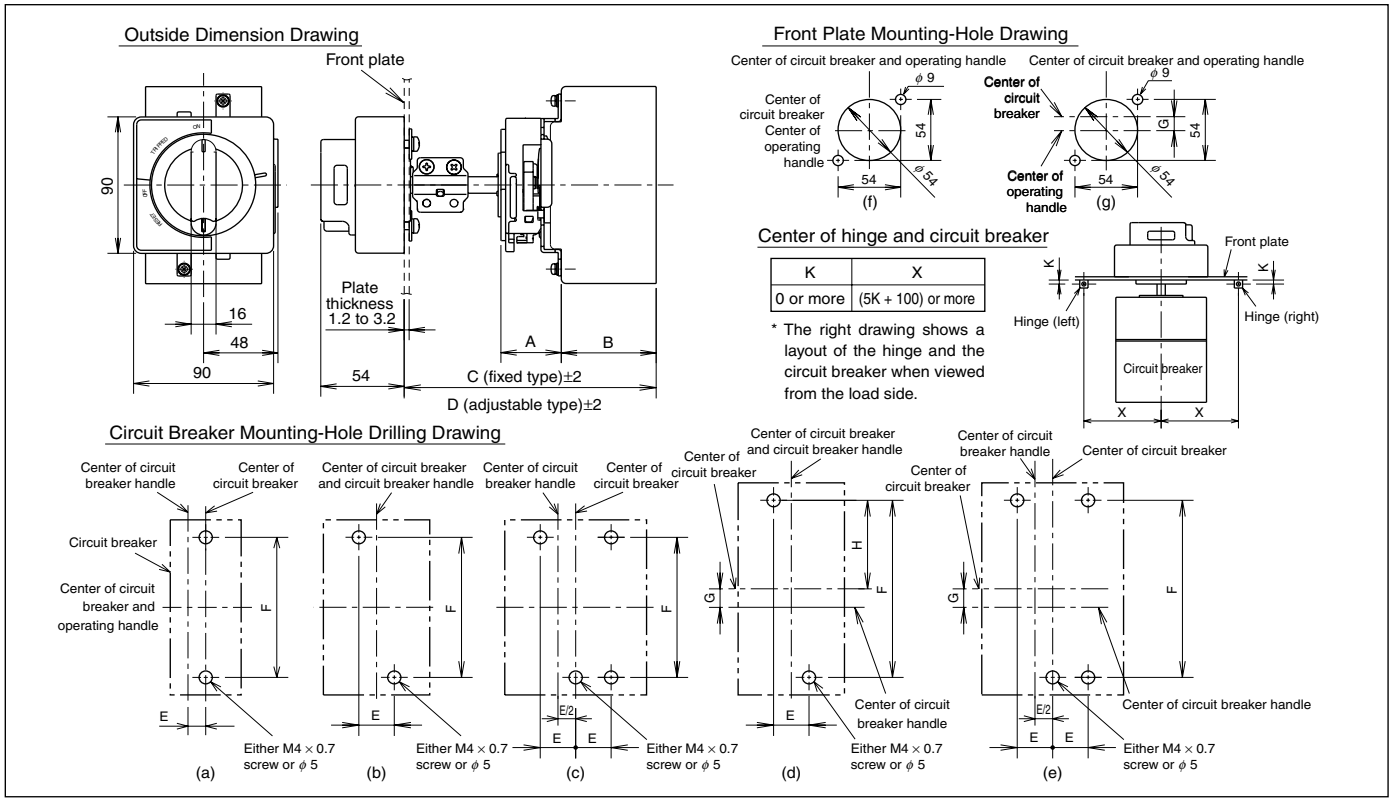
Dimension C: Maximum 8mm.

(2) Lockout Devices (Scissors Lock)



■Outside Dimension Drawing

250A Frame or Smaller



■Summary of Dimensions

Table 5-22

Type names	Applicable models (∗1)				Drilling plans	Dimension (mm)								
	MCCB	Number of poles	ELCB/MCCB with ground fault protection	Number of poles		A	B	Fixed type C	Adjustable type (∗2) D (min.)	Adjustable type (∗2) D (max.)	E	F	G	H
V-05S2, V-05SE2 (∗3)	NF32-SW, NF63-CW, NF63-SW, NF63-HW, DSN32-SW, DSN63-CW, DSN63-SW	2	—	—	(a) (f)	39	61	125	—	—	12.5	111	—	—
V-05S, V-05SE	NF32-SW, NF63-CW, NF63-SW, NF63-HW, MB30-SW, MB50-CW, MB50-SW, DSN32-SW,	3	NV32-SW, NV63-CW, NV63-SW, NV63-HW	2, 3	(b) (f)				162	300	25			
	DSN63-CW, DSN63-SW	4	—	—	(c) (f)									
V-1S2, V-1SE2 (∗3)	NF125-CW, NF125-SW, DSN125-CW, DSN125-SW	2	—	—	(a) (f)				—	—	15			
V-1S, V-1SE	NF125-CW, NF125-SW, MB100-SW, DSN125-CW, DSN125-SW	3	NV125-CW, NV125-SW, NV125-HW	3	(b) (f)				162	300	30			
		4		4	(c) (f)									
	NF125-HW	2, 3	—	—	(b) (f)									
		4			(c) (f)									
V-1U, V-1UE	—	—	NV125-RW	3	(d) (g)							172	30.5	86
V-2S, V-2SE	NF250-CW, NF250-SW, NF250-HW, MB225-SW, DSN250-CW, DSN250-SW	2, 3	NV250-CW, NV250-SW, NV250-HW, NV250-SEW, NV250-HEW	3	(b) (f)	41					35	126	—	—
		4		4	(c) (f)									
V-2U, V-2UE	—	—	NV250-RW	3	(d) (g)							201	37.5	100.5
V-2SG, V-2SGE	NF125-SGW, NF125-HGW NF160-SGW, NF160-HGW NF250-SGW, NF250-HGW DSN125-SGW, DSN160-SGW DSN250-SGW	2, 3	—	—	(b) (f)		79	143	180	318		126	—	—
		4			(c) (f)									
V-2UG, V-2UGE	NF125-RGW, NF125-UGW NF250-RGW, NF250-UGW	2, 3	—	—	(d) (g)							201	37.5	100.5
		4			(e) (g)									
V-05SUL2	NF50-SWU	2	—	—	(a) (f)	39	61	125	—	—	12.5	111	—	—
V-05SUL		3	NV50-SWU	3	(b) (f)				162	300	25			
V-1SUL2	NF100-CWU, NF100-SWU	2	—	—	(a) (f)				—	—	15			
V-1SUL		3	NV100-SWU	3	(b) (f)				162	300	30			
V-2SUL	NF225-CWU	3	NV225-CWU	3		41					35	126		
V-2SGUL	NF-SFW, NF-SJW, NF-HJW	3	—	—			79	143	180	318				

Note (∗1) As for applicable models other than those mentioned above, please contact us.
(∗2) As for the adjustable type, the dimensions shown above are those when the adjustment unit V-AD3S separately available is mounted.
(∗3) When using with a terminal cover, please specify "F" at the end of terminal cover model name. (Special type terminal cover for operating handle with screws.)

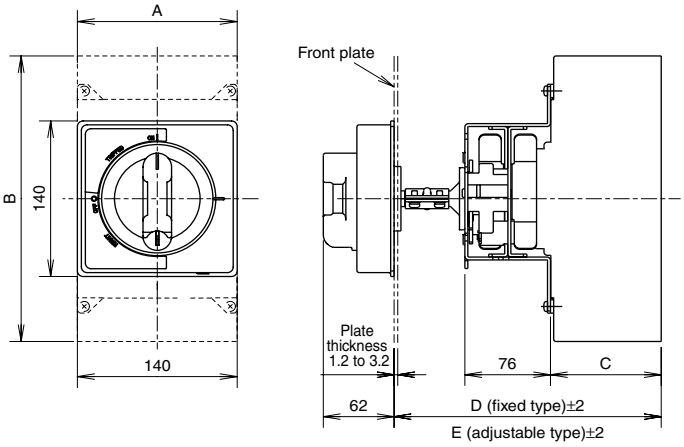
Remark: 1. Shows dimensions for front connection and rear connection types. For plug-in types, please contact us.

5. Accessories
External Accessories

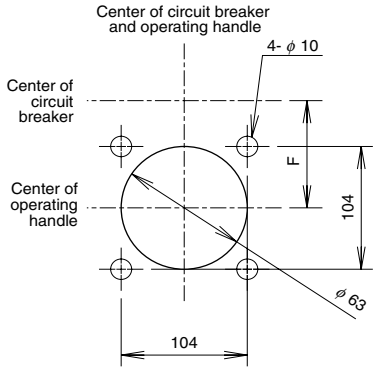
■Outside Dimension Drawing

400~800A Frame

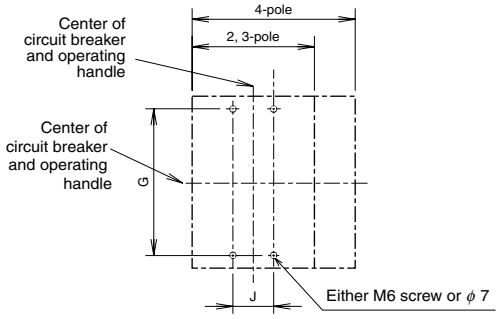
Outside Dimension Drawing



Front Plate Mounting-Hole Drawing

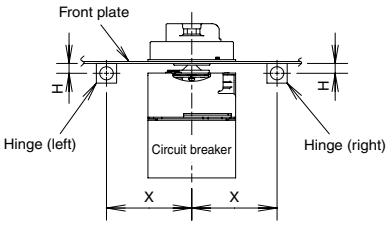


Circuit Breaker Mounting-Hole Drilling Drawing



Center of hinge and circuit breaker

H	X
0 or more	(8H + 150) or more



* The right drawing shows a layout of the hinge and the circuit breaker when viewed from the load side.

■Summary of Dimensions

Table 5-23

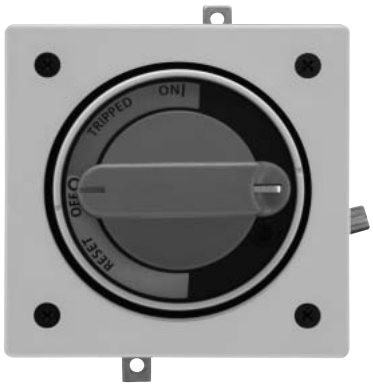
Type names	Applicable models (∗1)				Dimension (mm)								
	MCCB	Number of poles	ELCB/MCCB with ground fault protection	Number of poles	A	B	C	Fixed type D	Adjustable type (∗2) E (min.)	Adjustable type (∗2) E (max.)	F	G	J
V-4S, V-4SE	NF400-CW, NF400-SW, NF400-SEW, NF400-HEW, NF400-REW, DSN400-CW, DSN400-SW, NF630-CW, NF630-SW, NF630-SEW, NF630-HEW, NF630-REW, DSN630-CW, DSN630-SW	2, 3, 4	NV400-CW, NV400-SW, NV400-SEW, NV400-HEW, NV400-REW, NV400-NCW, NV630-CW, NV630-SW, NV630-SEW, NV630-HEW	3, 4	140	257	97	191	233	300	0	194	44
V-8S, V-8SE	NF800-CEW, NF800-SDW, NF800-SEW, NF800-HEW, NF800-REW, DSN800-SW	2, 3, 4	NV800-SEW, NV800-HEW	3	210	275	97	191	233	300	0	243	70
V-4SUL	NF-SKW	3	NV-SKW	3	140	257	97	191	233	300	0	194	44
V-6SUL	NF-SLW	3	—	—	210	275	97	191	233	300	0	243	70

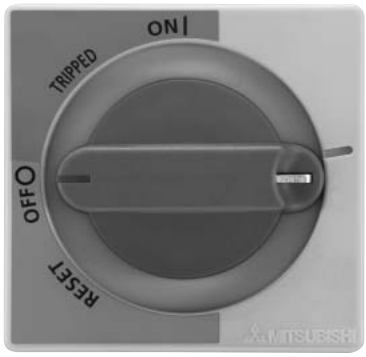
Note (∗1) As for applicable models other than those mentioned above, please contact us.
(∗2) As for the adjustable type, the dimensions shown above are those when the adjustment unit V-AD3L separately available is mounted.

Remark: 1. Shows dimensions for front connection types. For rear connection types, the reference surface changes. For plug-in types, please contact us.

■Appearance of 400~800A Frame

In the circumstances where safety of machinery is emphasized, this operating handle is effective for the emergency stop use in accordance to provisions of IEC 60204-1, EN 60204-1, NFPA79, and JIS B 9960-1.
The operating handle is colored in accordance with the applicable standard (handle in red and the surrounding part in yellow).
The type name consists of "E" added to the type name of the standard operating handle.





REFERENCE Requirements Regarding Operating Handles Covered by Standards Relating to Machinery

* Major requirements regarding operating handles are excerpted below from the standards relating to machinery.

Standard	Details of Requirement
IEC 60204-1 **EN 60204-1** (Safety of Machinery, Electric Equipment of Machines - Part 1: Specifications for General Requirements)	• "0" and "I" should be clearly identified. • The operating direction should conform to IEC 60447/EN 60447. → Clockwise direction • There should be no OFF indication until the contact is fully opened. • Disconnecting (isolating) function should be provided. • The handle should be colored in either black or gray. (Except some of those for emergency stop use.) • Measures to enable to lock in the OFF position should be provided. • The enclosure can be opened while live parts are disconnected. → Interlock with the door • Interlock can be released by a qualified person using a tool when the conditions (a) and (b) below are satisfied: → Release operation (a)While interlock is released, turning OFF and OFF lock are always enabled. (b)When the door is closed, the door lock is automatically reset. • The enclosure should conform to the protection grade of, at least, IP22. • The actuator of the emergency stop device should be red in color. The surrounding part where the actuator is installed should be yellow in color.

Standard	Details of Requirement
NFPA79 (Electrical Standard for Industrial Machinery)	• Measures to enable locking only in the OFF position regardless of door position should be provided. → Prohibition of ON lock • Operation should be enabled without any tool regardless of door position. • Either OFF state or ON state should be clearly indicated. • Interlock should be provided to prevent the door from being opened without disconnecting power supply. • The handle function should not be lost when the door position is open. • A qualified person can make an access without disconnecting power supply. → Release operation • A qualified person can release interlock by using a tool. → Release operation • When the door is closed, the door lock is automatically reset. • While the door is open, it cannot be turned ON unless interlock is intentionally released.
UL508A (Industrial Control Panel)	• Either OFF state or ON state should be clearly indicated. • Unless power supply is cut off, the door cannot be opened. (Interlock) • Interlock can be released by use of a tool. → Release operation • Measures are provided to prevent recovery of power supply while the door is open. • Locking should be enabled in either the ON or OFF position. • When the door is closed, the door lock is automatically reset.

5. Accessories
External Accessories

■Operating Handles

The basic type (standard) for the F-type operating handle includes OFF-lock/reset open/mounting on power source. When ordering specifications other than those mentioned above, designate the specifications in symbols together with the basic type name. The V-type operating handle is available only in the basic type (standard).

Basic type name	Required specifications		
	Operation lock	Door open	Installation direction
F-05S2	LF	DR	Y

		For general use	For emergency stop use
F-type	General products	F-05S2 F-05S F-1S2 F-1S F-1U F-2S F-2SG F-2UG F-4S F-4U F-8S F-8U	F-05SE2 F-05SE F-1SE2 F-1SE F-1UE F-2SE F-2SGE F-2UGE F-4SE F-4UE F-8SE F-8UE
	UL listed product	F-05SUL2 F-05SUL F-1SUL2 F-1SUL F-2SUL F-2SGUL F-4SUL F-6SUL	
V-type	General products	V-05S2 V-05S V-1S2 V-1S V-1U V-2S V-2SG V-2UG V-4S V-8S	V-05SE2 V-05SE V-1SE2 V-1SE V-1UE V-2SE V-2SGE V-2UGE V-4SE V-8SE
	UL listed product	V-05SUL2 V-05SUL V-1SUL2 V-1SUL V-2SUL V-2SGUL V-4SUL V-6SUL	

Symbol	Specifications
LF	OFF-lock
LN	ON/OFF lock

Symbol	Specifications
DR	Reset open
DF	OFF open

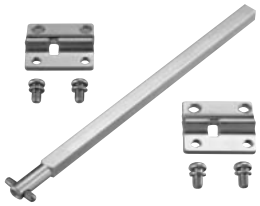
Symbol	Specifications
Blank	Power supply (upper)
Y	Power supply (left)
Z	Power supply (right)

Note: As for the UL listed products, only the specification of "mounting on power source" is available.

■Adjustment Unit (for V-type operating handle)

Please specify the type name and the necessary quantity.
One order unit includes 1 piece.

	Type name
Under 250AF	V-AD3S
400-800AF	V-AD3L



■Release Protection (for F-type operating handle)

Please specify the type name and the necessary quantity.
One order unit includes 10 pieces.

Type name
F-RCS

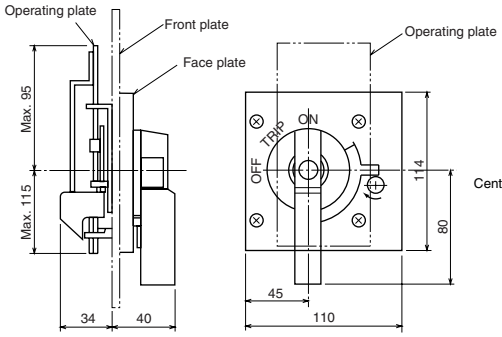
3. S-type Operating Handle

● 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.)
● Digrees of protection (IEC 60529) 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

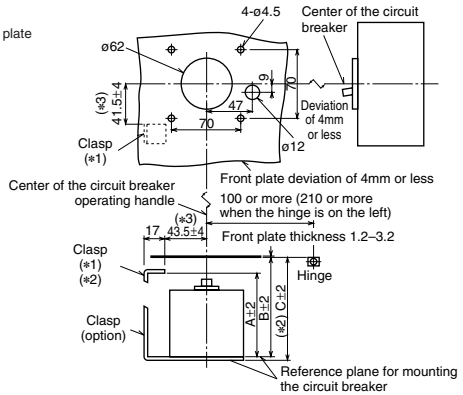


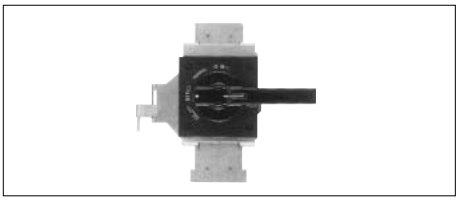
Table 5-24: Summary of Dimensions

Type name	Applicable models	Dimensions (mm)		
		A (∗4)	B (∗4)	C (∗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 (∗5)			
S2SW	NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW NV250-SEW/HEW, MB225-SW, NV250-RW (∗5)	95	110	112.5
S2GSW	NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW	113	128	130.5

Note (∗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.

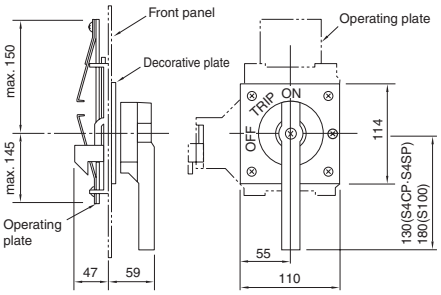
Remark: 1. Reset open-type
2. These are not suitable for isolation.

● 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 IEC 60529): IP5X.

● External dimensions



● Drilling plan

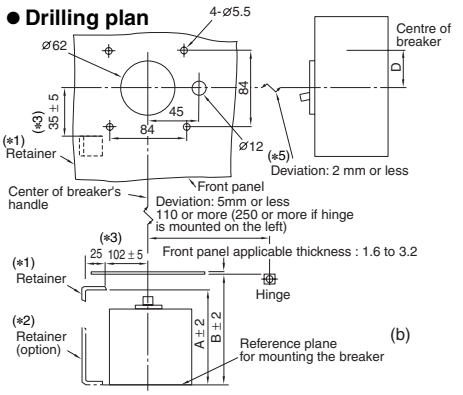


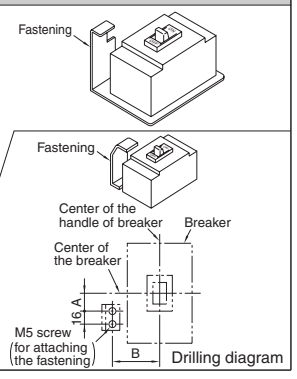
Table 5-25

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 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

Note (∗1) Retainers are not included. They must be provided by the customer.
(∗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.

Remark: 1. Reset open-type

●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	–	–	
	TG-S1UW (∗1)	NF125-RGW/UGW	NV125-RW			
	TG-S2SW (∗1)	NF160-SW/HW NF250-CW/SW/HW NF250-SEW/HEW,MB225-SW	NV250-CW/SW/HW NV250-SEW/HEW			
	TG-S2UW (∗1)	NF250-RGW/UGW	NV250-RW			
	TG-S2GSW (∗1)	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	67	119	
	TG-S4UW	NF400-UEW (3P)	–	67	119	
		NF400-UEW (4P), NF800-UEW	–	87	119	
	TG-S10	NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	–	67	119	

Remark: 1. The clamp for surface plate interlock fastener is common to 2P, 3P and 4P.
Note (∗1) The terminal cover cannot be installed.

5. Accessories

External Accessories

Ordering information

V – 1 S UL E 2
1) 2) 3) 4) 5) 6)

1) V : V-type Operating 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 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) S : Series name
- S indicate WSS C, S and H series
- U indicate WSS RW/UEW/RGW/UGW
- SG indicate SGW/HGW

4) UL : Type of breaker
- Blank····· General product
- UL····· UL Listed product

5) E : For emergency
- Blank····· For general
- E····· For emergency

6) 2 : Number of poles
- Blank····· 3 pole and 4 pole
- 2····· 2 pole

S 1 SW A
1) 2) 3) 4)

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 10 SW
1) 2) 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 S UL E 2 LF DR Y
1) 2) 3) 4) 5) 6) 7) 8) 9)

1) F : F-type Operating 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 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) S : Series name
- S indicate WSS C, S and H series
- U indicate WSS RW/UEW/RGW/UGW
- SG indicate SGW/HGW

4) UL : Type of breaker
- Blank····· General product
- UL····· UL Listed product

5) E : For emergency
- Blank····· For general
- E····· For emergency

6) 2 : Number of poles
- Blank····· 3 pole and 4 pole
- 2····· 2 pole

7) A : Handle lock position
- LN····· ON/OFF position lock
- LF····· OFF position lock only

8) R : Door open position
- DF····· OFF position open
- DR····· RESET position open

9) 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)

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

1) F : Operating handle type

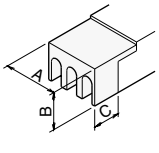
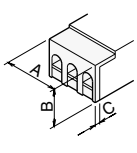
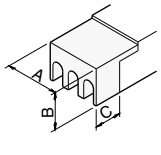
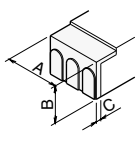
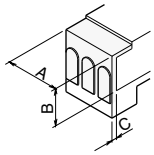
2) 10 : Frame size of breaker
- 10····· NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW

3) SW : Series name — SW indicate WSS

4) 4P : Number of poles
- Blank····· 2 pole and 3 pole
- 4P····· 4 pole

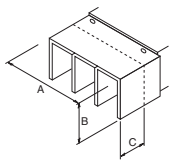
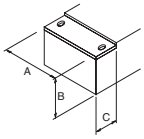
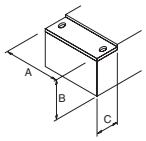
4. Terminal Cover

Table 5-26

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	IP20	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		TCL-05SW2W (∗1) (50×65.5×25)	TCS-05SW2W (∗1) (50×65.5×5)	TTC-05SW2 (∗1) (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		TCL-05SW3W (∗2) (75×65.5×25)	TCS-05SW3W (∗2) (75×65.5×5)	TTC-05SW3 (∗2) (75×65.5×25)	BTC-05SW3W (75×65.5×5)	PTC-05SW3W (75×65.5×6.5)
NF125-CW/SW/HW	2P		TCL-1SW2W (∗1) (60×65.5×40)	TCS-1SW2W (∗1) (60×65.5×6.5)	TTC-1SW2 (∗1) (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		TCL-1SW3W (∗2) (90×65.5×40)	TCS-1SW3W (∗2) (90×65.5×6.5)	TTC-1SW3 (∗2) (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		TCL-2SW3W (∗2) (105×65.5×40)	TCS-2SW3W (∗2) (105×65.5×6.5)	TTC-2SW3 (∗2) (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-2GSW3W (105×84×40)	BTC-2GSW3W (105×84×6.5)	PTC-2GSW3W (105×84×6.5)

Note (∗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.
Remark: 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 5-27

Breaker type		Large terminal cover (TC-L)		Transparent terminal cover (TTC)	Rear terminal cover (BTC)	Plug-in terminal cover (PTC)
		 Fig.1  Fig.2				
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) (171X99.5X110)	Fig. 1	TTC-4SW3 (171X104.5X110)	BTC-4SW3 (140X99.5X42)	PTC-4SW3 (140X99.5X42)
NF400-UEW	3P	TCL-4SW3 (∗1) (171X132.5/196.5X110)		—	BTC-4SW3 (∗1) (140X132.5/196.5X42)	—
NF400-SW/SEW/HEW, NV400-SEW/HEW NF630-SW/SEW/HEW, NV630-SEW	4P	TCL-4SW4 (240X104.5X110)	Fig. 2	TTC-4SW4 (240X104.5X110)	BTC-4SW4 (∗2) (185X97.5X39)	—
NF800-CEW/SDW/SEW/HEW/REW, NV800-SEW/HEW	2P, 3P	TCL-8SW3 (224X103.5X155)		TTC-8SW3 (224X103.5X155)	BTC-8SW3 (∗2) (210X97.5X32)	—
NF800-UEW	3P	TCL-8UW3 (∗1) (220X146/194.5X155)		—	BTC-8SW3 (∗1) (∗2) (210X146/194.5X32)	—
NF800-SEW/HEW	4P	TCL-8SW4 (294X103.5X155)		TTC-8SW4 (294X103.5X155)	BTC-8SW4 (∗2) (280X97.5X32)	—
NF400-UEW, NF800-UEW	4P	TCL-8UW4 (∗1) (290X146/194.5X155)		—	BTC-8SW4 (∗1) (∗2) (280X146/194.5X32)	—
NF1000-SEW NF1250-SEW/SDW	2P, 3P	TCL-10SW3 (220X139X150)		—	—	—
NF1000-SEW NF1250-SEW/SDW	4P	TCL-10SW4 (290X139X150)		—	—	—

Remark: 1. ( ) Shows external dimensions in mm. (A×B×C)
Note (∗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. Electrical Operation Device

● 250A Frame and less

Table 5-28: Summary of Model Designations

Applicable models (*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

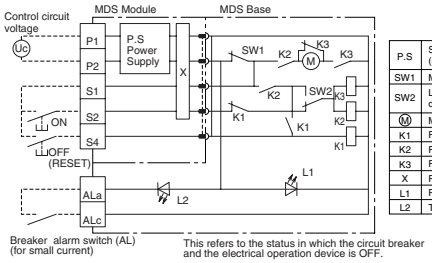
Note (*1) Place an order of other models in conjunction with the circuit breaker.

Table 5-29: 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		

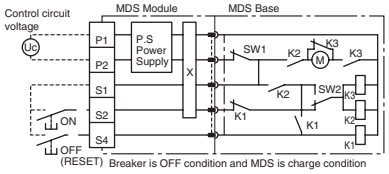
Remark: 1. The standard terminal cover can be used.
2. Please contact us for details of the outside dimensions.

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



P.S	Switching power supply (except for 24VDC model)
SW1	MANUAL/AUTO switch
SW2	Limit switch (for spring condition detection Charge/Discharge)
Ⓜ	Motor
K1	Relay(for Charge/OFF operation)
K2	Relay(for motor)
K3	Relay(for motor)
X	Pumping prevention circuit
L1	Power LED indicator (red)
L2	Trip LED indicator (yellow)

others



P.S	Switching power supply (except for 24VDC model)
SW1	MANUAL/AUTO switch
SW2	Limit switch (for spring condition detection Charge/Discharge)
Ⓜ	Motor
K1	Relay(for Charge/OFF operation)
K2	Relay(for motor)
K3	Relay(for motor)
X	Pumping prevention circuit

● 400A Frame and more

Motor-drive type (2) (MD)

Spring-charged type (MDS)

Table 5-30

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	
	NF-U, MB series	NF400-UEW NF800-UEW	—	NF400-UEW NF800-UEW		—	
ELCB type	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)					
				OFF	ON	OFF	ON
Operating current (A, rms) (*1)	DC 100/110V	3.0 (8.0)	4.0 (8.0)	1.0 (3.0)	8	1.0 (3.0)	9
	AC 100/110V	4.0 (8.0)	5.0 (10.0)	1.0 (3.0)	10	1.0 (3.0)	10
	AC 200/220V	2.0 (4.5)	3.5 (7.0)	0.5 (1.5)	8	0.5 (1.5)	8
Operating time (s)	On	Less than 0.3 (self-holding)	Less than 0.3 (self-holding)	0.05		0.07	
	Off			Less than 3 (self-holding)		Less than 3 (self-holding)	
Required transformer capacity (VA)		400	700	700		700	
Endurance voltage (V)		1500					

Note (*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.
- Please insulate each electric operation device by the relay when two or more electric operation devices are limped together and operated.

  The circumference circuit might be formed when each control terminal is connected parallel directly, and it not operate normally.

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.

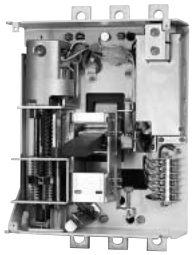
Electrically Operated MCCBs and ELCBs

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.
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

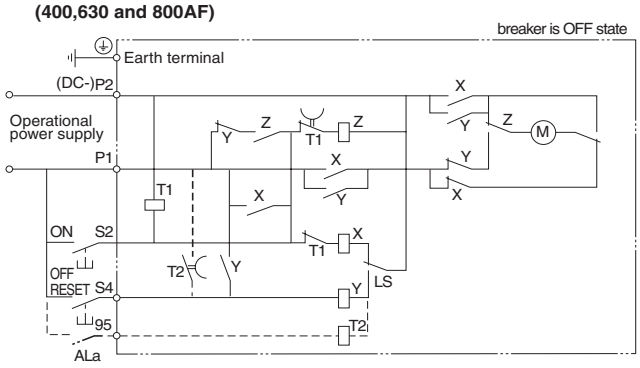


Internal structure

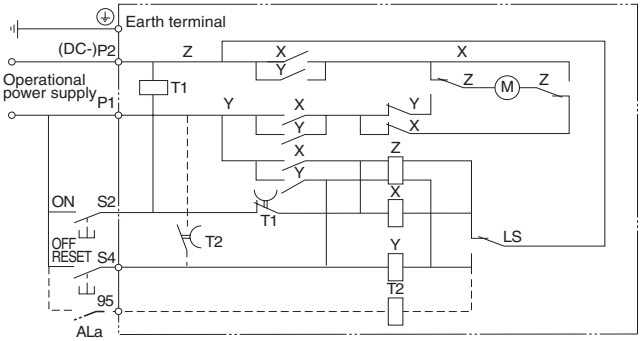
Control circuit

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)

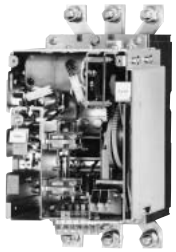


M :Motor
X :Relay for ON operation
Y :Relay for OFF operation
Z :Relay for changing Motor polarity
T1 :Timer for antipumping
T2 :Timer for automatic reset
LS :Limit Switch
ALa :Alarm switch for automatic reset (a contact)

5. Accessories
External Accessories

Spring-charged type

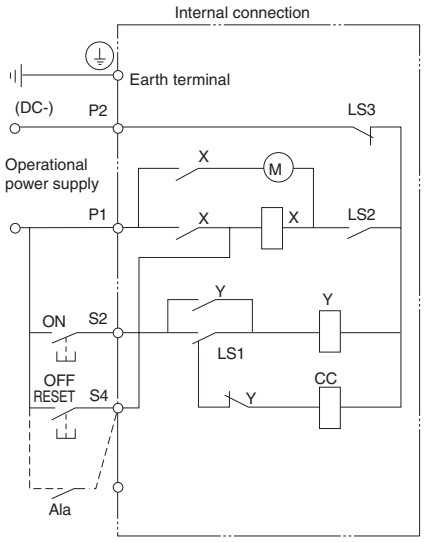
- Electrical operation
  When the ON switch is closed, the coil is excited to release the latch mechanism and the force of the closing spring turns the breaker ON instantly.
  When the OFF switch is closed, a relay starts the motor which turns the breaker OFF and charges the spring simultaneously.
- 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.



Internal structure

Control circuit

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



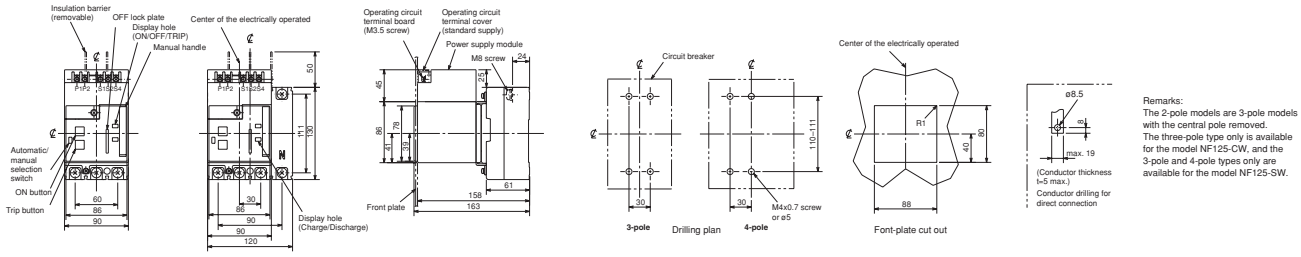
Alarm switch for automatic resetting (contact a)

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

Dimensions

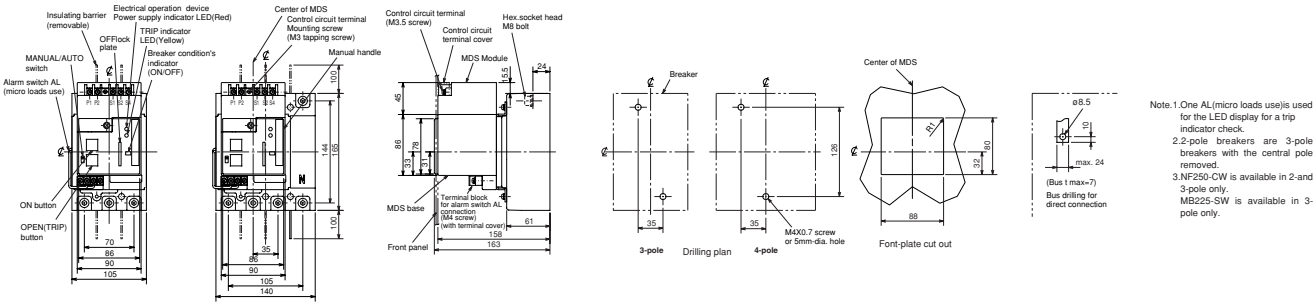
Front connection

● NF125-CW, NF125-SW, NF125-HW



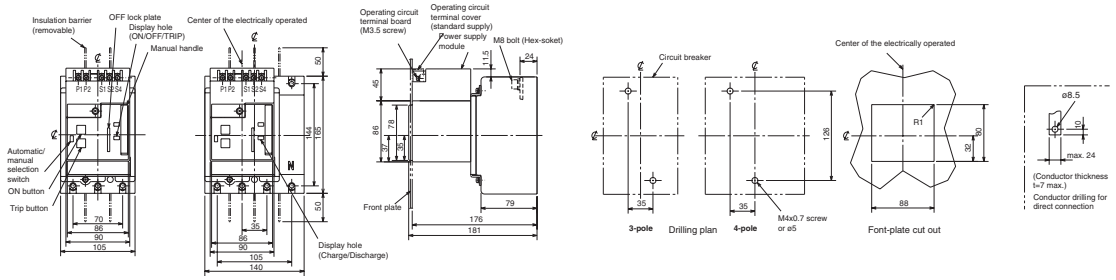
Remarks:
The 2-pole models are 3-pole models with the central pole removed.
The three-pole type only is available for the model NF125-CW, and the 3-pole and 4-pole types only are available for the model NF125-SW.

● NF160-SW, NF160-HW, NF250-CW, NF250-SW, NF250-HW, MB225-SW

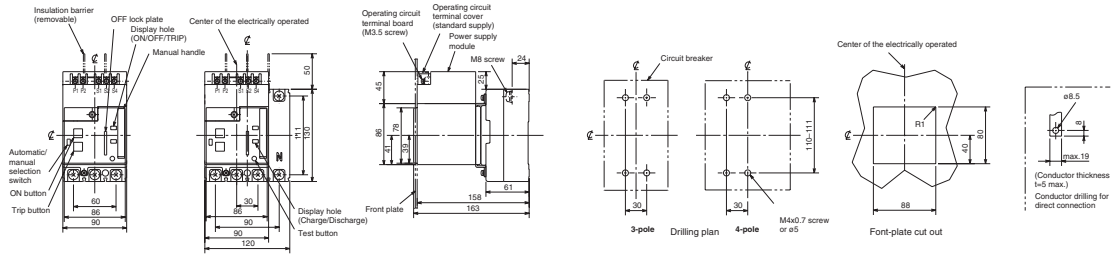


Note.1.One AL(micro loads use)is used for the LED display for a trip indicator check.
2.2-pole breakers are 3-pole breakers with the central pole removed.
3.NF250-CW is available in 2-and 3-pole only.
MB225-SW is available in 3-pole only.

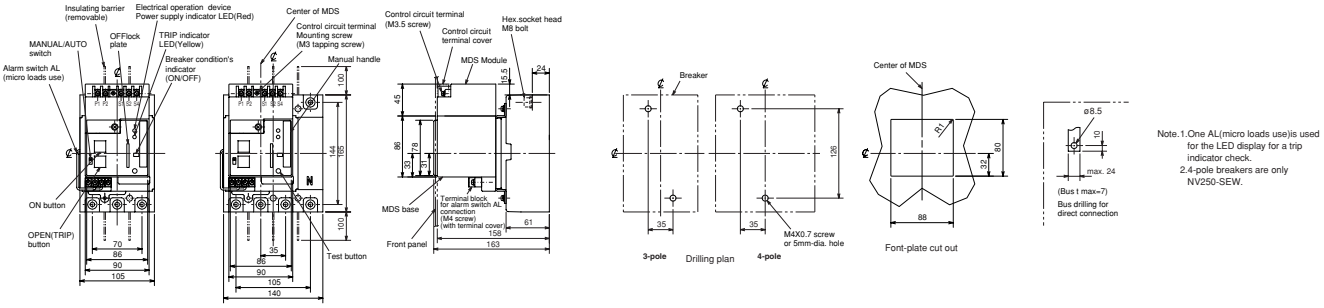
● NF125-SGW, NF125-HGW, NF160-SGW, NF160-HGW, NF250-SGW, NF250-HGW



● NV125-CW, NV125-SW, NV125-HW



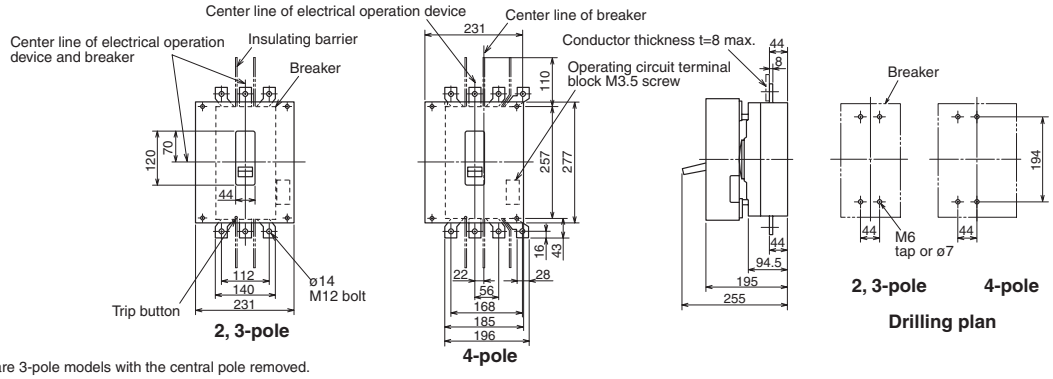
● NV250-SEW, NV250-HEW



Note.1.One AL(micro loads use)is used for the LED display for a trip indicator check.
2.4-pole breakers are only NV250-SEW.

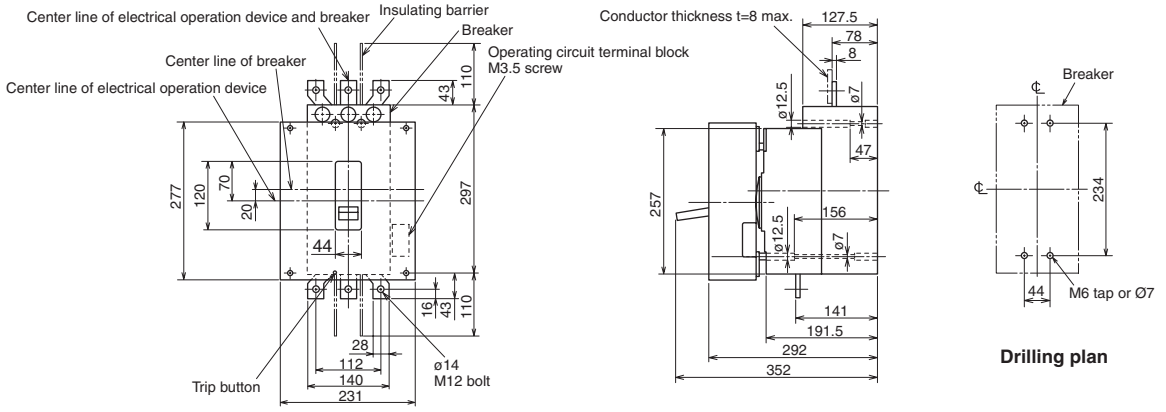
Front connection

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

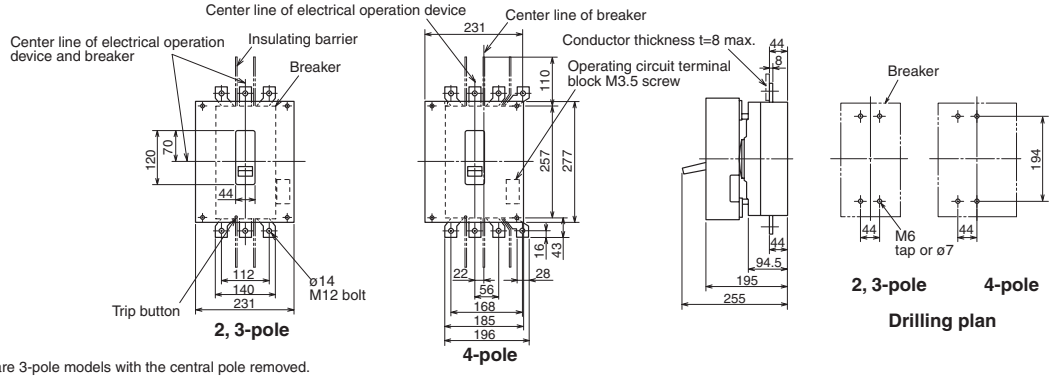


Remark: 2 pole models are 3-pole models with the central pole removed.

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

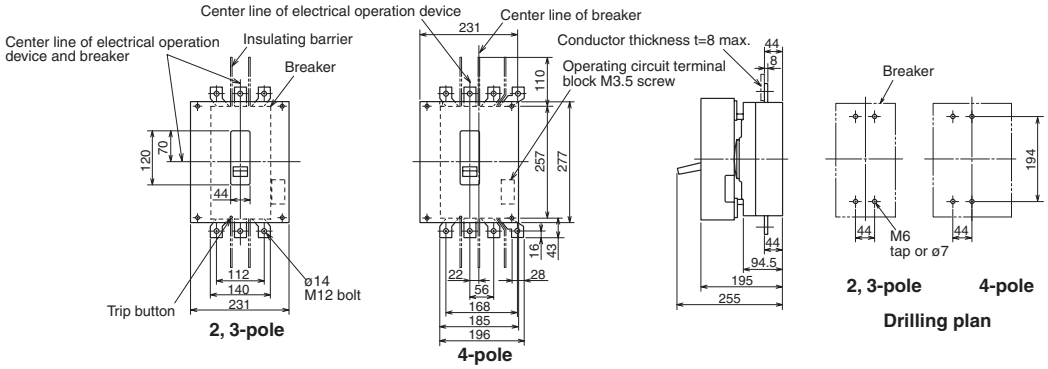


● NV400-CW, NV400-SW, NV400-SEW, NV400-HEW, NV400-REW Motor drive type (2)



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

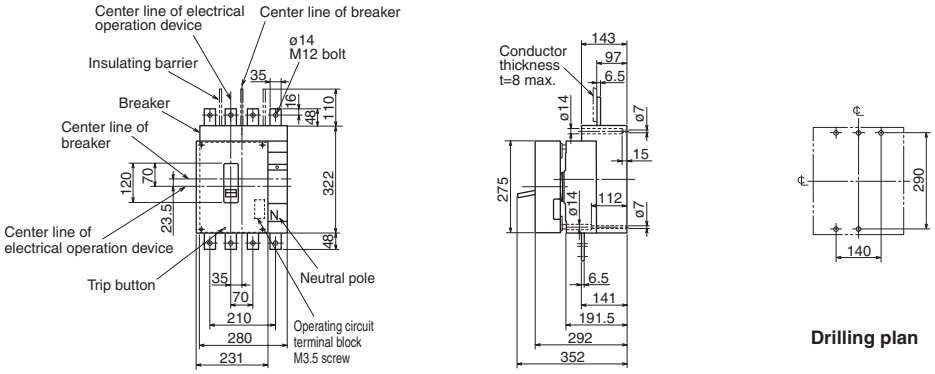
● NF630-CW, NF630-SW, NF630-SEW, NF630-HEW, NF630-REW Motor drive type (2)



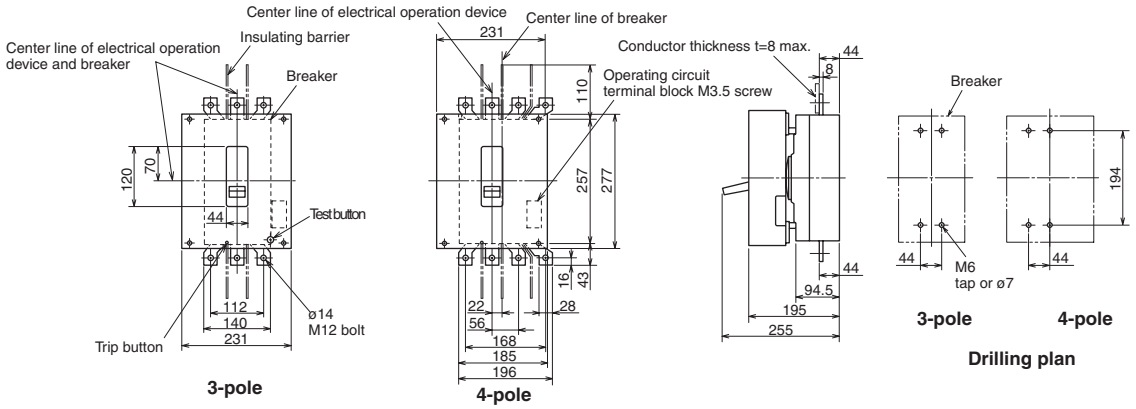
Remark: 2 pole models are 3-pole models with the central pole removed.

Front connection

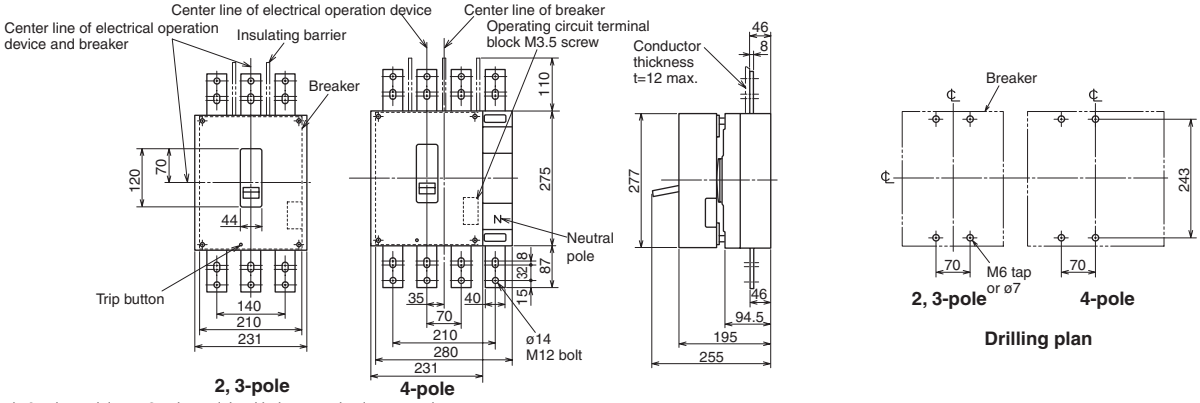
● NF400-UEW 4-pole Motor drive type (2)



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

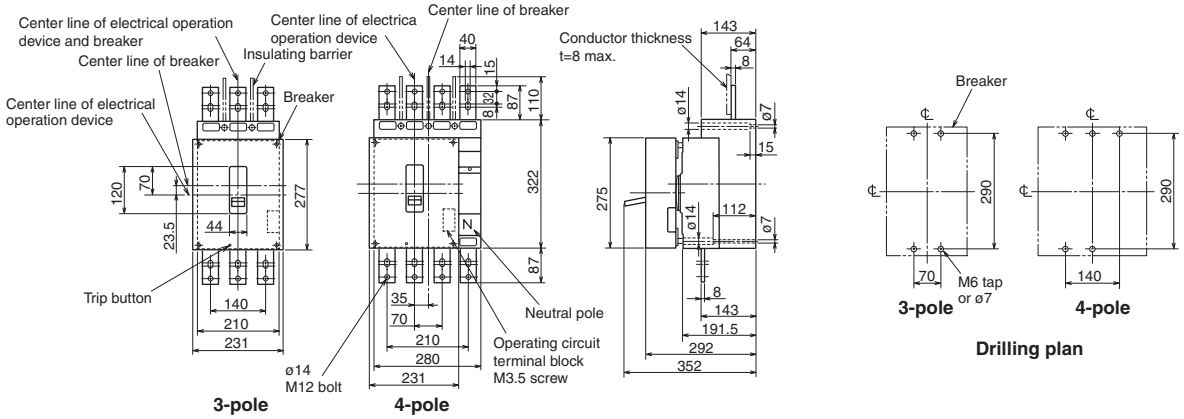


● NF800-CEW, NF800-SDW, NF800-SEW, NF800-HEW, NF800-REW Motor drive type (2)



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

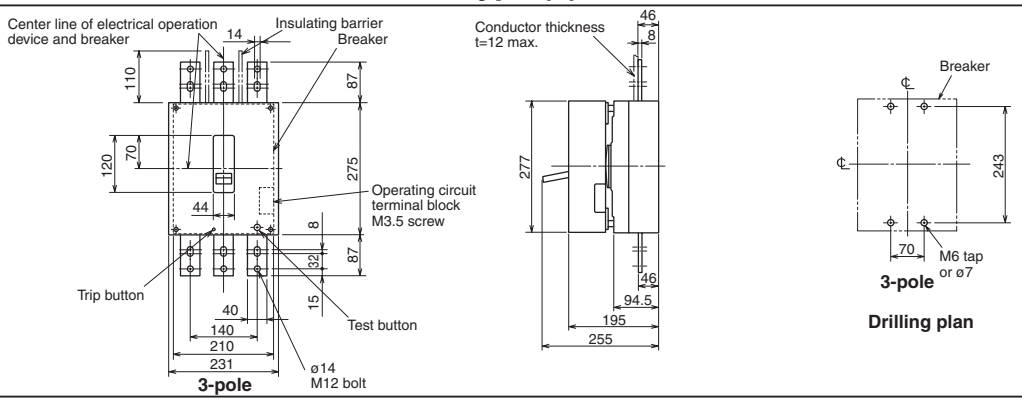
● NF800-UEW Motor drive type (2)



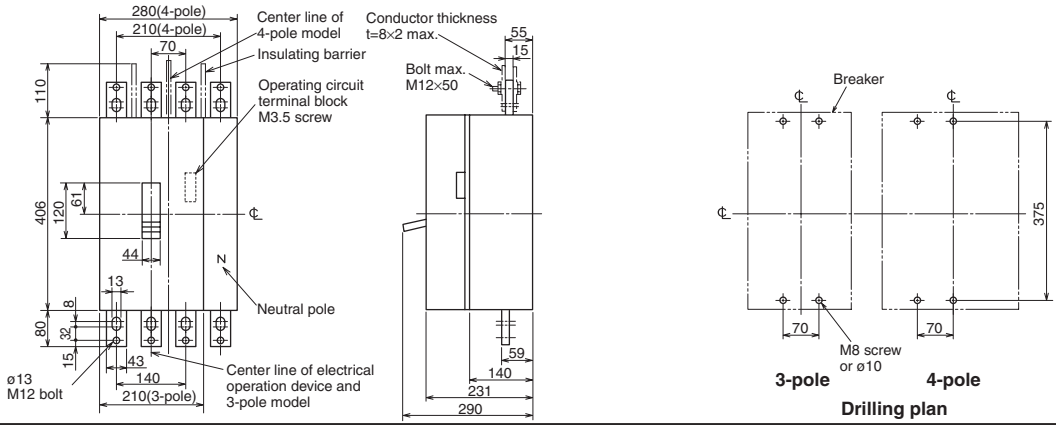
5

Front connection

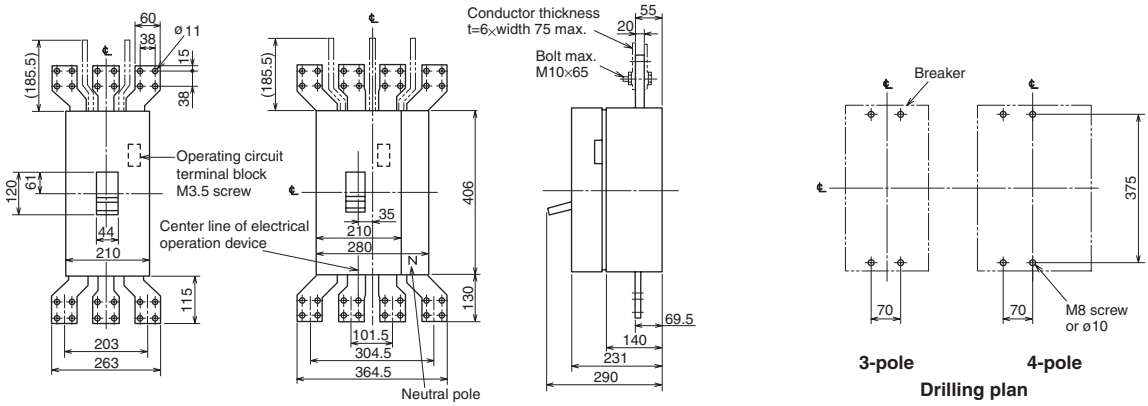
● NV800-SEW, NV800-HEW Motor drive type (2)



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

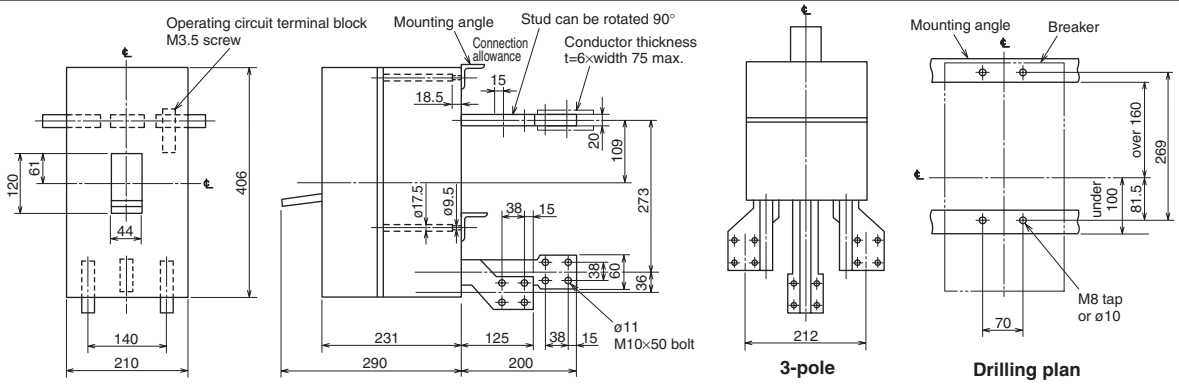


● NF1600-SEW, NF1600-SDW Motor drive type (2)

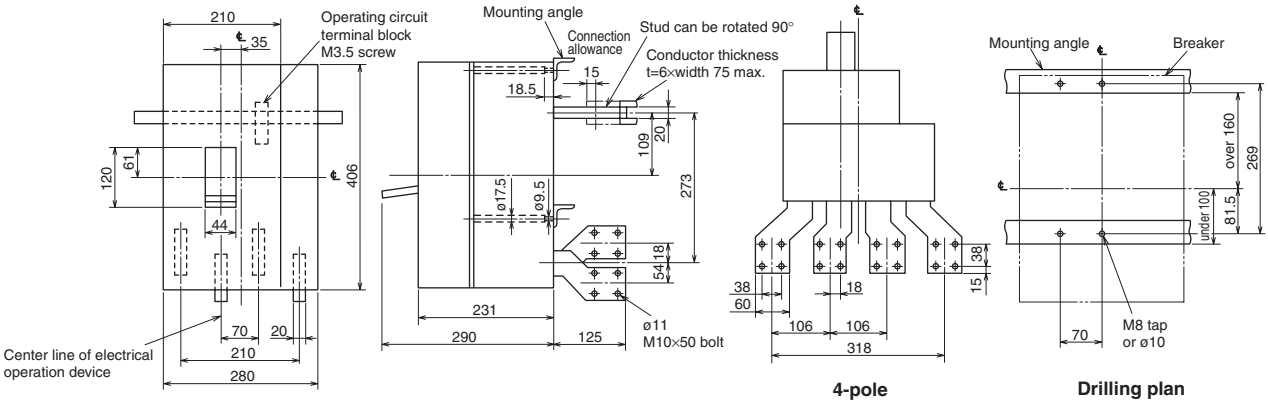


Rear connection

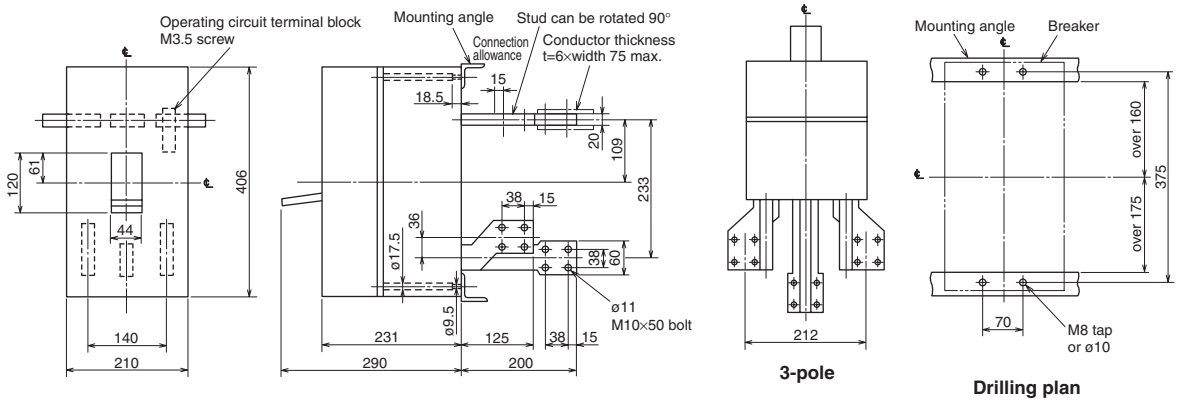
● NF1600-SEW (3-pole) Motor drive type (2)



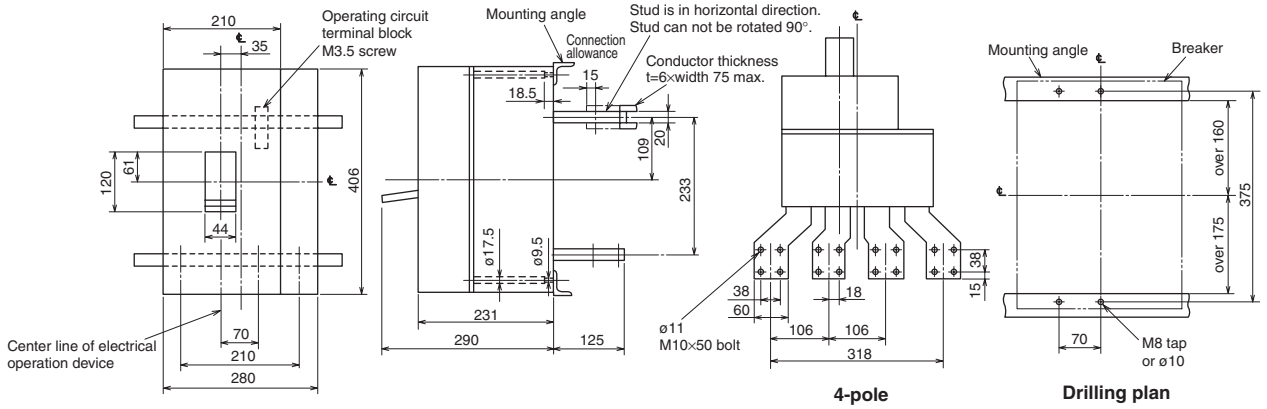
● NF1600-SEW (4-pole) Motor drive type (2)



● NF1600-SDW Motor drive type (2)



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



5

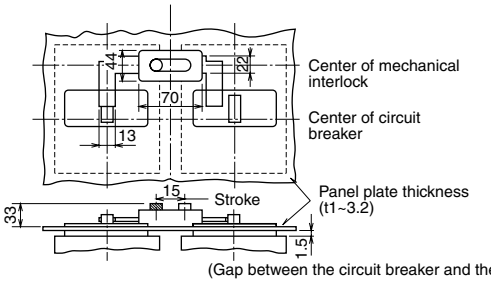
6. Mechanical Interlocks (MI)

Table 5-33

Applicable models	Number of poles	Panel mouting		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 3P	MI-05SW3	–	MI-2SWFB3
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		–

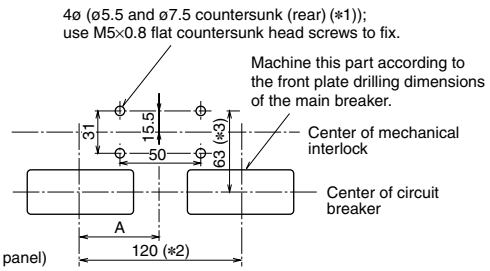
● **Outside Dimension Diagram**

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



● **Drilling Dimension Diagram**

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



Note (∗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.

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

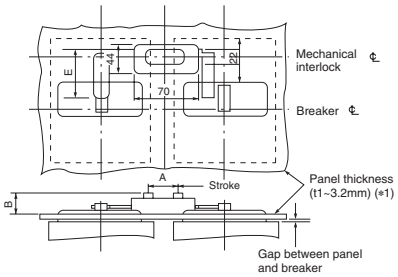
● Front, Rear, Plug-in

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.

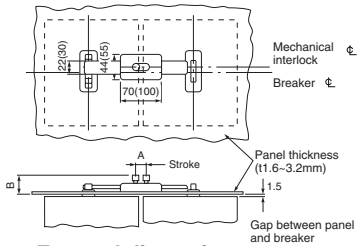
Breaker mounting (front)

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

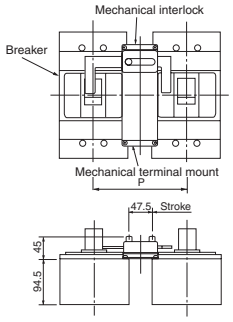
Front, Rear, Plug-in (panel mounting)



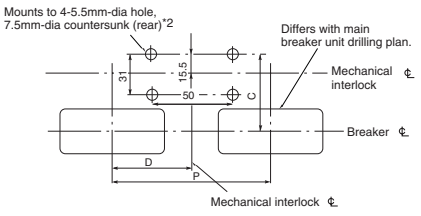
External dimensions



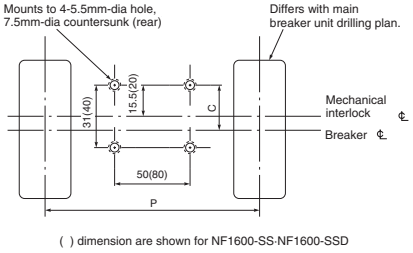
External dimensions



External dimensions

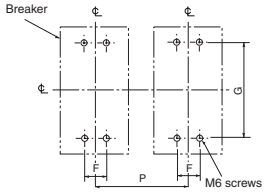


Drilling plan
Fig.1



( ) dimension are shown for NF1600-SS·NF1600-SSD

Drilling plan
Fig.2



Drilling plan(breaker mount)
Fig.3

Note (∗1) Above 400AF, use panel thickness t=1.6~3.2mm.
(∗2) When the panel thickness is greater than t=2.3mm, use 4-5.5mm-dia 9.5mm dia countersunk (rear).

● Table of Altered Dimensions

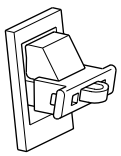
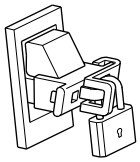
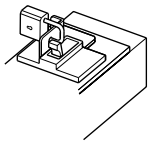
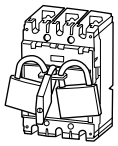
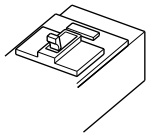
Table 5-34

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	4P							3P	
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								63.5				–	
NF800-CEW/SDW/SEW/HEW/REW	NV800-SEW/HEW	MI-8SW3	220		240	–	MI-8SW4	290		47.5	33	83.5	–	74		MI-8SWFB3	
NF400-UEW(4P), NF800-UEW	–		–	220								60				–	
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	–	–		–	–

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

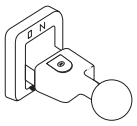
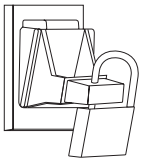
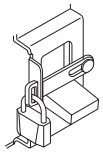
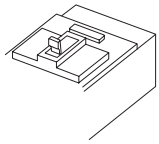
7. Handle Lock Devices and Card Holder

Table 5-35

Description		Lock cover (LC)	Handle lock (HL)	Handle lock (HL-S) (∗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	LC-05SW	HLF-05SW HLN-05SW (∗1)	HLS-05SW2P	—	
NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW MB30-SW, MB50-CW/SW	3P			HLS-05SW		
NF63-SW/HW	4P					
NF125-CW/SW	2P	LC-1SW	HLF-1SW HLN-1SW (∗1)	HLS-1SW2P		
NF125-HW	2P					
NF125-CW/SW/HW, NV125-CW/SW/HW MB100-SW, NV125-RW	3P			HLS-1SW		
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	HLF-2SW HLN-2SW (∗1)	HLS-2SW		
NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW NF125-RGW/UGW, NF250-RGW/UGW	3P, 4P	LC-2GSW	HLF-2GSW HLN-2GSW (∗1)	HLS-2GSW	HLF3-2GSW	

Note (∗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)	HLS-4SW (∗2)	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)		
NF400-UEW (3P)			HLS-4UW (∗2)	
NF400-UEW (4P) NF800-CEW/SDW/SEW/HEW/REW/UEW NV800-SEW/HEW			HLS-8SW (∗2) HLS-8UW (∗3)	
NF1000-SEW NF1250-SEW/SDW NF1600-SEW/SDW	HT-10SW	HL (∗2)	—	

Note (∗1) The HL without padlock can be used as a lock cover (LC).
(∗2) Must be ordered with breaker.
(∗3) Applicable types are NF400-UEW (4P) and NF800-UEW (3P, 4P).
Remark: 1. Padlocks for HL and HL-S must be provided by the customer.

8. 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	DIN-1SW3	
NF125-HW, NV125-CW/SW/HW, MB100-SW	2P 3P		

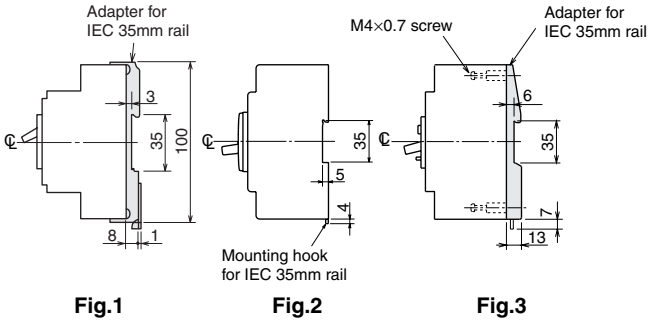


Fig.1 **Fig.2** **Fig.3**

6. Characteristics and Dimensions

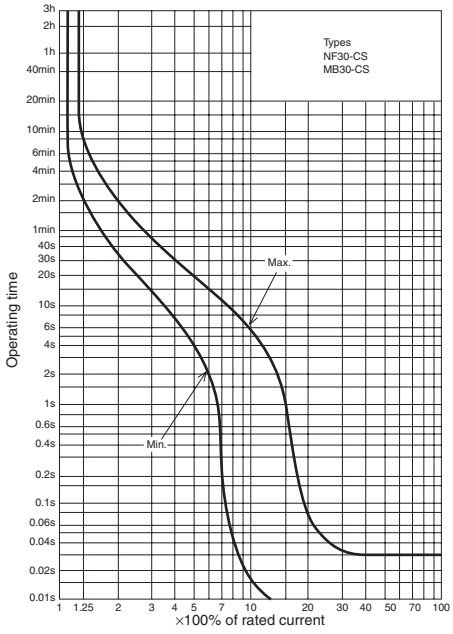
Molded-Case Circuit Breakers and Motor Breakers

NF30-CS
MB30-CS

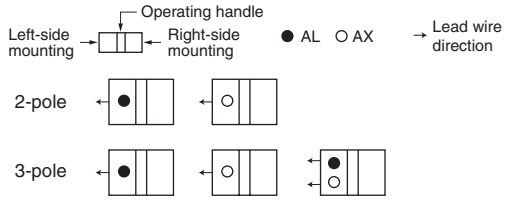
Type NF30-CS

Series				C series			
Frame size				30			
Type name				NF30-CS		MB30-CS	
Rated current In (Amp.)				3, 5, 10, 15, 20, 30		(2), (3.2), 4, (5), 6.3, (8), 10, 16	1.4, 2.5, 4, 7.1, 10, 16, 25, 32
Number of poles				2	3	2 (for single phase)	3
Rated insulation voltage Ui (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

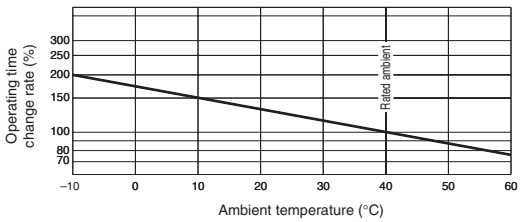


■Internal Accessories



Remark: 1. Standard lead wire is drawn from side. However, lead wire drawn by load can be produced upon request.
2. Refer to page 48.

■Temperature Characteristics

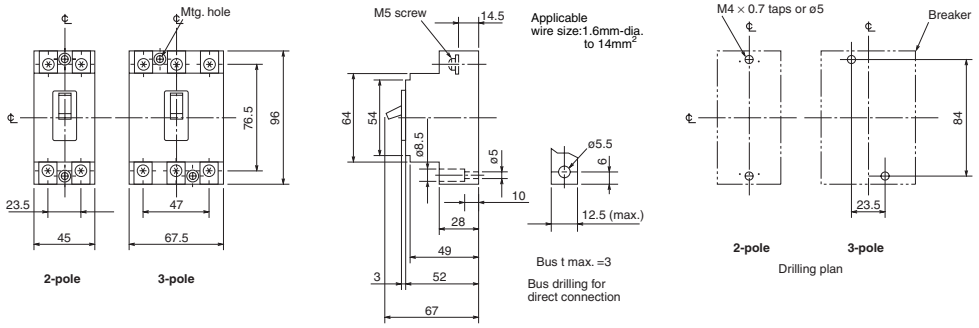


■External Accessories

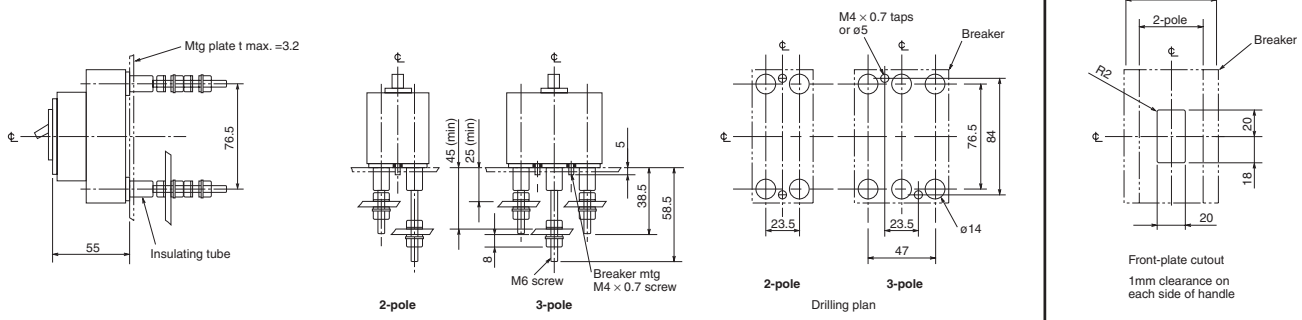
Accessories			Type name	Reference page
Terminal cover	Small	(TC-S)	TCS-03CS3W (∗1)	70
	Large	(TC-L)	TCL-03CS3W (∗1)	
	Rear	(BTC)	BTC-03CS3W (∗1)	
	Skeleton	(TTC)	TTC-03CS (∗1)	
Handle lock		(HL)	HL-05FH	80
Lock cover		(LC)	LC03CS	80
Rail mounting adapters		(DIN)	DIN-03CS	80

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

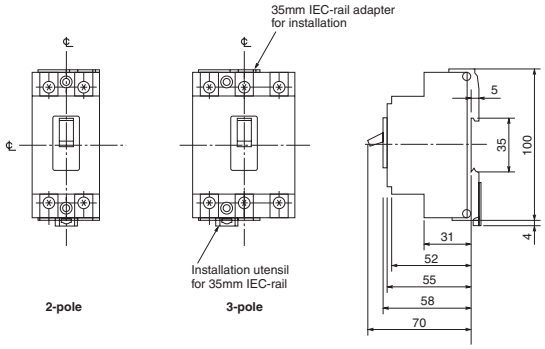
Front connection



Rear connection



IEC Rail Mounting Adapter



6

6. Characteristics and Dimensions

Molded-Case Circuit Breakers and Motor Breakers

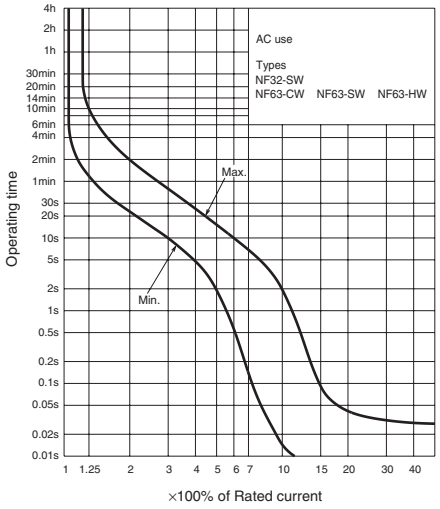
NF32-SW NF63-CW
NF63-SW NF63-HW
MB30-SW MB50-CW
MB50-SW

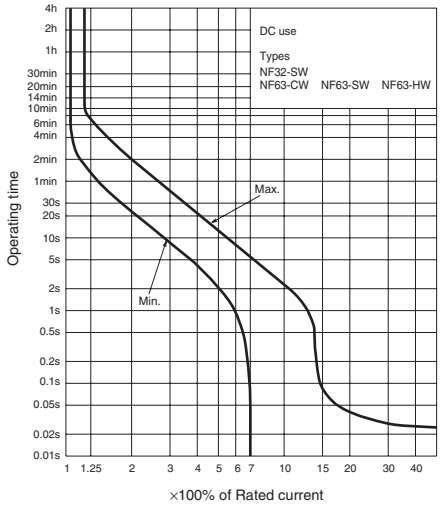
Type NF63-SW

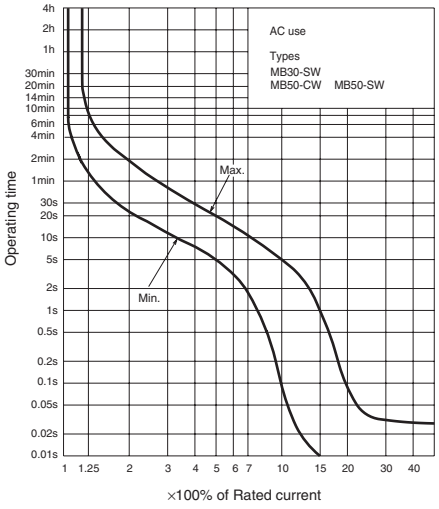
Type name				NF32-SW	NF63-CW	NF63-SW	NF63-HW	MB30-SW	MB50-CW	MB50-SW
Rated current In (Amp.)				3 4 (5) 6 10 (15) 16 20 25 (30) 32	3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	10 (15) 16 20 25 (30) 32 40 50 (60) 63	0.8 1.2 1.4 2 2.5 4 5 7.1 8 10 12 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	2 (∗1) 3 4	2 (∗1) 3 4	3	3	3
Rated insulation voltage Ui (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 –	7.5/4 –	–	–	–
Standard Attached Parts (Front connection)				Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) Insulation barrier: (2P: 1pc, 3P: 3pcs, 4P: 3pcs) (∗2)						

Note (∗1) Types of DC specifications can be produced upon request.
(∗2) These are supplied with NF63-SW, NF63-HW, and MB50-SW models.

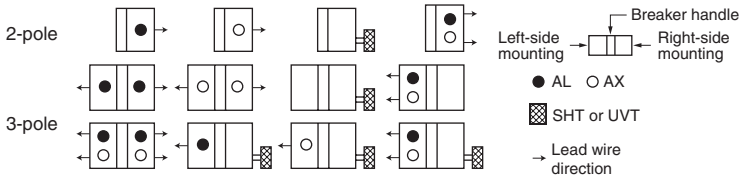
■Operating Characteristics





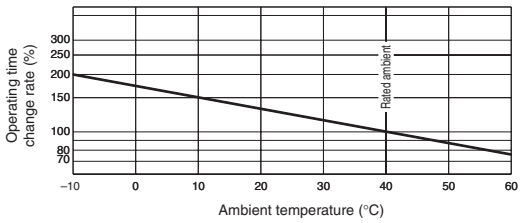


■Internal Accessories



Remark: 1. Refer to page 48.

■Temperature Characteristics



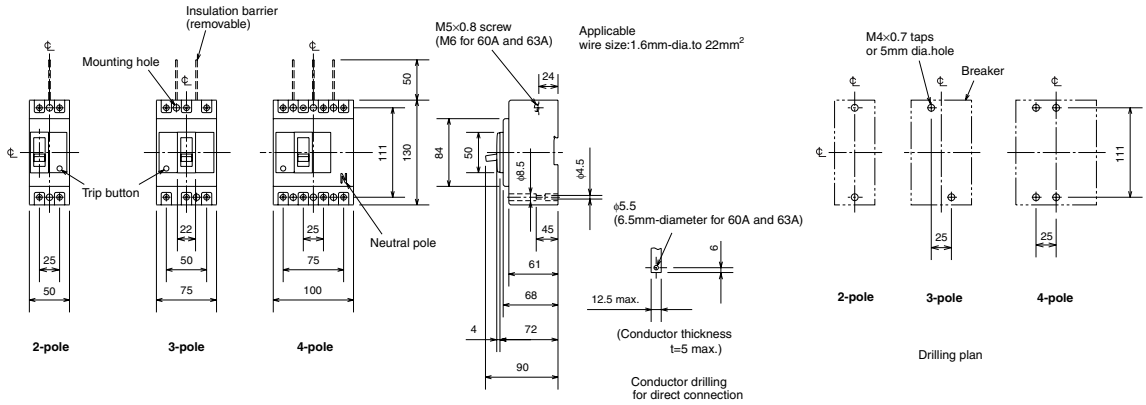
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-05S (∗1)	61
	V	V-05S	64
	S	S05SW	68
Handle lock device	LC	LC-05SW	80
	(∗2) HL	HLF-05SW	
		HLN-05SW	
	HL-S	HLS-05SW (∗1)	

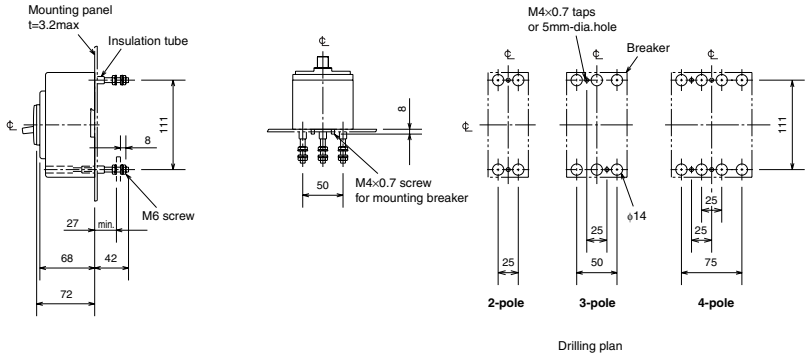
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗1)	79
Terminal cover	Small	TC-S	TCS-05SW3W (∗1)	70
	Large	TC-L	TCL-05SW3W (∗1)	
	Skeleton	TTC	TTC-05SW3 (∗1)	
	Rear	BTC	BTC-05SW3W (∗1)	
	Plug-in	PTC	PTC-05SW3W (∗1)	
IEC 35mm rail mounting adapters (option)			DIN-05SW	80

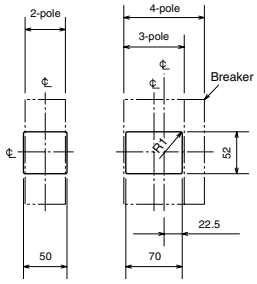
Note (∗1) The designation depends on the number of poles. Refer to the reference page.
(∗2) HLF types are used for OFF-lock, and HLN types for ON-lock.

Front connection

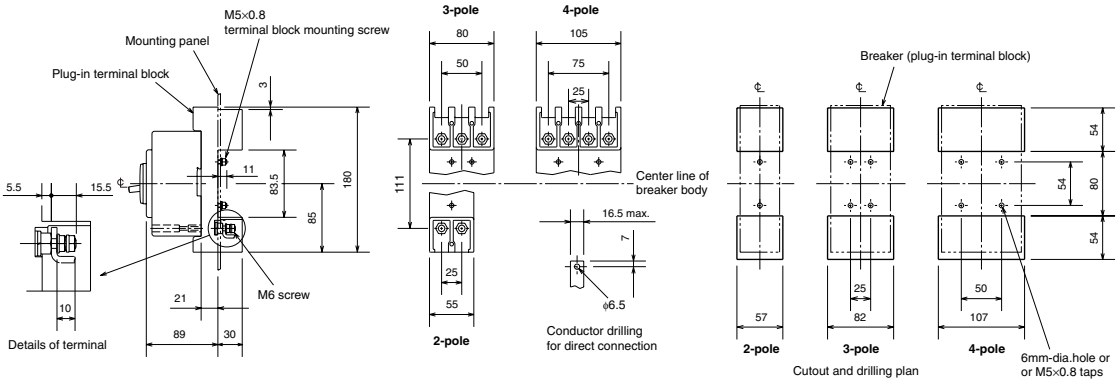


Rear connection





Plug-in



6. Characteristics and Dimensions

Molded-Case Circuit Breakers and Motor Breakers

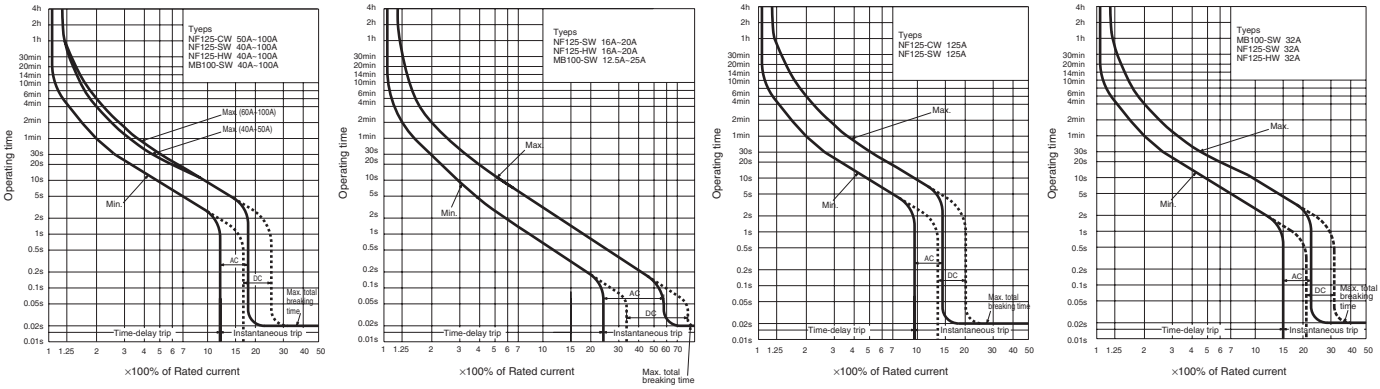
NF125-CW NF125-SW
NF125-HW MB100-SW

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 braking 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
			230V	30/15		50/25			100/50			50/25
		DC (∗1)	250V	7.5/4	–	15/8	–		40/20	–		–
			400V	–	7.5/4	–	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: 1pc, 3P: 2pcs, 4P: 3pcs) (∗2)								

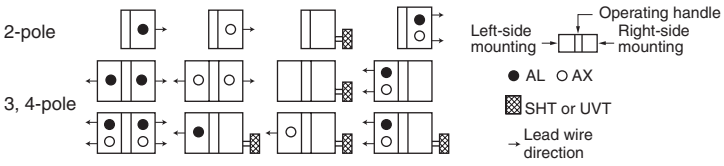
Note (∗1) When wired as shown at the bottom of page 13, 3-pole models can be used for up to 400 V DC, and 4-pole models for up to 500 V DC.
(∗2) These are supplied with NF125-SW, NF125-HW, and MB100-SW models.

■Operating Characteristics



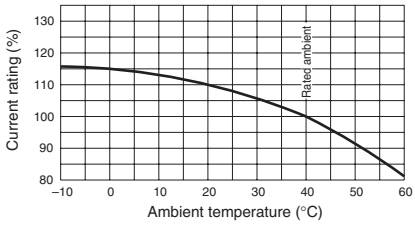
Remark: 1. Only AC characteristics are available for the model MB100-SW.

■Internal Accessories



Remark: 1. Refer to page 48.

■Ambient Compensating Curve



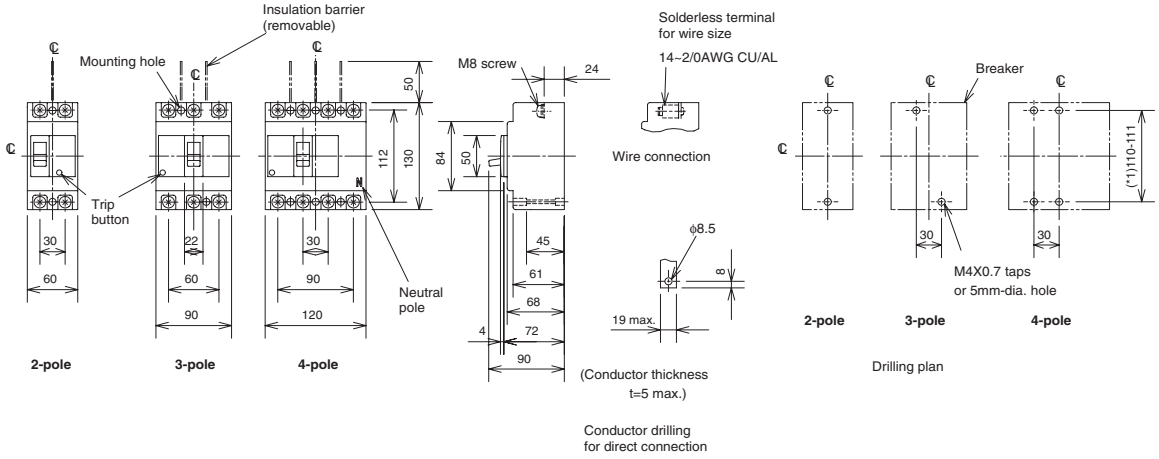
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-1S (∗1)	61
	V	V-1S	64
	S	S1SW	68
Handle lock device	LC	LC-1SW	80
	(∗2) HLF	HLF-1SW	
	HL	HLN-1SW	
	HL-S	HLS-1SW (∗1)(∗2)	

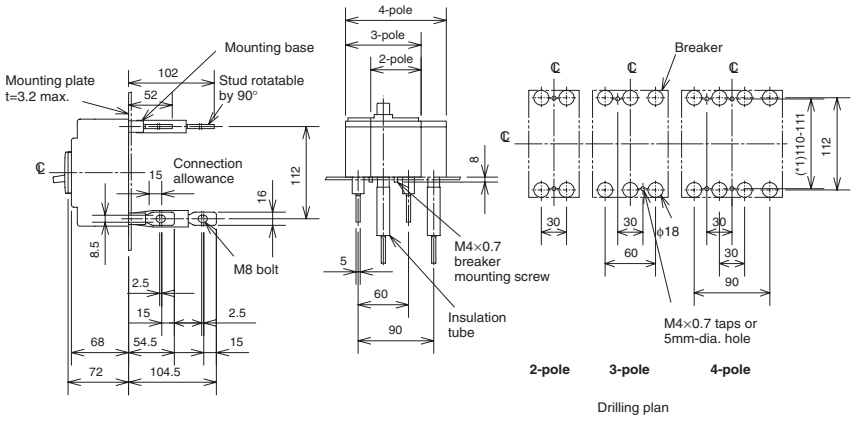
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗1)	79
Terminal cover	Small	TC-S	TCS-1SW3W (∗1)	70
	Large	TC-L	TCL-1SW3W (∗1)	
	Skeleton	TTC	TTC-1SW3 (∗1)	
	Rear	BTC	BTC-1SW3W (∗1)	
	Pulg-in	PTC	PTC-1SW3W (∗1)	
IEC 35mm rail mounting adapters			DIN-1SW3 (∗1)	80
Electrical operation device			MDS-NF1SWE (∗3)	71

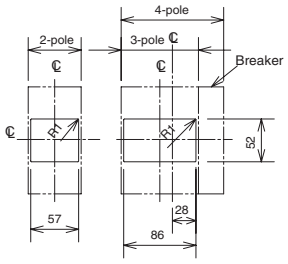
Note (∗1) The designation depends on the number of poles. Refer to the reference page.
(∗2) Specify the working voltage. An order should be placed at the same time as an order of circuit breaker main body.
(∗3) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.

Front connection



Rear connection

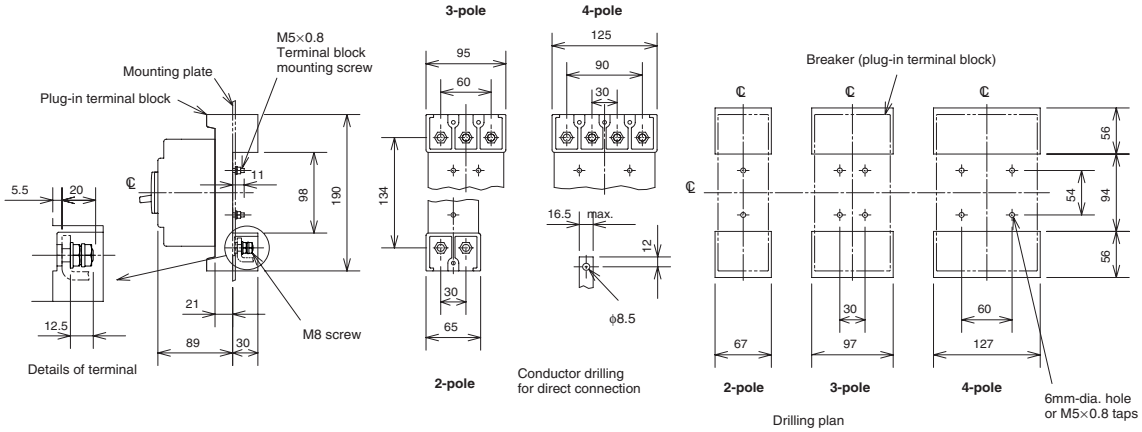




1.0mm clearance on each side
of the handle frame.

Front-panel cutout

Plug-in



Note (∗1) It can respond to the attachment size of 110 and 111 both sides.
Remark: 1. 2-pole model of NF125-HW are 3-pole model with the central pole removed.

6. Characteristics and Dimensions

Molded-Case Circuit Breakers and Motor Breakers

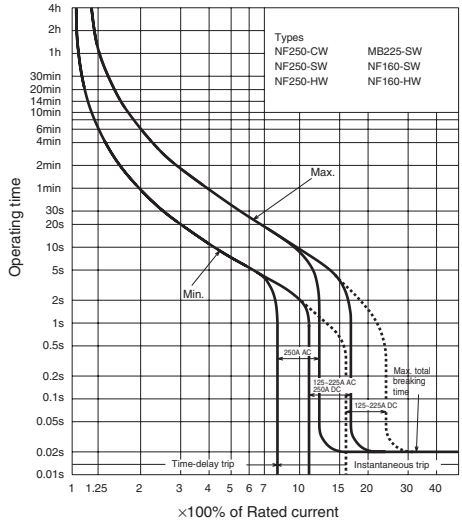
NF250-CW NF250-SW
NF250-HW NF160-SW
NF160-HW MB225-SW

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 braking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	–			5/3			–		–			5/3			–
			500V	15/8			30/8			10/5		15/8			30/8			–
			440V	25/13			50/13			15/8		25/13			50/13			25/13
			400V	30/15			50/13			18/9		30/15			50/13			30/15
			230V	50/25			100/25			35/18		50/25			100/25			50/25
		DC (∗1)	250V	15/8	–		40/20	–		10/5	–	15/8	–		40/20	–		–
			400V	–	15/8	–	–	40/20	–	–	10/5	–	15/8	–	–	40/20	–	–
			500V	–		15/8	–		40/20	–		–		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)														

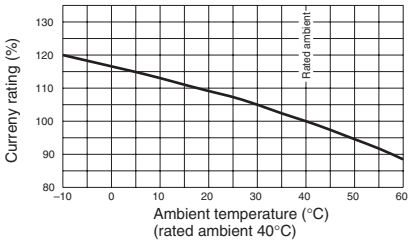
Note (∗1) When wired as shown at the bottom of page 13, 3-pole models can be used for up to 400 V DC, and 4-pole models for up to 500 V DC.

■Operating Characteristics

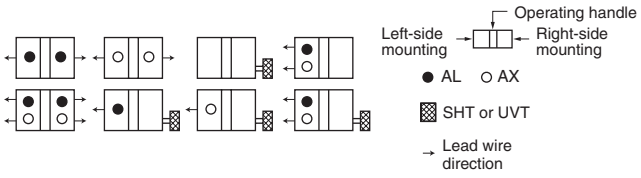


Remark: 1. Only AC characteristics are available for the model MB225-SW.
2. Refer to page 48.

■Ambient Compensating Curve



■Internal Accessories



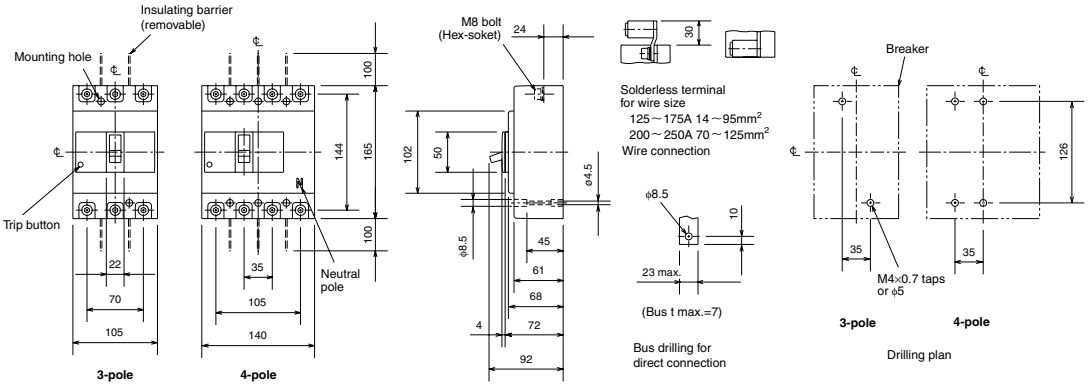
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2S	61
	V	V-2S	64
	S	S2SW	68
Handle lock device	LC	LC-2SW	80
	(∗3) HL	HLF-2SW	
		HLN-2SW	
	HL-S	HLS-2SW	

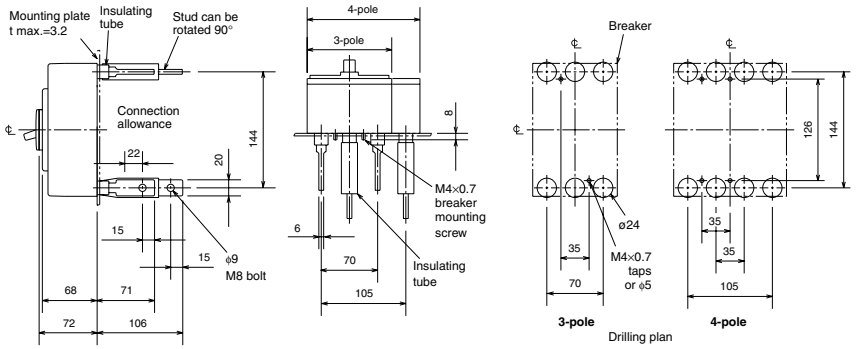
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗1)	79
Terminal cover	Small	TC-S	TCS-2SW3W (∗1)	70
	Large	TC-L	TCL-2SW3W (∗1)	
	Skeleton	TTC	TTC-2SW3 (∗1)	
	Rear	BTC	BTC-2SW3W (∗1)	
	Plug-in	PTC	PTC-2SW3W (∗1)	
Electrical operation device			MDS-NF2SWE (∗2)	71

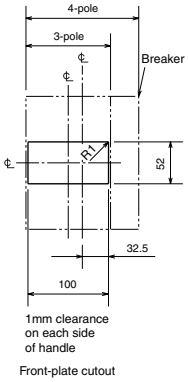
Note (∗1) The designation depends on the number of poles. Refer to the reference page.
(∗2) Specify the working voltage. An order of MB225-SW should be placed at the same time as an order of circuit breaker main body.
(∗3) HLF types are used for OFF-lock, and HLN types for ON-lock.

Front connection

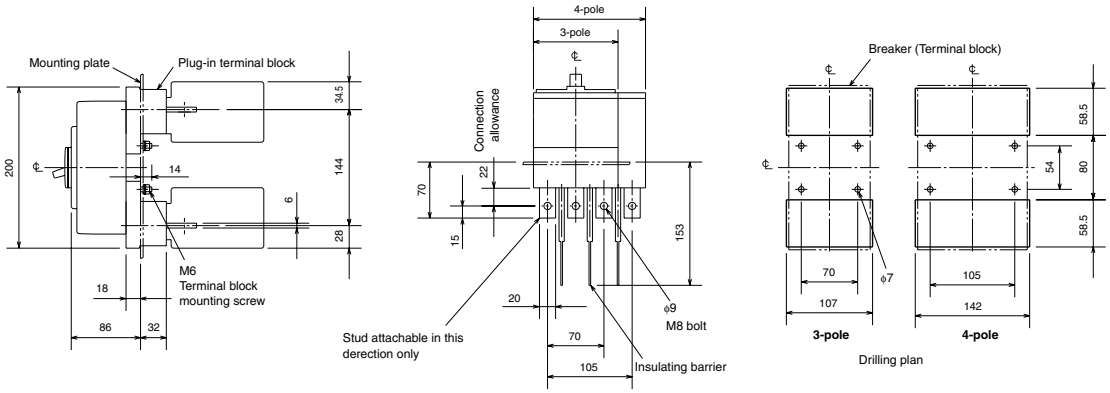


Rear connection





Plug-in



Remark: 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

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

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

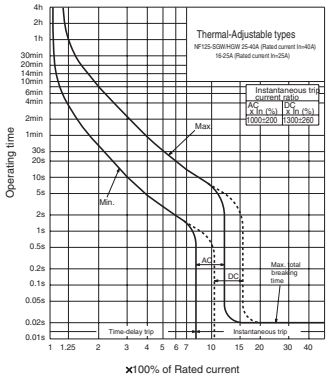
Type NF250-SGW

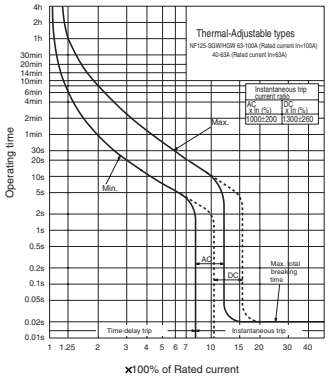
Type name				NF125-SGW RT			NF125-SGW RE			NF125-HGW RT			NF125-HGW RE			NF160-SGW RT			NF160-SGW RE		
Rated current In (Amp.)				16–25, 25–40, 40–63, 63–100, 80–125			16–32, 32–63, 63–100, 75–125			16–25, 25–40, 40–63, 63–100, 80–125			16–32, 32–63, 63–100, 75–125			125–160			80–160		
Number of poles				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 braking capacity (kA)	IEC 60947-2 (Icu/Ics)	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)																	

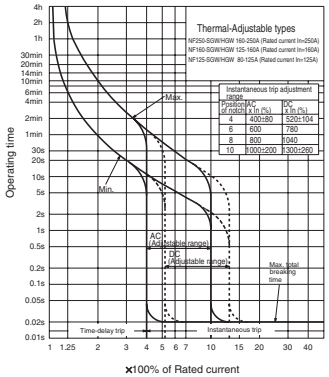
Type name				NF160-HGW RT			NF160-HGW RE			NF250-SGW RT			NF250-SGW RE			NF250-HGW RT			NF250-HGW RE		
Rated current In (Amp.)				125–160			80–160			125–160, 160–250			125–250			125–160 160–250			125–250		
Number of poles				2	3	4	3	4		2	3	4	3	4		2	3	4	3	4		
Rated insulation voltage Ui (V)				690			690			690			690			690			690		
Rated short-circuit braking capacity (kA)	IEC 60947-2 (Icu/Ics)	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)																	

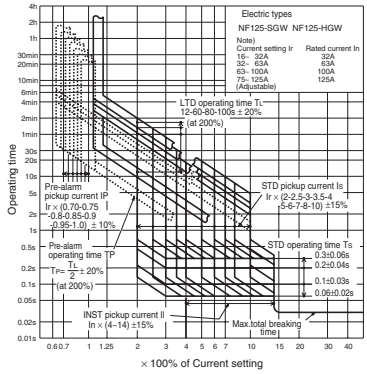
Note (∗1) Use either 2-pole. When wired as shown at the bottom of page 13, 3-pole models can be used for up to 500 V DC, and 4-pole models for up to 600V DC.

■Operating Characteristics

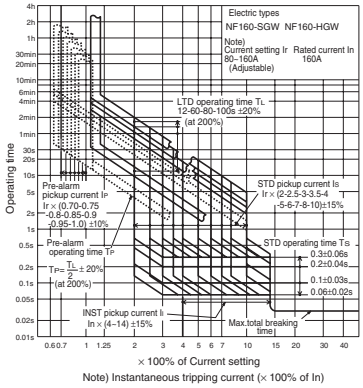


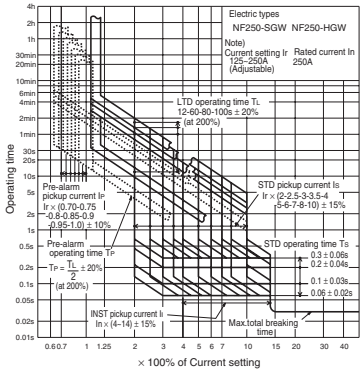






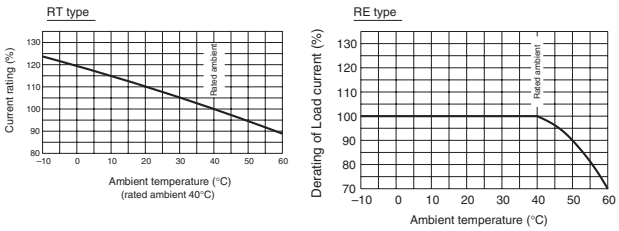
Note) Instantaneous tripping current (× 100% of In)



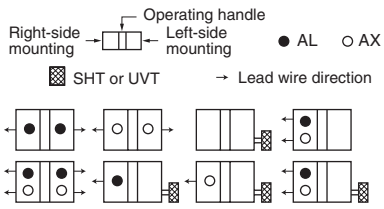


Note) Instantaneous tripping current (× 100% of In)

■Ambient Compensating Curve



■Internal Accessories



Remark: 1. Refer to page 48.

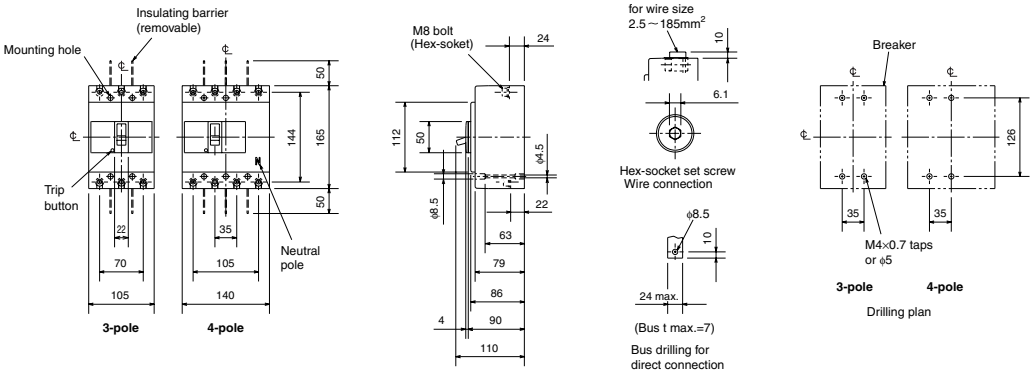
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2SG	61
	V	V-2SG	64
	S	S2GSW	68
Handle lock device	LC	LC-2GSW	80
	(∗2) HL	HLF-2GSW	
		HLN-2GSW	
	HL-S	HLS-2GSW	
OFF Lock with 3 Padlock		HLF3-2GSW	80

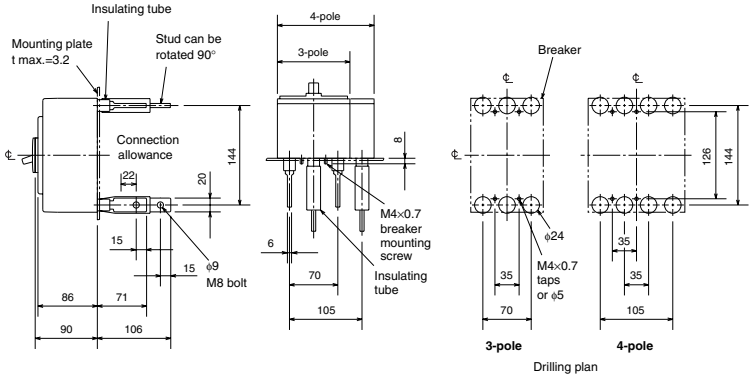
Accessories		Type name	Reference page
Mechanical interlock	MI	MI-05SW3 (∗1)	79
Terminal cover: Small	TC-S	TCS-2GSW3W (∗1)	70
Terminal cover: Large	TC-L	TCL-2GSW3W (∗1)	
Terminal cover: Skeleton	TTC	TTC-2GSW3 (∗1)	
Terminal cover: Rear	BTC	BTC-2GSW3W (∗1)	
Terminal cover: Plug-in	PTC	PTC-2GSW3W (∗1)	
Electrical operation device		MDS-NF2GSWE (∗3)	71

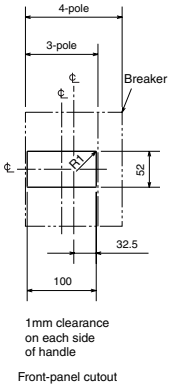
Note (∗1) The designation depends on the number of poles. Refer to the reference page.
(∗2) HLF types are used for OFF-lock, and HLN types for ON-lock.
(∗3) Specify the working voltage.

Front connection

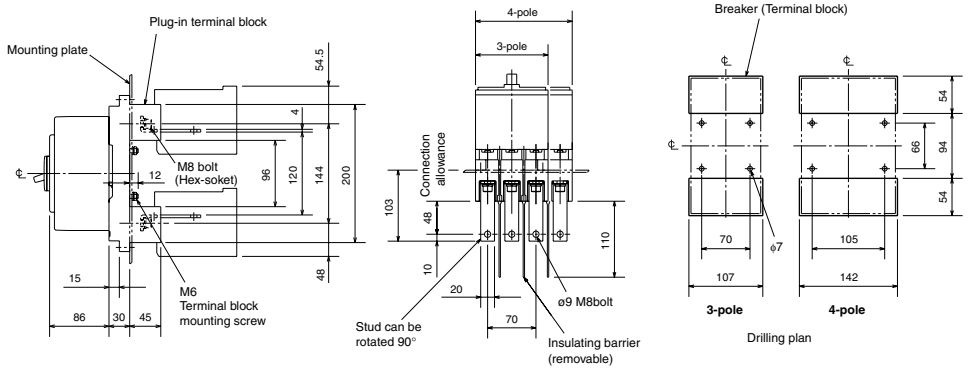


Rear connection





Plug-in



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

6

6. Characteristics and Dimensions

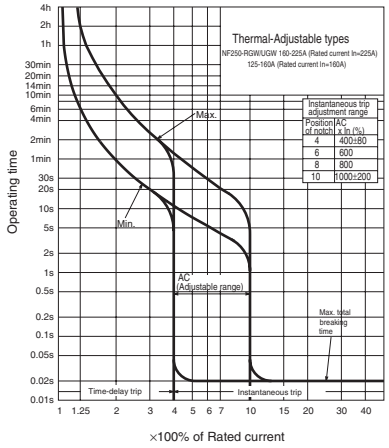
Molded-Case Circuit Breakers

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

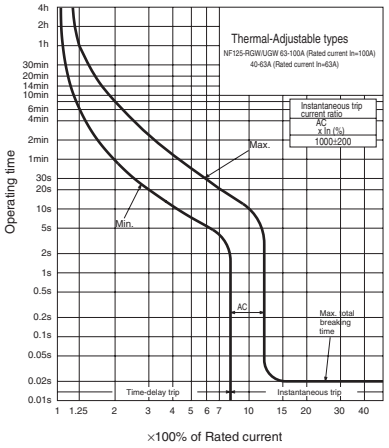
Type NF250-RGW

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	690	690
Rated short-circuit braking 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: M4×0.7×73 (4pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)			

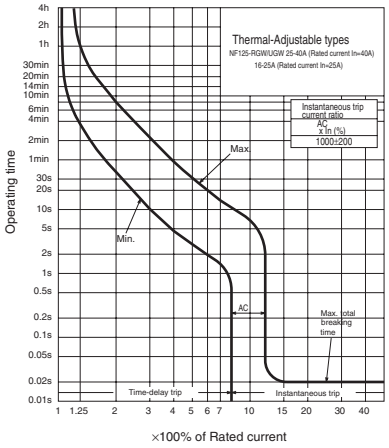
■Operating Characteristics



×100% of Rated current

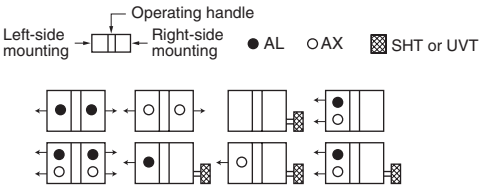


×100% of Rated current



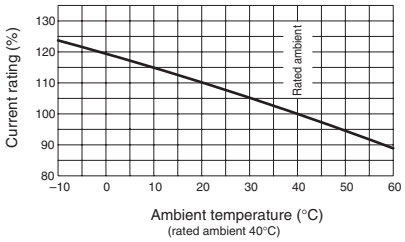
×100% of Rated current

■Internal Accessories



Remark: 1. Refer to page 48.

■Ambient Compensating Curve



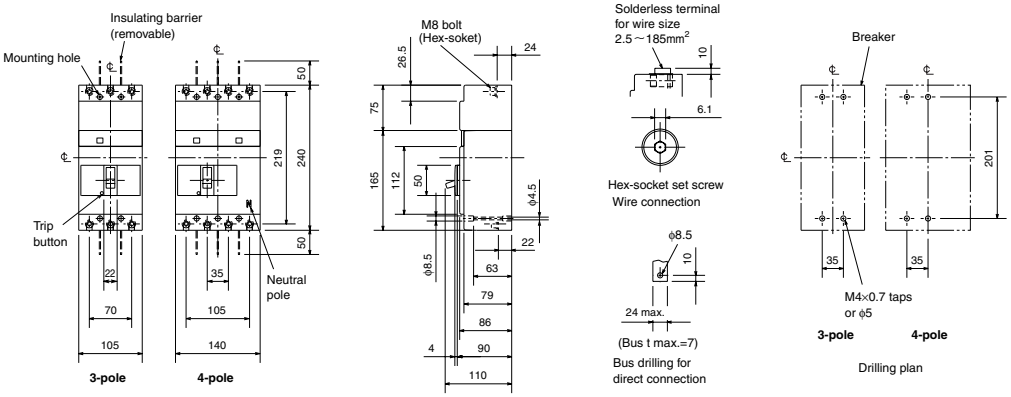
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2UG	61
	V	V-2UG	64
	S	—	—
Mechanical interlock	MI	MI-05SW3 (∗1)	79
Electrical operation device		—	—

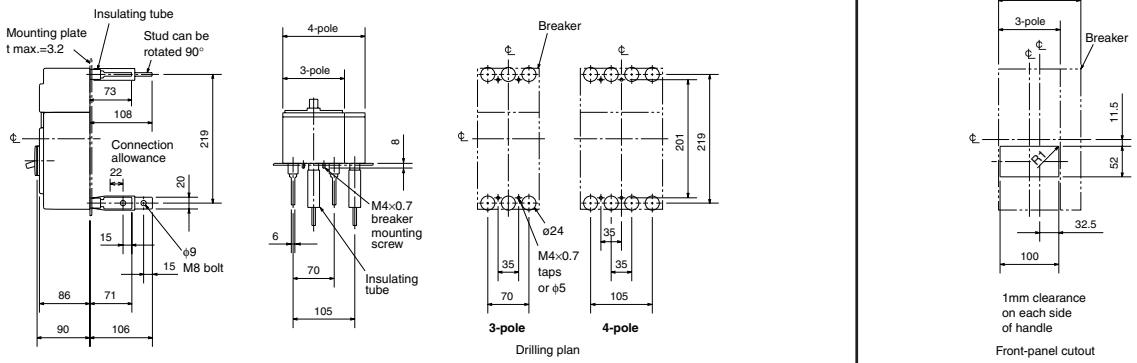
Accessories			Type name	Reference page
Terminal cover	Small	TC-S	TCS-2GSW3W (∗1)	70
	Large	TC-L	TCL-2GSW3W (∗1)	
	Skeleton	TTC	TTC-2GSW3 (∗1)	
	Rear	BTC	BTC-2GSW3W (∗1)	
	Plug-in	PTC	PTC-2GSW3W (∗1)	
Handle lock device		LC	LC-2GSW	80
		(∗2) HL	HLF-2GSW	
			HLN-2GSW	
		HL-S	HLS-2GSW	

Note (∗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.

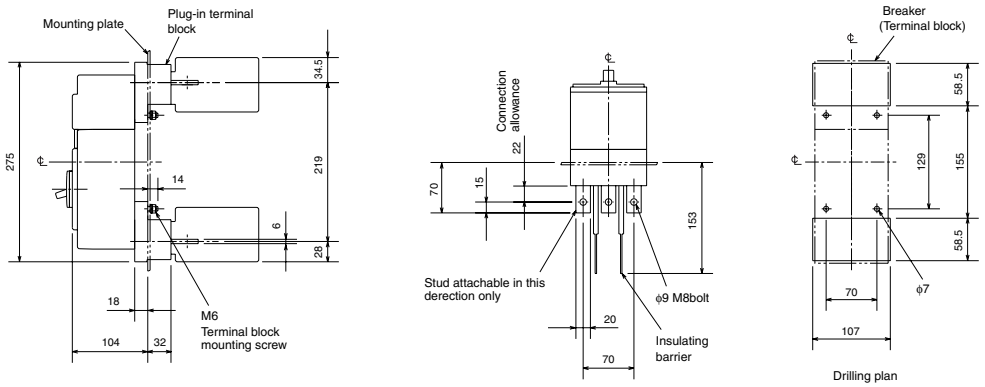
Front connection



Rear connection



Plug-in



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

6

6. Characteristics and Dimensions

Molded-Case Circuit Breakers

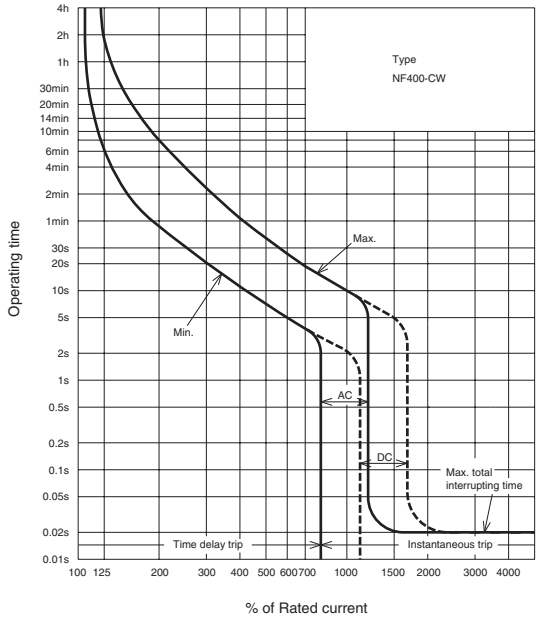
NF400-CW
NF400-SW

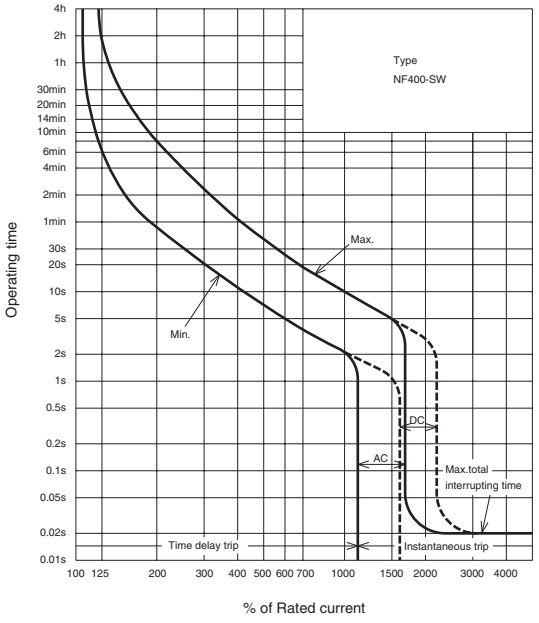
Type NF400-SW

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		
			400V	36/18		45/45		
			230V	50/25		85/85		
		DC(∗1)	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)				

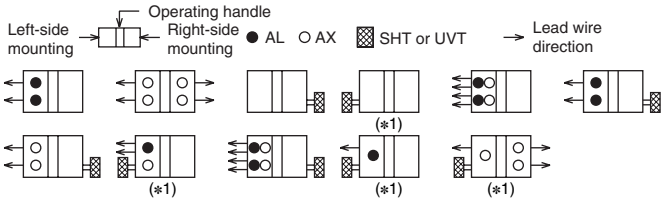
Note (∗1) When wired as shown at the bottom of page 17, 3-pole models can be used for up to 400VDC, and 4-pole models for up to 500VDC.

■Operating Characteristics



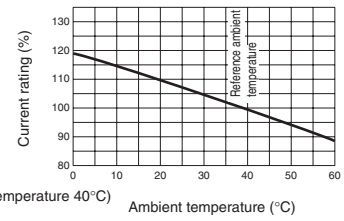


■Internal Accessories



Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: 1. Refer to page 49.

■Ambient Compensating Curve



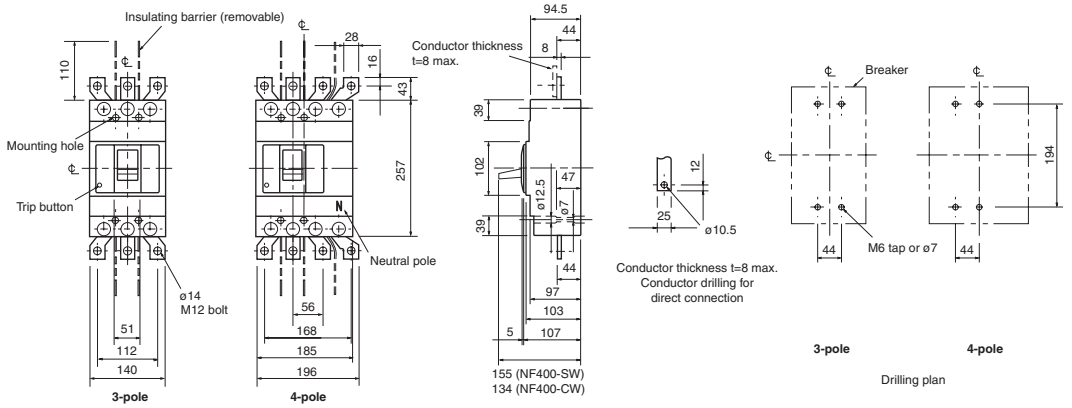
■External Accessories

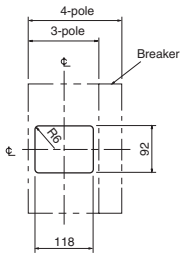
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page	Accessories		Type name	Reference page
Operating handle	F	F-4S	62	Terminal cover	Large (TC-L)	TCL-4SW3 (∗1)	70
	V	V-4S	65		Skeleton (TTC)	TTC-4SW3 (∗1)	
	S	S4CW, S4SW	68		Rear (BTC)	BTC-4SW3 (∗1)	
Mechanical interlock (MI)		MI-4SW3 (∗1)	79	Handle lock device	HL	HL-4CW, HL-4SW	80
Auxiliary handle (HT)		HT-4CW, HT4SW	80		HL-S	HLS-4SW	
				Electrical operation device		☆	71

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

Front connection

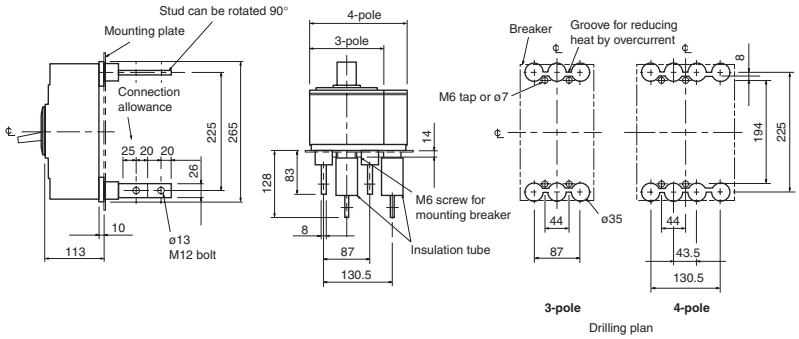




1.0mm clearance on each side of the handle frame.

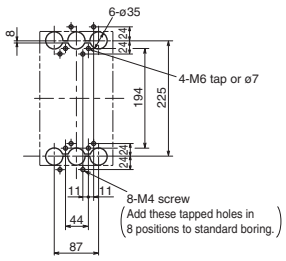
Front-panel cutout

Rear connection



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

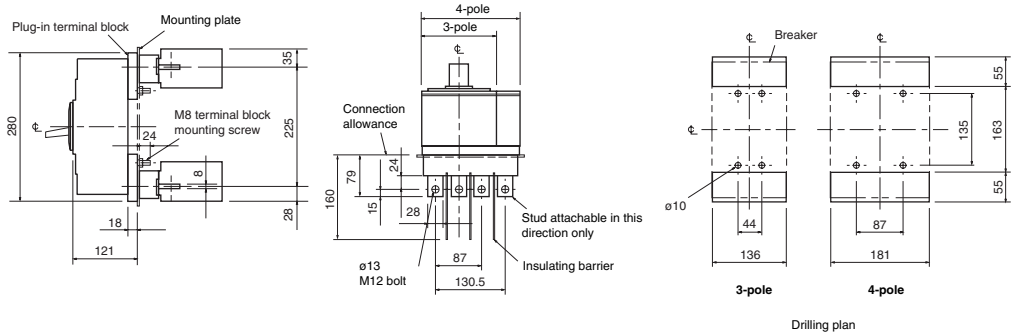
Line side



Load side

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

Plug-in



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

6. Characteristics and Dimensions

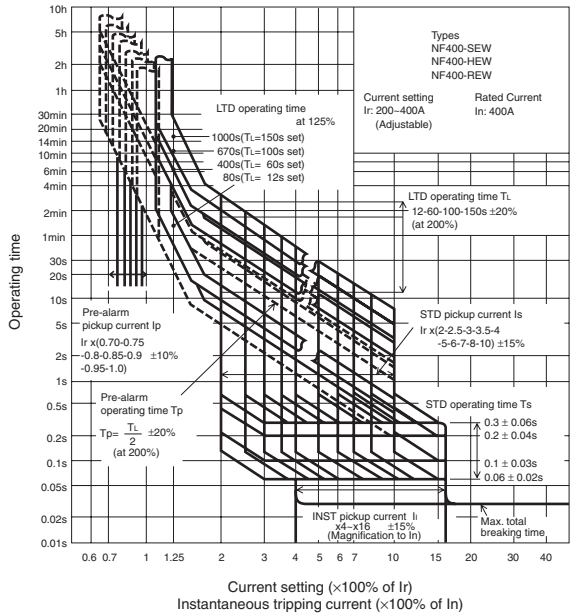
Molded-Case Circuit Breakers

NF400-SEW
NF400-HEW
NF400-REW

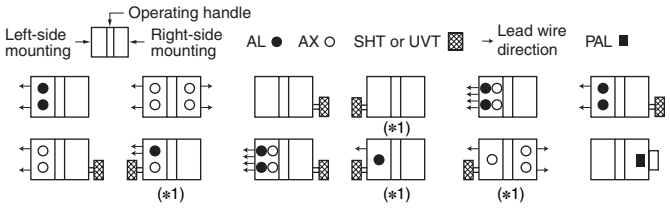
Type NF400-SEW

Type name				NF400-SEW		NF400-HEW		NF400-REW
Rated current In (Amp.)				200-400 adjustable				
Number of poles				3	4	3	4	3
Reted 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			Front connection	Mounting screw: M6×72 (4pcs) Insulating barrier: (3P: 4pcs, 4P: 6pcs)				
			Rear connection	Mounting screw: M6×85 (4pcs)				

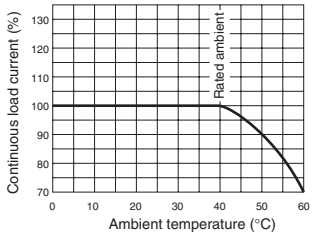
■Operating Characteristics



■Internal Accessories



■Temperature Characteristics



Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: 1. Refer to page 49.

■External Accessories

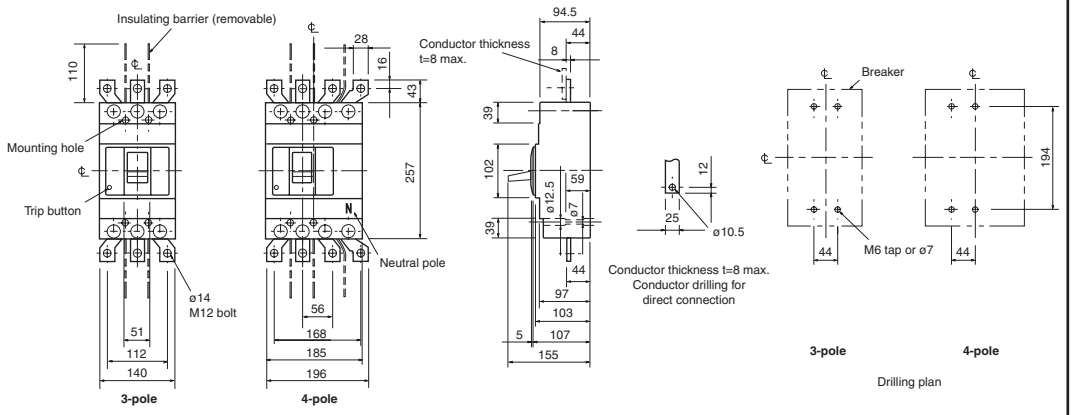
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

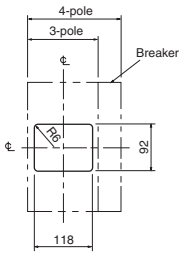
Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4SW	68
Mechanical interlock (MI)		MI-4SW3 (∗2)	79
Auxiliary handle (HT)		HT-4SW	80

Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3 (∗1)(∗2)	70
	Skeleton	(TTC)	TTC-4SW3 (∗2)	
	Rear	(BTC)	BTC-4SW3 (∗1)(∗2)	
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

Note (∗1) This is for NF400-SEW.
(∗2) The designation depends on the number of poles. Refer to the reference page.

Front connection

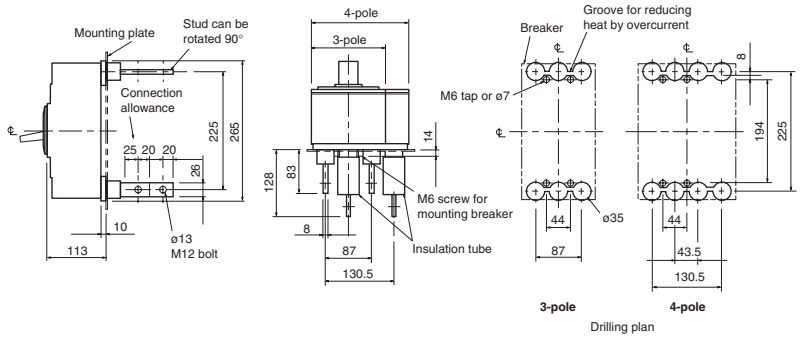




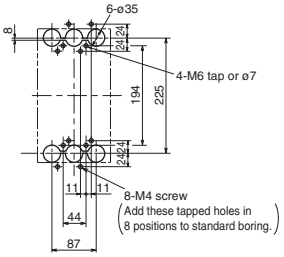
1.0mm clearance on each side of the handle frame.

Front-panel cutout

Rear connection

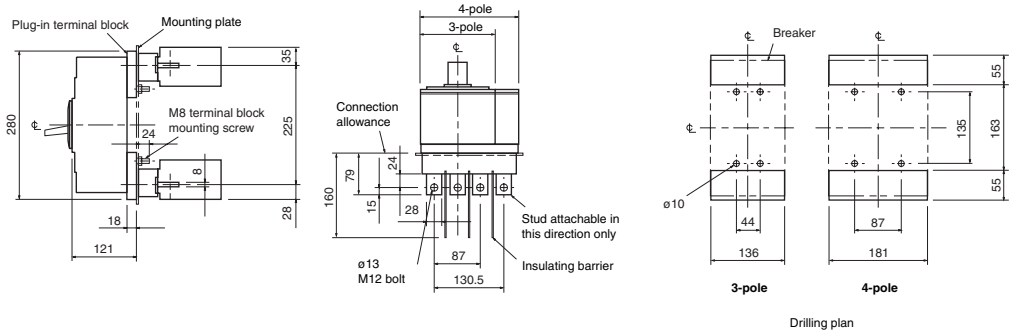


Boring dimensions for rear connection type barriers (3-pole)



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

Plug-in



6. Characteristics and Dimensions

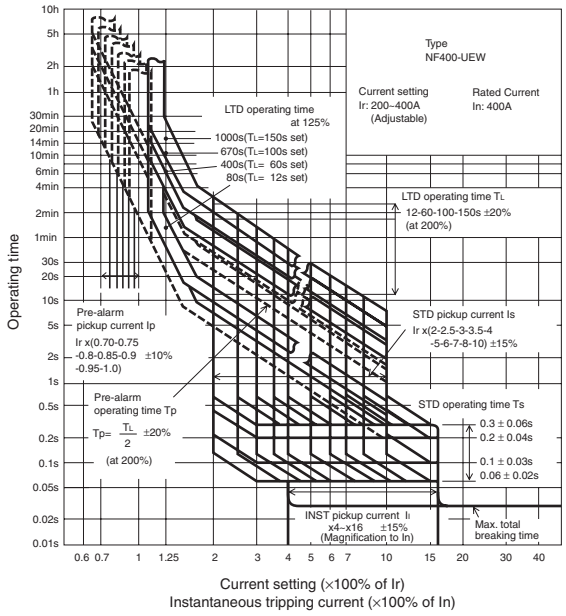
Molded-Case Circuit Breakers

NF400-UEW

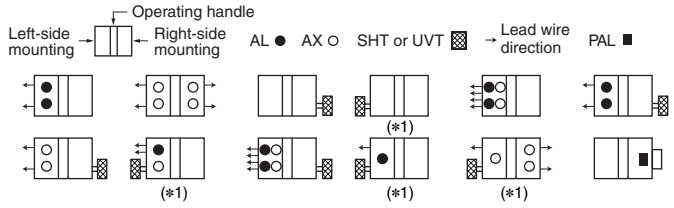
Type NF400-UEW

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)	

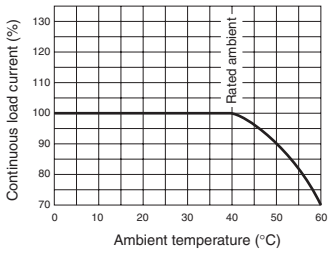
■Operating Characteristics



■Internal Accessories



■Current reducing curve



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 107.

■External Accessories

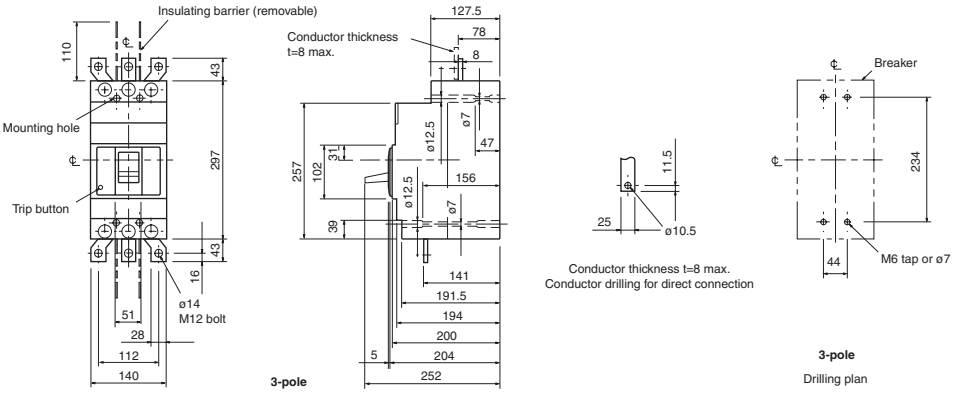
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

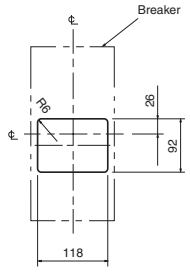
Accessories		Type name	Reference page
Operating handle	F	F-4U (∗1)	62
	S	S4SW	68
Mechanical interlock (MI)		MI-4SW3 (∗1)	79
Auxiliary handle (HT)		HT-4SW	80

Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3 (∗1)	70
	Skeleton	(TTC)	—	—
	Rear	(BTC)	BTC-4SW3 (∗1)	70
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-4UW	
Electrical operation device			☆	71

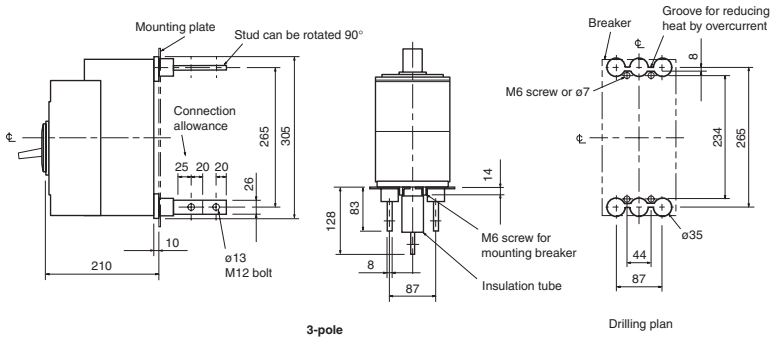
Note (∗1) The designation depends on the number of poles. Refer to the reference page.

Front connection

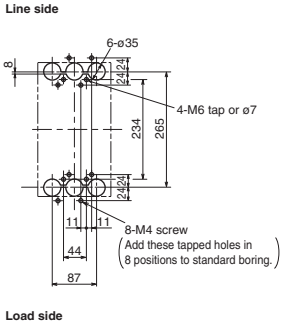




Rear connection

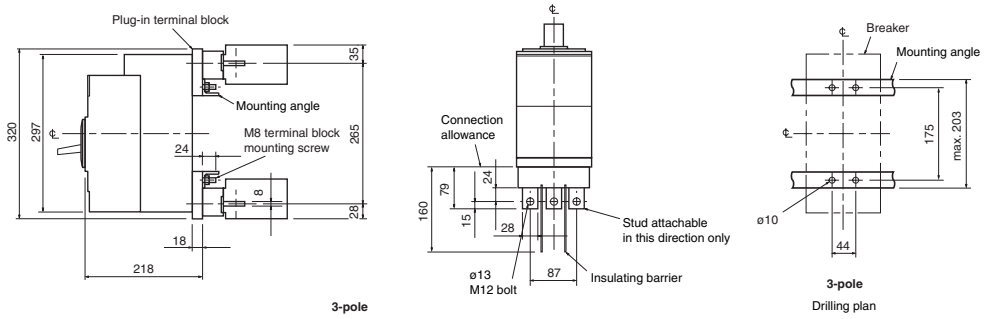


Boring dimensions for rear connection type barriers (3-pole)



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

Plug-in



Remark: 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

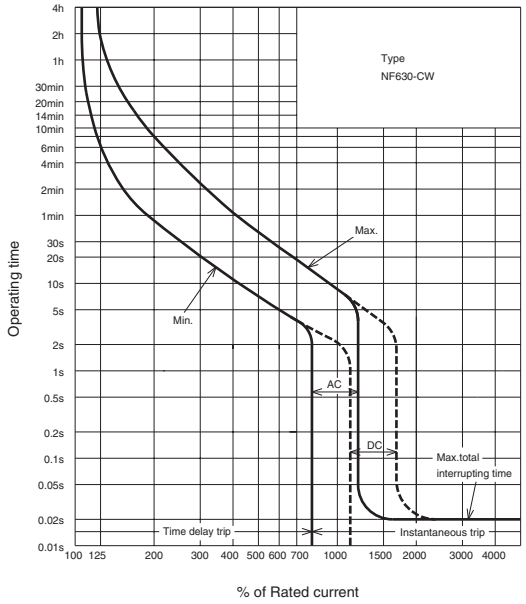
NF630-CW
NF630-SW

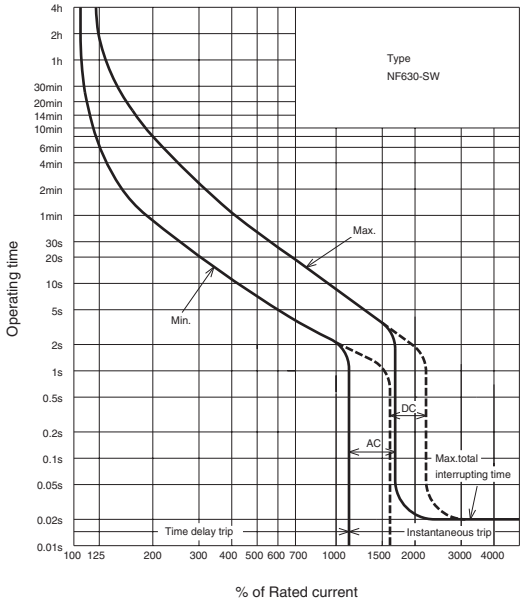
Type NF630-SW

Type name				NF630-CW		NF630-SW		
Rated current In (Amp.)				500 600 630				
Number of poles				2	3	2	3	4
Reted insulation voltage Ui (V)				690		690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (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		
		DC (∗1)	250V	20/10		40/40		
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)				

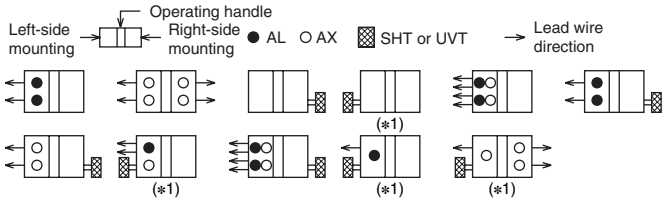
Note (∗1) When wired as shown at the bottom of page 17, 3-pole models can be used for up to 400VDC, and 4-pole models for up to 500VDC.

■Operating Characteristics



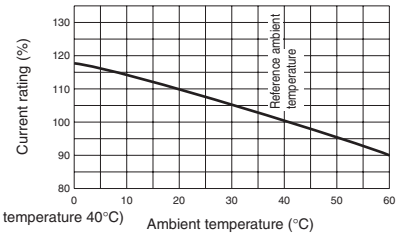


■Internal Accessories



Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: 1. Refer to page 49.

■Ambient Compensating Curve



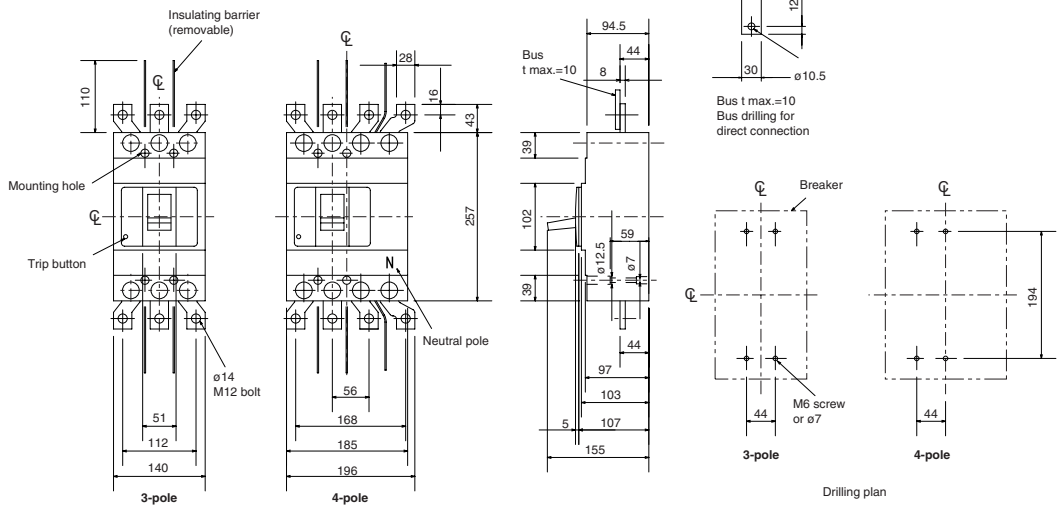
■External Accessories

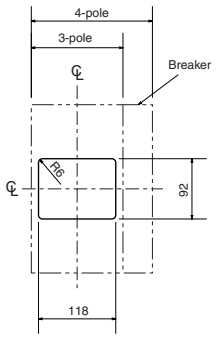
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page	Accessories		Type name	Reference page
Operating handle	F	F-4S	62	Terminal cover Large	(TC-L)	TCL-4SW3 (∗1)	70
	V	V-4S	65	Skeleton	(TTC)	TTC-4SW3 (∗1)	
	S	S4SW	68	Rear	(BTC)	BTC-4SW3 (∗1)	
Mechanical interlock	(MI)	MI-4SW3 (∗1)	79	Handle lock device	HL	HL-4SW	80
Auxiliary handle	(HT)	HT-4SW	80		HL-S	HLS-4SW	
				Electrical operation device		☆	71

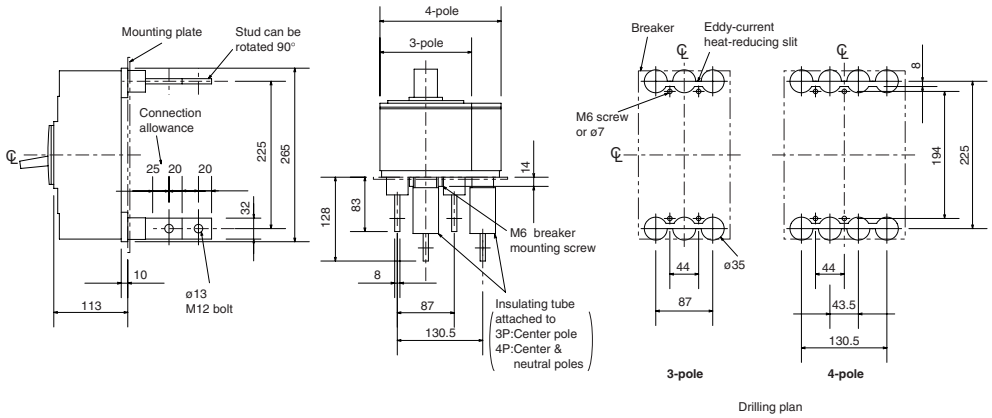
Note (∗1) The designation depends on the number of poles. Refer to the reference page.

Front connection

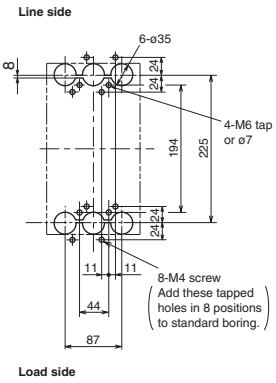




Rear connection

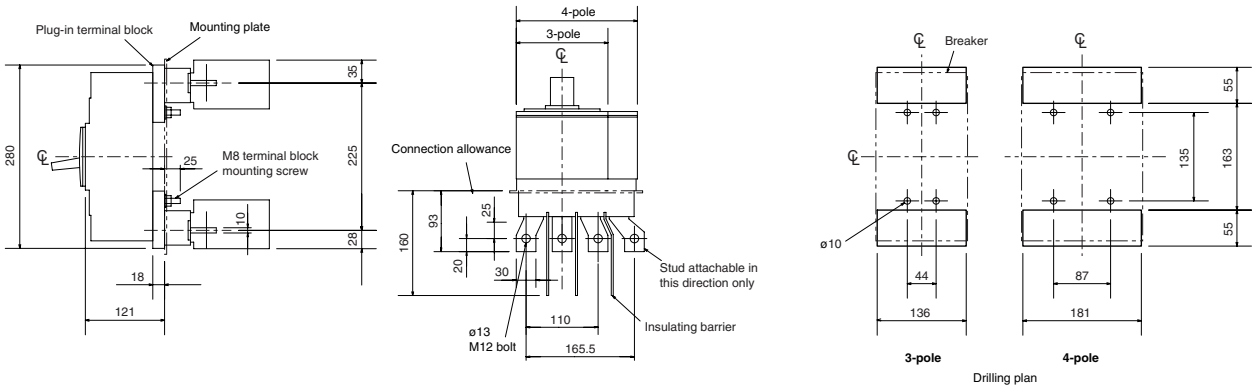


Boring dimensions for rear connection type barriers (3-pole)



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

Plug-in



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

6

6. Characteristics and Dimensions

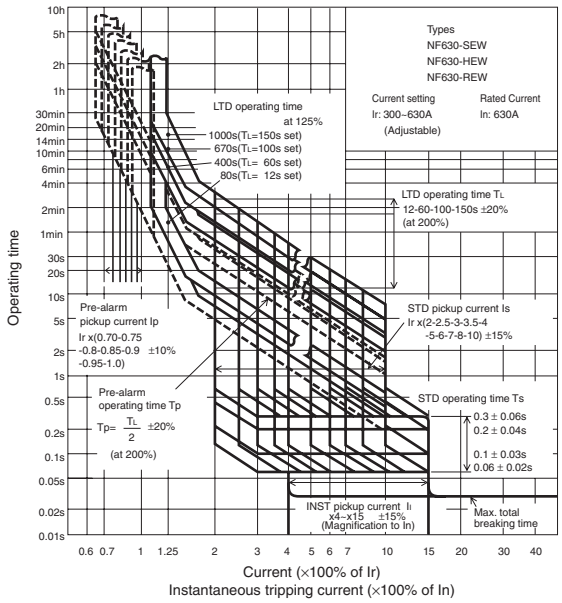
Molded-Case Circuit Breakers

NF630-SEW
NF630-HEW
NF630-REW

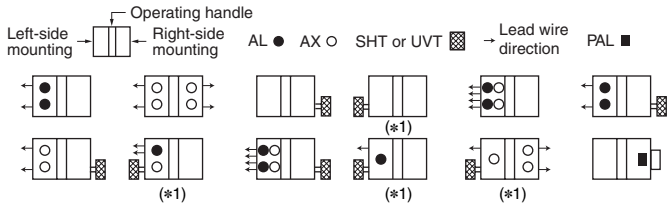
Type NF630-SEW

Type name				NF630-SEW		NF630-HEW		NF630-REW
Rated current In (Amp.)				300-630 adjustable				
Number of poles				3	4	3	4	3
Reted 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)				

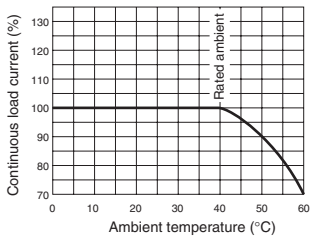
■Operating Characteristics



■Internal Accessories



■Temperature Characteristics



Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: 1. Refer to page 49.

■External Accessories

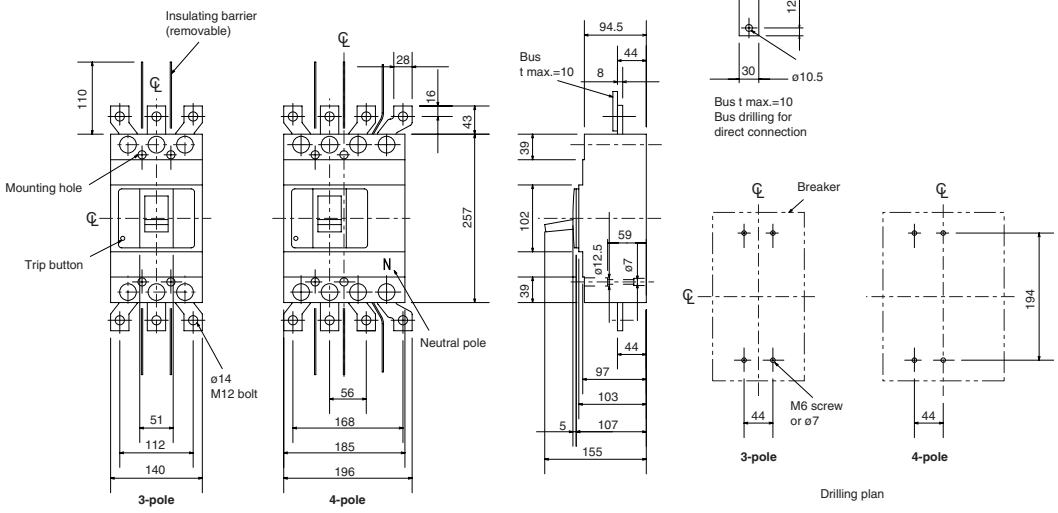
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

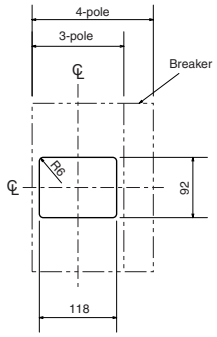
Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4SW	68
Mechanical interlock (MI)		MI-4SW3 (∗1)	79
Auxiliary handle (HT)		HT-4SW	80

Accessories		Type name	Reference page
Terminal cover	Large (TC-L)	TCL-4SW3 (∗2)	70
	Skeleton (TTC)	TTC-4SW3 (∗2)	
	Rear (BTC)	BTC-4SW3 (∗2)	
Handle lock device	HL	HL-4SW	80
	HL-S	HLS-4SW	
Electrical operation device		☆	71

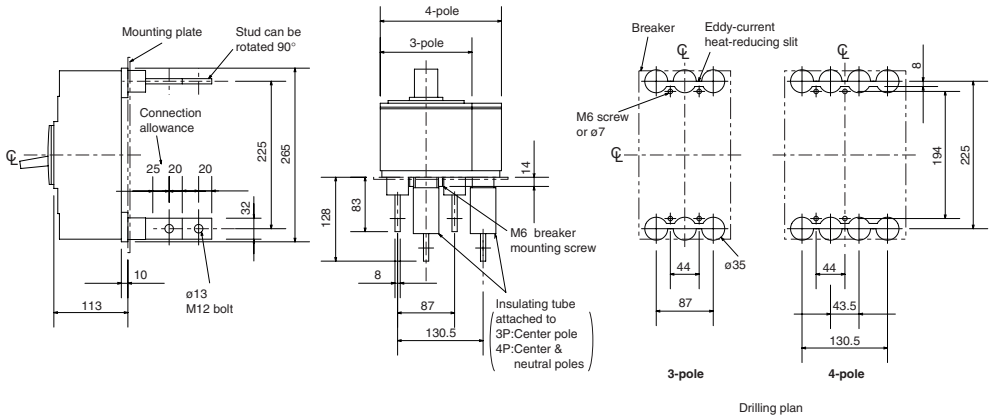
Note (∗1) This is for NF630-SEW
(∗2) The designation depends on the number of poles. Refer to the reference page.

Front connection

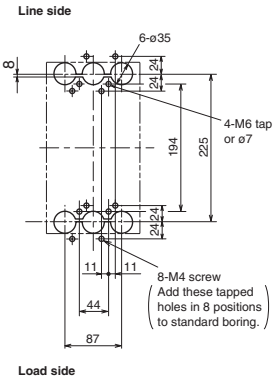




Rear connection

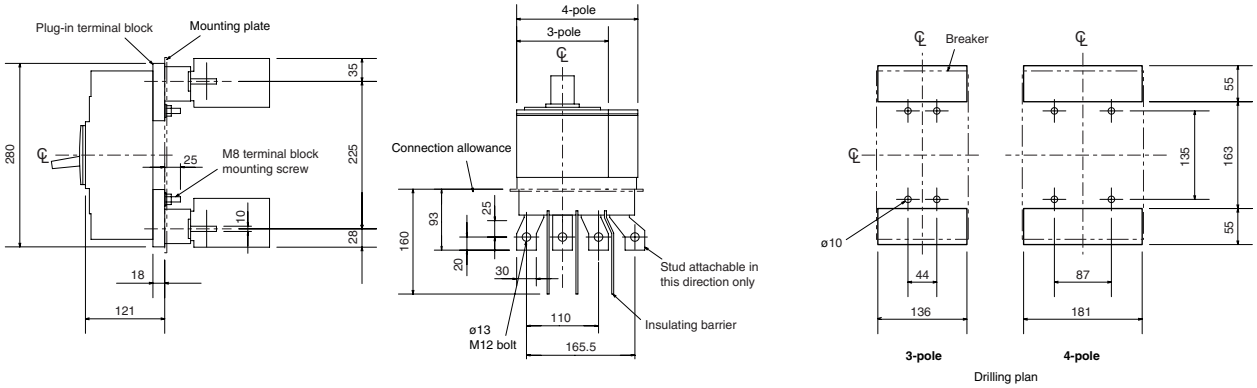


Boring dimensions for rear connection type barriers (3-pole)



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

Plug-in



6. Characteristics and Dimensions

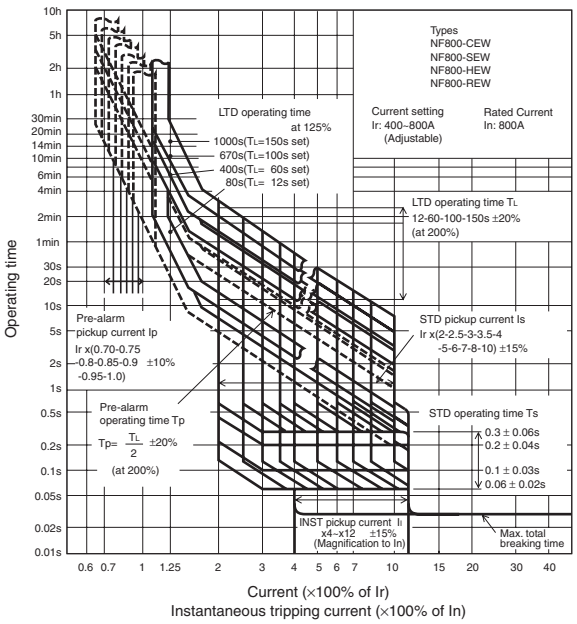
Molded-Case Circuit Breakers

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

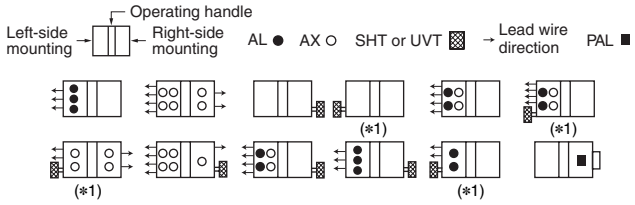
Type NF800-SEW

Type name				NF800-CEW	NF800-SEW		NF800-HEW		NF800-REW
Rated current In (Amp.)				400-800 adjustable					
Number of poles				3	3	4	3	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)					

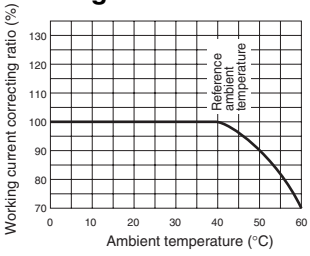
■Operating Characteristics



■Internal Accessories



■Current Reducing Curve



The rated current does not depend on temperature. However, if ambient temperature exceeds 40°C, reduce the continuous working current as left curve.

Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: 1. Refer to page 49.

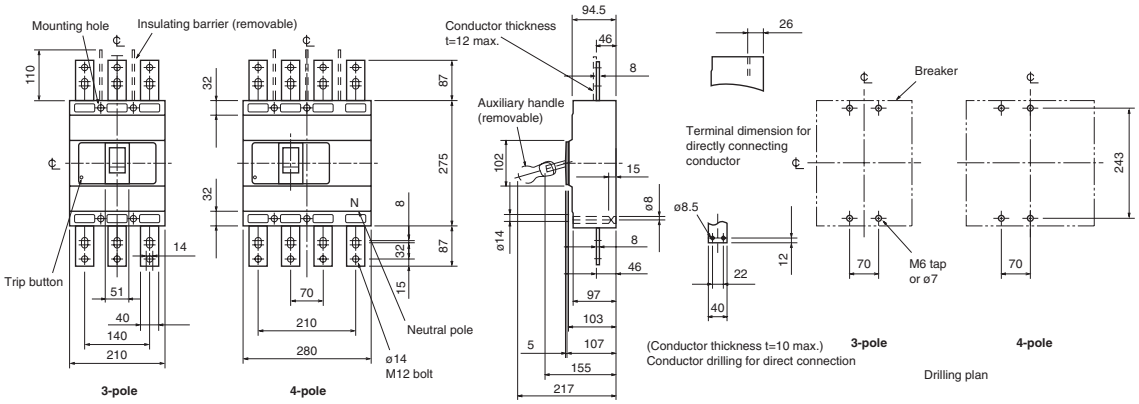
■External Accessories

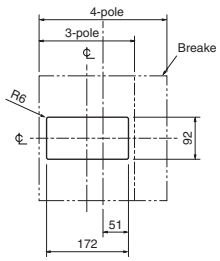
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page	Accessories		Type name	Reference page
Operating handle	F	F-8S	62	Terminal cover Large	(TC-L)	TCL-8SW3 (∗1)	70
	V	V-8S	65	Skeleton	(TTC)	TTC-8SW3 (∗1)	
	S	S4SW	68	Rear	(BTC)	BTC-8SW3 (∗1)	
Mechanical interlock	(MI)	MI-8SW3 (∗1)	79	Handle lock device	HL	HL-4SW	80
Auxiliary handle	(HT)	HT-4SW	80		HL-S	HLS-8SW	
				Electrical operation device		☆	71

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

Front connection

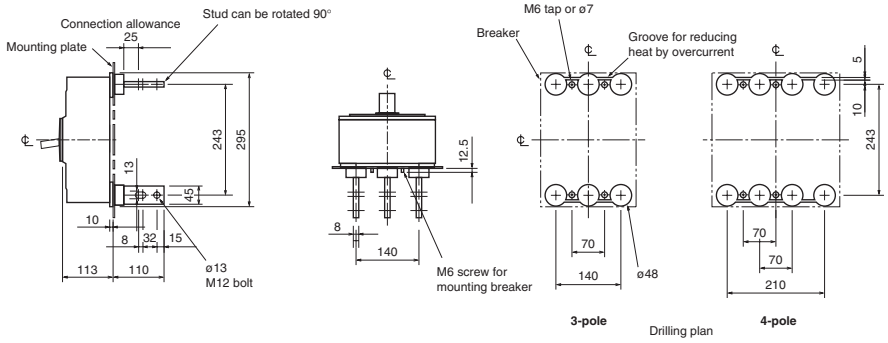




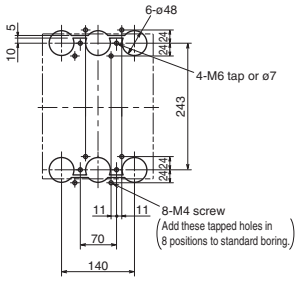
1.0mm clearance on each side of the handle frame.

Front-panel cutout

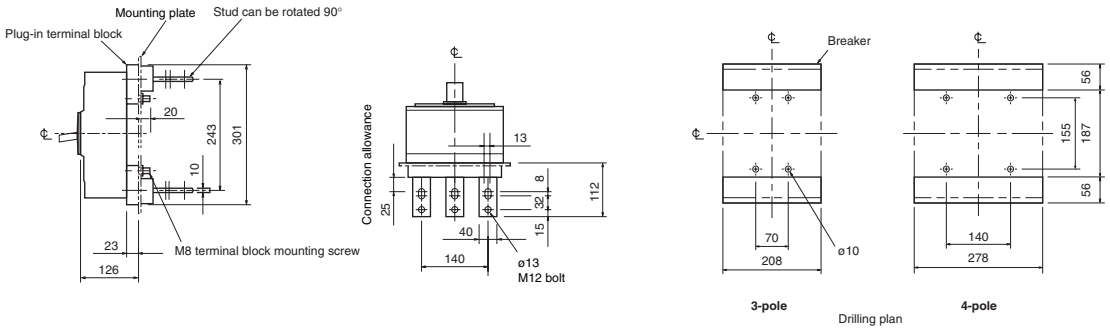
Rear connection



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



Plug-in



6

6. Characteristics and Dimensions

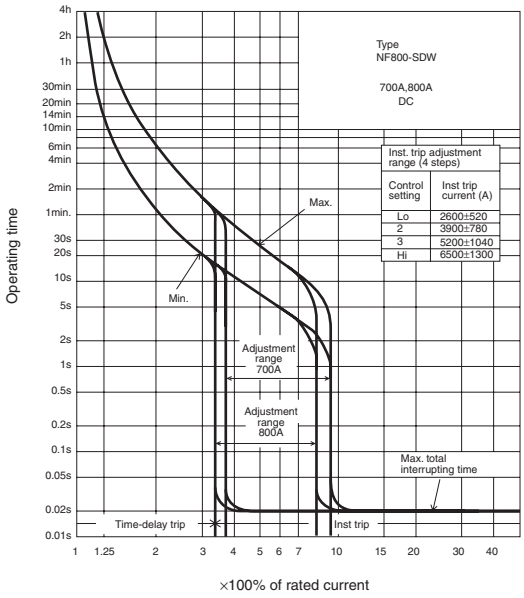
Molded-Case Circuit Breakers

NF800-SDW

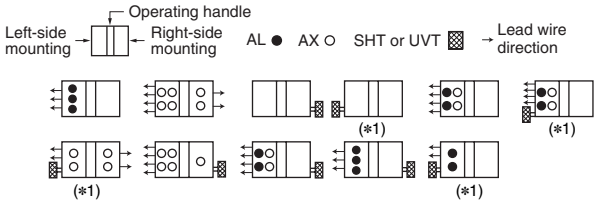
Type NF800-SDW

Type name				NF800-SDW
Rated current In (Amp.)				(700), 800
Number of poles				2
Reted insulation voltage Ui (V)				690
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics) Time constant not larger than 10ms	DC	250V	40/40
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

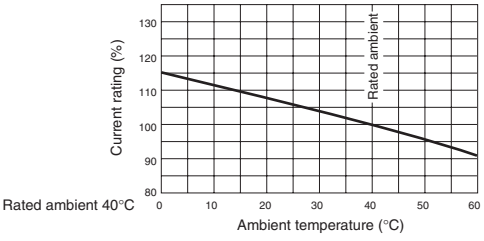


■Internal Accessories



Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: 1. Refer to page 49.

■Ambient Compensating Curve



■External Accessories

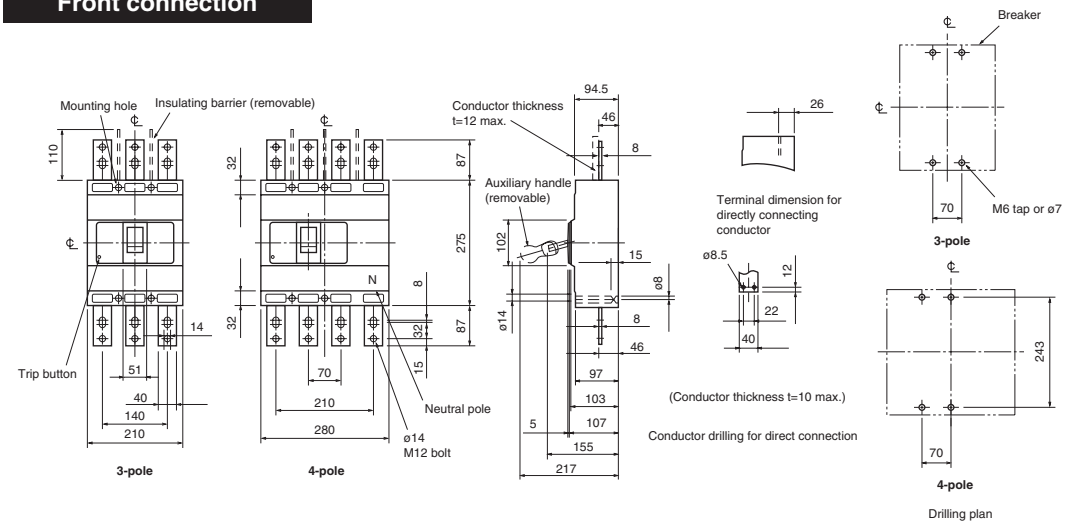
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

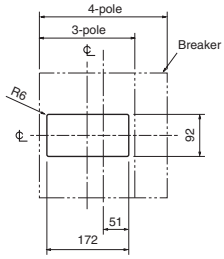
Accessories		Type name	Reference page
Operating handle	F	F-8S	62
	V	V-8S	65
	S	S4SW	68
Mechanical interlock (MI)		MI-8SW3 (∗1)	79
Auxiliary handle (HT)		HT-4SW	80

Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-8SW3 (∗1)	70
	Skeleton	(TTC)	TTC-8SW3 (∗1)	
	Rear	(BTC)	BTC-8SW3 (∗1)	
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-8SW	
Electrical operation device			☆	71

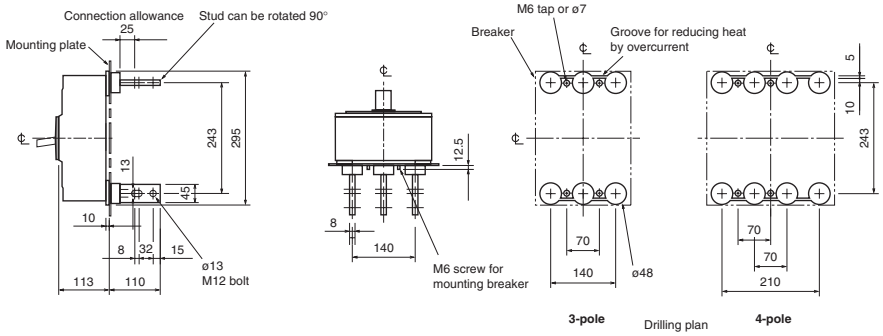
Note (∗1) The designation depends on the number of poles. Refer to the reference page.

Front connection

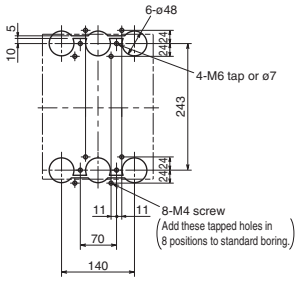




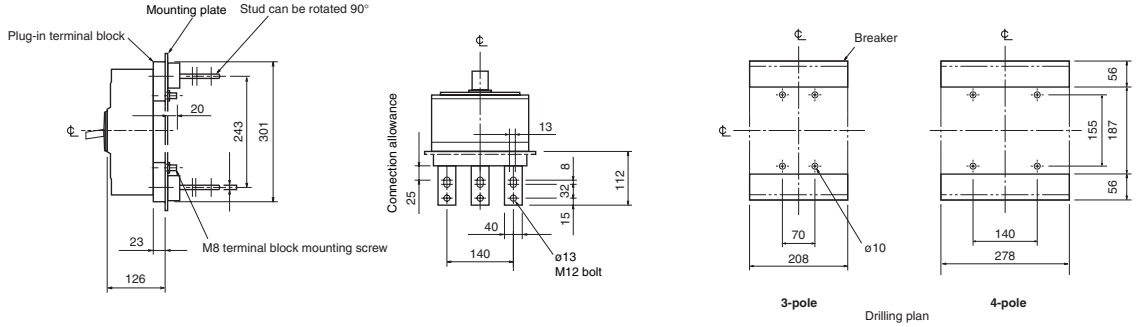
Rear connection



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



Plug-in



Remark: 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

6. Characteristics and Dimensions

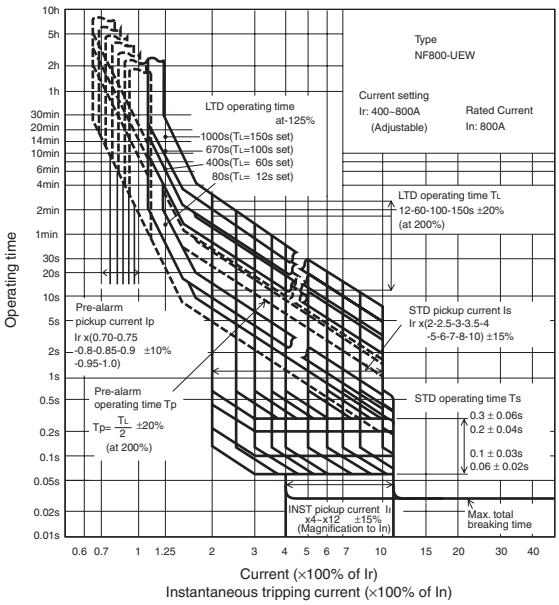
Molded-Case Circuit Breakers

NF800-UEW

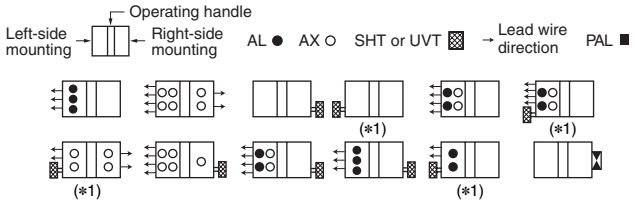
Type NF800-UEW

Type name				NF800-UEW	
Rated current In (Amp.)				400-800 adjustable	
Number of poles				3	4
Reted insulation voltage Ui (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)	

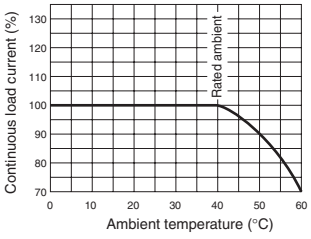
■Operating Characteristics



■Internal Accessories



■Current reducing curve



Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separately for left-side mounting.
Remark: 1. Refer to page 49.

■External Accessories

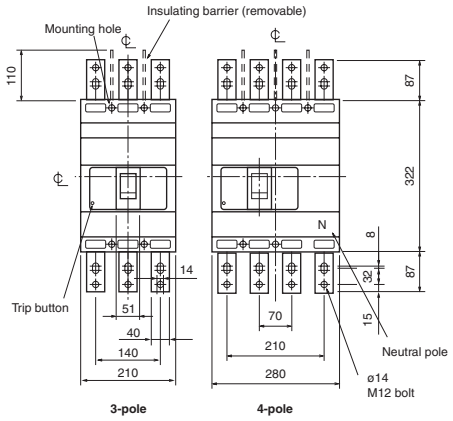
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

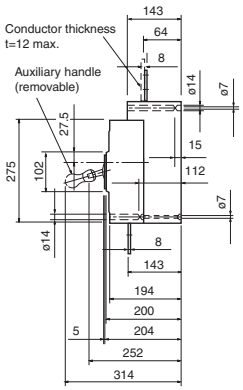
Accessories		Type name	Reference page
Operating handle	F	F-8U(*1)	62
	V	—	—
	S	S4SW	68
Mechanical interlock (MI)		MI-8SW3 (∗1)	79
Auxiliary handle (HT)		HT-4SW	80

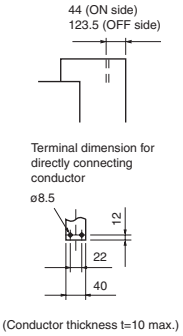
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-8UW3 (∗1)	70
	Skeleton	(TTC)	—	—
	Rear	(BTC)	BTC-8SW3 (∗1)	70
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-8UW	
Electrical operation device			☆	71

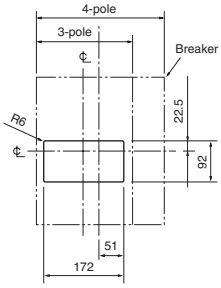
Note (∗1) The designation depends on the number of poles. Refer to the reference page.

Front connection



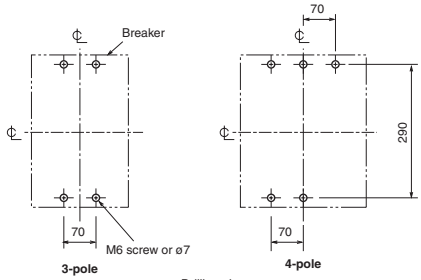




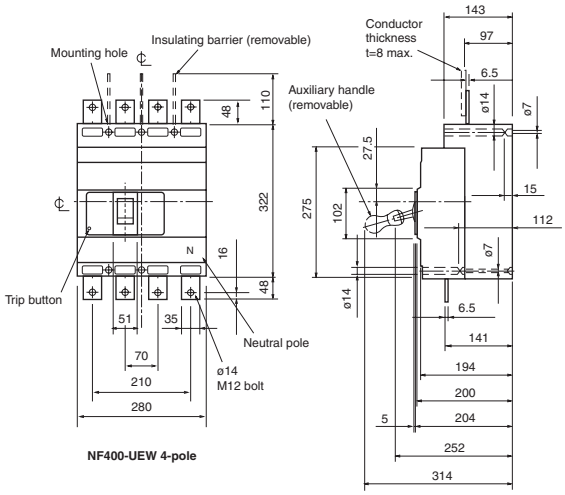


1.0mm clearance on each side of the handle frame.

Front-panel cutout

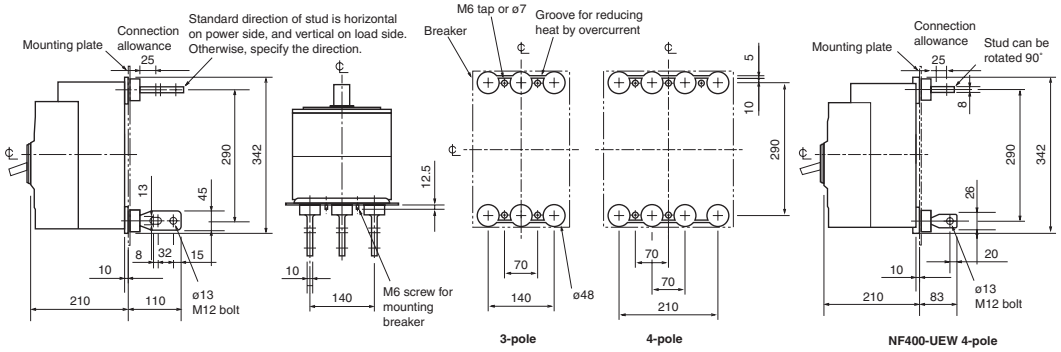


Drilling plan



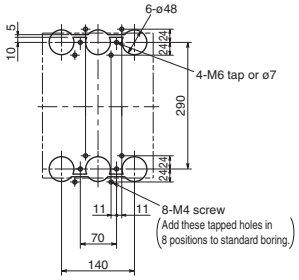
NF400-UEW 4-pole

Rear connection



Drilling plan

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



6

6. Characteristics and Dimensions

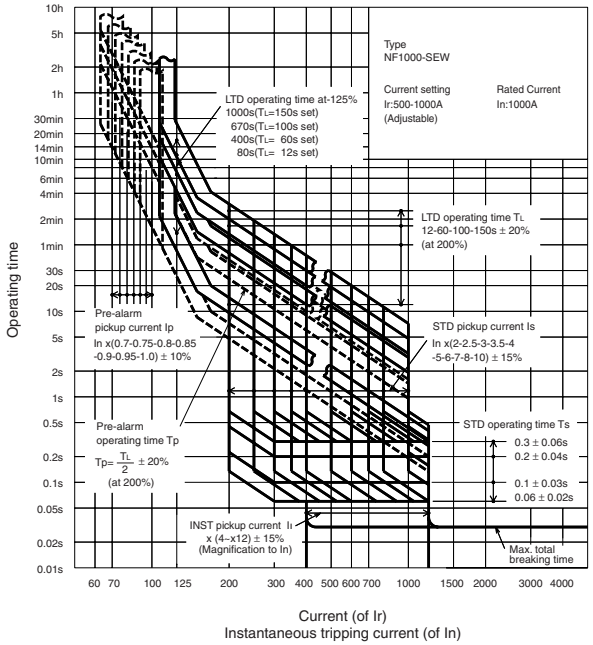
Molded-Case Circuit Breakers

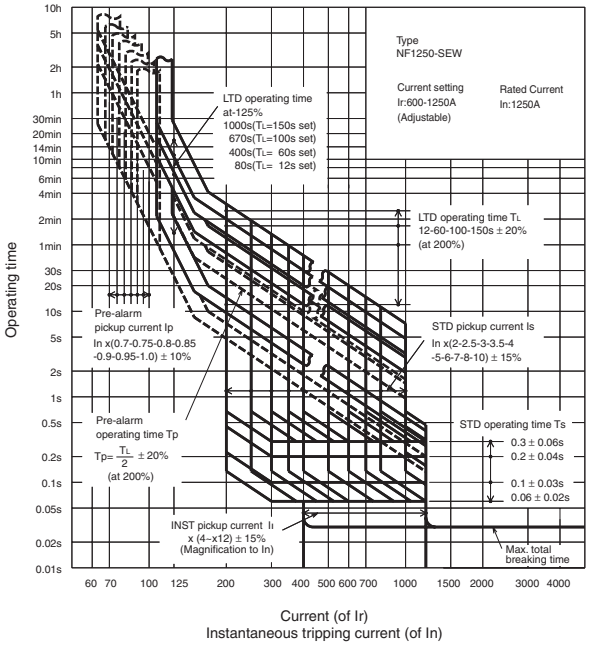
NF1000-SEW
NF1250-SEW

Type NF1250-SEW

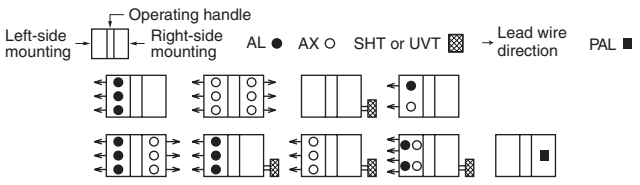
Type name				NF1000-SEW		NF1250-SEW	
Rated current In (Amp.)				500–1000 Adjustable		600–1250 Adjustable	
Number of poles				3	4	3	4
Reted insulation voltage Ui (V)				690		690	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	25/13		25/13	
			500V	65/33		65/33	
			440V	85/43		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



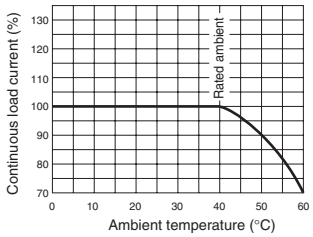


■Internal Accessories



Remark: 1. Refer to page 49.

■Current reduction curve



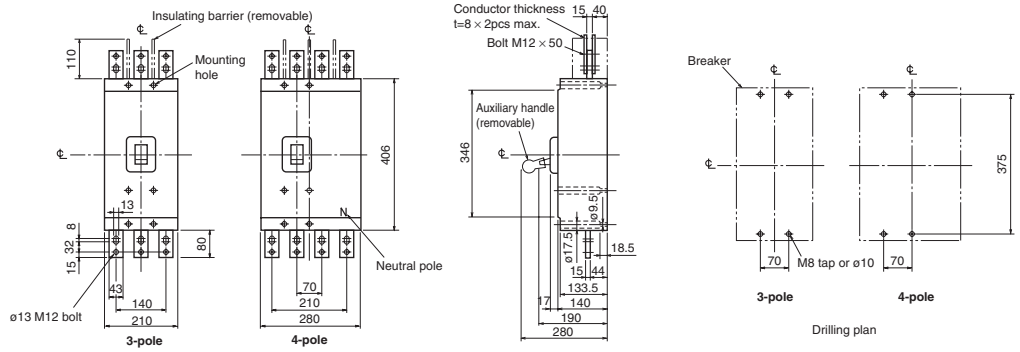
■External Accessories

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

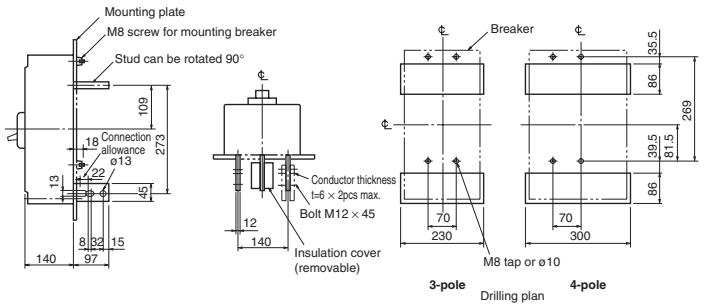
Accessories		Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F10SW (∗1)	—	Auxiliary handle	HT-10SW	80
	S	S10SW	68	Handle lock (HL)	☆	
Mechanical interlock (MI)		MI-10SW3 (∗1)	79	Large terminal cover (TC-L)	TCL-10SW3 (∗1)	70
				Electrical operation device	☆	71

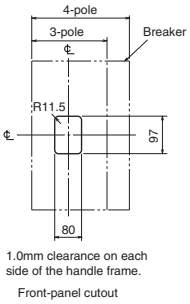
Note (∗1) The designation depends on the number of poles. Refer to the reference page.

Front connection

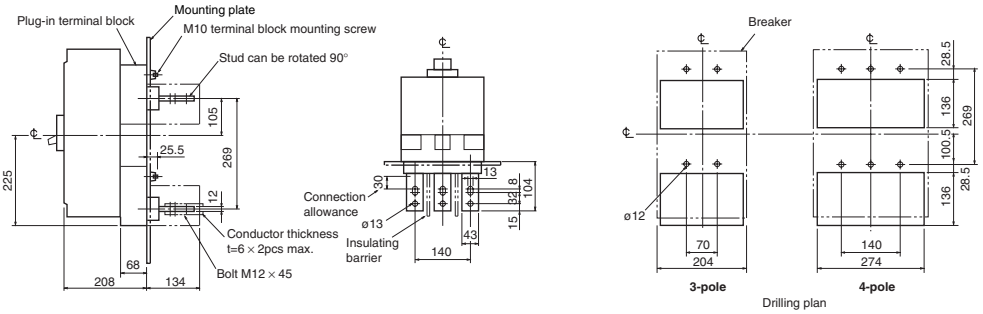


Rear connection





Plug-in



6

6. Characteristics and Dimensions

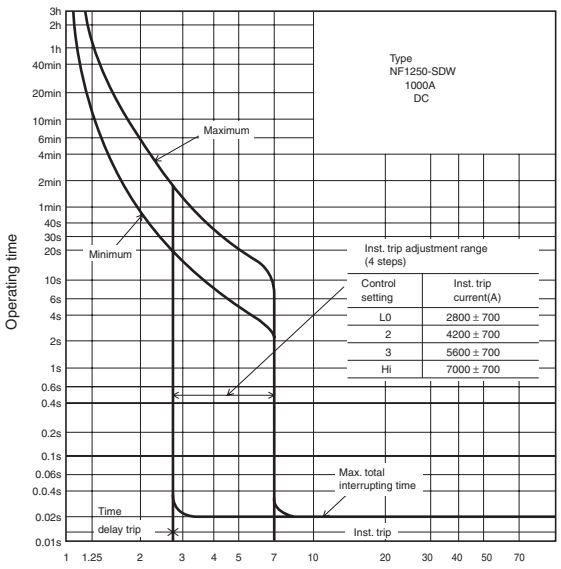
Molded-Case Circuit Breakers

NF1250-SDW

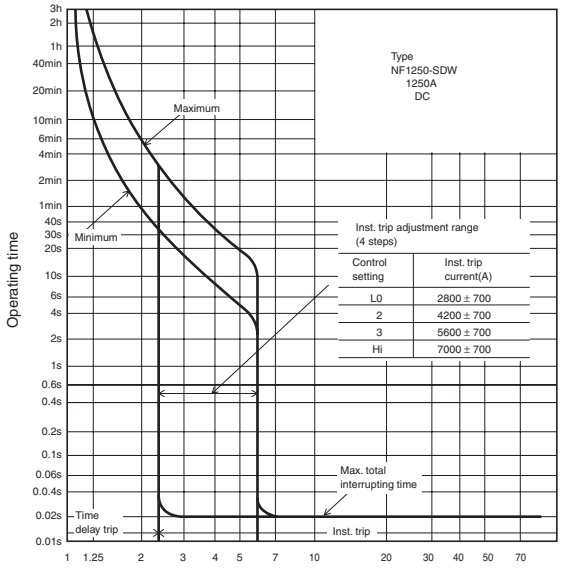
Type NF1250-SDW

Type name			NF1250-SDW
Rated current In (Amp.)			1000, 1250
Number of poles			2
Rated insulation voltage Ui (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 × 40 (4pcs) Insulating barrier: (2P: 1pc, 3P: 2pcs, 4P: 3pcs) Auxiliary handle: (1pc)
		Rear connection	Mounting screw: M8 × 40 (4pcs) Insulating cover: (3P: 2pcs, 4P: 4pcs) Auxiliary handle: (1pc)

■Operating Characteristics

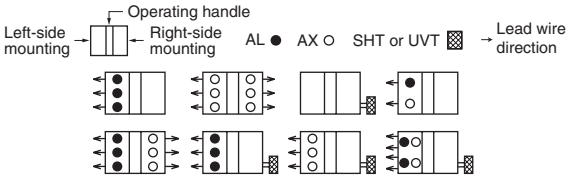


Current (×100% of rated current)



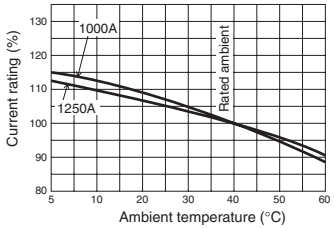
Current (×100% of rated current)

■Internal Accessories



Remark: 1. Refer to page 49.

■Ambient Compensating Curve



■External Accessories

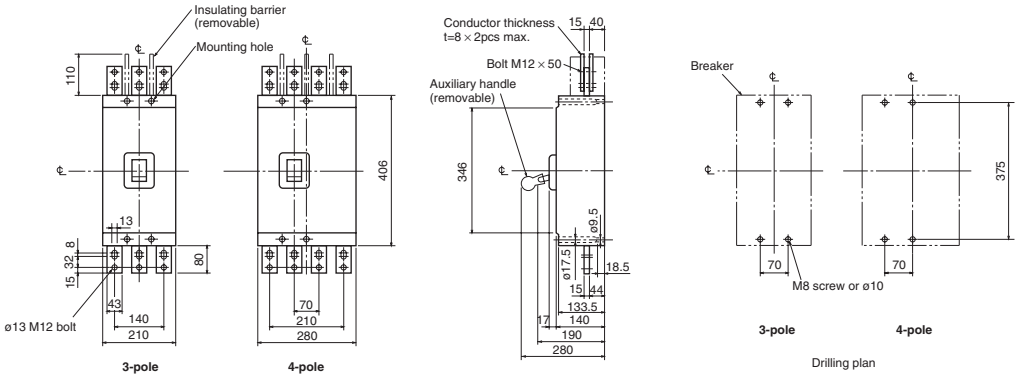
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F10SW (∗1)	—	Auxiliary handle	HT-10SW	80
	S	S10SW	68	Handle lock (HL)	☆	
Mechanical interlock (MI)		MI-10SW3 (∗1)	79	Large terminal cover (TC-L)	TCL-10SW3 (∗1)	70
				Electrical operation device	☆	71

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

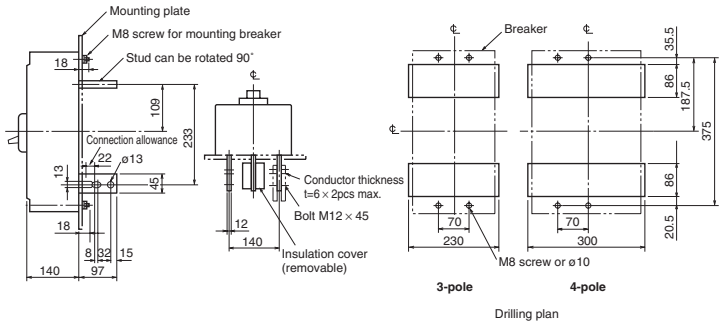
Front connection

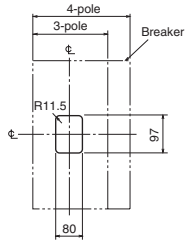
Outside dimensions are same as those of NF1000-SEW and NF1250-SEW.



Rear connection

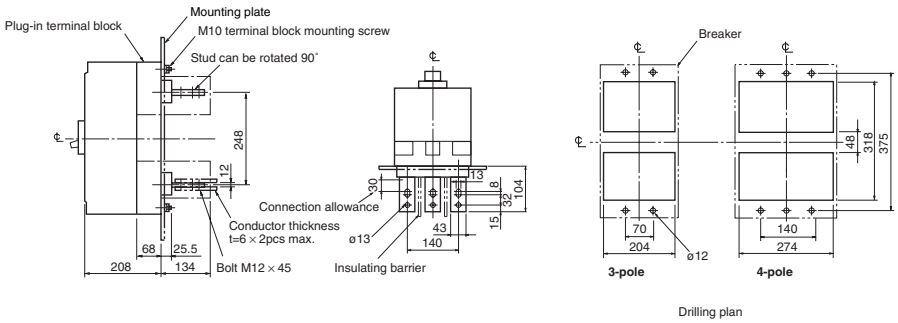
Outside dimensions are different from those of NF1000-SEW and NF1250-SEW.





Plug-in

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



Remark: 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

6. Characteristics and Dimensions

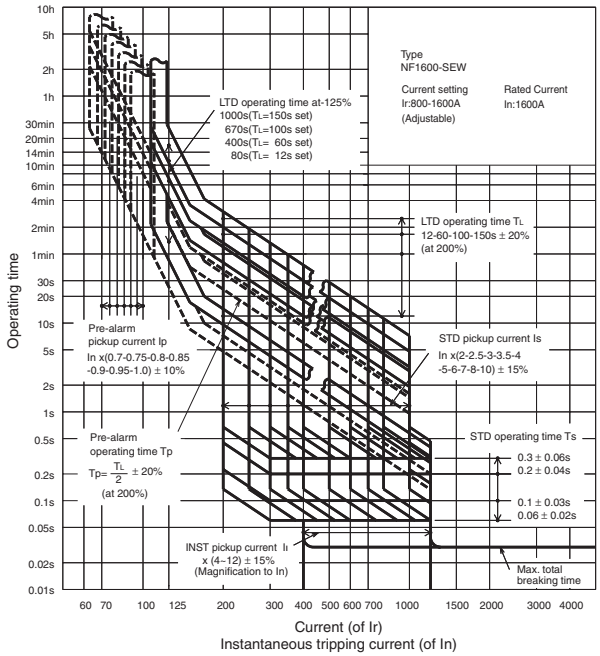
Molded-Case Circuit Breakers

NF1600-SEW

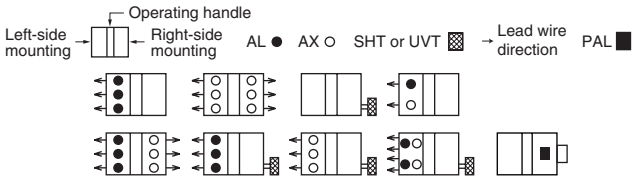
Type NF1600-SEW

Type name			NF1600-SEW	
Rated current In (Amp.)			Adjustable 800–1600	
Number of poles			3	4
Reted insulation voltage Ui (V)			690	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC 690V	25/13	
		AC 500V	65/33	
		AC 440V	85/43	
		AC 400V	85/43	
		AC 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

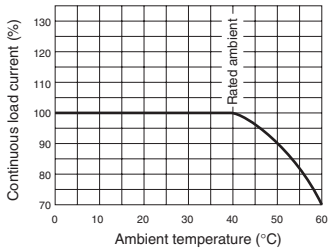


■Internal Accessories



Remark: 1. Refer to page 49.

■Current reducing curve



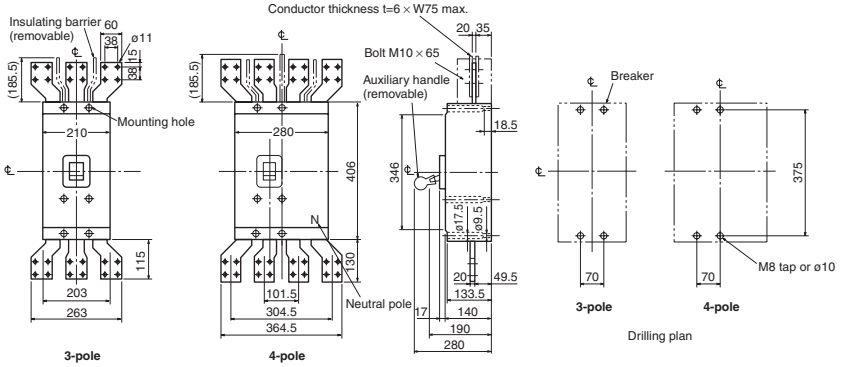
■External Accessories

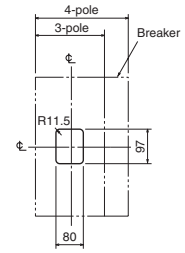
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F10SW (∗1)	—	Auxiliary handle	HT-10SW	80
	S	S10SW	68	Handle lock (HL)	☆	
Mechanical interlock (MI)		MI-16SW3 (∗1)	79	Electrical operation device	☆	71

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

Front connection

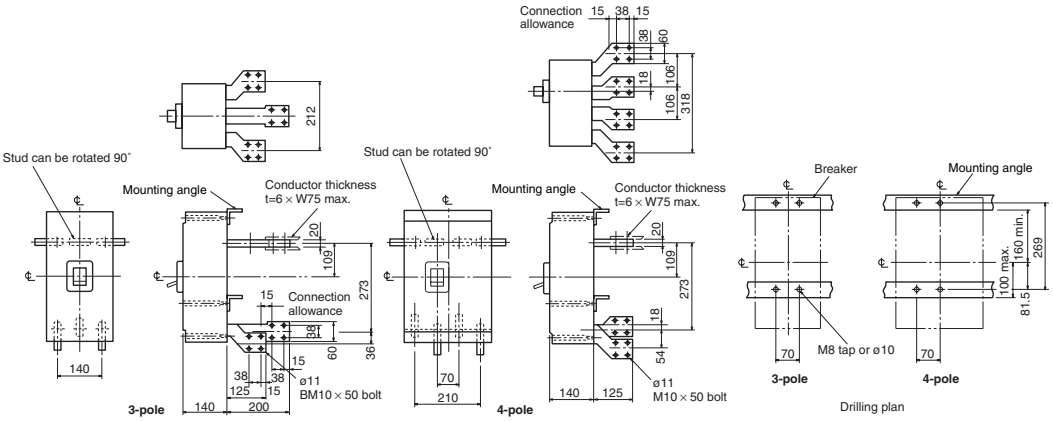




1.0mm clearance on each side of the handle frame.

Front-panel cutout

Rear connection



6

6. Characteristics and Dimensions

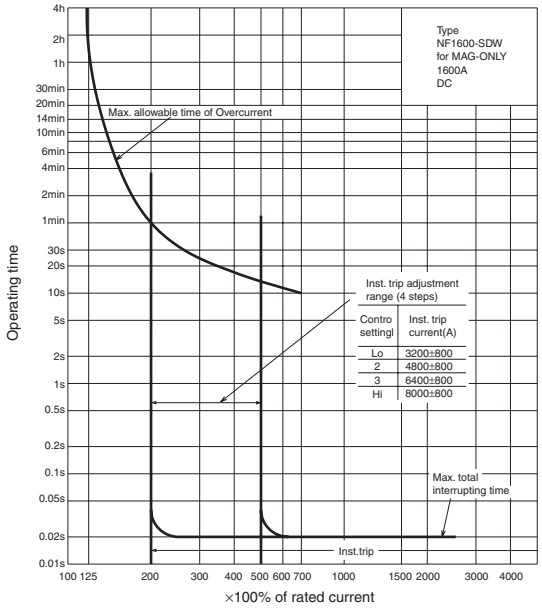
Molded-Case Circuit Breakers

NF1600-SDW

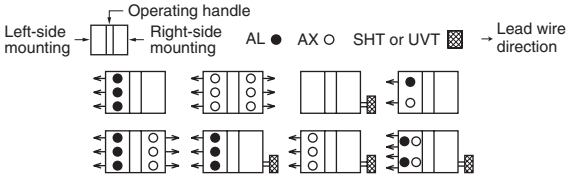
Type NF1600-SDW

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 49.

■External Accessories

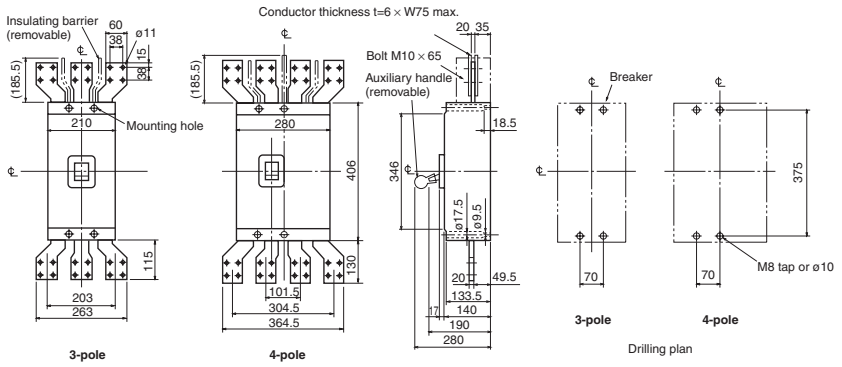
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

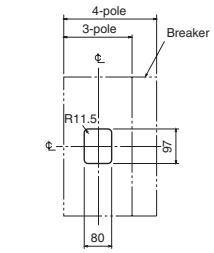
Accessories		Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F10SW (∗1)	—	Auxiliary handle	HT-10SW	80
	S	S10SW	68	Handle lock (HL)	☆	
Mechanical interlock (MI)		MI-16SW3 (∗1)	79	Electrical operation device	☆	71

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

Front connection

Outside dimensions are same as those of NF1600-SEW.



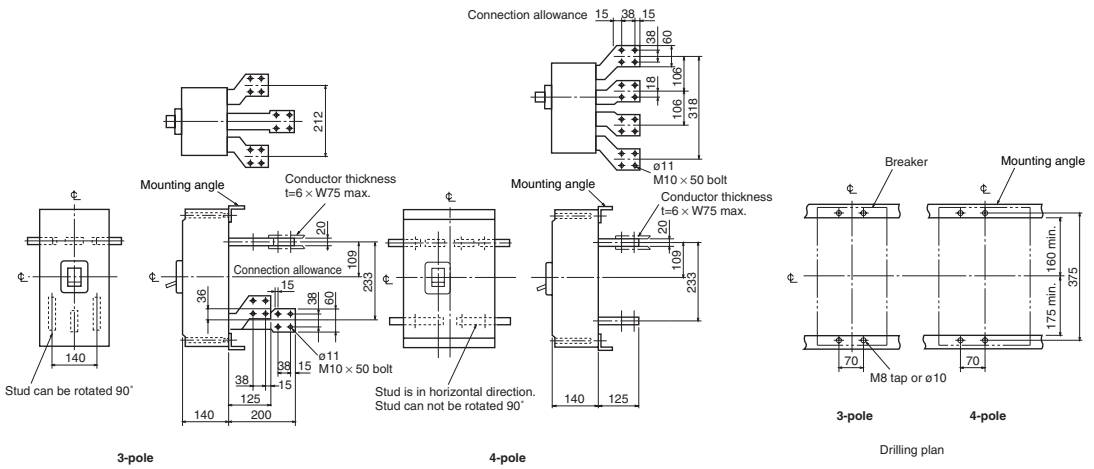


1.0mm clearance on each side of the handle frame.

Front-panel cutout

Rear connection

Outside dimensions are different from those of NF1600-SEW.



Remark: 1. Standard specification of NF1600-SDW is 2-pole model. 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

6. Characteristics and Dimensions

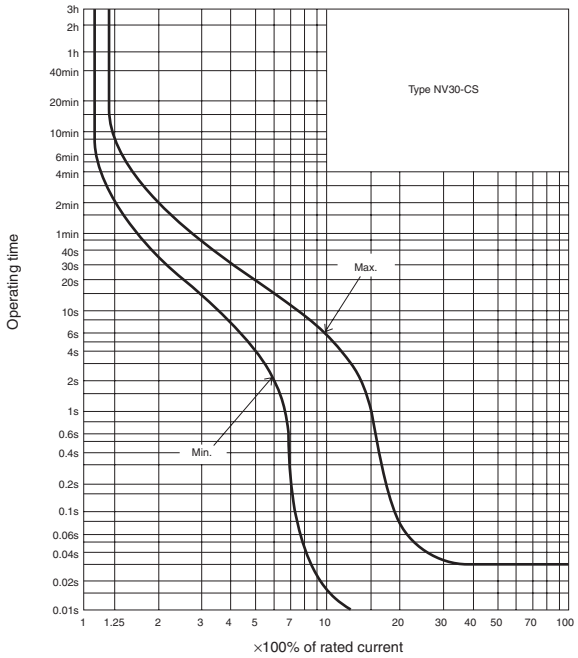
Earth-Leakage Circuit Breakers

NV30-CS

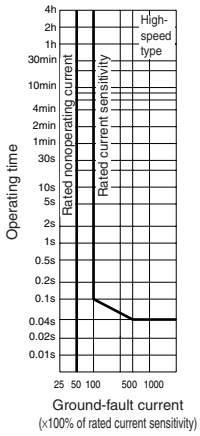
Type NV30-CS

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 IΔn (mA)		30
	Max.operating time at 5IΔn (s)		0.04
Time-delay type	Rated current sensitivity IΔn (mA)		—
	Max.operating time at 2IΔn (s)		—
	Inertial non-operating time at 2IΔn (s)		—
Earth-leakage indication system			Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed Icu/Ics	AC	440V	—
		400V	—
		230V	2.5/2
Standard Attached Parts (Front connection)			Mounting screw: M4 × 0.7 × 20 (2pcs.)

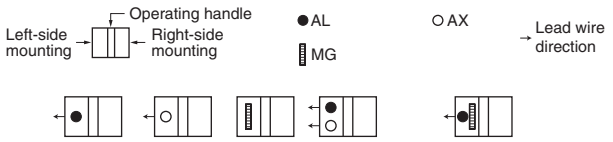
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

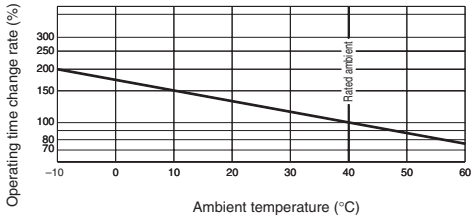


■Internal Accessories



Remark: 1. Standard lead wire is drawn from side. However, lead wire drawn by load can be produced upon request.
2. Refer to page 48.

■Temperature Characteristics

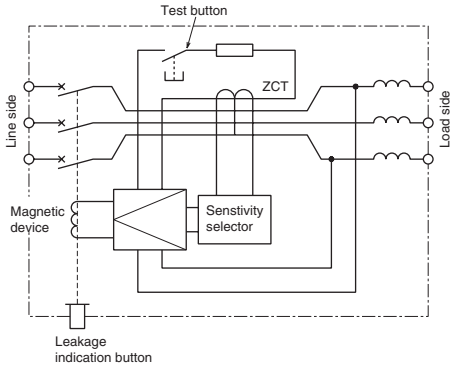


■External Accessories

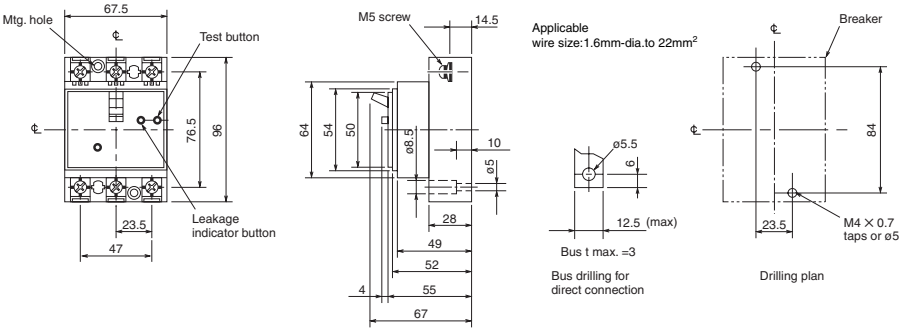
Accessories		Type name	Reference page
Lock cover	(LC)	LC03CS	80
Rail mounting adapter		DIN-03CS	80
Handle lock device		HL-05FH	80

Accessories			Type name	Reference page
Terminal cover	Small	(TC-S)	TCS-03CS3W	70
	Large	(TC-L)	TCL-03CS3W	
	Rear	(BTC)	BTC-03CS	
	Skeleton	(TTC)	TTC-03CS	

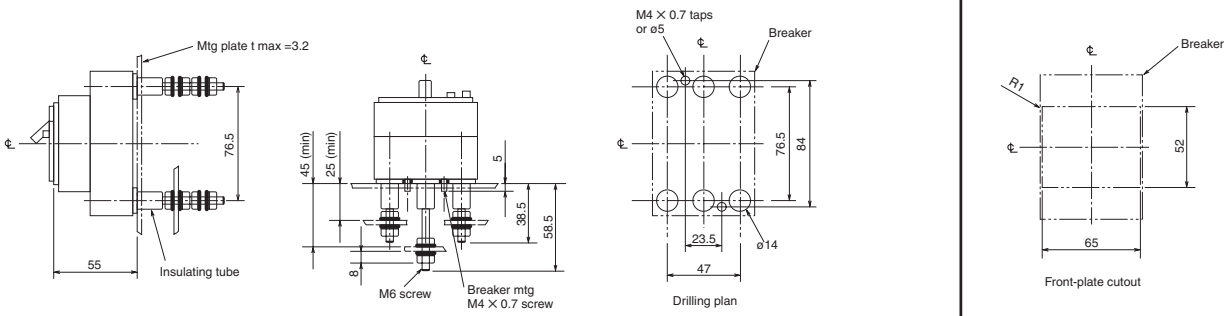
■Internal Wiring Diagram



Front connection



Rear connection



6

6. Characteristics and Dimensions

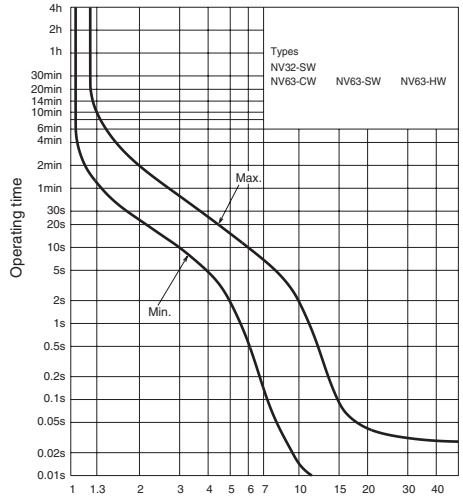
Earth-Leakage Circuit Breakers

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

Type NV63-SW

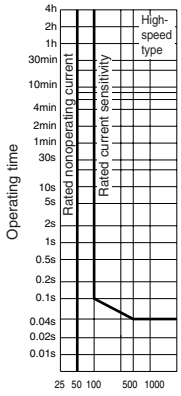
Type name			NV32-SW	NV63-CW	NV63-SW	NV63-HW
Rated current In (Amp.)			(5) 6 10 (15) 16 20 25 (30) 32	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(15) 16 20 25 (30) 32 40 50 (60) 63
Number of poles			3	3	3	3
Rated operational voltage Ue (V AC)			100–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type
High-speed type	Rated current sensitivity IΔn (mA)		30,100•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
Earth-leakage indication system			Button	Button	Button	Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed. (Icu/Ics)		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



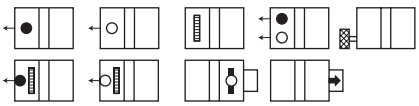
×100% of Rated current

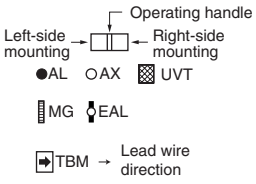
■Earth-Leakage Tripping Characteristics



Ground-fault current
(×100% of rated current sensitivity)

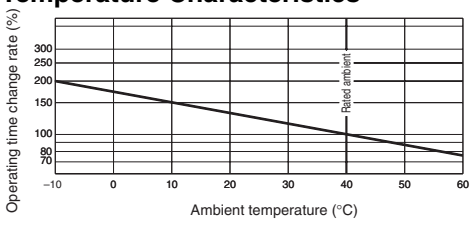
■Internal Accessories





Remark: 1. Refer to page 48.

■Temperature Characteristics



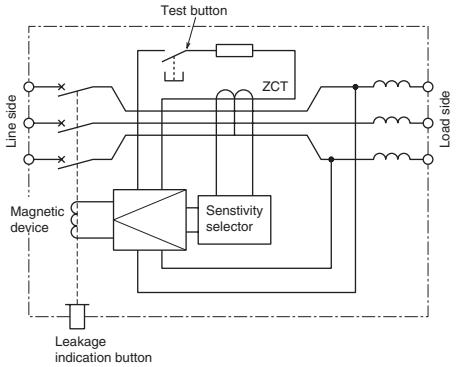
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-05S	61
	V	V-05S	64
	S	S05SW	68
Handle lock device	LC	LC-05SW	80
	(∗1) HL	HLF-05SW	
		HLN-05SW	
	HL-S	HLS-05SW	

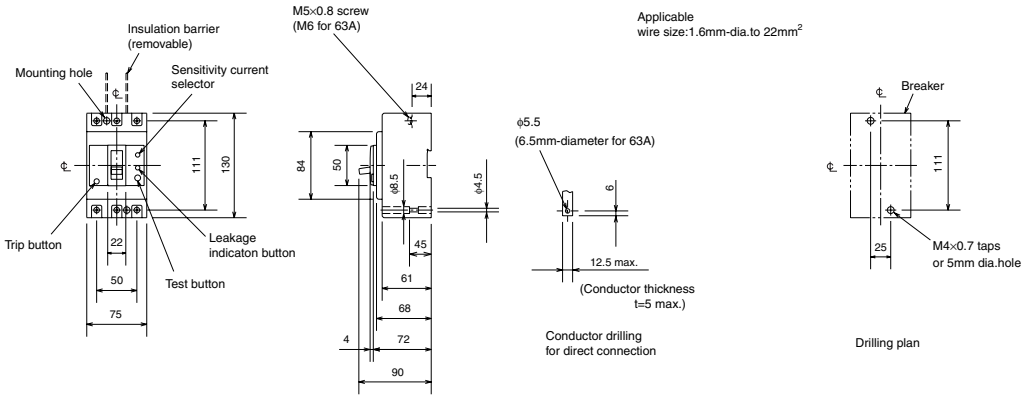
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗1)	79
Terminal cover	Small	TC-S	TCS-05SW3W	70
	Large	TC-L	TCL-05SW3W	
	Skeleton	TTC	TTC-05SW3	
	Rear	BTC	BTC-05SW3W	
	Plug-in	PTC	PTC-05SW3W	
IEC 35mm rail mounting adapters			DIN-05SW	80

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

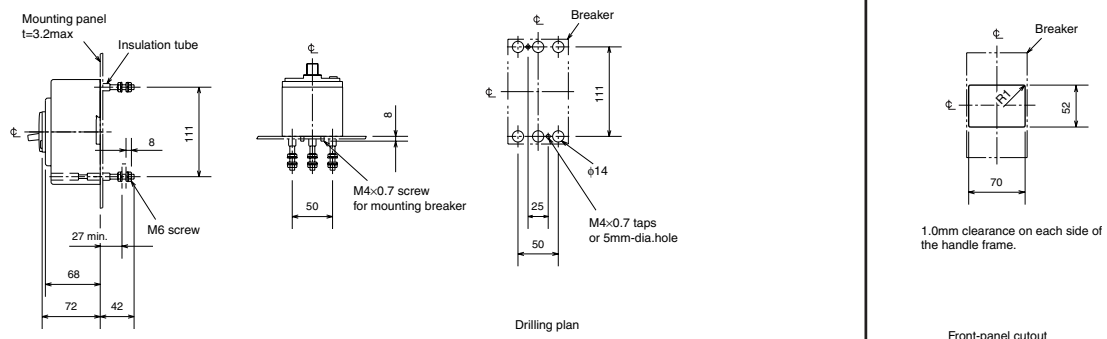
■Internal Wiring Diagram



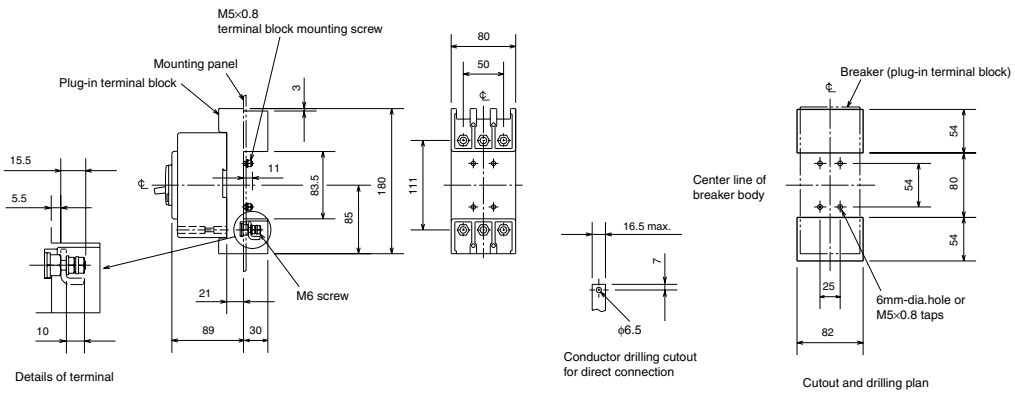
Front connection



Rear connection



Plug-in



6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

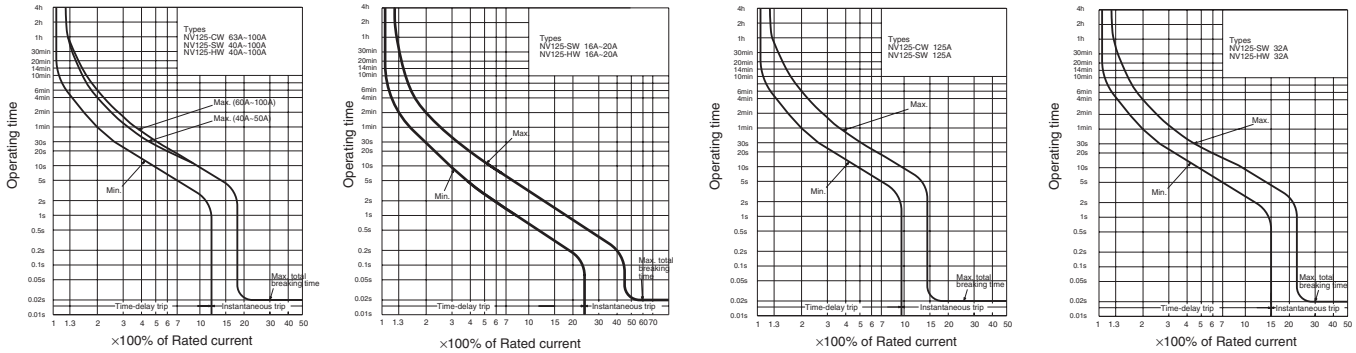
NV125-CW NV125-SW NV125-HW

Type NV125-SW

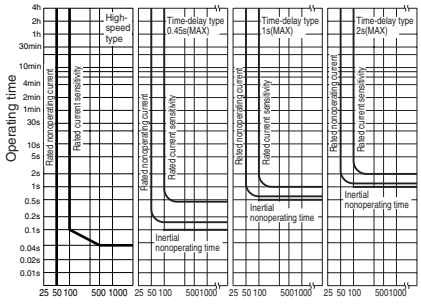
Type name			NV125-CW	NV125-SW		NV125-HW	
Rated current In (Amp.) (∗1)			63 (75) 80 100 125	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 (125 ∗2)		(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100	
Number of poles			3	3	4	3	4
Rated operational voltage Ue (V AC) (∗3)			100–440 Multi-voltage type	100–440 Multi-voltage type	200–440 Multi-voltage type	100–440 Multi-voltage type	200–440 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		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 5IΔn (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		Button	
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed. (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: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 2pcs, 4P: 3pcs) excluding models of NV125-CW				

Note (∗1) The time-delayed types will be produced when they have the current specifications of 20A or more.
(∗2) 3P only
(∗3) Rated operational voltage of time-delay type is for 200-440V.

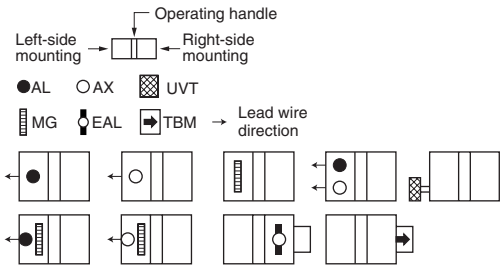
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

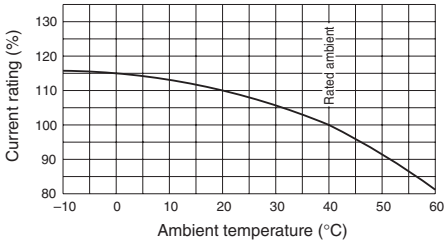


■Internal Accessories



Remark: 1. Refer to page 48.

■Temperature Characteristics

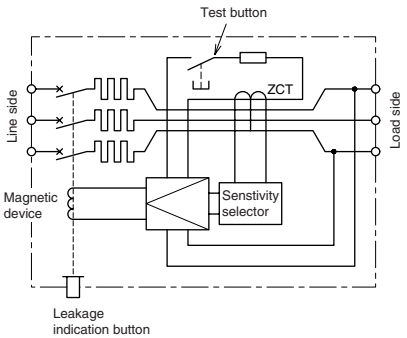


■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-1S	61
	V	V-1S	64
	S	S1SW	68
Handle lock device	LC	LC-1SW	80
	(∗1) HL	HLF-1SW	
		HLN-1SW	
	HL-S	HLS-1SW	

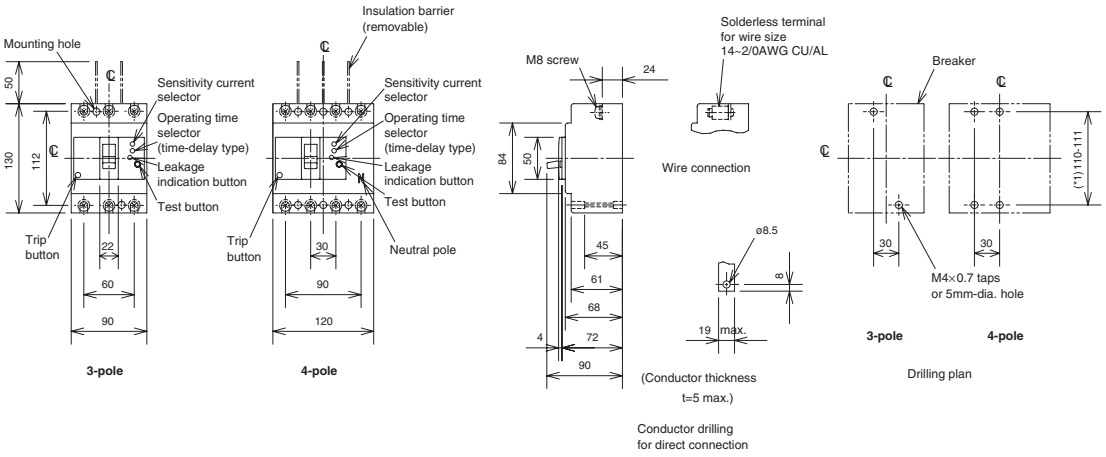
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗3)	79
Terminal cover	Small	TC-S	TCS-1SW3W (∗3)	70
	Large	TC-L	TCL-1SW3W (∗3)	
	Skeleton	TTC	TTC-1SW3 (∗3)	
	Rear	BTC	BTC-1SW3W (∗3)	
	Plug-in	PTC	PTC-1SW3W (∗3)	
IEC 35mm rail mounting adapters			DIN-1SW (∗3)	80
Electrical operation device			MDS-NV1SWE (∗2)	71

■Internal Wiring Diagram

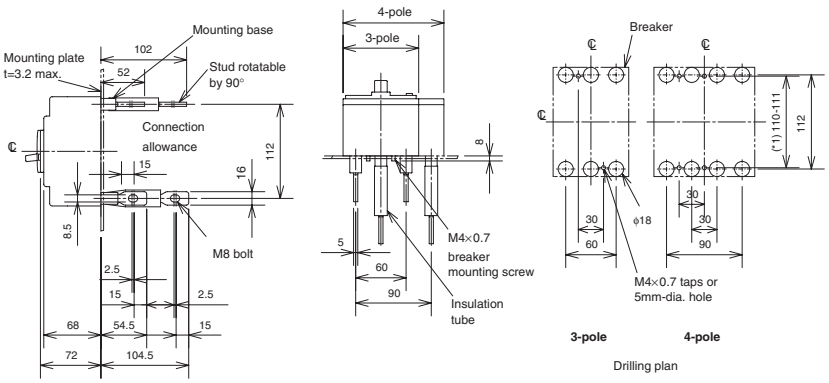


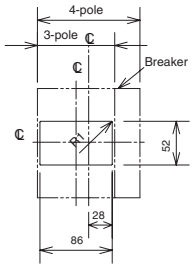
Note (∗1) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.
(∗2) Specify the working voltage.
(∗3) The designation depends on the number of poles. Refer to the reference page.

Front connection

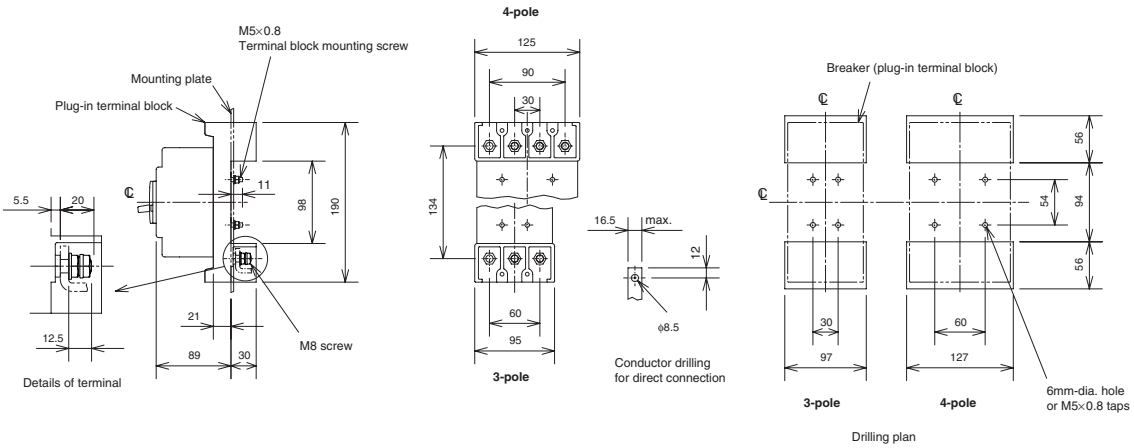


Rear connection





Plug-in



Note (∗1) It can respond to the attachment size of 110 and 111 both sides.

Remark: 1. NV125-CW is available in 3-pole only.

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

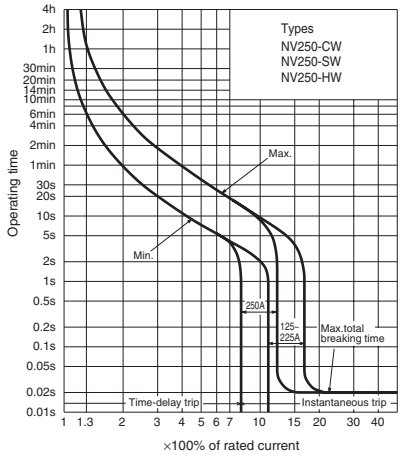
NV250-CW NV250-SW NV250-HW

Type NV250-SW

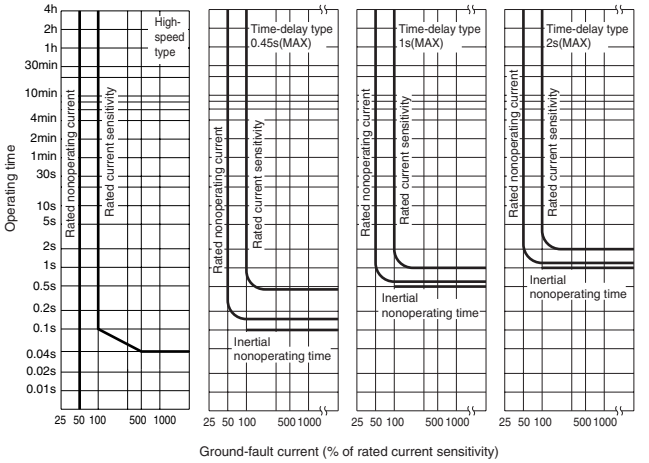
Type name			NV250-CW	NV250-SW		NV250-HW	
Rated current In (Amp.)			125 150 175 200 225 250	125 150 175 200 225 250	125 150 175 200 225	125 150 175 200 225	
Number of poles			3	3	4	3	4
Rated operational voltage Ue (V AC) (∗1)			100–440 Multi-voltage type	100–440 Multi-voltage type	200–440 Multi-voltage type	100–440 Multi-voltage type	200–440 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		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 5IΔn (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		Button	
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed. (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.

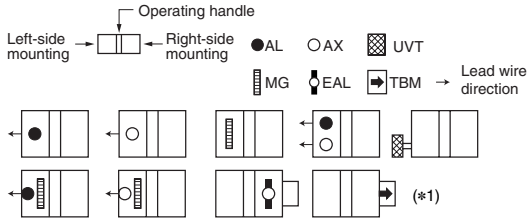
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

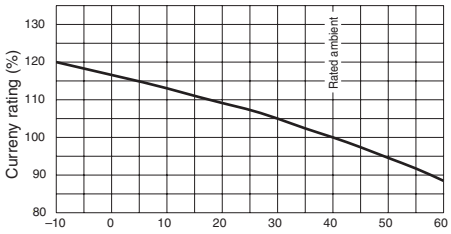


■Internal Accessories



Note (∗1) Refer to page 48.

■Temperature Characteristics



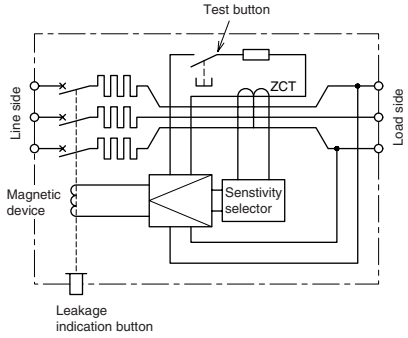
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2S	61
	V	V-2S	64
	S	S2SW	68
Handle lock device	LC	LC-2SW	80
	(∗1) HL	HLF-2SW	
		HLN-2SW	
	HL-S	HLS-2SW	

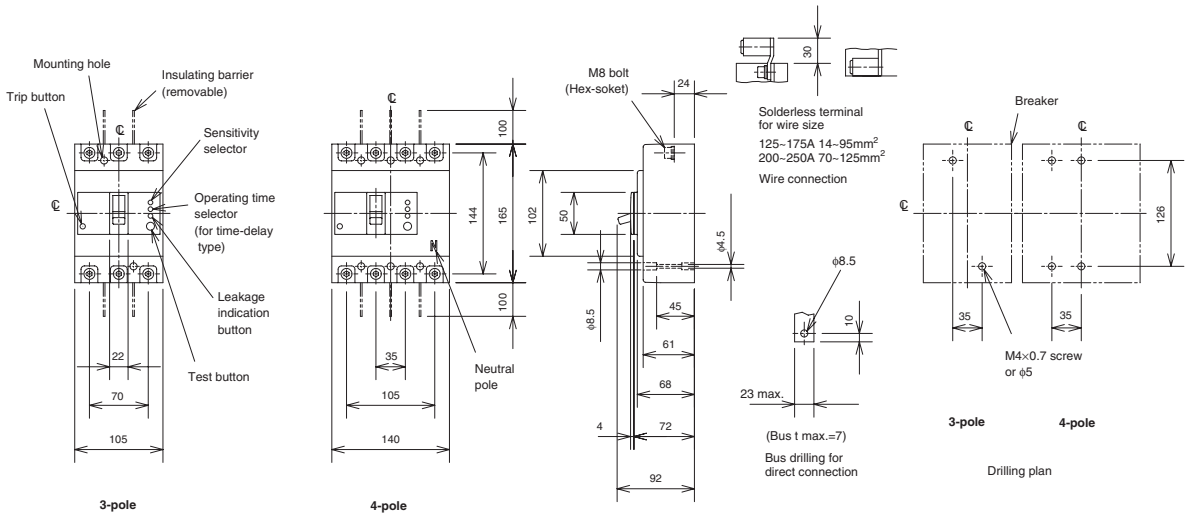
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗2)	79
Terminal cover	Small	TC-S	TCS-2SW3W (∗2)	70
	Large	TC-L	TCL-2SW3W (∗2)	
	Skeleton	TTC	TTC-2SW3 (∗2)	
	Rear	BTC	BTC-2SW3W (∗2)	
	Plug-in	PTC	PTC-2SW3W (∗2)	
Electrical operation device			MDS-NV2SWE (∗3)	71

Note (∗1) HLF types are used for OFF-lock, and HLN types for ON-lock.
(∗2) The designation depends on the number of poles. Refer to the reference page.
(∗3) Specify the working voltage.

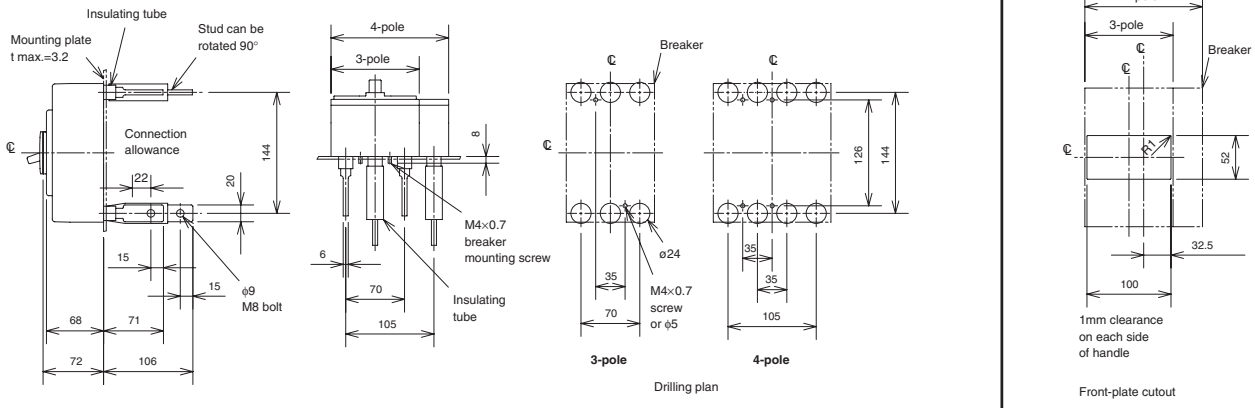
■Internal Wiring Diagram



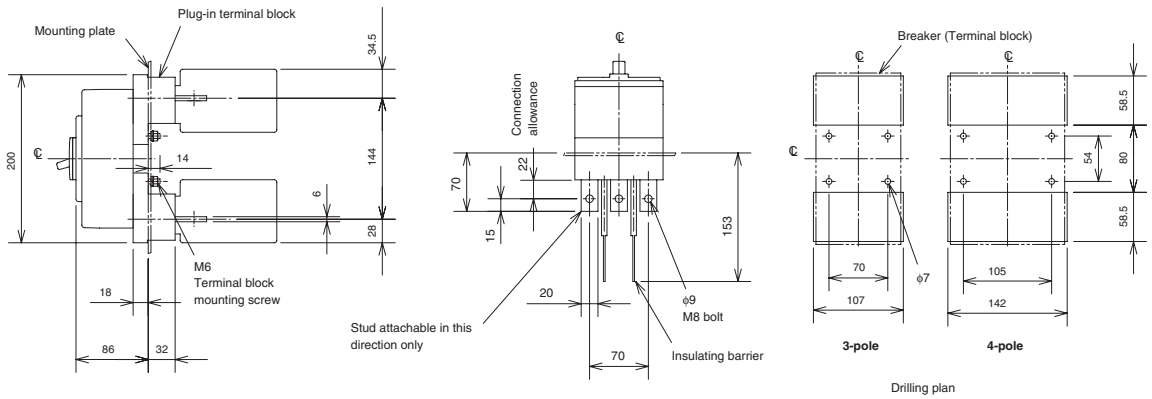
Front connection



Rear connection



Plug-in



Remark: 1. NV250-CW are available in 3-pole only.

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

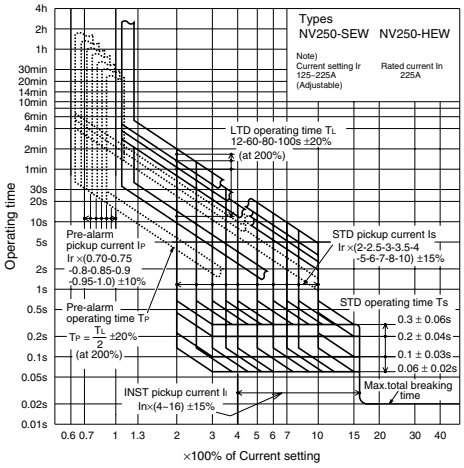
NV250-SEW NV250-HEW

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 2nd. ed. (Icu/Ics)		AC440V	25/13		50/13	
		AC400V	30/15		50/13	
		AC230V	50/25		100/25	
Standard Attached Parts (Front connection)			Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 4pc, 4P: 6pcs)			

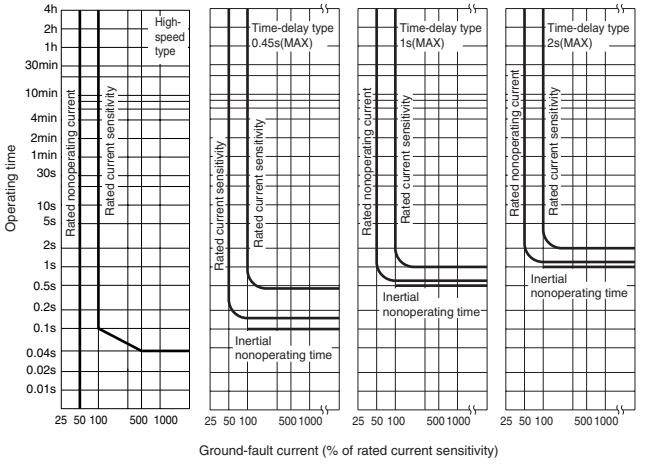
Note (∗1) Rated operational voltage of time-delay type is for 200-440V.

■Operating Characteristics

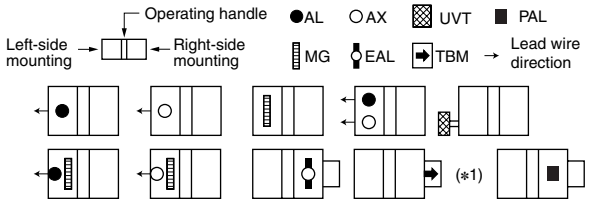


Note) Instantaneous tripping current (×100% of In)

■Earth-Leakage Tripping Characteristics

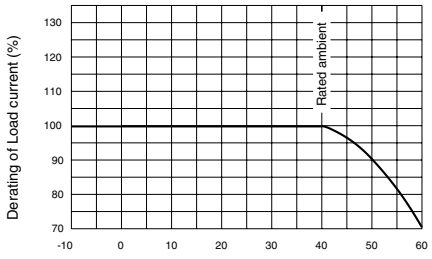


■Internal Accessories



Note (∗1) Refer to page 48.

■Temperature Characteristics



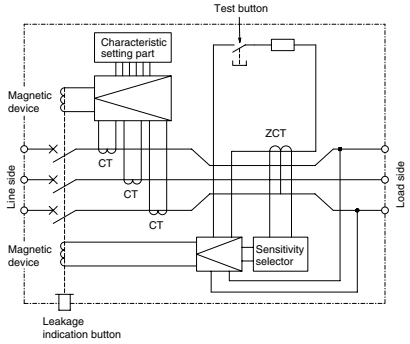
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2S	61
	V	V-2S	64
	S	S2SW	68
Handle lock device	LC	LC-2SW	80
	(∗1) HL	HLF-2SW	
		HLN-2SW	
	HL-S	HLS-2SW	

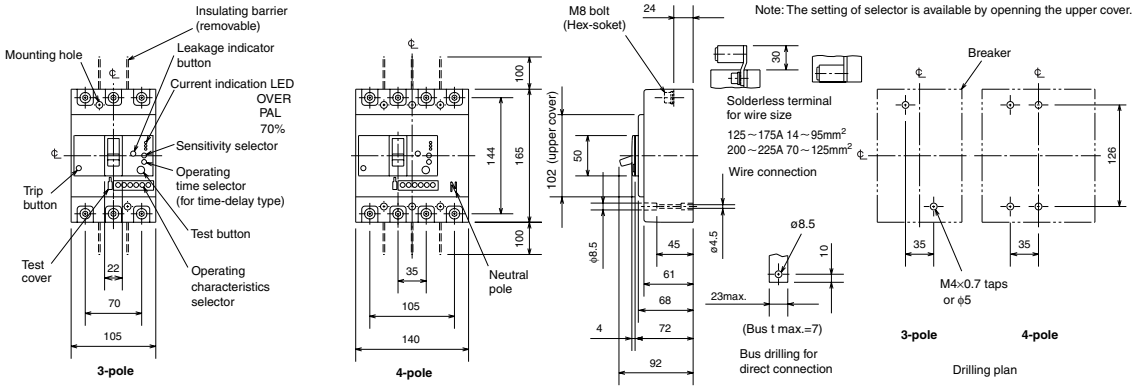
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗2)	79
Terminal cover	Small	TC-S	TCS-2SW3W (∗2)	70
	Large	TC-L	TCL-2SW3W (∗2)	
	Skeleton	TTC	TTC-2SW3 (∗2)	
	Rear	BTC	BTC-2SW3W (∗2)	
	Plug-in	PTC	PTC-2SW3W (∗2)	
Electrical operation device			MDS-NVE2SWE (∗3)	71

Note (∗1) HLF types are used for OFF-lock, and HLN types for ON-lock.
(∗2) The designation depends on the number of poles. Refer to the reference page.
(∗3) Specify the working voltage.

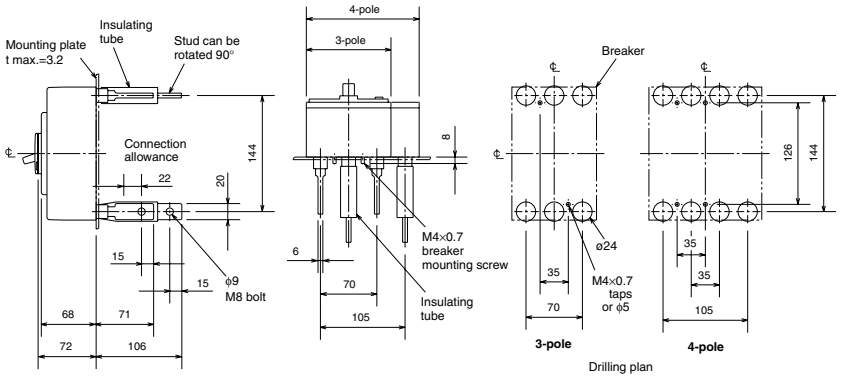
■Internal Wiring Diagram

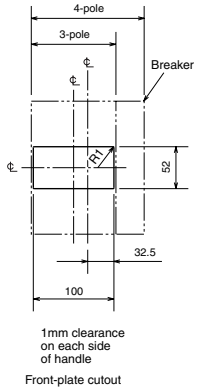


Front connection

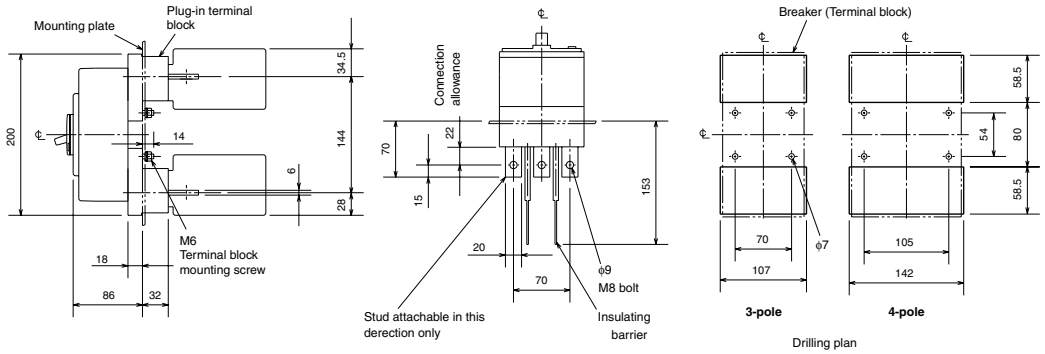


Rear connection





Plug-in



6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

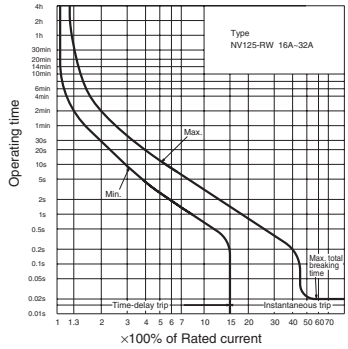
NV125-RW

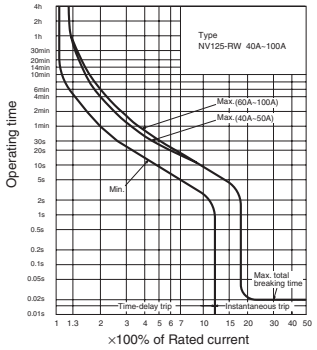
Type NV125-RW

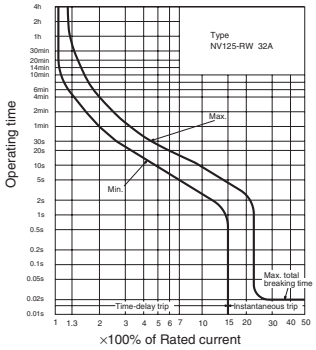
Type name			NV125-RW
Rated current In (Amp.) (∗1)			(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100
Number of poles			3
Rated operational voltage Ue (V AC) (∗2)			100–440 Multi-voltage type
High-speed type	Rated current sensitivity IΔn (mA)		(30) 100•200•500 Selectable
	Max. operating time at 5IΔn (s)		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)
	Inertial non-operating time at 2IΔn (s)		(0.1•0.5•1.0)
Earth-leakage indication system			Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed. (Icu/Ics)		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)

Note (∗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.

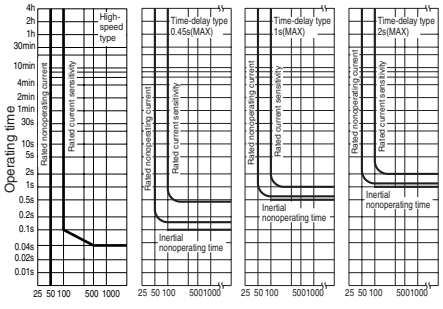
■Operating Characteristics



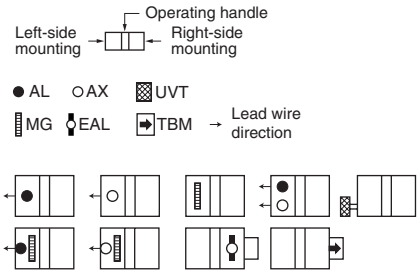




■Earth-Leakage Tripping Characteristics

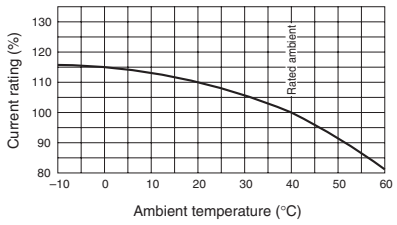


■Internal Accessories



Remark: 1. Refer to page 48.

■Temperature Characteristics



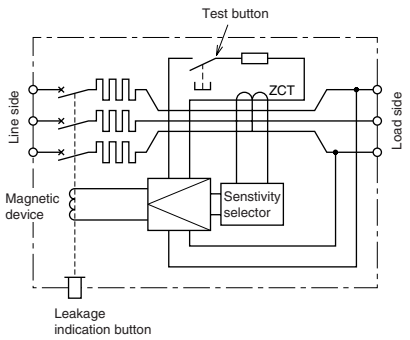
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-1U	61
	V	V-1U	64
	S	S1SW	68
Mechanical interlock	MI	MI-05SW3 (∗1)	79
Electrical operation device		—	—

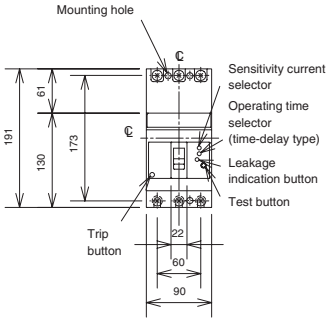
Accessories			Type name	Reference page
Terminal cover	Small	TC-S	TCS-1SW3W (∗1)	70
	Large	TC-L	TCL-1SW3W (∗1)	
	Skeleton	TTC	TTC-1SW3 (∗1)	
	Rear	BTC	BTC-1SW3W (∗1)	
	Plug-in	PTC	PTC-1SW3W (∗1)	
Handle lock device		LC	LC-1SW	80
		(∗2) HL	HLF-1SW	
			HLN-1SW	
		HL-S	HLS-1SW	

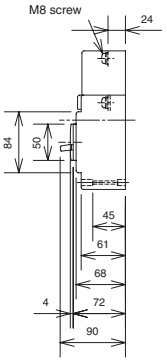
Note (∗1) The designation depends on the number of poles. Refer to the reference page.
(∗2) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.

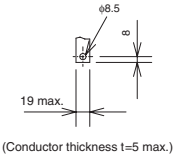
■Internal Wiring Diagram



Front connection

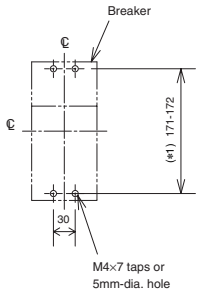






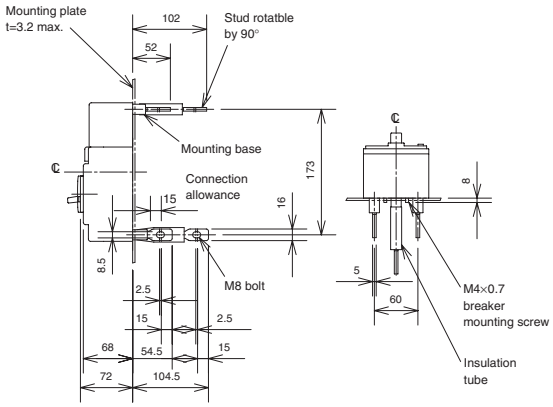
(Conductor thickness t=5 max.)

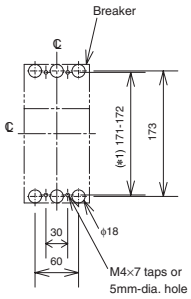
Conductor drilling for direct connection



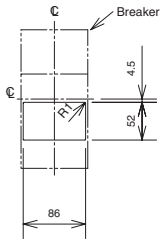
Drilling plan

Rear connection





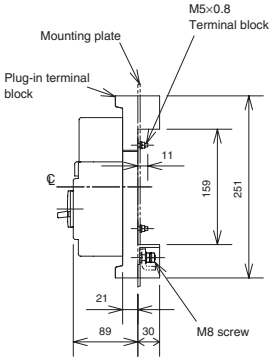
Drilling plan

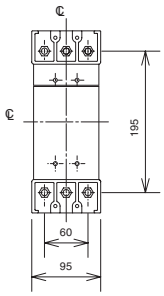


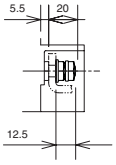
1.0mm clearance on each side of the handle frame.

Front-panel cutout

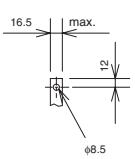
Plug-in



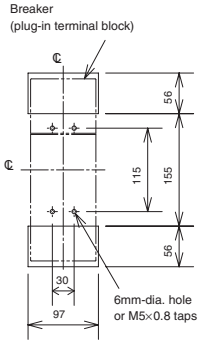




Details of terminal



Conductor drilling for direct connection



Drilling plan

Note (∗1) It can respond to the attachment size of 171 and 172 both sides.

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

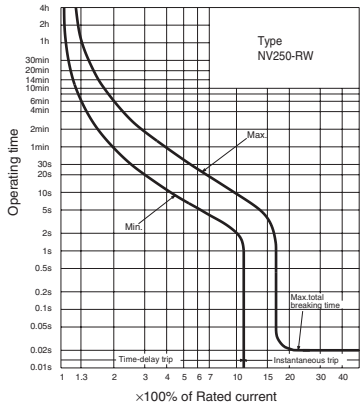
NV250-RW

Type NV250-RW

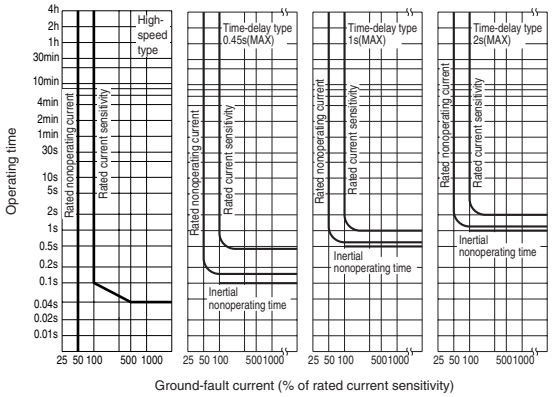
Type name			NV250-RW
Rated current In (Amp.)			125 150 175 200 225
Number of poles			3
Rated operational voltage Ue (V AC) (∗1)			100–440 Multi-voltage type
High-speed type	Rated current sensitivity IΔn (mA)		(30) 100•200•500 Selectable
	Max. operating time at 5IΔn (s)		0.04
Time-delay type	Rated current sensitivity IΔn (mA)		(100•200•500 Selectable)
	Max. operating time at 5IΔn (s)		(0.45•1.0•2.0 Selectable)
	Inertial non-operating time at 2IΔn (s)		(0.1•0.5•1.0)
Earth-leakage indication system			Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed. (Icu/Ics)		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

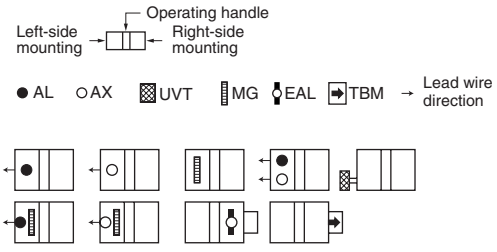
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

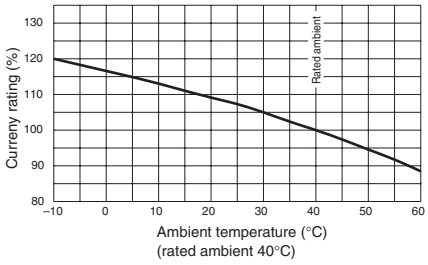


■Internal Accessories



Remark 1. Refer to page 48.

■Ambient Compensating Curve



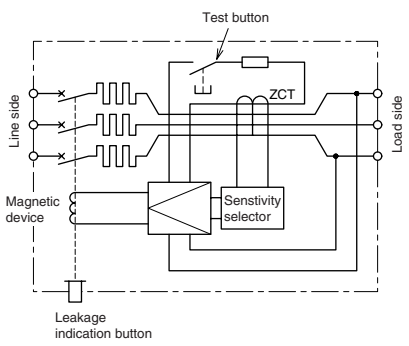
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2U	61
	V	V-2U	64
	S	S2SW	68
Handle lock device	LC	LC-2SW	80
	(∗2) HL	HLF-2SW	
		HLN-2SW	
	HL-S	HLS-2SW	

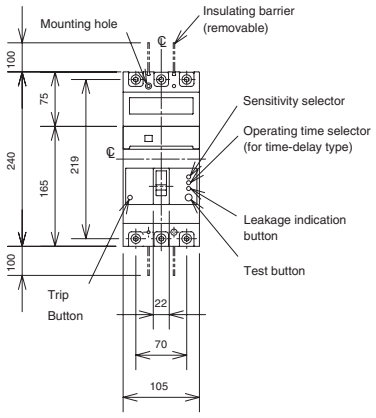
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗1)	79
Terminal cover	Small	TC-S	TCS-2SW3W (∗1)	70
	Large	TC-L	TCL-2SW3W (∗1)	
	Skeleton	TTC	TTC-2SW3 (∗1)	
	Rear	BTC	BTC-2SW3W (∗1)	
	Plug-in	PTC	PTC-2SW3W (∗1)	
Electrical operation device			—	—

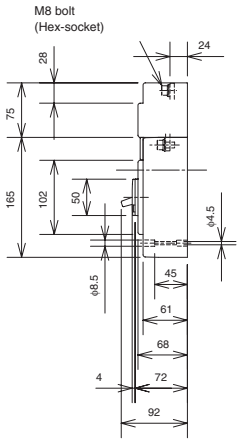
Note (∗1) The designation depends on the number of poles. Refer to the reference page.
(∗2) HLF types are used for OFF-lock, and HLN types for ON-lock.

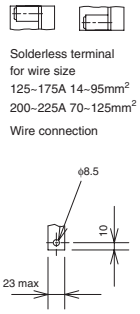
■Internal Wiring Diagram

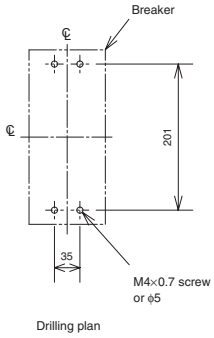


Front connection

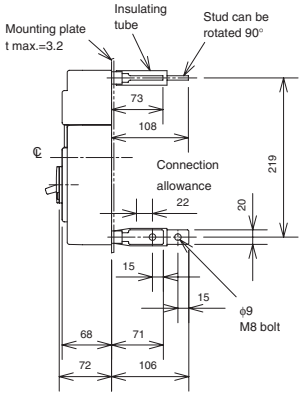


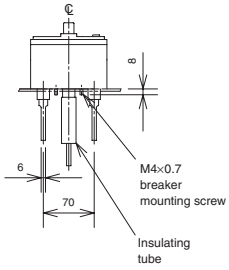


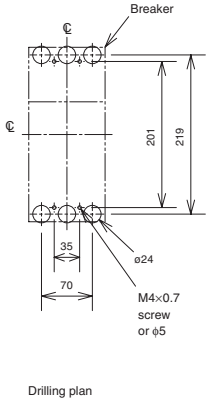


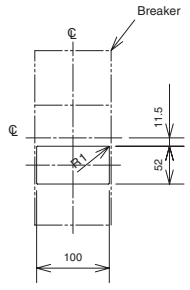


Rear connection

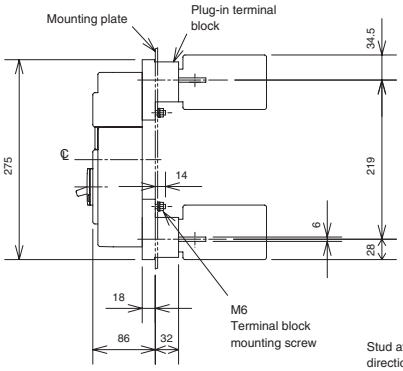


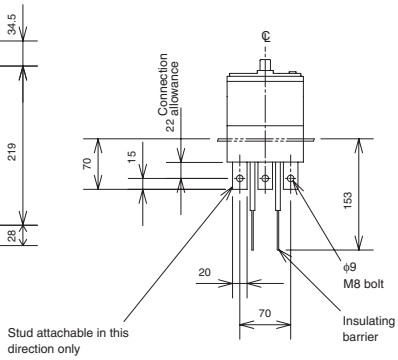


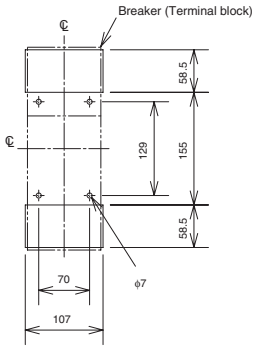




Plug-in







6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

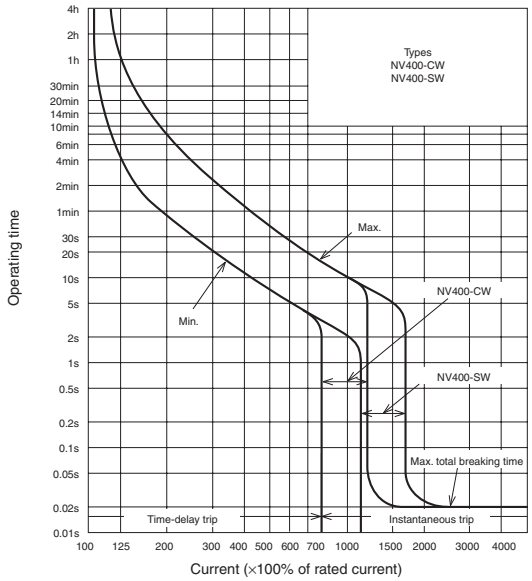
NV400-CW
NV400-SW

Type NV400-SW

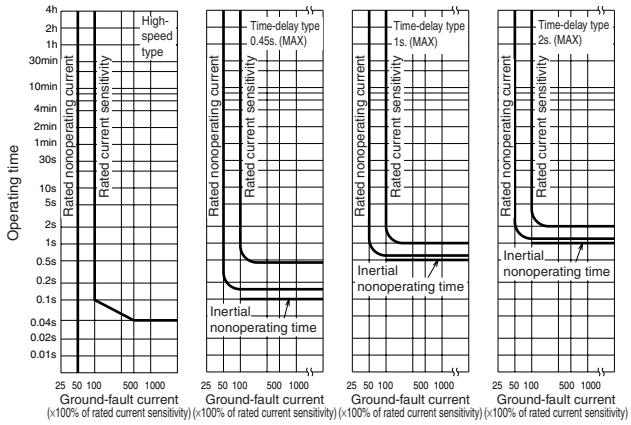
Type name			NV400-CW	NV400-SW
Number of poles			3	
Rated operational voltage Ue (V AC) (∗1)			100-440 Multi-voltage type	
Rated current In (Amp.)			250 300 350 400	
High-speed type	Rated current sensitivity IΔn (mA)		(30) 100 · 200 · 500 Selectable	
	Max. operating time at 5IΔn (s)		0.04	
Time-delay type	Rated current sensitivity IΔn (mA)		(100 · 200 · 500 Selectable)	
	Max. operating time at 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	
Rated short-circuit breaking capacity (kA) IEC 60947-2 2nd. ed. (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.

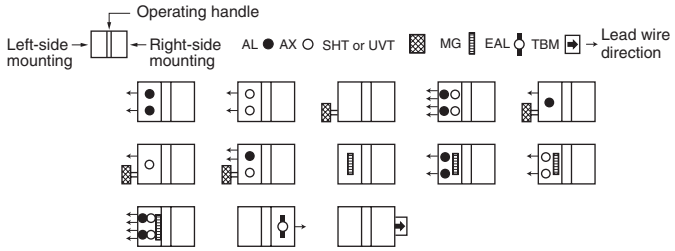
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

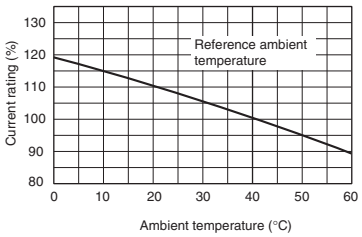


■Internal Accessories



Remark: 1. Refer to page 50 and 51.

■Ambient Compensating Curve



■External Accessories

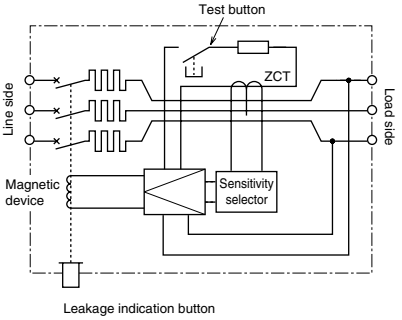
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4CW, S4SW	68
Mechanical interlock (MI)		MI-4SW3 (∗1)	79
Auxiliary handle (HT)		HT-4CW, HT-4SW	80

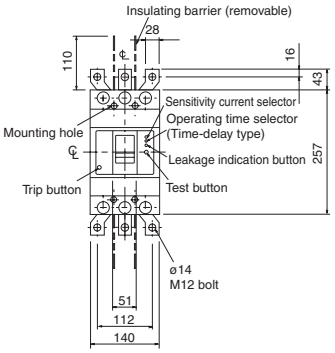
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3	70
	Skeleton	(TTC)	TTC-4SW3	
	Rear	(BTC)	BTC-4SW3	
Handle lock device		HL	HL-4CW, HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

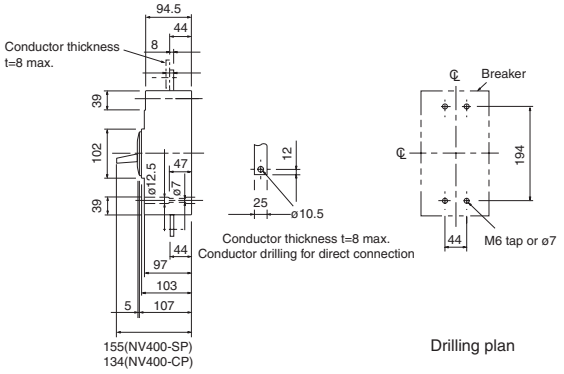
Note (∗1) The designation depends on the number of poles. Refer to the reference page.

■Internal Wiring Diagram

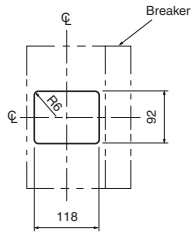


Front connection





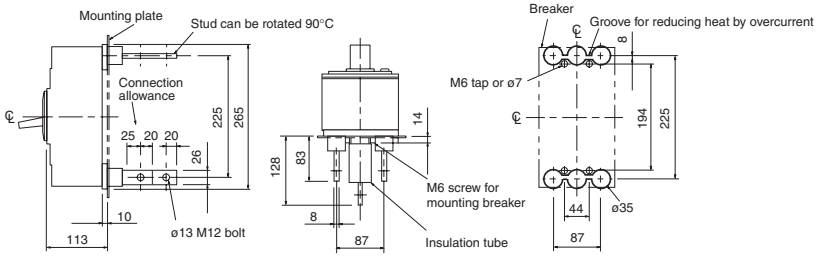
Drilling plan



1.0mm clearance on each side of the handle frame.

Front-panel cutout

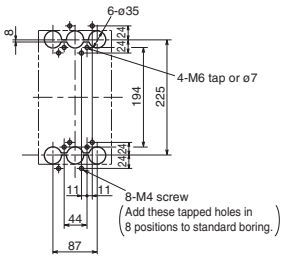
Rear connection



Drilling plan

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

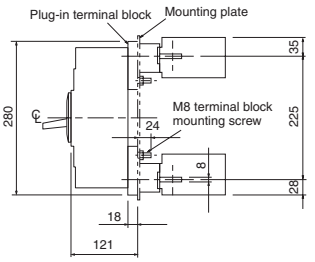
Line side

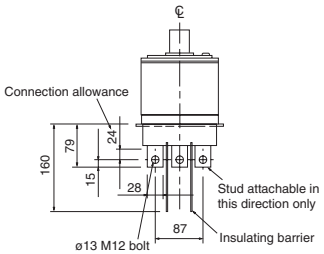


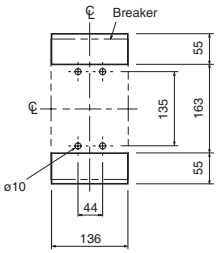
Load side

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

Plug-in







Drilling plan

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

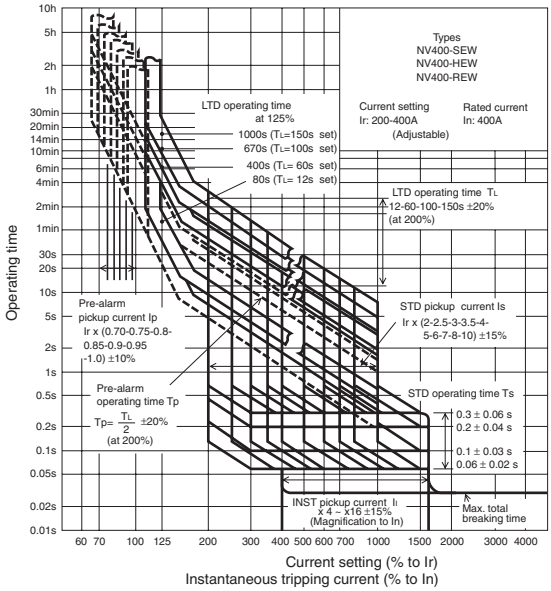
NV400-SEW
NV400-HEW
NV400-REW

Type NV400-SEW

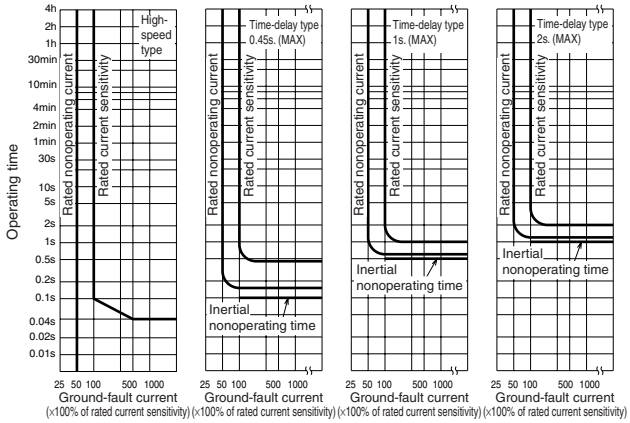
Type name			NV400-SEW		NV400-HEW		NV400-REW
Number of poles			3	4	3	4	3
Rated operational voltage Ue (V AC) (∗1)			100-440 Multi-voltage type				
Rated current In (Amp.)			200-400 adjustable				
High-speed type	Rated current sensitivity IΔn (mA)		(30) 100 · 200 · 500 Selectable				
	Max. operating time 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) IEC 60947-2 2nd. ed. (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.

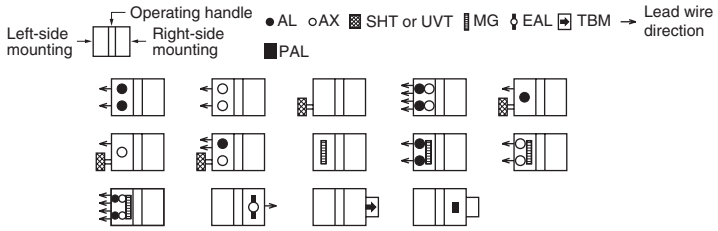
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

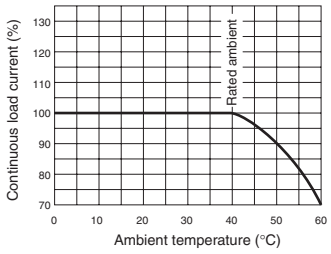


■Internal Accessories



Remark: 1. Instead of EAL and TBM, pre-alarm module (PAL) can be attached.
2. Refer to page 50 and 51.

■Current reducing curve



■External Accessories

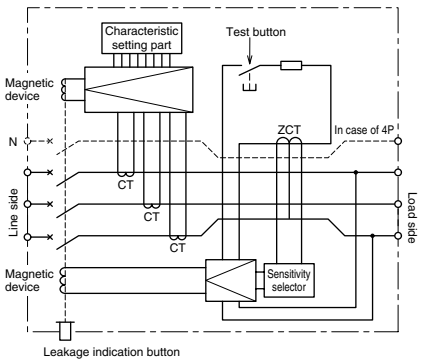
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4SW	68
Mechanical interlock (MI)		MI-4SW3 (∗2)	79
Auxiliary handle (HT)		HT-4SW	80

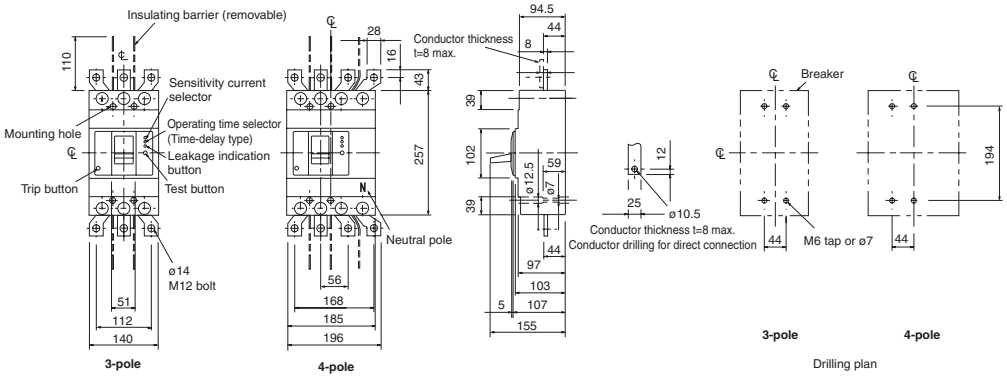
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3 (∗1) (∗2)	70
	Skeleton	(TTC)	TTC-4SW3 (∗2)	
	Rear	(BTC)	BTC-4SW3 (∗1) (∗2)	
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

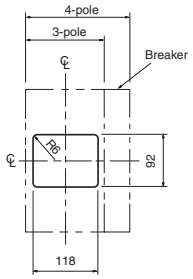
Note (∗1) This is for NV400-SEW.
(∗2) The designation depends on the number of poles. Refer to the reference page.

■Internal Wiring Diagram



Front connection

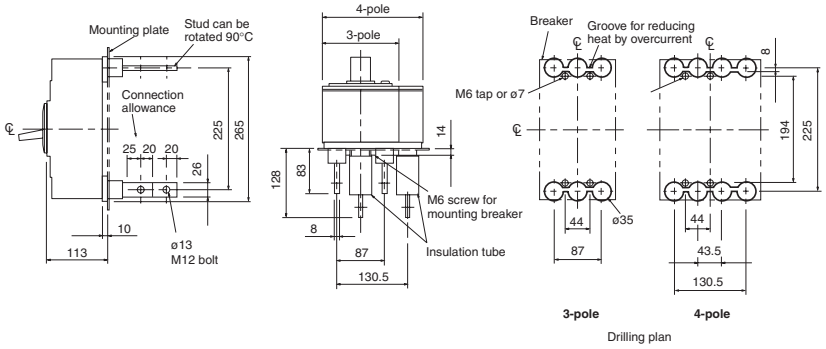




1.0mm clearance on each side of the handle frame.

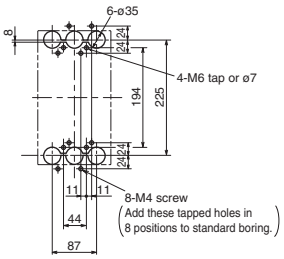
Front-panel cutout

Rear connection



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

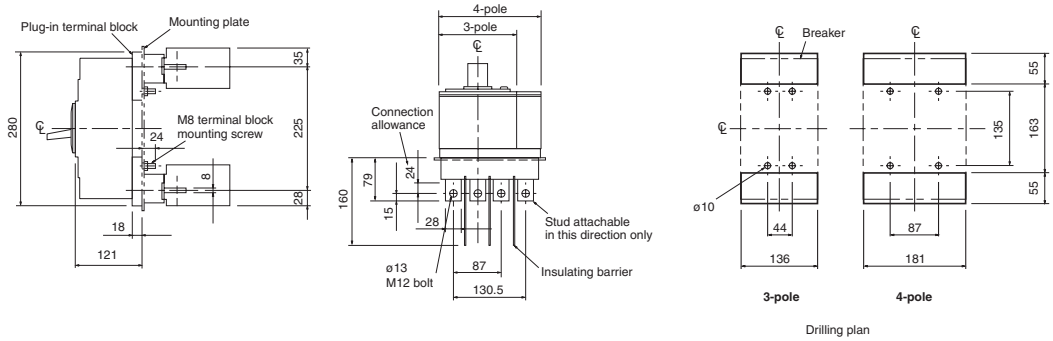
Line side



Load side

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

Plug-in



6. Characteristics and Dimensions

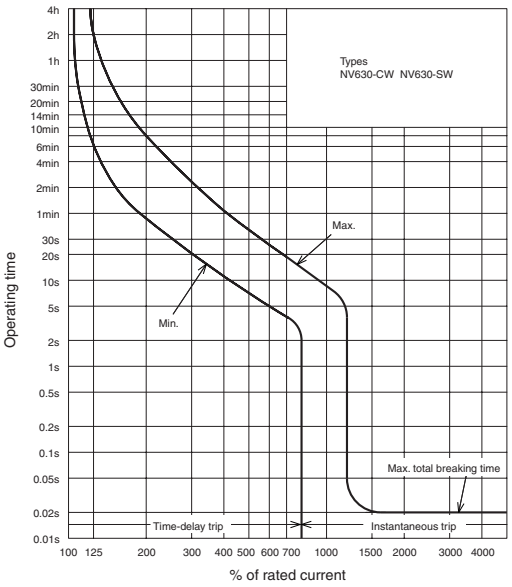
Earth-Leakage Circuit Breakers

NV630-CW
NV630-SW

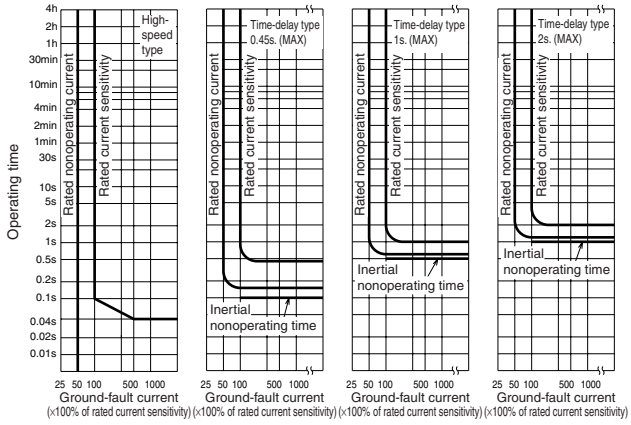
Type NV630-SW

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) IEC 60947-2 2nd. ed. (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)	

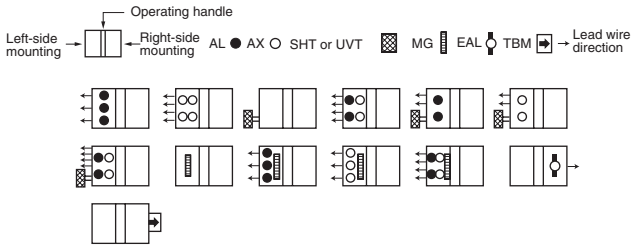
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

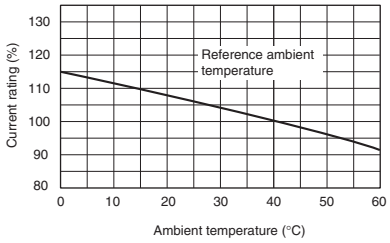


■Internal Accessories



Remark: 1. Refer to page 50 and 51.

■Ambient Compensating Curve



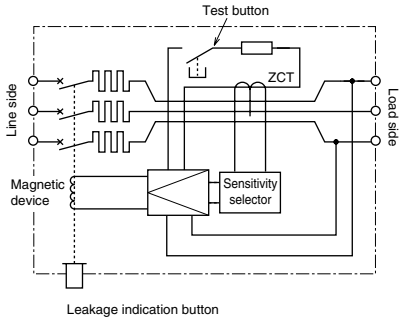
■External Accessories

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

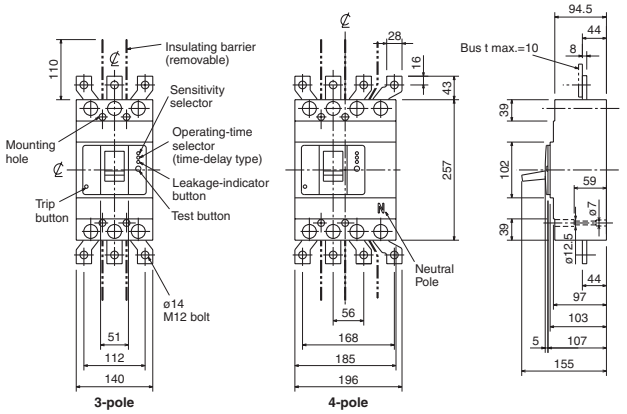
Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4SW	68
Mechanical interlock	(MI)	MI-4SW3	79
Auxiliary handle	(HT)	HT-4SW	80

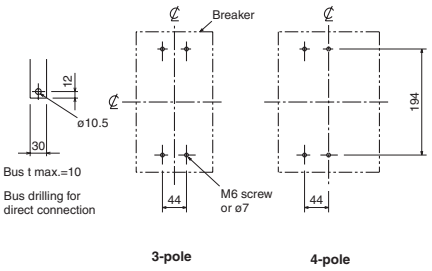
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3	70
	Skeleton	(TTC)	TTC-4SW3	
	Rear	(BTC)	BTC-4SW3	
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

■Internal Wiring Diagram

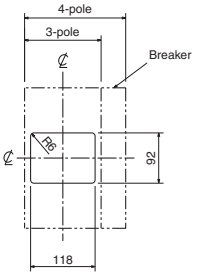


Front connection





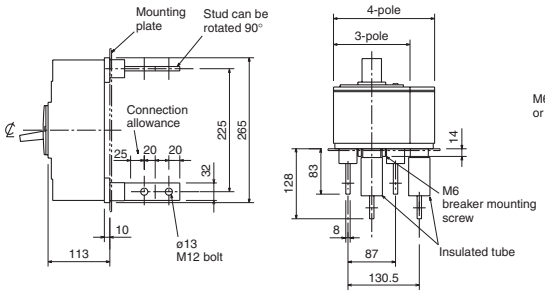
Drilling plan

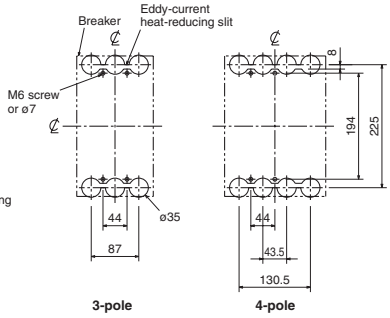


1mm clearance on each side of handle

Front-plate cutout

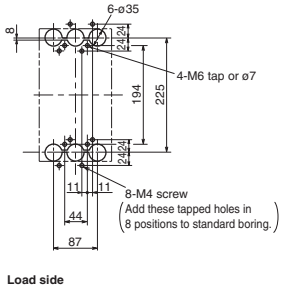
Rear connection





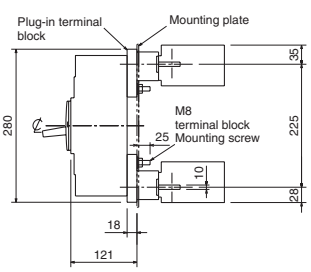
Drilling plan

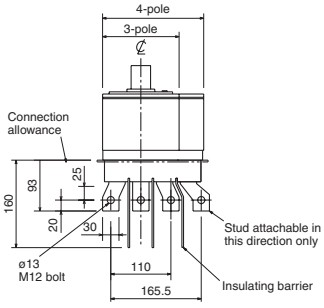
Boring dimensions for rear connection type barriers (3-pole)

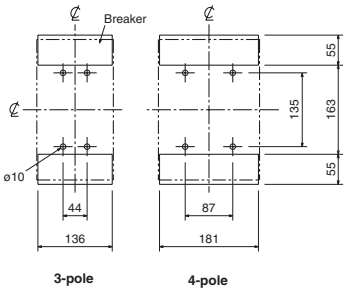


Note: The bore dimensional drawing shows the breaker viewed from the rear.

Plug-in







Drilling plan

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

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers

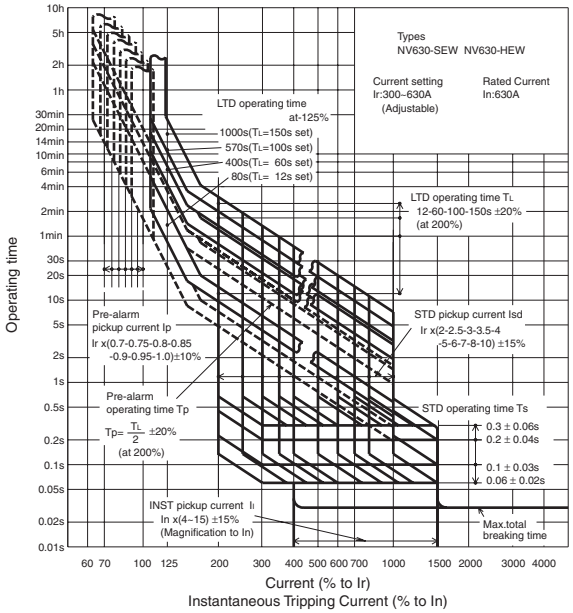
NV630-SEW
NV630-HEW

Type NV630-SEW

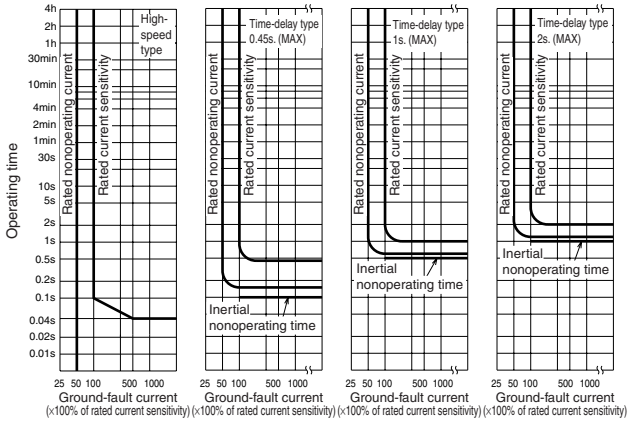
Type name			NV630-SEW		NV630-HEW
Number of poles			3	4	3
Rated operational voltage Ue (V AC) (∗1)			100-440 Multi-voltage type		
Rated current In (Amp.)			300-630 adjustable		
High-speed type	Rated current sensitivity IΔn (mA)		100 · 200 · 500 Selectable		
	Max. operating time at 5IΔn (s)		0.04		
Time-delay 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) IEC 60947-2 2nd. ed. (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: M6×72 (4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)		

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

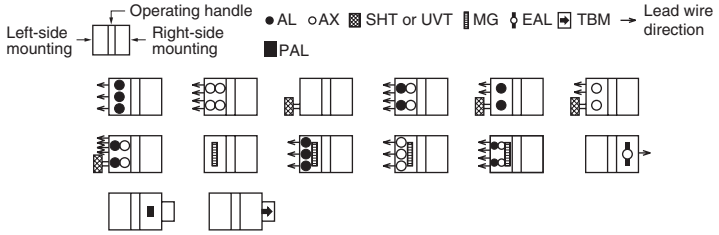
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

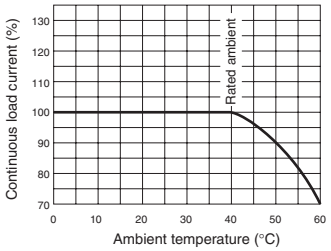


■Internal Accessories



Remark: 1. Instead of EAL and TBM, pre-alarm module (PAL) can be attached.
2. Refer to page 50 and 51.

■Current reducing curve



■External Accessories

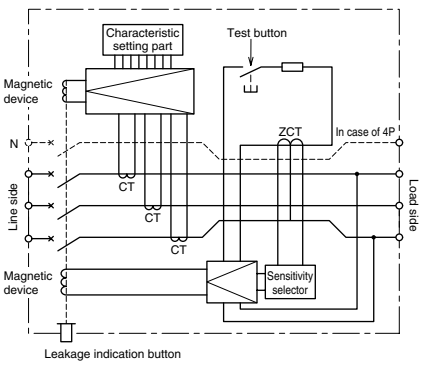
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4SW	68
Mechanical interlock (MI)		MI-4SW3 (∗1)	79
Auxiliary handle (HT)		HT-4SW	80

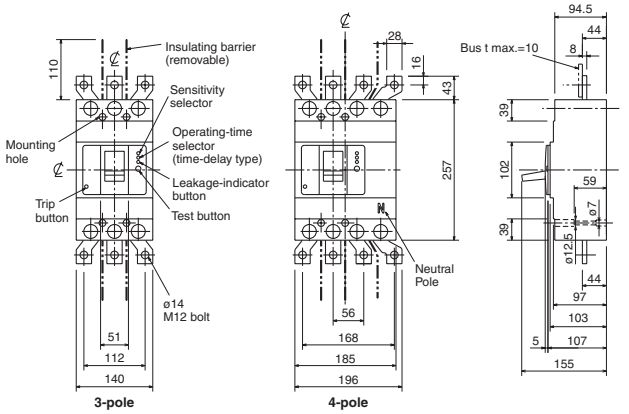
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3 (∗1)(∗2)	70
	Skeleton	(TTC)	TTC-4SW3 (∗2)	
	Rear	(BTC)	BTC-4SW3 (∗1)(∗2)	
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

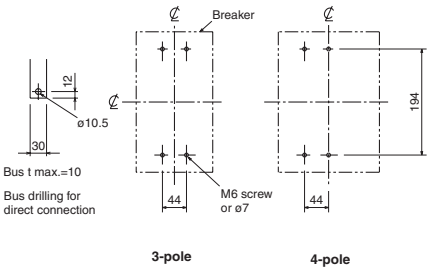
Note (∗1) This is for NV630-SEW
(∗2) The designation depends on the number of poles. Refer to the reference page.

■Internal Wiring Diagram

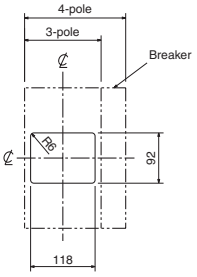


Front connection





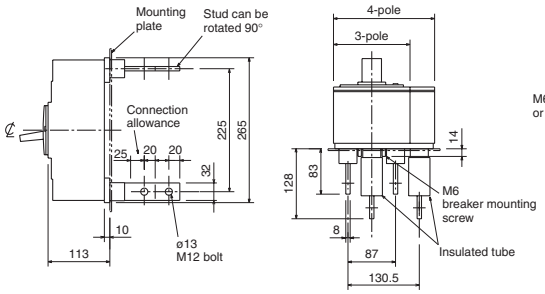
Drilling plan

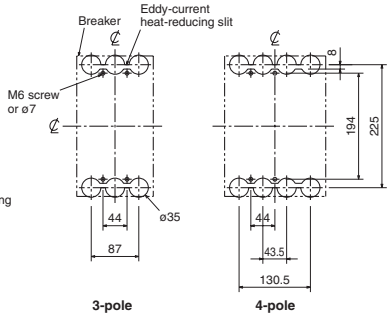


1mm clearance on each side of handle

Front-plate cutout

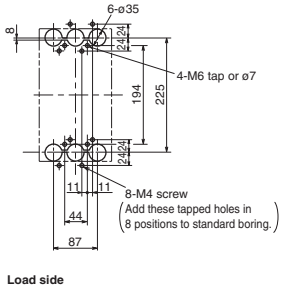
Rear connection





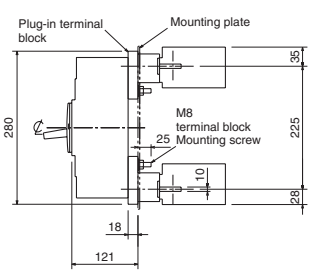
Drilling plan

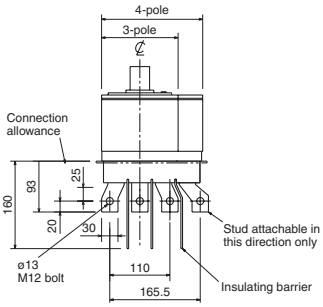
Boring dimensions for rear connection type barriers (3-pole)

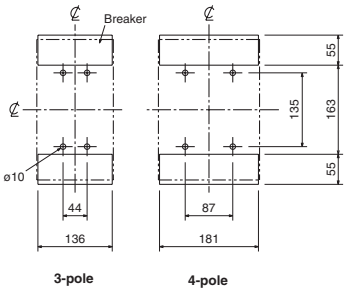


Note: The bore dimensional drawing shows the breaker viewed from the rear.

Plug-in







Drilling plan

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

6

6. Characteristics and Dimensions

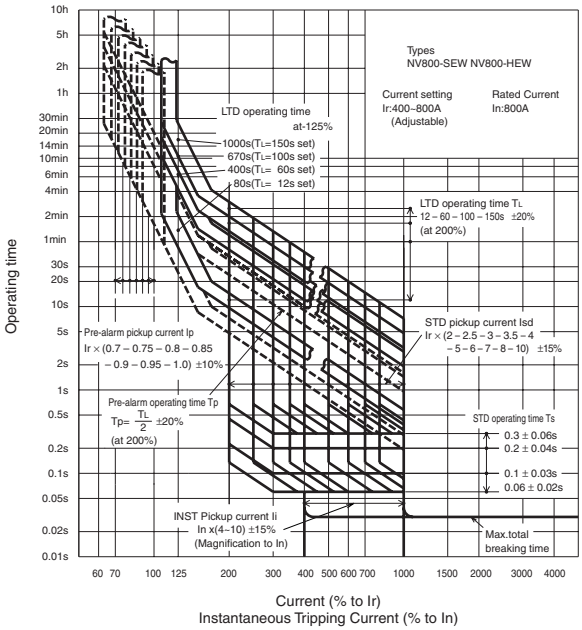
Earth-Leakage Circuit Breakers

NV800-SEW
NV800-HEW

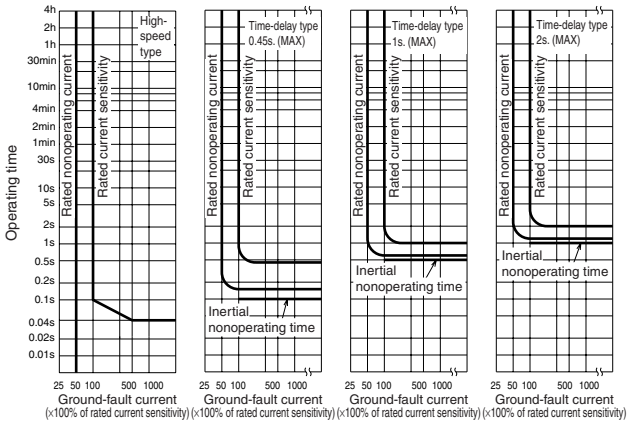
Type NV800-SEW

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) IEC 60947-2 2nd. ed. (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: M6×35 (4pcs) Insulation barrier: (2pcs)	

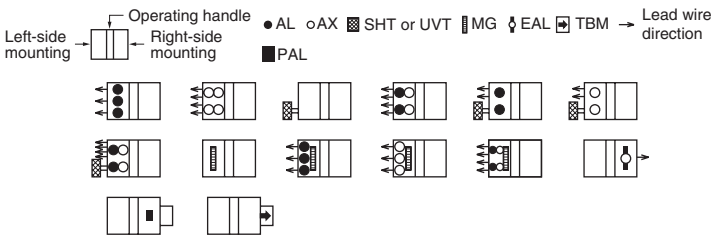
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

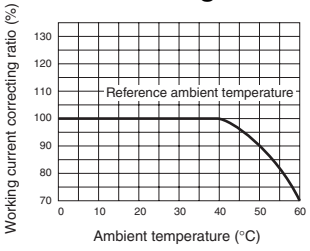


■Internal Accessories



Remark: 1. Instead of EAL and TBM, pre-alarm module (PAL) or trip indicator (TI) can be attached.
2. Refer to page 50 and 51.

■Current reducing curve

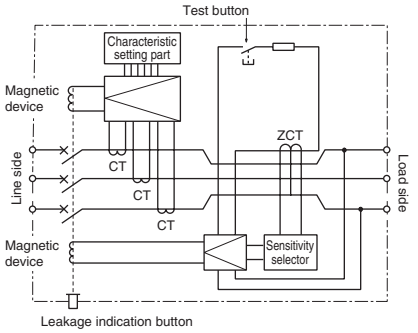


■External Accessories

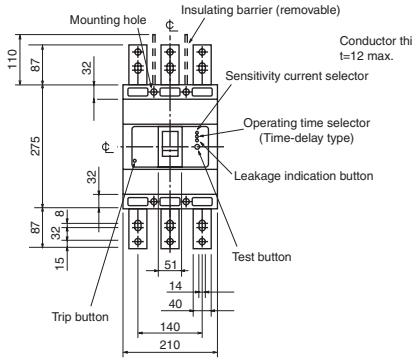
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

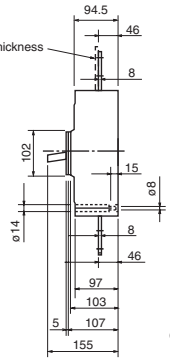
Accessories		Type name	Reference page	Accessories		Type name	Reference page
Operating handle	F	F-8S	62	Terminal cover: Large (TC-L)		TCL-8SW3	70
	V	V-8S	65	Terminal cover: Skeleton (TTC)		TTC-8SW3	
	S	S4SW	68	Terminal cover: Rear (BTC)		BTC-8SW3	
Mechanical interlock (MI)		MI-8SW3	79	Handle lock device	HL	HL-4SW	80
					HL-S	HLS-8SW	
Auxiliary handle (HT)		HT-4SW	80	Electrical operation device		☆	71

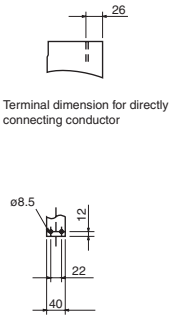
■Internal Wiring Diagram

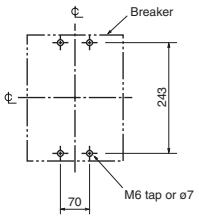


Front connection

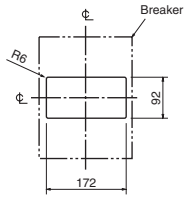








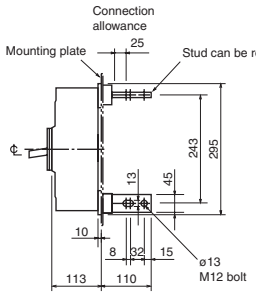
Drilling plan

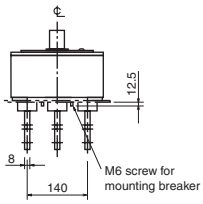


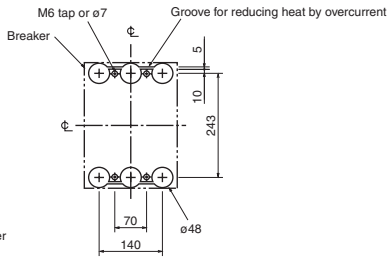
1.0mm clearance on each
side of the handle frame.

Front-panel cutout

Rear connection

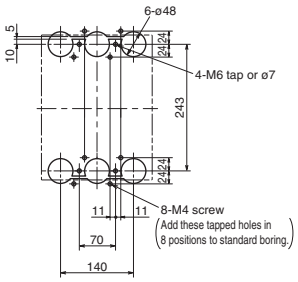






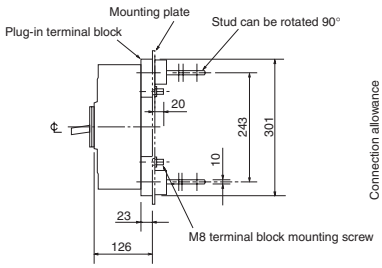
Drilling plan

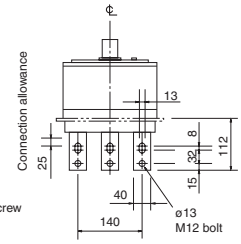
Boring dimensions for rear connection type barriers (3-pole)

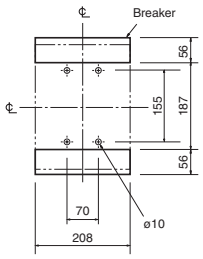


Note: The bore dimensional drawing shows
the breaker viewed from the rear.

Plug-in







Drilling plan

6

6. Characteristics and Dimensions

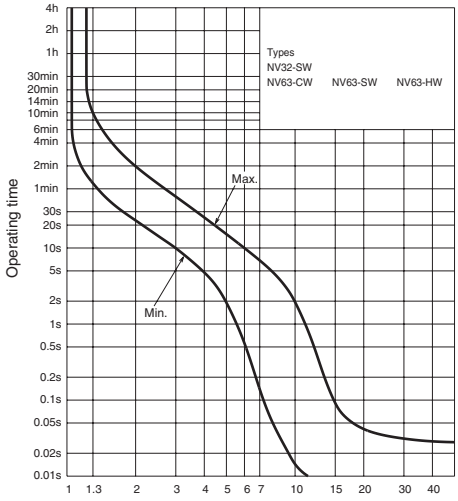
Earth-Leakage Circuit Breakers for CE Marking

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

Type NV63-SW

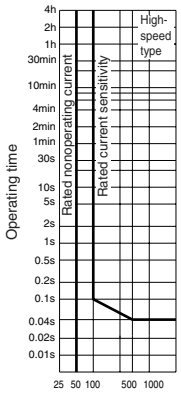
Type name			NV32-SW	NV63-CW	NV63-SW	NV63-HW
Rated current In (Amp.)			(5) 6 10 (15) 16 20 25 (30) 32	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(15) 16 20 25 (30) 32 40 50 (60) 63
Number of poles			3	3	3	3
Rated operational voltage Ue (V AC)			100–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type	100–440 Multi-voltage type
High-speed type	Rated current sensitivity IΔn (mA)		30,100•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
Earth-leakage indication system			Button	Button	Button	Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics) EN 60947-2		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



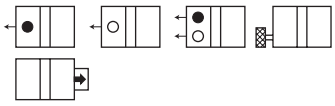
×100% of Rated current

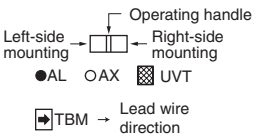
■Earth-Leakage Tripping Characteristics



Ground-fault current
(×100% of rated current sensitivity)

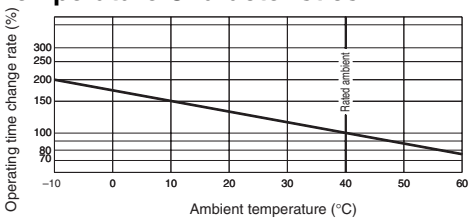
■Internal Accessories





Remark: 1. Refer to page 52.

■Temperature Characteristics



Ambient temperature (°C)

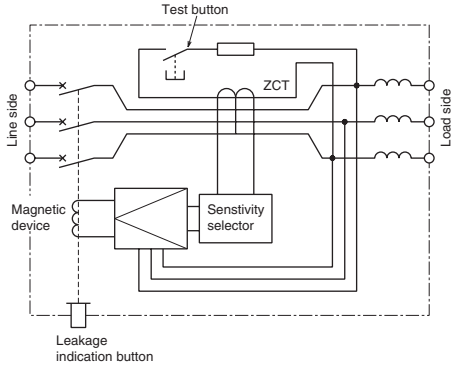
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-05S	61
	V	V-05S	64
	S	S05SW	68
Handle lock device	LC	LC-05SW	80
	(∗1) HL	HLF-05SW	
		HLN-05SW	
	HL-S	HLS-05SW	

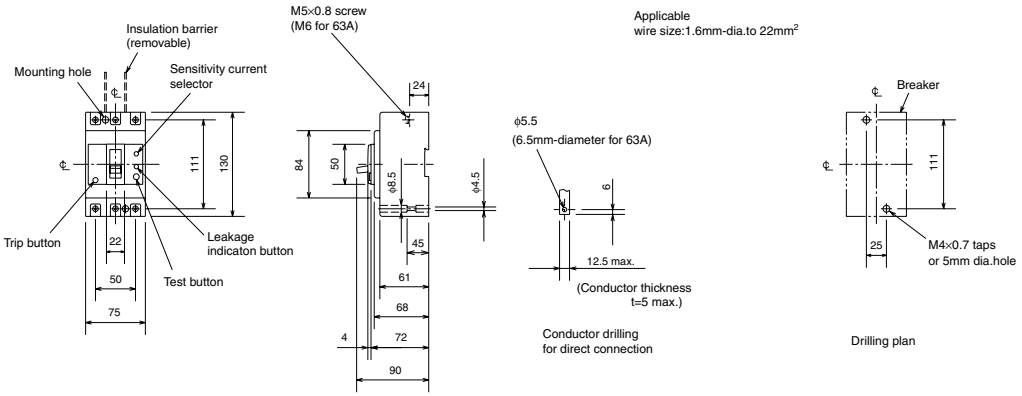
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗1)	79
Terminal cover	Small	TC-S	TCS-05SW3W	70
	Large	TC-L	TCL-05SW3W	
	Skeleton	TTC	TTC-05SW3	
	Rear	BTC	BTC-05SW3W	
	Plug-in	PTC	PTC-05SW3W	
IEC 35mm rail mounting adapters			DIN-05SW	80

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

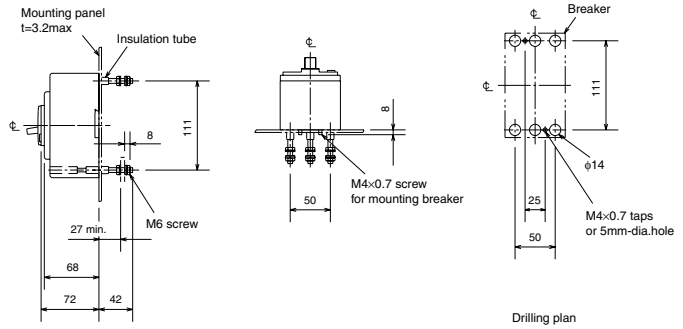
■Internal Wiring Diagram

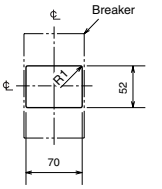


Front connection



Rear connection





1.0mm clearance on each side of the handle frame.

Front-panel cutout

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers for CE Marking

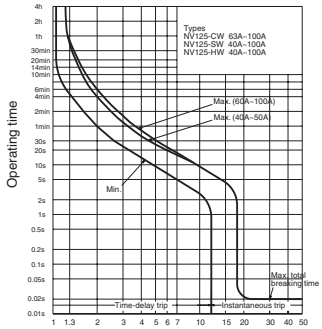
NV125-CW NV125-SW NV125-HW

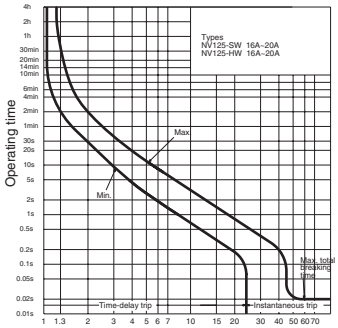
Type NV125-SW

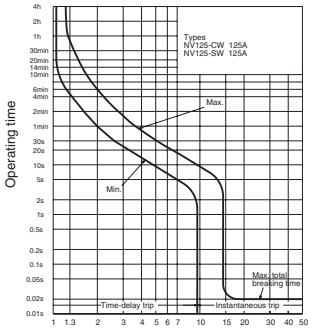
Type name			NV125-CW	NV125-SW		NV125-HW	
Rated current In (Amp.) (∗1)			63 (75) 80 100 125	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 (125 ∗2)		(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100	
Number of poles			3	3	4	3	4
Rated operational voltage Ue (V AC) (∗3)			100–440 Multi-voltage type	100–440 Multi-voltage type	200–440 Multi-voltage type	100–440 Multi-voltage type	200–440 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		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 5IΔn (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		Button	
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics) EN 60947-2		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: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 2pcs, 4P: 3pcs) excluding models of NV125-CW				

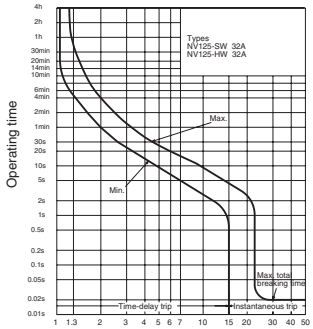
Note (∗1) The time-delayed types will be produced when they have the current specifications of 20A or more.
(∗2) 3P only
(∗3) Rated operational voltage of time-delay type is for 200-440V.

■Operating Characteristics

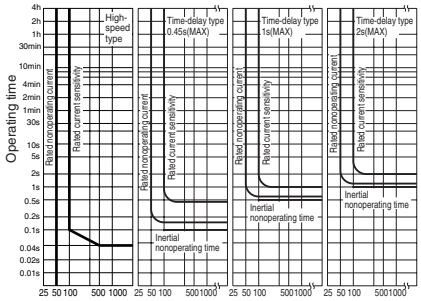




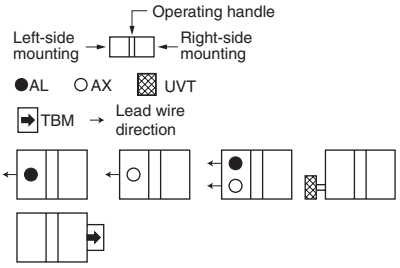




■Earth-Leakage Tripping Characteristics

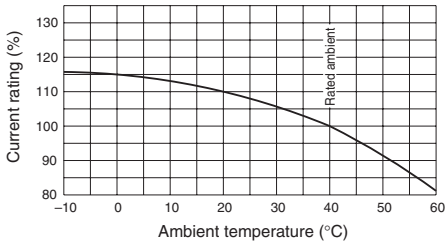


■Internal Accessories



Remark: 1. refer to page 52.

■Temperature Characteristics

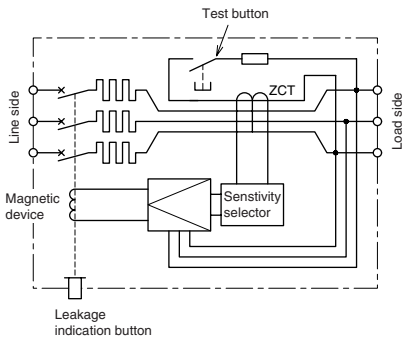


■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-1S	61
	V	V-1S	64
	S	S1SW	68
Handle lock device	LC	LC-1SW	80
	(∗1) HL	HLF-1SW	
		HLN-1SW	
	HL-S	HLS-1SW	

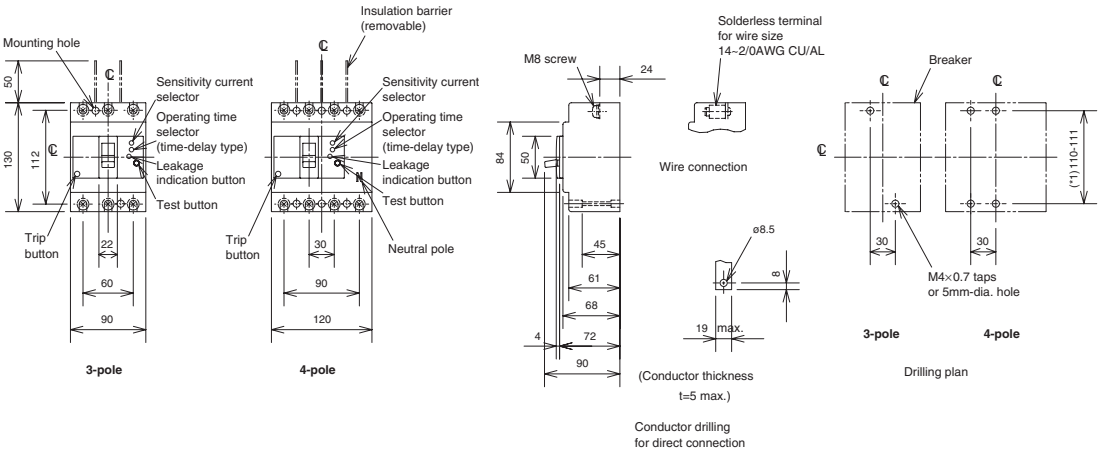
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗3)	79
Terminal cover	Small	TC-S	TCS-1SW3W (∗3)	70
	Large	TC-L	TCL-1SW3W (∗3)	
	Skeleton	TTC	TTC-1SW3 (∗3)	
	Rear	BTC	BTC-1SW3W (∗3)	
	Plug-in	PTC	PTC-1SW3W (∗3)	
IEC 35mm rail mounting adapters			DIN-1SW (∗3)	80
Electrical operation device			MDS-NV1SWE (∗2)	71

■Internal Wiring Diagram

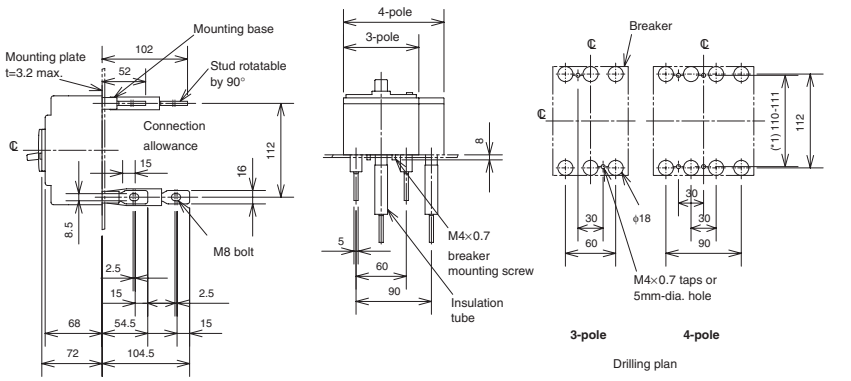


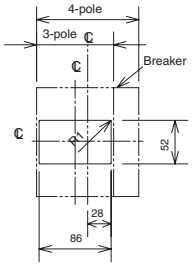
Note (∗1) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.
(∗2) Specify the working voltage.
(∗3) The designation depends on the number of poles. Refer to the reference page.

Front connection



Rear connection





1.0mm clearance on each side of the handle frame.

Front-panel cutout

Note (∗1) It can respond to the attachment size of 110 and 111 both sides.

Remark: 1. NV125-CW is available in 3-pole only.

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers for CE Marking

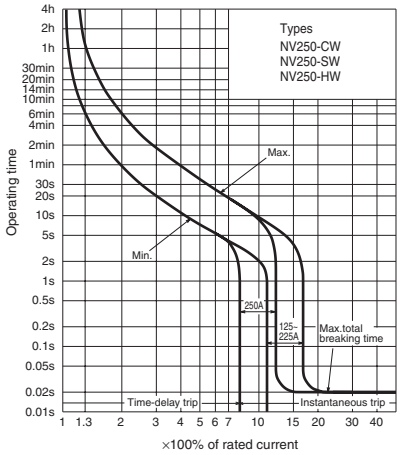
NV250-CW NV250-SW NV250-HW

Type NV250-SW

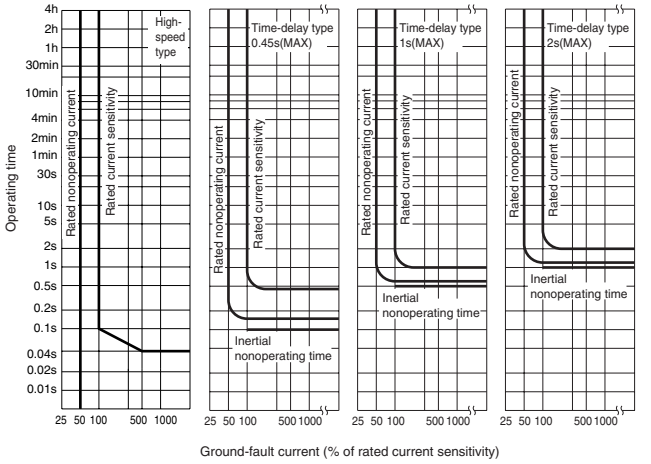
Type name			NV250-CW	NV250-SW		NV250-HW	
Rated current In (Amp.)			125 150 175 200 225 250	125 150 175 200 225 250	125 150 175 200 225	125 150 175 200 225	
Number of poles			3	3	4	3	4
Rated operational voltage Ue (V AC) (∗1)			100–440 Multi-voltage type	100–440 Multi-voltage type	200–440 Multi-voltage type	100–440 Multi-voltage type	200–440 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		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 5IΔn (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		Button	
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics) EN 60947-2		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.

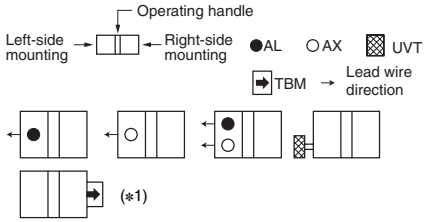
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

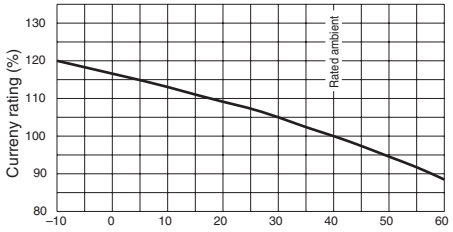


■Internal Accessories



Note (∗1) Refer to page 52.

■Temperature Characteristics



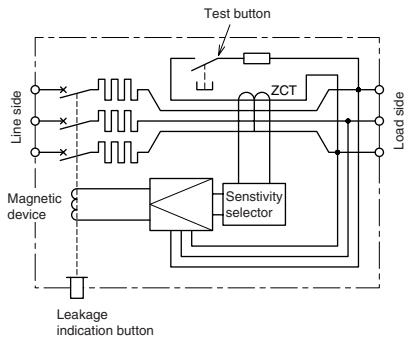
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2S	61
	V	V-2S	64
	S	S2SW	68
Handle lock device	LC	LC-2SW	80
	(∗1) HL	HLF-2SW	
		HLN-2SW	
	HL-S	HLS-2SW	

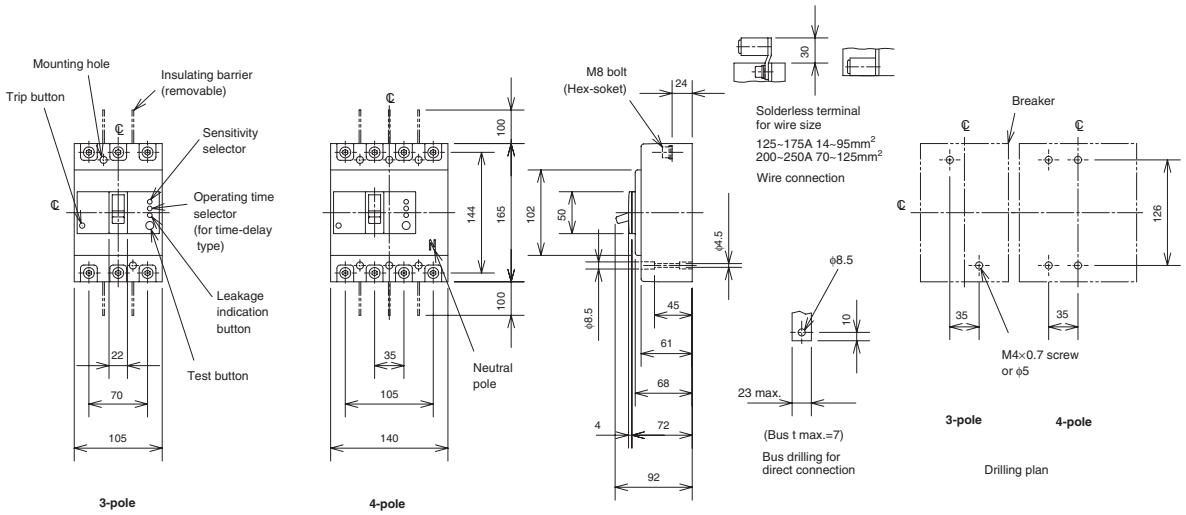
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗2)	79
Terminal cover	Small	TC-S	TCS-2SW3W (∗2)	70
	Large	TC-L	TCL-2SW3W (∗2)	
	Skeleton	TTC	TTC-2SW3 (∗2)	
	Rear	BTC	BTC-2SW3W (∗2)	
	Plug-in	PTC	PTC-2SW3W (∗2)	
Electrical operation device			MDS-NV2SWE (∗3)	71

Note (∗1) HLF types are used for OFF-lock, and HLN types for ON-lock.
(∗2) The designation depends on the number of poles. Refer to the reference page.
(∗3) Specify the working voltage.

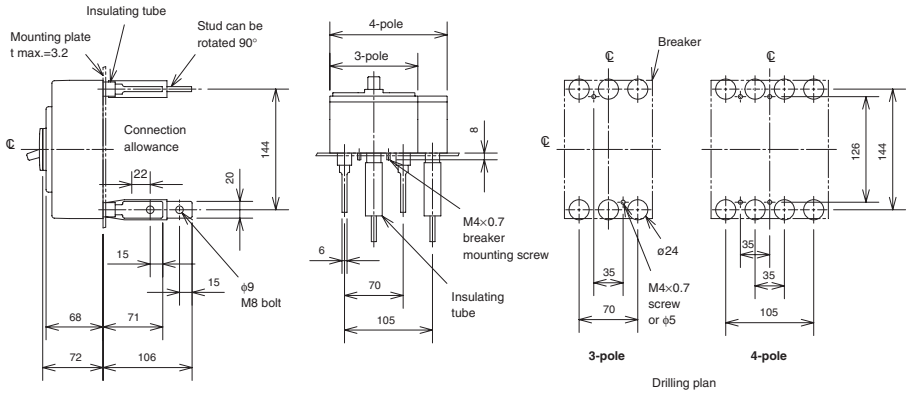
■Internal Wiring Diagram

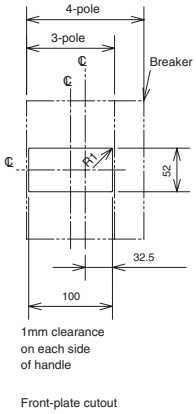


Front connection



Rear connection





Remark: 1. NV250-CW are available in 3-pole only.

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers for CE Marking

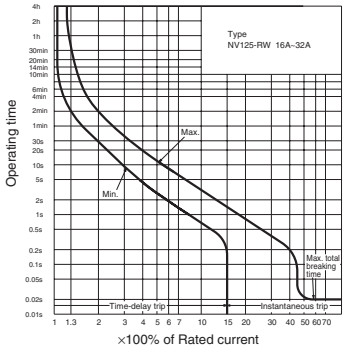
NV125-RW

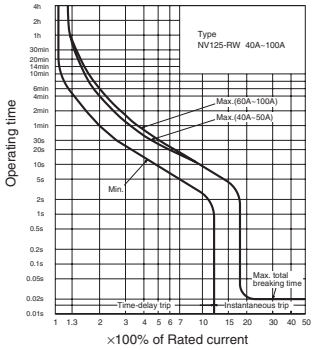
Type NV125-RW

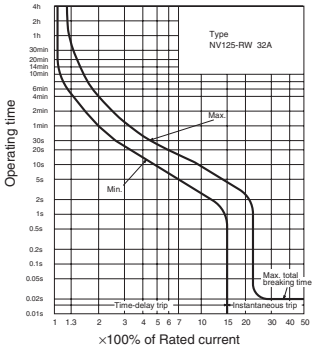
Type name		NV125-RW
Rated current In (Amp.)		(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100
Number of poles		3
Rated operational voltage Ue (V AC) (∗2)		100–440 Multi-voltage type
High-speed type	Rated current sensitivity IΔn (mA)	(30) 100•200•500 Selectable
	Max. operating time at 5IΔn (s)	0.04
Time-delay type	Rated current sensitivity IΔn (mA)	(100•200•500 Selectable)
	Max. operating time at 5IΔn (s)	(0.45•1.0•2.0 Selectable)
	Inertial non-operating time at 2IΔn (s)	(0.1•0.5•1.0)
Earth-leakage indication system		Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics) EN 60947-2	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)

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

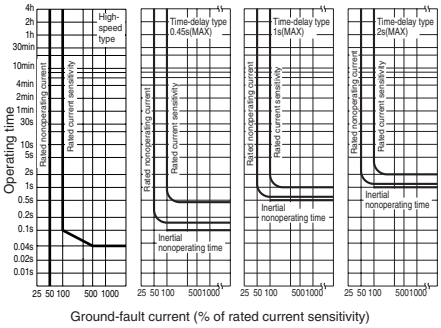
■Operating Characteristics



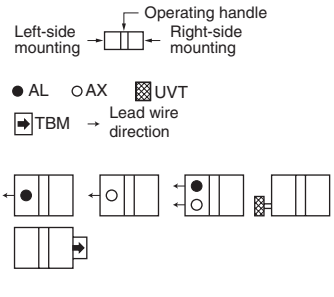




■Earth-Leakage Tripping Characteristics

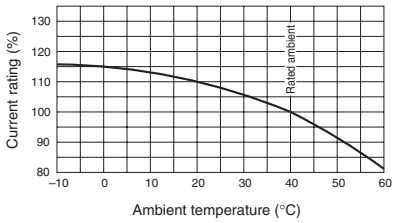


■Internal Accessories



Remark: 1. Refer to page 52.

■Temperature Characteristics



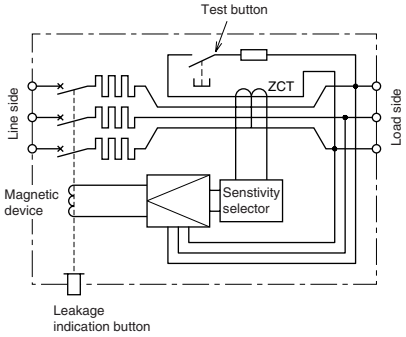
■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-1U	61
	V	V-1U	64
	S	S1SW	68
Mechanical interlock	MI	MI-05SW3 (∗1)	79
Electrical operation device		—	—

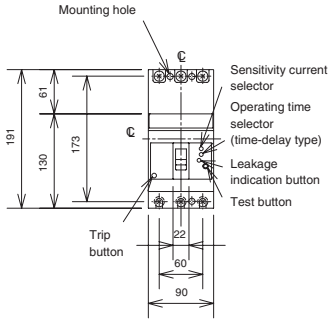
Accessories			Type name	Reference page
Terminal cover	Small	TC-S	TCS-1SW3W (∗1)	70
	Large	TC-L	TCL-1SW3W (∗1)	
	Skeleton	TTC	TTC-1SW3 (∗1)	
	Rear	BTC	BTC-1SW3W (∗1)	
	Plug-in	PTC	PTC-1SW3W (∗1)	
Handle lock device		LC	LC-1SW	80
		(∗2) HL	HLF-1SW	
			HLN-1SW	
		HL-S	HLS-1SW	

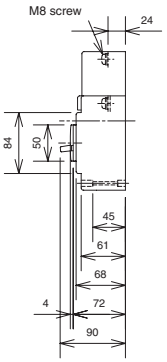
Note (∗1) The designation depends on the number of poles. Refer to the reference page.
(∗2) HLF and HLS types are used for OFF-lock, and HLN types for ON-lock.

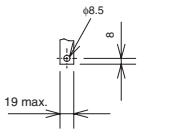
■Internal Wiring Diagram



Front connection

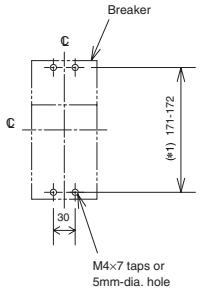






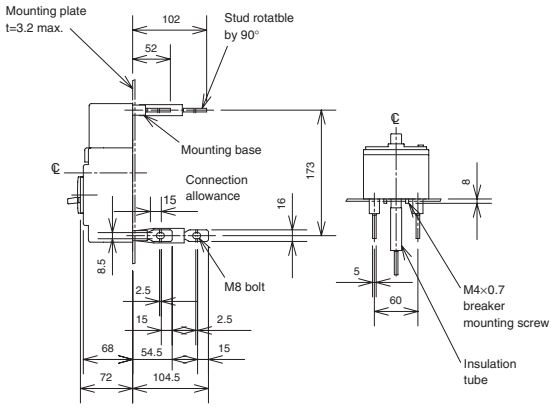
(Conductor thickness t=5 max.)

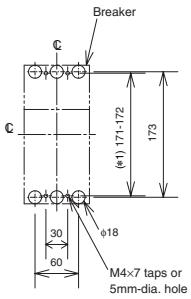
Conductor drilling for direct connection



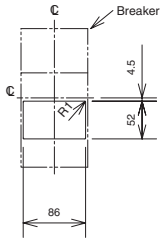
Drilling plan

Rear connection





Drilling plan



1.0mm clearance on each side of the handle frame.

Front-panel cutout

Note (∗1) It can respond to the attachment size of 171 and 172 both sides.

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers for CE Marking

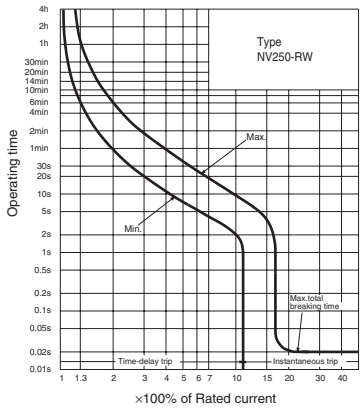
NV250-RW

Type NV250-RW

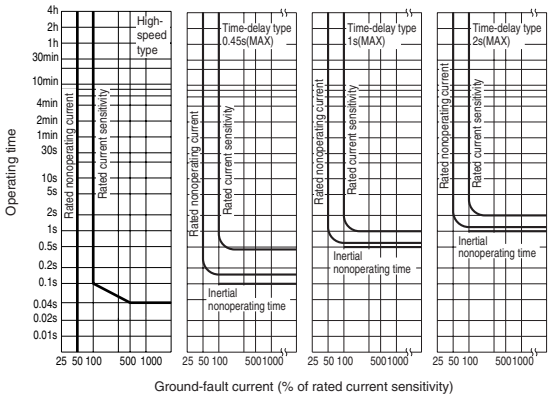
Type name			NV250-RW
Rated current In (Amp.)			125 150 175 200 225
Number of poles			3
Rated operational voltage Ue (V AC) (∗1)			100–440 Multi-voltage type
High-speed type	Rated current sensitivity IΔn (mA)		(30) 100•200•500 Selectable
	Max. operating time at 5IΔn (s)		0.04
Time-delay type	Rated current sensitivity IΔn (mA)		(100•200•500 Selectable)
	Max. operating time at 5IΔn (s)		(0.45•1.0•2.0 Selectable)
	Inertial non-operating time at 2IΔn (s)		(0.1•0.5•1.0)
Earth-leakage indication system			Button
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics) EN 60947-2		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

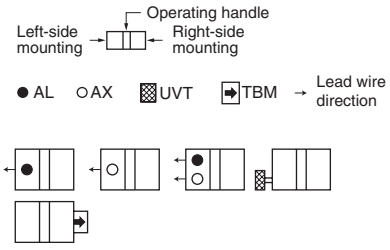
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

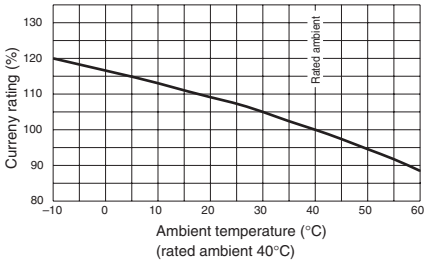


■Internal Accessories



Remark: 1. Refer to page 52.

■Ambient Compensating Curve

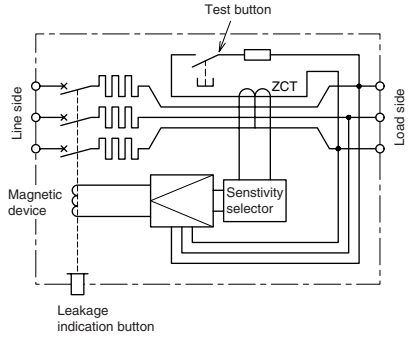


■External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2U	61
	V	V-2U	64
	S	S2SW	68
Handle lock device	LC	LC-2SW	80
	(∗1) HL	HLF-2SW	
		HLN-2SW	
	HL-S	HLS-2SW	

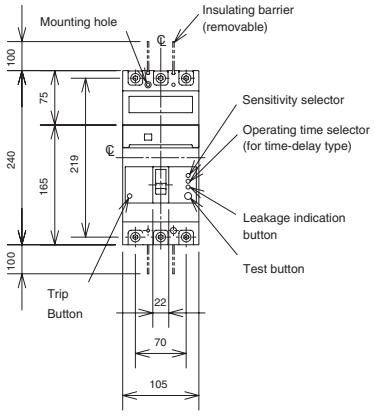
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SW3 (∗1)	79
Terminal cover	Small	TC-S	TCS-2SW3W (∗1)	70
	Large	TC-L	TCL-2SW3W (∗1)	
	Skeleton	TTC	TTC-2SW3 (∗1)	
	Rear	BTC	BTC-2SW3W (∗1)	
	Plug-in	PTC	PTC-2SW3W (∗1)	
Electrical operation device			—	—

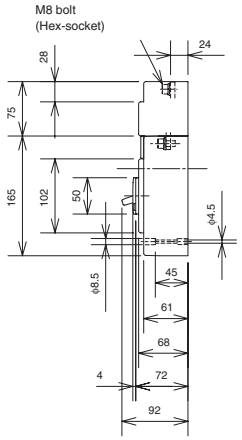
■Internal Wiring Diagram

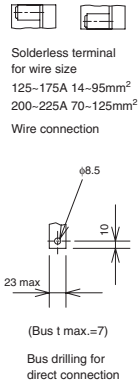


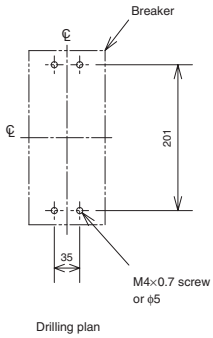
Note (∗1) The designation depends on the number of poles. Refer to the reference page.
(∗2) HLF types are used for OFF-lock, and HLN types for ON-lock.

Front connection

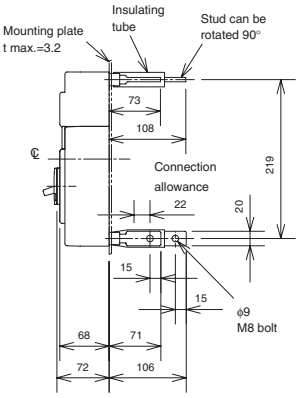


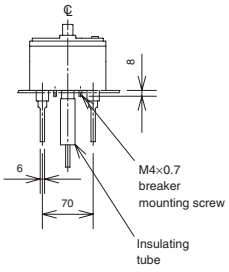


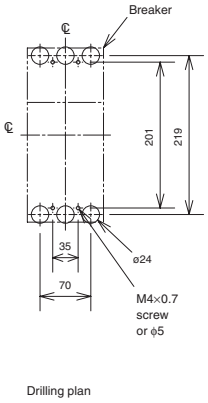




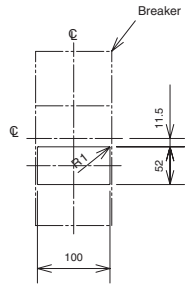
Rear connection







Drilling plan



1mm clearance
on each side
of handle

Front-plate cutout

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers for CE Marking

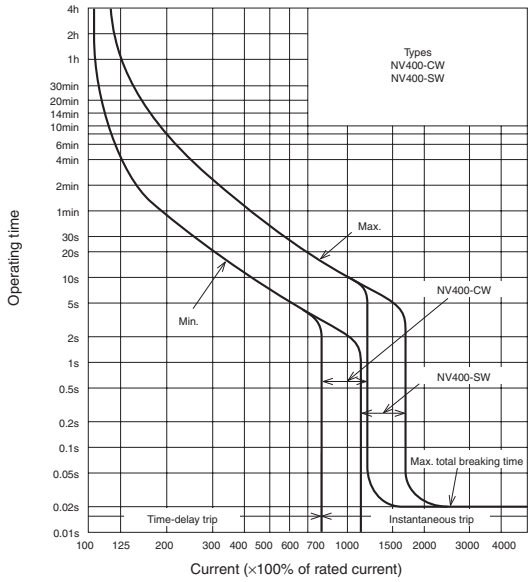
NV400-CW
NV400-SW

Type NV400-SW

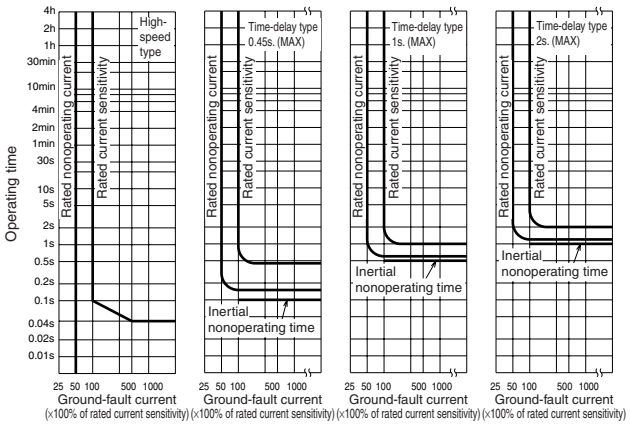
Type name			NV400-CW	NV400-SW
Number of poles			3	
Rated operational voltage Ue (V AC) (∗1)			100-440 Multi-voltage type	
Rated current In (Amp.)			250 300 350 400	
High-speed type	Rated current sensitivity IΔn (mA)		(30) 100 · 200 · 500 Selectable	
	Max. operating time at 5IΔn (s)		0.04	
Time-delay type	Rated current sensitivity IΔn (mA)		(100 · 200 · 500 Selectable)	
	Max. operating time at 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	
Rated short-circuit breaking capacity (kA) IEC 60947-2 (Icu/Ics) EN 60947-2	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.

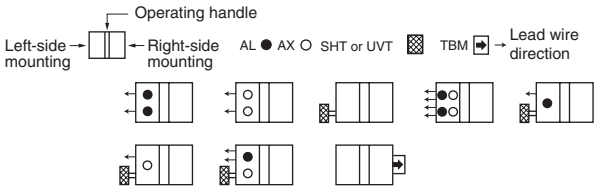
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

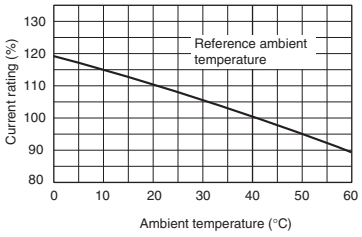


■Internal Accessories



Remark: 1. Refer to page 53.

■Ambient Compensating Curve



■External Accessories

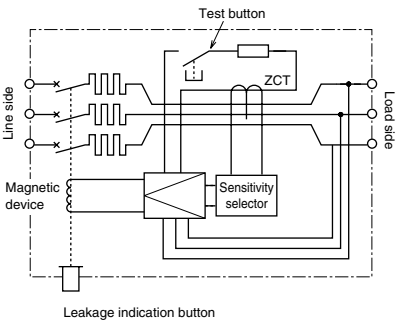
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4CW, S4SW	68
Mechanical interlock (MI)		MI-4SW3 (∗1)	79
Auxiliary handle (HT)		HT-4CW, HT-4SW	80

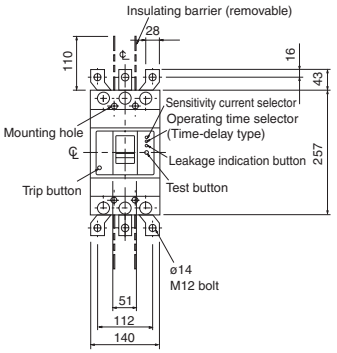
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3	70
	Skeleton	(TTC)	TTC-4SW3	
	Rear	(BTC)	BTC-4SW3	
Handle lock device		HL	HL-4CW, HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

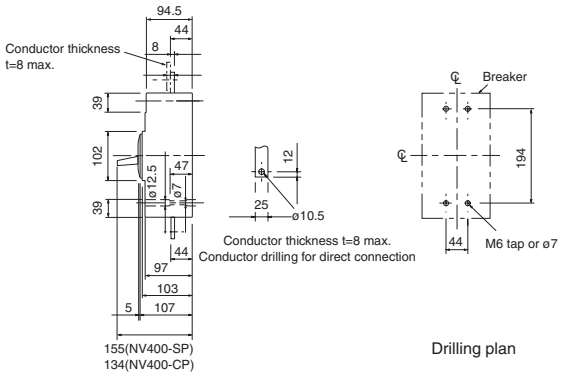
Note (∗1) The designation depends on the number of poles. Refer to the reference page.

■Internal Wiring Diagram

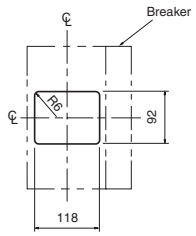


Front connection





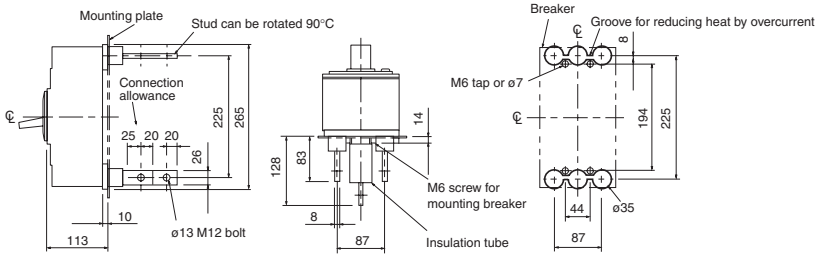
Drilling plan



1.0mm clearance on each side of the handle frame.

Front-panel cutout

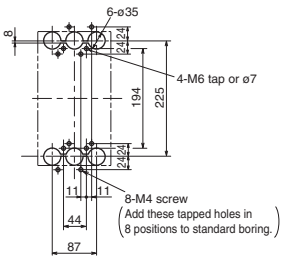
Rear connection



Drilling plan

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

Line side



Load side

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

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers for CE Marking

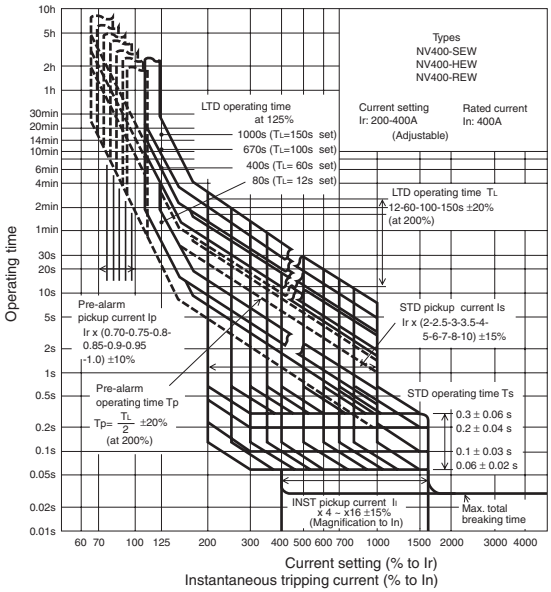
NV400-SEW
NV400-HEW
NV400-REW

Type NV400-SEW

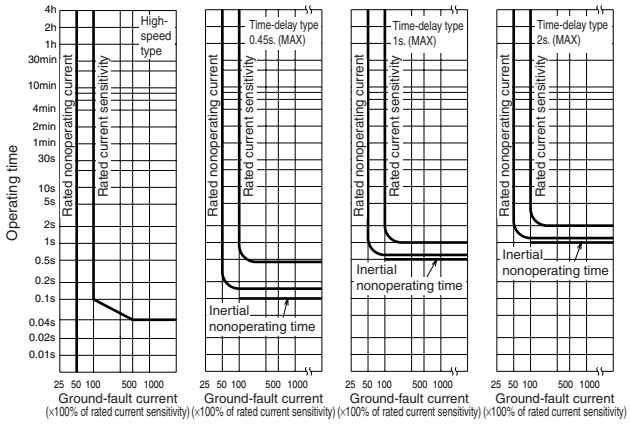
Type name			NV400-SEW		NV400-HEW		NV400-REW
Number of poles			3	4	3	4	3
Rated operational voltage Ue (V AC) (∗1)			100-440 Multi-voltage type				
Rated current In (Amp.)			200-400 adjustable				
High-speed type	Rated current sensitivity IΔn (mA)		(30) 100 · 200 · 500 Selectable				
	Max. operating time 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) IEC 60947-2 (Icu/Ics) EN 60947-2	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.

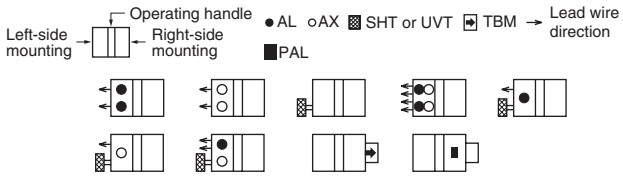
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

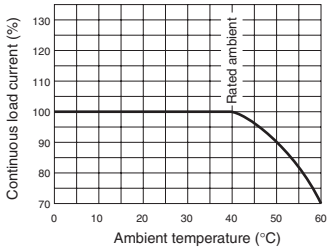


■Internal Accessories



Remark 1. Instead of TBM, pre-alarm module (PAL) can be attached.
2. Refer to page 53.

■Current reducing curve



■External Accessories

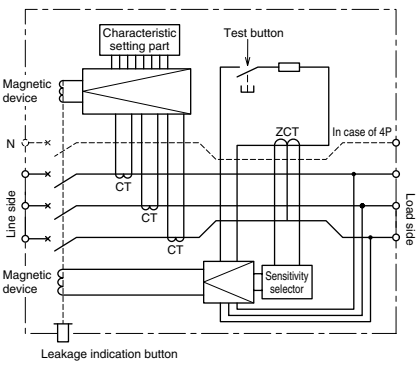
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4SW	68
Mechanical interlock	(MI)	MI-4SW3 (∗2)	79
Auxiliary handle	(HT)	HT-4SW	80

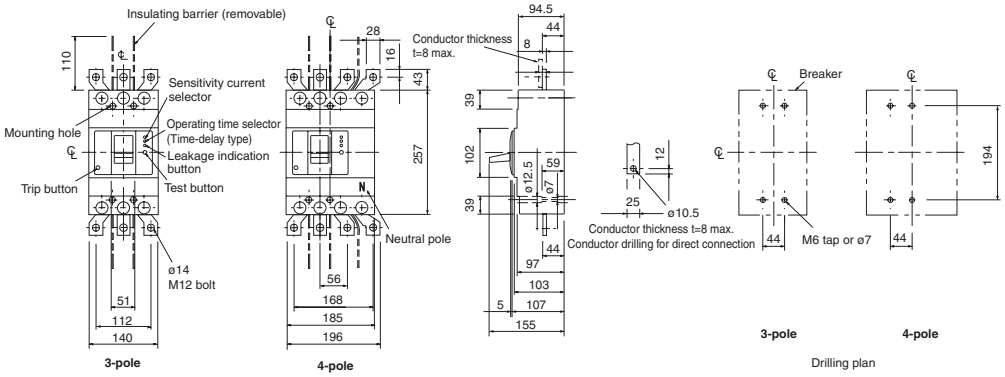
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3 (∗1) (∗2)	70
	Skeleton	(TTC)	TTC-4SW3 (∗2)	
	Rear	(BTC)	BTC-4SW3 (∗1) (∗2)	
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

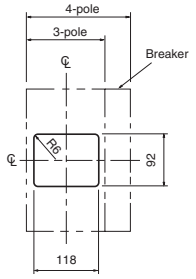
Note (∗1) This is for NV400-SEW.
(∗2) The designation depends on the number of poles. Refer to the reference page.

■Internal Wiring Diagram



Front connection

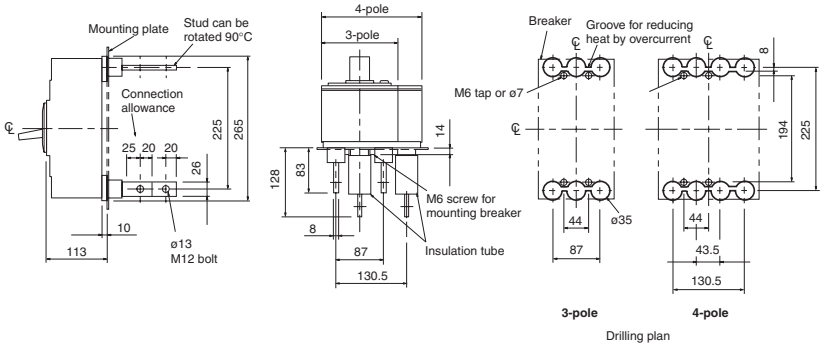




1.0mm clearance on each side of the handle frame.

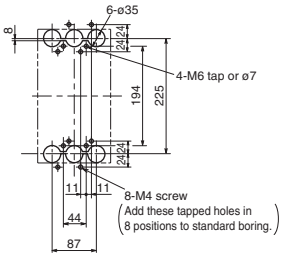
Front-panel cutout

Rear connection



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

Line side



Load side

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

6

6. Characteristics and Dimensions

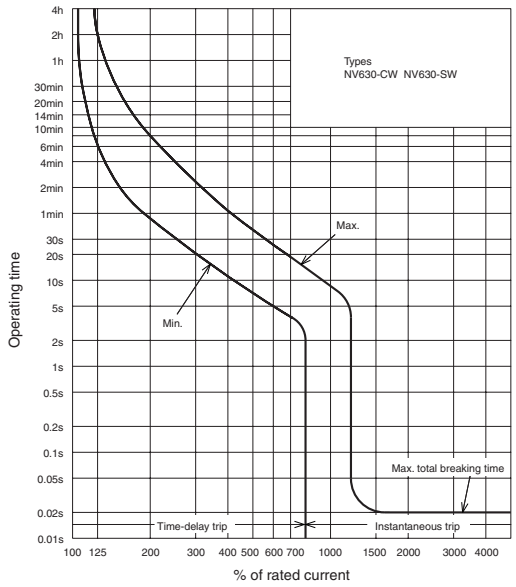
Earth-Leakage Circuit Breakers for CE Marking

NV630-CW
NV630-SW

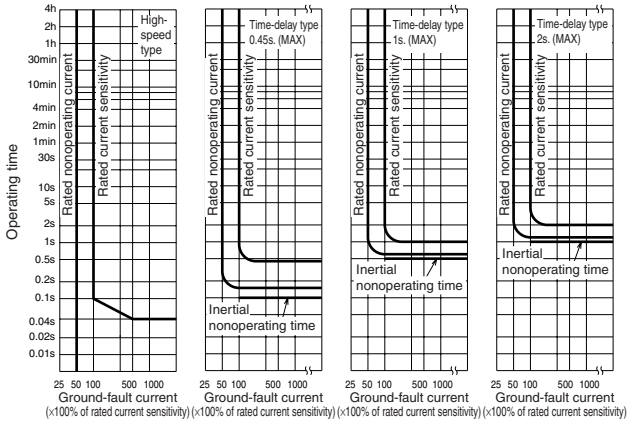
Type NV630-SW

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) IEC 60947-2 (Icu/Ics) EN 60947-2	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)	

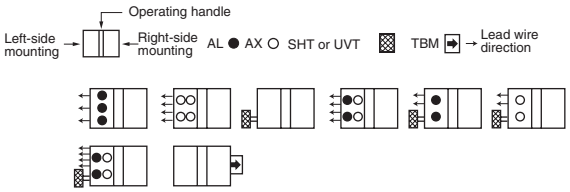
■Operating Characteristics



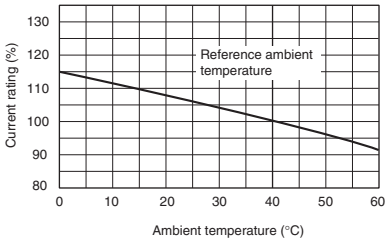
■Earth-Leakage Tripping Characteristics



■Internal Accessories



■Ambient Compensating Curve



Remark: 1. Refer to page 53.

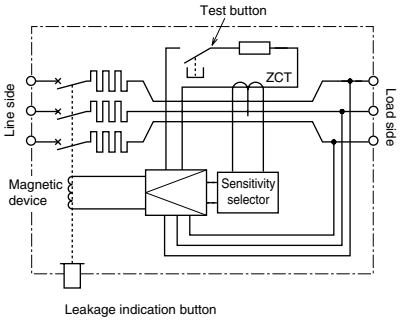
■External Accessories

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

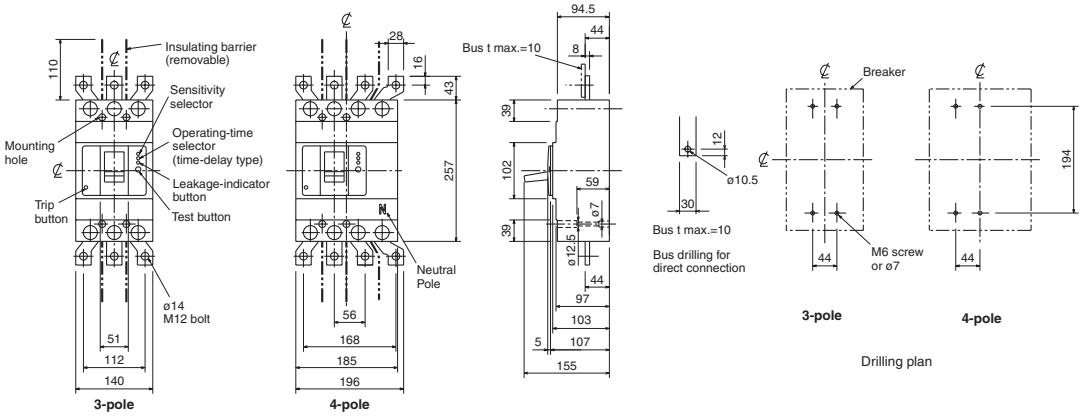
Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4SW	68
Mechanical interlock	(MI)	MI-4SW3	79
Auxiliary handle	(HT)	HT-4SW	80

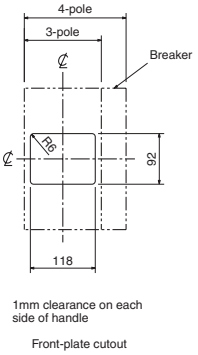
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3	70
	Skeleton	(TTC)	TTC-4SW3	
	Rear	(BTC)	BTC-4SW3	
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

■Internal Wiring Diagram



Front connection

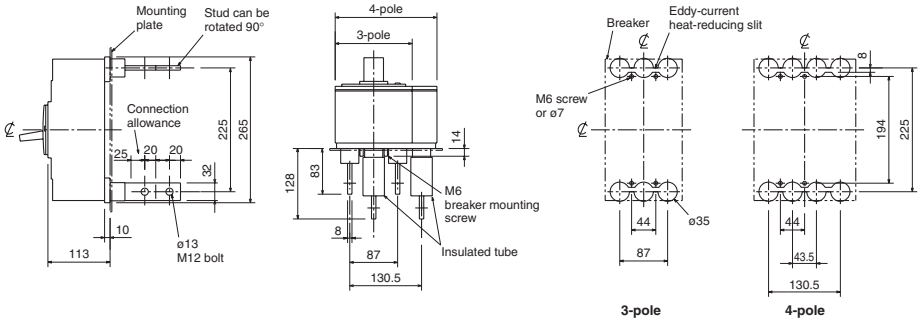




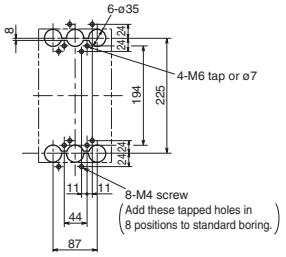
1mm clearance on each side of handle

Front-plate cutout

Rear connection



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



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

6

6. Characteristics and Dimensions

Earth-Leakage Circuit Breakers for CE Marking

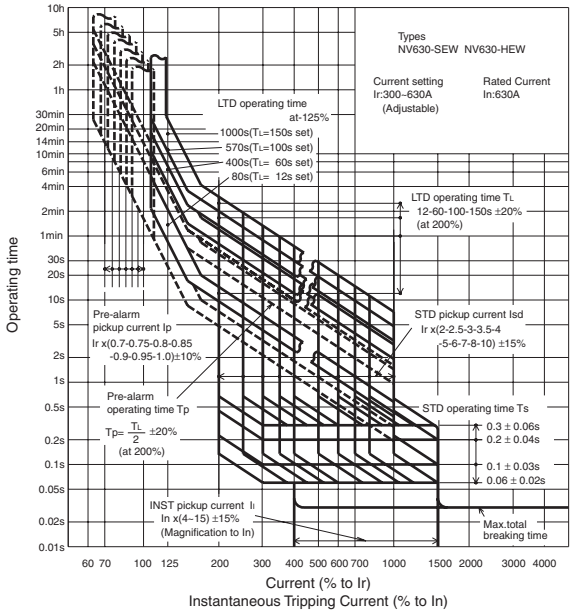
NV630-SEW
NV630-HEW

Type NV630-SEW

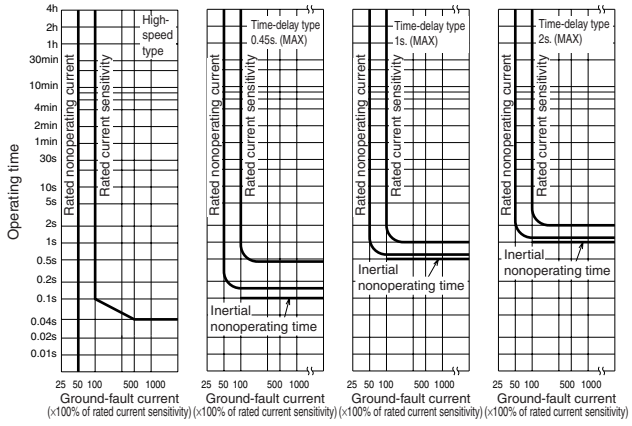
Type name			NV630-SEW		NV630-HEW
Number of poles			3	4	3
Rated operational voltage Ue (V AC) (∗1)			100-440 Multi-voltage type		
Rated current In (Amp.)			300-630 adjustable		
High-speed type	Rated current sensitivity IΔn (mA)		100 · 200 · 500 Selectable		
	Max. operating time at 5IΔn (s)		0.04		
Time-delay 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) IEC 60947-2 (Icu/Ics) EN 60947-2	AC	440V	42/42		65/65
		400V	50/50		70/70
		230V	85/85		100/100
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.

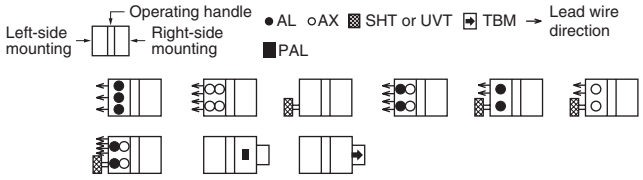
■Operating Characteristics



■Earth-Leakage Tripping Characteristics

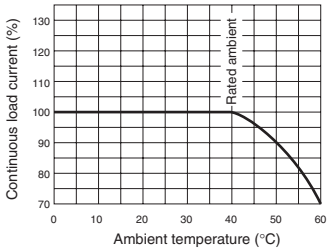


■Internal Accessories



Remark 1. Instead of TBM, pre-alarm module (PAL) can be attached.
2. Refer to page 53.

■Current reducing curve



■External Accessories

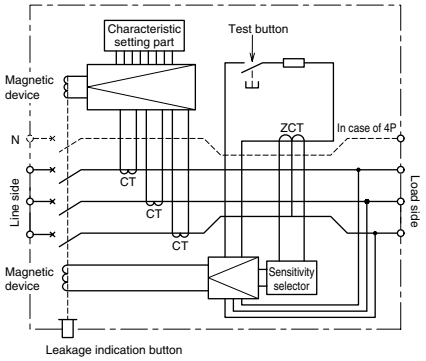
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

Accessories		Type name	Reference page
Operating handle	F	F-4S	62
	V	V-4S	65
	S	S4SW	68
Mechanical interlock (MI)		MI-4SW3 (∗1)	79
Auxiliary handle (HT)		HT-4SW	80

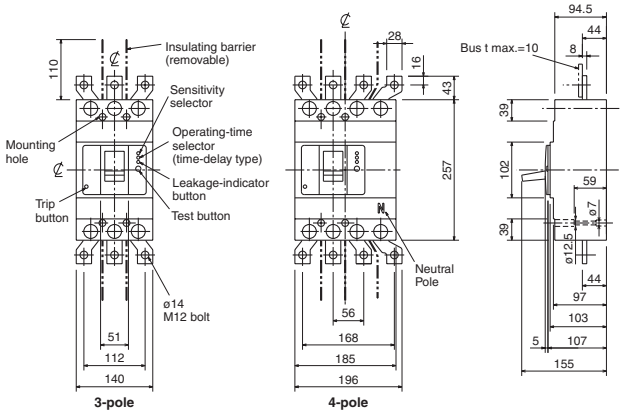
Accessories			Type name	Reference page
Terminal cover	Large	(TC-L)	TCL-4SW3 (∗1)(∗2)	70
	Skeleton	(TTC)	TTC-4SW3 (∗2)	
	Rear	(BTC)	BTC-4SW3 (∗1)(∗2)	
Handle lock device		HL	HL-4SW	80
		HL-S	HLS-4SW	
Electrical operation device			☆	71

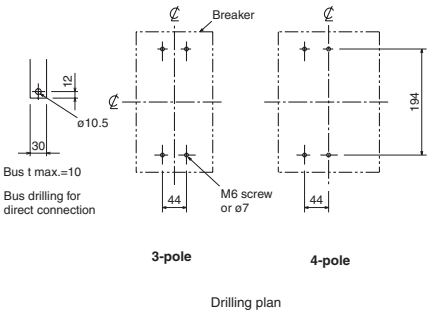
Note (∗1) This is for NV630-SEW
(∗2) The designation depends on the number of poles. Refer to the reference page.

■Internal Wiring Diagram

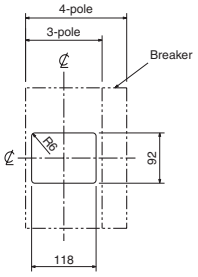


Front connection





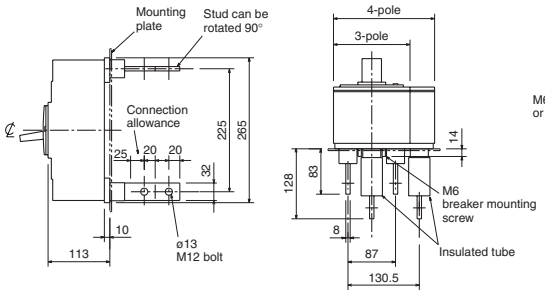
Drilling plan

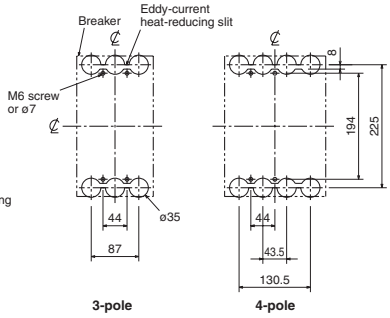


1mm clearance on each side of handle

Front-plate cutout

Rear connection

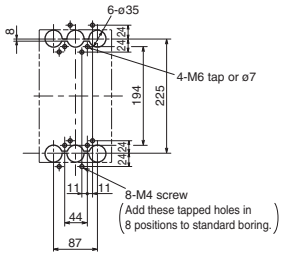




Drilling plan

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

Line side



Load side

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

6

6. Characteristics and Dimensions

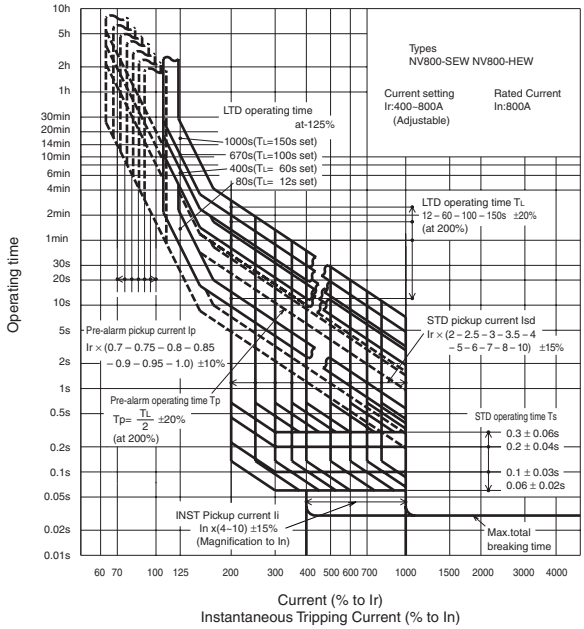
Earth-Leakage Circuit Breakers for CE Marking

NV800-SEW
NV800-HEW

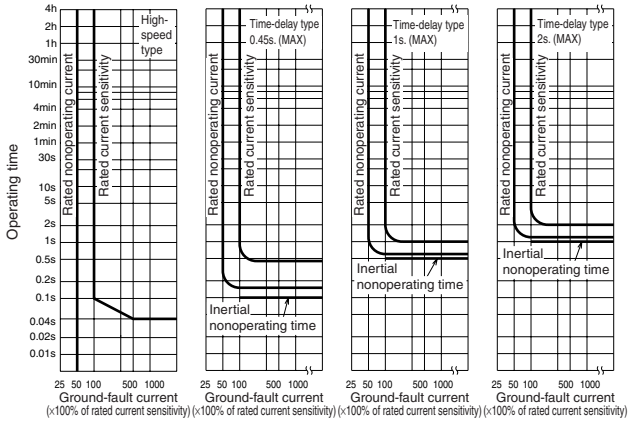
Type NV800-SEW

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) IEC 60947-2 (Icu/Ics) EN 60947-2	AC	440V	42/42	65/65
		400V	50/50	70/70
		230V	85/85	100/100
Standard Attached Parts (Front connection)			Mounting screw: M6×35 (4pcs) Insulation barrier: (2pcs)	

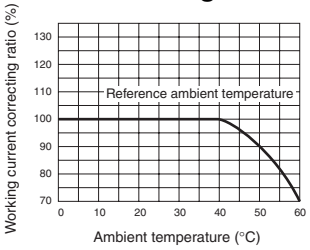
■Operating Characteristics



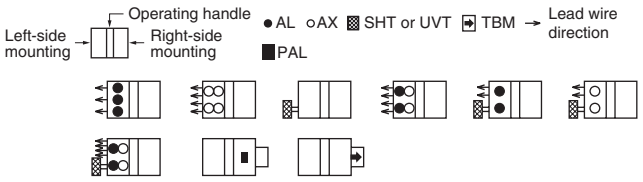
■Earth-Leakage Tripping Characteristics



■Current reducing curve

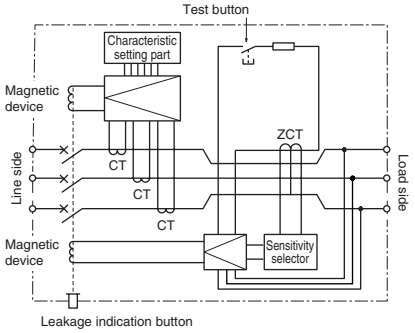


■Internal Accessories



Remark: 1. Instead of TBM, pre-alarm module (PAL) or trip indicator (TI) can be attached.
2. Refer to page 53.

■Internal Wiring Diagram

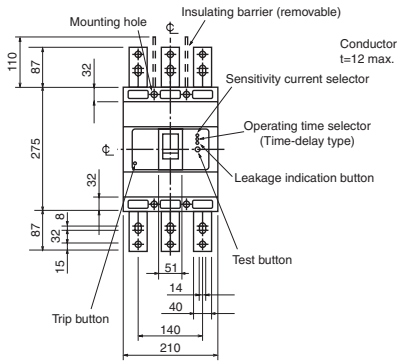


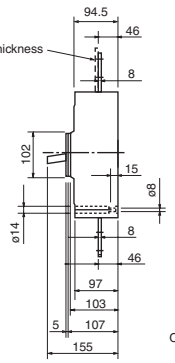
■External Accessories

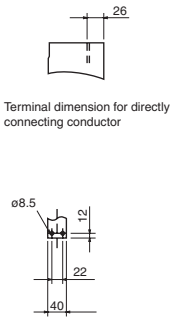
(An order for ☆ should be placed at the same time as an order of circuit breaker main body.)

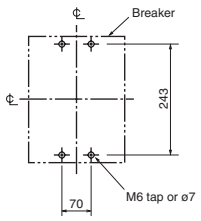
Accessories		Type name	Reference page	Accessories		Type name	Reference page
Operating handle	F	F-8S	62	Terminal cover	Large (TCL-L)	TCL-8SW3	70
	V	V-8S	65		Skeleton (TTC)	TTC-8SW3	
	S	S4SW	68		Rear (BTC)	BTC-8SW3	
Mechanical interlock (MI)		MI-8SW3	79	Handle lock device	HL	HL-4SW	80
					HL-S	HLS-8SW	
Auxiliary handle (HT)		HT-4SW	80	Electrical operation device		☆	71

Front connection

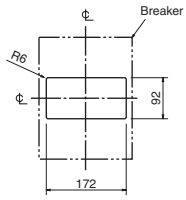








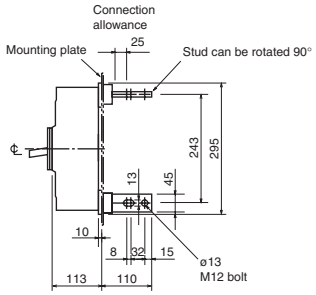
Drilling plan

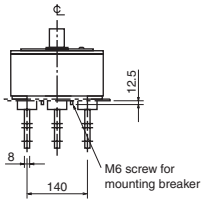


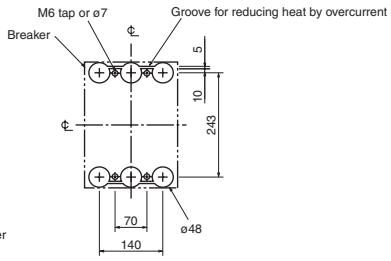
1.0mm clearance on each
side of the handle frame.

Front-panel cutout

Rear connection

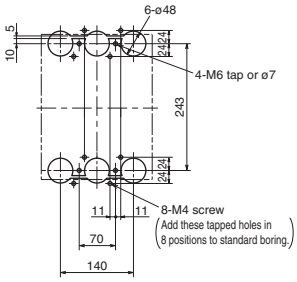






Drilling plan

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



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

6

6. Characteristics and Dimensions

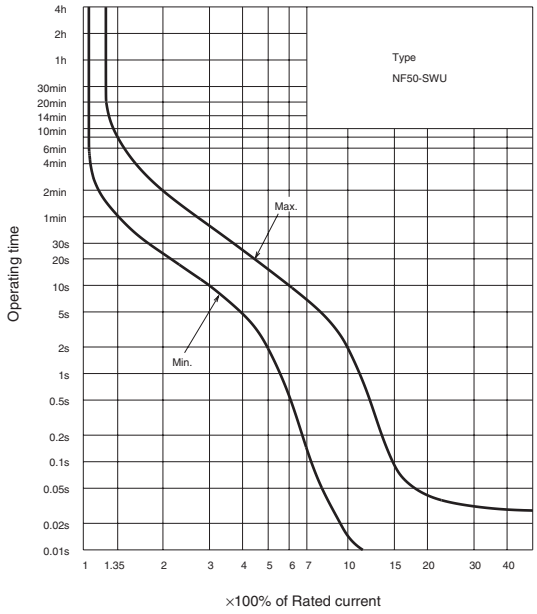
UL489 Listed Molded-Case Circuit Breakers

NF50-SWU

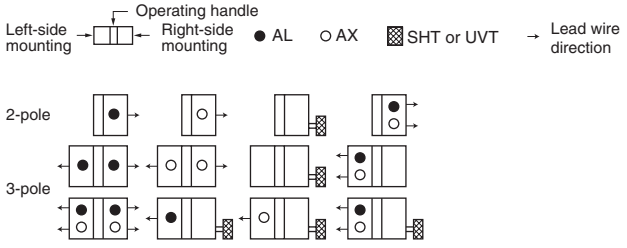
Type NF50-SWU

Type name				NF50-SWU	
Rated current In (Amp.)				(3) 5 10 15 20 30 40 50	
Number of poles				2	3
Rated short-circuit braking capacity (kA)	UL489	Rated voltage (AC V)		240	
		AC	240V	14	
	IEC 60947-2 (Icu/Ics)	Rated insulation voltage Ui (V)		600	
		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)	

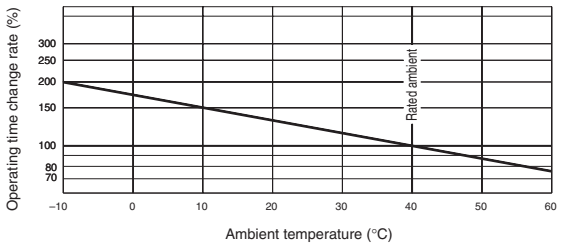
■Operating Characteristics



■Internal Accessories



■Temperature Characteristics

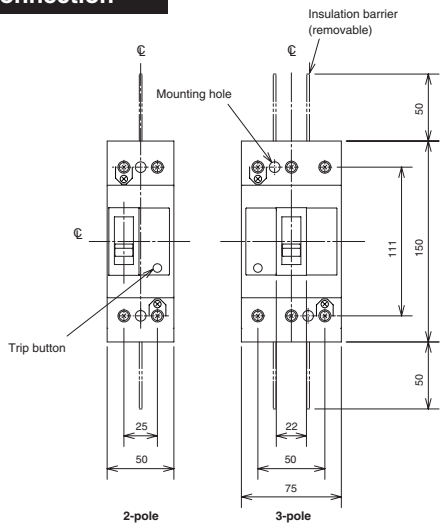


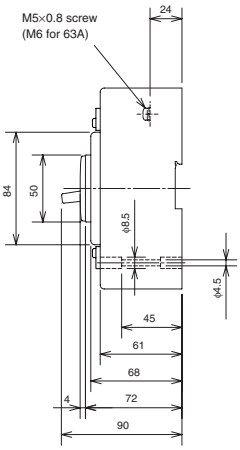
Remark: 1. Refer to page 54.

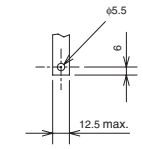
■External Accessories

Accessories		Type name	Accessories			Type name
Operating handle	F	F-05SUL2 F-05SUL	Mechanical interlock		MI	MI-05SWU3
	V	V-05SUL2 V-05SUL	Terminal cover	Large	TC-L	TCL-05SWU2 TCL-05SWU3
	S	S05SWU				
Handle lock device	HL	HLF-05SWU				

Front connection

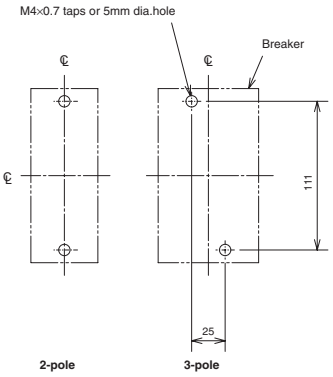




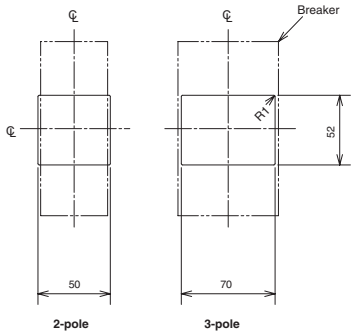


(Conductor thickness
t=5 max.)

Conductor drilling
for direct connection



Drilling plan



1.0mm clearance on each side of
the handle frame.

Front-panel cutout

6

6. Characteristics and Dimensions

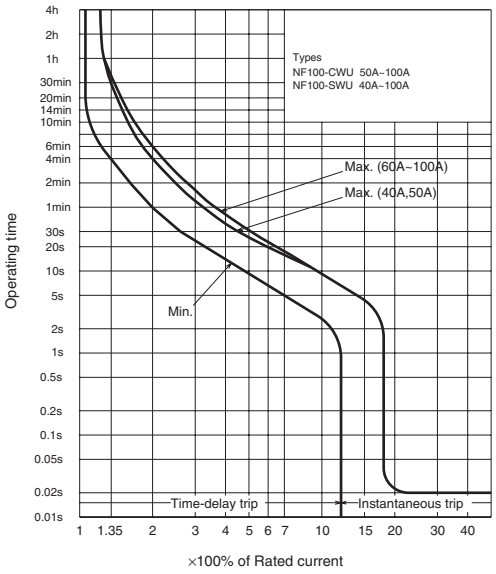
UL489 Listed Molded-Case Circuit Breakers

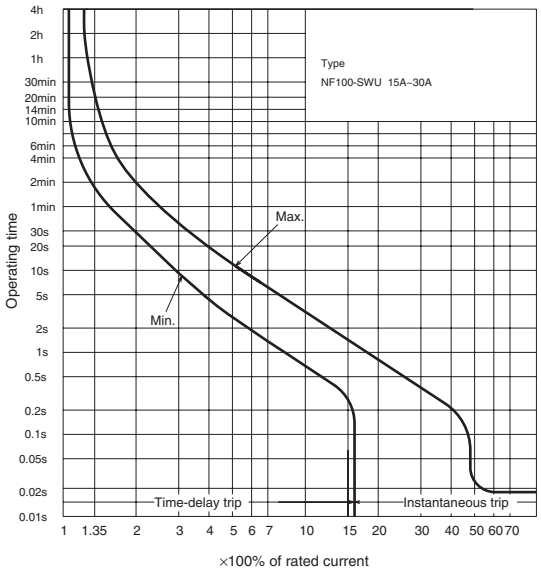
NF100-CWU
NF100-SWU

Type NF100-SWU

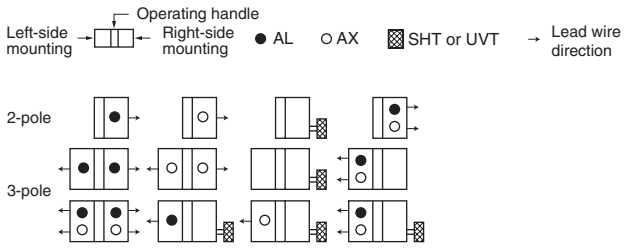
Type name				NF100-CWU	NF100-SWU
Rated current In (Amp.) at ambient temperature 40°C (IEC30°C)				50 60 75 100	15 20 30 40 50 60 75 100
Number of poles				2 3	2 3
Rated short-circuit breaking capacities (kA)	UL 489	Rated voltage (AC V)		240	480Y/277
		AC	480Y/277V	–	22
			240V	10	35
	IEC 60947-2 (Icu/Ics)	Rated insulation voltage Ui (V)		600	690
		AC	690V	–	8/4
			500V	7.5/4	18/9
			440V	10/5	25/13
			400V	10/5	30/15
			230V	30/15	50/25
		DC	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



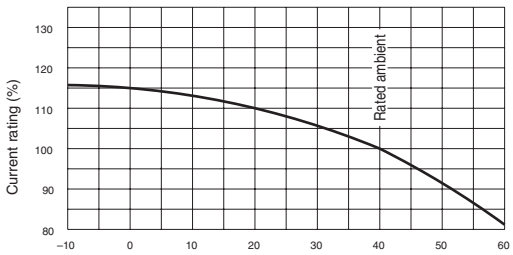


■Internal Accessories



Remark: 1. Refer to page 54.

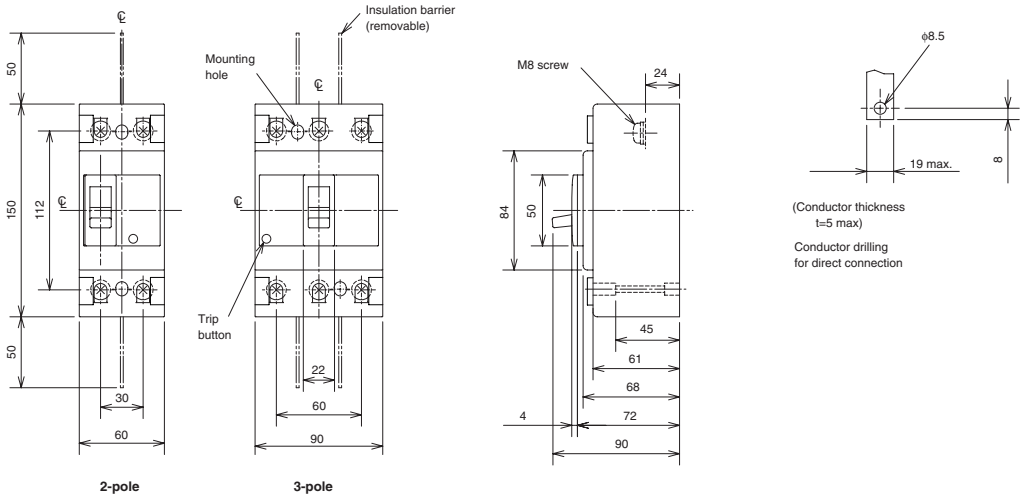
■Ambient Compensating Curve



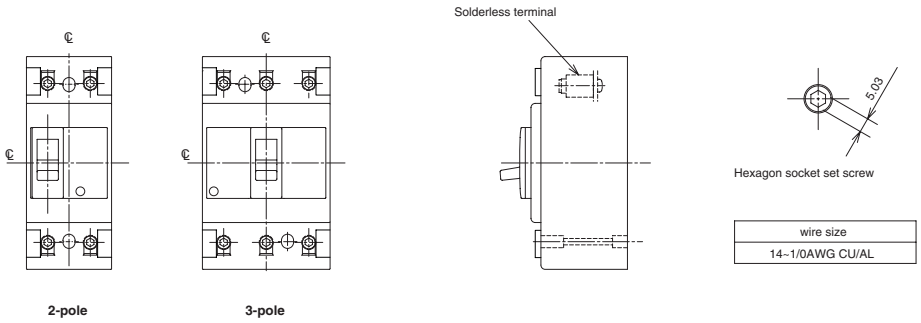
■External Accessories

Accessories		Type name	Accessories			Type name
Operating handle	F	F-1SUL2 F-1SUL	Mechanical interlock		MI	MI-05SWU3
	V	V-1SUL2 V-1SUL	Terminal cover	Large	TC-L	TCL-1SWU2 TCL-1SWU3
	S	S1SWU				
Handle lock device	HL	HLF-1SWU				

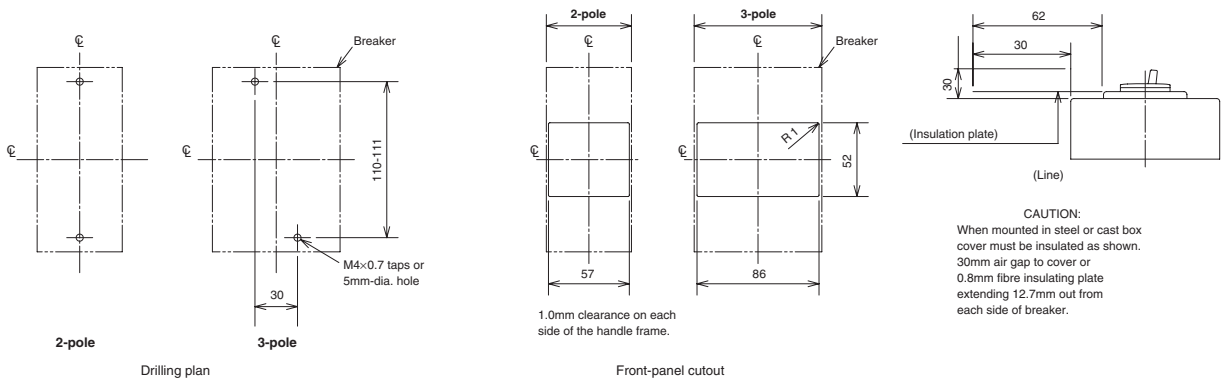
Front connection (Standard)



Front connection (Solderless terminal) (Option)



wire size
14~1/0AWG CU/AL



CAUTION:
When mounted in steel or cast box cover must be insulated as shown. 30mm air gap to cover or 0.8mm fibre insulating plate extending 12.7mm out from each side of breaker.

6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

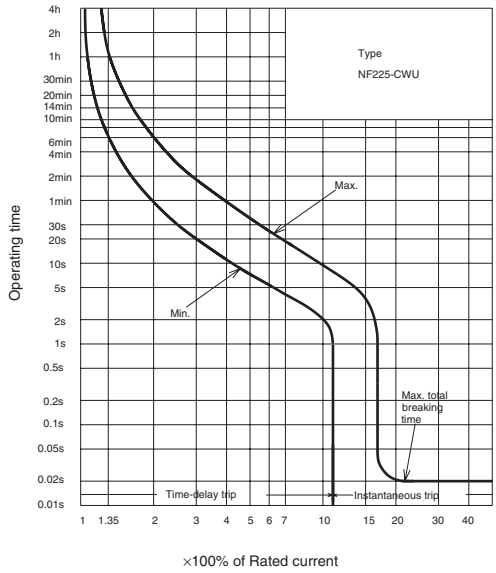
NF225-CWU

Type NF225-CWU

Type name				NF225-CWU
Rated current In (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)		240
		AC	240V	35
	IEC 60947-2 (Icu/Ics)	Rated insulation voltage Ui (V)		600
		AC	500V	10/5
			440V	15/8
			400V	18/9
			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)

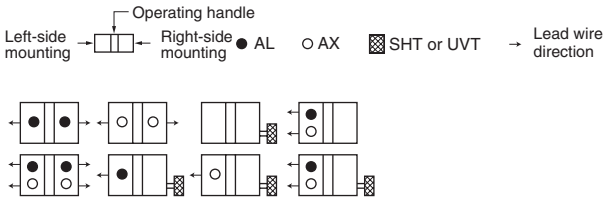
Note (∗1) Use either two poles. When wired as shown at the bottom of page 26, the models can be used for up to 400 V DC.
(∗2) The standard configuration contains a protection cover and adopts the IP20 (finger protection) structure.

■Operating Characteristics



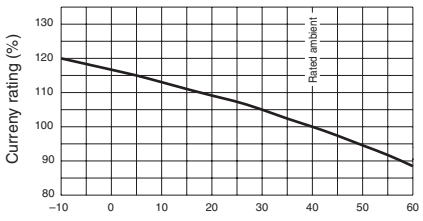
×100% of Rated current

■Internal Accessories



Remark: 1. Refer to page 54.

■Ambient Compensating Curve

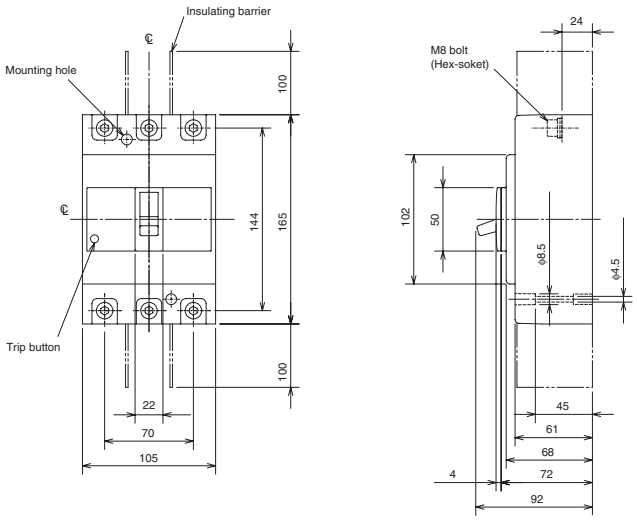


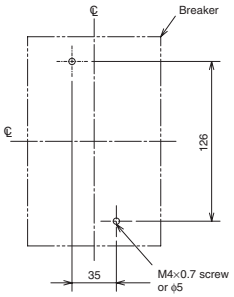
Ambient temperature (°C)
(rated ambient 40°C)

■External Accessories

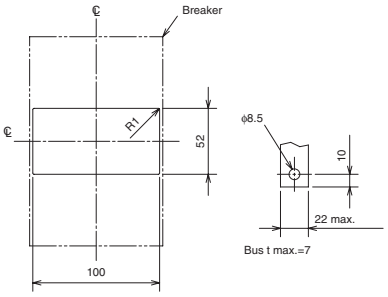
Accessories		Type name	Accessories			Type name
Operating handle	F	F-2SUL	Mechanical interlock		MI	MI-05SWU3
	V	V-2SUL				
	S	S2SWU	Terminal cover	Large	TC-L	TCL-2SWU3
Handle lock device	HL	HLF-2SWU				

Front connection





Drilling plan



Front cover cutout
1mm clearance on
each side of handle

Bus drilling for
direct connection

6

6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

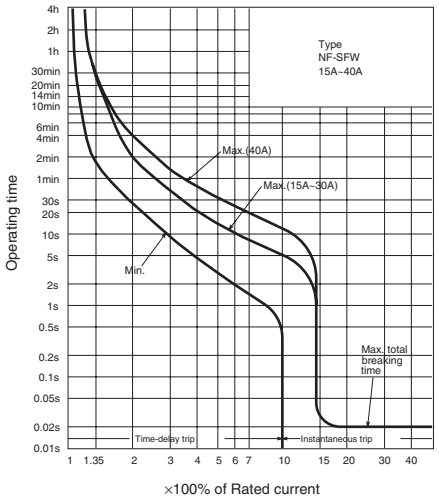
NF-SFW
NF-SJW
NF-HJW

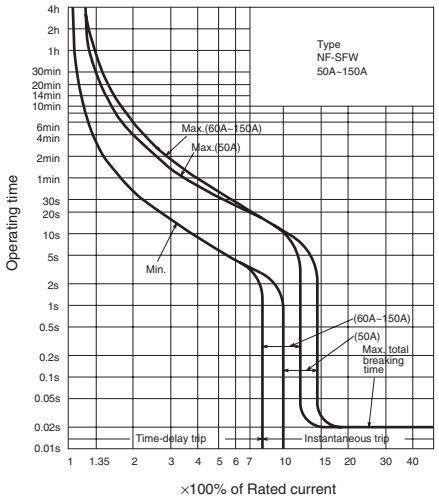
Type NF-SFW

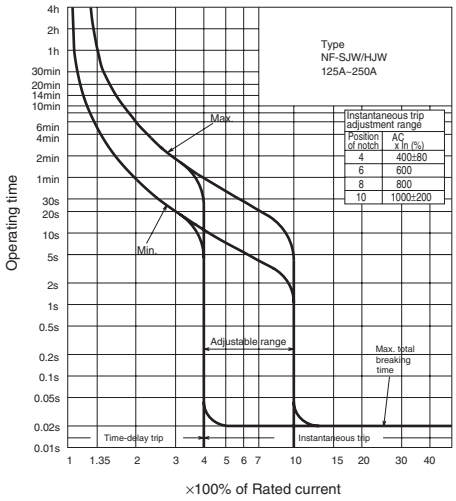
Type name				NF-SFW	NF-SJW	NF-HJW
Rated current In (Amp.) at ambient temperature 40°C (IEC30°C)				15 20 30 40 50 60 70 80 90 100 110 125 150	(125) (150) 175 200 225 250	125 150 175 200 225 250
Number of poles				3	3	3
Rated short-circuit breaking capacities (kA)	UL 489	Rated voltage (AC V)		600Y/347	600Y/347	600Y/347
		AC	600Y/347V	14	14	18
			480V	35	35	50
			240V	65	65	100
	IEC 60947-2 (Icu/Ics)	Rated insulation voltage Ui (V)		690	690	690
		AC	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.

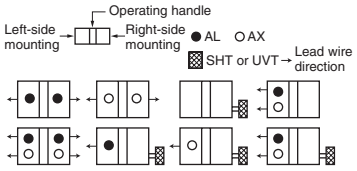
■Operating Characteristics





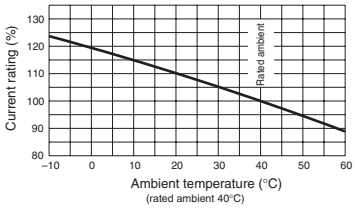


■Internal Accessories



Remark: 1. Refer to page 54.

■Ambient Compensating Curve

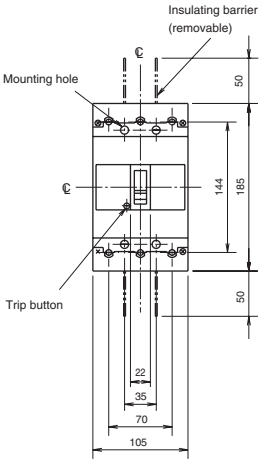


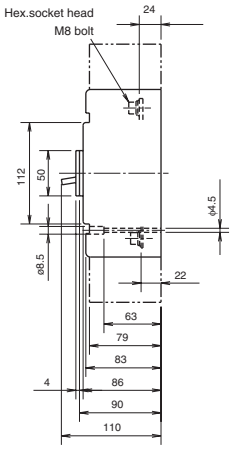
Remark: 1. The reference ambient temperature for IEC models is 30°C.

■External Accessories

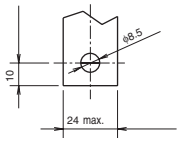
Accessories		Type name	Accessories			Type name
Operating handle	F	F-2SGUL	Mechanical interlock		MI	MI-05SWU3
	V	V-2SGUL				
	S	S2GSWU	Terminal cover	Large	TC-L	TCL-2GSWU3
Handle lock device	HL	HLF-2GSWU				

Front connection (Standard)





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

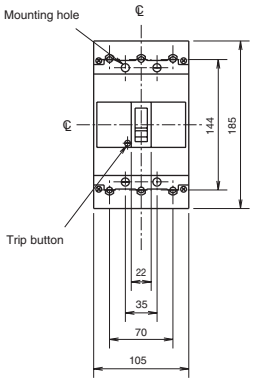


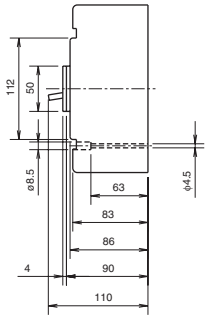
(Conductor thickness t=7max.)

Bus bar drilling for direct connection

4-FRONT

Front connection (Solderless terminal) (Option)

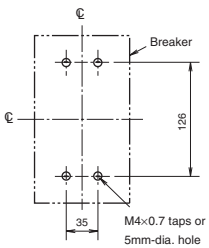




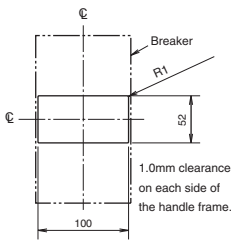
Hexagon socket set screw

Wire size
14AWG-250MCM CU/AL

3-FRONT

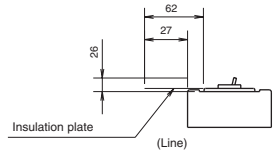


Drilling plan



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 fromeach side of breaker.



5-RIGHT

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

6

6. Characteristics and Dimensions

UL489 Listed Molded-Case Circuit Breakers

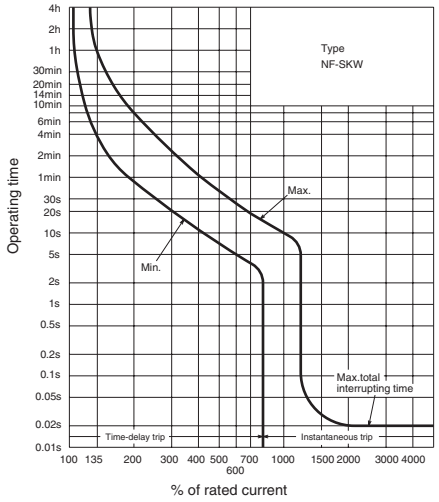
NF-SKW

Type NF-SKW

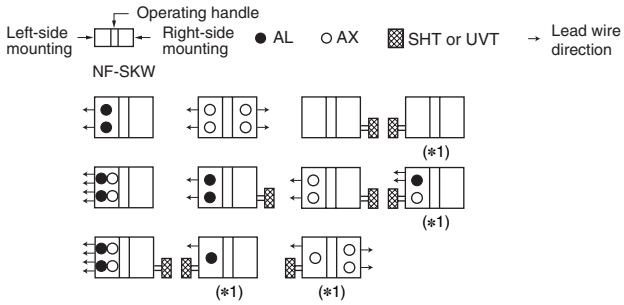
Type name				NF-SKW
Rated current In (Amp.) at ambient temperature 40°C				250 300 350 400
Number of poles				3
Rated short-circuit breaking capacities (kA)	UL 489	Rated voltage (AC V)		600Y/347
		AC	600Y/347V	20
			480V	35
			240V	65
	IEC 60947-2 (Icu/Ics)	Rated insulation voltage Ui (V)		690
		AC	690V	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)

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

■Operating Characteristics



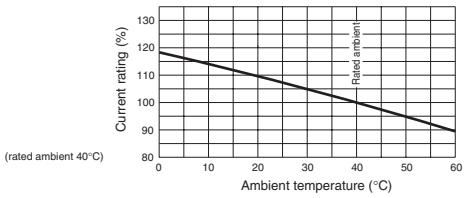
■Internal Accessories



Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separataly for left-side mounting.

Remark: 1. Refer to page 54.

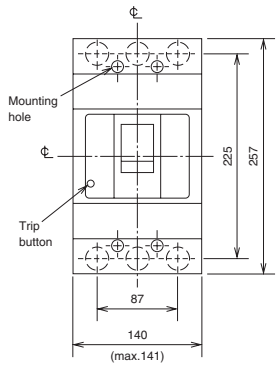
■Ambient Compensating Curve

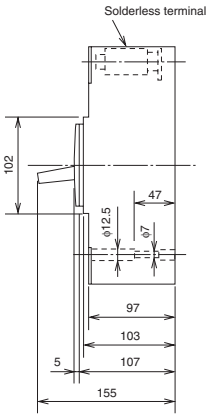


■External Accessories

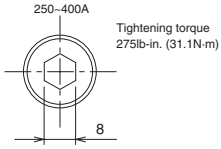
Accessories		Type name	Accessories			Type name
Operating handle	F	F-4SUL	Terminal cover	Large	TC-L	TCL-4SKW
	V	V-4SUL				
	S	S4SKW				
Handle lock device	HL	HL-4SP				

Front connection (Solderless terminal)





Hexagon socket set screw



UL

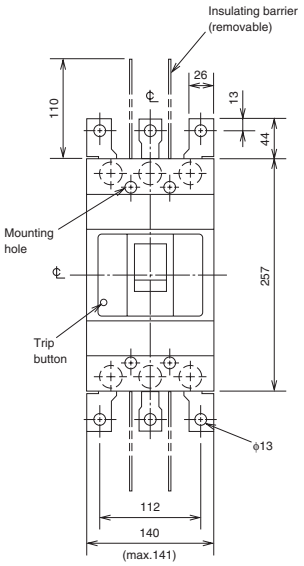
Ampere ratings	Wire size
250A, 300A	250-350MCM CU
250A	350MCM AL
350A, 400A	3/0AWG CU ONLY

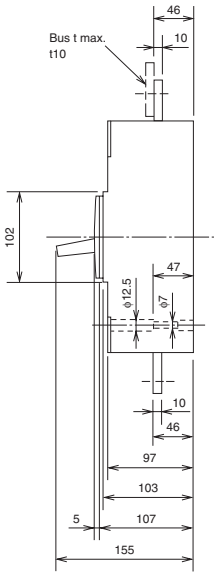
IEC

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

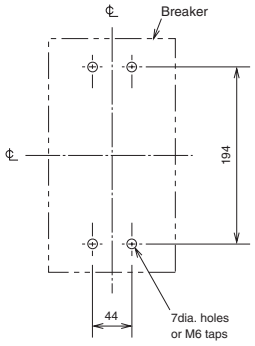
Note: Do not remove solderless terminal in any case.
Standard attached parts
Mounting screw:M6×60 (4pcs), Insulating plate: (1pc)

Front connection (Busbar terminal)

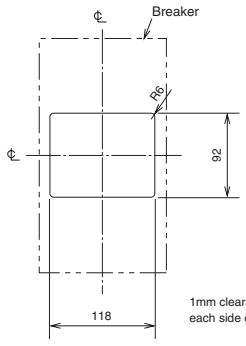




Note: Do not remove busbar terminal in any case.
Standard attached parts
Mounting screw:M6×60 (4pcs), Insulating barrier: (4pcs), Insulating plate: (1pc)



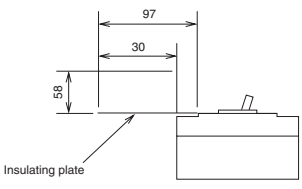
Drilling plan



Front-panel cutout

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

6. Characteristics and Dimensions

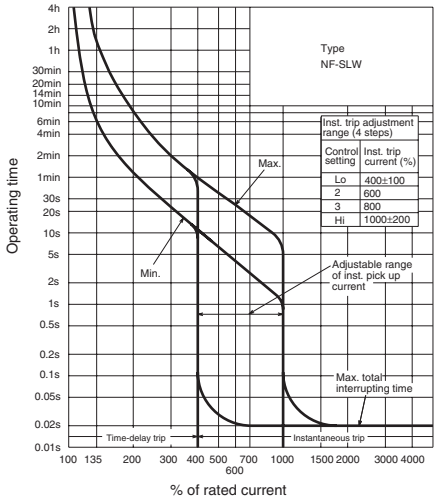
UL489 Listed Molded-Case Circuit Breakers

NF-SLW

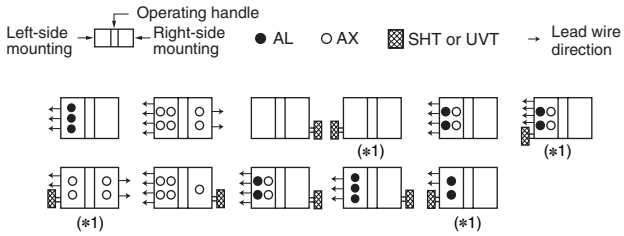
Type NF-SLW

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)		600Y/347
		AC	600Y/347V	20
			480V	35
			240V	85
	IEC 60947-2 (Icu/Ics)	Rated insulation voltage Ui (V)		690
		AC	690V	10/10
			500V	30/30
			440V	42/42
			400V	45/45
			230V	85/85

■Operating Characteristics



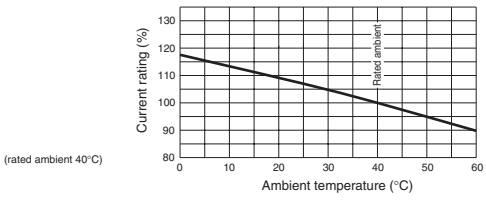
■Internal Accessories



Note (∗1) Right-side mounting is standard of SHT and UVT. Specify separataly for left-side mounting.

Remark: 1. Refer to page 54.

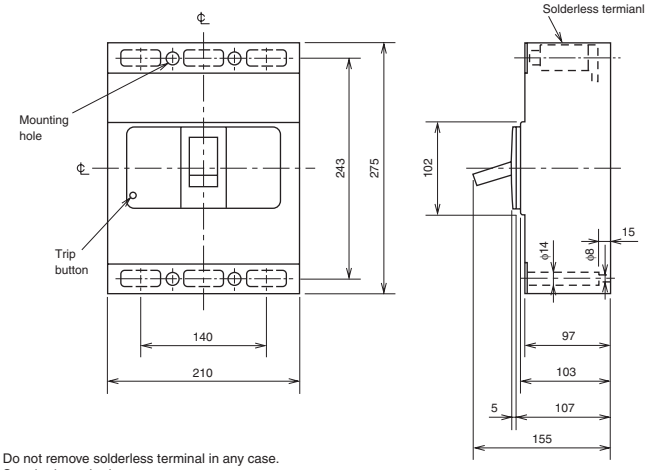
■Ambient Compensating Curve



■External Accessories

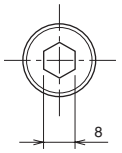
Accessories		Type name	Accessories			Type name
Operating handle	F	F-6SUL	Terminal cover	Large	TC-L	TCL-6SLW
	V	V-6SUL				
	S	S4SKW				
Handle lock device	HL	HL-4SP				

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



Tightening torque
275lb-in. (31.1N·m)

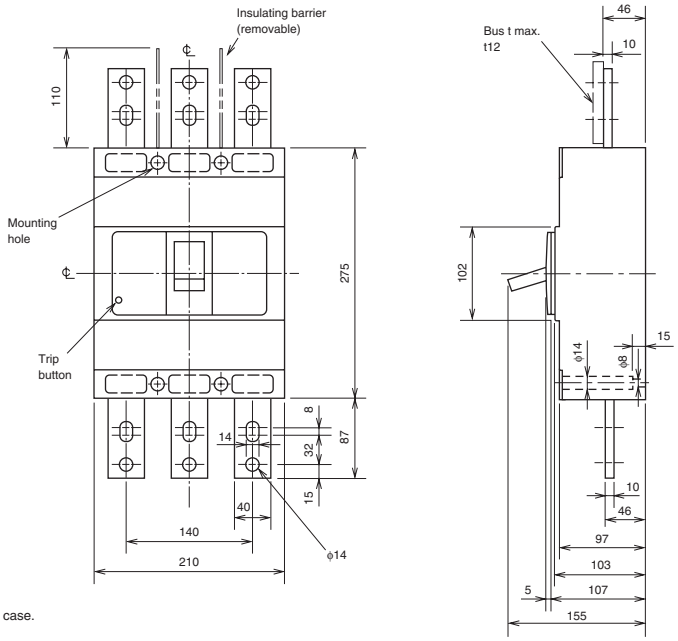
UL

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

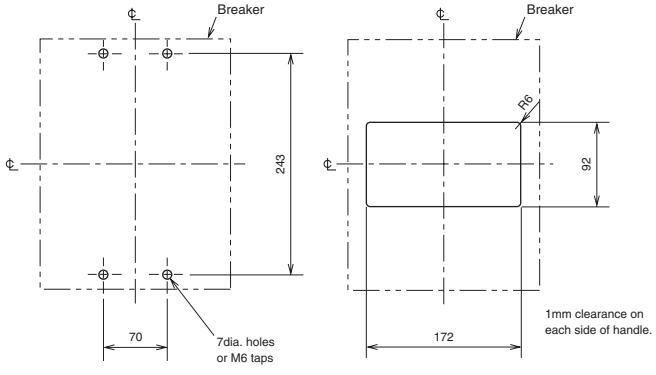
IEC

Ampere ratings	Wire size (IEC 60228)	
	Class 2	Class 5
500A, 600A	95~185mm^2	120~185mm^2

Front connection (Busbar terminal)

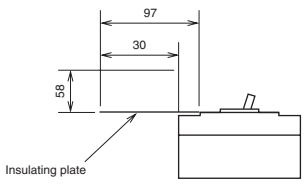


Note: Do not remove busbar terminal in any case.
Standard attached parts
Mounting screw:M6×35 (4pcs), Insulating barrier: (2pcs), Insulating plate: (1pc)



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

6. Characteristics and Dimensions

Miniature Circuit Breakers

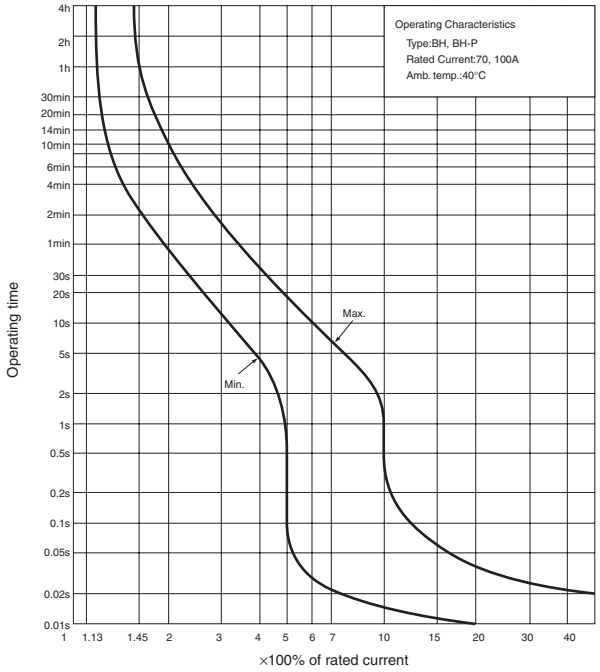
BH
BH-P

Type BH

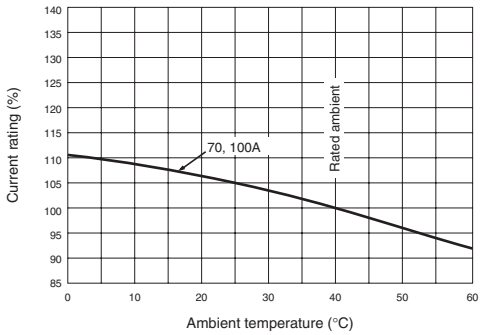
Type BH-P

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			230/400		
		DC	125			125		
Breaking capacity (kA) sym.	IEC 60898	AC230/400V	3	—		3	—	
		AC400V	—	3		—	3	
	—	DC125V	1			1		

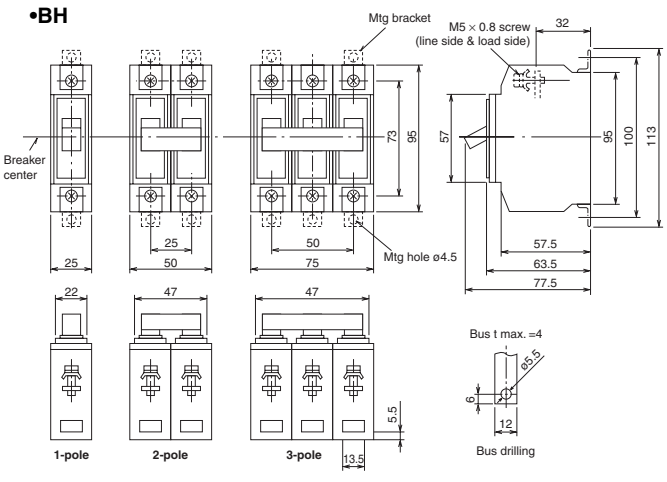
■Operating Characteristics

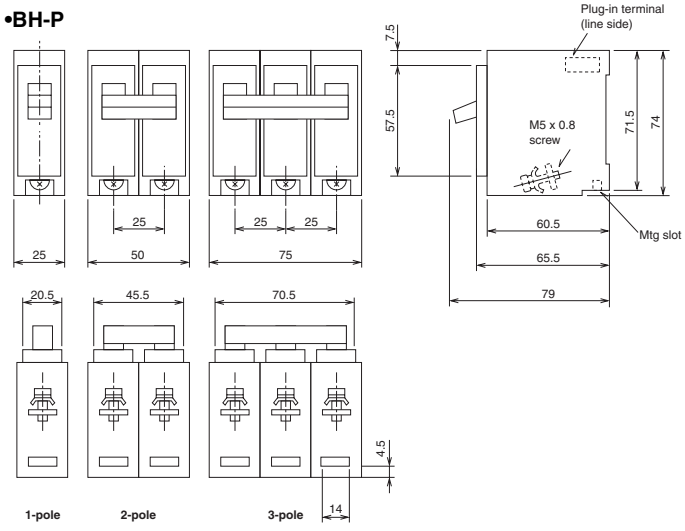


■Ambient Compensating Curve



■Outside Dimension Diagram





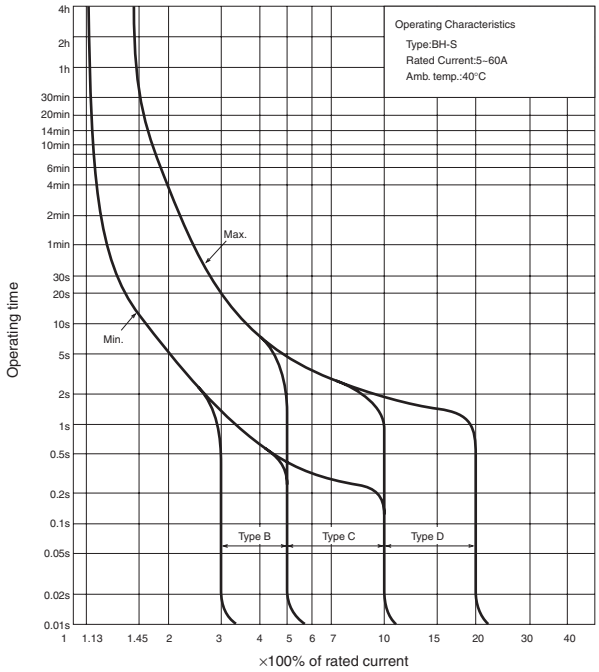
Note: Two mounting brackets are used for single-pole breakers.
and four for two-pole and three-pole breakers.

BH-S

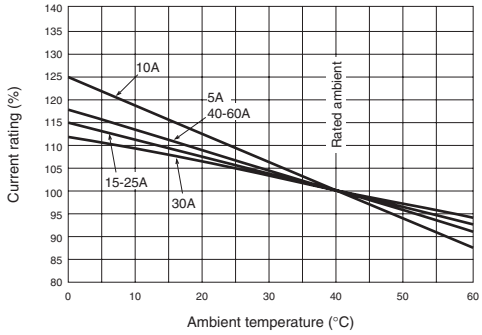
Type BH-S

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	400	400	230/400	400	400
		DC	—	125	—	—	125	—
Breaking capacity (kA) sym.	IEC 60898	AC230/400V	3	—		6	—	
		AC400V	—	3		—	6	
	—	DC125V	—	1	—	—	1	—

■Operating Characteristics

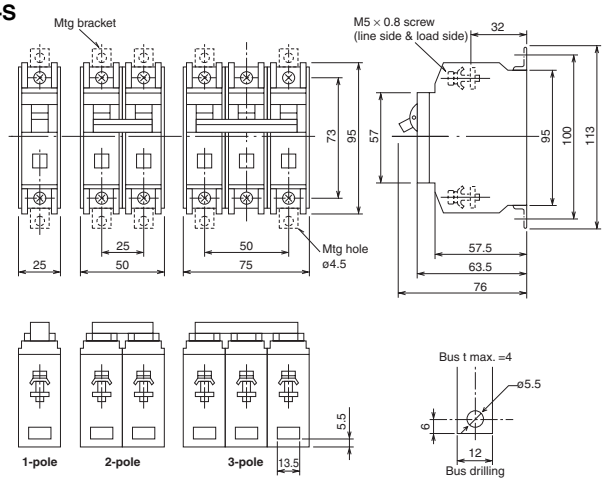


■Ambient Compensating Curve



■Outside Dimension Diagram

•BH-S



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

6

6. Characteristics and Dimensions

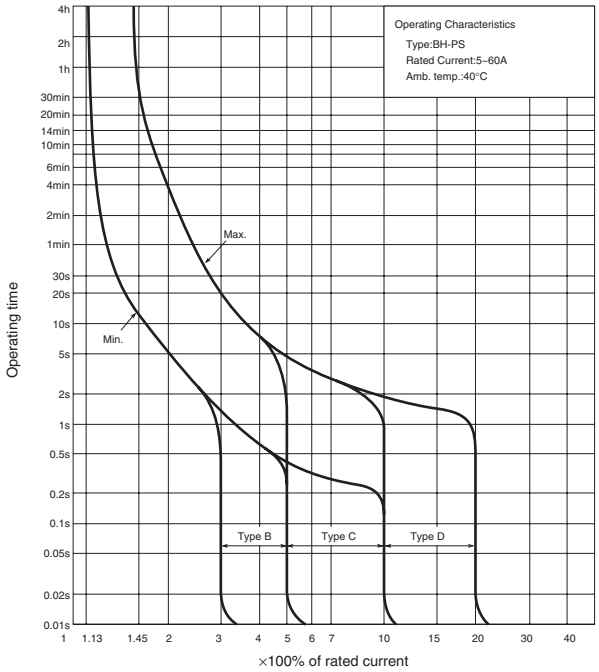
Miniature Circuit Breakers

BH-PS

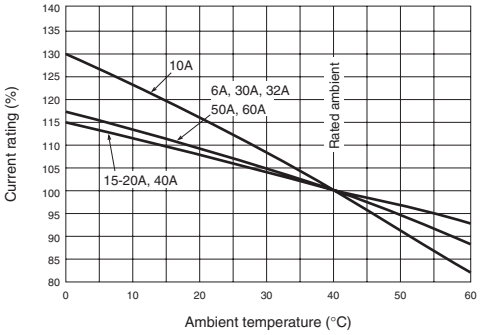
Type BH-PS

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	400
		DC	—	125	—	—		
Breaking capacity (kA) sym.	IEC 60898	AC230/400V	3	—		9	—	
		AC400V	—	3		—	9	
	—	DC125V	—	1	—	—		

■Operating Characteristics

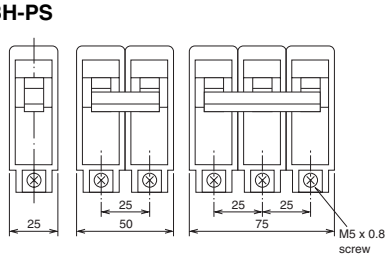


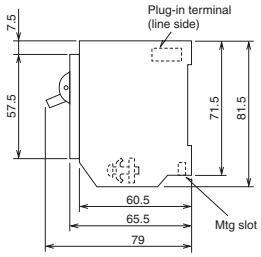
■Ambient Compensating Curve

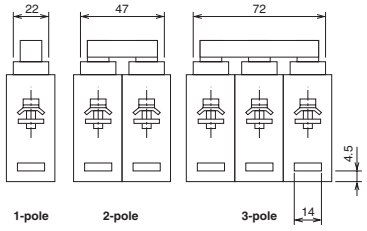


■Outside Dimension Diagram

•BH-PS





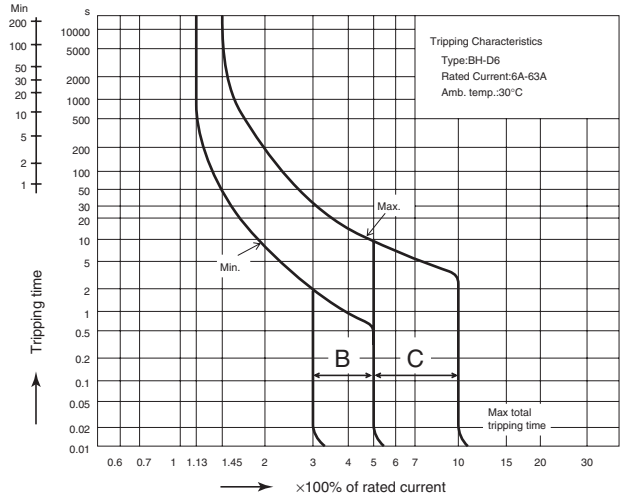


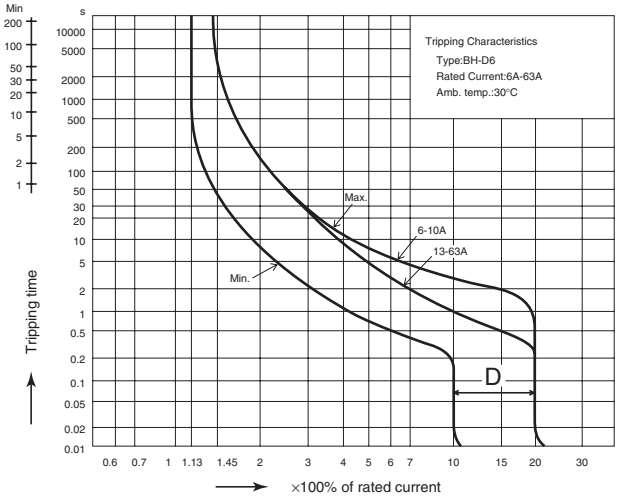
BH-D6

MCB	BH-D6 (IEC 60898)				
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. (IEC 60898)	6				

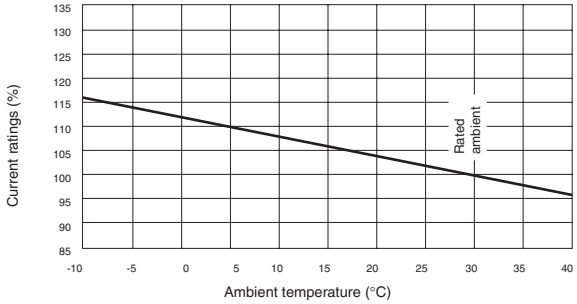
Type BH-D6

■Operating Characteristics



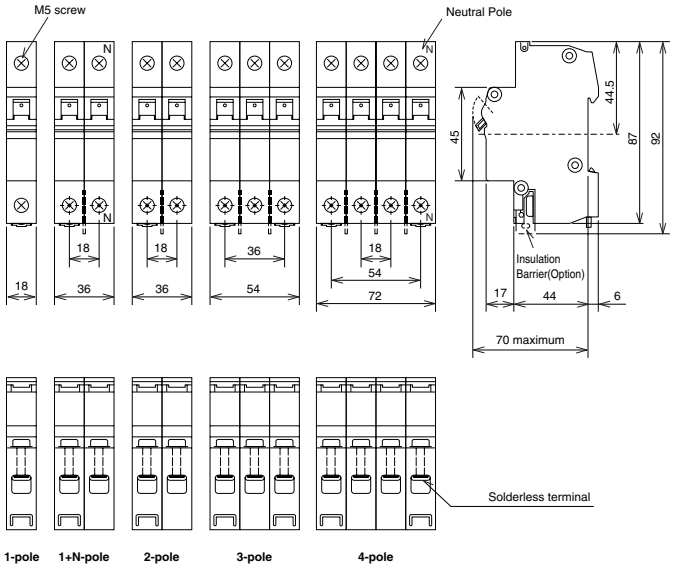


■Ambient Compensating Curve



■Outside Dimension Diagram

•BH-D6



6

6. Characteristics and Dimensions

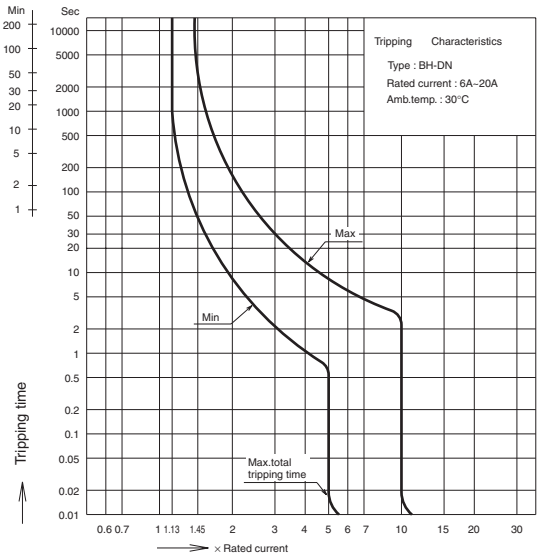
DIN Series

BH-DN

Type BH-DN

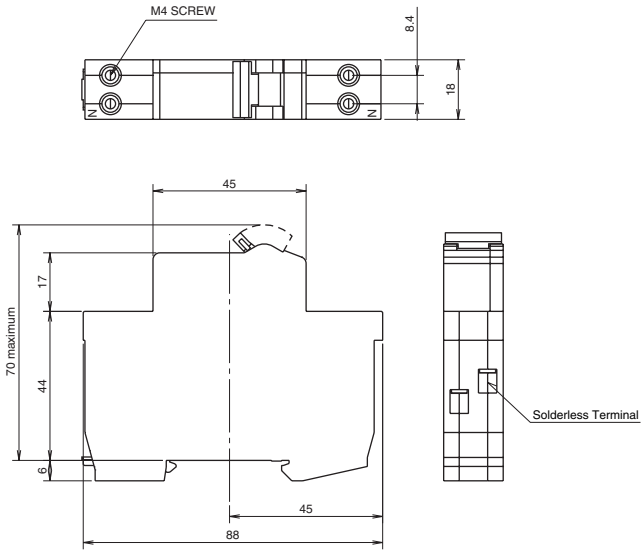
MCB	BH-DN (IEC 60898)
Number of poles	2 (1+N)
Rated current (A) at ambient temperature 30°C	6, 10, 16, 20
Rated voltage (VAC)	230
Breaking capacity (kA) sym. (IEC 60898)	4.5

■Operating Characteristics



■Outside Dimension Diagram

•BH-DN

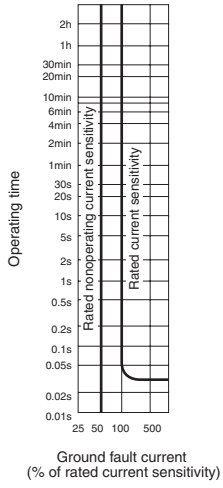


BV-D

Type BV-D

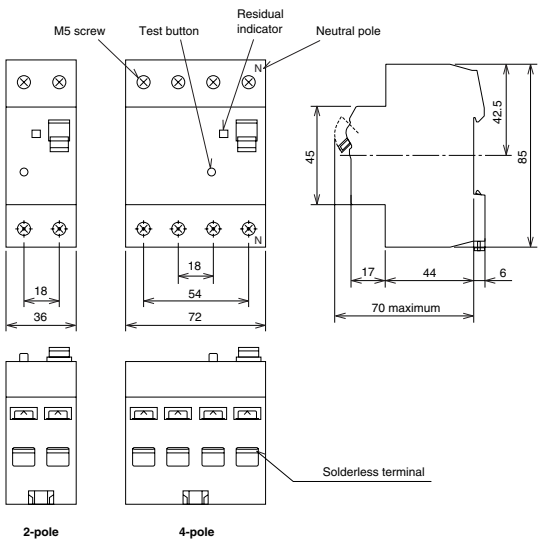
RCCB	BV-D (IEC 61008)	
Number of poles	2 (1+N)	4 (3+N)
Rated current (A) at ambient temperature 30°C	25, 40, 63	
Rated voltage (VAC)	230	230/400
Rated current sensitivity IΔn (mA)	30, 300	
Max. operating time (sec) at 5IΔ	0.04	
Pulsating current sensitivity	Type AC	
Rated conditional short-cirrent (kA)	6	

■Operating Characteristics



■Outside Dimension Diagram

•BV-D



6

6. Characteristics and Dimensions

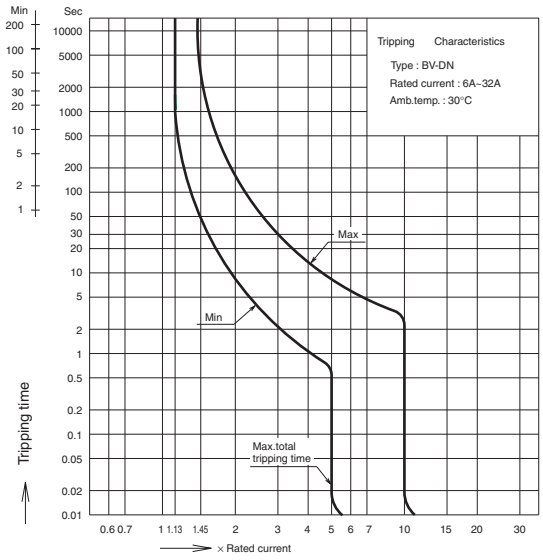
DIN Series

BV-DN

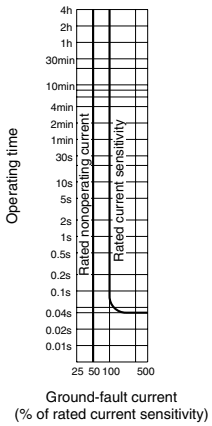
Type BV-DN

RCBO	BV-DN (IEC 61009)
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 (sec) at 5IΔn	0.04
Pulsating current sensitivity	Type AC
Breaking capacity (kA) sym (IEC 61009)	4.5

■Operating Characteristics

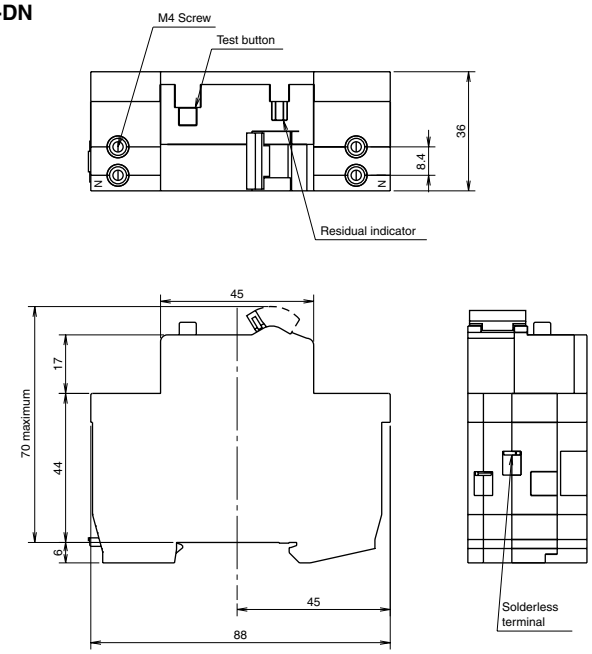


■Leakage Tripping characteristics



■Outside Dimension Diagram

•BV-DN



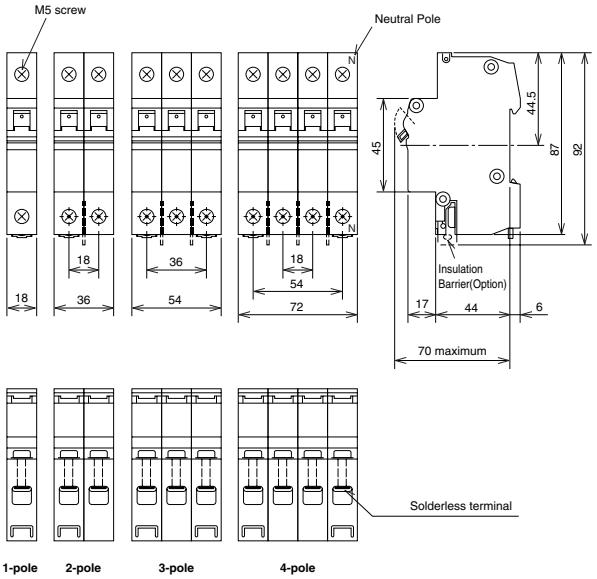
KB-D

Type KB-D

Isolating switch	KB-D (IEC 60947-3)			
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 × In, 1s			
Shot-circuit making capacity (A)	20 × In			

■Outside Dimension Diagram

•KB-D



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6. Characteristics and Dimensions

Circuit Protectors

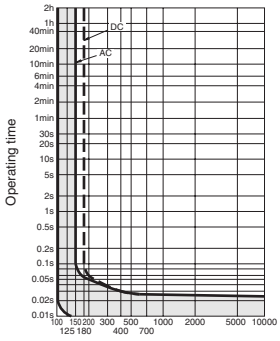
CP30-BA

Type CP30-BA

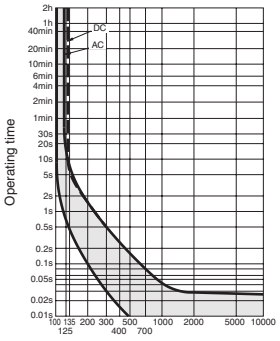
Frame (A)				30		
Type				CP30-BA		
Number of poles				1	2	3
Rated impulse withstand voltage Uimp (kV)				2.5		
Rated current (A)				0.1, 0.25, 0.3, 0.5, 1, 2, 3, 5, 7, 10,15, 20, 30		
Rated short-circuit capacity (kA)	UL 1077 CSA C22.2 No.235	Rated voltage (V)	AC (V)	250		
			DC (V)	65	125	—
		AC		2.5kA at 250V		
		DC		2.5kA at 65V	2.5kA at 125V	—
	IEC 60934 EN 60934 GB 17701 JIS C 4610	Rated insulation voltage Ui (V)		250		
		AC		2.5kA at 230V		
		DC		2.5kA at 60V	2.5kA at 120V	—
	EN 60947-2 IEC 60947-2 JIS C 8201-2-1 Annl (Icu/Ics)	Rated insulation voltage Ui (V)		250		
		AC		2.5/2.5kA at 230V		
		DC		2.5/2.5kA at 60V	2.5/2.5kA at 120V	—
AC-DC common use				●		—
Operating characteristics				Instantaneous type (I) Medium type (M),(MD) Slow type (S),(SD) Fast type (F)		
Mode of tripping				Instantaneous type (I): magnetic only Other type (M, MD, S, SD, F):hydraulic-magnetic		

■Operating Characteristics

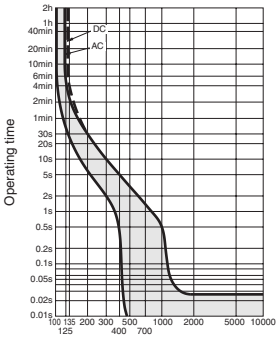
Instantaneous type (I)



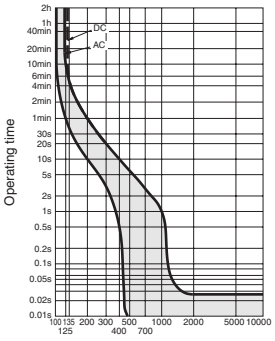
Fast type (F)



Medium type (M)

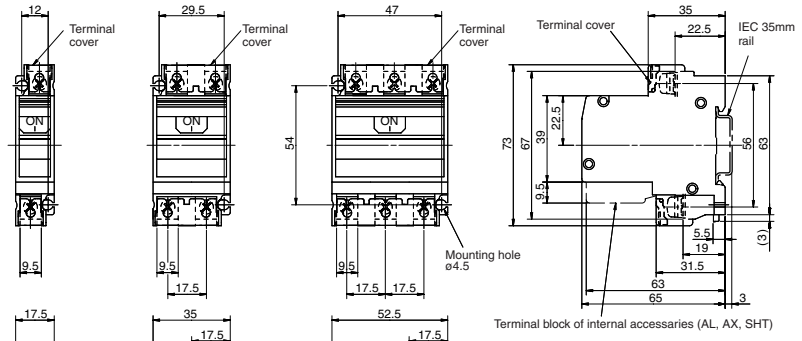


Slow type (S)

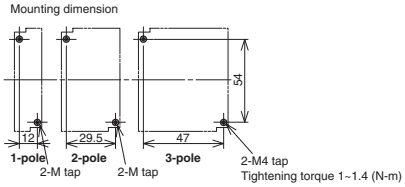


■Outside Dimension Diagram

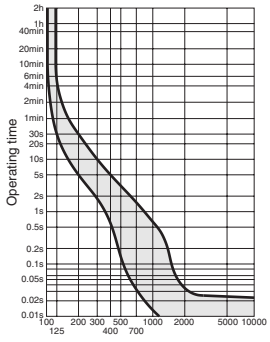
•CP30-BA



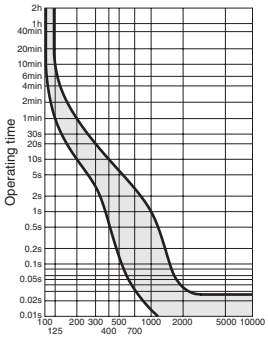
Mounting dimension



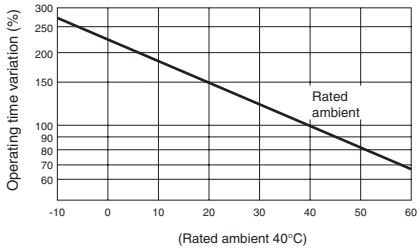
Medium type with inertial delay (MD)



Slow type with inertial delay (SD)



■Temperature Characteristics

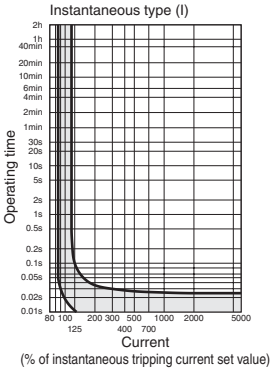


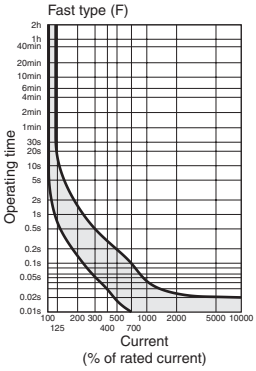
CP-S

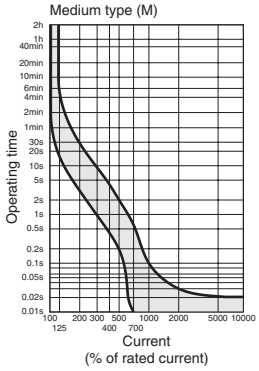
Type CP-S

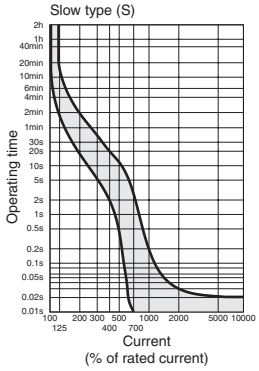
Frame (A)				30		
Type				CP-S		
Number of poles				1	2	3
Rated impulse withstand voltage Uimp (kV)				2.5		
Rated current (A)				0.05, 0.1, 0.25, 0.3, 0.5, 0.75 1, 2, 2.5, 3, 5, 7, 7.5, 10,15, 20, 25, 30		
Rated short-circuit capacity (kA)	UL 1077	Rated voltage (V)	AC (V)	250	—	
			DC (V)	65	—	
		AC		1.5kA at 250V	—	
		DC		1kA at 65V	—	
	IEC 60934 EN 60934 (Icn)	Rated insulation voltage Ui (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 Ui (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		

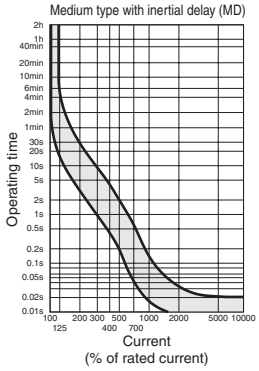
■Operating Characteristics

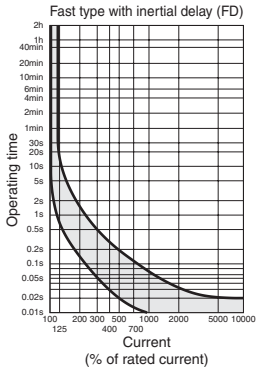


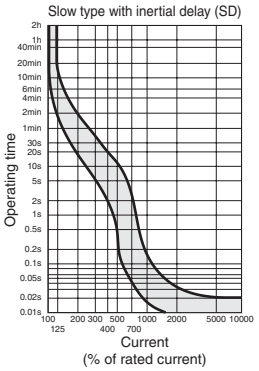








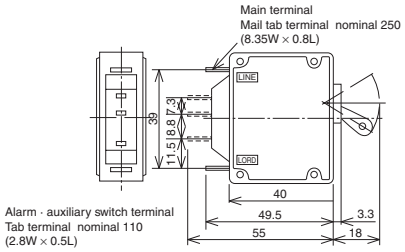


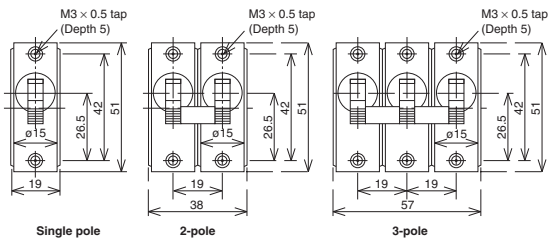


■Outside Dimension Diagram

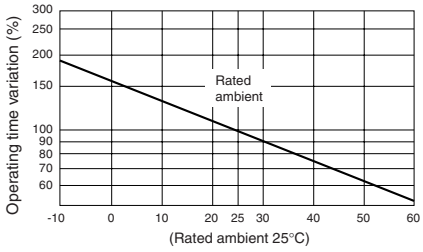
•CP-S

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





■Temperature Characteristics



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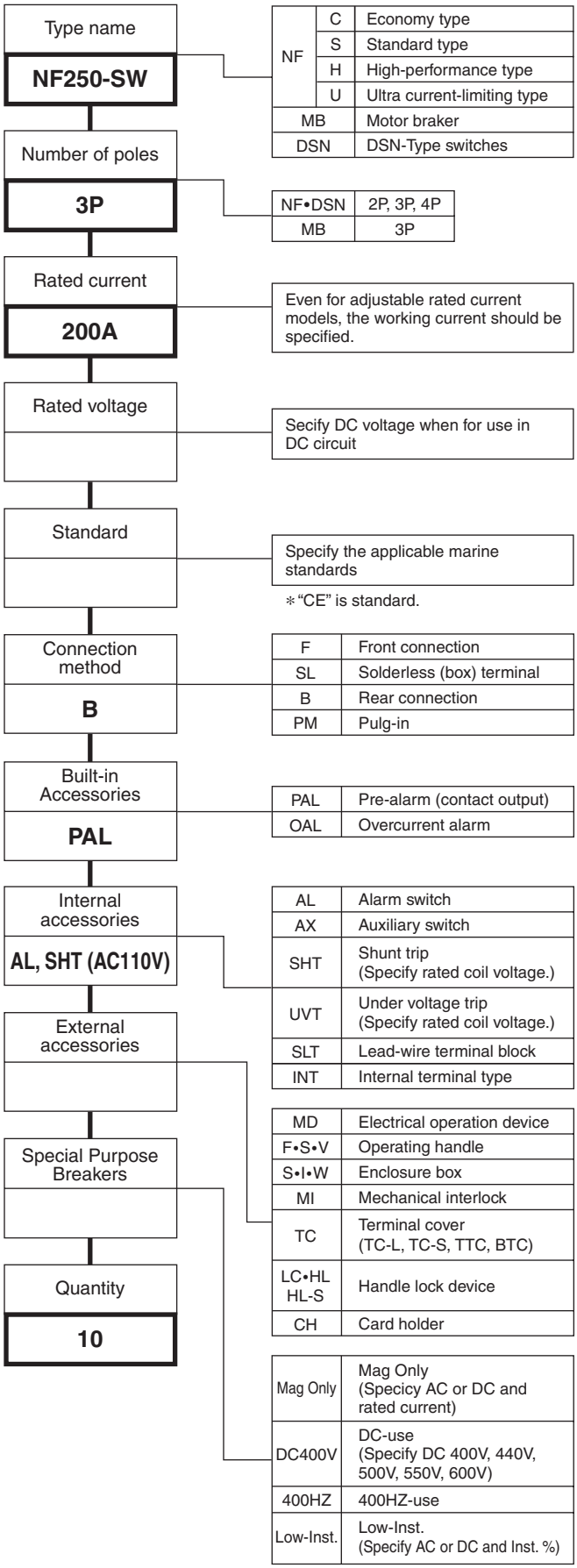
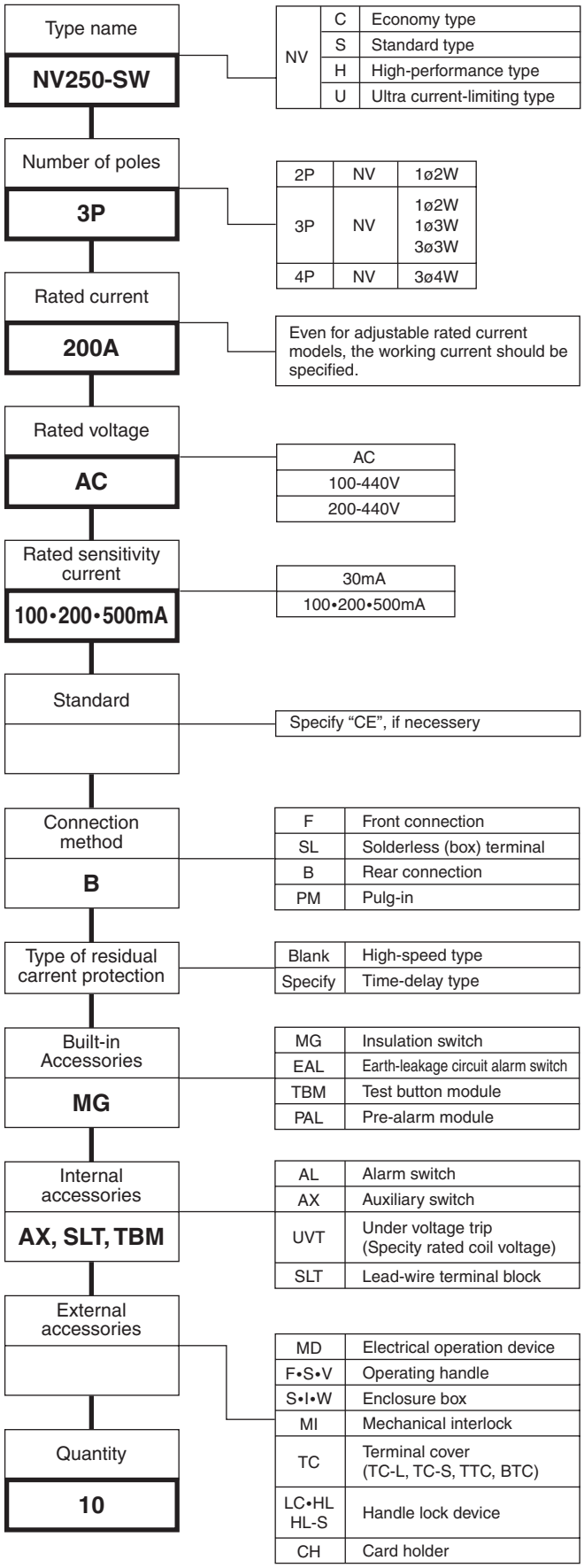
7. Ordering Information

Molded-Case Circuit Breakers



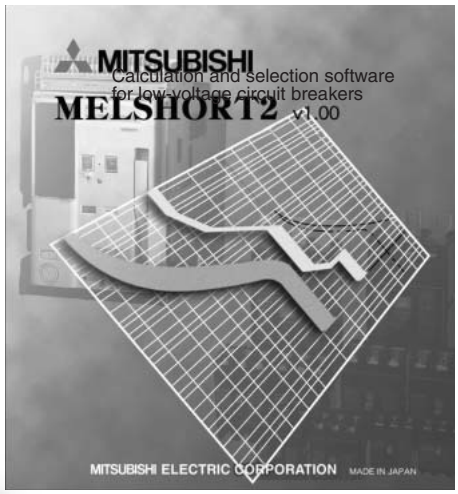
Earth-Leakage Circuit Breakers

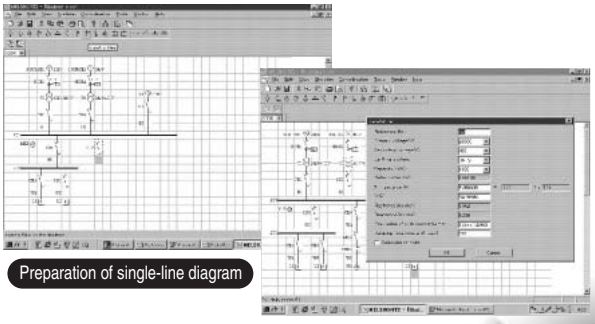


8. Melshort 2

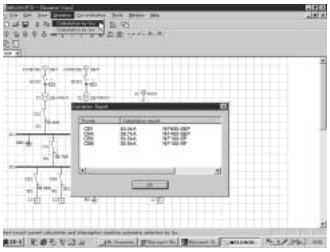
A Smarter, Easier Way to Select Breakers

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

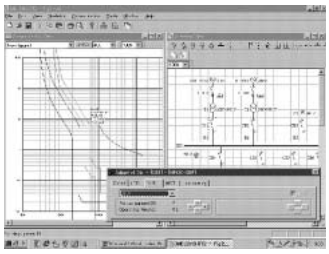




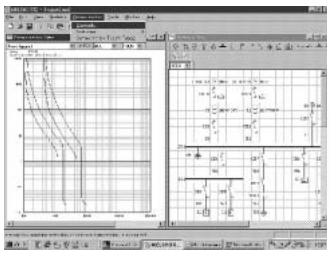
Preparation of single-line diagram



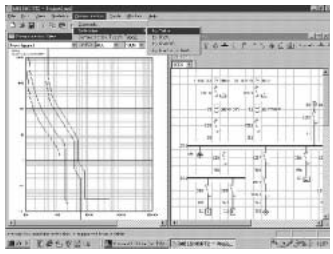
Short-circuit current calculation



Coodination between high-voltage protection equipments



Examination of cascade interruption combination



Examination of selective interraption

Advantages

●Contents

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 equipment.
- ●Protection coordination with motor start current.

●Selection Efficiency Improved

Simple, accurate and fast operation is ensured as a result of being able to examine the coordination between various protection systems, and being able to select breakers interactively on the screen.

●Software Updates

Users can download the latest software updates by accessing Mitsubishi's LVS home page.

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

■Products Menu

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

■Computer Requirements

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: 2x or higher

Changes for the Better

MITSUBISHI ELECTRIC

www.MitsubishiElectric.co.jp/haisei/lvs/

Introducing a New Look…

Low-voltage Products Website Renewed

— Easier to Navigate, More Information Available —

Whether you are looking for information on high-performance power distribution/protection systems and energy-saving support equipment or simply interested in one of our many low-voltage power control products, we've made things easier for you to find. The website is now organized to provide enhanced usability for customers, and the latest information on our low-voltage products and systems. Please be sure to visit, check out our new look, and bookmark the site for future reference.

Four Key Features

1 Product Information

Based on past customer requests, we've increased the content to include a full product line-up, product specifications and relevant CAD data. The Products pages are divided into two categories:

Low-voltage Circuit Breakers

World Super (WS) Series Next-generation Circuit Breakers (ACBs, MCCBs, ELCBs and MCBs)

Energy Measuring Devices

New S Series Multi-measuring Instruments, EcoMonitorPro Energy Measuring Unit

2 Downloads

The latest catalogs, information on certifications acquired, handling and maintenance information, and technical notes can all be downloaded free of charge. We've organized the information for maximum customer convenience, and will be updating the contents penodically.

3 News

Check here for the latest, up-to-date news on Mitsubishi Electric products such as new product releases and changes in specifications.

4 Support

Our interest is to serve you! Please contact us whenever you have a question or are in need of support. We'll reply at the earliest possible time. Committed to supporting our customers' businesses, we also provide information through Mitsubishi Electric's global network.

Empowering Industries

INFORMATION SERVICE VIA THE INTERNET

Product Line-up

Mitsubishi Electric manufactures intelligent high-performance low-voltage products that are renowned for their high reliability. Each product page provides product details and other information required to help you make the right decision, as well as links to other pages of related interest, such as downloadable catalogs and product certifications.

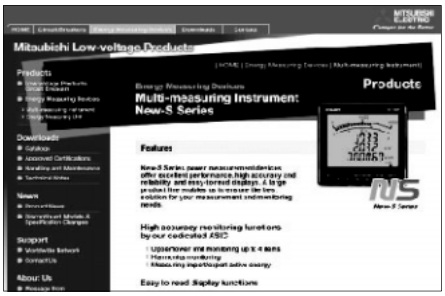
Low-voltage Products

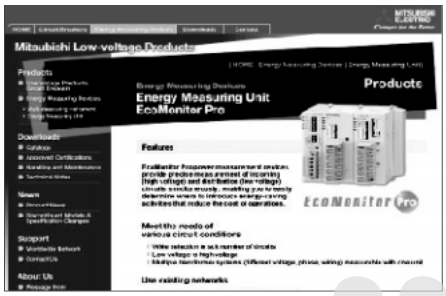
Circuit Breakers

- Air Circuit Breakers (ACB)
- Molded-case Circuit Breakers (MCCB)
- Earth-leakage Circuit Breakers (ELCB)
- Miniature Circuit Breakers (MCB)
- Measuring Display Unit Breakers
- UL-listed Products
- Circuit Protectors
- Motor Protection Breakers

Energy Measuring Devices

- Multi-measuring Instrument
- Energy Measuring Unit

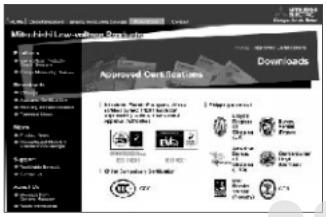




Downloads

Download useful product information in PDF format whenever you need it.

- Catalogs
- Approved certifications
- Handling and maintenance
- Technical notes



About Us

The outstanding technological expertise of the Fukuyama Works has led to its recognition as a leader in the field of power distribution control equipment. These pages provide various information on the works, including our history and manufacturing facilities.

Related Websites

Mitsubishi Electric offers a variety of FA products and systems.
For further information, please visit the Mitsubishi Electric Global Website at:

Global.MitsubishiElectric.com

MEMO

Service network

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Colombia	Proelectrico Representaciones S.A.	Carrera 53 No 29C-73 - Medellin, Colombia	+57-4-235-30-38
Egypt	Cairo Electrical Group	9, Rostoum St. Garden City P.O. Box 165-11516 Maglis El-Shaab, Cairo - Egypt	+20-2-27961337
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Laos	Societe Lao Import Co., Ltd.	43-47 Lane Xang Road P.O. BOX 2789 VT Vientiane Laos	+856-21-215043
Lebanon	Comptoir d'Electricite Generale-Liban	Cebaco Center - Block A Autostrade Dora, P.O. Box 11-2597 Beirut - Lebanon	+961-1-240445
Malaysia	Mittric Sdn Bhd	5 Jalan Pemberita U1/49, Temasya Industrial Park, Glenmarie 40150 Shah Alam, Selangor, Malaysia	+603-5569-3748
Myanmer	Peace Myanmar Electric Co.,Ltd.	NO137/139 Botataung Pagoda Road, Botataung Town Ship 11161, Yangon, Myanmar	+95-(0)1-202589
Nepal	Watt&Volt House	KHA 2-65, Volt House Dillibazar Post Box:2108, Kathmandu, Nepal	+977-1-4411330
Other Middle East Arab Countries & Cyprus	Comptoir d'Electricite Generale-International-S.A.L.	Cebaco Center - Block A Autostrade Dora P.O. Box 11-1314 Beirut - Lebanon	+961-1-240430
Pakistan	Prince Electric Co.	1&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)2-634-8691
Saudi Arabia	Center of Electrical Goods	Al-Shuwayer St. Side way of Salahuddin Al-Ayoubi St. P.O. Box 15955 Riyadh 11454 - Saudi Arabia	+966-1-4770149
South Africa	CBI-electric: low voltage	Private Bag 2016, Isando, 1600, South Africa	+27-(0)11-9282000
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Safety Tips : Be sure to read the instruction manual fully before using this product.

MITSUBISHI ELECTRIC CORPORATION
FACTORY AUTOMATION SYSTEM: TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

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