



**MITSUBISHI
ELECTRIC**

Molded-case Circuit Breakers
Earth-leakage Circuit Breakers

Changes for the Better

World Super WS-V

Mitsubishi Molded-case Circuit Breakers and Earth-leakage Circuit Breakers



11
A

**Empowering
Industries**

for a greener tomorrow



INDEX

This document is intended for those having electrical knowledge and expertise, such as those using these products for manufacturing assemblies, carrying out electrical installation, maintenance and inspection, including the operators (end users) of these products.

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Note

This document describes the product specifications for selecting an appropriate low-voltage circuit breaker. A separate document "Handling and Maintenance" describing the operating instructions in detail. Please be sure to request a copy for using the selected product correctly.

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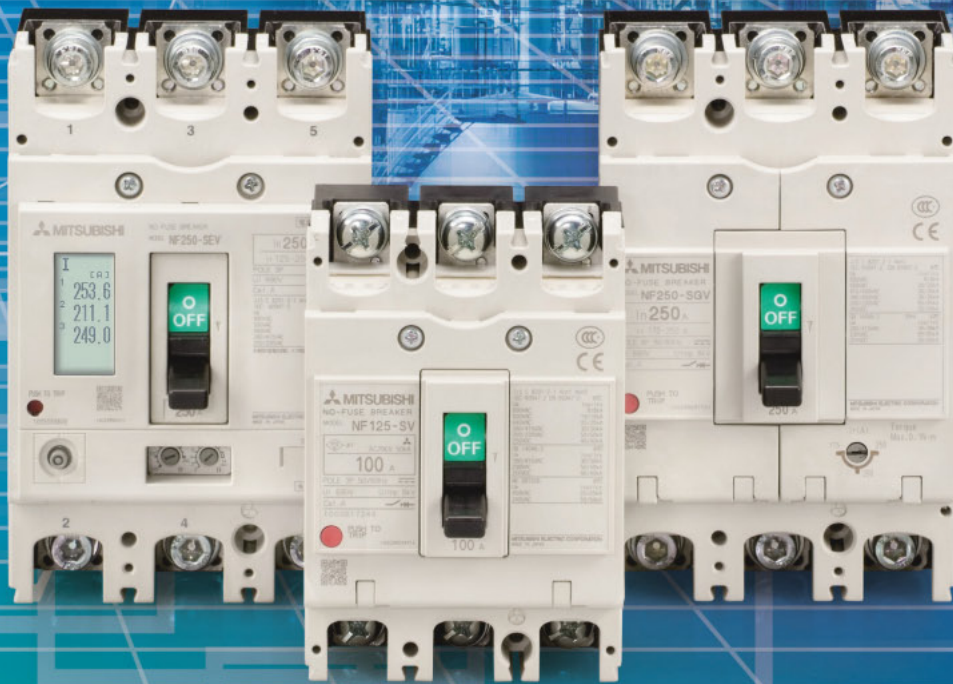
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(http://www.MitsubishiElectric.co.jp/haisei/lvs/)	

Breaking Through



The Industry



World Super
WS-V

Higher Performance

The new circuit breaking technology “Expanded ISTAC” upgrades current limiting performance, leading to higher breaking capacity.

- With higher breaking capacity, lower class models (e.g. NF-S General-purpose model to NF-C Economy model) can be used, thus leading to cost reduction of panels/machines.

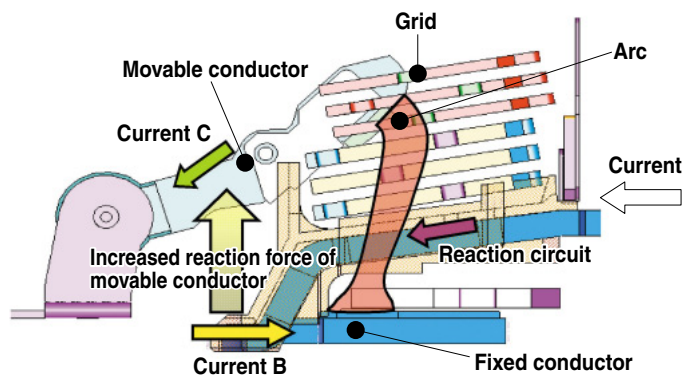


NF250-HV

Conventional model NF250-HW
50kA/13kA (at 400VAC)

75kA/75kA
New model NF250-HV (at 400VAC)

Expanded ISTAC breaking technology



Extending the conductor (reaction circuit for movable conductor) beneath the fixed conductor makes the movable conductor open faster than the conventional ISTAC mechanism. Significantly improves the current limiting performance. (Reduces the maximum peak current by 10%.)



Visualization

The new electronic circuit breakers (with display) and MDU breakers can display various measurement items. This will enable energy management through “visualization”, which leads to energy saving.

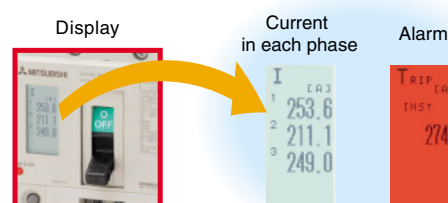
Electronic circuit breaker
(with display)



MDU breakers



- The display is on the circuit breaker body and shows circuit information.
- Detailed setting can be done on the display.
- The display turns red during alarms.



Compact

The thermal adjustable circuit breakers and electronic circuit breakers are smaller.

- These breakers contribute to the reduction of panel size.

Volume ratio **74%**

(Compared with our conventional models)



(Conventional model : 105 × 165 × 86mm)



(New model : 105 × 165 × 68mm)

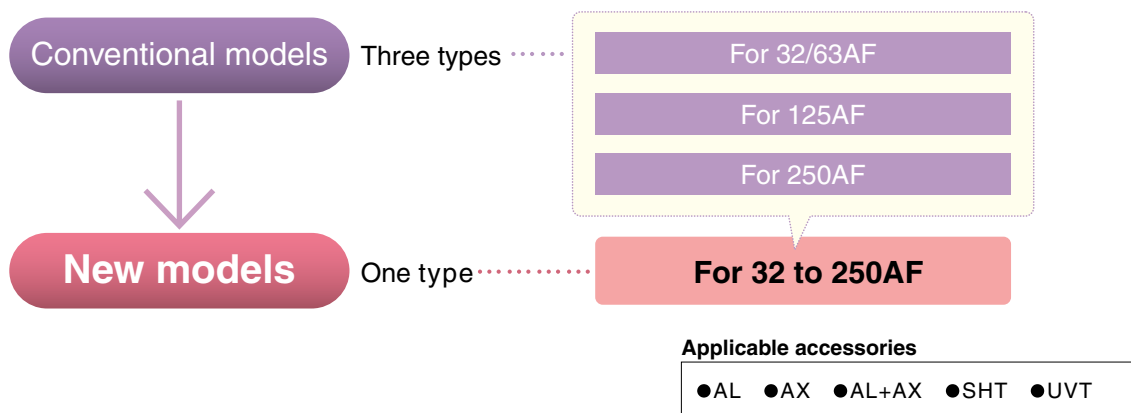
- 250AF circuit breakers' fixed types (NF250-CV, NF250-SV, NF250-HV, NV250-CV, NV250-SV, NV250-HV), thermal adjustable types (NF250-SGV, NF250-HGV, NF250-RGV), and electronic types (NF250-SEV, NF250-HEV, NV250-SEV, NV250-HEV) are the same size, leading to the standardization of panel design.



Standardization

Types of internal accessories are reduced from 3 types to 1 type.

- Standardization of internal accessories contributes to the reduction of stock and delivery time.



- 32AF and 63AF circuit breakers can now be used in both AC and DC circuits without specifying when ordering. This will lead to prevention of ordering mistakes.
- The earth-leakage circuit breakers can now be equipped with a voltage shunt trip device (SHT).



Environment

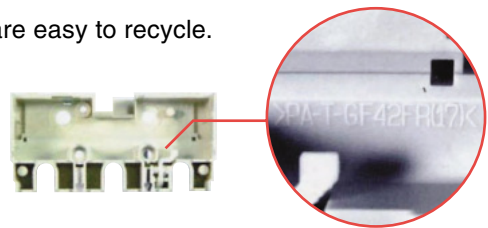
Nonuse of Hazardous Substances

Eco-friendly design is used for all circuit breakers, and they do not use hazardous substances. The circuit breakers comply with RoHS regulation.

Use of Various Recyclable Materials

The circuit breakers are made of thermo-plastic materials that are easy to recycle.
(Some models are partially made of thermoset materials.)

The major plastic parts bear material identifications so that they can be recycled.



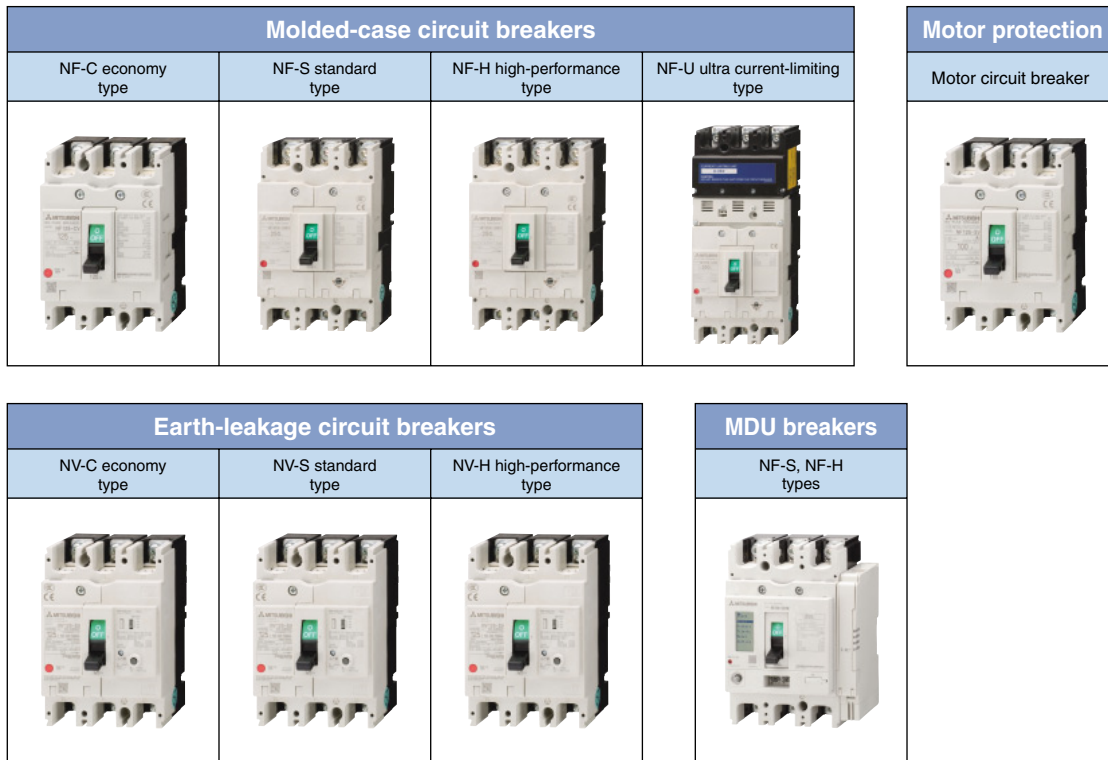
Energy Saving at Fukuyama Works

Mitsubishi Electric Cooperation Fukuyama Works uses energy saving support devices such as MDU breakers and EcoServer to save energy through “visualization” of energy. Along with “visualization”, Fukuyama Works also installed high-efficiency equipments to further promote energy saving.

Through energy saving activity, Fukuyama Works has successfully reduced its electrical power consumption rate by 27% in 2007 (compared with 1990).



Product Line-up



Molded-case Circuit Breakers

Types	Frame(A)	30 32	50 60 63	100 125	160	225 250	400	600 630	800	1000	1250	1600
NF-C economy type			NF63-CV	NF125-CV		NF250-CV	NF400-CW	NF630-CW	NF800-CEW			
NF-S standard type		NF32-SV	NF63-SV	NF125-SV		NF250-SV	NF400-SW	NF630-SW	NF800-SDW	NF1000-SEW	NF1250-SEW	NF1600-SEW
NF-H high-performance type			NF63-HV	NF125-SGV NF125-SEV NF125-HV NF125-LGV NF125-HGV NF125-HEV	NF160-SGV NF160-LGV NF160-HGV	NF250-SGV NF250-SEV NF250-HV NF250-LGV NF250-HGV NF250-HEV	NF400-SEW	NF630-SEW	NF800-SEW			
NF-U ultra current-limiting type				NF125-RGV NF125-UGV		NF250-RGV NF250-UGV	NF400-REW	NF400-REW	NF800-REW			
							NF400-UW		NF800-UW			

Earth-leakage Circuit Breakers

Types	Frame(A)	30 32	50 60 63	100 125	160	225 250	400	600 630	800
NV-C economy type			NV63-CV	NV125-CV		NV250-CV	NV400-CW	NV630-CW	NV800-SEW
NV-S standard type		NV32-SV	NV63-SV	NV125-SV		NV250-SV	NV400-SW	NV630-SW	
				NV125-SEV		NV250-SEV	NV400-SEW	NV600-HEW	NV800-HEW
NV-H high-performance type			NV63-HV	NV125-HV NV125-HEV		NV250-HV NV250-HEV	NV400-HEW		

Motor Protection

Types	Frame(A)	30 32	50 60 63	100 125	160	225 250	400	600 630	800
Motor circuit breaker		NF32-SV	NF63-CV NF63-SV	NF125-SV		NF250-SV			

MDU Breakers

Types	Frame(A)	30 32	50 60 63	100 125	160	225 250	400	600 630	800
NF-S, NF-H types						NF250-SEV NF250-HEV	NF400-SEP NF400-HEP	NF600-SEP NF600-HEP	NF800-SEP NF800-HEP

New models



Ordering Information

Molded-case Circuit Breakers

Type name	<table border="1"> <tr><td>C</td><td>Economy type</td></tr> <tr><td>S</td><td>Standard type</td></tr> <tr><td>H</td><td>High-performance type</td></tr> <tr><td>U</td><td>Ultra current-limiting type</td></tr> <tr><td>DSN</td><td>DSN-type switches</td></tr> </table>		C	Economy type	S	Standard type	H	High-performance type	U	Ultra current-limiting type	DSN	DSN-type switches						
C	Economy type																	
S	Standard type																	
H	High-performance type																	
U	Ultra current-limiting type																	
DSN	DSN-type switches																	
NF250-SV	NF																	
Number of poles	2P, 3P, 4P																	
3P																		
Rated current	Please specify the rated current even for rated current adjustable types																	
200A																		
Motor protection	Please specify MB for motor protection types																	
MB																		
Rated voltage	Please specify DC voltage for use in DC circuit																	
Standard	Please specify applicable marine standard																	
Connection method	<table border="1"> <tr><td>F</td><td>Front connection</td></tr> <tr><td>SL</td><td>Solderless (box) terminal</td></tr> <tr><td>B</td><td>Rear connection</td></tr> <tr><td>PM</td><td>Plug-in</td></tr> </table>		F	Front connection	SL	Solderless (box) terminal	B	Rear connection	PM	Plug-in								
F	Front connection																	
SL	Solderless (box) terminal																	
B	Rear connection																	
PM	Plug-in																	
B																		
Built-in accessories	PAL Pre-alarm (contact output)																	
PAL																		
Internal accessories	<table border="1"> <tr><td>AL</td><td>Alarm switch</td></tr> <tr><td>AX</td><td>Auxiliary switch</td></tr> <tr><td>SHT</td><td>Shunt trip (specify rated coil voltage)</td></tr> <tr><td>UVT</td><td>Under voltage trip (specify rated coil voltage)</td></tr> <tr><td>SLT</td><td>Lead-wire terminal block</td></tr> </table>		AL	Alarm switch	AX	Auxiliary switch	SHT	Shunt trip (specify rated coil voltage)	UVT	Under voltage trip (specify rated coil voltage)	SLT	Lead-wire terminal block						
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AX	Auxiliary switch																	
SHT	Shunt trip (specify rated coil voltage)																	
UVT	Under voltage trip (specify rated coil voltage)																	
SLT	Lead-wire terminal block																	
AL, SHT (110VAC)																		
External accessories	<table border="1"> <tr><td>MD</td><td>Electrical operation device</td></tr> <tr><td>F/S/V</td><td>Operating handle</td></tr> <tr><td>S/I/W</td><td>Enclosure box</td></tr> <tr><td>MI</td><td>Mechanical interlock</td></tr> <tr><td>TC</td><td>Terminal cover (TC-L, TC-S, TTC, BTC)</td></tr> <tr><td>LC/HL</td><td>Handle lock device</td></tr> <tr><td>HL-S</td><td>Handle lock device</td></tr> <tr><td>CH</td><td>Card holder</td></tr> </table>		MD	Electrical operation device	F/S/V	Operating handle	S/I/W	Enclosure box	MI	Mechanical interlock	TC	Terminal cover (TC-L, TC-S, TTC, BTC)	LC/HL	Handle lock device	HL-S	Handle lock device	CH	Card holder
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LC/HL	Handle lock device																	
HL-S	Handle lock device																	
CH	Card holder																	
Special-purpose breakers																		
Quantity	<table border="1"> <tr><td>Mag Only</td><td>Mag Only (specify AC or DC and rated current)</td></tr> <tr><td>DC400V</td><td>DC-use (specify 400, 440, 500, 550 or 600VDC)</td></tr> <tr><td>400Hz</td><td>400Hz use</td></tr> <tr><td>Low-inst</td><td>Low-inst (specify AC or DC and Inst. %)</td></tr> </table>		Mag Only	Mag Only (specify AC or DC and rated current)	DC400V	DC-use (specify 400, 440, 500, 550 or 600VDC)	400Hz	400Hz use	Low-inst	Low-inst (specify AC or DC and Inst. %)								
Mag Only	Mag Only (specify AC or DC and rated current)																	
DC400V	DC-use (specify 400, 440, 500, 550 or 600VDC)																	
400Hz	400Hz use																	
Low-inst	Low-inst (specify AC or DC and Inst. %)																	
10																		




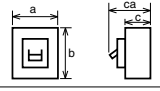
Earth-leakage Circuit Breakers

Type name	<table border="1"> <tr><td>C</td><td>Economy type</td></tr> <tr><td>S</td><td>Standard type</td></tr> <tr><td>H</td><td>High-performance type</td></tr> <tr><td>U</td><td>Ultra current-limiting type</td></tr> </table>		C	Economy type	S	Standard type	H	High-performance type	U	Ultra current-limiting type						
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S	Standard type															
H	High-performance type															
U	Ultra current-limiting type															
NV250-SV	NV															
Number of poles	<table border="1"> <tr><td>2P</td><td>NV</td><td>1ø2W</td></tr> <tr><td>3P</td><td>NV</td><td>1ø2W 1ø3W 3ø3W</td></tr> <tr><td>4P</td><td>NV</td><td>3ø4W</td></tr> </table>		2P	NV	1ø2W	3P	NV	1ø2W 1ø3W 3ø3W	4P	NV	3ø4W					
2P	NV	1ø2W														
3P	NV	1ø2W 1ø3W 3ø3W														
4P	NV	3ø4W														
3P																
Rated current	Please specify the rated current even for rated current adjustable types															
200A																
Motor protection	Please specify MB for motor protection types															
MB																
Rated voltage	<table border="1"> <tr><td>AC</td></tr> <tr><td>100-440V</td></tr> <tr><td>200-440V</td></tr> </table>		AC	100-440V	200-440V											
AC																
100-440V																
200-440V																
AC																
Rated sensitivity current	<table border="1"> <tr><td>30mA</td></tr> <tr><td>100/200/500mA</td></tr> </table>		30mA	100/200/500mA												
30mA																
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Connection method	<table border="1"> <tr><td>F</td><td>Front connection</td></tr> <tr><td>SL</td><td>Solderless (box) terminal</td></tr> <tr><td>B</td><td>Rear connection</td></tr> <tr><td>PM</td><td>Plug-in</td></tr> </table>		F	Front connection	SL	Solderless (box) terminal	B	Rear connection	PM	Plug-in						
F	Front connection															
SL	Solderless (box) terminal															
B	Rear connection															
PM	Plug-in															
B																
Type of residual current protection	<table border="1"> <tr><td>Blank</td><td>High-speed type</td></tr> <tr><td>Specify</td><td>Time-delay type</td></tr> </table>		Blank	High-speed type	Specify	Time-delay type										
Blank	High-speed type															
Specify	Time-delay type															
Blank																
Built-in accessories	<table border="1"> <tr><td>MG</td><td>Insulation switch</td></tr> <tr><td>EAL</td><td>Earth-leakage circuit alarm switch</td></tr> <tr><td>TBM</td><td>Test button module</td></tr> <tr><td>PAL</td><td>Pre-alarm module</td></tr> </table>		MG	Insulation switch	EAL	Earth-leakage circuit alarm switch	TBM	Test button module	PAL	Pre-alarm module						
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EAL	Earth-leakage circuit alarm switch															
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MG																
Internal accessories	<table border="1"> <tr><td>AL</td><td>Alarm switch</td></tr> <tr><td>AX</td><td>Auxiliary switch</td></tr> <tr><td>UVT</td><td>Under voltage trip (specify rated coil voltage)</td></tr> <tr><td>SLT</td><td>Lead-wire terminal block</td></tr> </table>		AL	Alarm switch	AX	Auxiliary switch	UVT	Under voltage trip (specify rated coil voltage)	SLT	Lead-wire terminal block						
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AX	Auxiliary switch															
UVT	Under voltage trip (specify rated coil voltage)															
SLT	Lead-wire terminal block															
AX, SLT, TBM																
External accessories	<table border="1"> <tr><td>MD</td><td>Electrical operation device</td></tr> <tr><td>F/S/V</td><td>Operating handle</td></tr> <tr><td>MI</td><td>Mechanical interlock</td></tr> <tr><td>TC</td><td>Terminal cover (TC-L, TC-S, TTC, BTC)</td></tr> <tr><td>LC/HL</td><td>Handle lock device</td></tr> <tr><td>HL-S</td><td>Handle lock device</td></tr> <tr><td>CH</td><td>Card holder</td></tr> </table>		MD	Electrical operation device	F/S/V	Operating handle	MI	Mechanical interlock	TC	Terminal cover (TC-L, TC-S, TTC, BTC)	LC/HL	Handle lock device	HL-S	Handle lock device	CH	Card holder
MD	Electrical operation device															
F/S/V	Operating handle															
MI	Mechanical interlock															
TC	Terminal cover (TC-L, TC-S, TTC, BTC)															
LC/HL	Handle lock device															
HL-S	Handle lock device															
CH	Card holder															
Quantity	10															

1. Detailed Specifications

Molded-case Circuit Breakers

NF-C (Economy type)

Frame (A)		63	125	250		
Type name		NF63-CV	NF125-CV	NF250-CV		
Image						
Rated current In (A)		3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	50 (60) 63 (75) 80 100 125	(100) 125 150 175 200 225 250		
Number of poles		2 3	2 3	2 3		
Rated ambient temperature (°C)		40	40	40		
Rated insulation voltage Ui (V)		600	600	600		
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	–	–	
			500V	2.5/2.5	7.5/4	10/8
			440V	2.5/2.5	10/5	15/12
			415V	2.5/2.5	10/5	25/19
			400V	5/5	10/5	25/19
			380V	5/5	10/5	25/19
			230V	7.5/7.5	30/15	36/27
			DC	250V	2.5/2.5 (*5)	7.5/4 (*2)
Rated impulse withstand voltage Uimp (kV)		8	8	8		
Current (*1)		AC/DC compatible	AC/DC compatible	AC/DC compatible		
Suitability for isolation		Compatible	Compatible	Compatible		
Reverse connection		Possible	Possible	Possible		
Number of operating cycles	Without current	10,000	10,000	8,000		
	With current (440VAC)	6,000	6,000	4,000		
Utilization category		A	A	A		
Pollution degree		3	3	3		
EMC environment condition (environment A or B)		N/A	N/A	N/A		
Overall dimensions (mm)		a	50 75	60 90	105	
		b	130	130	165	
		c	68	68	68	
		ca	90	90	92	
Mass of front-face type (kg)		0.5 0.7	0.6 1.0	1.3 1.5		
Installation and connections	Front (F)	●	●	●		
	Solderless (BOX) terminal (SL)	–	●	●		
	Rear (B)	●	●	●		
	Plug-in (PM)	●	●	●		
Cassette-type accessories	Alarm switch (AL)	● (*3)	● (*3)	● (*3)		
	Auxiliary switch (AX)	● (*3)	● (*3)	● (*3)		
	Shunt trip (SHT)	● (*3)	● (*3)	● (*3)		
	Undervoltage trip (UVT)	● (*3)	● (*3)	● (*3)		
	With lead-wire terminal block (SLT)	●	●	●		
	Pre-alarm (PAL)	–	–	–		
External accessories	Enclosure	Closed (S)	●	●	●	
		Dustproof (I)	●	●	●	
		Waterproof (W)	– ●	– ●	– ●	
	Electrical operation device (NFM)	–	– ●	– ●		
	Mechanical interlock (MI) (*4)	Panel mounting	●	●	●	
		LC	●	●	●	
		HL	●	●	●	
	Handle lock device	HL-S	●	●	●	
		(F)	●	●	●	
		(V)	●	●	●	
	External operating handle	(S) (*4)	●	●	●	
		Terminal cover (TC-L, TC-S, TTC, BTC, PTC)	●	●	●	
	Rear stud (B-ST)	●	●	●		
	Plug-in (PM)	●	●	●		
IEC 35mm rail mounting adapters	●	–	–			
CE marking		Self-declaration	Self-declaration	TÜV approval		
CCC recognition		Recognized	Recognized	Recognized		
Automatic tripping device		Thermal-magnetic	Thermal-magnetic	Thermal-magnetic		
Trip button		Equipped	Equipped	Equipped		

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

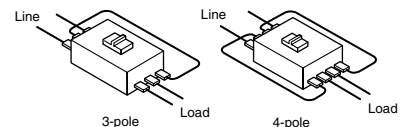
*2 Use two poles for three- and four-pole products. If wired as shown on the right, three and four poles can be used for up to 400 and 500VDC, respectively.

*3 The cassette-type design makes it easy for customer to install. Available for installation on side (excluding UVT).

*4 Not isolation-compatible.

*5 Use two poles for three- and four-pole products. In this case, do not use the neutral pole of the four-pole products. Not available for use with connection as shown on the right.




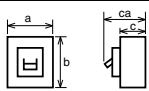
*6 Use two poles for three- and four-pole products. If wired as shown on the right, three and four poles can be used for up to 500 and 600VDC, respectively.



1. Detailed Specifications

Molded-case Circuit Breakers

NF-S (Standard type)

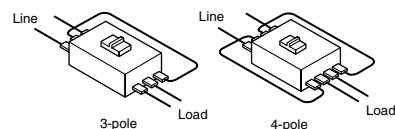
Frame (A)		125		160			250				
Type name		NF125-SEV		NF160-SGV			NF250-SV				
Image											
Rated current In (A)		16-32	32-63	125-160			(100)	125	150	160	175
Number of poles		3	4	2	3	4	2	3	4		
Rated ambient temperature (°C)		40		40			40				
Rated insulation voltage Ui (V)		690		690			690				
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	8/8	8/8	8/8	8/8	8/8	8/8		
			500V	30/30	30/30	30/30	30/30	30/30			
			440V	36/36	36/36	36/36	36/36				
			415V	36/36	36/36	36/36					
			400V	36/36	36/36	36/36					
			380V	36/36	36/36						
			230V	85/85	85/85						
		DC	250V	–	20/20 (300V) (*2)	20/20 (300V) (*2)					
Rated impulse withstand voltage Uimp (kV)		8		8			8				
Current (*1)		AC		AC/DC compatible			AC/DC compatible				
Suitability for isolation		Compatible		Compatible			Compatible				
Reverse connection		Possible		Possible			Possible				
Number of operating cycles	Without current	25,000		40,000			25,000				
	With current (440VAC)	10,000		20,000			10,000				
Utilization category		A		A			A				
Pollution degree		3		3			3				
EMC environment condition (environment A or B)		A		N/A			N/A				
Overall dimensions (mm)		a	105	140	105	140	105	140			
		b	165		165			165			
		c	68		68			68			
		ca	92		92			92			
Mass of front-face type (kg)		1.7	2.2	1.4	1.6	2.0	1.4	1.6	2.0		
Installation and connections	Front	(F)	●	●	●	●	●	●			
	Solderless (BOX) terminal	(SL)	●	●	●	●	●				
	Rear	(B)	●	●	●	●	●				
	Plug-in	(PM)	●	●	●	●	●				
Cassette-type accessories	Alarm switch	(AL)	● (*3)	●	● (*3)	●	● (*3)	●			
	Auxiliary switch	(AX)	● (*3)	●	● (*3)	●	● (*3)	●			
	Shunt trip	(SHT)	● (*3)	●	● (*3)	●	● (*3)	●			
	Undervoltage trip	(UVT)	● (*3)	●	● (*3)	●	● (*3)	●			
	With lead-wire terminal block	(SLT)	●	●	●	●	●				
	Pre-alarm	(PAL)	●	●	●	●	●				
External accessories	Enclosure	Closed	(S)	●	–	●	–	●	–		
		Dustproof	(I)	●	–	●	–	●	–		
		Waterproof	(W)	●	–	●	–	●	–		
	Electrical operation device	(NFM)	●	●	●	●	●				
	Mechanical interlock (MI) (*4)	Panel mounting	●	●	●	●	●				
		LC	●	●	●	●	●				
	Handle lock device	HL	●	●	●	●	●				
		HL-S	●	●	●	●	●				
	External operating handle	(F)	●	●	●	●	●				
		(V)	●	●	●	●	●				
		(S) (*4)	●	●	●	●	●				
	Terminal cover	(TC-L, TC-S, TTC, BTC, PTC)	●	●	●	●	●				
	Rear stud	(B-ST)	●	●	●	●	●				
Plug-in	(PM)	●	●	●	●	●					
IEC 35mm rail mounting adapters		–	–	–	–	–					
CE marking		Self-declaration		Self-declaration			TÜV approval			Self-declaration	
CCC recognition		Recognized		Recognition in process			Recognized				
Automatic tripping device		Electronic (effective value detection)		Thermal-magnetic			Thermal-magnetic				
Trip button		Equipped		Equipped			Equipped				

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






*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 500 and 600VDC, respectively.

*3 The cassette-type design makes it easy for customer to install. Available for installation on side (excluding UVT).

*4 Not isolation-compatible.



NF-L




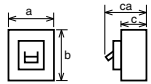
250 NF250-SGV		250 NF250-SEV		125 NF125-LGV			160 NF160-LGV			250 NF250-LGV					
															
125-160 140-200 175-250		80-160 125-250		16-20 20-25 25-32 32-40 35-50 45-63 56-80 70-100 90-125			125-160			125-160 140-200 175-250					
2	3	4	3	4	2	3	4	2	3	4	2	3	4		
40		40		40			40			40					
690		690		690			690			690					
8/8		8/8		8/8			8/8			8/8					
30/30		30/30		36/36			36/36			36/36					
36/36		36/36		50/50			50/50			50/50					
36/36		36/36		50/50			50/50			50/50					
36/36		36/36		50/50			50/50			50/50					
36/36		36/36		50/50			50/50			50/50					
85/85		85/85		90/90			90/90			90/90					
20/20 (300V) (*2)		-		20/20 (300V) (*2)			20/20 (300V) (*2)			20/20 (300V) (*2)					
8		8		8			8			8					
AC/DC compatible		AC		AC/DC compatible			AC/DC compatible			AC/DC compatible					
Compatible		Compatible		Compatible			Compatible			Compatible					
Possible		Possible		Possible			Possible			Possible					
25,000		25,000		50,000			40,000			25,000					
10,000		10,000		30,000			20,000			10,000					
A		A		A			A			A					
3		3		3			3			3					
N/A		A		N/A			N/A			N/A					
105		140		105		140		105		140		105		140	
165		165		165			165			165					
68		68		68			68			68					
92		92		92			92			92					
1.4	1.6	2.0	1.7	2.2	1.4	1.6	2.0	1.4	1.6	2.0	1.4	1.6	2.0		
●		●		●			●			●					
●		●		●			●			●					
●		●		●			●			●					
●		●		●			●			●					
● (*3)		●		● (*3)			●			● (*3)			●		
● (*3)		●		● (*3)			●			● (*3)			●		
● (*3)		●		● (*3)			●			● (*3)			●		
● (*3)		●		● (*3)			●			● (*3)			●		
●		●		●			●			●					
-		-		-			-			-					
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
●		-		●			-			●			-		
-		-		-			-			-			-		
Self-declaration		Self-declaration		Self-declaration			Self-declaration			Self-declaration					
Recognition in process		Recognized		Recognition in process			Recognition in process			Recognition in process					
Thermal-magnetic		Electronic (effective value detection)		Thermal-magnetic			Thermal-magnetic			Thermal-magnetic					
Equipped		Equipped		Equipped			Equipped			Equipped					

Remarks: 1. Products with rated current parenthesized are produced when an order is placed.
 2. Specify "P-LT" when using a plug-in product with a lead-wire terminal block.
 3. The circuit breaker has the rated short-circuit breaking capacity specified in the shaded cells.

1. Detailed Specifications

Molded-case Circuit Breakers

NF-H (High-performance type)

Frame (A)		63			125			125					
Type name		NF63-HV			NF125-HV			NF125-HGV					
Image													
Rated current In (A)		10 (15) 16 20 25 (30) 32 40 50 (60) 63			(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125			16-20 20-25 25-32 32-40 35-50 45-63 56-80 70-100 90-125					
Number of poles		2 3 4			2 3 4			2 3 4					
Rated ambient temperature (°C)		40			40			40					
Rated insulation voltage Ui (V)		690			690			690					
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	2.5/2.5		10/8		10/8					
			500V	7.5/7.5		30/23		50/38					
			440V	10/8		50/38		65/65					
			415V	10/8		50/38		70/70					
			400V	10/8		50/38		75/75					
			380V	10/8		50/38		75/75					
			230V	25/19		100/75		100/100					
			DC	250V		7.5/7.5 (*5)		-		40/40 (300V) (*2)			
Rated impulse withstand voltage Uimp (kV)		8			8			8					
Current (*1)		AC/DC compatible			AC			AC/DC compatible					
Suitability for isolation		Compatible			Compatible			Compatible					
Reverse connection		Possible			Possible			Possible					
Number of operating cycles	Without current		15,000			25,000			50,000				
	With current (440VAC)		8,000			10,000			30,000				
Utilization category		A			A			A					
Pollution degree		3			3			3					
EMC environment condition (environment A or B)		N/A			N/A			N/A					
Overall dimensions (mm)		a	50	75	100	90		120	105		140		
		b	130			130			165				
		c	68			68			68				
		ca	90			90			92				
Mass of front-face type (kg)		0.55	0.75	1.0	0.6	1.0	1.2	1.4	1.6	2.0			
Installation and connections	Front	(F)	●			●			●				
	Solderless (BOX) terminal	(SL)	-			●			●				
	Rear	(B)	●			●			●				
	Plug-in	(PM)	●			●			●				
Cassette-type accessories	Alarm switch	(AL)	● (*3)		●		● (*3)		●		● (*3)		
	Auxiliary switch	(AX)	● (*3)		●		● (*3)		●		● (*3)		
	Shunt trip	(SHT)	● (*3)		●		● (*3)		●		● (*3)		
	Undervoltage trip	(UVT)	● (*3)		●		● (*3)		●		● (*3)		
	With lead-wire terminal block	(SLT)	●			●			●				
	Pre-alarm	(PAL)	-			-			-				
External accessories	Enclosure	Closed	(S)	●		-		●		-		-	
		Dustproof	(I)	●		-		●		-		-	
		Waterproof	(W)	-		●		-		●		-	
	Electrical operation device	(NFM)	-			●			●				
	Mechanical interlock (MI) (*4)	Panel mounting		●		●		●		●		●	
		LC		●		●		●		●		●	
		HL		●		●		●		●		●	
	Handle lock device	HL-S		●		●		●		●		●	
		(F)		●		●		●		●		●	
	External operating handle	(V)		●		●		●		●		●	
		(S) (*4)		●		●		●		●		●	
		Terminal cover	(TC-L, TC-S, TTC, BTC, PTC)	●		●		●		●		●	
	Rear stud	(B-ST)	●		●		●		●		●		
Plug-in	(PM)	●		●		●		●		●			
IEC 35mm rail mounting adapters		●		-		-		-		-			
CE marking		Self-declaration			Self-declaration			Self-declaration					
CCC recognition		Recognized			Recognized			Recognition in process					
Automatic tripping device		Thermal-magnetic			Thermal-magnetic			Thermal-magnetic					
Trip button		Equipped			Equipped			Equipped					

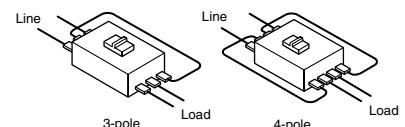
Notes: *1 The trip action characteristics differ between AC and DC for products that are compatible with both AC and DC.

*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 500 and 600VDC, respectively.

*3 The cassette-type design makes it easy for customer to install. Available for installation on side (excluding UVT).

*4 Not isolation-compatible.



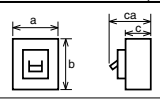
*5 Use two poles for three- and four-pole products. In this case, do not use the neutral pole of the four-pole products. Not available for use with connection as shown on the right.



1. Detailed Specifications



Molded-case Circuit Breakers

NF-U (Current-limiting type ultra breaker)

Frame (A)		125		250	
Type name		NF125-RGV		NF250-RGV	
Image					
Rated current In (A)		16-20	20-25 25-32 32-40 40-50 50-63 63-80 80-100 100-125	125-160	160-200 200-250
Number of poles		2	3	2	3
Rated ambient temperature (°C)		40		40	
Rated insulation voltage Ui (V)		690		690	
Rated short-circuit breaking capacities (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	-	-
			500V	-	-
			440V	125/125	125/125
			415V	150/150	150/150
			400V	150/150	150/150
			380V	150/150	150/150
			230V	150/150	150/150
DC	250V	-	-		
Rated impulse withstand voltage Uimp (kV)		8		8	
Current		AC		AC	
Suitability for isolation		Compatible		Compatible	
Reverse connection		Possible		Possible	
Number of operating cycles	Without current	50,000		25,000	
	With current (440VAC)	30,000		10,000	
Utilization category		A		A	
Pollution degree		3		3	
EMC environment condition (environment A or B)		N/A		N/A	
Overall dimensions (mm)		a	105	105	
		b	165	165	
		c	68	68	
		ca	92	92	
Mass of front-face type (kg)		1.5	1.8	1.5	1.8
Installation and connections	Front (F)	●	●		
	Solderless (BOX) terminal (SL)	●	●		
	Rear (B)	●	●		
	Plug-in (PM)	●	●		
Cassette-type accessories	Alarm switch (AL)	● (*1)	● (*1)		
	Auxiliary switch (AX)	● (*1)	● (*1)		
	Shunt trip (SHT)	● (*1)	● (*1)		
	Undervoltage trip (UVT)	● (*1)	● (*1)		
	With lead-wire terminal block (SLT)	●	●		
	Pre-alarm (PAL)	-	-		
External accessories	Enclosure	Closed (S)	-	-	
		Dustproof (I)	-	-	
		Waterproof (W)	-	-	
	Electrical operation device (NFM)	●	●		
	Mechanical interlock (MI) (*2)	Panel mounting	●	●	
		LC	●	●	
	Handle lock device	HL	●	●	
		HL-S	●	●	
	External operating handle	(F)	●	●	
		(V)	●	●	
		(S) (*2)	●	●	
	Terminal cover (TC-L, TC-S, TTC, BTC, PTC)	●	●		
	Rear stud (B-ST)	-	-		
Plug-in (PM)	●	●			
IEC 35mm rail mounting adapters	-	-			
CE marking		Self-declaration		Self-declaration	
CCC recognition		Recognition in process		Recognition in process	
Automatic tripping device		Thermal-magnetic		Thermal-magnetic	
Trip button		Equipped		Equipped	

Notes: *1 The cassette-type design makes it easy for customer to install. Available for installation on side (excluding UVT, NF125-RGV, NF250-RGV).

*2 Not isolation-compatible.




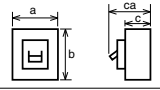
125 NF125-UGV						250 NF250-UGV							
													
16-20		20-25	25-32	32-40	40-50	50-63	63-80	80-100	100-125	125-160		160-200	175-225
2		3		4		2		3		4			
40						40							
690						690							
15/15						15/15							
200/200						200/200							
200/200						200/200							
200/200						200/200							
200/200						200/200							
200/200						200/200							
200/200						200/200							
-						-							
8						8							
AC						AC							
Compatible						Compatible							
Possible						Possible							
50,000						25,000							
30,000						10,000							
A						A							
3						3							
N/A						N/A							
105			140			105			140				
240						240							
68						68							
92						92							
2.5		2.7		3.7		2.5		2.7		3.7			
●						●							
●						●							
●						●							
●			-			●			-				
● (*1)		●		●		● (*1)		●		●		●	
● (*1)		●		●		● (*1)		●		●		●	
● (*1)		●		●		● (*1)		●		●		●	
● (*1)		●		●		● (*1)		●		●		●	
●						●							
-						-							
-						-							
-						-							
●						●							
●						●							
●						●							
●						●							
●						●							
●						●							
●						●							
●						●							
-						-							
●			-			●			-				
-						-							
Self-declaration						Self-declaration							
-						-							
Thermal-magnetic Equipped						Thermal-magnetic Equipped							

Remarks: 1. Specify "P-LT" when using a plug-in product with a lead-wire terminal block.
2. The circuit breaker has the rated short-circuit breaking capacity specified in the shaded cells.

1. Detailed Specifications

Earth-leakage Circuit Breakers

NV-C (Economy type) Harmonic surge ready

Frame (A)		63		125		250	
Type name		NV63-CV		NV125-CV		NV250-CV	
Image							
Rated current In (A)		(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63		(60) 63 (75) 80 100 125		125 150 175 200 225 250	
Number of poles		2 3		3		3	
Rated ambient temperature (°C)		40		40		40	
Phase line (*1)		1ø2W 3ø3W, 1ø2W		3ø3W, 1ø2W		3ø3W, 1ø2W	
Rated operational voltage Ue (V) (*2)		AC 100-240 100-440		100-440		100-440	
High-speed type	Rated current sensitivity (mA)	30		30, 100/200/500 selectable		30, 100/200/500 selectable	
	Max. operating time (s)	at IΔn at 5IΔn		0.1 0.04		0.1 0.04	
Time-delay type	Rated current sensitivity (mA)	-		(100/200/500 selectable)		(100/200/500 selectable)	
	Max. operating time (s) (*4)	-		(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)	
	Internal non-operating time (s) (or more)	-		(0.1/0.5/1.0)		(0.1/0.5/1.0)	
Earth-leakage indication system		Mechanical type (button)		Mechanical type (button)		Mechanical type (button)	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	440V	-	2.5/2.5	10/5	15/12
			415V	-	2.5/2.5	10/5	25/19
			400V	-	5/5	10/5	25/19
			230V	7.5/7.5	30/15	36/27	
			200V	7.5/7.5	30/15	36/27	
			100V	7.5/7.5	30/15	36/27	
Rated impulse withstand voltage Uimp (kV)		6		6		6	
Current		AC		AC		AC	
Suitability for isolation		Compatible		Compatible		Compatible	
Number of operating cycles	Without current	10,000		10,000		8,000	
	With current	6,000		6,000		4,000	
Utilization category		A		A		A	
Pollution degree		2		2		2	
EMC environment condition (environment A or B)		A		A		A	
Overall dimensions (mm)		a	75	90	105		
		b	130	130	165		
		c	68	68	68		
		ca	90	90	92		
		Mass of front-face type (kg)	0.7	0.75	1.0	1.7	
Installation and connections	Front (F)	●		●		●	
	Solderless (BOX) terminal (SL)	-		●		●	
	Rear (B)	●		●		●	
	Plug-in (PM)	●		●		●	
Cassette-type accessories	Alarm switch (AL)	● (*5)		● (*5)		● (*5)	
	Auxiliary switch (AX)	● (*5)		● (*5)		● (*5)	
	Shunt trip (SHT)	● (*5)		● (*5)		● (*5)	
	Undervoltage trip (UVT)	● (*5)		● (*5)		● (*5)	
	With lead-wire terminal block (SLT)	●		●		●	
	Test button module (TBM)	● (*6)		● (*6)		● (*6)	
External accessories	Enclosure	Closed (S)	●		●		
		Dustproof (I)	●		●		
		Waterproof (W)	●		●		
	Electrical operation device (NFM)	-		●		●	
	Mechanical interlock (MI) (*8)	Panel mounting	●		●		
		LC	●		●		
		HL	●		●		
	Handle lock device	HL-S	●		●		
		(F)	●		●		
		(V)	●		●		
	External operating handle	(S) (*8)	●		●		
		Terminal cover (TC-L, TC-S, TTC, BTC)	●		●		
	Rear stud (B-ST)	●		●			
Plug-in (PM)	●		●				
IEC 35mm rail mounting adapters	●		-				
CE marking		Self-declaration		Self-declaration		TÜV approval	
CCC recognition		-		Recognized		Recognized	
Automatic tripping device		Thermal-magnetic		Thermal-magnetic		Thermal-magnetic	
Trip button		Equipped		Equipped		Equipped	

Notes: *1 For the 1ø2W supply system, use the right and left pole terminals.

Caution is required in this case as the center pole is a live part.

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

*3 Time-delayed types are produced for current specifications of 20A or more.

*4 When operating times are 0.45s, 1.0s and 2.0s, the relay operates between 0.15s and 0.45s, 0.6s and 1.0s, and 1.2s and 2.0s, respectively.





*5 The cassette-type design makes it easy for customer to install. Available for installation on side (excluding UVT).

*6 All models have a vertical lead terminal unit (SLT) as standard.

*7 For other models, please order in conjunction with the circuit breaker.

*8 Not isolation-compatible.

NV-S (Standard type) Harmonic surge ready




32 NV32-SV	63 NV63-SV	125 NV125-SV	125 NV125-SEV
			
(5) 6 10 (15) 16 20 25 (30) 32	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125 (*3)	63-125
3 40	3 40	3 40	3 4
3φ3W, 1φ2W 100-440	3φ3W, 1φ2W 100-440	3φ3W, 1φ2W 100-440	3φ3W, 1φ2W 200-440
30, 100/200/500 selectable	30, 100/200/500 selectable	30, 100/200/500 selectable	(30) 100/200/500 selectable
0.1 0.04	0.1 0.04	0.1 0.04	0.1 0.04
-	-	(100/200/500 selectable)	(100/200/500 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)
Mechanical type (button)	Mechanical type (button)	Mechanical type (button)	Mechanical type (button)
5/5 5/5 5/5 10/10 10/10 10/10	7.5/7.5 7.5/7.5 7.5/7.5 15/15 15/15 15/15	25/25 30/30 30/30 50/50 50/50 50/50	36/36 36/36 36/36 85/85 85/85 85/85
6 AC	6 AC	6 AC	6 AC
Compatible	Compatible	Compatible	Compatible
10,000 6,000	15,000 8,000	25,000 10,000	25,000 10,000
A 2 A	A 2 A	A 2 A	A 2 A
75 130 68 90	75 130 68 90	90 130 68 90	105 165 68 92
0.75	0.8	1.1	1.4 1.9 2.5
● - ● ●	● - ● ●	● ● ● ●	● ● ● ●
● (*5) ● (*5) ● (*5) ● (*5)	● (*5) ● (*5) ● (*5) ● (*5)	● (*5) ● (*5) ● (*5) ● (*5)	● (*5) ● (*5) ● (*5) ● (*5)
● ● (*6)	● ● (*6)	● ● (*6)	● ● (*6)
● ● ● ● ● ● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ● ● ● ● ● ●
Self-declaration Recognized Thermal-magnetic Equipped	Self-declaration Recognized Thermal-magnetic Equipped	Self-declaration Recognized Thermal-magnetic Equipped	Self-declaration Recognized Electronic (effective value detection) Equipped

Remarks: 1. Products with rated current parenthesized are produced when an order is placed.
 2. The circuit breakers will be delivered with rated current sensitivity set to 500mA and operating time of time-delayed types to 2.0s unless otherwise specified.
 3. Specify "P-LT" when using a plug-in product with a lead-wire terminal block.
 4. The circuit breaker has the rated short-circuit breaking capacity specified in the shaded cells.

(5) Rated operational voltage	Applicable circuit voltage	Available voltage range
100-240V	100/110/200/220/230/240V	80-264V
100-440V	100/110/200/220/240/254/265/380/400/415/440V	80-484V
200-440V	200/220/240/254/265/380/400/415/440V	160-484V
100-200-415V	100/110/200/220/240/254/265/380/400/415/440V	80-484V
200-415V	200/220/240/254/265/380/400/415/440V	160-484V

1. Detailed Specifications

Earth-leakage Circuit Breakers

NV-S (Standard type) Harmonic surge ready				NV-H											
Frame (A)				250		250		63							
Type name				NV250-SV		NV250-SEV		NV63-HV							
Image															
Rated current In (A)				125 150 175 200 225 250		125-250		(15) 16 20 (30) 32 40 50 (60) 63							
Number of poles				3 4		3 4		3							
Rated ambient temperature (°C)				40		40		40							
Phase line type (*1)				3ø3W, 1ø2W 3ø4W		3ø3W, 1ø2W 3ø4W		3ø3W, 1ø2W							
Rated operational voltage Ue (V) (*2)				100-440 200-440		100-440		100-440							
High-speed type				Rated current sensitivity (mA)		(30) 100/200/500 selectable		(30) 100/200/500 selectable							
				Max. operating time (s)		at IΔn at 5IΔn		0.1 0.04		0.1 0.04					
Time-delay type				Rated current sensitivity (mA)		(100/200/500 selectable)		(100/200/500 selectable)							
				Max. operating time (s) (*4)		(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)		-					
				Internal non-operating time (s) (or more)		(0.1/0.5/1.0)		(0.1/0.5/1.0)		-					
Earth-leakage indication system				Mechanical type (button)		Mechanical type (button)		Mechanical type (button)							
Rated short-circuit breaking capacity (kA)				IEC 60947-2 (Icu/Ics)		AC		440V		36/36					
								415V		36/36					
								400V		36/36					
								230V		85/85					
								200V		85/85					
								100V		85/85					
Rated impulse withstand voltage Uimp (kV)				6		6		6							
Current				AC		AC		AC							
Suitability for isolation				Compatible		Compatible		Compatible							
Number of operating cycles				Without current		25,000		25,000							
				With current		10,000		10,000		8,000					
Utilization category				A		A		A							
Pollution degree				2		2		2							
EMC environment condition (environment A or B)				A		A		A							
Overall dimensions (mm)				a		105 140		105 140		75					
				b		165		165		130					
				c		68		68		68					
				ca		92		92		90					
				ca		92		92		90					
Mass of front-face type (kg)				1.9 2.5		1.9 2.5		0.8							
Installation and connections				Front (F)		●		●		●					
				Solderless (BOX) terminal (SL)		●		●		-					
				Rear (B)		●		●		●					
				Plug-in (PM)		●		●		●					
Cassette-type accessories				Alarm switch (AL)		● (*5)		●		● (*5)					
				Auxiliary switch (AX)		● (*5)		● (*5)		●		● (*5)			
				Shunt trip (SHT)		● (*5)		● (*5)		●		● (*5)			
				Undervoltage trip (UVT)		● (*5)		● (*5)		●		● (*5)			
				With lead-wire terminal block (SLT)		●		●		●		●			
				Test button module (TBM)		● (*6)		● (*6)		● (*6)		● (*6)			
External accessories				Enclosure		Closed (S)		●		●					
						Dustproof (I)		●		-		●			
						Waterproof (W)		●		-		●			
				Electrical operation device (NFM)				●		●		-			
				Mechanical interlock (MI) (*8)				Panel mounting		●		●			
								LC		●		●		●	
								HL		●		●		●	
				Handle lock device				HL-S		●		●			
								HL		●		●		●	
				External operating handle				(F)		●		●			
								(V)		●		●		●	
								(S) (*8)		●		●		●	
				Terminal cover (TC-L, TC-S, TTC, BTC)				●		●		●			
Rear stud (B-ST)				●		●		●							
Plug-in (PM)				●		●		●							
IEC 35mm rail mounting adapters				-		-		●							
CE marking				TÜV approval Self-declaration		Self-declaration		Self-declaration							
CCC recognition				Recognized		Recognized		Recognized							
Automatic tripping device				Thermal-magnetic		Electronic (effective value detection)		Thermal-magnetic							
Trip button				Equipped		Equipped		Equipped							

Notes: *1 When wiring a three-pole earth-leakage circuit breaker to 1ø2W, do not use the central pole but connect to the left and right poles.

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

*3 Time-delayed types are produced for current specifications of 20A or more.

*4 When operating times are 0.45s, 1.0s and 2.0s, the relay operates between 0.15s and 0.45s, 0.6s and 1.0s, and 1.2s and 2.0s, respectively.

*5 The cassette-type design makes it easy for customer to install. Available for installation on side (excluding UVT).

*6 All models have a vertical lead terminal unit (SLT) as standard.

*7 For other models, please order in conjunction with the circuit breaker.

*8 Not isolation-compatible.

1. Detailed Specifications

Motor-protection Breakers

NF - MB (Motor breakers)

Frame (A)		32			50							
Type name		NF32-SV			NF63-CV			NF63-SV				
		A	200/220V kW	400/440V kW	A	200/220V kW	400/440V kW	A	200/220V kW	400/440V kW		
Rated current In (A)		32	7.5	15	45	11	22	7.1	1.5	–		
Rated motor capacity (kW)		25	5.5	11	40	–	18.5	5	–	2.2		
		16	3.7	7.5	32	7.5	15	4	0.75	1.5		
		12	–	5.5	25	5.5	11					
		10	2.2	–	16	3.7	7.5					
		8	–	3.7	12	–	5.5					
		7.1	1.5	–	10	2.2	–					
		5	–	2.2	8	–	3.7					
		4	0.75	1.5								
Number of poles		3			3			3				
Rated ambient temperature (°C)		40			40							
Rated insulation voltage Ui (V)		500			500			500				
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	440V	2.5/2.5	2.5/2.5			7.5/7.5				
			415V	2.5/2.5	2.5/2.5			7.5/7.5				
			400V	5/5	5/5			7.5/7.5				
			380V	5/5	5/5			7.5/7.5				
			230V	7.5/7.5	7.5/7.5			15/15				
Rated impulse withstand voltage Uimp (kV)		8			8			8				
Current		AC			AC			AC				
Suitability for isolation		Compatible			Compatible			Compatible				
Reverse connection		Possible			Possible			Possible				
Number of operating cycles	Without current		10,000			10,000			15,000			
	With current (440VAC)		6,000			6,000			8,000			
Utilization category		A			A			A				
Pollution degree		3			3			3				
EMC environment condition (environment A or B)		N/A			N/A			N/A				
Overall dimensions (mm)		a	75			75			75			
		b	130			130			130			
		c	68			68			68			
		ca	90			90			90			
		ca'	90			90			90			
Mass of front-face type (kg)		0.65			0.65			0.7				
Installation and connections	Front	(F)	●			●			●			
	Rear	(B)	●			●			●			
	Plug-in	(PM)	●			●			●			
Cassette-type accessories	Alarm switch (*1)	(AL)	●			●			●			
	Auxiliary switch (*1)	(AX)	●			●			●			
	Shunt trip (*1)	(SHT)	●			●			●			
	Undervoltage trip (*1)	(UVT)	●			●			●			
	With lead-wire terminal block	(SLT)	●			●			●			
External accessories	Enclosure	Closed	(S)	●			●			●		
		Dustproof	(I)	●			●			●		
		Waterproof	(W)	●			●			●		
	Electrical operation device	(NFM)	–			–			–			
	Mechanical interlock (MI) (*2)	Panel mounting		●			●			●		
		LC		●			●			●		
		HL		●			●			●		
	Handle lock device	HL-S		●			●			●		
		(F)		●			●			●		
		(V)		●			●			●		
	External operating handle	(S) (*2)		●			●			●		
(S) (*2)			●			●			●			
Terminal cover	(TC-L, TC-S, TTC, BTC)	●			●			●				
Rear stud	(B-ST)	●			●			●				
Plug-in	(PM)	●			●			●				
	IEC 35mm rail mounting adapters	●			●			●				
CE marking		Self-declaration			Self-declaration			Self-declaration				
CCC recognition		Recognized			Recognized			Recognized				
Automatic tripping device		Thermal-magnetic			Thermal-magnetic			Thermal-magnetic				
Trip button		Equipped			Equipped			Equipped				

Notes: *1 The cassette-type design makes it easy for customer to install. Available for installation on side (excluding UVT).

*2 Not isolation-compatible.

2. Special-purpose Breakers

Mag Only, DC and DSN

Mag Only (Instantaneous tripping circuit breakers)

Fixed	NF63-CV/SV/HV	AC, DC	10 times rated current (AC) (DC)
	NF125-CV/SV/HV	AC, DC	
	NF250-CV/SV/HV	AC, DC	
	NF125-SGV/LGV/HGV	AC, DC	
	NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV		

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

DC MCCBs and DSN Switches

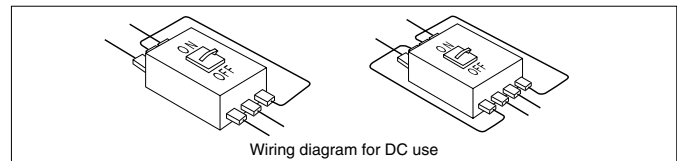
Breaking is more difficult with direct currents because the current value never reaches zero. While ordinary DC breakers are suitable for low voltages, special-voltage DC breakers are recommended for voltages in excess of 250VDC. Breakers for 550V are all 4-pole models.

The size, shape, drilling plan, accessories, etc., are all identical to the S Series breakers with the same designations.

Type	NF63-SV		NF125-SV		NF250-SV	
Number of poles	3	4	3	4	3	4
Rated voltage (VDC)	400	550	440	550	500	600
Rated breaking capacity (kA) IEC 60947-2 (Icu/Ics)	2/2		10/10		20/20	

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

Wiring diagram for DC use.



Remark: 1. The tripping characteristics will change if the wiring differs from that shown here.

● 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-SV		NF250-SV	
Number of poles	2	3	2	3
Rated voltage (VDC)	250	440	300	500
Rated breaking capacity (kA) IEC 60947-2 (Icu/Ics)	40/40	10/10	20/20	
Instantaneous trip current (min.)	3 times rated current		3 times rated current	

● DSN switches

These are standard MCCBs without the automatic tripping element.

The tripping capacity is approximately 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	DSN63-CV		DSN125-CV		DSN250-CV	
Rated current (A)	63		125		250	
Number of poles	2	3	2	3	2	3
Rated voltage (AC/DC)	500/250		500/250		500/250	
Max. switching current (AC/DC)	378/155		750/310		1500/625	

Type	DSN32-SV		DSN63-SV		DSN125-SV		DSN125-SGV		DSN160-SGV		DSN250-SV		DSN250-SGV			
Rated current (A)	32		63		125		125		160		250		250			
Number of poles	2	3	2	3	2	3	4	2	3	4	2	3	4	2	3	4
Rated voltage (AC/DC)	500/250		500/250		690/250		690/300		690/300		690/250		690/300			
Max. switching current (AC/DC)	192/80		378/155		750/310		750/315		960/400		1500/625		1500/625			

2. 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-SV			NF125-HV			NF250-SV			NF250-HV			
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			
Number of poles	2	3	4	2	3	4	2	3	4	2	3	4	
Rated insulation voltage (V)	690												
Rated breaking capacity (kA) IEC 60947-2 (Icu / Ics)	690V	8/8			10/8			8/8			10/8		
	500V	18/18			30/23			30/30			50/38		
	440V	25/25			50/38			36/36			65/65		
	400V	30/30			50/38			36/36			75/75		
	230V	50/50			100/75			85/85			100/100		

Low-instantaneous MCCBs

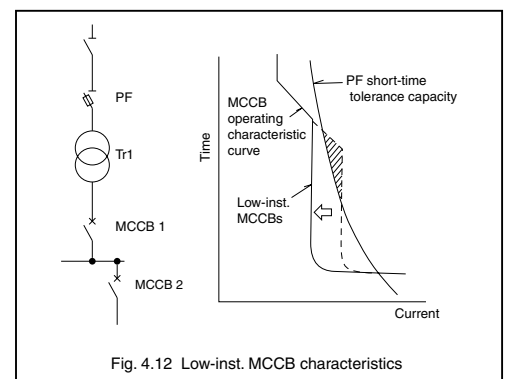
● Low-Inst. MCCBs for Discrimination

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

Type	NF125-CV		NF125-SV			NF250-CV		NF250-SV		
Number of poles	2	3	2	3	4	2	3	2	3	4
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		
Instantaneous trip (% of rated current)	600	●	●			●		●		
	400	—	—			●		●		

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

● Specifications



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

Generator Protection MCCBs

These breakers are designed for generator protection.

● Specifications

Type	NF125-SEV	NF125-HEV	NF250-SEV	NF250-HEV
Number of poles	3		3	
Rated current (A)	16-32 32-63 63-125 adjustable	16-32 32-63 63-125 adjustable	80-160 125-250 adjustable	80-160 125-250 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)	690VAC	8/8	10/8	8/8
	500VAC	30/30	50/38	30/30
	440VAC	36/36	65/65	36/36
	400VAC	36/36	75/75	36/36
	230VAC	85/85	100/100	85/85

Note: *1 The MCCB operating characteristics must be adjusted as follows.
STD ≤ 3 (Is setting)
LTD: minimum setting (TL = 12s setting)

2. Special-purpose Breakers

MDU Breakers

Measuring Display Unit (MDU)

Circuit breakers and measurement display units are integrated.

With built-in VT and CT, the circuit breaker requires less space and contributions are made to reduced work and energy savings.

Features

- A low-voltage circuit breaker combines an MDU for measuring, displaying, and transmitting information on cable ways, and closely monitors energy consumption by measuring current, voltage, power, electric energy, harmonic current, leakage current, power factor, etc., to assist in energy savings.
- Since the circuit breaker saves its tripping information (causes and current values), causes of accidents can be investigated and corrected sooner.

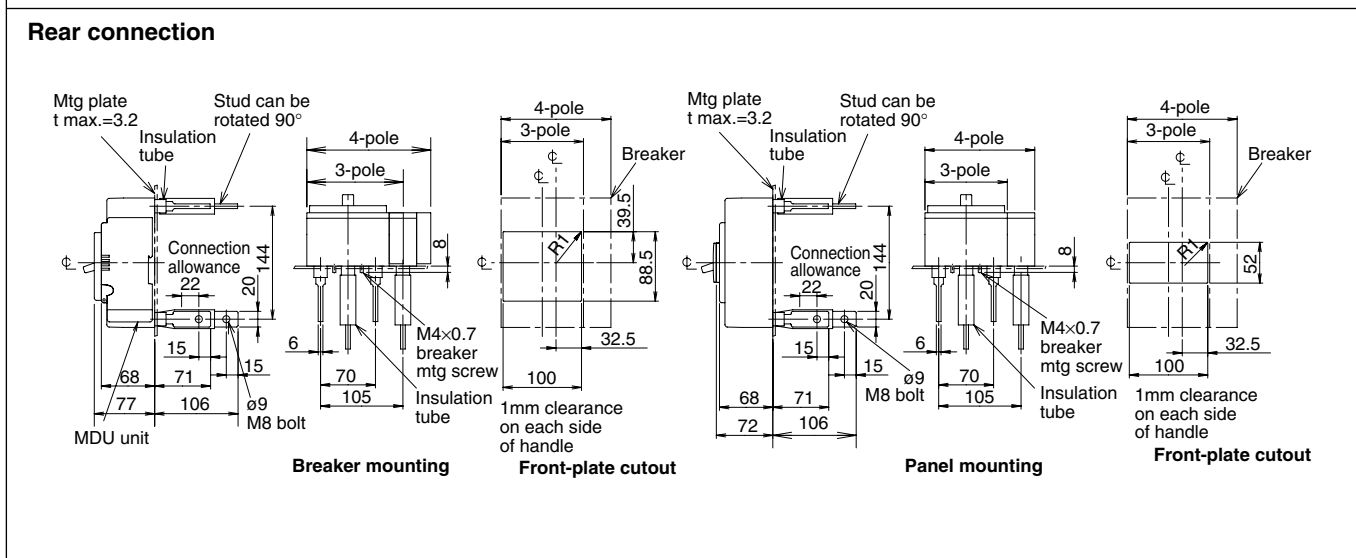
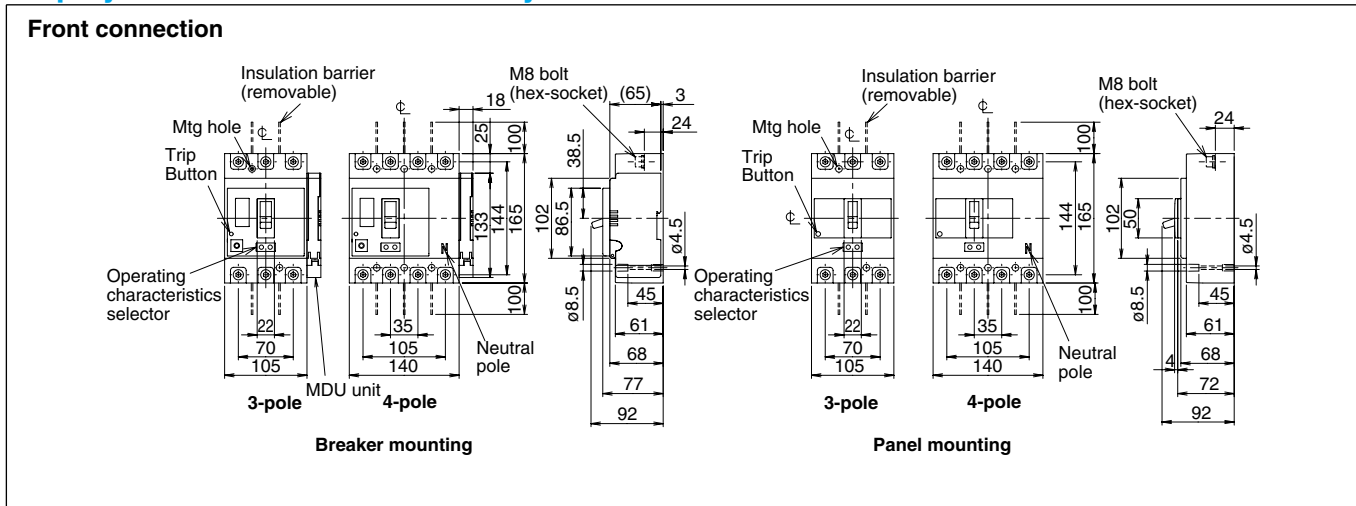
Type			NF250-SEV with MDU		NF250-HEV with MDU	
Frame (A)			250		250	
Number of poles			3	4	3	4
Suitability for use			3ø3W	3ø4W	3ø3W	3ø4W
Rated insulation voltage (V)			690		690	
Rated current (A)			125-250A (adjustable)		125-250A (adjustable)	
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC	690V	8/8	10/8	
			500V	18/18	30/23	
			440V	36/36	50/50	
			415V	36/36	70/70	
			400V	36/36	75/75	
			380V	36/36	75/75	
			230V	85/85	100/100	
			200V	85/85	100/100	
Reverse connection			-		-	
Installation and connections	Front connection (F)		●		●	
	Rear connection (R)		●		●	
Cassette-type accessories			Refer to P.16		Refer to P.18	
External accessories (*1)			Refer to P.16		Refer to P.18	

Note: *1 For models with DP, the accessories below are not applicable.

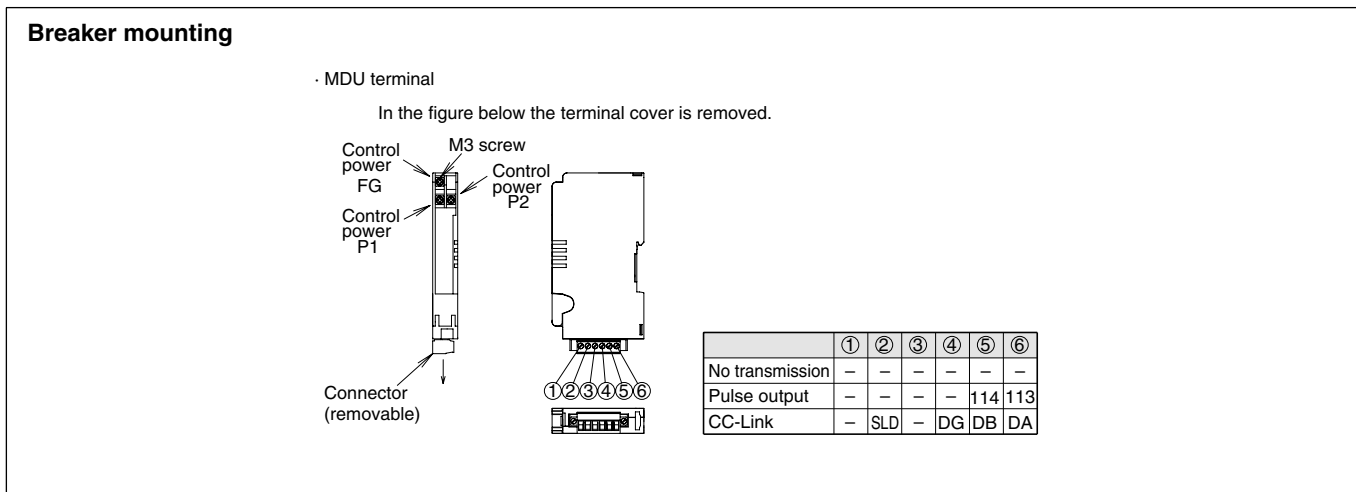
- Electrical operation device (NFM)
- Mechanical interlock (MI)
- External operating handle (F, V, S)
- Handle lock device (HL-S)
- Enclosure (S, I, W)

Combination			Display (DP) on the breaker				Panelboard mounting			
			①	②	③	④	①	②	③	④
NF250-SEV/HEV with DP			①-a	①-a	①-a	①-a				
NF250-SEV/HEV							①-b	①-b	①-b	①-b
Module (power input)			②-a		②-a					
Module (power input + transmission)				②-b	②-b					
Module (pre-alarm)					③	③			③	③
MDU-DP-N (display)							④-a		④-a	
MDU-DP-C (display + network)								④-b		④-b
Display ①④	Measuring	Load current	●	●	●	●	●	●	●	●
		Line voltage	●	●	●	●	●	●	●	●
		Power (active/reactive)	●	●	●	●	●	●	●	●
		Energy (active/reactive)	●	●	●	●	●	●	●	●
		Harmonic current	●	●	●	●	●	●	●	●
		Power factor	●	●	●	●	●	●	●	●
		Frequency	●	●	●	●	●	●	●	●
	Alarm	OVER	●	●	●	●	●	●	●	●
Trip cause (LTD, STD, INST) & trip current		●	●	●	●	●	●	●	●	
Pre-alarm		-	-	●	●	-	-	●	●	
Transmission ②	CC-Link	-	●	-	●	-	●	-	●	
	Pulse output (electric energy)	-	●	-	●	-	●	-	●	

Display on the circuit breaker body



MDU Terminal

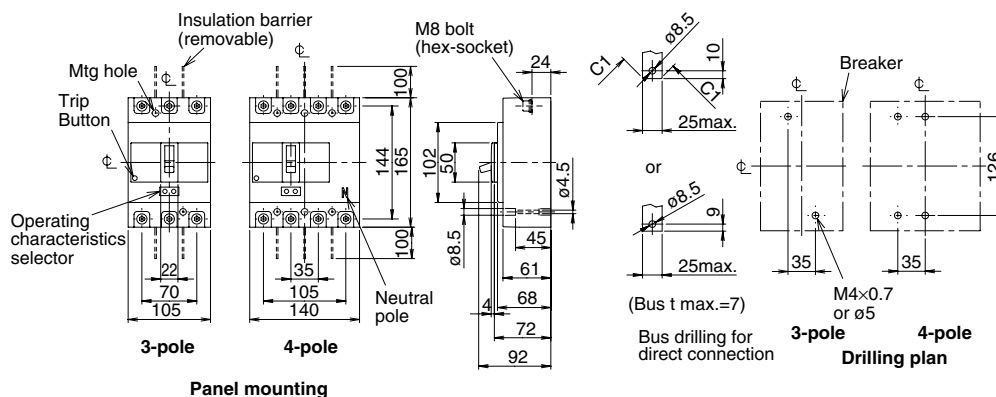


2. Special-purpose Breakers

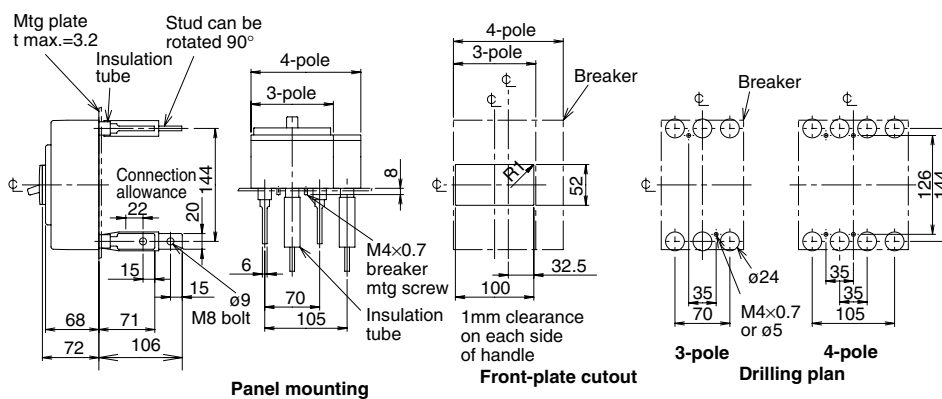
MDU Breakers

MDU panel mounting

Front connection

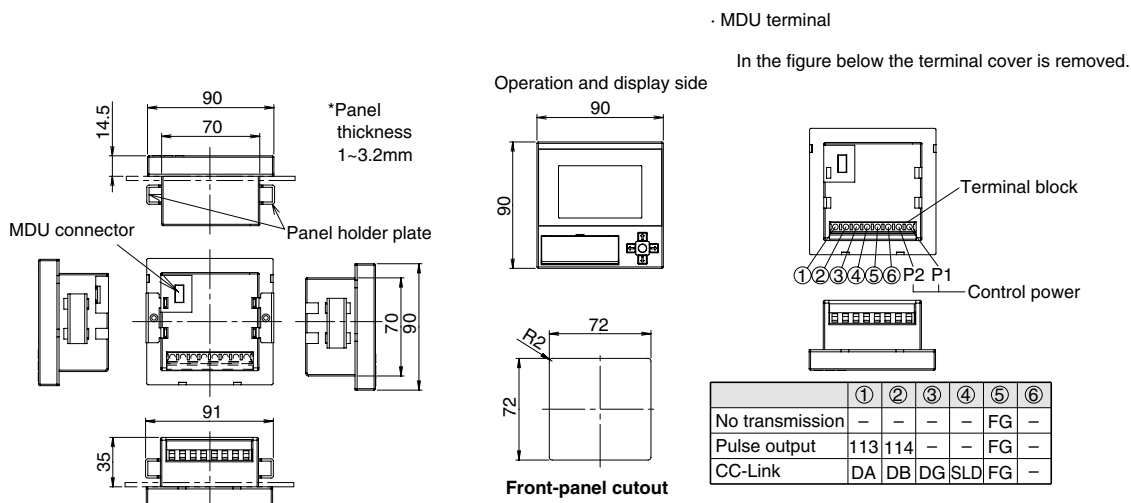


Rear connection



MDU Terminal for panel mounting

Panel mounting






3. Connection Method

1. Connection Types

Table 3-1: Connection types

The front connection model will be delivered unless otherwise specified. Front connection models can be converted to other types using an appropriate connection component (separately available).

Connection method (abbreviation)	Front connection (F)	Rear connection (B)	Plug-in (PM)
Image			
NF-C/S/H Series	○	○	○
NF-U Series	○	○	○ (2P and 3P only)
NV-C/S/H Series	○	○	○

2. Connection Accessories

Table 3-2: List of connection accessories

Type name		Solderless terminal (SL)	Rear studs (B-ST)	Plug-in (PM)
NF32-SV, NF63-CV/SV/HV	2P	-	● (ST-05SV2)	● (PM-05SV2)
NV32-SV, NV63-HV	3P		● (ST-05SV3)	● (PM-05SV3)
NV63-CV/SV	2P	-	● (ST-05SV2)	● (PM-NV05SV2)
NF63-SV/HV	4P		● (ST-05SV4)	● (PM-05SV4)
NF125-CV/SV	2P	SL-1SV4L (*1)	● (ST-1SV2)	● (PM-1SV2)
NF125-HV		SL-1SV4G (*2)	● (ST-1HV2)	● (PM-1HV2)
NF125-CV/SV, NV125-CV/SV	3P	SL-1SV3L (*1)	● (ST-1SV3)	● (PM-1SV3)
NF125-HV, NV125-HV		SL-1SV3G (*2)		
NF125-SV, NV125-SV, NF125-ZSV	4P	SL-1SV4L (*1)	● (ST-1SV4)	● (PM-1SV4)
NF125-HV, NV125-HV, NF125-ZHV		SL-1SV4G (*2)		
NF250-CV/SV	2P	SL-2SV4L (*3)	● (ST-2SV2)	● (PM-2SV2)
NF250-HV		SL-2SV4G (*4)		
NF250-CV/SV, NF125-SEV, NF250-SEV, NF125-SGV/LGV/HGV, NF160-SGV/LGV/HGV, NF250-SGV/LGV/HGV, NV250-CV/SV, NV125-SEV, NV250-SEV	3P	SL-2SV3L (*3)	● (ST-2SV3)	● (PM-2SV3)
NF250-HV, NF250-HEV, NV250-HV, NV250-HEV, NF125-HEV, NV125-HEV		SL-2SV3G (*4)		
NF125-SEV, NV125-SEV, NF250-SV, NF250-SEV, NV250-SV, NV250-SEV	4P	SL-2SV4L (*3)	● (ST-2SV4)	● (PM-2SV4)
NF250-HV, NF250-HEV, NV250-HEV, NF125-HEV, NV125-HEV		SL-2SV4G (*4)		
NF125-RGV, NF250-RGV	2P	SL-2SV4L (*3) SL-2SV4G (*4)	-	● (PM-2SV2)
	3P	SL-2SV3L (*3) SL-2SV3G (*4)	-	● (PM-2SV3)
NF125-UGV, NF250-UGV	2P	SL-2UV4L (*3) SL-2UV4G (*4)	-	● (PM-2UV2)
	3P	SL-2UV3L (*3) SL-2UV3G (*4)	-	● (PM-2UV3)
	4P	SL-2UV4L (*3) SL-2UV4G (*4)	-	-

Notes: *1 Connected wire size : 2.5 ~ 25mm²
 *2 Connected wire size : 25 ~ 70mm²
 *3 Connected wire size : 14 ~ 95mm²
 *4 Connected wire size : 70 ~ 125mm²

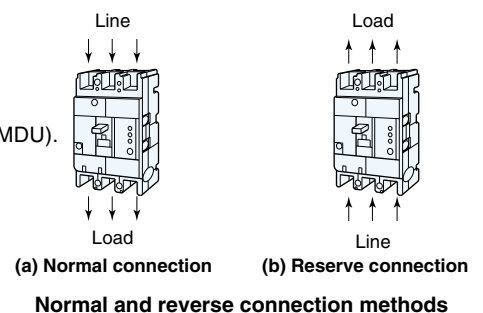
3. Connection of Line and Load

The standard wiring of line and load on the circuit breaker is as shown in (a) normal connection on the right.

Avoid the wiring shown in (b) reverse connection. This may lead to a decrease in breaking performance.

However, the reverse connection is allowed for the following models (excluding models with MDU).

NF-C, NF-S, NF-H, NF-U and MB Series	Reverse connection is allowed for the standard models.
--------------------------------------	--



4. Accessories

Internal Accessories

1. Accessories

Table 4-1: 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	○
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 NV-C/S/H/U	○
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, it is possible to reset the device and restart operation.	NF-C/S/H/U NV-C/S/H/U	○
TBM Test button module (*1)	Allows remote testing through application of 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	—
PAL Pre-alarm module	Indicates that the load current exceeds the pre-alarm setting current.	Electronic type	—

2. Switch Operation and Rating

Table 4-2: AL switch operation

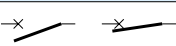
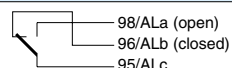
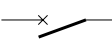
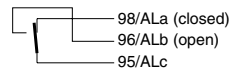
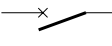
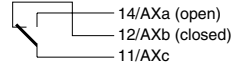
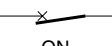
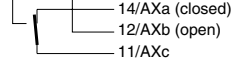
Circuit breaker status	AL switch contact
 OFF or ON	
 Trip	

Table 4-4: AL-AX switch rating

Switch type	AC			DC		
	Voltage (V)	Current (A)		Voltage (V)	Current (A)	
S	460	—	—	250	0.2	0.2
	250	3	2	125	0.4	0.4
	125	5	3	30	4	3

Please contact us regarding applications requiring smaller current values.

Table 4-3: AX switch operation

Circuit breaker status	AX switch contact
 OFF or Trip	
 ON	

3. Maximum Number of Internally Mounted Accessories

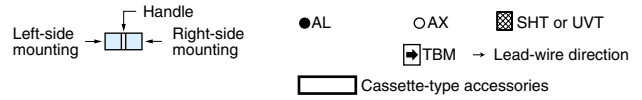


Table 4-9: Combinations of accessories

Series		NF		NV
Type	C	NF63-CV, NF125-CV	NF63-CV, NF125-CV, NF250-CV	NV63-CV, NV125-CV, NV250-CV
	S	NF32-SV, NF63-SV, NF125-SV	NF32-SV, NF63-SV, NF125-SV NF125-SEV, NF125-SGV, NF160-SGV NF250-SV, NF250-SEV, NF250-SGV NF125-LGV, NF160-LGV, NF250-LGV	NV32-SV, NV63-SV, NV125-SV, NV125-SEV NV250-SV, NV250-SEV
	H	NF63-HV	NF63-HV, NF125-HV, NF125-HEV NF125-HGV, NF160-HGV NF250-HV, NF250-HEV, NF250-HGV	NV63-HV, NV125-HV, NV125-HEV NV250-HV, NV250-HEV
	U		NF125-RGV, NF125-UGV NF250-RGV, NF250-UGV	
Poles		2	2, 3, 4	2, 3, 4
AL/AX (standard) switches		S		
AL				
AX				
AL + AX				
SHT or UVT				
AL + SHT or UVT				
AX + SHT or UVT				
AL + AX + SHT or UVT				
TBM				

Notes: *1 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).
 *2 Second AX can be substituted for the AL on the left pole.
 *3 SHT and UVT for left-pole installation can be produced if specified.
 *4 Only the models with an SLT are available. EAL and PAL require a control power supply (shared 100 - 200VAC).
 For the 24VDC TBM only, please specify control voltage (the standard shared voltage is 100 - 240VAC/100 - 240VDC).

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

4. Accessories

Internal Accessories

4. Shunt Trip (SHT)

Table 4-10: Standard coil rating

Series	Cut-off switch	Voltage	Input power requirement (VA) (*1)					Operating time (ms) (*2)
			AC				DC	
			100V	240V	380V	550V	100V 100-125V	
All models	Equipped	100-240VAC 380-550VAC (Compatible to 50 and 60Hz) 100-125VDC	120				50	15 or less

Notes: *1 Secure a sufficient input power so that the voltage will not drop below the permissible lower working voltage (70% of the lowest rated voltage).

*2 The operating time denotes the time from when the rated voltage is applied to SHT until when the main contact of the breaker starts to open.

5. Undervoltage Trip (UVT)

Table 4-11: Standard coil rating

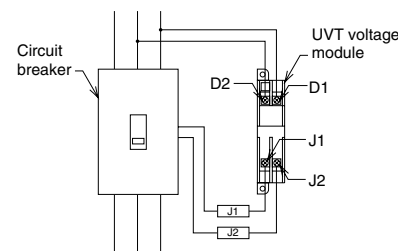
Series	Voltage	Input power VA	Operating time (ms) (*1) (*2)
All models	100-130VAC/VDC (*1) 200-250VAC 380-480VAC (Compatible to 50 and 60Hz)	5	30 or less

Notes: *1 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.

*2 Time-delayed types can be produced. Details are available on request.

● 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 on request).



UVT voltage module wiring diagram (lead-wire connection)

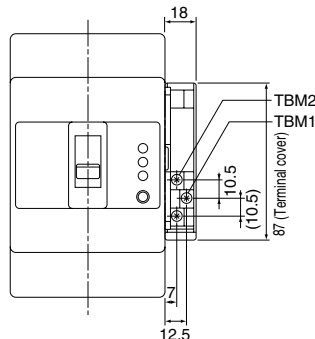
6. Test Button Module (TBM)

- 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 two seconds when testing time-delayed NV models
- All models have a vertical lead terminal unit (SLT) as standard

Table 4-12

Series	NV-C/S/H,
Input rated control voltage	Compatible with 100-240VAC/VDC 24VDC (*1)
Input control power (VA)	1.5 or less

Note: *1 100-240VAC and 100-240VDC specifications are standard unless otherwise specified. Specifications for 24VDC are available on request.



7. Lead-wire Specifications

Table 4-13

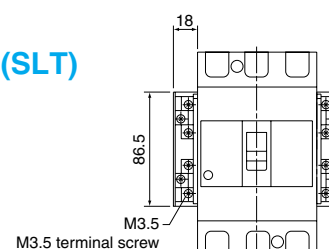
Type	Size	Length	Marking	Ring-mark example
Heat-resistant wire	0.5mm ²	(*1) 450mm	A ring-mark with the terminal symbol is attached to each lead wire	98/ALa, 96/ALb, 95/ALc C1/S1, C2/S2

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

8. Vertical Lead-wire Terminal Block (SLT)

- The circuit breaker can be mounted, and 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 front connection, rear connection and plug-in models (excluding PLT)



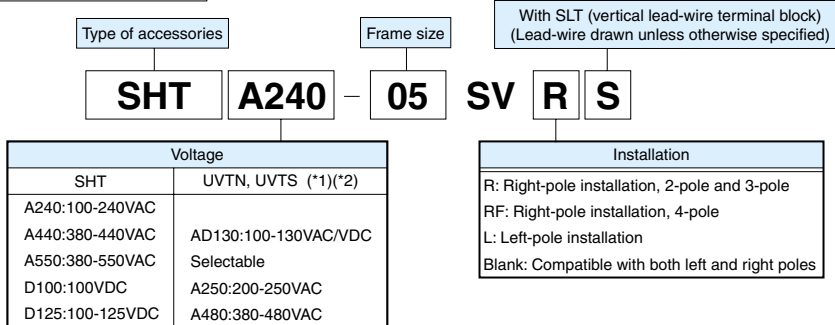
9. Cassette-type Accessories

● The cassette-type accessories can be attached to or removed from a circuit breaker by the customer.

Table 4-14: Model names of cassette-type accessories

Applicable models	Frame size	Type of accessories				
		AL	AX	AL + AX	SHT	UVTN or UVTS (*1)
NF32-SV, NF63-CV/SV/HV NF125-CV/SV/HV NF125-SGV/LGV/HGV NF125-RGV/UGV NF125-SEV/HEV NF160-SGV/LGV/HGV NF250-CV/SV/HV NF250-SGV/LGV/HGV NF250-RGV/UGV NF250-SEV/HEV	05	● AL-05SV ● AL-05SVLS ● AL-05SVRS	● AX-05SV ● AX-05SVLS ● AX-05SVRS	● ALAX-05SV ● ALAX-05SVLS ● ALAX-05SVRS	● SHTA240-05SVR ● SHTA550-05SVR ● SHTD125-05SVR ● SHTA240-05SVRS ● SHTA550-05SVRS ● SHTD125-05SVRS	● UVTNAD130-05SVR ● UVTSAD130-05SVR ● UVTNAD130-05SVL ● UVTSAD130-05SVL ● UVTNA250-05SVR ● UVTSA250-05SVR ● UVTNA250-05SVL ● UVTSA250-05SVL ● UVTNA480-05SVR ● UVTSA480-05SVR ● UVTNA480-05SVL ● UVTSA480-05SVL ● UVTNAD130-05SVRS ● UVTSAD130-05SVRS ● UVTNAD130-05SVLS ● UVTSAD130-05SVLS ● UVTNA250-05SVRS ● UVTSA250-05SVRS ● UVTNA250-05SVLS ● UVTSA250-05SVLS ● UVTNA480-05SVRS ● UVTSA480-05SVRS ● UVTNA480-05SVLS ● UVTSA480-05SVLS
NV32-SV, NV63-CV/SV/HV NV125-CV/SV/HV NV125-SEV/HEV NV250-CV/SV/HV NV250-SEV/HEV					● SHTA240-05SVL ● SHTA550-05SVL ● SHTD125-05SVL ● SHTA240-05SVLS ● SHTA550-05SVLS ● SHTD125-05SVLS	● UVTNAD130-05SVL ● UVTSAD130-05SVL ● UVTNA250-05SVL ● UVTSA250-05SVL ● UVTNA480-05SVL ● UVTSA480-05SVL ● UVTNAD130-05SVLS ● UVTSAD130-05SVLS ● UVTNA250-05SVLS ● UVTSA250-05SVLS ● UVTNA480-05SVLS ● UVTSA480-05SVLS

Model name explanation



Notes: *1

UVTN	Reset prohibited UVT
UVTS	Resettable UVT

The circuit breaker main body of UVTS can be reset even if not electrically energized.
*2 The UVTN is not a cassette accessory. An order for the UVTN should be placed at the same time as an order of circuit breaker main body.

Remarks: 1. Refer to the list of combinations of accessories on page 44 for possible combinations and pole connections.
2. No cassette accessories are available for the corrosion-resistant models of AL and AX.
3. Cassette accessories cannot be mounted on circuit breakers with MG.
4. Cannot be mounted on a built-in circuit breaker with an SLT.
5. The four-pole circuit breakers with a right-pole SLT or UVT have different dimensions and model names. Please contact us for details.

10. Pre-alarm Module (PAL)

● Can be mounted on the right side of electronic breakers

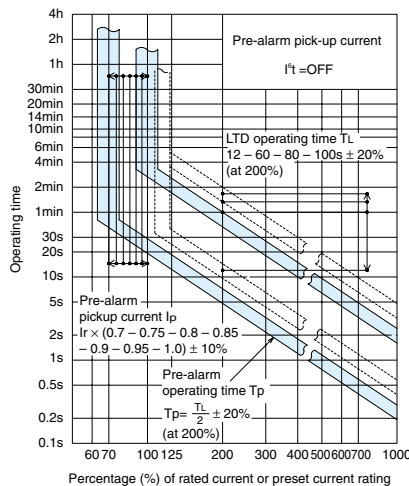
Table 4-15

Type	Pre-alarm module (contact output) (*2)
NF125/250-SEV/HEV	Option (*1)
NV125/250-SEV/HEV	Option (*1)

Notes: *1 Control power source of 100 to 200VAC is necessary.

*2 In this case, no other accessory can be attached to the right pole.

● Pre-alarm characteristics



The self-holding models are standard. An auto-reset model is produced on request.

4. Accessories

External Accessories

1. F-type Operating Handle

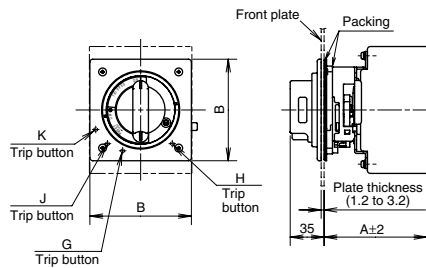
● Appearance (Color N1.5)



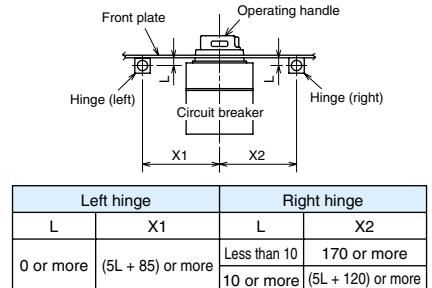
Breaker-mounted operating handle installed on a circuit breaker main body

- Provides a circuit-disconnecting (isolating) function in combination with the breaker body
- Conforms to EN safety standards (EN 60204-1)
- Includes as standard a safety device which prevents breaker turning on when the cover is open
- Can be locked in the OFF position (a padlock of 35mm or 40mm can be used and a model with ON/OFF lock only can be produced on request)
- IP54 rating (IEC 60529)

● External dimension drawing

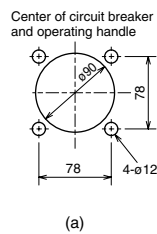


● Center of hinge and circuit breaker



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

● Front plate drilling dimension drawing



● Circuit breaker mounting-hole drilling dimension drawing

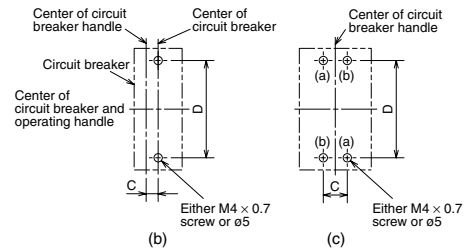


Table 4-16 Summary of dimensions

Type names	Applicable models				Drilling plans	Dimensions (mm)				Trip button position	Mounting screws
	NFB		NV			A (*1)	B	C	D		
F-05SV2	NF32-SV	2	-		(b) (a)	105	12.5	111	H	(a): Breaker mounting screws (2 pcs) (b): Breaker - operating handle mounting screws (2 pcs)	
F-05SVE2	NF63-CV, NF63-SV, NF63-HV										
F-05SV	NF32-SV	3/4	NV32-SV		(c) (a)		25	111	J		
F-05SVE	NF63-CV, NF63-SV, NF63-HV		NV63-CV, NV63-SV, NV63-HV								
F-1SV2	NF125-CV, NF125-SV	2	-		(b) (a)	104	15	30	H		
F-1SVE2	NF125-CV, NF125-SV										
F-1SV	NF125-CV, NF125-SV	3/4	NV125-CV, NV125-SV, NV125-HV		(c) (a)		30	126	J		
F-1SVE	NF63-HRV, NF125-HV		-								
F-2SV	NF125-SEV, NF125-HEV, NF125-SGV	2/3/4	NV125-SEV, NV125-HEV		(c) (a)	107	35	126	K	F-05SV2, F-05SVE2, F-1SV2 and F-1SVE2 use (b) only.	
F-2SVE	NF125-LGV, NF125-HGV, NF125-RGV		NV250-CV, NV250-SV, NV250-HV								
	NF160-SGV, NF160-LGV, NF160-HGV		NV250-SEV, NV250-HEV								
	NF250-CV, NF250-SV, NF250-HV										

Notes: *1 Shows dimensions for front connection types. For rear connection and plug-in types, the reference surface changes.

*2 Do not remove the sponge packing installed to ensure protection rating of IP54. Install the packing that comes with the operating handle.

*3 Operating the trip button can trip the circuit breaker with the door open (the trip button position differs from one model to another).

Remarks: 1. Products with "E" in the model numbers are for emergency stop devices.

2. The standard models have reset-open specifications that allow the door to be opened only when reset (open operation).

Products with OFF-open specifications are made on request and allow the door to be opened in the OFF position.

3. Products with the same ON/OFF indication specifications as the standard models are made on request even if the circuit breaker is installed on its side.

2. V-type Operating Handle

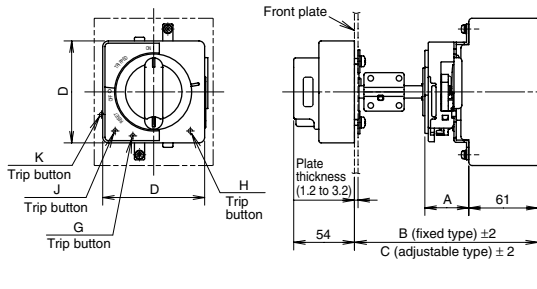
● Appearance (Color N1.5)



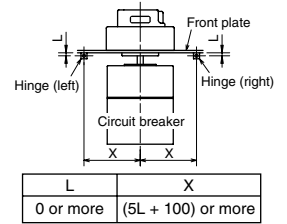
Operating handle attached to the panel door and control settings attached to the breaker body

- Provides a circuit-disconnecting (isolating) function in combination with the breaker body
- Conforms to EN safety standards (EN 60204-1)
- IP65 rating (IEC 60529)
- Can be locked with a commercial padlock (35mm and 40mm) in the OFF position
- 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, but the panel door can still be opened in the ON and TRIP positions by pushing the release tab using a tool

● External dimension drawing

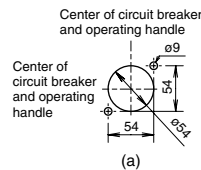


● Center of hinge and circuit breaker



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

● Front plate drilling dimension drawing



● Circuit breaker mounting-hole drilling dimension drawing

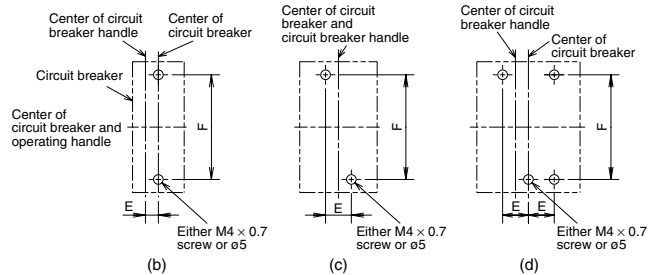


Table 4-17 Summary of dimensions

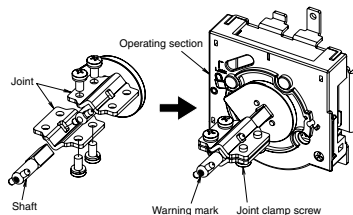
Type names	Applicable models				Drilling plans	Dimensions (mm)						Trip button position	Mounting screws	
	NFB		NV			A	B	C (min.)	C (max.)	D	E			F
		Number of poles		Number of poles										
V-05SV2	NF32-SV	2	-	-	(b) (a)	125	162	300	90	111	30	K	(a): Breaker mounting screws (2 pcs) (4 pcs for 4P) (b): Breaker - operating handle mounting screws and nuts (2 pcs each) V-05SV2, V-05SVE2, V-1SV2 and V-1SVE2 use (b) only with no nuts attached.	
V-05SVE2	NF63-CV, NF63-SV, NF63-HV	2	-	-	(c) (a)									
V-05SV	NF125-SVF	2/3	NV32-SV	2/3	(d) (a)									
V-05SVE	NF32-SV	3	NV63-CV, NV63-SV, NV63-HV	3	(a)									
	NF63-CV, NF63-SV, NF63-HV	4	-	-	(a)									
V-1SV2	NF125-CV, NF125-SV	2	-	-	(b) (a)									
V-1SVE2	NF125-CV, NF125-SV	3	NV125-CV, NV125-SV, NV125-HV	3	(c) (a)									
	NF125-CV, NF125-SV	4	-	-	(d) (a)									
V-1SV	NF63-HRV, NF125-HV	2/3	-	-	(a)									
V-1SVE	NF63-HRV, NF125-HV	4	-	-	(a)									
V-2SV	NF125-SEV, NF125-HEV, NF125-SGV, NF125-LGV, NF125-HGV, NF125-RGV	2/3	NV125-SEV, NV125-HEV, NV250-CV, NV250-SV, NV250-HV	3	(c) (a)									
V-2SVE	NF160-SGV, NF160-LGV, NF160-HGV, NF250-CV, NF250-SV, NF250-HV, NF250-SGV, NF250-LGV, NF250-HGV, NF250-SEV, NF250-HEV, NF250-RGV	4	NV250-SEV, NV250-HEV	4	(d) (a)									

Note: *1 For the adjustable type, the dimensions shown above are those when the adjustment unit V-AD3S (separately available) is mounted.

- Remarks: 1. Please contact us regarding applicable models other than those mentioned above.
 2. IP65 rating (IEC 60529).
 3. Operating the trip button can trip the circuit breaker with the door open (the trip button position differs from one model to another).
 4. Products with "E" in the model numbers are for emergency stop devices.

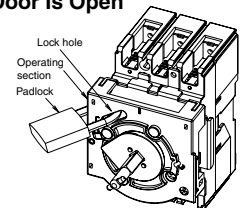
● Adjustable Type

Mounting the separately available adjustment unit V-AD3S to the built-in control settings, enables adjustment of the height between the breaker installation face and the panel door. Cut the shaft of the adjustment unit to fit the height.



● Operation Lock While Panel Door Is Open

During checkup and other times when the panel door is open, the operation lock can be used 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.

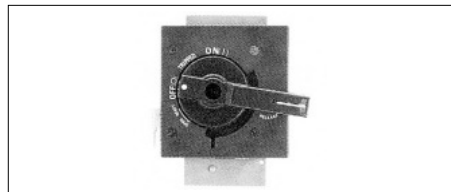


4. Accessories

External Accessories

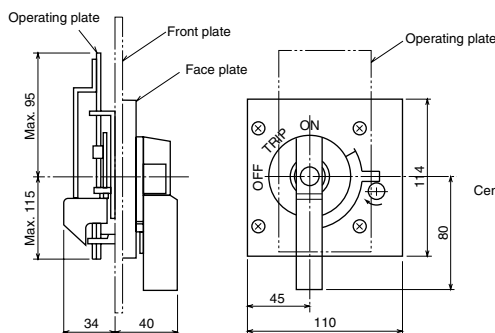
3. S-type Operating Handle

● Appearance (Color N1.5)



- The handle can be locked at either ON or OFF position (three padlocks (40mm) can be installed, OFF-position lock only specifications are also acceptable)
 - Degrees 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)).

● External dimension drawing



● Front plate drilling dimension diagram

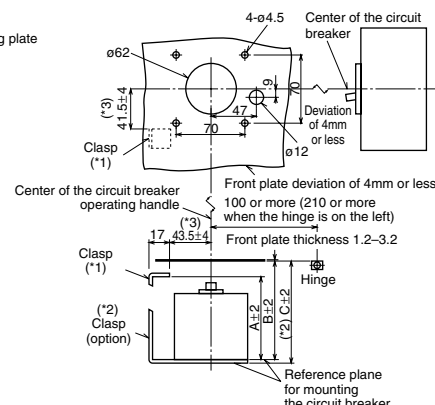


Table 4-18 Summary of dimensions

Type names	Applicable models		Delivery category	Dimensions (mm)		
	NFB	NV		A (*4)	B (*4)	C (*4)
S-05SV	NF32-SV, NF63-CV, NF63-SV, NF63-HV, NF50-HRV, NF125-CV, NF125-SV, NF125-HV	NV32-SV, NV63-CV, NV63-SV, NV63-HV, NV125-CV, NV125-SV, NV125-HV	●	87	102	104.5
S-2SV	NF125-SEV, NF125-HEV, NF125-SGV, NF125-LGV, NF125-HGV, NF125-RGV, NF160-SGV, NF160-LGV, NF160-HGV, NF250-CV, NF250-SV, NF250-HV, NF250-SGV, NF250-LGV, NF250-HGV, NF250-SEV, NF250-HEV, NF250-RGV	NV125-SEV, NV125-HEV, NV250-CV, NV250-SV, NV250-HV, NV250-SEV, NV250-HEV	●	95	110	112.5

- Notes: *1 The clasps are not supplied as standard, and should be prepared by users. Other details such as dimensions are available on 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.
- Remark: 1. Not suitable for isolation.

4. Terminal Cover

Table 4-19

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)
NF32-SV, NF63-CV/SV/HV	2P	●TCL-05SV2 (*1) (50×65.5×25)	●TCS-05SV2 (*1) (50×65.5×5)	●TTC-05SV2 (*1) (50×65.5×25)	●BTC-05SV2 (50×65.5×5)	●PTC-05SV2 (50×65.5×5)
NF32-SV, NF63-CV/SV/HV, NV32-SV, NV63-HV	3P	●TCL-05SV3 (*2) (75×65.5×25)	●TCS-05SV3 (*2) (75×65.5×5)	●TTC-05SV3 (*2) (75×65.5×25)	●BTC-05SV3 (75×65.5×5)	●PTC-05SV3 (75×65.5×5)
NF125-CV/SV	2P	●TCL-1SV2 (*1) (60×65.5×40)	●TCS-1SV2 (*1) (60×65.5×6.5)	●TTC-1SV2 (*1) (60×65.5×40)	●BTC-1SV2 (60×65.5×6.5)	●PTC-1SV2 (60×65.5×6.5)
NF125-CV/SV, NV125-CV/SV/HV	3P	●TCL-1SV3 (*2) (90×65.5×40)	●TCS-1SV3 (*2) (90×65.5×6.5)	●TTC-1SV3 (*2) (90×65.5×40)	●BTC-1SV3 (90×65.5×6.5)	●PTC-1SV3 (90×65.5×6.5)
NF125-SEV, NF125-HEV, NF125-SGV, NF125-LGV, NF125-HGV, NF125-RGV, NF160-SGV, NF160-LGV, NF160-HGV, NF250-CV, NF250-SV, NF250-HV, NF250-SGV, NF250-LGV, NF250-HGV, NF250-SEV, NF250-HEV, NF250-RGV, NV250-CV, NV250-SV, NV250-HV, NV250-SEV, NV250-HEV	2P 3P	●TCL-2SV3 (*2) (105×65.5×40) (*3) ●TCL-2SV3L (*2) (105×65.5×50) (*4)	●TCS-2SV3 (105×65.5×6.5)	●TTC-2SV3 (105×65.5×40) (*3)	●BTC-2SV3 (105×65.5×6.5)	●PTC-2SV3 (105×65.5×6.5)

- Notes: *1 Attach the letter "F" to the end of model names for models with F-type operating handle (Those are F-type operating-handle dedicated models which use screws for fixing).
 *2 Can be combined with the F-type or V-type operating handle as a standard feature.
 *3 Available for 200A rating or smaller (maximum wire size of 100mm²).
 *4 Available for 250A rating or smaller (maximum wire size of 150mm²).
 Remarks: 1. External dimensions shown in parentheses are in mm and correspond to the figure labels A, B and C in the format (A×B×C).
 2. The wire sizes mentioned in notes (*3) through (*6) refer to 600V polyvinyl chloride wire.
 3. Cover the exposed live conductors of crimp terminals with insulation tape.

5. Electrical Operation Device

Table 4-20

Applicable models (*1)		NF125-CV (3P) NF125-SV (3P, 4P) NF125-HV	NF125-SEV/HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV/SV/HV/SGV/LGV/HGV/RGV NF250-SEV/HEV	NV125-CV/SV/HV	NV125-SEV/HEV NV250-CV/SV/HV NV250-SEV/HEV
Rated operating voltage	24VDC	MDS024-NF1SVJ	MDS024-NF2SVJ	MDS024-NV1SVJ	MDS024-NV2SVJ
	Compatible with 100-240VAC/100-250VDC	MDSAD240-NF1SVJ	MDSAD240-NF2SVJ	MDSAD240-NV1SVJ	MDSAD240-NV2SVJ

Note: *1 For other models, please order in conjunction with the circuit breaker.



Table 4-21 Specifications

Rated operating voltage (allowable voltage range 85~110%)		24VDC	Compatible with 100-240VAC/100-250VDC
Operating time (s)	ON action	0.05~0.1	
	OFF action	0.6 or less (self-holding)	
	Charging action	1.2 or less (self-holding)	
Power requirement (VA)		150	

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

2. Please contact us for details of the external dimensions.

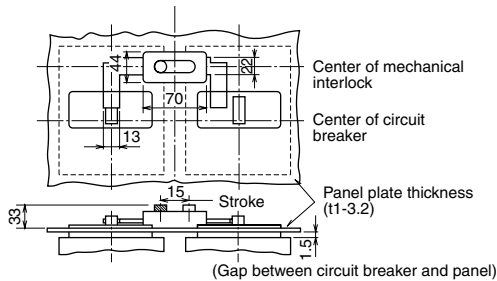
6. Mechanical Interlocks (MI)

Table 4-22

Applicable models	Number of poles	Front connection/Rear connection/Plug-in	Dimension A (mm)	Panel mounting	Mounted directly on circuit breaker
NF32-SV, NF63-CV/SV/HV	2P		47.5		● MI-05SVFB2
NF32-SV, NF63-CV/SV/HV NV32-SV, NV63-SV	3P	● MI-05SV3	-	● MI-05SVFP3	● MI-05SVFB3
NV63-CV, NV63-SV	2P, 3P			● MI-05SVFP4	-
NF63-SV/HV	4P	● MI-05SV4	45		● MI-1SVFB2
NF125-CV/SV	2P		-	● MI-1SVFP3	● MI-1SVFB3
NF125-CV NV125-CV/SV/HV	3P	● MI-05SV3		● MI-1SVFP4	-
NF125-SV/HV	3P, 4P	● MI-1SV4		● MI-2SVFP3	● MI-2SVFB3
NF125-SEV, NF125-HEV, NF125-SGV, NF125-LGV, NF125-HGV, NF125-RGV, NF160-SGV, NF160-LGV, NF160-HGV, NF250-CV, NF250-SV, NF250-HV, NF250-SGV, NF250-LGV, NF250-HGV, NF250-SEV, NF250-HEV, NF250-RGV, NV125-SEV, NV125-HEV, NV250-CV, NV250-SV, NV250-HV, NV250-SEV, NV250-HEV	2P, 3P, 4P	● MI-05SV3, ● MI-2SV4		● MI-2SVFP4	-

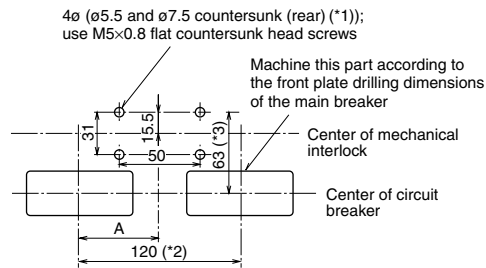
External dimension diagram

(front connection, rear connection and plug-in)



Drilling dimension diagram

(front connection, rear connection and plug-in)



Notes: *1 When the panel plate thickness is 2.3 or more, prepare four holes (ø5.5 and ø9.5 countersunk (rear)).

*2 These are standard dimensions for two- and three-pole models, but can be altered on request.

*3 The U Series have different dimensions. Please contact us for details.

Remarks: 1. Please contact us for external dimensions of other models of different specifications.

2. Not isolation-compatible.

4. Accessories

External Accessories

7. Handle Lock Devices and Card Holder

Table 4-23

Image		Lock cover (LC)	Handle lock (HL)	Handle lock (HL-S) (*2)	Card holder
NF32-SV, NF63-CV/SV/HV	2P	● LC-05SV	(*1) ● HLF-05SV ● HLN-05SV	● HLS-05SV2	● CH-P No.5
NV63-CV	2P, 3P			● HLS-05SV	
NF32-SV, NF63-CV/SV/HV, NV32-SV, NV63-SV/HV	3P 4P			● HLS-05SV	
NF125-CV/SV	2P	● LC-05SV	(*1) ● HLF-05SV ● HLN-05SV	● HLS-05SV2	
NF125-CV/SV, NV125-CV/SV/HV	3P 4P			● HLS-05SV	
NF125-HV	2P, 3P			● HLS-05SV	
NF125-SEV, NF125-HEV, NF125-SGV, NF125-LGV, NF125-HGV, NF125-RGV, NF160-SGV, NF160-LGV, NF160-HGV, NF250-CV, NF250-SV, NF250-HV, NF250-SGV, NF250-LGV, NF250-HGV, NF250-SEV, NF250-HEV, NF250-RGV, NV125-SEV, NV125-HEV, NV250-CV, NV250-SV, NV250-HV, NV250-SEV, NV250-HEV	2P 3P 4P	● LC-05SV	(*1) ● HLF-05SV ● HLN-05SV	● HLS-2SV	

Notes: *1 HLF types are used for OFF-lock, and HLN types for ON-lock.

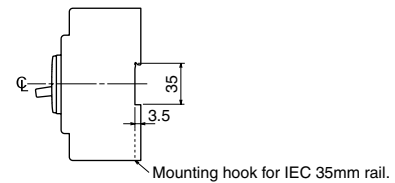
*2 HL-S types are used for OFF-lock.

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

8. IEC 35mm Rail Mounting Adapters

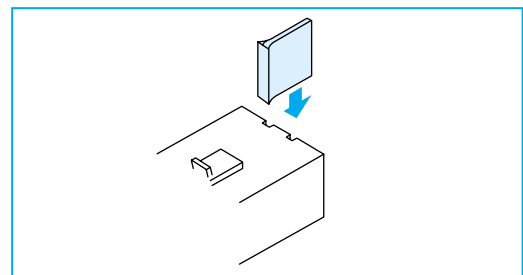
Table 4-24

Applicable models	Number of poles	Type names
NF32-SV, NF63-CV/SV/HV, NV32-SV, NV63-CV/SV/HV	2P, 3P	● DIN-05SV



9. Insulating Barrier

The insulating barrier enhances the insulation between the phases of circuit breaker terminals. It also prevents accidents due to conductive foreign matter and dust, and secondary accidents when isolating a fault current.



(1) The insulating barrier is available for the models listed in the table below.

Table 4-25

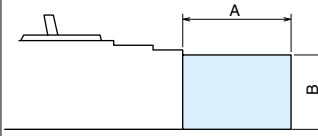
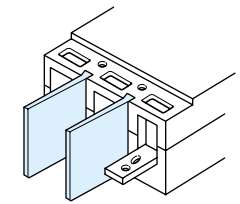
("○" denotes optional)

Applicable models		Connection method		
NFB	NV	Front connection	Rear connection	Plug-in
NF32-SV, NF63-CV, NF125-CV	NV32-SV, NV63-CV, NV125-CV	○	-	-
NF63-SV/HV, NF125-SV/HV	NV63-SV/HV NV125-SV/HV	Standard attachment	-	-
NF125-SEV/HEV NF125-RV, NF250-CV/SV/HV/SEV/HEV	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV	Standard attachment	-	Standard attachment

Remark: 1. Always mount the insulating barrier when it comes with the circuit breaker.

● Insulating Barrier - Front (BA-F)

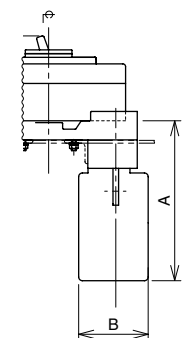
Table 4-26 Summary of dimensions

Type names	Applicable models		Delivery category	Dimensions (mm)		Quantity per breaker			Reference diagram
	NFB	NV		A	B	2P	3P	4P	
BAF-05SV	NF32-SV, NF63-CV, NF125-CV	NV32-SV NV63-CV NV125-CV	○	50	59.5	1 (*1)	2	3	
	NF63-SV/HV, NF125-SV/HV	NV63-SV/HV NV125-SV/HV	Standard attachment						
BAF-2SV	NF125-SEV, NF125-HEV, NF125-SGV, NF125-LGV, NF125-HGV, NF125-RGV, NF160-SGV, NF160-LGV, NF160-HGV, NF250-CV, NF250-SV, NF250-HV, NF250-SGV, NF250-LGV, NF250-HGV, NF250-SEV, NF250-HEV, NF250-RGV	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV	Standard attachment	100	59.5	2	4	6	

Note: *1 Not supplied with NV.

● Insulating Barrier - Plug-in (BA-P)

Table 4-27 Summary of dimensions

Type name	Applicable models		Delivery category	Dimensions (mm)		Quantity per breaker			Reference diagram
	NFB	NV		A	B	2P	3P	4P	
BAP-2SV	NF125-SEV, NF125-HEV, NF125-SGV, NF125-LGV, NF125-HGV, NF125-RGV, NF160-SGV, NF160-LGV, NF160-HGV, NF250-CV, NF250-SV, NF250-HV, NF250-SGV, NF250-LGV, NF250-HGV, NF250-SEV, NF250-HEV, NF250-RGV	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV	Standard attachment	172	74.5	4	4	6	

5. Characteristics and Dimensions

Molded-case Circuit Breakers

NF32-SV
NF63-CV
NF63-SV
NF63-HV

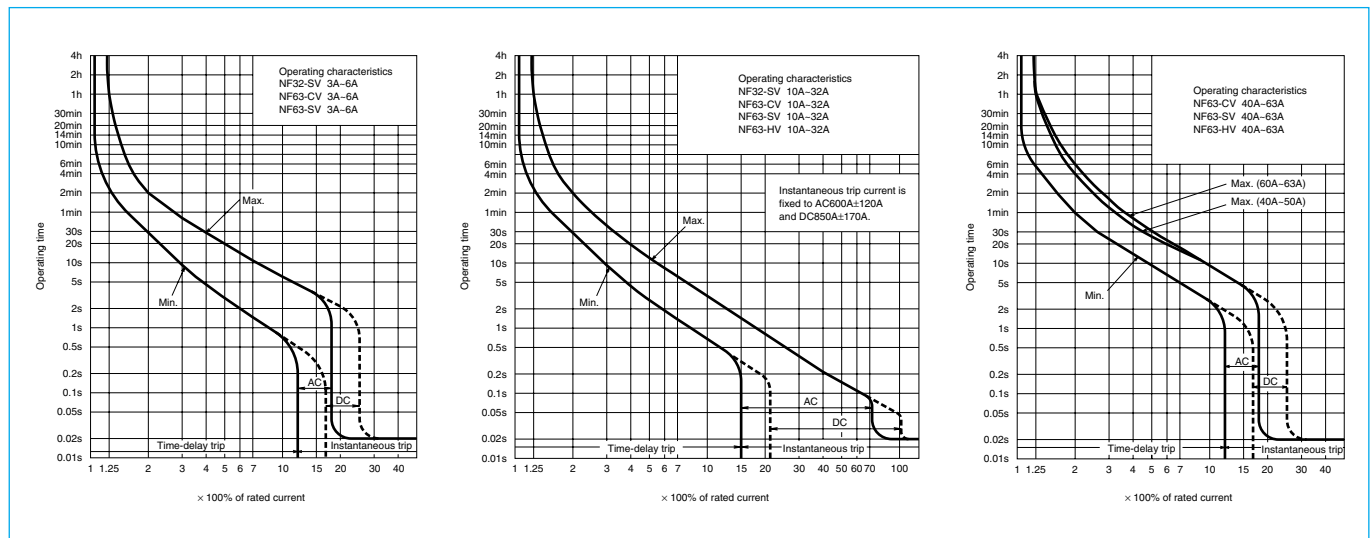


NF63-SV

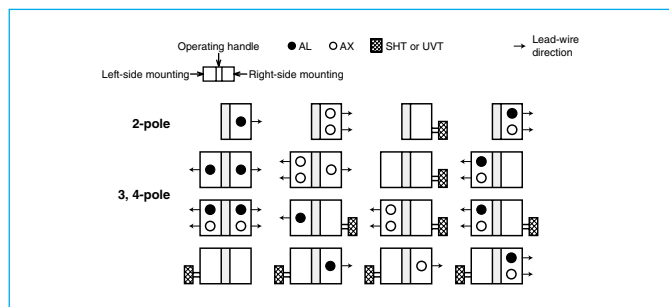
Type name		NF32-SV	NF63-CV	NF63-SV	NF63-HV	
Rated current In (A)		3 4 (5) 6 10 (15) 16 20 25 (30) 32	3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	10 (15) 16 20 25 (30) 32 40 50 (60) 63	
Number of poles		2 3	2 3	2 3 4	2 3 4	
Rated insulation voltage Ui (V)		600	600	600	690	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	DC	AC	DC	
		690V	—	—	2.5/2.5	
		500V	2.5/2.5	2.5/2.5	7.5/7.5	7.5/7.5
		440V	2.5/2.5	2.5/2.5	7.5/7.5	10/8
		415V	2.5/2.5	2.5/2.5	7.5/7.5	10/8
		400V	5/5	5/5	7.5/7.5	10/8
		380V	5/5	5/5	7.5/7.5	10/8
230V	7.5/7.5	7.5/7.5	15/15	25/19		
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)				

Notes: *1 Use two poles for three- and four-pole products. Not available for use with connection as shown at the bottom of page 13.
*2 Supplied with NF63-SV and NF63-HV.

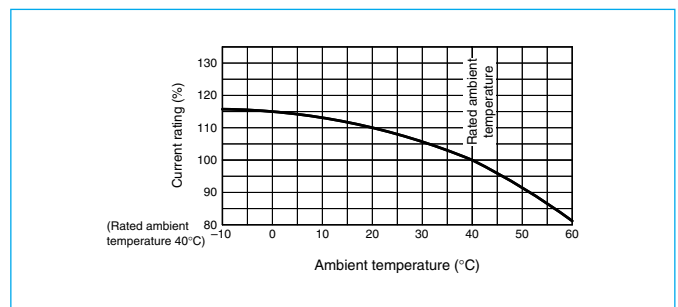
Operating Characteristics



Internal Accessories



Ambient Compensating Curve

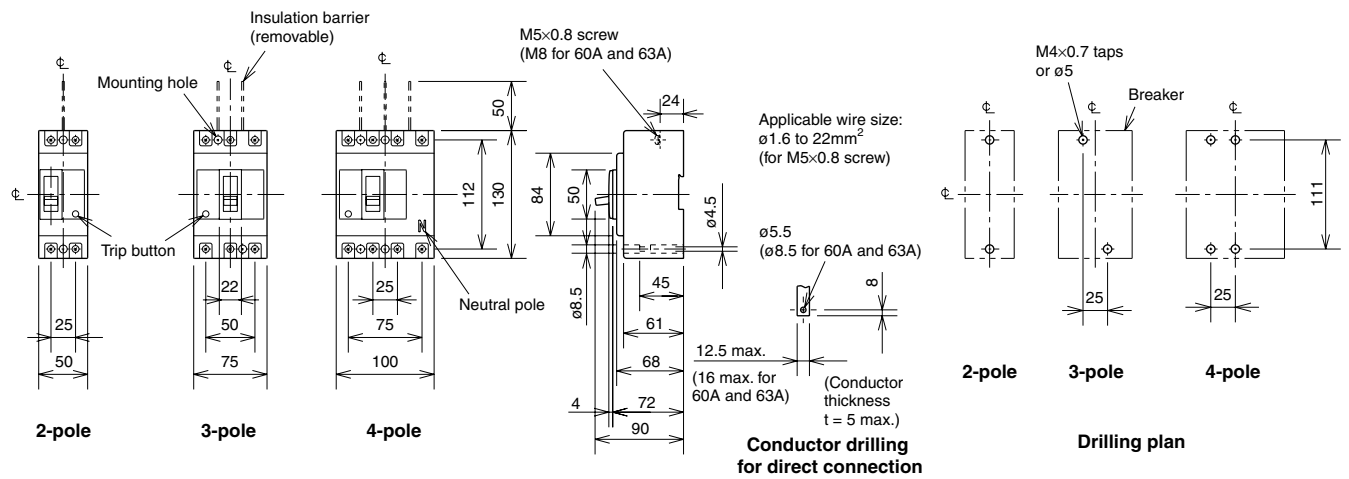


External Accessories

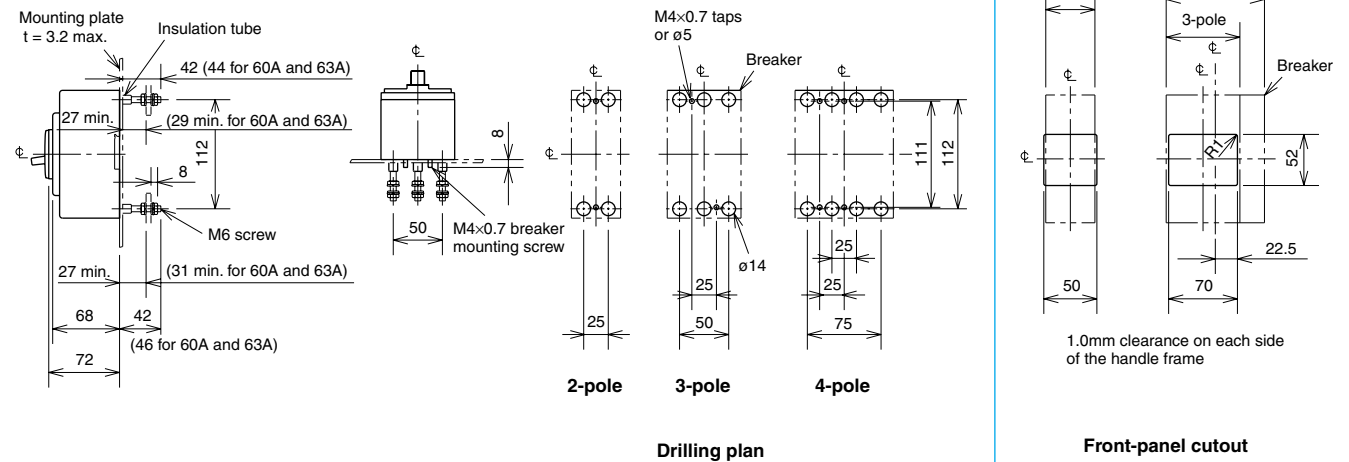
Accessories		Type name	Reference page	Accessories		Type name	Reference page	
Operating handle	F	2P F-05SV2	37	Mechanical interlock	MI	2, 3P MI-05SV3	40	
		3, 4P F-05SV			4P MI-05SV4			
	V	2P V-05SV2	38		Small	TC-S		2P TCS-05SV2
		3, 4P V-05SV				3P TCS-05SV3		
S	S-05SV	39	Large			TC-L	2P TCL-05SV2	
Handle lock device	LC	LC-05SV				41	4P	TCL-05SV2L
	(*1) HL	HLF-05SV	3P TCL-05SV3					
	HLN	HLN-05SV	2P TTC-05SV2					
	HL-S	HLS-05SV	3P TTC-05SV3					
					Skeleton	TTC	2P TTC-05SV2	39
			Rear			BTC	2P BTC-05SV2	
						3P BTC-05SV3		
				Plug-in	PTC	2P PTC-05SV2	39	
			3P PTC-05SV3					
				IEC 35mm rail mounting adapters		DIN-05SV	41	

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

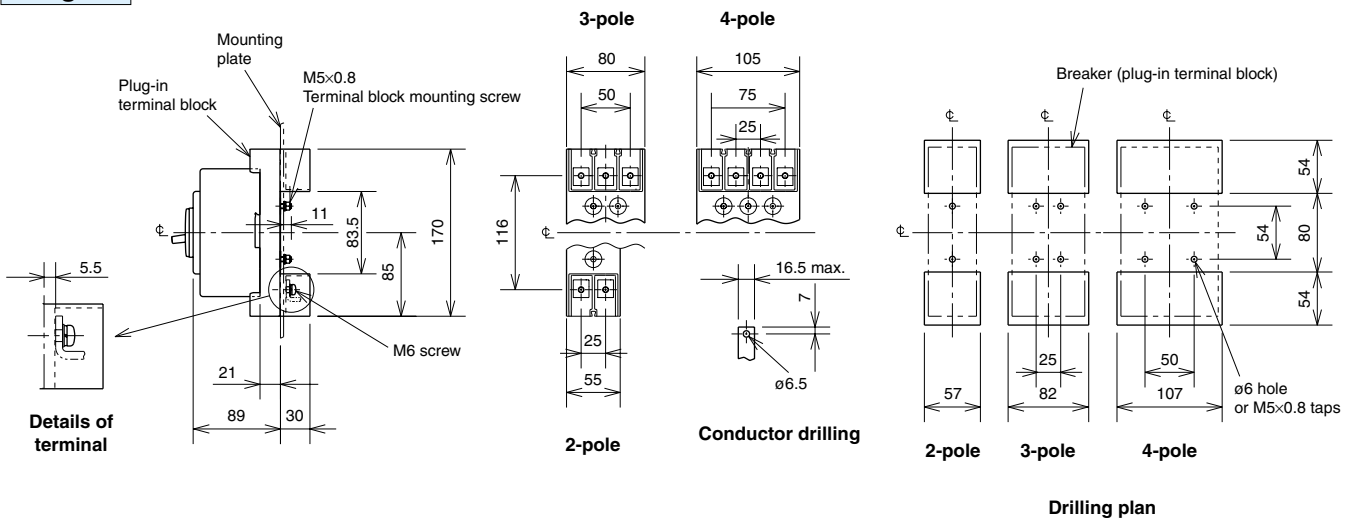
Front connection



Rear connection



Plug-in



Remark: 1. Only two- and three-pole models are available for NF32-SV and NF63-CV.

5. Characteristics and Dimensions

Molded-case Circuit Breakers

NF125-CV
NF125-SV
NF125-HV



NF125-SV

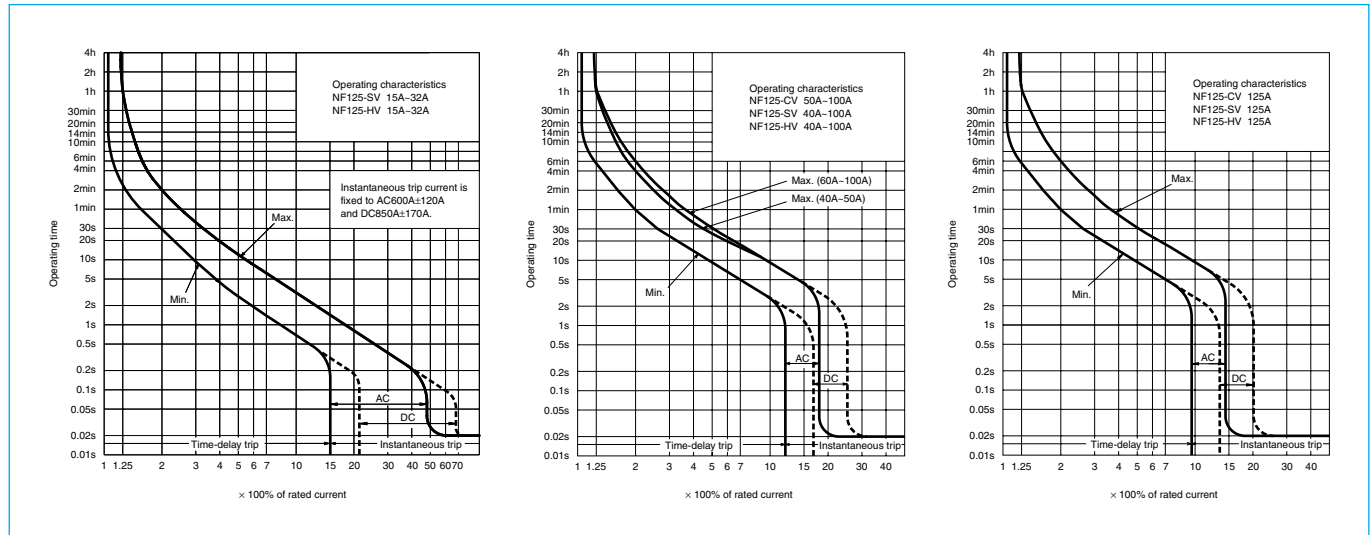
Type name		NF125-CV	NF125-SV	NF125-HV
Rated current In (A)		50 (60) 63 (75) 80 100 125	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125
Number of poles		2 3	2 3 4	2 3 4
Rated insulation voltage Ui (V)		600	690	690
Rated short-circuit breaking capacity (kA)	IEC 60947-2 AC	690V	—	8/8
		500V	7.5/4	18/18
		440V	10/5	25/25
		415V	10/5	30/30
		400V	10/5	30/30
		380V	10/5	30/30
		230V	30/15	50/50
DC	250V (*1)	7.5/4	40/40	
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) (*2) Insulation barrier: (2P: 1pc, 3P: 2pcs, 4P: 3pcs)		

Notes: *1 Use two poles for three- and four-pole products.

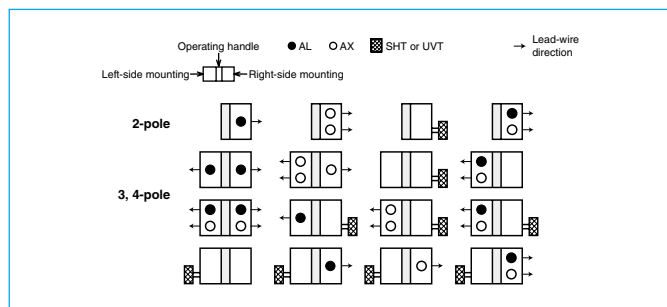
If wired as shown at the bottom on page 13, three and four poles can be used for up to 400 and 500VDC, respectively.

*2 Supplied with NF125-SV and NF125-HV.

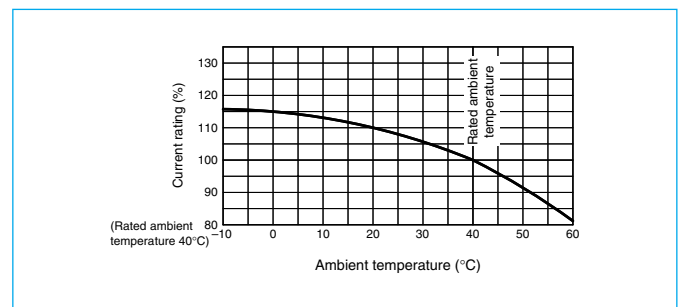
Operating Characteristics



Internal Accessories



Ambient Compensating Curve



External Accessories

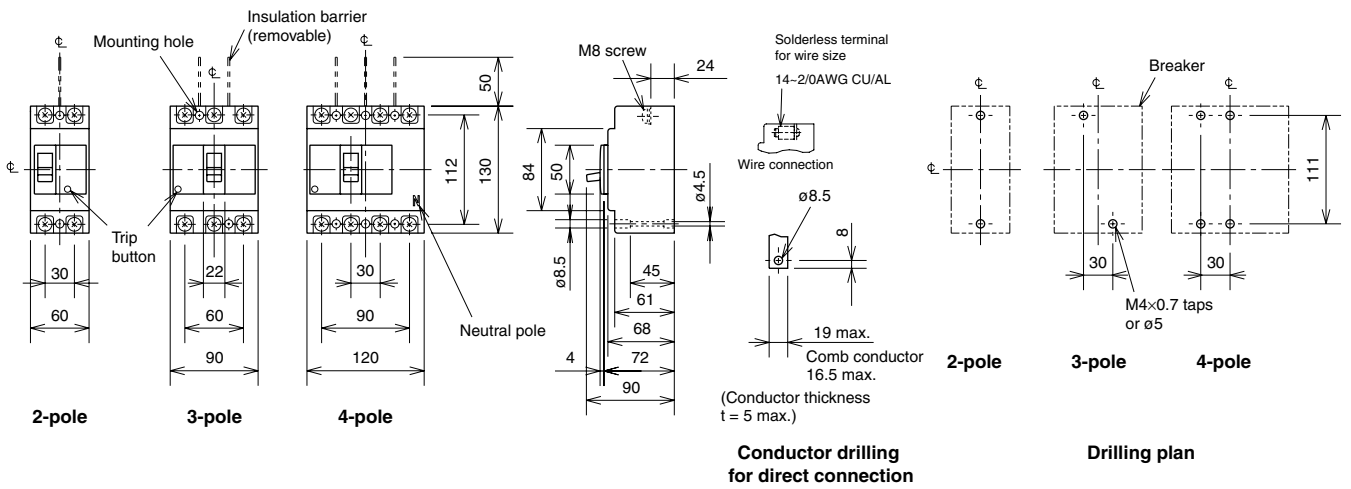
Accessories		Type name	Reference page	Accessories		Type name	Reference page		
Operating handle	F	2P F-1SV2	37	Mechanical interlock	MI	2, 3P MI-05SV3	40		
		3, 4P F-1SV				4P MI-05SV4			
	V	2P V-1SV2	38		Terminal cover	Small		2P TCS-1SV2	39
		3, 4P V-1SV						3P TCS-1SV3	
S	S-05SV	39	Large	2P TCL-1SV2		39			
Handle lock device	LC	LC-05SV		41				3P TCL-1SV3	
	(*1) HL	HLF-05SV					4P TCL-1SV4		
		HLN-05SV					2P TTC-1SV2		
		HLS-1SV			3P TTC-1SV3				
				Rear	2P BTC-1SV2	40			
				3P BTC-1SV3					
				2P PTC-1SV2					
				3P PTC-1SV3					
Electrical operation device				(*2)			40		

Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.

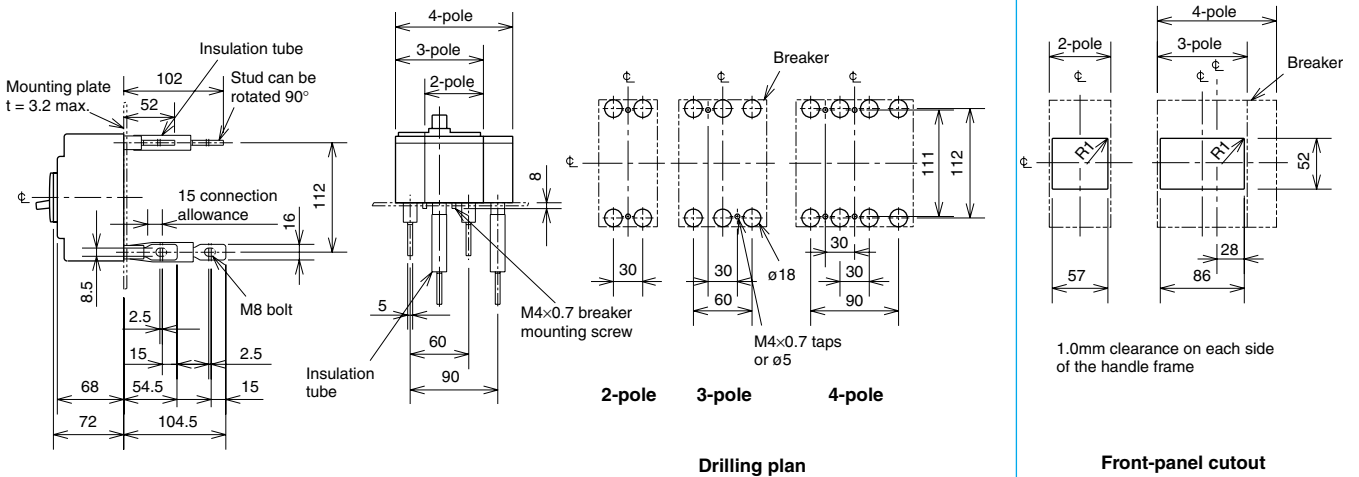
*2 Specify the working voltage. Refer to the reference page for type name.

*3 Available for NF125-CV/SV.

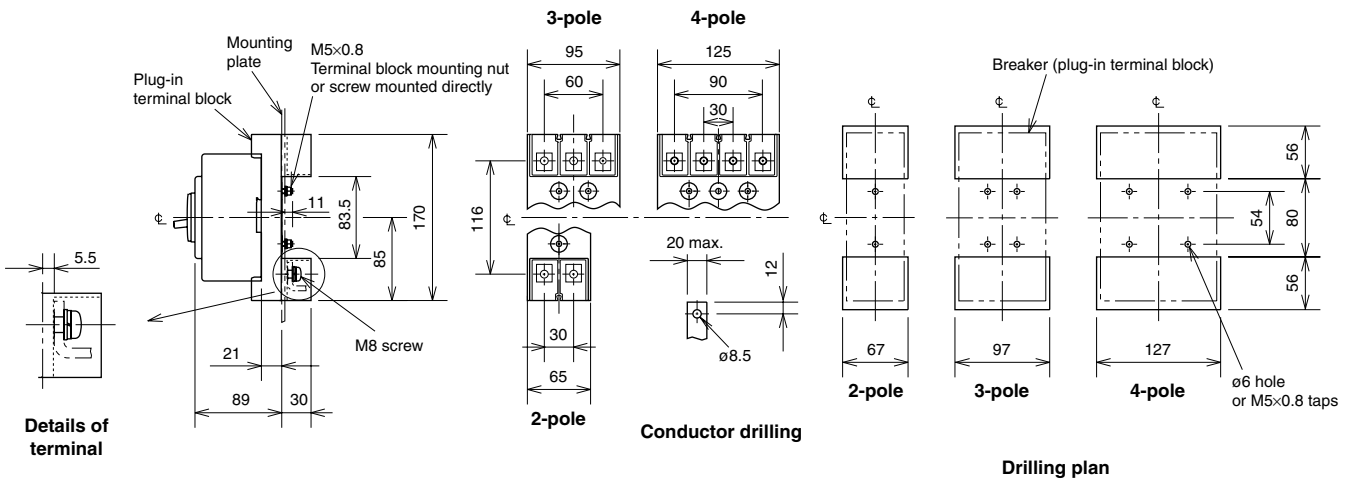
Front connection



Rear connection



Plug-in



- Remarks: 1. The two-pole models of NF125-HV are three-pole models with the central pole removed.
2. Only two- and three-pole models are available for NF125-CV.

5. Characteristics and Dimensions

Molded-case Circuit Breakers

NF250-CV
NF250-SV
NF250-HV

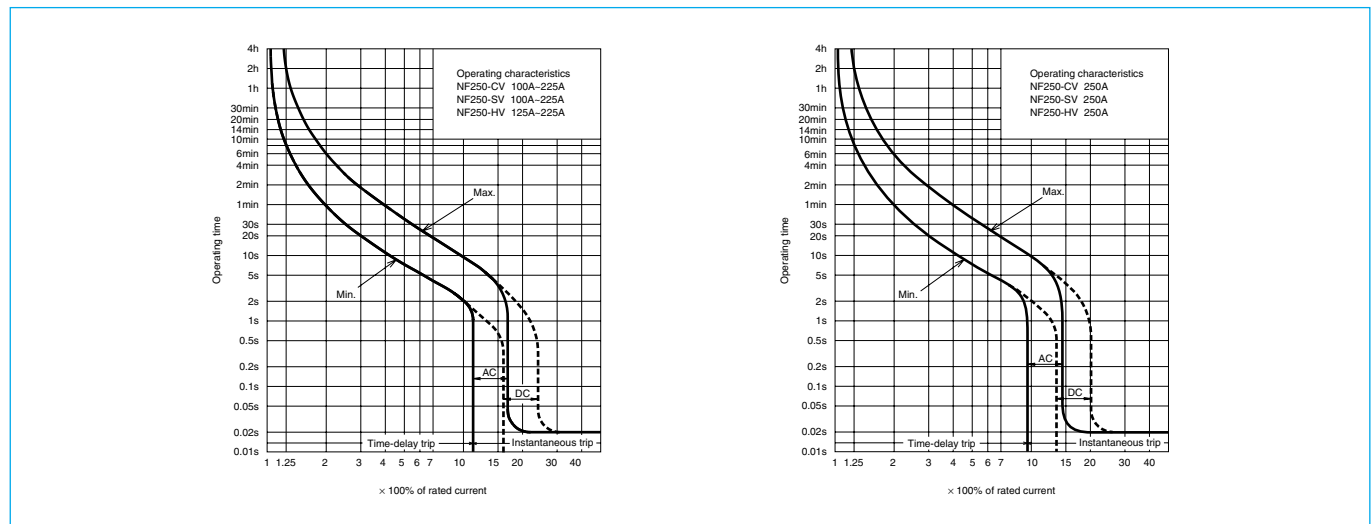


NF250-SV

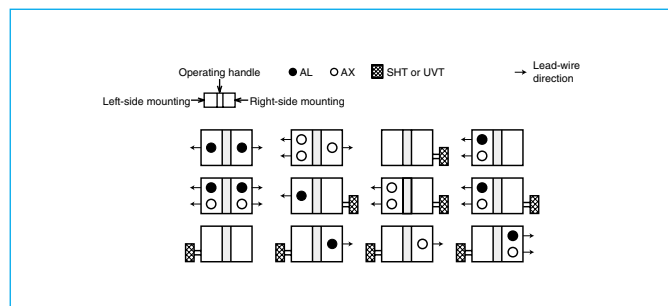
Type name		NF250-CV	NF250-SV	NF250-HV	
Rated current In (A)		(*1) (100) 125 150 175 200 225 250	(*1) (100) 125 150 160 175 200 225 250	125 150 160 175 200 225 250	
Number of poles		2 3	2 3 4	2 3 4	
Rated insulation voltage Ui (V)		600	690	690	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	—	8/8
			500V	10/8	30/30
			440V	15/12	36/36
			415V	25/19	36/36
			400V	25/19	36/36
			380V	25/19	36/36
			230V	36/27	85/85
DC (*1)	250V	15/12	20/20 (300V)	40/40 (300V)	
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 Use two poles for three- and four-pole products. In this case, do not use the neutral pole of the four-pole products.
If wired as shown at the bottom of page 13, three-pole NF250-CV can be used for up to 400VDC, three-pole NF250-SV and NF250-HV up to 500V and four-pole products up to 600VDC.

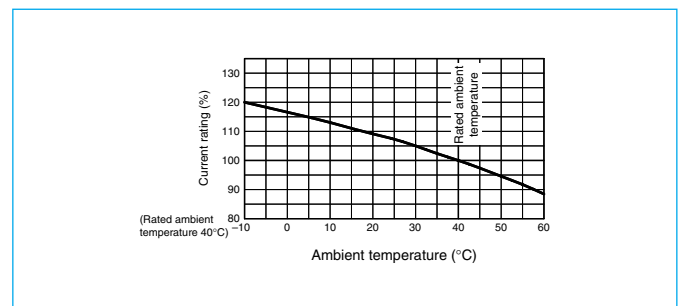
Operating Characteristics



Internal Accessories



Ambient Compensating Curve

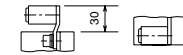
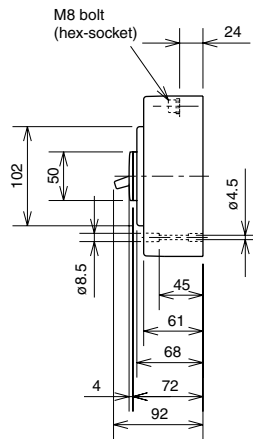
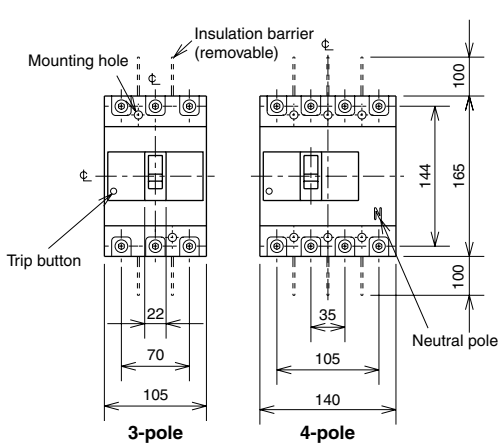


External Accessories

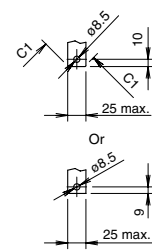
Accessories	Type name	Reference page	Accessories	Type name	Reference page	
Operating handle	F	F-2SV	Mechanical interlock	2, 3P	MI-05SV3	
	V	V-2SV		4P	MI-2SV4	
	S	S-2SV	39	2, 3P	TCS-2SV3	
Handle lock device	LC	LC-05SV	Terminal cover	Small	2, 3P	TCL-2SV3
	(*1) HL	HLF-05SV			Large	2, 3P
	HL	HLN-05SV		4P		TCL-2SV4
	HL-S	HLS-2SV		41	Skeleton	2, 3P
			Rear	BTC	2, 3P	BTC-2SV3
			Plug-in	PTC	2, 3P	PTC-2SV3
			Electrical operation device		(*2)	40

Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.
*3 Available for NF250-CV/SV.

Front connection

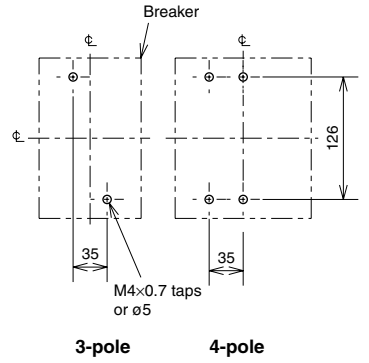


Solderless terminal for wire size
125 – 175A 14 – 95mm²
200 – 250A 70 – 125mm²
Wire connection



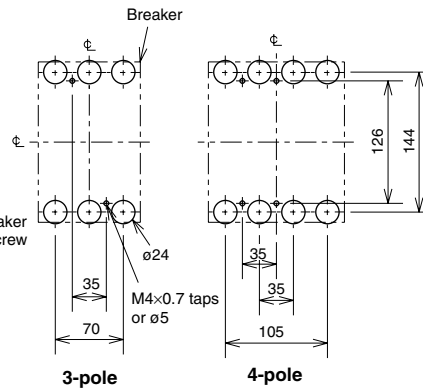
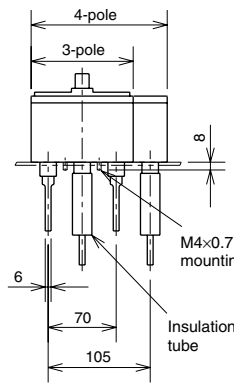
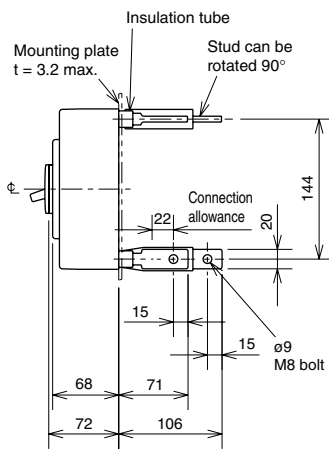
(Conductor thickness $t = 7$ max.)

Conductor drilling for direct connection

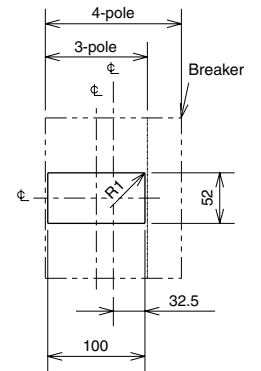


Drilling plan

Rear connection



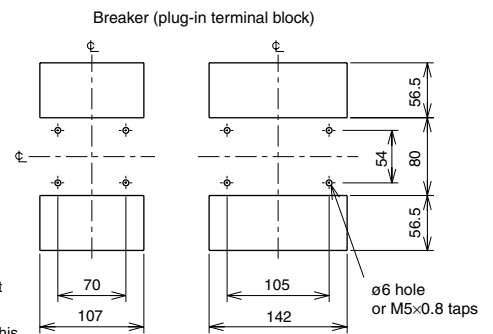
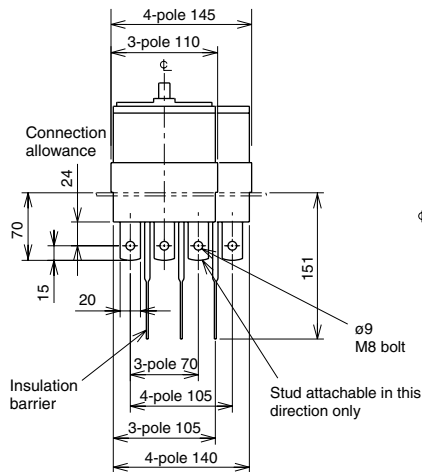
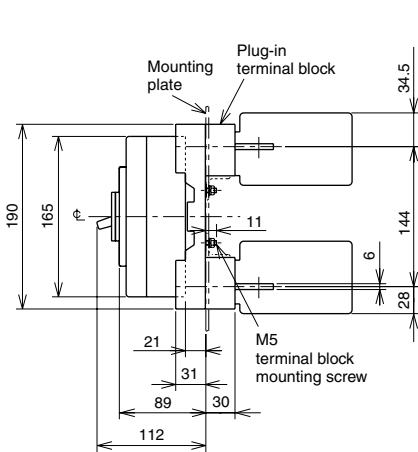
Drilling plan



1.0mm clearance on each side of the handle frame

Front-panel cutout

Plug-in



Drilling plan

Remarks: 1. two-pole models are three-pole models with the central pole removed.
2. Only two- and three-pole models are available for NF250-CV.

5. Characteristics and Dimensions

Molded-case Circuit Breakers

NF125-SGV NF160-SGV
 NF250-SGV NF125-LGV
 NF160-LGV NF250-LGV
 NF125-HGV NF160-HGV
 NF250-HGV NF125-RGV
 NF250-RGV



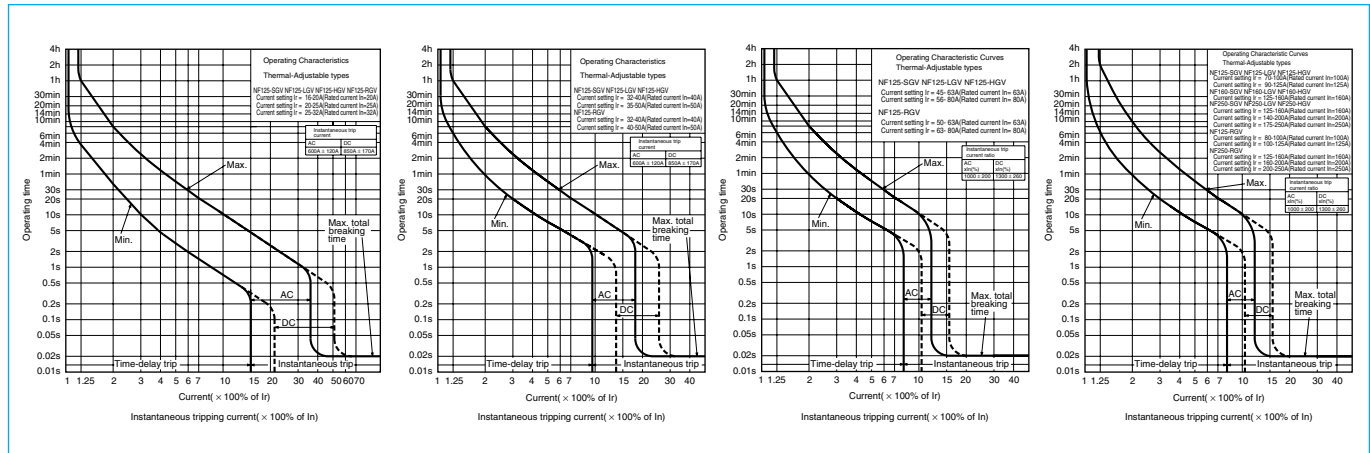
NF250-SGV

Type name		NF125-SGV	NF160-SGV	NF250-SGV	NF125-LGV	NF160-LGV	NF250-LGV	
Rated current In (A)		16-20, 20-25, 25-32 32-40, 35-50, 45-63 56-80, 70-100, 90-125	125-160	125-160 140-200 175-250	16-20, 20-25, 25-32 32-40, 35-50, 45-63 56-80, 70-100, 90-125	125-160	125-160 140-200 175-250	
Number of poles		2 3 4	2 3 4	2 3 4	2 3 4	2 3 4	2 3 4	
Rated insulation voltage Ui (V)		690		690	690		690	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	8/8	8/8	8/8	8/8	8/8
			500V	30/30	30/30	30/30	36/36	36/36
			440V	36/36	36/36	36/36	50/50	50/50
			415V	36/36	36/36	36/36	50/50	50/50
			400V	36/36	36/36	36/36	50/50	50/50
			380V	36/36	36/36	36/36	50/50	50/50
			230V	85/85	85/85	85/85	90/90	90/90
			200V	85/85	85/85	85/85	90/90	90/90
Standard attached parts (front connection)		Mounting screw: M4x0.7x55 (2 and 3P: 2pcs, 4P: 4pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)						

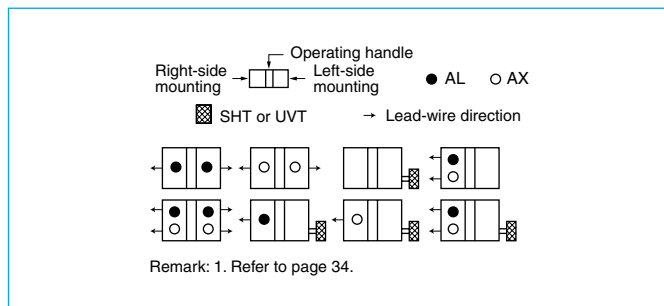
Type name		NF125-HGV	NF160-HGV	NF250-HGV	NF125-RGV	NF250-RGV	
Rated current In (A)		16-20, 20-25, 25-32 32-40, 35-50, 45-63 56-80, 70-100, 90-125	125-160	125-160 140-200 175-250	16-20, 20-25, 25-32 32-40, 40-50, 50-63 63-80, 80-100, 100-125	125-160 160-200 200-250	
Number of poles		2 3 4	2 3 4	2 3 4	2 3	2 3	
Rated insulation voltage Ui (V)		690		690	690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	10/8	10/8	—	—
			500V	50/38	50/38	50/38	—
			440V	65/65	65/65	65/65	125/125
			415V	70/70	70/70	70/70	150/150
			400V	75/75	75/75	75/75	150/150
			380V	75/75	75/75	75/75	150/150
			230V	100/100	100/100	100/100	150/150
			200V	100/100	100/100	100/100	150/150
Standard attached parts (front connection)		Mounting screw: M4x0.7x55 (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, three-pole models can be used for up to 500VDC, and 4-pole models for up to 600VDC.

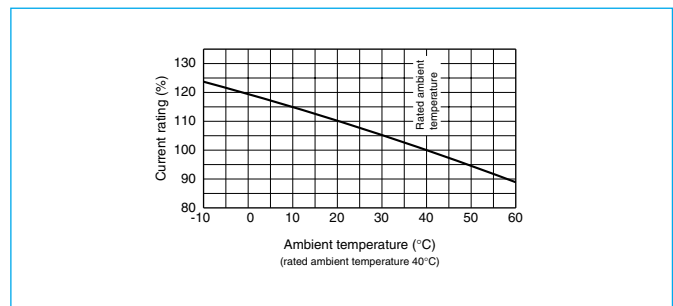
Operating Characteristics



Internal Accessories



Ambient Compensating Curve

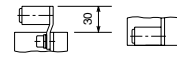
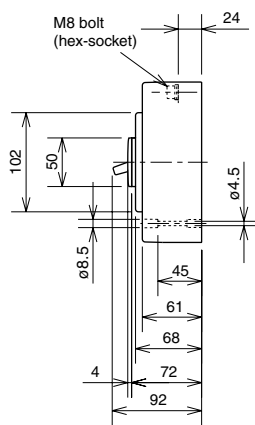
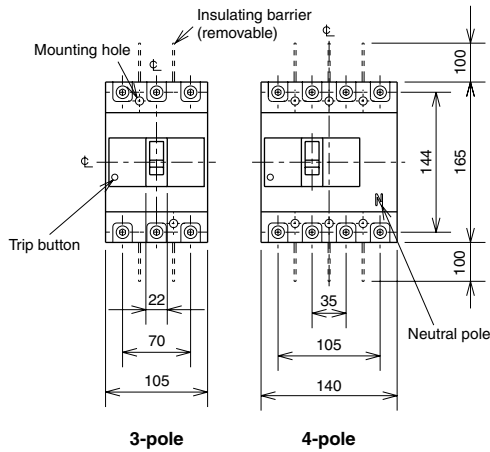


External Accessories

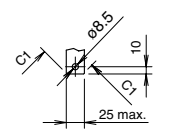
Accessories	Type name	Reference page	Accessories	Type name	Reference page	
Operating handle	F	F-2SV	Mechanical interlock	MI	2, 3P MI-05SV3	
	V	V-2SV		4P MI-2SV4	40	
	S	S-2SV		2, 3P TCS-2SV3		
Handle lock device	LC	LC-05SV	Terminal cover	Small	2, 3P TCL-2SV3	39
	(*)1 HLF	HLF-05SV			4P TCL-2SV3L	
	HL	HLN-05SV		2, 3P TTC-2SV3		
	HL-S	HLS-2SV		4P TTC-2SV3		
			Rear	BTC	2, 3P BTC-2SV3	
			Plug-in	PTC	2, 3P PTC-2SV3	
			Electrical operation device	(*)2	40	

Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
 *2 Specify the working voltage. Refer to the reference page for type name.
 *3 Available for NF250-CV/SV.

Front connection

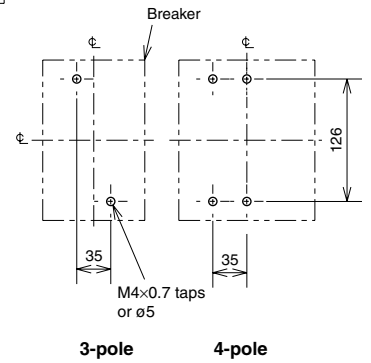


Solderless terminal for wire size
125~175A 14~95mm²
200~250A 70~125mm²
Wire connection



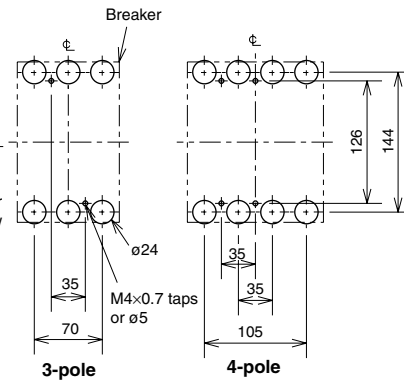
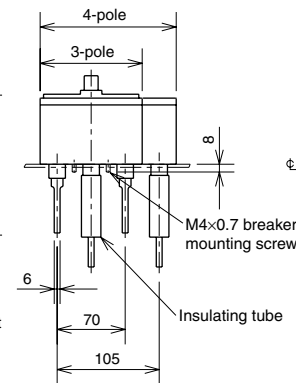
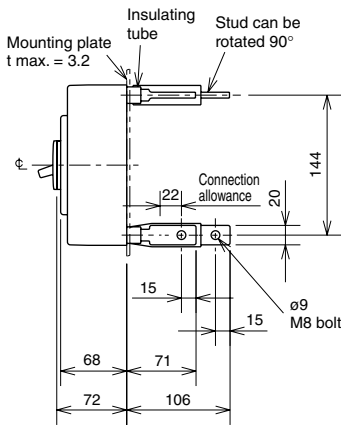
(Conductor thickness $t = 7$ max.)

Conductor drilling for direct connection

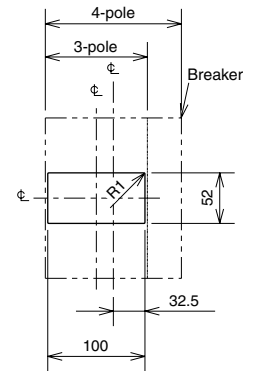


Drilling plan

Rear connection



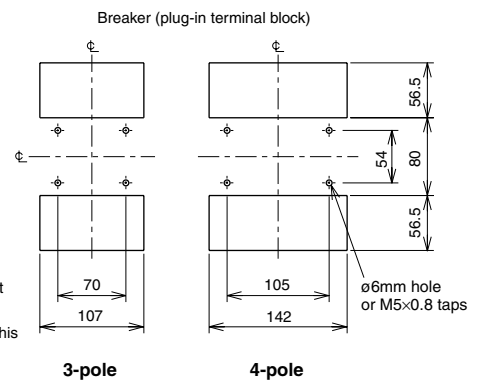
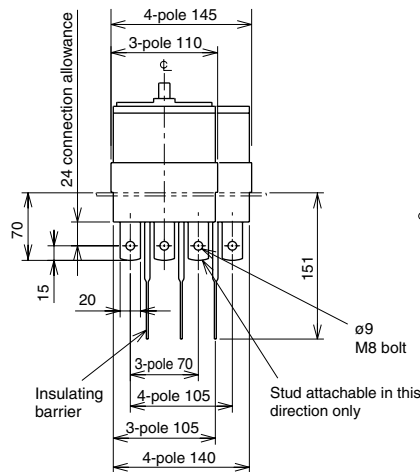
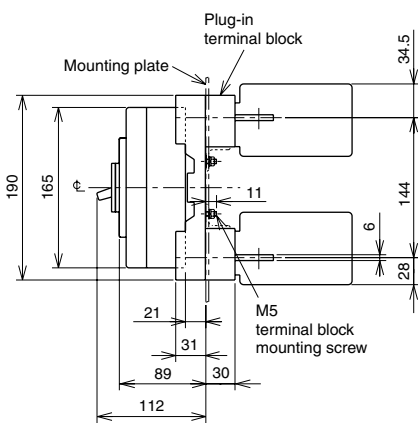
Drilling plan



1mm clearance on each side of the handle frame

Front-panel cutout

Plug-in



Drilling plan

Remark: 1. Two-pole models are three-pole models with the central pole removed.

5. Characteristics and Dimensions

Molded-case Circuit Breakers

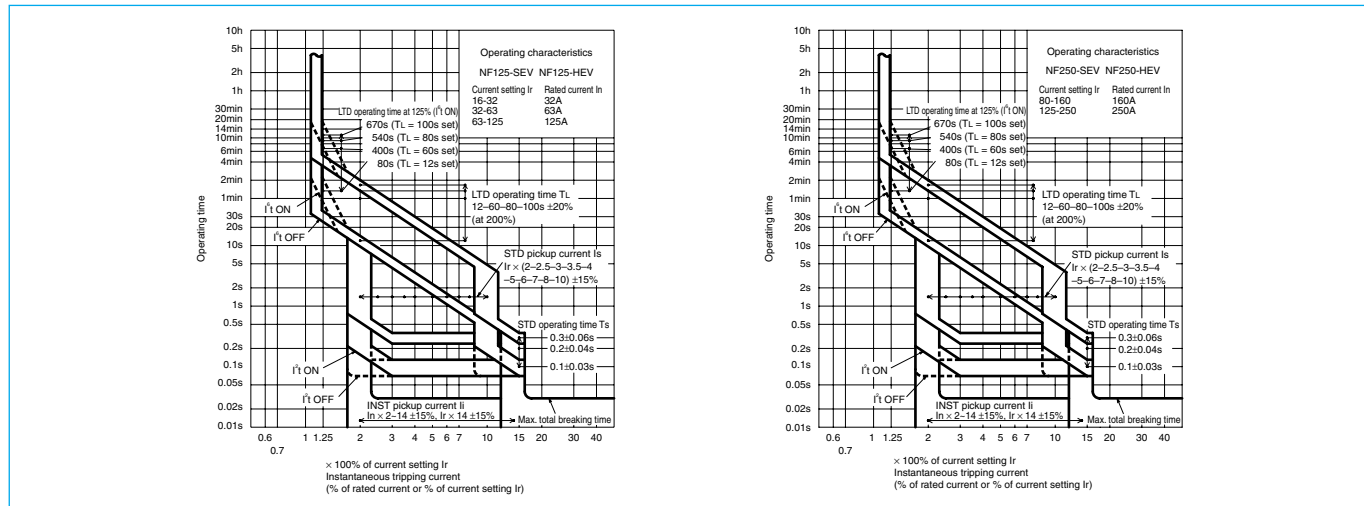
NF125-SEV
NF125-HEV
NF250-SEV
NF250-HEV



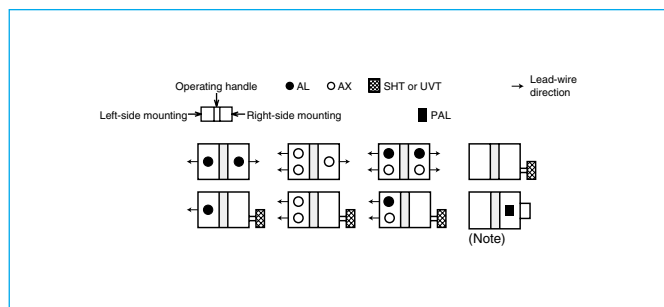
NF125-SEV

Type name		NF125-SEV	NF125-HEV	NF250-SEV	NF250-HEV	
Rated current In (A)		16-32 32-63 63-125	16-32 32-63 63-125	80-160 125-250	80-160 125-250	
Number of poles		3 4	3 4	3 4	3 4	
Rated insulation voltage Ui (V)		690		690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 AC	690V	8/8	10/8	8/8	10/8
		500V	30/30	50/38	30/30	50/38
		440V	36/36	65/65	36/36	65/65
		415V	36/36	70/70	36/36	70/70
		400V	36/36	75/75	36/36	75/75
		380V	36/36	75/75	36/36	75/75
		230V	85/85	100/100	85/85	100/100
	DC	250V	-	-	-	-
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)				

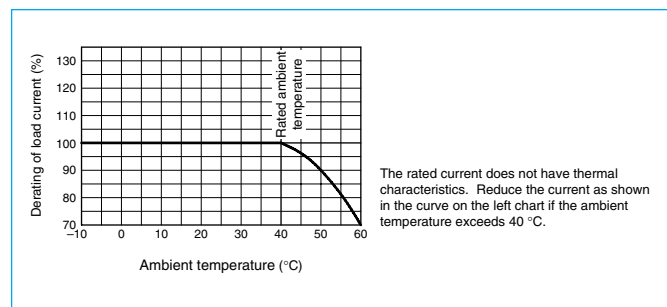
Operating Characteristics



Internal Accessories



Ambient Compensating Curve

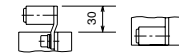
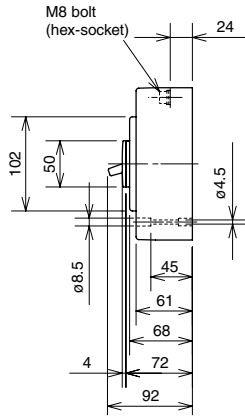
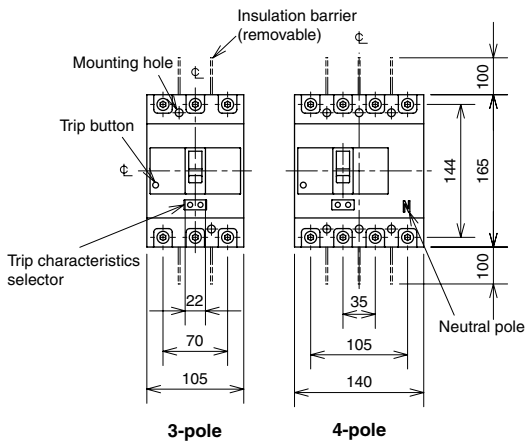


External Accessories

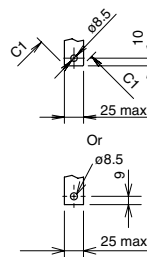
Accessories	Type name	Reference page	Accessories	Type name	Reference page		
Operating handle	F	F-2SV	37	Mechanical interlock	MI	3P MI-05SV3	40
	V	V-2SV	38		4P MI-2SV4		
	S	S-2SV	39	Terminal cover	Small	TC-S	3P TCS-2SV3
Handle lock device	LC	LC-05SV	41		3P	TCL-2SV3	
	(*1) HL	HLF-05SV			4P	TCL-2SV3L	
	HLN	HLN-05SV			3P	TTC-2SV3	
	HL-S	HLS-2SV			4P	TTC-2SV4	
			Rear		BTC	3P BTC-2SV3	
			Plug-in	PTC	3P PTC-2SV3		
Electrical operation device				(*2)	40		

Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.

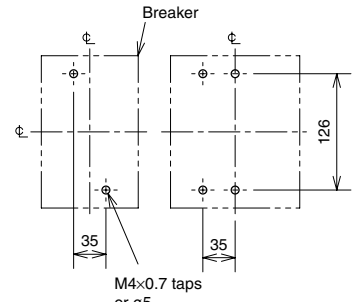
Front connection



Solderless terminal for wire size
125 ~ 175A 14 ~ 95mm²
200 ~ 250A 70 ~ 125mm²



(Conductor thickness $t = 7$ max.)



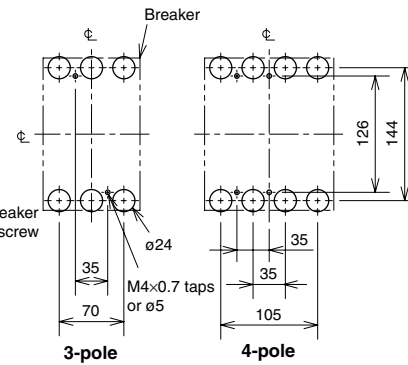
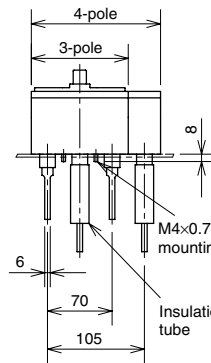
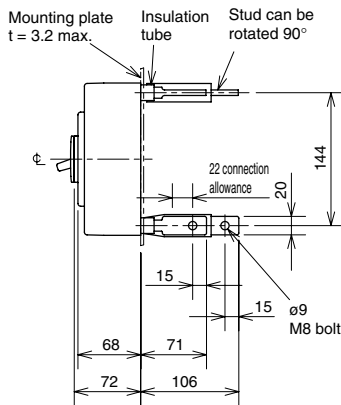
3-pole

4-pole

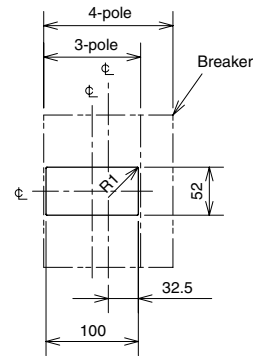
Conductor drilling for direct connection

Drilling plan

Rear connection



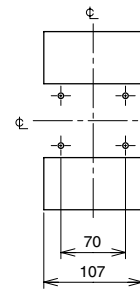
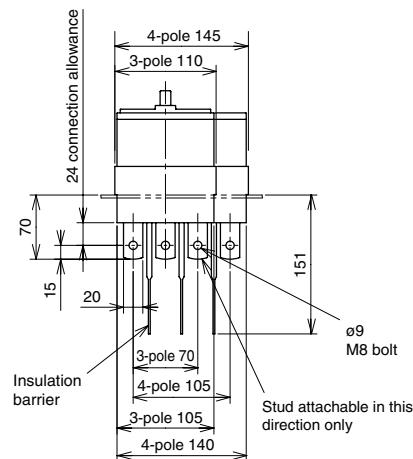
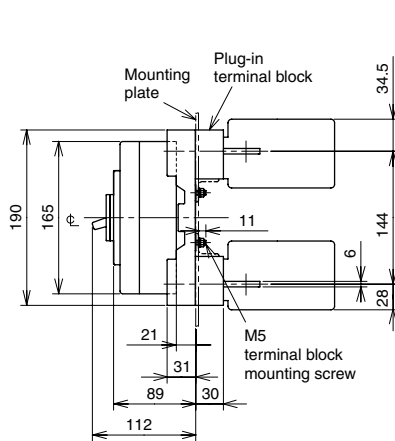
Drilling plan



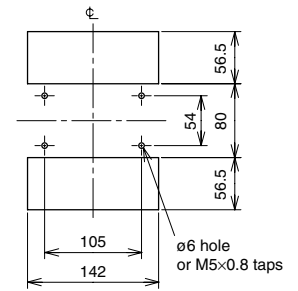
1.0mm clearance on each side of the handle frame

Front-panel cutout

Plug-in



3-pole



4-pole

Drilling plan

Remark: 1. Products with data parenthesized come with PAL; built-in models with PAL have different external dimensions from the standard models.

5. Characteristics and Dimensions

Molded-case Circuit Breakers

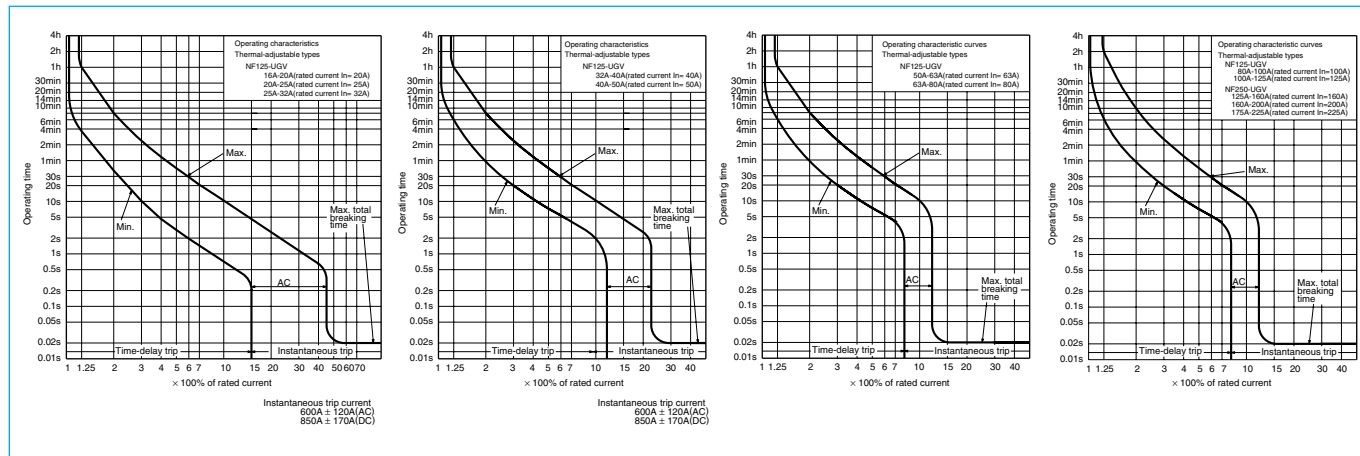
NF125-UGV
NF250-UGV



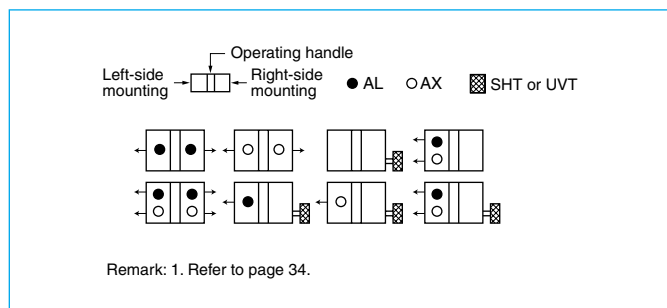
NF250-UGV

Type name		NF125-UGV			NF250-UGV		
Rated current I _n (A)		16-20, 20-25, 25-32 32-40, 40-50, 50-63 63-80, 80-100, 100-125			125-160 160-200 175-225		
Number of poles		2	3	4	2	3	4
Rated insulation voltage U _i (V)		690			690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	15/15		15/15	
			500V	200/200		200/200	
			440V	200/200		200/200	
			415V	200/200		200/200	
			400V	200/200		200/200	
			380V	200/200		200/200	
			230V	200/200		200/200	
		200V	200/200		200/200		
DC	300V	—		—			
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) M4×0.7×73 (2 and 3P: 2pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)					

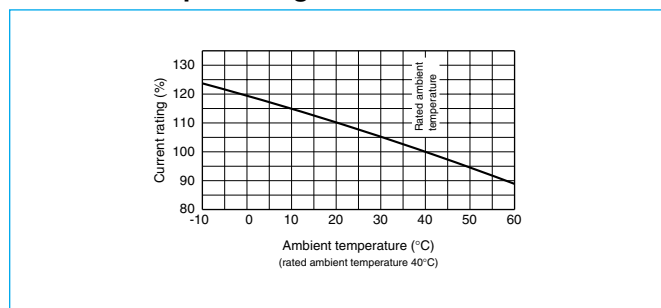
Operating Characteristics



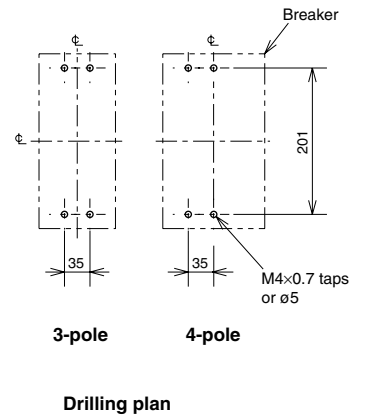
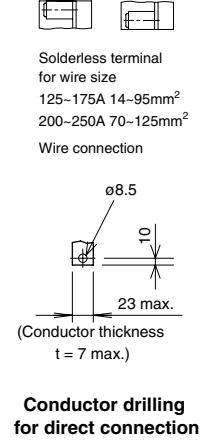
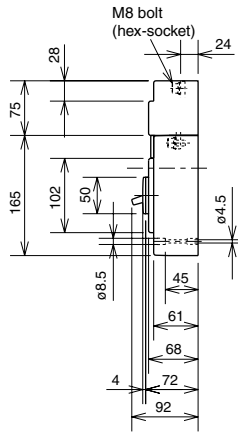
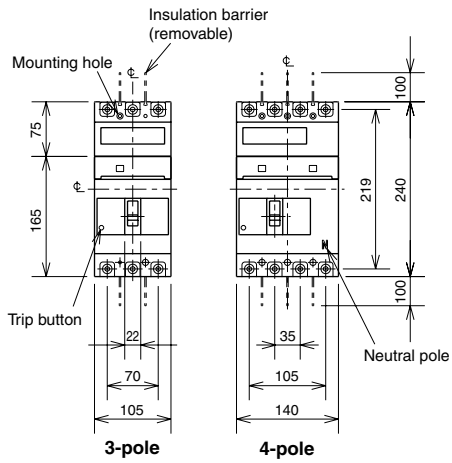
Internal Accessories



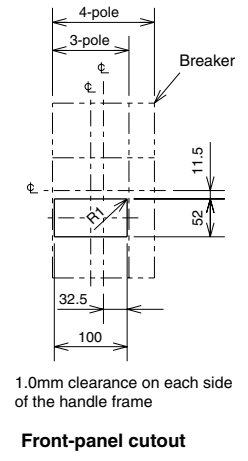
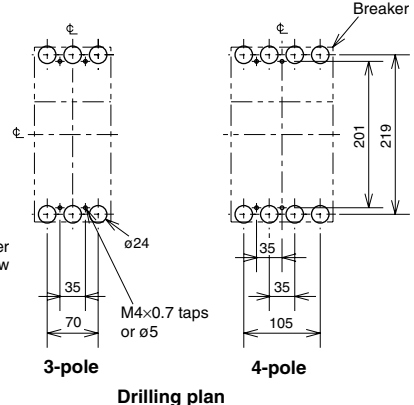
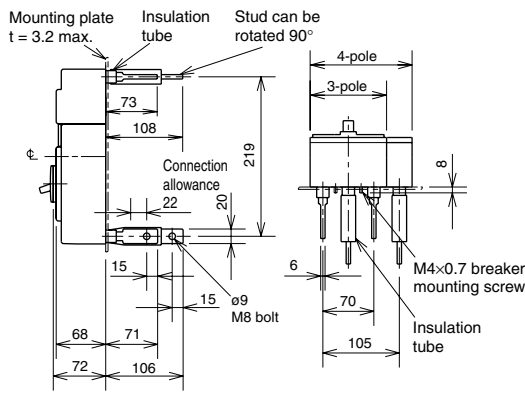
Ambient Compensating Curve



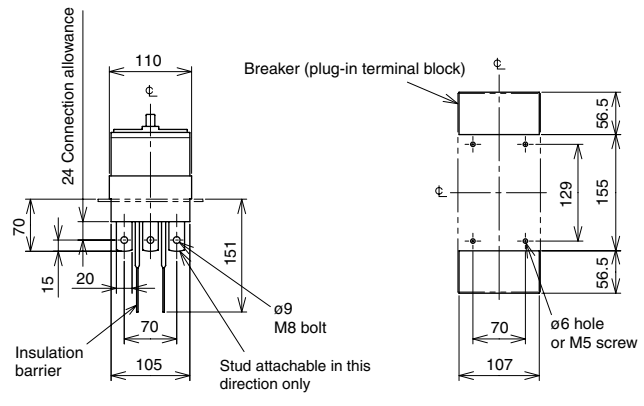
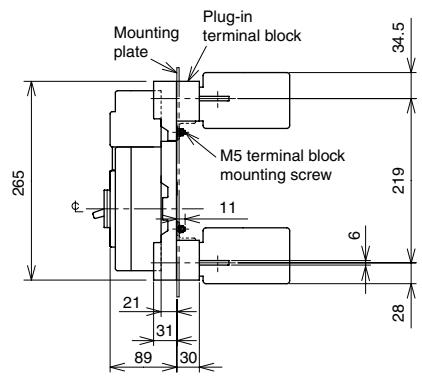
Front connection



Rear connection



Plug-in



Remark: 1. Two-pole models are three-pole models with the central pole removed.

5. Characteristics and Dimensions

Earth-leakage Circuit Breakers

NV32-SV
NV63-CV
NV63-SV
NV63-HV

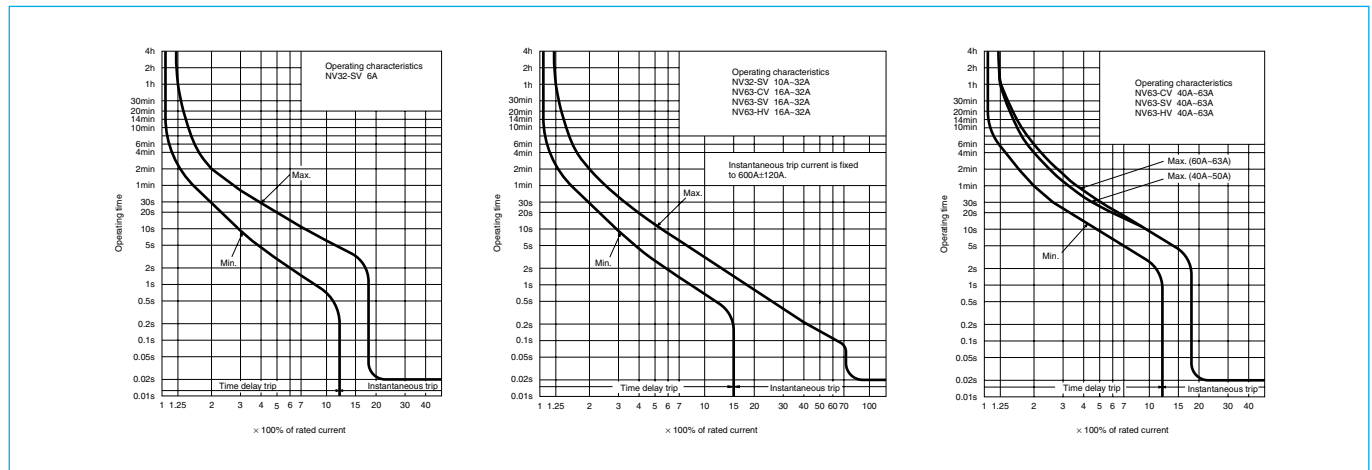


NV63-SV

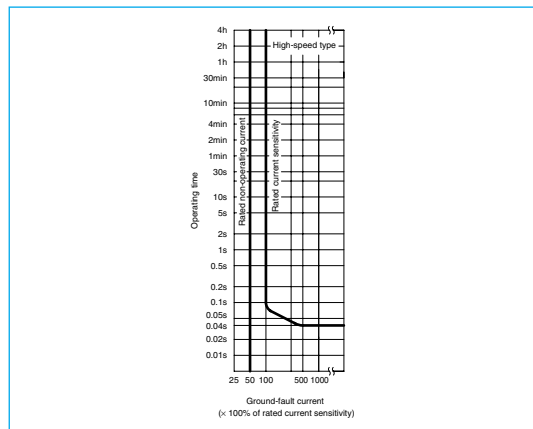
Type name		NV32-SV	NV63-CV	NV63-SV	NV63-HV				
Rated current I _n (A)		(5) 6 10 (15) 16 20 25 (30) 32	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63	(15) 16 20 25 (30) 32 40 50 (60) 63				
Number of poles		3	2	3	3				
Phase line		3ø3W, 1ø2W	1ø2W	3ø3W, 1ø2W	3ø3W, 1ø2W				
Rated operational voltage U _e (V)		AC 100-440	100-240	100-440	100-440				
High-speed type	Rated current sensitivity (mA)	(15) 30 100/200/ 500 selectable	30	15 30 100/200/ 500 selectable	(15) 30 100/200/ 500 selectable				
	Max operating time (s)	at ΔI _n at 5ΔI _n	0.1 0.04	0.1 0.04	0.1 0.04				
Time-delay type	Rated current sensitivity (mA)	—	—	—	—				
	Max operating time (s)	—	—	—	—				
	Inertial operating time (s) (or more)	—	—	—	—				
Earth-leakage indication system		—	Mechanical type (button)	Mechanical type (button)	Mechanical type (button)				
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	440V	5/5	—	2.5/2.5	—	7.5/7.5	10/8
			415V	5/5	—	2.5/2.5	—	7.5/7.5	10/8
			400V	5/5	—	5/5	—	7.5/7.5	10/8
			230V	10/10	—	7.5/7.5	—	15/15	25/19
			200V	10/10	—	7.5/7.5	—	15/15	25/19
			100V	10/10	—	7.5/7.5	—	15/15	25/19
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (2pcs) (*1)		Insulation barrier: (2P: 1pc, 3P: 2pcs)					

Note: *1 Attached to NV63-SV and NV63-HV.

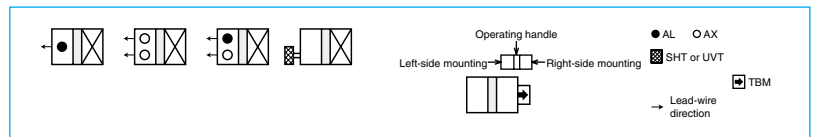
Operating Characteristics



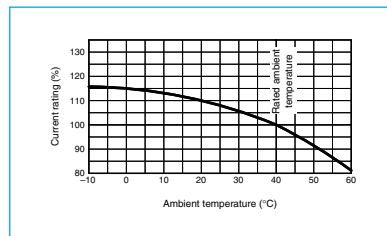
Earth-leakage Tripping Characteristics



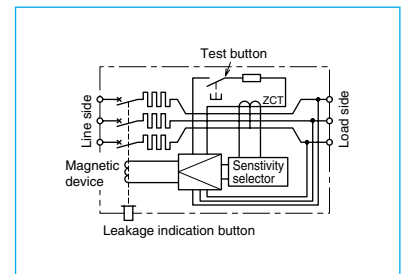
Internal Accessories



Ambient Compensating Curve



Internal Wiring Diagram

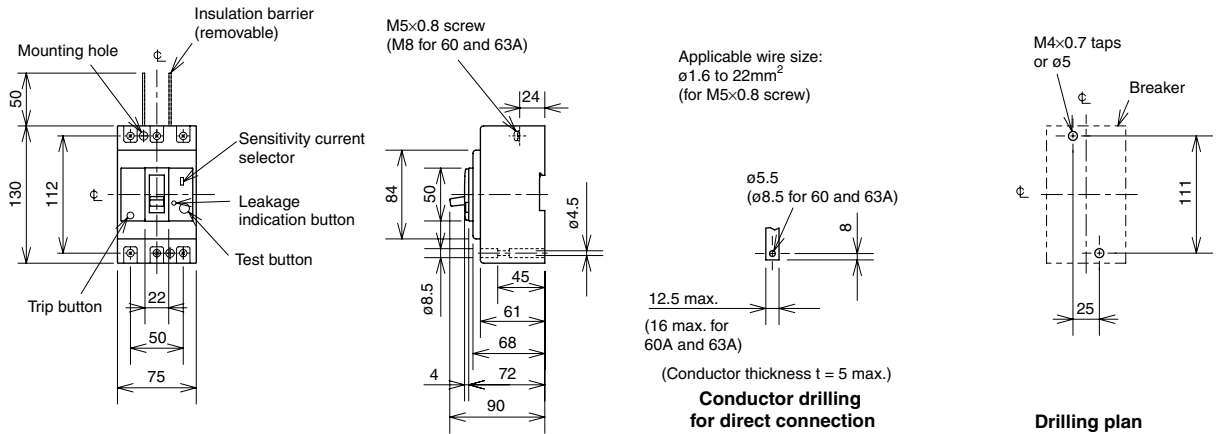


External Accessories

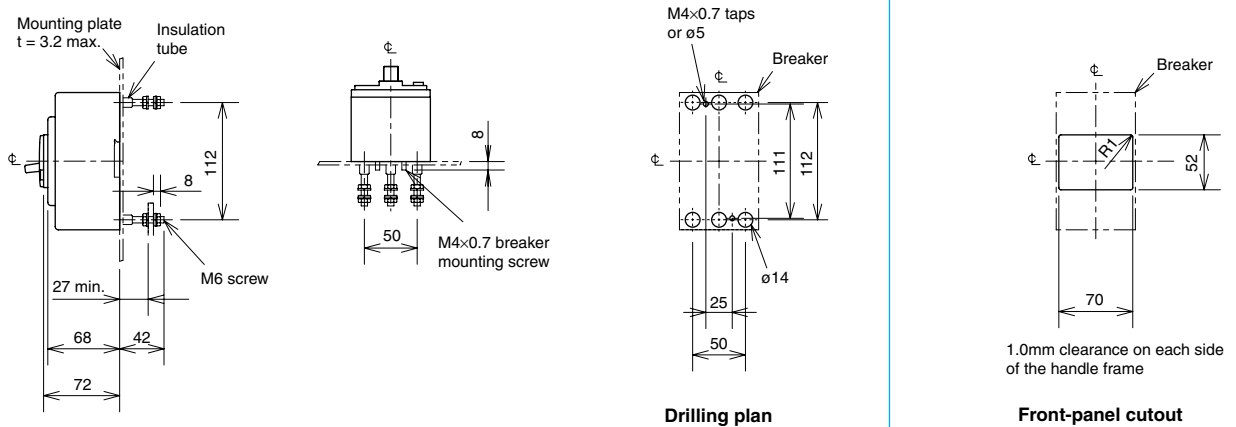
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F-05SV	Mechanical interlock	MI	MI-05SV3
	V	V-05SV	Small	TC-S	TCS-05SV3
	S	S-05SV	Large	TC-L	TCL-05SV3
Handle lock device	LC	LC-05SV	Skeleton	TTC	TTC-05SV3
	(*1) HLF	HLF-05SV	Rear	BTC	BTC-05SV3
	HLN	HLN-05SV	Plug-in	PTC	PTC-05SV3
	HL-S	HLS-05SV	IEC 35mm rail mounting adapters	DIN-05SV	

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

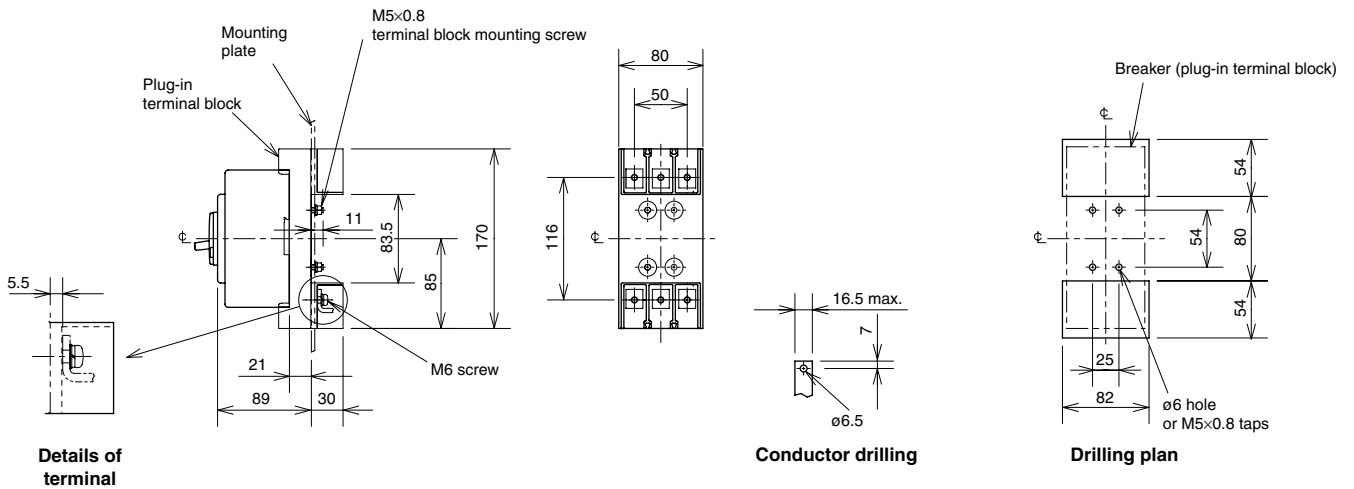
Front connection



Rear connection



Plug-in



Remark: 1. Two-pole models are three-pole models with the central pole removed.

5. Characteristics and Dimensions

Earth-leakage Circuit Breakers

NV125-CV
NV125-SV
NV125-HV

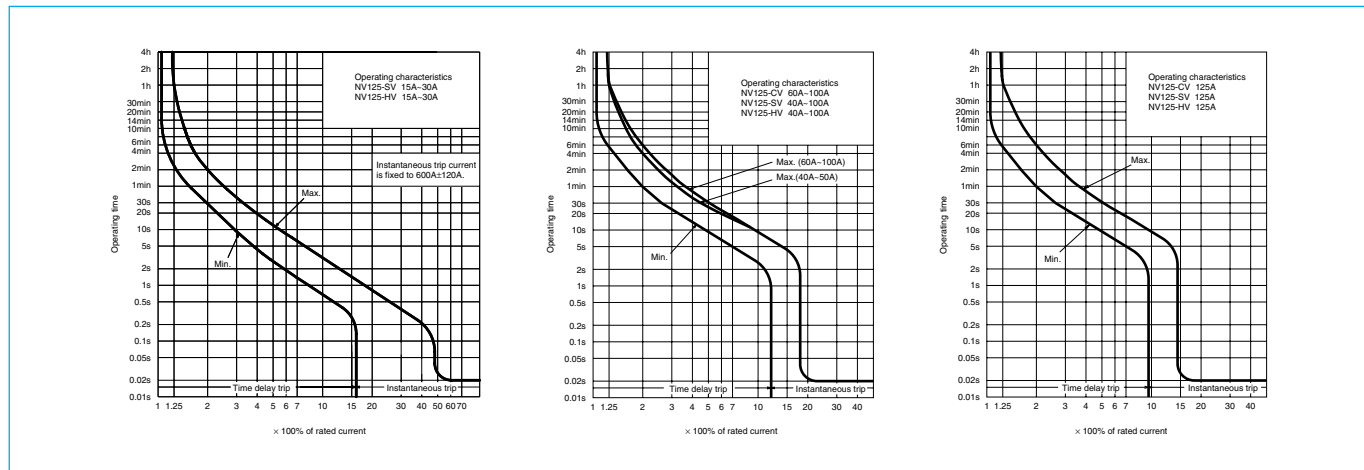


NV125-SV

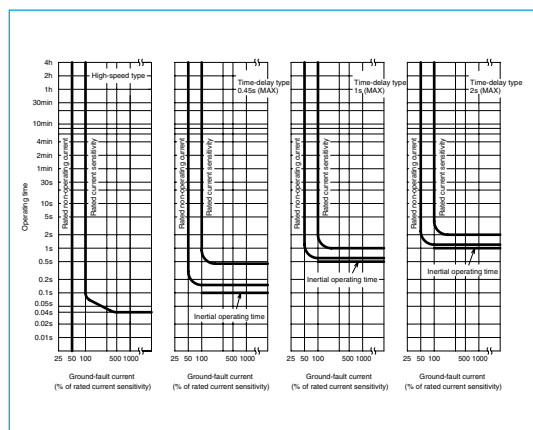
Type name		NV125-CV		NV125-SV		NV125-HV	
Rated current I _n (A)		(60) 63 (75) 80 100 125		(15) 16 20 30 32 40 50 (60) 63 (75) 80 100 125		(15) 16 20 (30) 32 40 50 (60) 63 75 80 100 125	
Number of poles		3		3	4	3	4
Phase line		3ø3W, 1ø2W		3ø3W, 1ø2W	3ø4W	3ø3W, 1ø2W	3ø4W
Rated operational voltage U _e (V)		AC 100-440		100-440	200-440	100-440	200-440
High-speed type	Rated current sensitivity (mA)	(15) 30 100/200/ 500 selectable		30 100/200/500 selectable		(30) 100/200/500 selectable	
	Max operating time (s)	at IΔn at 5IΔn		0.1 0.04		0.1 0.04	
Time-delay type	Rated current sensitivity (mA)	(100/200/500 selectable)		(100/200/500 selectable)		(100/200/500 selectable)	
	Max operating time (s)	(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)	
	Inertial operating time (s) (or more)	(0.1/0.5/1.0)		(0.1/0.5/1.0)		(0.1/0.5/1.0)	
Earth-leakage indication system		Mechanical type (button)		Mechanical type (button)		Mechanical type (button)	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	440V	10/5	25/25	50/38	
			415V	10/5	30/30	50/38	
			400V	10/5	30/30	50/38	
			230V	30/15	50/50	100/75	
			200V	30/15	50/50	100/75	
			100V	30/15	50/50	100/75	
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs)		(*1) Insulation barrier: (3P: 2pcs, 4P: 3pcs)			

Note: *1 Attached to NV125-SV and NV125-HV.

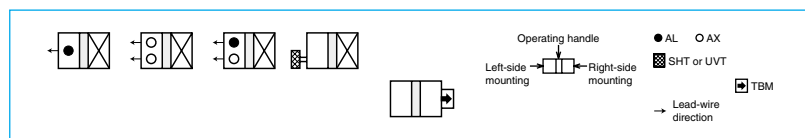
Operating Characteristics



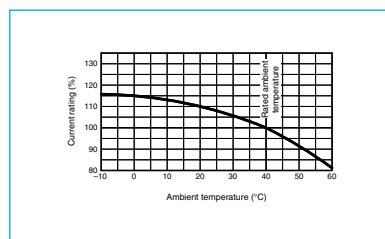
Earth-leakage Tripping Characteristics



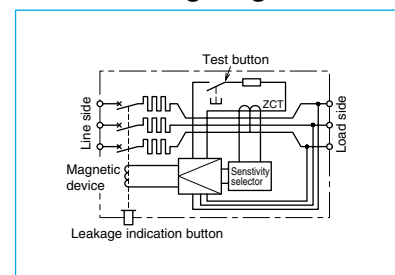
Internal Accessories



Ambient Compensating Curve



Internal Wiring Diagram



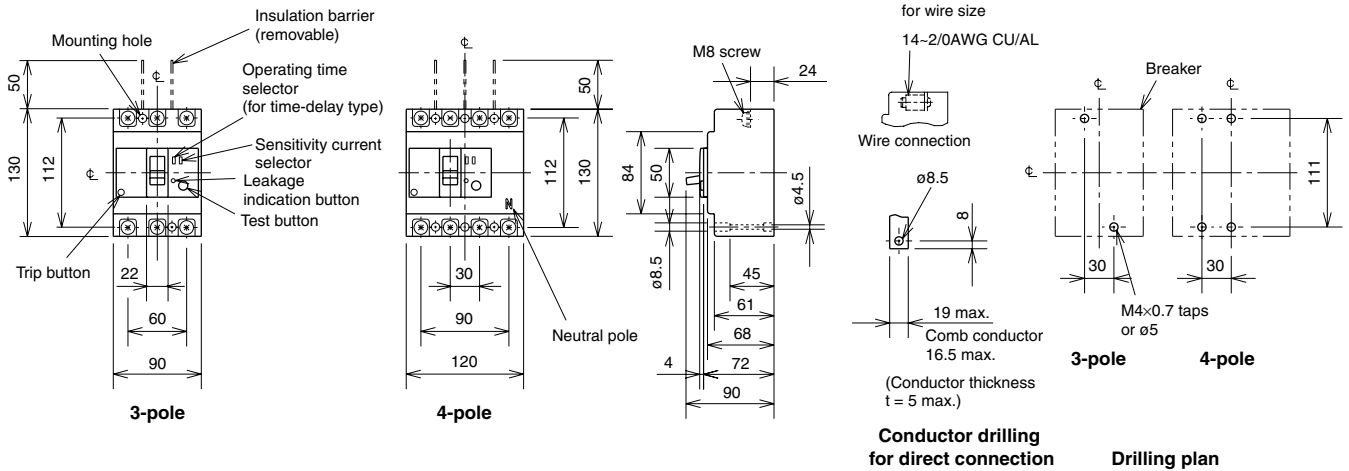
External Accessories

Accessories		Type name	Reference page	Accessories		Type name	Reference page
Operating handle	F	F-1SV	37	Mechanical interlock	MI	3P MI-05SV3	40
	V	V-1SV	38		4P MI-1SV4		
	S	S-05SV	39	Terminal cover	Small	TC-S	TCS-1SV3
Handle lock device	LC	LC-05SV	41		Large	TC-L	TCL-1SV3
	(*1) HLF	HLF-05SV			3P	TCL-1SV4	
	HL	HLN-05SV			4P	TTC-1SV3	
	HL-S	HLS-1SV			TTC-1SV3		
				Rear	BTC	BTC-1SV3	39
				Plug-in	PTC	PTC-1SV3	
				Electrical operation device		(*2)	40

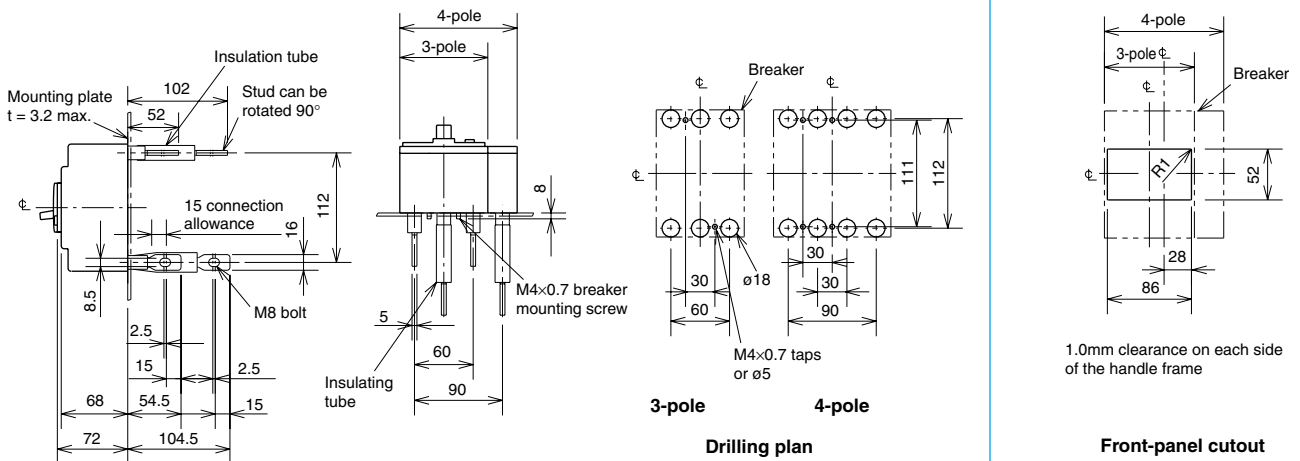
Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.

*2 Specify the working voltage. Refer to the reference page for type name.

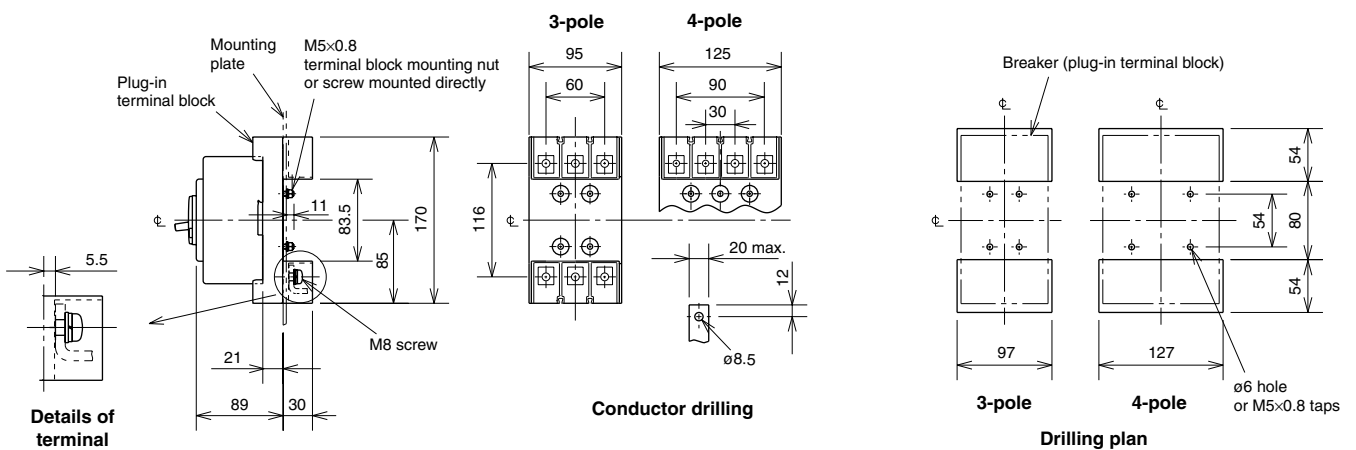
Front connection



Rear connection



Plug-in



Note: *1 Products with data parenthesized come with EAL or TBM; built-in models with EAL or TBM have different external dimensions from the standard models.
 Remark: 1. Only three-pole models are available for NV125-CV.

5. Characteristics and Dimensions

Earth-leakage Circuit Breakers

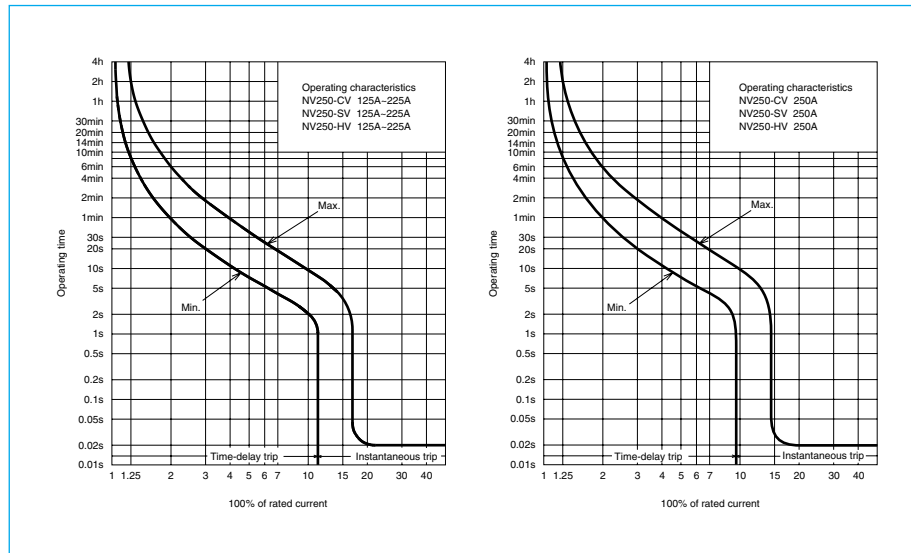
NV250-CV
NV250-SV
NV250-HV



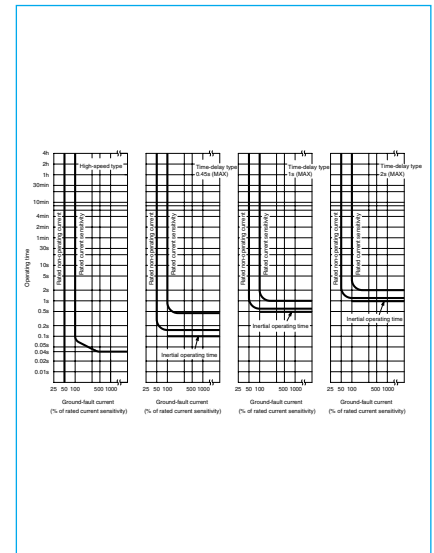
NV250-SV

Type name		NV250-CV		NV250-SV		NV250-HV	
Rated current I _n (A)		125 150 175 200 225 250		125 150 175 200 225 250		125 150 175 200 225 250	
Number of poles		3		3 4		3 4	
Phase line		3ø3W, 1ø2W		3ø3W, 1ø2W 3ø4W		3ø3W, 1ø2W 3ø4W	
Rated operational voltage U _e (V)		AC 100-440		100-440 200-440		100-440 200-440	
High-speed type	Rated current sensitivity (mA)	30 100/200/500 selectable		(30) 100/200/500 selectable		(30) 100/200/500 selectable	
	Max operating time (s)	at IΔn at 5IΔn		0.1 0.04		0.1 0.04	
Time-delay type	Rated current sensitivity (mA)	(100/200/500 selectable)		(100/200/500 selectable)		(100/200/500 selectable)	
	Max operating time (s)	(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)	
	Inertial operating time (s) (or more)	(0.1/0.5/1.0)		(0.1/0.5/1.0)		(0.1/0.5/1.0)	
Earth-leakage indication system		Mechanical type (button)		Mechanical type (button)		Mechanical type (button)	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	440V	15/12	36/36	65/65	
			415V	25/19	36/36	70/70	
			400V	25/19	36/36	75/75	
			230V	36/27	85/85	100/100	
			200V	36/27	85/85	100/100	
100V	36/27	85/85	100/100				
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs)		Insulation barrier: (3P: 4pcs, 4P: 6pcs)			

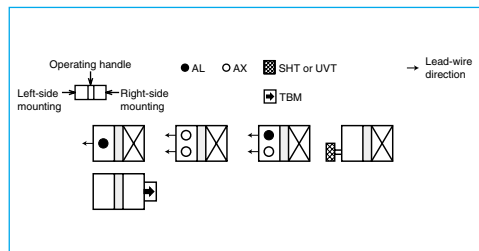
Operating Characteristics



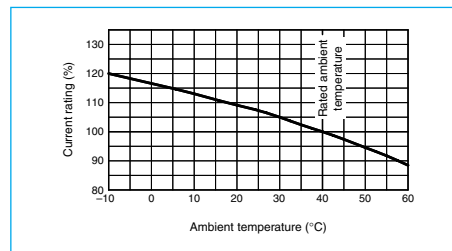
Earth-leakage Tripping Characteristics



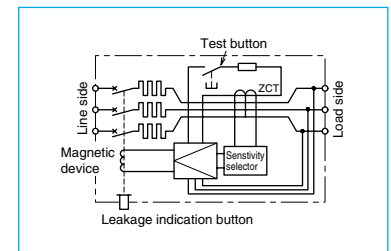
Internal Accessories



Ambient Compensating Curve



Internal Wiring Diagram

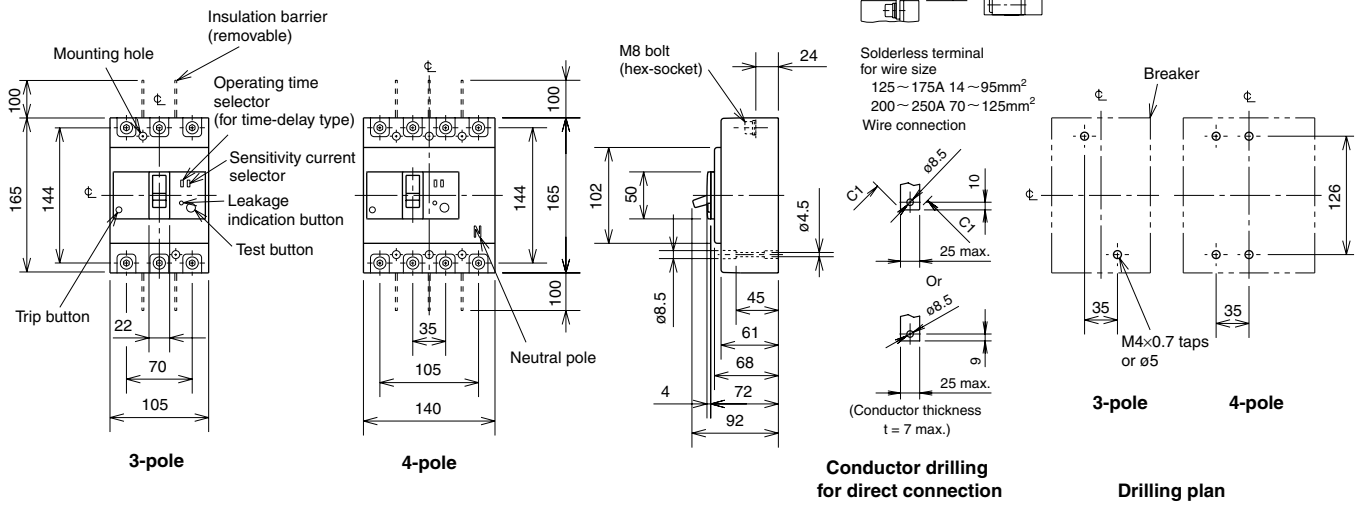


External Accessories

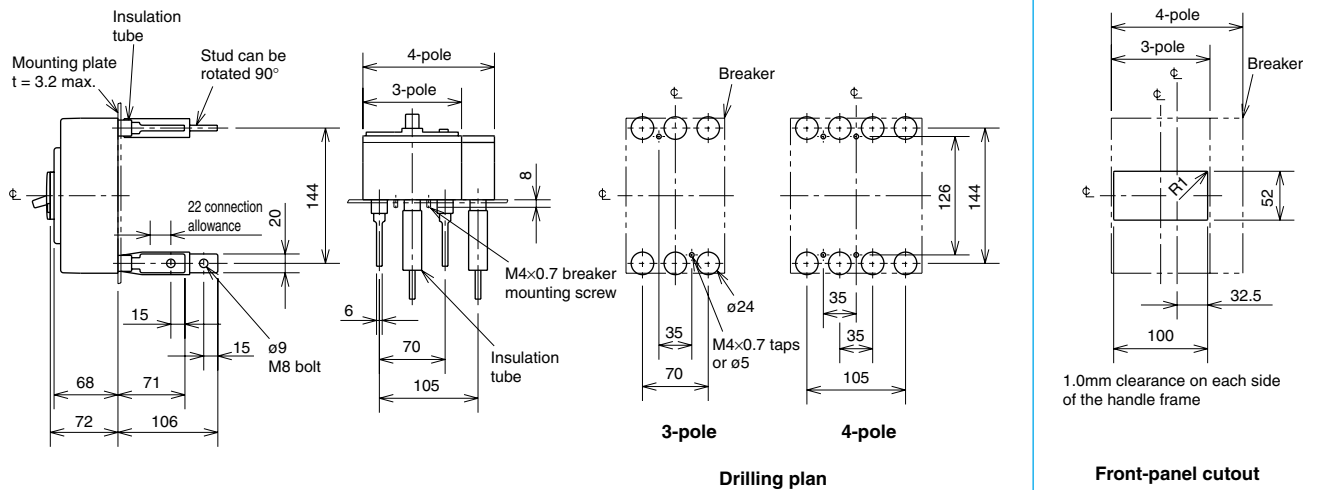
Accessories	Type name	Reference page	Accessories	Type name	Reference page	
Operating handle	F	F-2SV	Mechanical interlock	MI	3P MI-05SV3	
	V	V-2SV		4P MI-2SV4	40	
	S	S-2SV	Small	TC-S		3P TCS-2SV3
Handle lock device	LC	LC-05SV	Terminal cover	Large	TC-L	3P TCL-2SV3
	(*1) HL	HLF-05SV		4P TCL-2SV4	39	
	HLN	HLN-05SV	Skeleton	TTC		3P TTC-2SV3
	HL-S	HLS-2SV	Rear	BTC	3P BTC-2SV3	
			Plug-in	PTC	3P PTC-2SV3	
			Electrical operation device		(*2) 40	

Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.

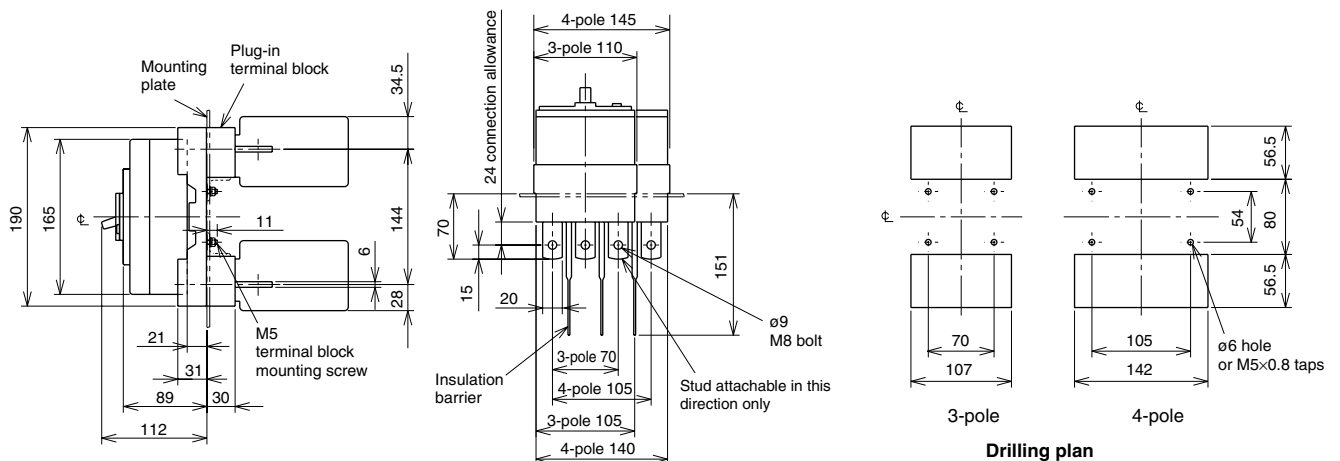
Front connection



Rear connection



Plug-in



Note: *1 Products with data parenthesized come with EAL or TBM. Built-in models with EAL or TBM have different external dimensions from the standard models.
Remark: 1. Only three-pole models are available for the model of NV250-CV and NV250-HV.

5. Characteristics and Dimensions

Earth-leakage Circuit Breakers

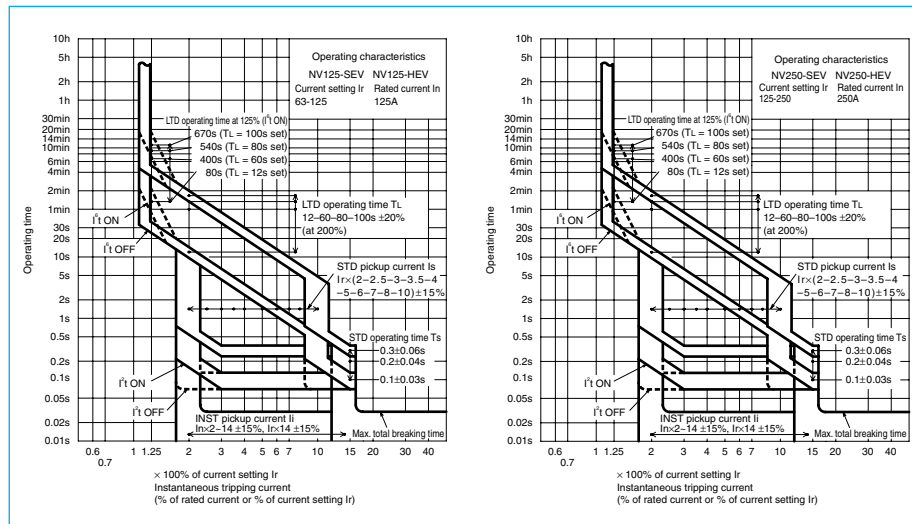
NV125-SEV
NV125-HEV
NV250-SEV
NV250-HEV



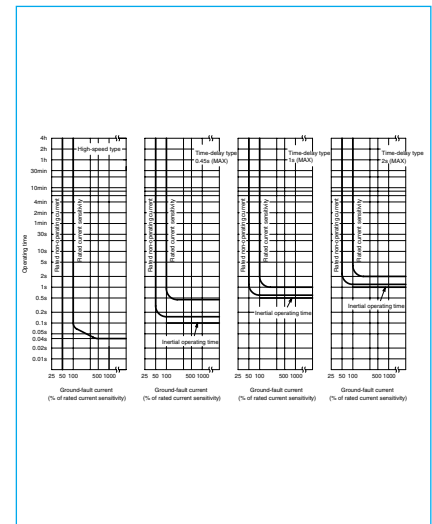
NV250-SEV

Type name		NV125-SEV	NV125-HEV	NV250-SEV	NV250-HEV		
Rated current I _n (A)		63-125		125-250			
Number of poles		3	4	3	4		
Phase line type		3φ3W, 1φ3W, 1φ2W	3φ4W	3φ3W, 1φ2W	3φ4W		
Rated operational voltage U _i		440		440			
Rated operational voltage U _e (V)		100-440		100-440			
High-speed type	Rated current sensitivity (mA)	(30) 100/200/500 selectable		(30) 100/200/500 selectable			
	Max operating time (s)	at ΔI _n 0.1 at 5I _n 0.04		0.1 0.04			
Time-delay type	Rated current sensitivity (mA)	(100/200/500 selectable)		(100/200/500 selectable)			
	Max operating time (s)	(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)			
	Inertial operating time (s) (or more)	(0.1/0.5/1.0)		(0.1/0.5/1.0)			
Earth-leakage indication system		Mechanical type (button)		Mechanical type (button)			
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	440V	36/36	65/65	36/36	65/65
			415V	36/36	70/70	36/36	70/70
			400V	36/36	75/75	36/36	75/75
			230V	85/85	100/100	85/85	100/100
			200V	85/85	100/100	85/85	100/100
			100V	85/85	100/100	85/85	100/100
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs)		Insulation barrier: (3P: 4pcs, 4P: 6pcs)			

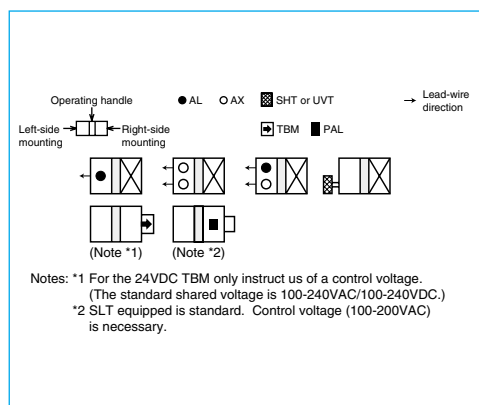
Operating Characteristics



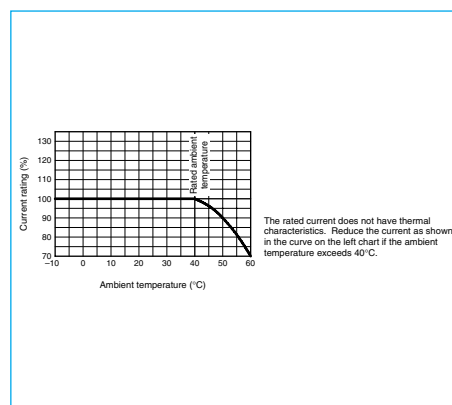
Earth-leakage Tripping Characteristics



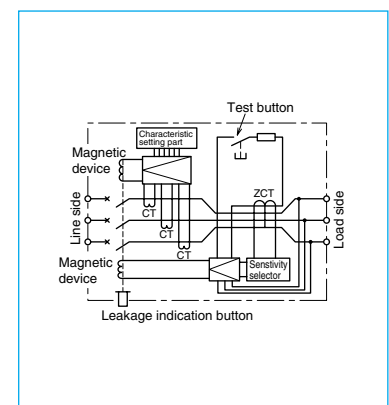
Internal Accessories



Ambient Compensating Curve



Internal Wiring Diagram

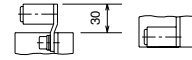
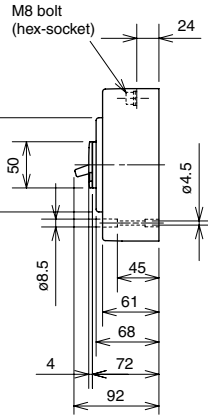
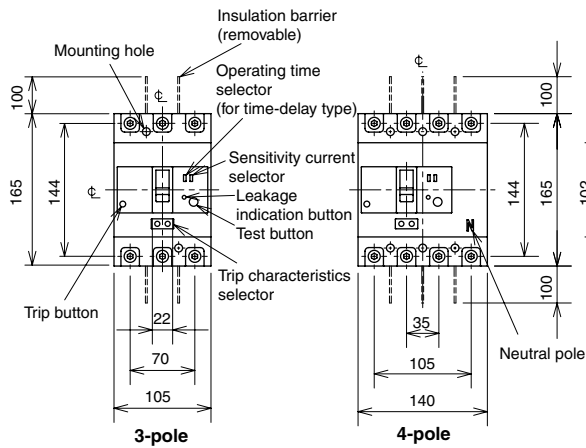


External Accessories

Accessories	Type name	Reference page	Accessories	Type name	Reference page			
Operating handle	F	F-2SV	Mechanical interlock	3P	MI-05SV3			
	V	V-2SV		4P	MI-2SV4			
	S	S-2SV	39	Terminal cover	Small	TC-S	3P	TCS-2SV3
Handle lock device	LC	LC-05SV	Large		TC-L	3P	TCL-2SV3	
	(*1) HLF	HLF-05SV			4P	TCL-2SV3L		
	HL	HLN-05SV			4P	TCL-2SV4		
	HL-S	HLS-2SV			3P	TTC-2SV3		
			Rear	BTC	3P	BTC-2SV3	40	
			Plug-in	PTC	3P	PTC-2SV3		
			Electrical operation device	(*2)		40		

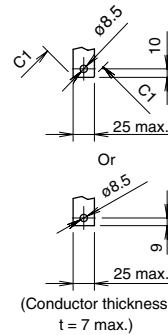
Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.

Front connection

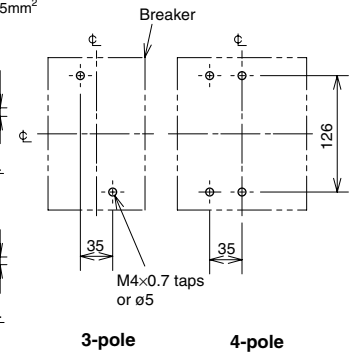


Solderless terminal for wire size
125~175A 14~95mm²
200~250A 70~125mm²

Wire connection

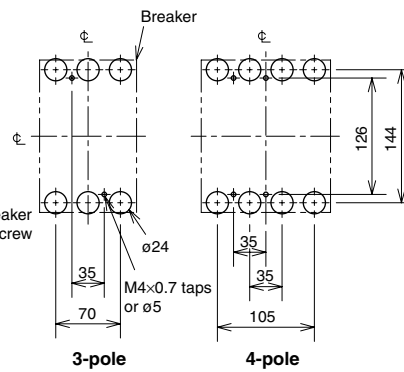
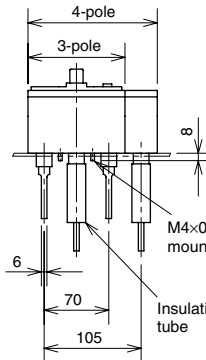
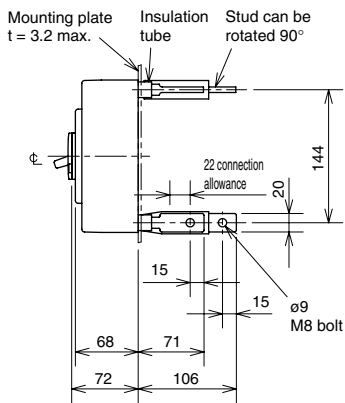


Conductor drilling for direct connection

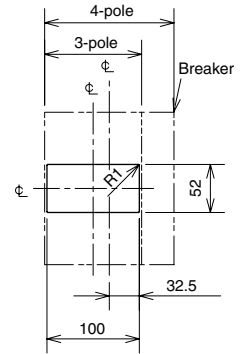


Drilling plan

Rear connection



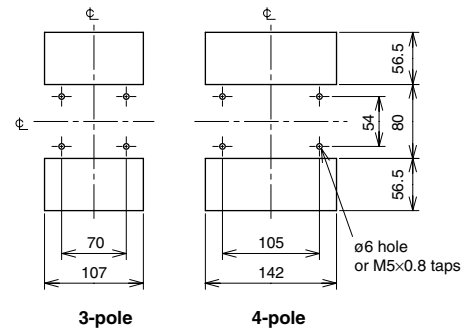
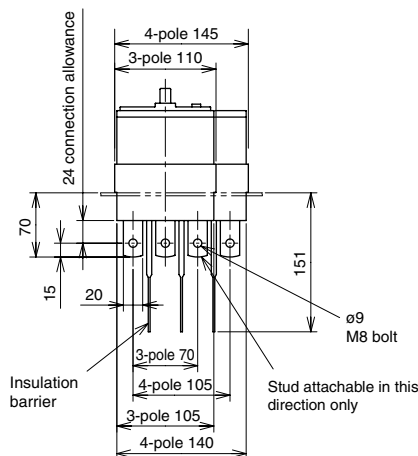
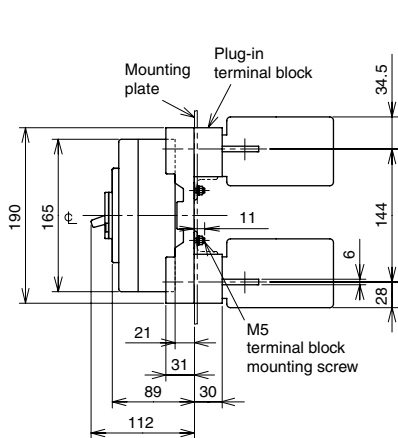
Drilling plan



1.0mm clearance on each side of the handle frame

Front-panel cutout

Plug-in



Drilling plan

Note: *1 Products with data parenthesized come with PAL, EAL or TBM. Built-in models with PAL, EAL or TBM have different external dimensions from the standard models.

5. Characteristics and Dimensions

Motor-protection Breakers

Specify "MB"

NF63-CV
NF32-SV
NF63-SV

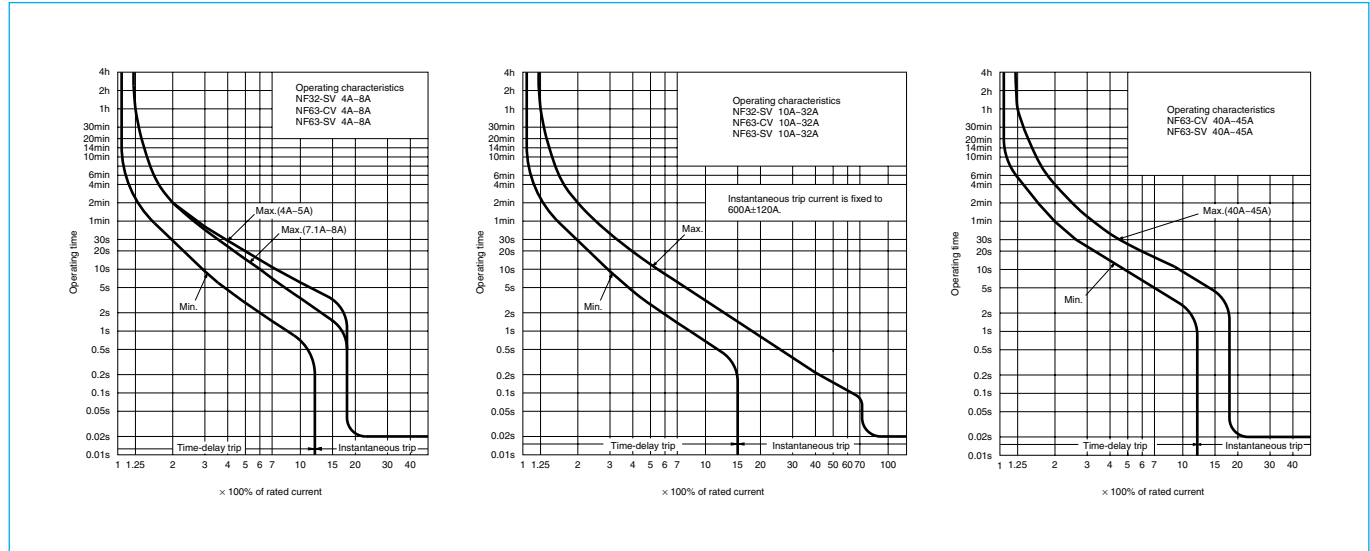


NF63-SV

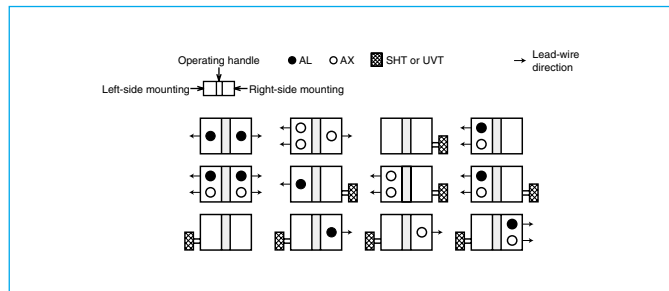
Type name		NF63-CV	NF32-SV	NF63-SV		
Rated current I _n (A)		4 5 7.1 8 10 12 16 25 32 40 45	4 5 7.1 8 10 12 16 25 32	4 5 7.1 8 10 12 16 25 32 40 45		
Number of poles		3	3	3		
Rated insulation voltage U _i (V)		600	600	600		
Rated short-circuit breaking capacity (kA)	JIS C 8201-2-1 Ann.1 JIS C 8201-2-1 Ann.2 IEC 60947-2 EN 60947-2 (I _{cu} /I _{cs})	AC	440V	2.5/2.5	2.5/2.5	7.5/7.5
			415V	2.5/2.5	2.5/2.5	7.5/7.5
			400V	5/5	5/5	7.5/7.5
			380V	5/5	5/5	7.5/7.5
			230V	7.5/7.5	7.5/7.5	15/15
	GB 14048.2 (I _{cu} /I _{cs})	AC	415V	2.5/2.5	2.5/2.5	7.5/7.5
			400V	5/5	5/5	7.5/7.5
			380V	5/5	5/5	7.5/7.5
	NK (I _{cu} /I _{cs})	AC	230V	7.5/7.5	7.5/7.5	15/15
			450V	2.5/2.5	2.5/2.5	7.5/7.5
		240V	7.5/7.5	7.5/7.5	15/15	
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs) (*2) Insulation barrier: (3P: 2pcs)				

Notes: *1 Refer to page 64 for the external dimensions.
*2 Supplied with NF63-SV.

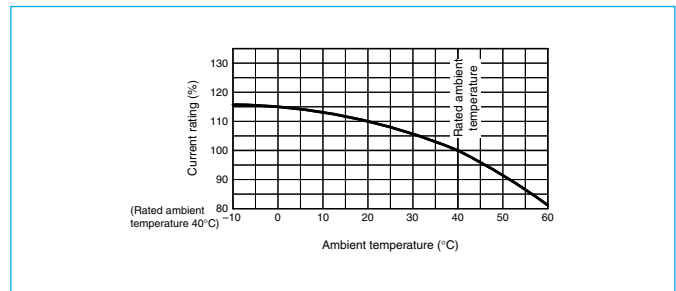
Operating Characteristics



Internal Accessories



Ambient Compensating Curve



External Accessories

Accessories		Type name	Reference page	Accessories		Type name	Reference page		
Operating handle	F	2P	F-05SV2	Mechanical interlock	MI	2, 3P	MI-05SV3		
		3, 4P	F-05SV			4P	MI-05SV4		
	V	2P	V-05SV2		Terminal cover	Small	TC-S	2P	TCS-05SV2
		3, 4P	V-05SV					3P	TCS-05SV3
S	S-05SV	Large	TC-L			2P	TCL-05SV2		
Handle lock device	LC					LC-05SV	3P	TCL-05SV3	
	HL					HLN-05SV	4P	TCL-05SV4	
	HL-S					HLS-05SV	2P	TTC-05SV2	
						3P	TTC-05SV3		
						Rear	BTC	2P	BTC-05SV2
						3P	BTC-05SV3		
			Plug-in		PTC	2P	PTC-05SV2		
					3P	PTC-05SV3			
				IEC 35mm rail mounting adapters		DIN-05SV	41		

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

NF125-SV

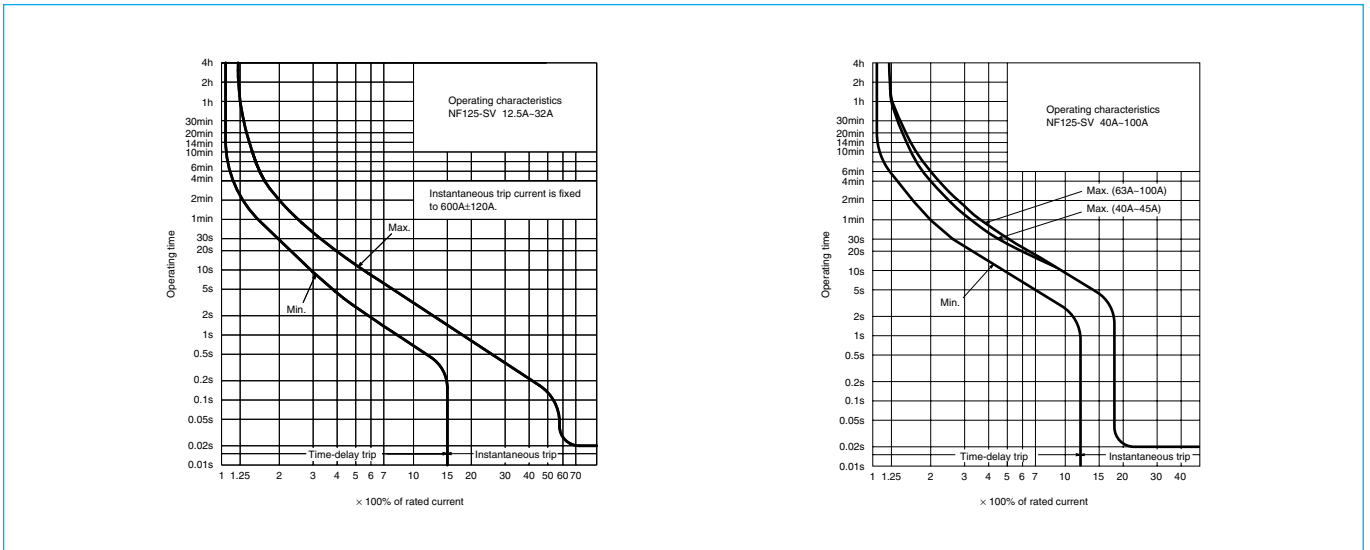


NF125-SV

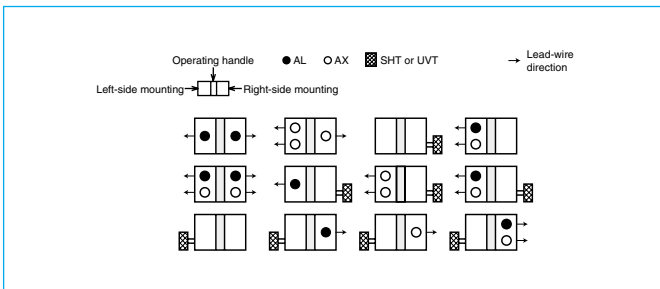
Type name		NF125-SV		
Rated current In (Amp.)		(12.5) (16) (25) 32 (40) 45 63 71 90 100		
Number of poles		3		
Rated insulation voltage Ui (V)		690		
Rated operational voltage Ue (V)		AC 230, 380/440		
Rated short-circuit breaking capacity (kA)	JIS C 8201-2-1 Ann.1	AC	440V	25/25
			415V	30/30
	JIS C 8201-2-1 Ann.2	AC	400V	30/30
			380V	30/30
	IEC 60947-2	AC	230V	50/50
			230V	30/30
	EN 60947-2	AC	415V	30/30
			400V	30/30
	GB 14048.2	AC	380V	30/30
			230V	50/50
NK	AC	450V	25/25	
		240V	50/50	
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs) Insulation barrier: (3P: 2pcs)		

Remark: 1. Refer to page 66 for the external dimensions.

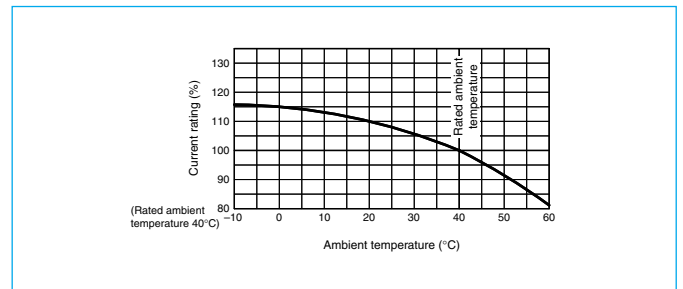
Operating Characteristics



Internal Accessories



Ambient Compensating Curve



External Accessories

Accessories			Type name	Reference page	Accessories			Type name	Reference page	
Operating handle	F	3P	F-1SV	37	Mechanical interlock	MI	3P	MI-05SV3	40	
	V	3P	V-1SV	38		Terminal cover	Small	TC-S		3P
	S		S-05SV	39	Large		TC-L	3P		TCL-1SV3
Handle lock device	LC		LC-05SV	41	Skeleton		TTC	3P		TTC-1SV3
	(*1) HLF		HLF-05SV		Rear	BTC	3P	BTC-1SV3		
	HLN		HLN-05SV		Plug-in	PTC	3P	PTC-1SV3		
	HL-S		HLS-1SV		Electrical operation device		(*2)		40	

Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.

5. Characteristics and Dimensions

Motor-protection Breakers

NF250-SV

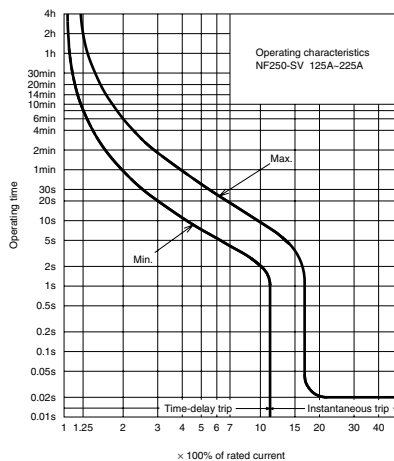


NF250-SV

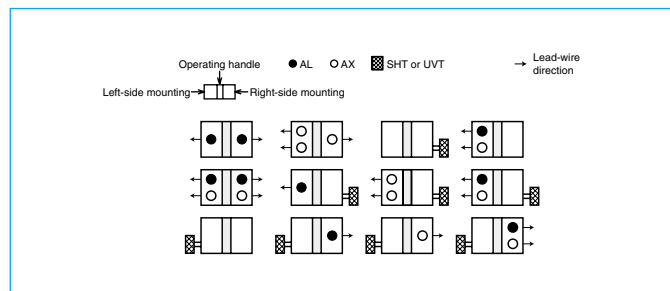
Type name		NF250-SV		
Rated current I _n (A)		125 150 175 200 225		
Number of poles		3		
Rated insulation voltage U _i (V)		690		
Rated short-circuit breaking capacity (kA)	JIS C 8201-2-1 Ann.1	AC	440V	36/36
			415V	36/36
			400V	36/36
	JIS C 8201-2-1 Ann.2	AC	380V	36/36
			230V	85/85
			415V	36/36
	IEC 60947-2	AC	400V	36/36
			380V	36/36
			230V	85/85
	EN 60947-2 (Icu/Ics)	AC	415V	36/36
400V			36/36	
380V			36/36	
GB 14048.2 (Icu/Ics)	AC	400V	36/36	
		380V	36/36	
		230V	85/85	
NK (Icu/Ics)	AC	450V	36/36	
		240V	85/85	
Standard attached parts (front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs) Insulation barrier: (3P: 4pcs)		

Remark: 1. Refer to page 70 for the external dimensions.

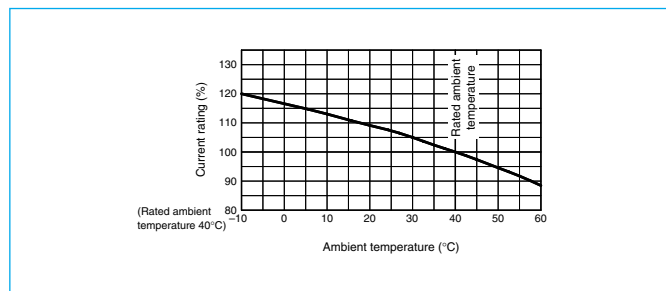
Operating Characteristics



Internal Accessories



Ambient Compensating Curve



External Accessories

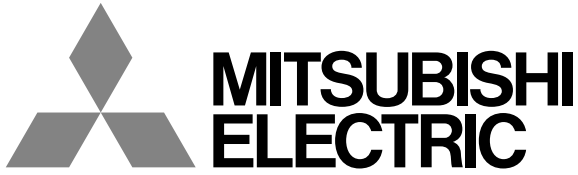
Accessories	Type name	Reference page	Accessories	Type name	Reference page					
Operating handle	F	F-2SV	37	Mechanical interlock	MI	2, 3P	MI-05SV3	40		
	V	V-2SV	38		Terminal cover	Small	TC-S	3P	TCS-2SV3	39
	S	S-2SV	39			Large	TC-L	3P	TCL-2SV3	
Handle lock device	LC	LC-05SV	41	Skeleton		TTC	3P	TTC-2SV3		
	(*)1 HL	HLN-05SV		Rear		BTC	3P	BTC-2SV3		
	HL-S	HLS-2SV		Plug-in		PTC	3P	PTC-2SV3		
			Electrical operation device	(*)2			40			

Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.

*2 Specify the working voltage. Refer to the reference page for type name.

MEMO

6. LOW-VOLTAGE SWITCHGEAR TECHNICAL



Changes for the Better

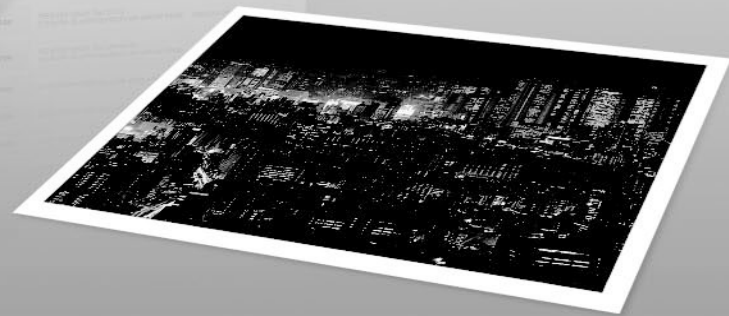
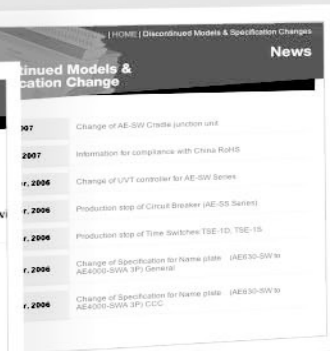
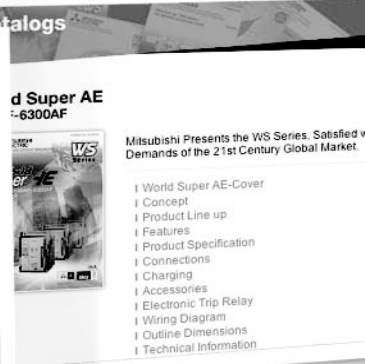
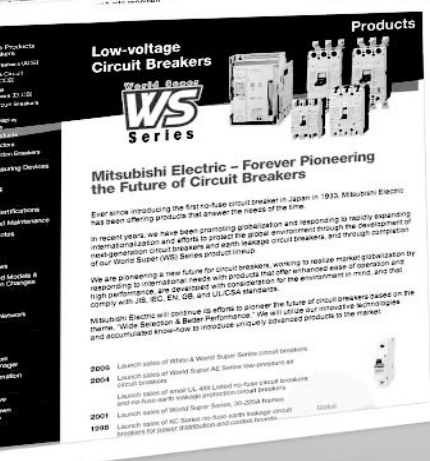
www.MitsubishiElectric.co.jp/haisei/lvs/

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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 periodically.

3 News

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

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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.

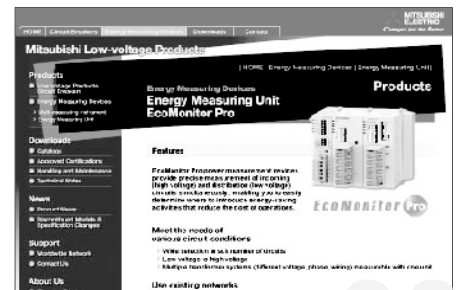
Low-voltage Products Circuit Breakers

- 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

MITSUBISHI Molded-case Circuit Breakers & Earth-leakage Circuit Breakers

Service Network

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Australia	Mitsubishi Electric Australia Pty. Ltd.	348 Victoria Road, Rydalmere, N.S.W. 2116, Australia	+61-2-9684-7777
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China	Mitsubishi Electric Automation (CHINA) Ltd.	Mitsubishi Electric Automation Center, No. 1386 Hongqiao Road, Shanghai, 200336	+86-21-2322-3030
China	Mitsubishi Electric Automation (HongKong) Ltd.	10/F., Manulife Tower, 169 Electric Road, North Point, Hong Kong	+852-2887-8810
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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Korea	Mitsubishi Electric Automation Korea Co., Ltd	1480-6, Gayang-Dong, Gangseo-Gu, Seoul, Korea	+82-2-3660-9572
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	Mitric Sdn Bhd	5 Jalan Pemberita U1/49, Temasya Industrial Park, Glenmarie 40150 Shah Alam, Selangor, Malaysia	+603-5569-3748
Myanmar	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
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
Singapore	Mitsubishi Electric Asia Pte. Ltd.	307, Alexandra Road, #05-01/02 Mitsubishi Electric Building, Singapore 159943	+65-6473-2308
South Africa	CBI-electric: low voltage	Private Bag 2016, Isando, 1600, South Africa	+27-(0)11-9282000
Taiwan	Setsuyo Enterprise Co., Ltd	6th Fl., No.105, Wu Kung 3rd, Wu-Ku Hsiang, Taipei, Taiwan, R.O.C.	+886-(0)2-2298-8889
Thailand	United Trading & Import Co., Ltd.	77/12 Bamrungmuang Road, Klong Mahanak, Pomprab Bangkok Thailand	+66-223-4220-3
Uruguay	Fierro Vignoli S.A.	Avda. Uruguay 1274, Montevideo, Uruguay	+598-2-902-0808
Venezuela	Adesco S.A.	Calle 7 La Urbina Edificio Los Robles Locales C y D Planta Baja, Caracas - Venezuela	+58-212-241-9952
Vietnam	CTY TNHH-TM SA GIANG	10th Floor, Room 1006-1007, 255 Tran Hung Dao St., Co Giang Ward, Dist 1, Ho Chi Minh City, Vietnam	+84-8-8386727/28/29

For Safety : Please read the instruction manual carefully before using the products in this catalog.
Wiring and connection must be done by the person have a specialized knowledge of electric construction and wiring.



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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