MITSUBISHI ELECTRIC

Changes for the Better

Molded-case Circuit Breakers
Earth-leakage Circuit Breakers

World Super WS-V Series

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

11 B

Empowering Industries

for a greener tomorrow eco Changes

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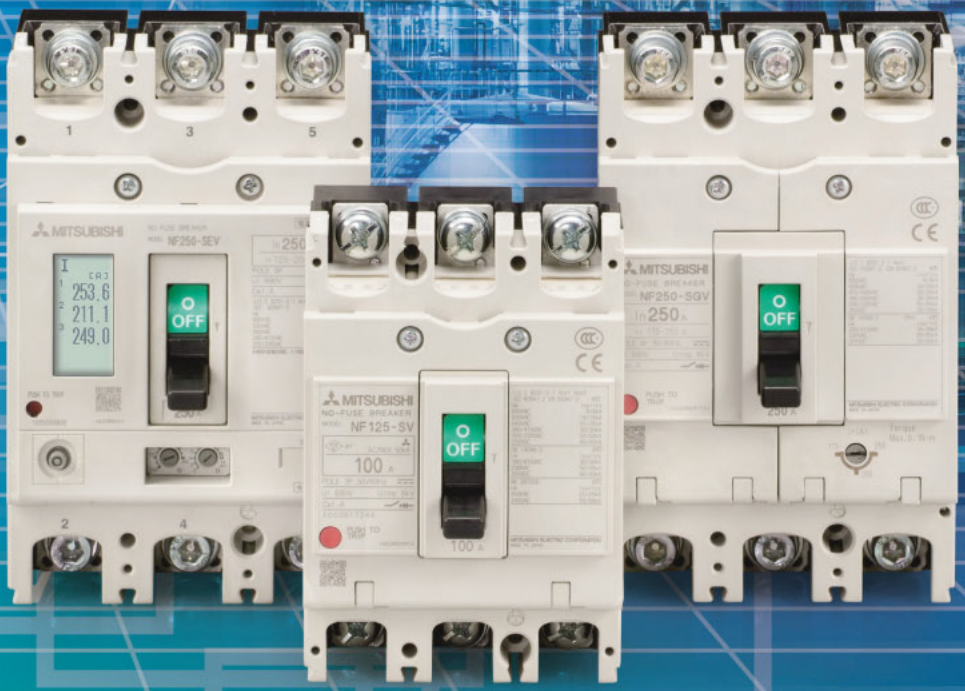
(http://www.MitsubishiElectric.co.jp/haisei/lvs/)

Breaking Through

The Industry



World Super WS-V Series

Higher Performance

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

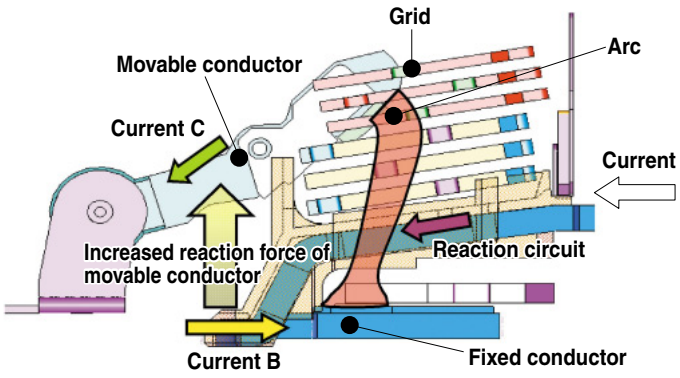
■ With higher breaking capacity, lower class models (e.g. NF-S General-purpose model to NF-C Economy model) can be used, thus leading to cost reduction of panels/machines.

NF250-HV

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

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

Expanded ISTAC breaking technology



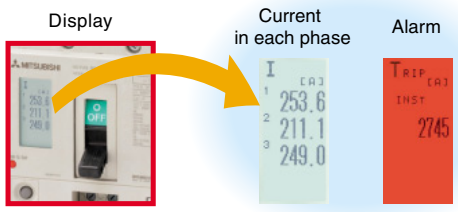
Extending the conductor (reaction circuit for movable conductor) beneath the fixed conductor makes the movable conductor open faster than the conventional ISTAC mechanism.
Significantly improves the current limiting performance.(Reduces the maximum peak current by 10%.)

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)

NF250-SGW

(Conventional model : 105 × 165 × 86mm)

NF250-SGV

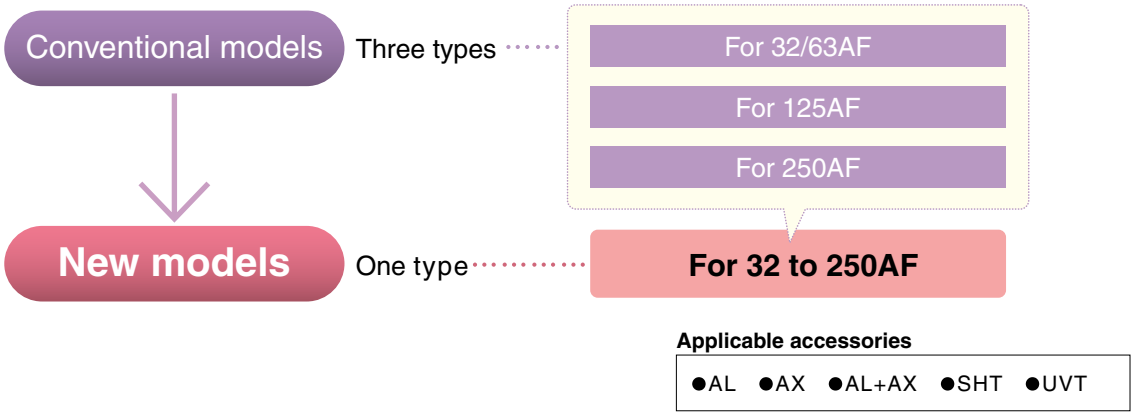
(New model : 105 × 165 × 68mm)

■ 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).

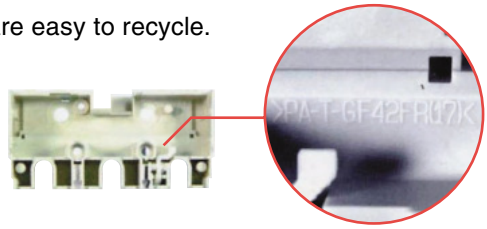
Environment

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			
NF-C economy type	NF-S standard type	NF-H high-performance type	NF-U ultra current-limiting type
			

Motor protection
Motor circuit breaker


Earth-leakage circuit breakers		
NV-C economy type	NV-S standard type	NV-H high-performance type
		

MDU breakers
NF-S, NF-H types


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
			NF125-SGV NF125-SEV	NF160-SGV	NF250-SGV NF250-SEV	NF400-SEW	NF630-SEW	NF800-SEW			
NF-H high-performance type		NF63-HV	NF125-HV NF125-LGV NF125-HGV NF125-HEV	NF160-LGV NF160-HGV	NF250-HV NF250-LGV NF250-HGV NF250-HEV	NF400-HEW	NF630-HEW	NF800-HEW			
NF-U ultra current-limiting type			NF125-RGV		NF250-RGV	NF400-REW	NF400-REW	NF800-REW			
			NF125-UGV		NF250-UGV	NF400-UEW		NF800-UEW			

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		NF63-CV	NF125-SV		NF250-SV			
	NF32-SV	NF63-SV						

MDU Breakers

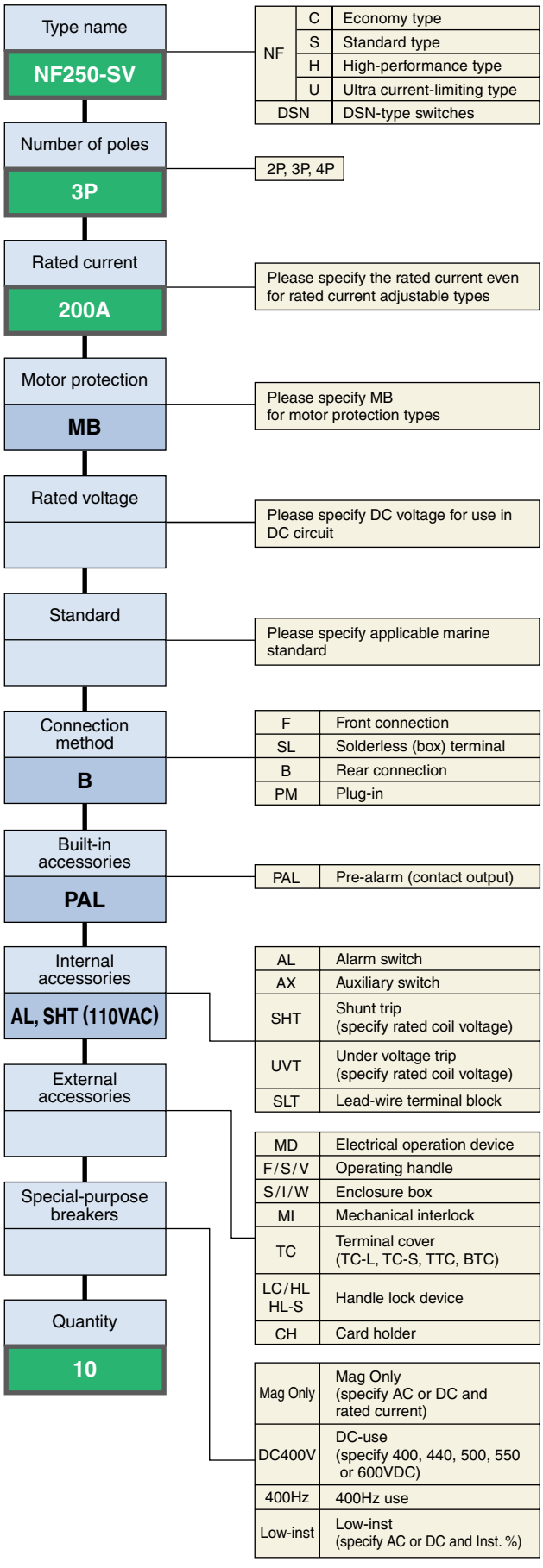
Types \ Frame(A)	30 32	50 60 63	100 125	160	225 250	400	600 630	800
NF-S, NF-H types					NF250-SEV NF250-HEV	NF400-SEP NF400-HEP	NF600-SEP NF600-HEP	NF800-SEP NF800-HEP

New models

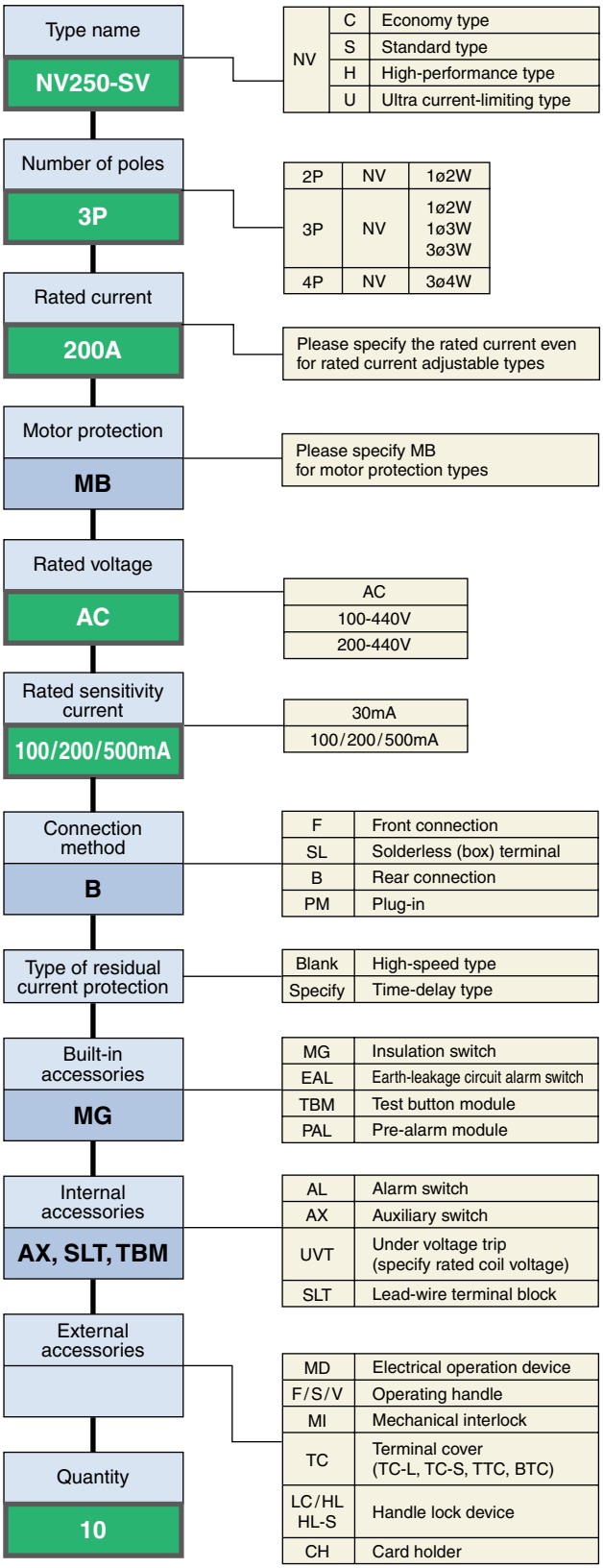

MITSUBISHI
NF250-SEV
OFF
MITSUBISHI
NF250-SGV
OFF

Ordering Information

Molded-case Circuit Breakers



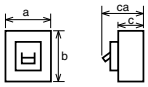
Earth-leakage Circuit Breakers



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)		15/12 (*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			●		●		●	
	Handle lock device	LC			●		●		●	
		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	
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.

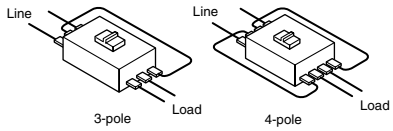
*2 Use two poles for three- and four-pole products. If wired as shown on the right, three and four poles can be used for up to 400 and 500VDC, respectively.

*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.



NF-S (Standard type)

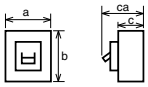
	32		63			125			125		
	NF32-SV		**NF63-SV**			**NF125-SV**			**NF125-SGV**		
											
	3 4 (5) 6 10 (15) 16 20 25 (30) 32		3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63			(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125			16-20 20-25 25-32 32-40 35-50 45-63 56-80 70-100 90-125		
	2	3	2	3	4	2	3	4	2	3	4
	40		40			40			40		
	600		600			690			690		
	–		–			8/8			8/8		
	2.5/2.5		7.5/7.5			18/18			30/30		
	2.5/2.5		7.5/7.5			25/25			36/36		
	2.5/2.5		7.5/7.5			30/30			36/36		
	5/5		7.5/7.5			30/30			36/36		
	5/5		7.5/7.5			30/30			36/36		
	7.5/7.5		15/15			50/50			85/85		
	2.5/2.5 (*5)		7.5/7.5 (*5)			40/40 (*2)			20/20 (300V) (*6)		
	8		8			8			8		
	AC/DC compatible		AC/DC compatible			AC/DC compatible			AC/DC compatible		
	Compatible		Compatible			Compatible			Compatible		
	Possible		Possible			Possible			Possible		
	10,000		15,000			25,000			50,000		
	6,000		8,000			10,000			30,000		
	A		A			A			A		
	3		3			3			3		
	N/A		N/A			N/A			N/A		
	50	75	50	75	100	60	90	120	105		140
	130		130			130			165		
	68		68			68			68		
	90		90			90			92		
	0.45	0.65	0.55	0.75	1.0	0.7	0.95	1.3	1.4	1.6	2.0
	●		●			●			●		
	–		–			●			●		
	●		●			●			●		
	●		●			●			●		
	● (*3)		● (*3)		●	● (*3)		●	● (*3)		●
	● (*3)		● (*3)		●	● (*3)		●	● (*3)		●
	● (*3)		● (*3)		●	● (*3)		●	● (*3)		●
	● (*3)		● (*3)		●	● (*3)		●	● (*3)		●
	●		●			●			●		
	–		–			–			–		
	●		●		–	●		–	●		–
	●		●		–	●		–	●		–
	–	●	–	●	–	–	●	–	●		–
	–		–			–	●		●		
	●		●			●			●		
	●		●			●			●		
	●		●			●			●		
	●		●			●			●		
	●		●			●			●		
	●		●			–	●		●		
	●		●			●			●		
	●		●			●			●		
	●		●			●			●		
	●		●			●			●		
	●		●		–	–			–		
	Self-declaration		Self-declaration			Self-declaration			Self-declaration		
	Recognized		Recognized			Recognized			Recognition in process		
	Thermal-magnetic		Thermal-magnetic			Thermal-magnetic			Thermal-magnetic		
	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-S (Standard type)

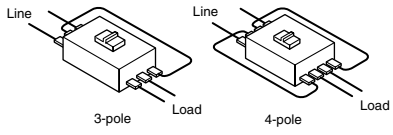
Frame (A)					125		160			250		
Type name					NF125-SEV		NF160-SGV			NF250-SV		
Image					 Available soon							
Rated current In (A)					16-32 32-63 63-125		125-160			(100) 125 150 160 175 200 225 250		
Number of poles					3	4	2	3	4	2	3	4
Rated ambient temperature (°C)					40		40			40		
Rated insulation 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		
			500V		30/30		30/30			30/30		
			440V		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			36/36		
			230V		85/85		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		15,000			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			●		●			●		
	Handle lock device	LC			●		●			●		
		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

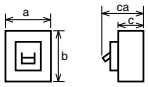
	250			250		125			160			250		
	NF250-SGV			**NF250-SEV**		**NF125-LGV**			**NF160-LGV**			**NF250-LGV**		
				 Available soon										
	125-160 140-200 175-250			80-160 125-250		16-20 20-25 25-32 32-40 35-50 45-63 56-80 70-100 90-125			125-160			125-160 140-200 175-250		
	2	3	4	3	4	2	3	4	2	3	4	2	3	4
	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			15,000			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	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)	●	● (*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				●			●			●	
	Handle lock device	LC				●			●			●	
		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			Self-declaration		
CCC recognition					Recognized			Recognized			Recognition in process		
Automatic tripping device					Thermal-magnetic			Thermal-magnetic			Thermal-magnetic		
Trip button					Equipped			Equipped			Equipped		

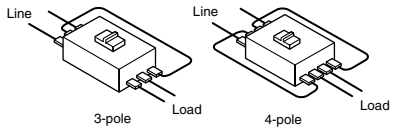
Notes: *1 The trip action characteristics differ between AC and DC for products that are compatible with both AC and DC.

*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.



	125		160			250			250			250	
	NF125-HEV		**NF160-HGV**			**NF250-HV**			**NF250-HGV**			**NF250-HEV**	
	 Available soon											 Available soon	
	16-32 32-63 63-125		125-160			125 150 160 175 200 225 250			125-160 140-200 175-250			80-160 125-250	
	3	4	2	3	4	2	3	4	2	3	4	3	4
	40		40			40			40			40	
	690		690			690			690			690	
	10/8		10/8			10/8			10/8			10/8	
	50/38		50/38			50/38			50/38			50/38	
	65/65		65/65			65/65			65/65			65/65	
	70/70		70/70			70/70			70/70			70/70	
	75/75		75/75			75/75			75/75			75/75	
	75/75		75/75			75/75			75/75			75/75	
	100/100		100/100			100/100			100/100			100/100	
	–		40/40 (300V) (*2)			40/40 (300V) (*2)			40/40 (300V) (*2)			–	
	8		8			8			8			8	
	AC		AC/DC compatible			AC/DC compatible			AC/DC compatible			AC	
	Compatible		Compatible			Compatible			Compatible			Compatible	
	Possible		Possible			Possible			Possible			Possible	
	25,000		40,000			25,000			25,000			25,000	
	10,000		15,000			10,000			10,000			10,000	
	A		A			A			A			A	
	3		3			3			3			3	
	A		N/A			N/A			N/A			A	
	105	140	105		140	105		140	105		140	105	140
	165		165			165			165			165	
	68		68			68			68			68	
	92		92			92			92			92	
	1.7	2.2	1.4	1.6	2.0	1.4	1.6	2.0	1.4	1.6	2.0	1.7	2.2
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	● (*3)	●	● (*3)		●	● (*3)		●	● (*3)		●	● (*3)	●
	● (*3)	●	● (*3)		●	● (*3)		●	● (*3)		●	● (*3)	●
	● (*3)	●	● (*3)		●	● (*3)		●	● (*3)		●	● (*3)	●
	● (*3)	●	● (*3)		●	● (*3)		●	● (*3)		●	● (*3)	●
	●		●			●			●			●	
	●		–			–			–			●	
	–		–			–			–			–	
	●	–	●		–	●		–	●		–	●	–
	●	–	●		–	●		–	●		–	●	–
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	●		●			●			●			●	
	–		–			–			–			–	
	Self-declaration		Self-declaration			Self-declaration			Self-declaration			Self-declaration	
	Recognized		Recognition in process			Recognized			Recognition in process			Recognized	
	Electronic (effective value detection)		Thermal-magnetic			Thermal-magnetic			Thermal-magnetic			Electronic (effective value detection)	
	Equipped		Equipped			Equipped			Equipped			Equipped	

Remarks: 1. Products with rated current parenthesized are produced when an order is placed.

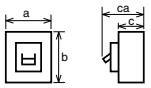
2. Specify “P-LT” when using a plug-in product with a lead-wire terminal block.

3. The circuit breaker has the rated short-circuit breaking capacity specified in the shaded cells.

1. Detailed Specifications

Molded-case Circuit Breakers

NF-U (Current-limiting type ultra breaker)

Frame (A)				125	250	
Type name				**NF125-RGV**	**NF250-RGV**	
Image				 Available soon	 Available soon	
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		●	●	
	Handle lock device	LC		●	●	
		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			250		
	NF125-UGV			**NF250-UGV**		
	 Available soon			 Available soon		
	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)		●
	●			●		
	–			–		
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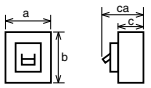
	●			●		
	●			●		
	●			●		
	–			–		
	●		–	●		–
	–			–		
	Self-declaration			Self-declaration		
	–			–		
	Thermal-magnetic			Thermal-magnetic		
	Equipped			Equipped		

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	30, 100/200/500 selectable
	Max. operating time (s)		at IΔn	0.1		0.1	0.1
			at 5IΔn	0.04		0.04	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		●		●	●
	Handle lock device	LC		●		●	●
		HL		●		●	●
		HL-S		●		●	●
	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				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 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	63	125		125	
	NV32-SV	**NV63-SV**	**NV125-SV**		**NV125-SEV**	
					 Available soon	
	(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	3	3	4	3	4
	40	40	40		40	
	3ø3W, 1ø2W	3ø3W, 1ø2W	3ø3W, 1ø2W	3ø4W	3ø3W, 1ø2W	3ø4W
	100-440	100-440	100-440	200-440	100-440	
	30, 100/200/500 selectable	30, 100/200/500 selectable	30, 100/200/500 selectable		(30) 100/200/500 selectable	
	0.1	0.1	0.1		0.1	
	0.04	0.04	0.04		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	7.5/7.5	25/25		36/36	
	5/5	7.5/7.5	30/30		36/36	
	5/5	7.5/7.5	30/30		36/36	
	10/10	15/15	50/50		85/85	
	10/10	15/15	50/50		85/85	
	10/10	15/15	50/50	–	85/85	
	6	6	6		6	
	AC	AC	AC		AC	
	Compatible	Compatible	Compatible		Compatible	
	10,000	15,000	25,000		25,000	
	6,000	8,000	10,000		10,000	
	A	A	A		A	
	2	2	2		2	
	A	A	A		A	
	75	75	90	120	105	140
	130	130	130		165	
	68	68	68		68	
	90	90	90		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	Self-declaration	Self-declaration		Self-declaration	
	Recognized	Recognized	Recognized		Recognized	
	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic		Electronic (effective value detection)	
	Equipped	Equipped	Equipped		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)

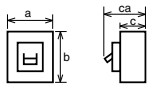
Rated operational voltage	Applicable circuit voltage	Available voltage range
100-240V	100/110/200/220/230/240V	80~264V
100-440V	100/110/200/220/240/254/265/380/400/415/440V	80~484V
200-440V	200/220/240/254/265/380/400/415/440V	160~484V
100-200-415V	100/110/200/220/240/254/265/380/400/415/440V	80~484V
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									 Available soon	
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	3
Rated ambient temperature (°C)							40		40	40
Phase line type (*1)							3ø3W, 1ø2W	3ø4W	3ø3W, 1ø2W	3ø3W, 1ø2W
Rated operational voltage Ue (V) (*2)						AC	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	30, 100/200/500 selectable
	Max. operating time (s)					at IΔn	0.1		0.1	0.1
						at 5IΔn	0.04		0.04	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		36/36	10/8
						415V	36/36		36/36	10/8
						400V	36/36		36/36	10/8
						230V	85/85		85/85	25/19
						200V	85/85		85/85	25/19
						100V	85/85		85/85	25/19
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	15,000
	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	75
						b	165		165	130
						c	68		68	68
						ca	92		92	90
Mass of front-face type (kg)							1.9	2.5	1.9	0.8
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					●		●	●
	Handle lock device	LC					●		●	●
		HL					●		●	●
		HL-S					●		●	●
	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.

(High-performance type) Harmonic surge ready

	125	125	250	250
	NV125-HV	**NV125-HEV**	**NV250-HV**	**NV250-HEV**
		 Available soon		 Available soon
	(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125 (*3)	63-125	125 150 175 200 225 250	125-250
	3 | 4	3 | 4	3 | 4	3
	40	40	40	40
	3ø3W, 1ø2W | 3ø4W	3ø3W, 1ø2W | 3ø4W	3ø3W, 1ø2W | 3ø4W	3ø3W, 1ø2W
	100-440 | 200-440	100-440	100-440 | 200-440	100-440
	30, 100/200/500 selectable	(30) 100/200/500 selectable	30, 100/200/500 selectable	(30) 100/200/500 selectable
	0.1	0.1	0.1	0.1
	0.04	0.04	0.04	0.04
	(100/200/500 selectable)	(100/200/500 selectable)	(100/200/500 selectable)	(100/200/500 selectable)
	(0.45/1.0/2.0 selectable)	(0.45/1.0/2.0 selectable)	(0.45/1.0/2.0 selectable)	(0.45/1.0/2.0 selectable)
	(0.1/0.5/1.0)	(0.1/0.5/1.0)	(0.1/0.5/1.0)	(0.1/0.5/1.0)
	Mechanical type (button)	Mechanical type (button)	Mechanical type (button)	Mechanical type (button)
	50/38	65/65	65/65	65/65
	50/38	70/70	70/70	70/70
	50/38	75/75	75/75	75/75
	100/75	100/100	100/100	100/100
	100/75	100/100	100/100	100/100
	100/75 | –	100/100	100/100	100/100
	6	6	6	6
	AC	AC	AC	AC
	Compatible	Compatible	Compatible	Compatible
	25,000	25,000	25,000	25,000
	10,000	10,000	10,000	10,000
	A	A	A	A
	2	2	2	2
	A	A	A	A
	90 | 120	105 | 140	105 | 140	105
	130	165	165	165
	68	68	68	68
	90	92	92	92
	1.1 | 1.4	1.9 | 2.5	1.8 | 2.5	1.9
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	● (*5) | ●	● (*5) | ●	● (*5) | ●	● (*5)
	● (*5) | ●	● (*5) | ●	● (*5) | ●	● (*5)
	● (*5) | ●	● (*5) | ●	● (*5) | ●	● (*5)
	● (*5) | ●	● (*5) | ●	● (*5) | ●	● (*5)
	●	●	●	●
	● (*6)	● (*6)	● (*6)	● (*6)
	● | –	–	–	–
	● | –	● | –	● | –	●
	● | –	● | –	● | –	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●
	–	–	–	–
	Self-declaration	Self-declaration	Self-declaration	Self-declaration
	Recognized	Recognized	Recognized	Recognized
	Thermal-magnetic	Electronic (effective value detection)	Thermal-magnetic	Electronic (effective value detection)
	Equipped	Equipped	Equipped	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 (excluding 63A frame or smaller).
4. The circuit breaker has the rated short-circuit breaking capacity specified in the shaded cells.
5. Please contact us for 4 pole of NV250-SEV, NV250-HEV.

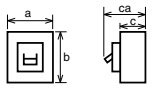
(5)

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

Motor-protection Breakers

NF - MB (Motor breakers)

Frame (A)				32	50	
Type name				NF32-SV	NF63-CV	NF63-SV
Rated current In (A) / Rated motor capacity (kW)				A / 200/220V kW / 400/440V kW: 32 / 7.5 / 15; 25 / 5.5 / 11; 16 / 3.7 / 7.5; 12 / – / 5.5; 10 / 2.2 / –; 8 / – / 3.7; 7.1 / 1.5 / –; 5 / – / 2.2; 4 / 0.75 / 1.5	A / 200/220V kW / 400/440V kW: 45 / 11 / 22; 40 / – / 18.5; 32 / 7.5 / 15; 25 / 5.5 / 11; 16 / 3.7 / 7.5; 12 / – / 5.5; 10 / 2.2 / –; 8 / – / 3.7	A / 200/220V kW / 400/440V kW: 7.1 / 1.5 / –; 5 / – / 2.2; 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
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		●	●	●
	Handle lock device	LC		●	●	●
		HL		●	●	●
		HL-S		●	●	●
	External operating handle	(F)		●	●	●
		(V)		●	●	●
		(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.

	100	225
	NF125-SV	**NF250-SV**
	A: 100 (200/220V kW: –, 400/440V kW: 55); 90 (22, 45); 71 (18.5, 37); 63 (15, 30); 45 (11, 22); (40) (–, 19); 32 (7.5, 15); (25) (5.5, 11); (16) (3.7, 7.5); (12.5) (–, 5.5)	A: 225 (200/220V kW: 55, 400/440V kW: 110); 200 (–, –); 175 (45, 90); 150 (37, 75); 125 (30, –)
	3	3
	40	40
	500	500
	25/25	36/36
	30/30	36/36
	30/30	36/36
	30/30	36/36
	50/50	85/85
	8	8
	AC	AC
	Compatible	Compatible
	Possible	Possible
	25,000	25,000
	10,000	10,000
	A	A
	3	3
	N/A	N/A
	90	105
	130	165
	68	68
	90	92
	0.95	1.6
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	●	●
	–	–
	Self-declaration	TÜV approval
	Recognized	Recognized
	Thermal-magnetic	Thermal-magnetic
	Equipped	Equipped

Remarks: 1. The motor circuit breakers do not have an applicable rated motor capacity. Select a motor circuit breaker based on the total load current of the motor.
2. Products with rating parenthesized are produced when an order is placed.
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.

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 NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV	AC, DC	

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.

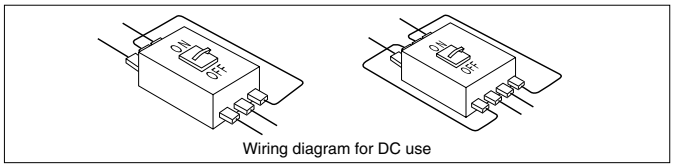
DC MCCBs and DSN Switches

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.



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	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

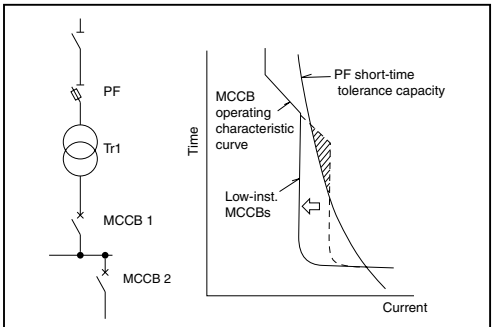


Fig. 4.12 Low-inst. MCCB characteristics

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

Generator Protection MCCBs

These breakers are designed for generator protection.

● Specifications

Type			NF125-SEV	NF125-HEV	NF250-SEV	NF250-HEV
Number of poles			3	3	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	10/8
		500VAC	30/30	50/38	30/30	50/38
		440VAC	36/36	65/65	36/36	65/65
		400VAC	36/36	75/75	36/36	75/75
		230VAC	85/85	100/100	85/85	100/100

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

Measuring Display Unit (MDU) **Available soon**

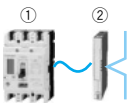
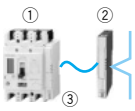
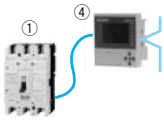
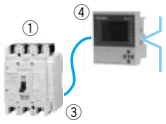
Circuit breakers and measurement display units are integrated.
With built-in VT and CT, the circuit breaker requires less space and contributions are made to reduced work and energy savings.

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.

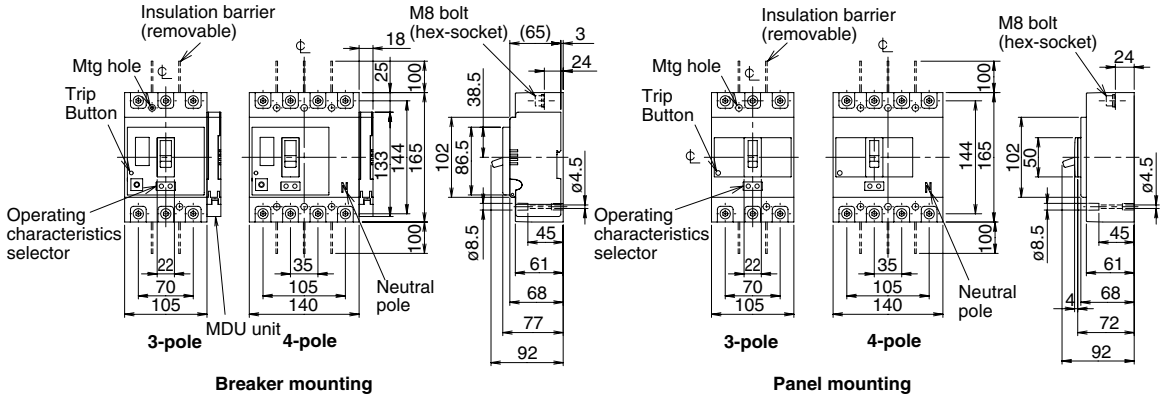
Type				NF250-SEV with MDU		NF250-HEV with MDU	
Frame (A)				250		250	
Number of poles				3	4	3	4
Suitability for use				3ø3W	3ø4W	3ø3W	3ø4W
Rated insulation voltage (V)				690		690	
Rated current (A)				125-250A (adjustable)		125-250A (adjustable)	
Rated short-circuit breaking capacities (kA)	IEC60947-2 (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)

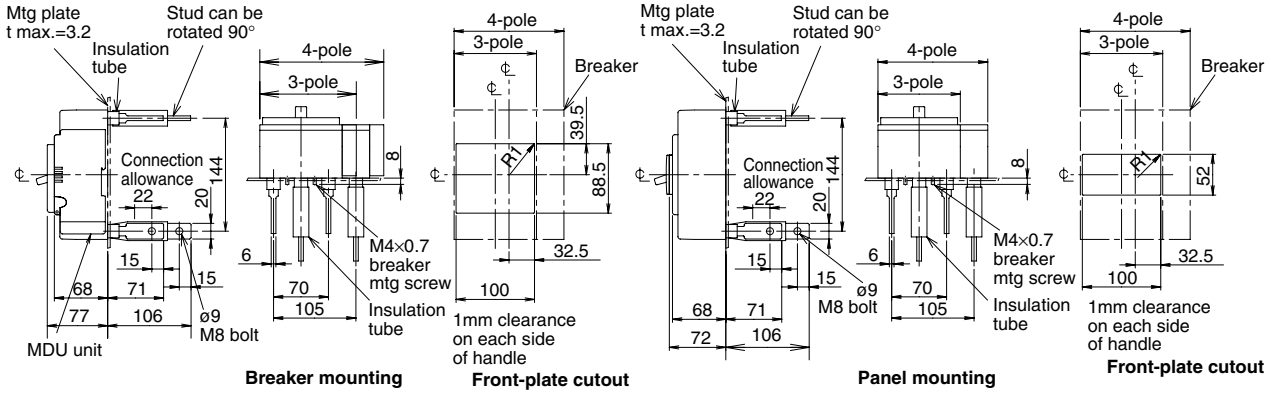
Combination			Display (DP) on the breaker				Panelboard mounting			
										
NF250-SEV/HEV with DP			①-a	①-a	①-a	①-a				
NF250-SEV/HEV							①-b	①-b	①-b	①-b
Module (power input)			②-a		②-a					
Module (power input + transmission)				②-b		②-b				
Module (pre-alarm)					③	③			③	③
MDU-DP-N (display)							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

Front connection



Rear connection

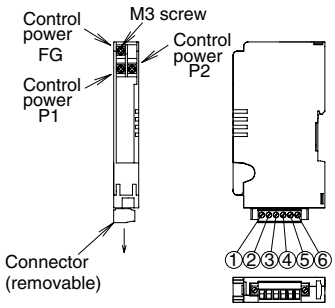


MDU Terminal

Breaker mounting

· MDU terminal

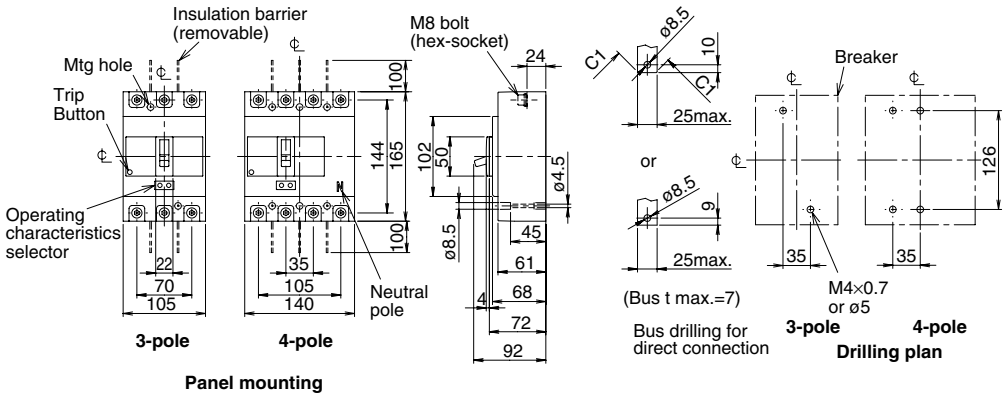
In the figure below the terminal cover is removed.



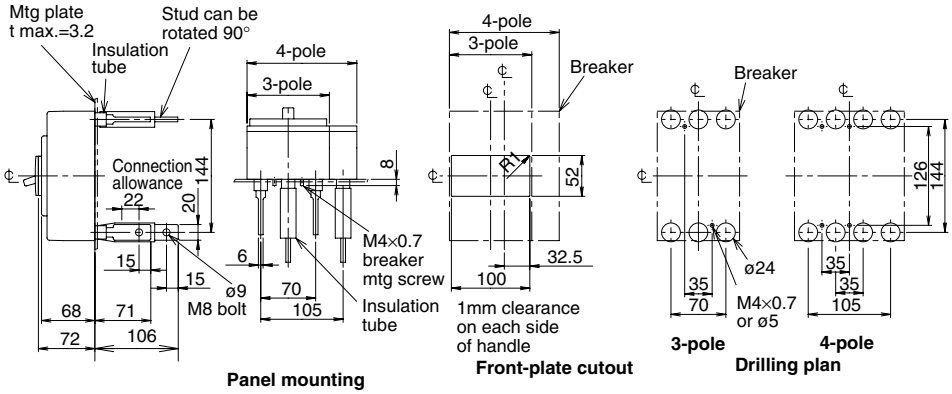
	①	②	③	④	⑤	⑥
No transmission	–	–	–	–	–	–
Pulse output	–	–	–	–	114	113
CC-Link	–	SLD	–	DG	DB	DA

MDU panel mounting

Front connection

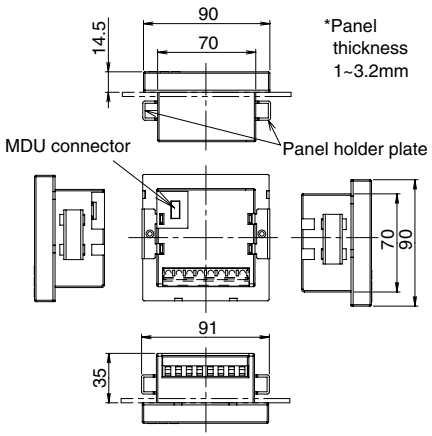


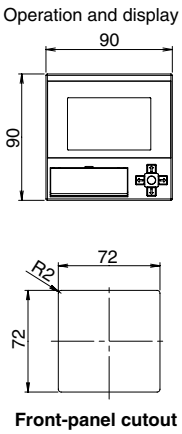
Rear connection



MDU Terminal for panel mounting

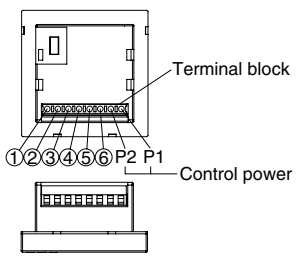
Panel mounting





· MDU terminal

In the figure below the terminal cover is removed.



	①	②	③	④	⑤	⑥
No transmission	–	–	–	–	FG	–
Pulse output	113	114	–	–	FG	–
CC-Link	DA	DB	DG	SLD	FG	–

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

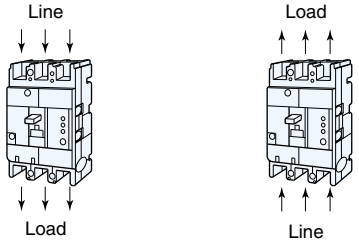
Type name		Solderless terminal (SL)	Rear studs (B-ST)	Plug-in (PM)
NF32-SV, NF63-CV/SV/HV	2P	–	● (ST-05SV2)	● (PM-05SV2)
NV32-SV, NV63-HV	3P		● (ST-05SV3)	● (PM-05SV3)
NV63-CV/SV	2P		● (ST-05SV2)	● (PM-NV05SV2)
NF63-SV/HV	4P		● (ST-05SV4)	● (PM-05SV4)
NF125-CV/SV	2P	SL-1SV4L (*1) SL-1SV4G (*2)	● (ST-1SV2)	● (PM-1SV2)
NF125-HV			● (ST-1HV2)	● (PM-1HV2)
NF125-CV/SV, NV125-CV/SV	3P	SL-1SV3L (*1) SL-1SV3G (*2)	● (ST-1SV3)	● (PM-1SV3)
NF125-HV, NV125-HV				
NF125-SV, NV125-SV, NF125-ZSV	4P	SL-1SV4L (*1) SL-1SV4G (*2)	● (ST-1SV4)	● (PM-1SV4)
NF125-HV, NV125-HV, NF125-ZHV				
NF250-CV/SV	2P	SL-2SV4L (*3) SL-2SV4G (*4)	● (ST-2SV2)	● (PM-2SV2)
NF250-HV				
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) SL-2SV3G (*4)	● (ST-2SV3)	● (PM-2SV3)
NF250-HV, NF250-HEV, NV250-HV, NV250-HEV, NF125-HEV, NV125-HEV				
NF125-SEV, NV125-SEV, NF250-SV, NF250-SEV, NV250-SV, NV250-SEV (*5)	4P	SL-2SV4L (*3) SL-2SV4G (*4)	● (ST-2SV4)	● (PM-2SV4)
NF250-HV, NF250-HEV, NV250-HEV (*5), NF125-HEV, NV125-HEV				
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 ~ 25mm^2
*2 Connected wire size : 25 ~ 70mm^2
*3 Connected wire size : 14 ~ 95mm^2
*4 Connected wire size : 70 ~ 125mm^2
*5 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

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.



(a) Normal connection **(b) Reserve connection**

Normal and reverse connection methods

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

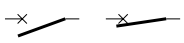
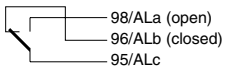
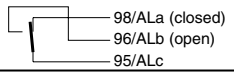
Circuit breaker status	AL switch contact
 OFF or ON	
 Trip	

Table 4-3: AX switch operation

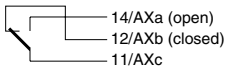
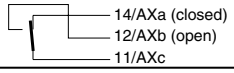
Circuit breaker status	AX switch contact
 OFF or Trip	
 ON	

Table 4-4: AL·AX switch rating

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

Please contact us regarding applications requiring smaller current values.

3. Maximum Number of Internally Mounted Accessories

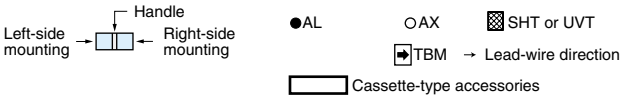


Table 4-9: Combinations of accessories

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 (*5)
	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 (*5)
	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			 (*2)	 (*2)
SHT or UVT		 (*1)	 (*1) (*3)	 (*1)
AL + SHT or UVT			 (*1)	
AX + SHT or UVT			 (*1)	
AL + AX + SHT or UVT			 (*1)	
TBM				 (*4)

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).
*5 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

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. 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)

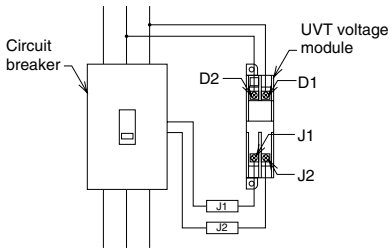
Table 4-11: Standard coil rating

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)

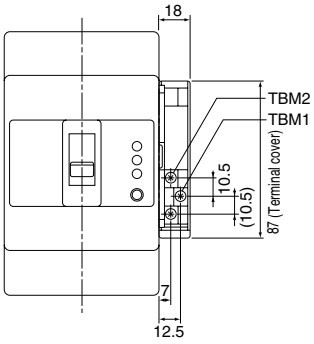
6. Test Button Module (TBM)

- 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

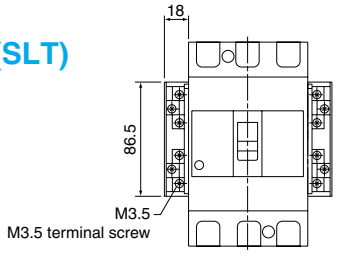
Type	Size	Length	Marking	Ring-mark example
Heat-resistant wire	0.5mm^2	(*1) 450mm	A ring-mark with the terminal symbol is attached to each lead wire	98/ALa, 96/ALb, 95/ALc C1/S1, C2/S2

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 beaker 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)



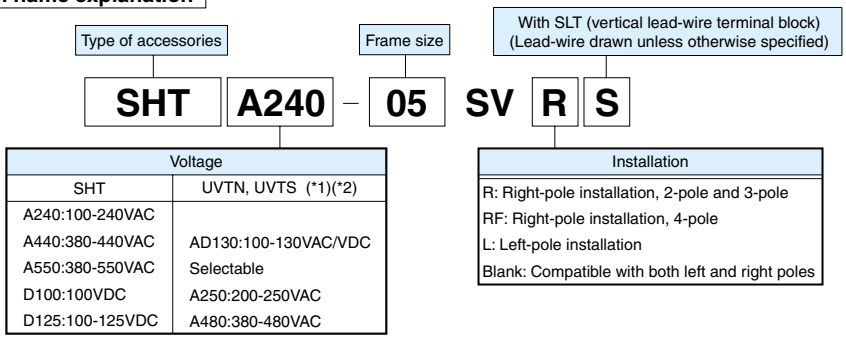
9. Cassette-type Accessories

● 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 (*3)					● 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



Voltage	
SHT	UVTN, UVTS (*1)(*2)
A240:100-240VAC	
A440:380-440VAC	AD130:100-130VAC/VDC
A550:380-550VAC	Selectable
D100:100VDC	A250:200-250VAC
D125:100-125VDC	A480:380-480VAC

Installation
R: Right-pole installation, 2-pole and 3-pole
RF: Right-pole installation, 4-pole
L: Left-pole installation
Blank: Compatible with both left and right poles

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.

*3 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

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)

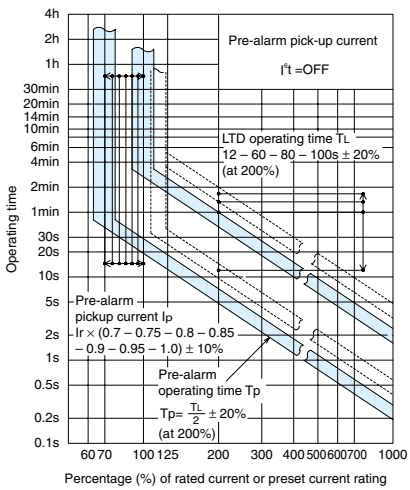
● Can be mounted on the right side of electronic breakers

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.

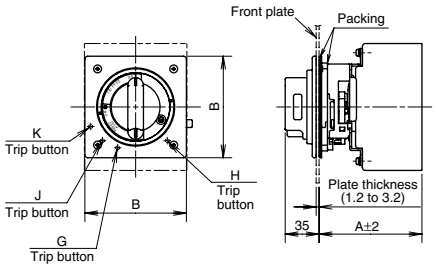
1. F-type Operating Handle

●Appearance (Color N1.5)

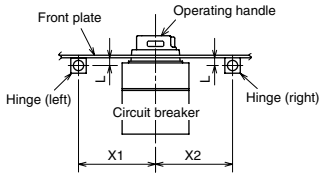
Breaker-mounted operating handle installed on a circuit breaker main body

- ●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



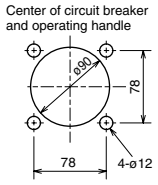
●Center of hinge and circuit breaker



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

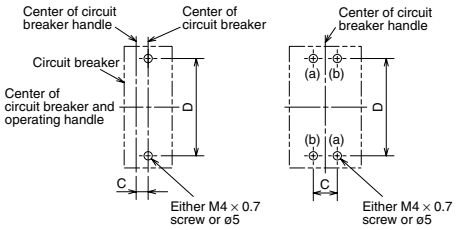
* The above drawing shows the layout of the hinge and the circuit breaker when viewed from the load side.

●Front plate drilling dimension drawing



(a)

●Circuit breaker mounting-hole drilling dimension drawing



(b) (c)

Table 4-16 Summary of dimensions

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

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).
*4 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

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.

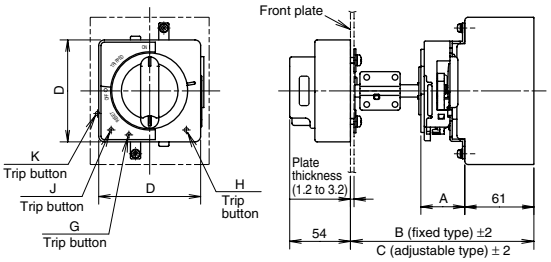
2. V-type Operating Handle

●Appearance (Color N1.5)

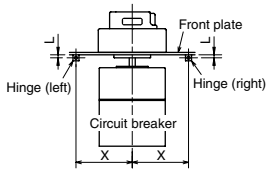
Operating handle attached to the panel door and control settings attached to the breaker body

- 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



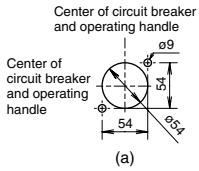
●Center of hinge and circuit breaker



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

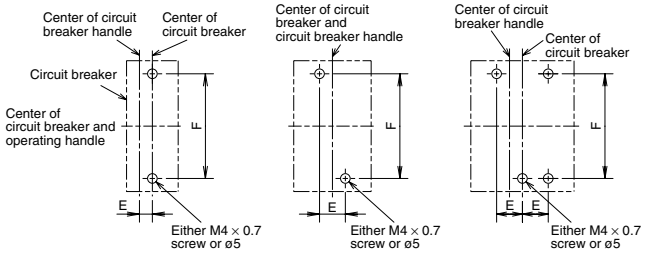
* The above drawing shows the layout of the hinge and the circuit breaker when viewed from the load side.

●Front plate drilling dimension drawing



(a)

●Circuit breaker mounting-hole drilling dimension drawing



(b) (c) (d)

Table 4-17 Summary of dimensions

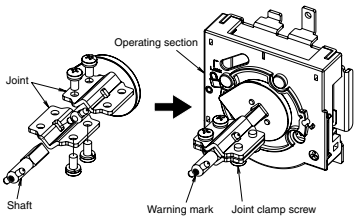
Type names	Applicable models				Drilling plans	Dimensions (mm)							Trip button position	Mounting screws
	NFB	Number of poles	NV	Number of poles		A	Fixed type B	Adjustable type (*1) C (min.)	Adjustable type (*1) C (max.)	D	E	F		
V-05SV2 V-05SVE2	NF32-SV NF63-CV, NF63-SV, NF63-HV	2	–	–	(b) (a)	39	125	–	–	90	12.5	111	H	(a): Breaker mounting screws (2 pcs) (4 pcs for 4P) (b): Breaker - operating handle mounting screws and nuts (2 pcs each)
V-05SV V-05SVE	NF125-SVF	2/3	NV32-SV NV63-CV, NV63-SV, NV63-HV	2/3	(c) (a)			162	300		25		J	
	NF32-SV	3												
	NF63-CV, NF63-SV, NF63-HV	4	–	–	(d) (a)									
V-1SV2 V-1SVE2	NF125-CV, NF125-SV	2	–	–	(b) (a)			–	–		15		H	
V-1SV V-1SVE	NF125-CV, NF125-SV	3	NV125-CV, NV125-SV, NV125-HV	3	(c) (a)			162	300		30		J	
		4		4	(d) (a)									
	NF63-HRV, NF125-HV	2/3	–	–	(c) (a)									
		4			(d) (a)									
V-2SV V-2SVE	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	2/3	NV125-SEV, NV125-HEV NV250-CV, NV250-SV, NV250-HV NV250-SEV (*2), NV250-HEV (*2)	3	(c) (a)	41		162	300		35	126	K	V-05SV2, V-05SVE2, V-1SV2 and V-1SVE2 use (b) only with no nuts attached.
		4		4	(d) (a)									

Notes: *1 For the adjustable type, the dimensions shown above are those when the adjustment unit V-AD3S (separately available) is mounted.
*2 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

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.

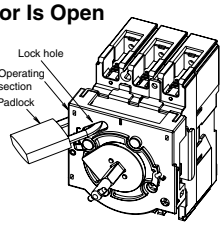
●Adjustable Type

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.



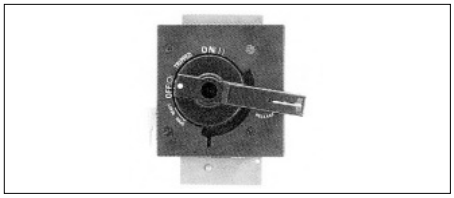
●Operation Lock While Panel Door Is Open

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.



3. S-type Operating Handle

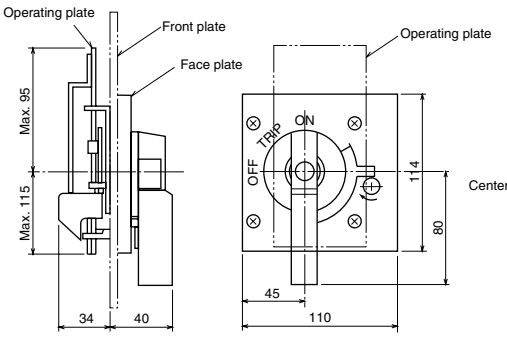
●Appearance (Color N1.5)



- 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

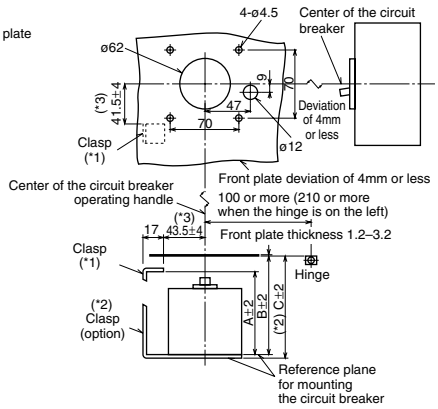


Table 4-18 Summary of dimensions

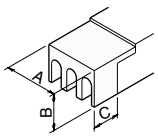
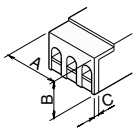
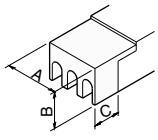
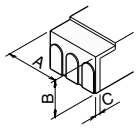
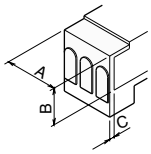
Type names	Applicable models		Delivery category	Dimensions (mm)		
	NFB	NV		A (*4)	B (*4)	C (*4)
S-05SV	NF32-SV, NF63-CV, NF63-SV, NF63-HV, NF50-HRV, NF125-CV, NF125-SV, NF125-HV	NV32-SV, NV63-CV, NV63-SV, NV63-HV, NV125-CV, NV125-SV, NV125-HV	●	87	102	104.5
S-2SV	NF125-SEV, NF125-HEV, NF125-SGV, NF125-LGV, 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 (*5), NV250-HEV (*5)	●	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.
*5 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

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)
NV63-CV/SV	2P, 3P					
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-HV	2P, 3P					
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)	(*2) ●TCS-2SV3 (105×65.5×6.5)	(*2) (*3) ●TTC-2SV3 (105×65.5×40)	●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 100mm^2).
*4 Available for 250A rating or smaller (maximum wire size of 150mm^2).

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 (*2)
Rated operating voltage	24VDC	MDSD024-NF1SVJ	MDSD024-NF2SVJ	MDSD024-NV1SVJ	MDSD024-NV2SVJ
	Compatible with 100-240VAC /100-250VDC	MDSAD240-NF1SVJ	MDSAD240-NF2SVJ	MDSAD240-NV1SVJ	MDSAD240-NV2SVJ

Notes: *1 For other models, please order in conjunction with the circuit breaker.
*2 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

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.

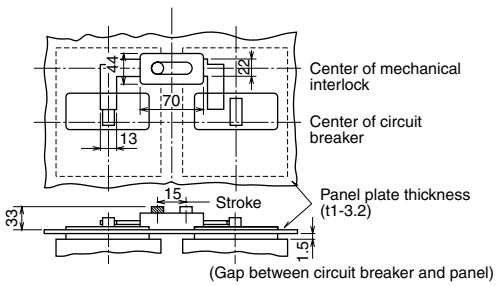
6. Mechanical Interlocks (MI)

Table 4-22

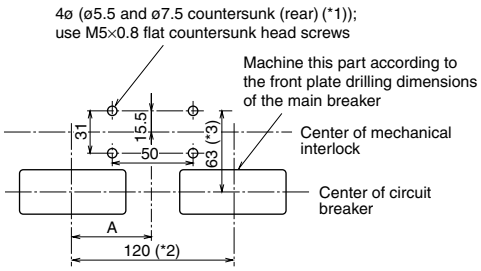
Applicable models	Number of poles	Front connection/Rear connection/Plug-in	Dimension A (mm)	Panel mounting	Mounted directly on circuit breaker
NF32-SV, NF63-CV/SV/HV	2P	● MI-05SV3	47.5	● MI-05SVFP3	● MI-05SVFB2
NF32-SV, NF63-CV/SV/HV NV32-SV, NV63-SV	3P		–		● MI-05SVFB3
NV63-CV, NV63-SV	2P, 3P				
NF63-SV/HV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

Note: *1 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

●External dimension diagram
(front connection, rear connection and plug-in)



●Drilling dimension diagram
(front connection, rear connection and plug-in)

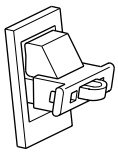
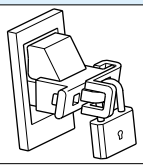
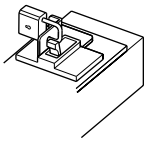
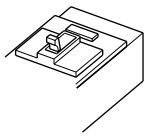


Notes: *1 When the panel plate thickness is 2.3 or more, prepare four holes (ø5.5 and ø9.5 countersunk (rear)).
*2 These are standard dimensions for two- and three-pole models, but can be altered on request.
*3 The U Series have different dimensions. Please contact us for details.

Remarks: 1. Please contact us for external dimensions of other models of different specifications.
2. Not isolation-compatible.

7. Handle Lock Devices and Card Holder

Table 4-23

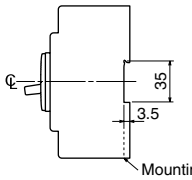
Image		Lock cover (LC)	Handle lock (HL)	Handle lock (HL-S) (*2)	Card holder
					
NF32-SV, NF63-CV/SV/HV	2P	● LC-05SV	(*1) ● HLF-05SV ● HLN-05SV	● HLS-05SV2	● CH-P No.5
NV63-CV	2P, 3P			● HLS-05SV	
NF32-SV, NF63-CV/SV/HV, NV32-SV, NV63-SV/HV	3P 4P				
NF125-CV/SV	2P	● LC-05SV	(*1) ● HLF-05SV ● HLN-05SV	● HLS-05SV2	
NF125-CV/SV, NV125-CV/SV/HV	3P 4P			● HLS-05SV	
NF125-HV	2P, 3P				
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 (*3), NV250-HEV (*3)	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.
*3 Please contact us for 4 pole of NV250-SEV, NV250-HEV.
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

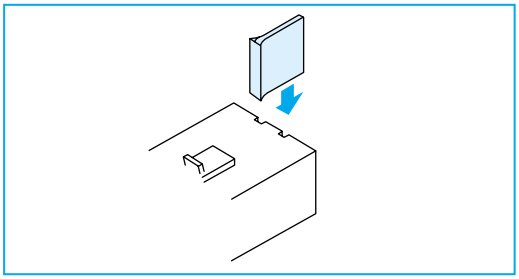
Applicable models	Number of poles	Type names
NF32-SV, NF63-CV/SV/HV, NV32-SV, NV63-CV/SV/HV	2P, 3P	● DIN-05SV



Mounting hook for IEC 35mm rail.

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

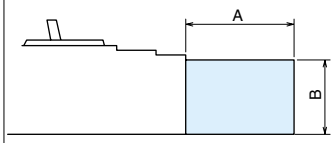
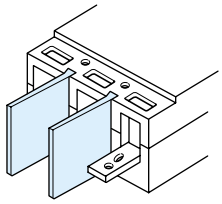
("○" denotes optional)

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)

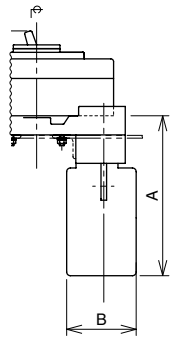
Table 4-26 Summary of dimensions

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 (*1)	Standard attachment	172	74.5	4	4	6	

Note: *1 Please contact us for 4 pole of NV250-SEV, NV250-HEV.

5. Characteristics and Dimensions

Molded-case Circuit Breakers

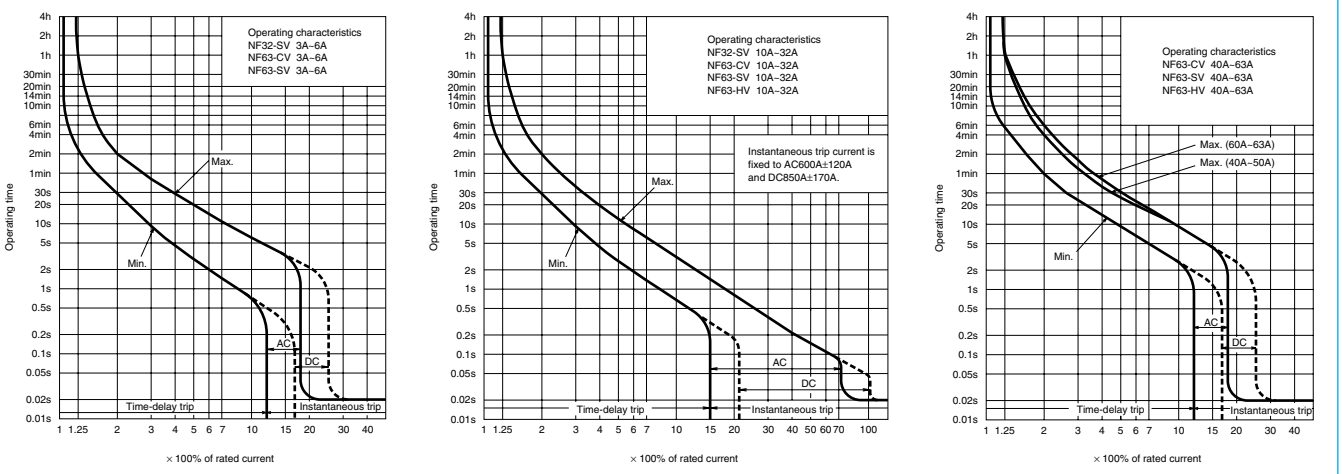
NF32-SV
NF63-CV
NF63-SV
NF63-HV

NF63-SV

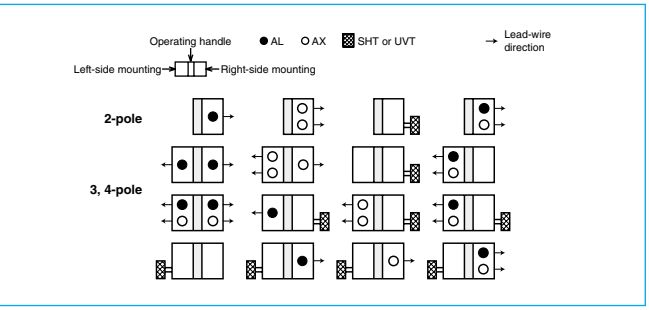
Type name				NF32-SV	NF63-CV	NF63-SV	NF63-HV
Rated current In (A)				3 4 (5) 6 10 (15) 16 20 25 (30) 32	3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	3 4 (5) 6 10 (15) 16 20 25 (30) 32 40 50 (60) 63	10 (15) 16 20 25 (30) 32 40 50 (60) 63
Number of poles				2 3	2 3	2 3 4	2 3 4
Rated insulation voltage Ui (V)				600	600	600	690
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	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
		DC	250V (*1)	2.5/2.5	2.5/2.5	7.5/7.5	7.5/7.5
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.

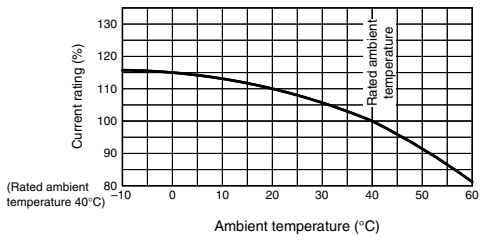
Operating Characteristics



Internal Accessories



Ambient Compensating Curve



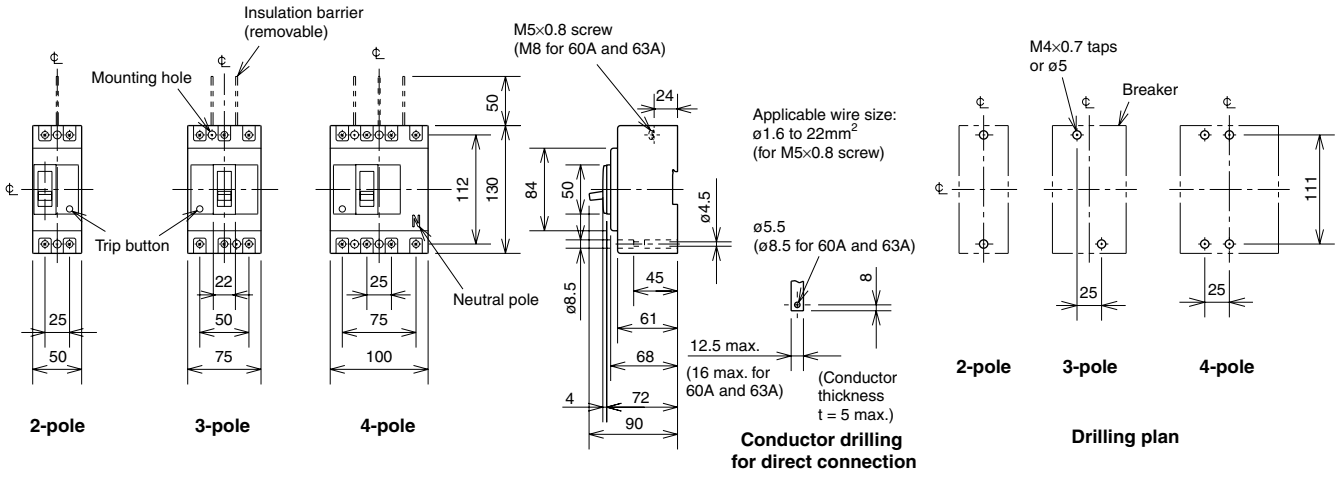
External Accessories

Accessories			Type name	Reference page
Operating handle	F	2P	F-05SV2	37
		3, 4P	F-05SV	
	V	2P	V-05SV2	38
		3, 4P	V-05SV	
	S		S-05SV	39
Handle lock device	LC		LC-05SV	41
	(*1) HL		HLF-05SV	
			HLN-05SV	
	HL-S		HLS-05SV	

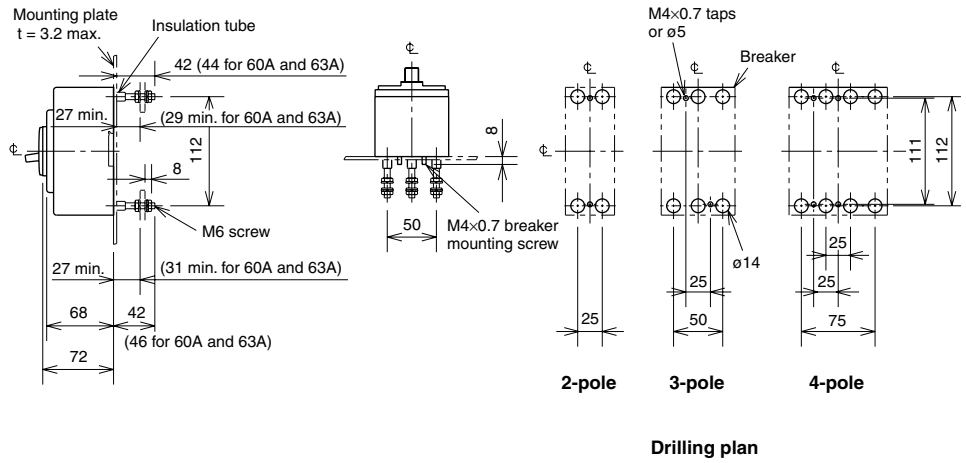
Note: *1 HLF types are used for OFF-lock and HLN types for ON-lock.

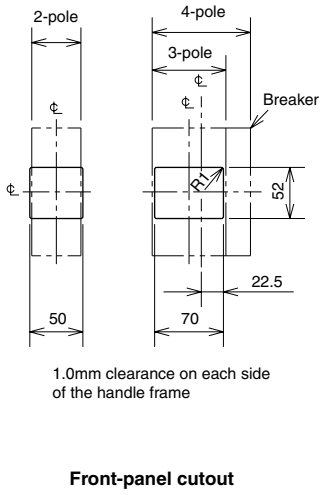
Accessories				Type name	Reference page
Mechanical interlock		MI	2, 3P	MI-05SV3	40
			4P	MI-05SV4	
Terminal cover	Small	TC-S	2P	TCS-05SV2	39
			3P	TCS-05SV3	
	Large	TC-L	2P	TCL-05SV2	
				TCL-05SV2L	
			3P	TCL-05SV3	
				TCL-05SV3L	
			4P	TCL-05SV4	
	Skeleton	TTC	2P	TTC-05SV2	
			3P	TTC-05SV3	
	Rear	BTC	2P	BTC-05SV2	
			3P	BTC-05SV3	
	Plug-in	PTC	2P	PTC-05SV2	
			3P	PTC-05SV3	
IEC 35mm rail mounting adapters				DIN-05SV	41

Front connection

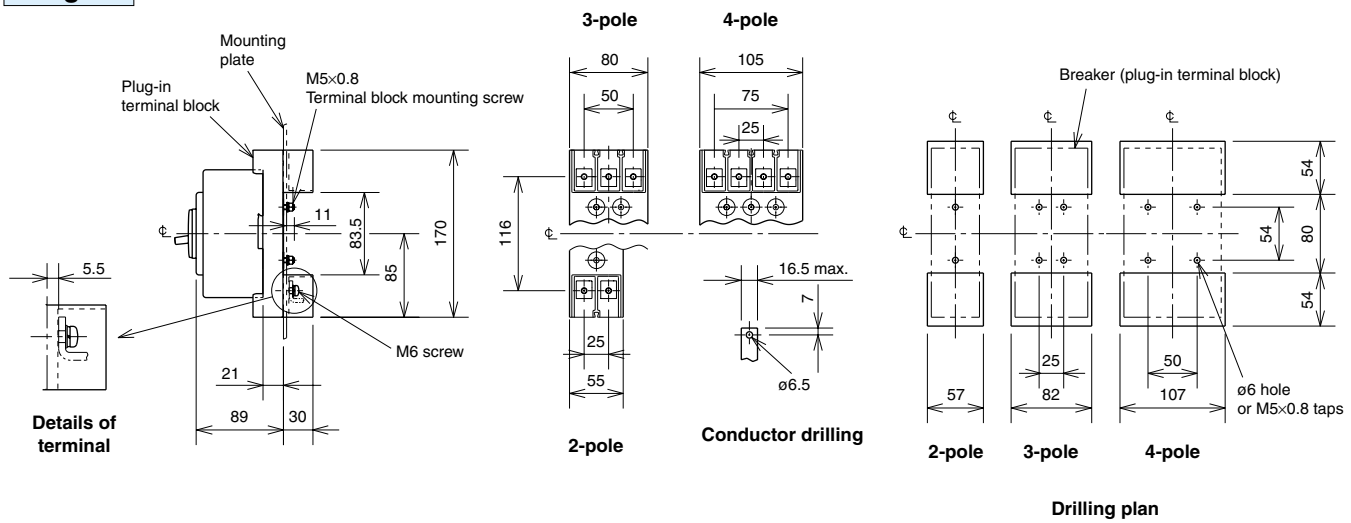


Rear connection





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

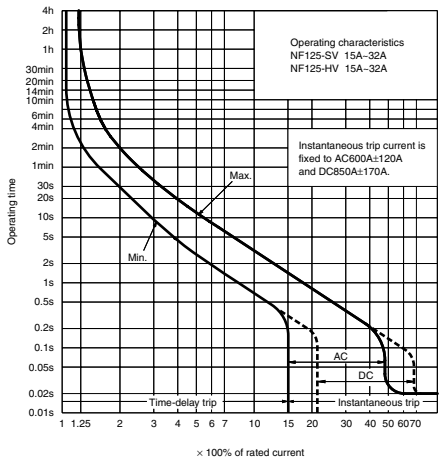
NF125-CV
NF125-SV
NF125-HV

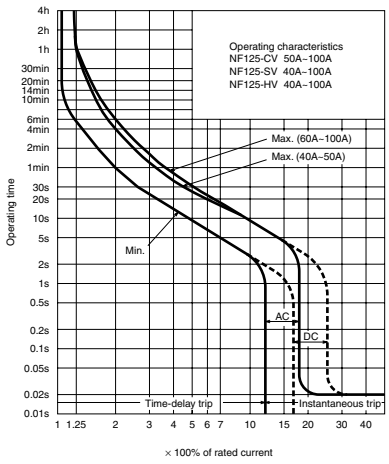
NF125-SV

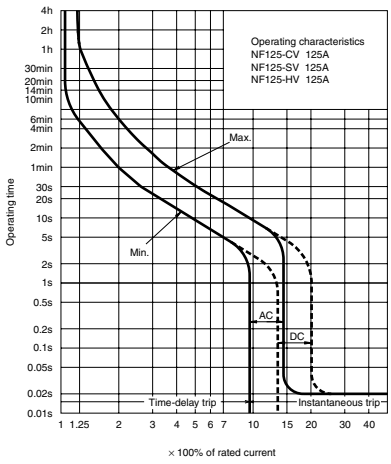
Type name				NF125-CV		NF125-SV			NF125-HV		
Rated current In (A)				50 (60) 63 (75) 80 100 125		(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125			(15) 16 20 (30) 32 40 50 (60) 63 (75) 80 100 125		
Number of poles				2	3	2	3	4	2	3	4
Rated insulation voltage Ui (V)				600		690			690		
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	–		8/8			10/8		
			500V	7.5/4		18/18			30/23		
			440V	10/5		25/25			50/38		
			415V	10/5		30/30			50/38		
			400V	10/5		30/30			50/38		
			380V	10/5		30/30			50/38		
			230V	30/15		50/50			100/75		
		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.

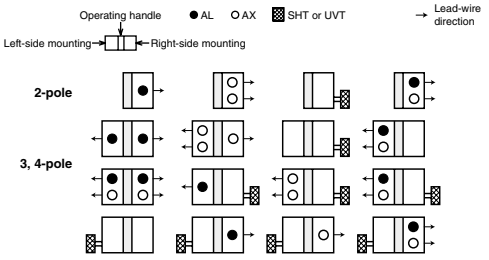
Operating Characteristics



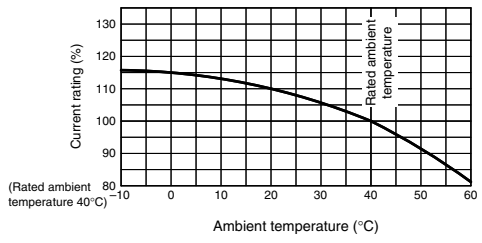




Internal Accessories



Ambient Compensating Curve



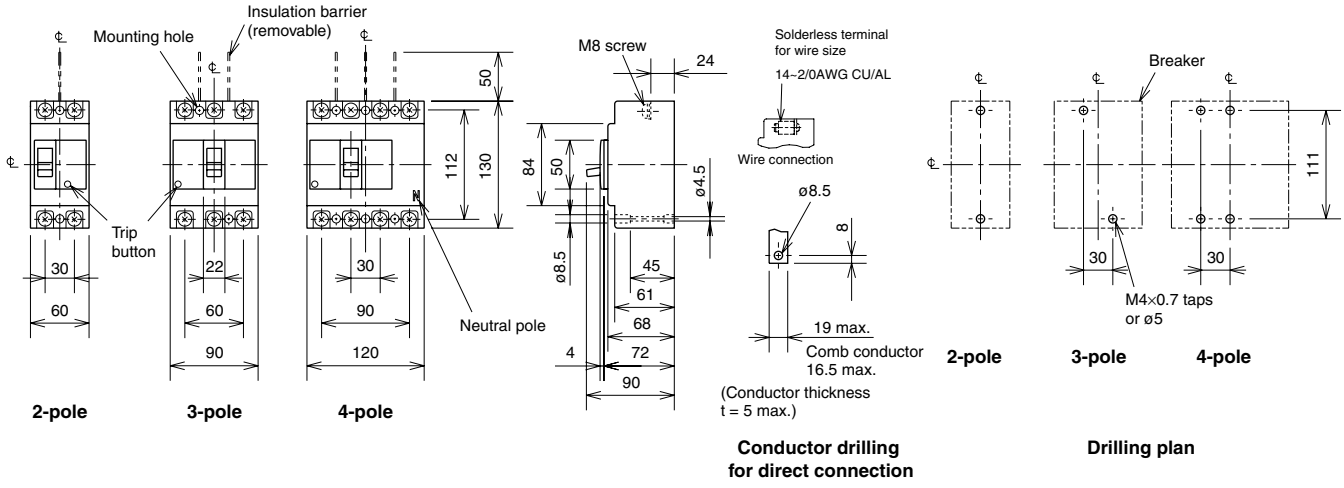
External Accessories

Accessories			Type name	Reference page
Operating handle	F	2P	F-1SV2	37
		3, 4P	F-1SV	
	V	2P	V-1SV2	38
		3, 4P	V-1SV	
	S		S-05SV	39
Handle lock device	LC		LC-05SV	41
	(*1) HL		HLF-05SV	
			HLN-05SV	
	HL-S		HLS-1SV	

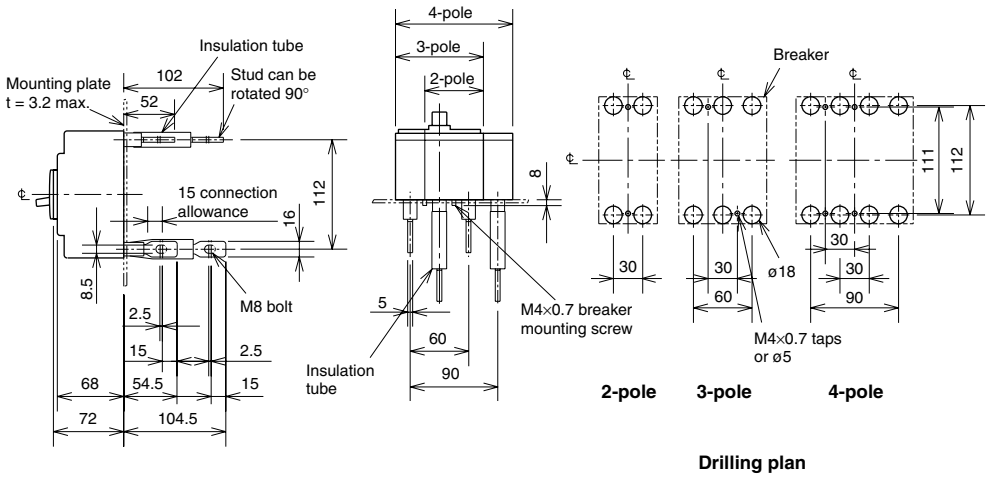
Accessories				Type name	Reference page
Mechanical interlock		MI	2, 3P	MI-05SV3	40
			4P	MI-05SV4	
Terminal cover	Small	TC-S	2P	TCS-1SV2	39
			3P	TCS-1SV3	
	Large	TC-L	2P	TCL-1SV2	
			3P	TCL-1SV3	
			4P	TCL-1SV4	
	Skeleton	TTC	2P	TTC-1SV2	
			3P	TTC-1SV3	
	Rear	BTC	2P	BTC-1SV2	
			3P	BTC-1SV3	
	Plug-in	PTC	2P	PTC-1SV2	
			3P	PTC-1SV3	
Electrical operation device				(*2)	40

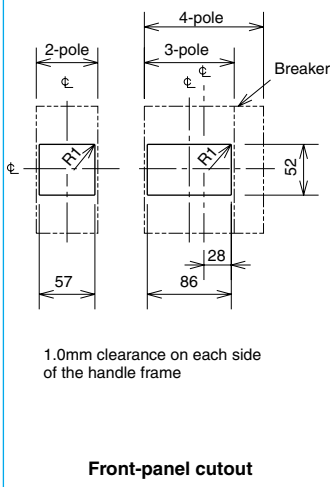
Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.
*3 Available for NF125-CV/SV.

Front connection

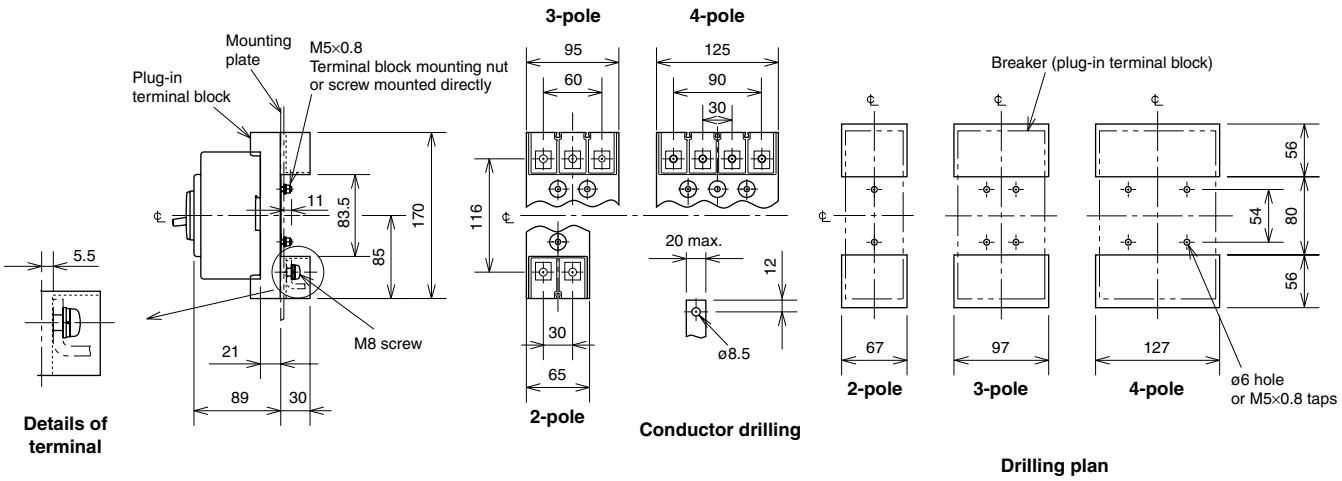


Rear connection





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

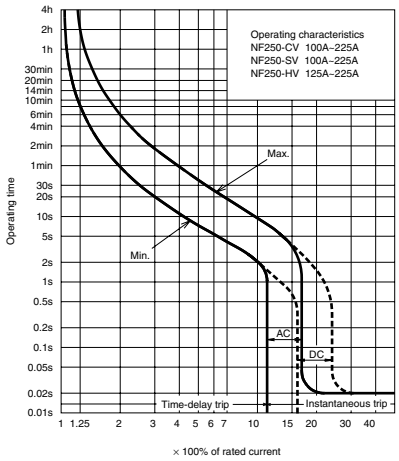
NF250-CV
NF250-SV
NF250-HV

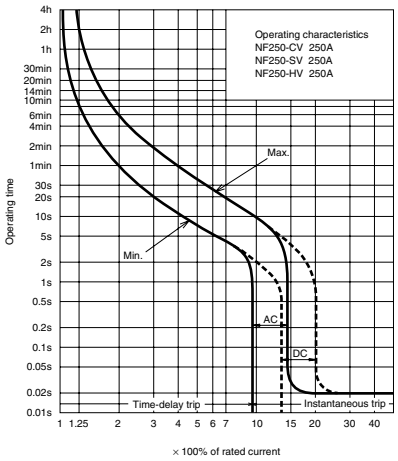
NF250-SV

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	10/8
			500V	10/8	30/30	50/38
			440V	15/12	36/36	65/65
			415V	25/19	36/36	70/70
			400V	25/19	36/36	75/75
			380V	25/19	36/36	75/75
			230V	36/27	85/85	100/100
		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)		

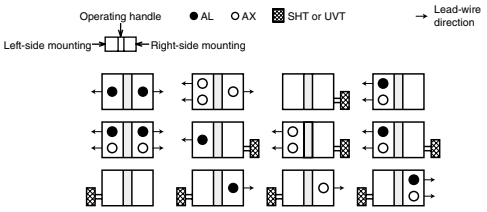
Note: *1 Use two poles for three- and four-pole products. In this case, do not use the neutral pole of the four-pole products. If wired as shown at the bottom of page 13, three-pole NF250-CV can be used for up to 400VDC, three-pole NF250-SV and NF250-HV up to 500VI and four-pole products up to 600VDC.

Operating Characteristics

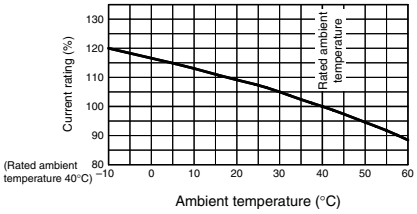




Internal Accessories



Ambient Compensating Curve



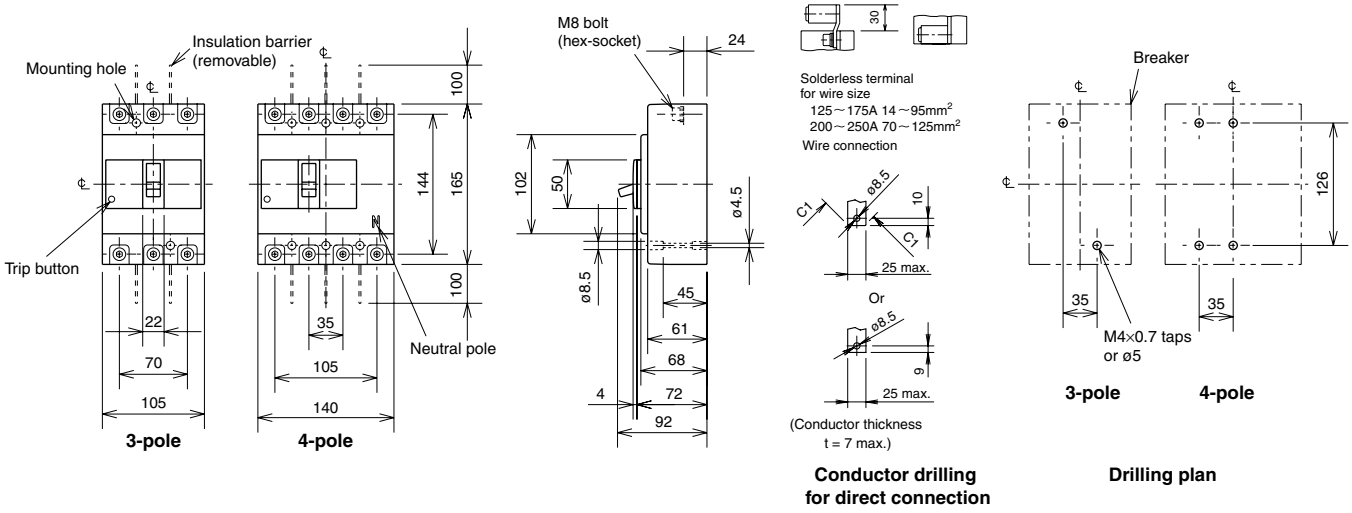
External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2SV	37
	V	V-2SV	38
	S	S-2SV	39
Handle lock device	LC	LC-05SV	41
	(*1) HL	HLF-05SV	
		HLN-05SV	
	HL-S	HLS-2SV	

Accessories				Type name	Reference page
Mechanical interlock		MI	2, 3P	MI-05SV3	40
			4P	MI-2SV4	
Terminal cover	Small	TC-S	2, 3P	TCS-2SV3	39
	Large	TC-L	2, 3P	TCL-2SV3	
				TCL-2SV3L	
			4P	TCL-2SV4	
	Skeleton	TTC	2, 3P	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.

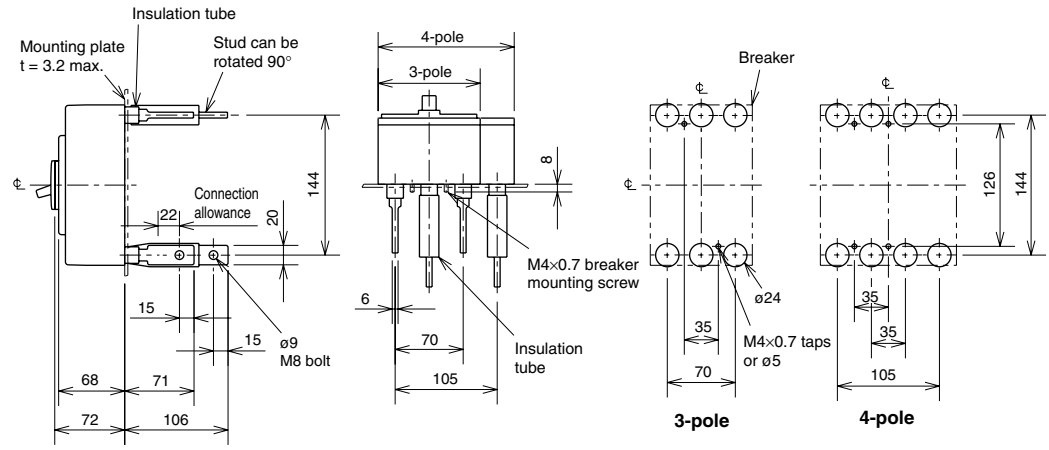
Front connection



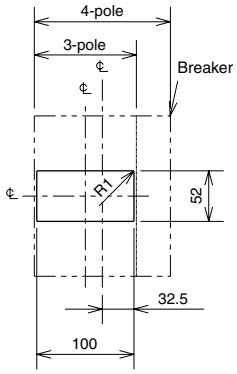
Conductor drilling for direct connection

Drilling plan

Rear connection



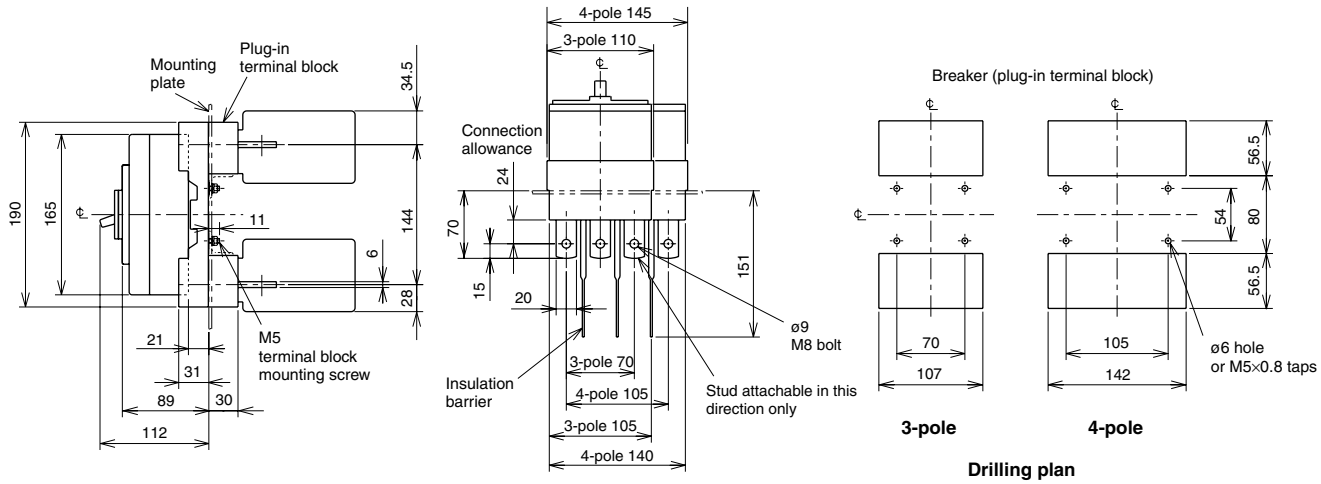
Drilling plan



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

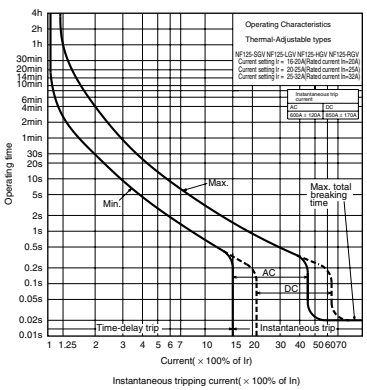
NF250-SGV

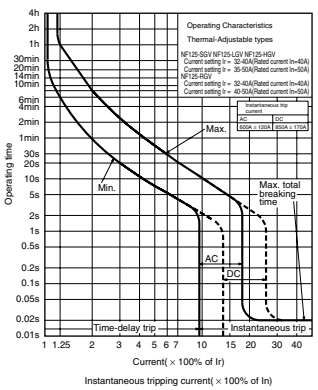
Type name				NF125-SGV			NF160-SGV			NF250-SGV			NF125-LGV			NF160-LGV			NF250-LGV		
Rated current In (A)				16-20, 20-25, 25-32 32-40, 35-50, 45-63 56-80, 70-100, 90-125			125-160			125-160 140-200 175-250			16-20, 20-25, 25-32 32-40, 35-50, 45-63 56-80, 70-100, 90-125			125-160			125-160 140-200 175-250		
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			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			8/8		
			500V	30/30			30/30			30/30			36/36			36/36			36/36		
			440V	36/36			36/36			36/36			50/50			50/50			50/50		
			415V	36/36			36/36			36/36			50/50			50/50			50/50		
			400V	36/36			36/36			36/36			50/50			50/50			50/50		
			380V	36/36			36/36			36/36			50/50			50/50			50/50		
			230V	85/85			85/85			85/85			90/90			90/90			90/90		
			200V	85/85			85/85			85/85			90/90			90/90			90/90		
		DC (*1)	300V	20/20			20/20			20/20			20/20			20/20			20/20		
Standard attached parts (front connection)				Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)																	

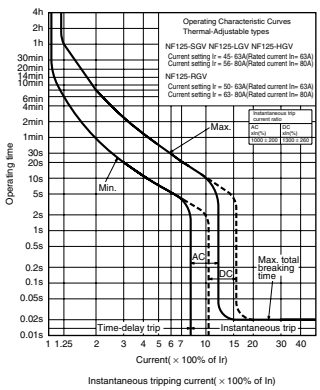
Type name				NF125-HGV			NF160-HGV			NF250-HGV			NF125-RGV		NF250-RGV	
Rated current In (A)				16-20, 20-25, 25-32 32-40, 35-50, 45-63 56-80, 70-100, 90-125			125-160			125-160 140-200 175-250			16-20, 20-25, 25-32 32-40, 40-50, 50-63 63-80, 80-100, 100-125		125-160 160-200 200-250	
Number of poles				2	3	4	2	3	4	2	3	4	2	3	2	3
Rated insulation voltage Ui (V)				690			690			690			690		690	
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	10/8			10/8			10/8			–		–	
			500V	50/38			50/38			50/38			–		–	
			440V	65/65			65/65			65/65			125/125		125/125	
			415V	70/70			70/70			70/70			150/150		150/150	
			400V	75/75			75/75			75/75			150/150		150/150	
			380V	75/75			75/75			75/75			150/150		150/150	
			230V	100/100			100/100			100/100			150/150		150/150	
			200V	100/100			100/100			100/100			150/150		150/150	
		DC (*1)	300V	40/40			40/40			40/40			–		–	
Standard attached parts (front connection)				Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) Insulation barrier: (2P: 2pcs, 3P: 4pcs, 4P: 6pcs)												

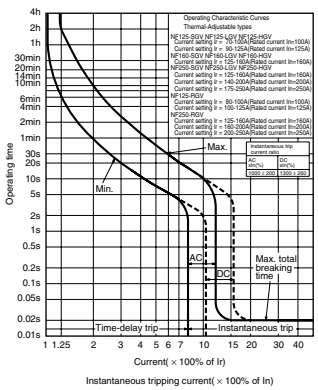
Note: *1 When wired as shown at the bottom of page 13, three-pole models can be used for up to 500VDC, and 4-pole models for up to 600VDC.

Operating Characteristics

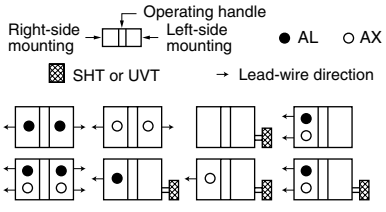






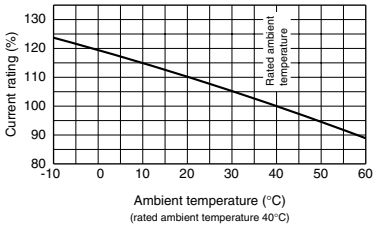


Internal Accessories



Remark: 1. Refer to page 34.

Ambient Compensating Curve



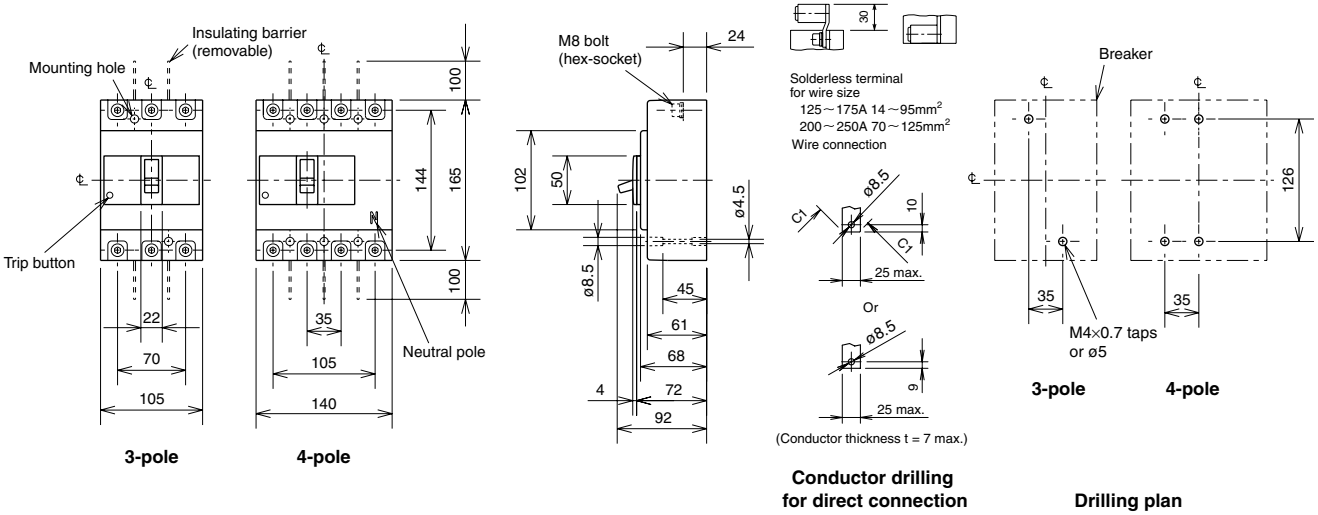
External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2SV	37
	V	V-2SV	38
	S	S-2SV	39
Handle lock device	LC	LC-05SV	41
	(*1) HLF	HLF-05SV	
	HL	HLN-05SV	
	HL-S	HLS-2SV	

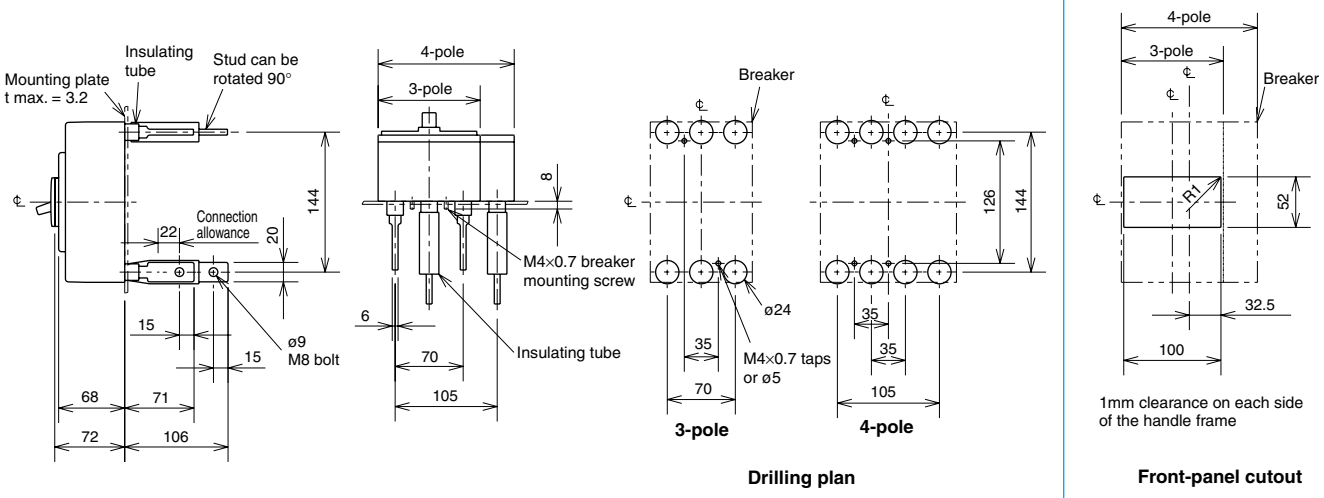
Accessories				Type name	Reference page
Mechanical interlock		MI	2, 3P	MI-05SV3	40
			4P	MI-2SV4	
Terminal cover	Small	TC-S	2, 3P	TCS-2SV3	39
	Large	TC-L	2, 3P	TCL-2SV3	
				TCL-2SV3L	
			4P	TCL-2SV4	
	Skeleton	TTC	2, 3P	TTC-2SV3	
	Rear	BTC	2, 3P	BTC-2SV3	
	Plug-in	PTC	2, 3P	PTC-2SV3	
Electrical operation 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.

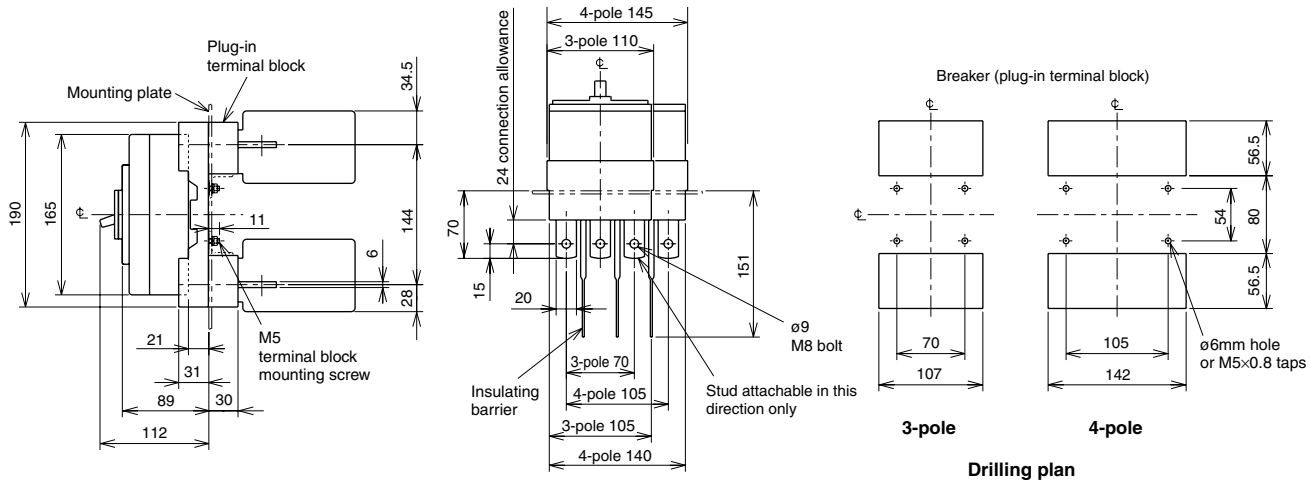
Front connection



Rear connection



Plug-in



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

5. Characteristics and Dimensions

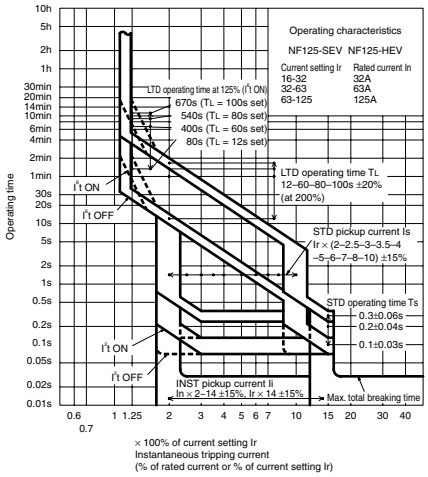
Molded-case Circuit Breakers

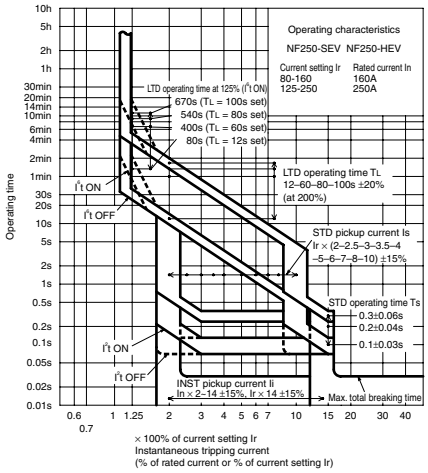
NF125-SEV
NF125-HEV
NF250-SEV
NF250-HEV

NF125-SEV

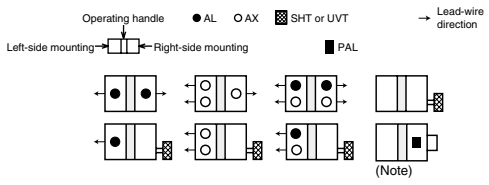
Type name				NF125-SEV	NF125-HEV	NF250-SEV	NF250-HEV
Rated current In (A)				16-32 32-63 63-125	16-32 32-63 63-125	80-160 125-250	80-160 125-250
Number of poles				3 4	3 4	3 4	3 4
Rated insulation voltage Ui (V)				690	690	690	690
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	690V	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

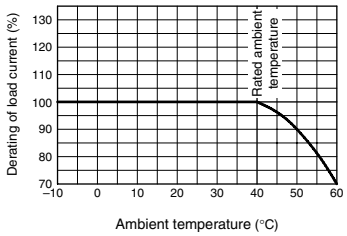




Internal Accessories



Ambient Compensating Curve



The rated current does not have thermal characteristics. Reduce the current as shown in the curve on the left chart if the ambient temperature exceeds 40 °C.

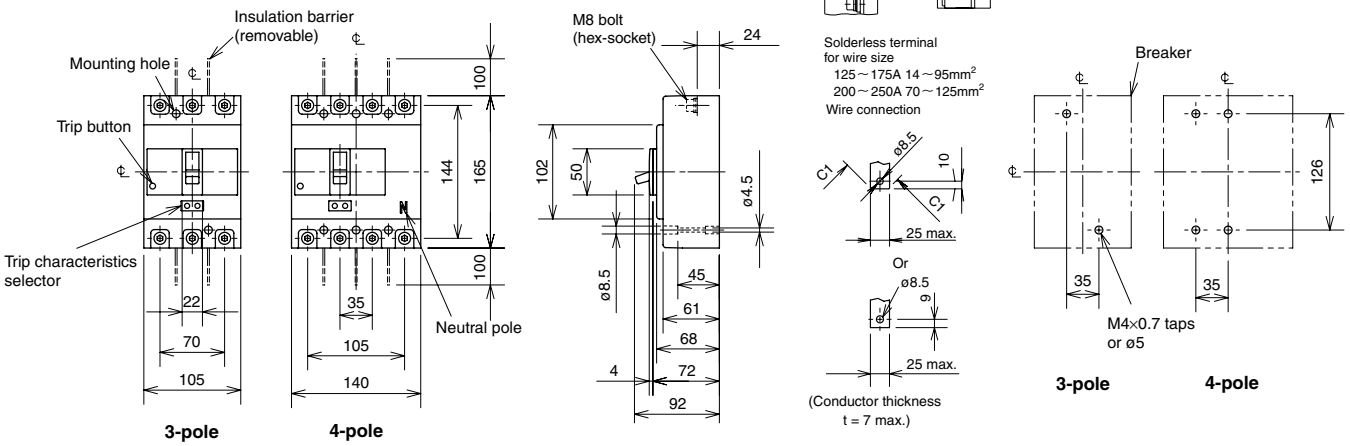
External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2SV	37
	V	V-2SV	38
	S	S-2SV	39
Handle lock device	LC	LC-05SV	41
	(*1) HL	HLF-05SV	
		HLN-05SV	
	HL-S	HLS-2SV	

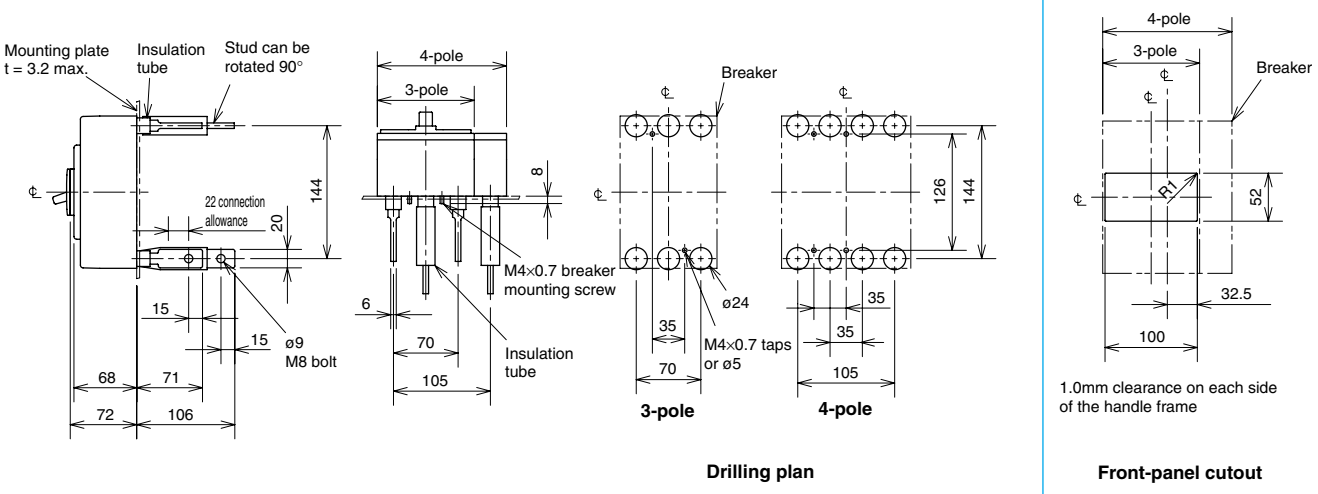
Accessories				Type name	Reference page
Mechanical interlock		MI	3P	MI-05SV3	40
			4P	MI-2SV4	
Terminal cover	Small	TC-S	3P	TCS-2SV3	39
	Large	TC-L	3P	TCL-2SV3	
				TCL-2SV3L	
			4P	TCL-2SV4	
	Skeleton	TTC	3P	TTC-2SV3	
	Rear	BTC	3P	BTC-2SV3	
	Plug-in	PTC	3P	PTC-2SV3	
Electrical operation device				(*2)	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.

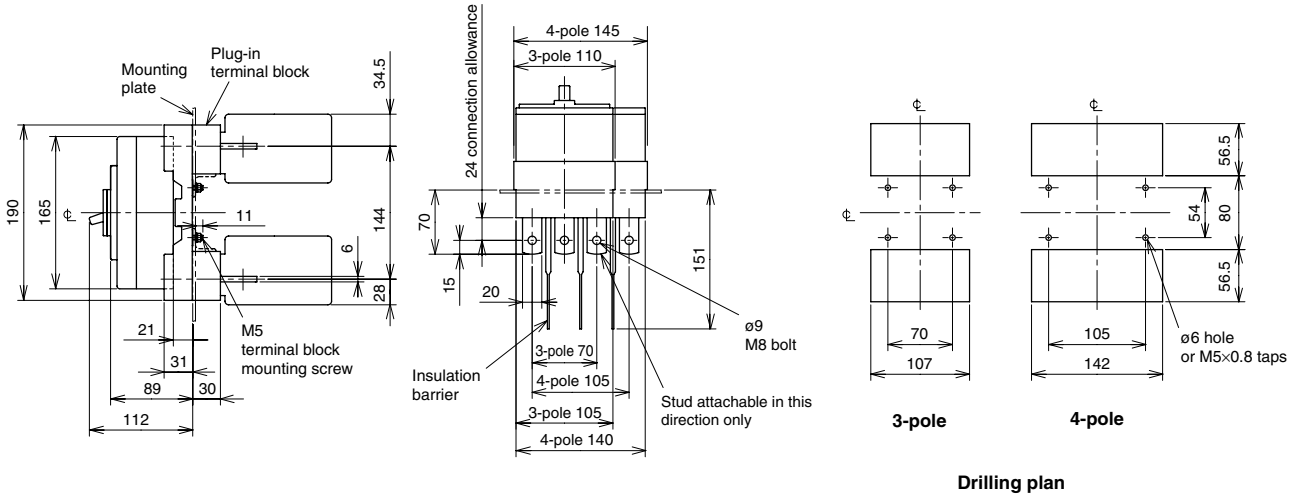
Front connection



Rear connection



Plug-in



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

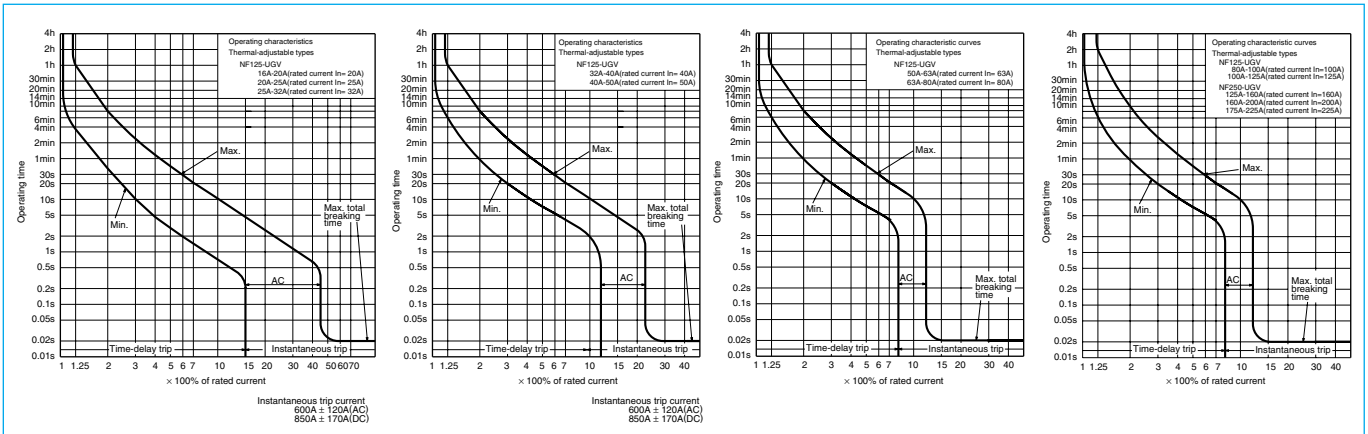
Molded-case Circuit Breakers

NF125-UGV
NF250-UGV

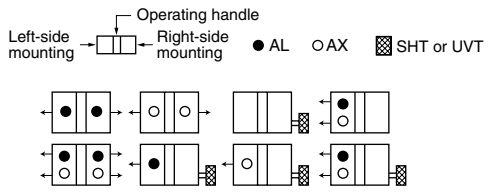
NF250-UGV

Type name				NF125-UGV			NF250-UGV		
Rated current In (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 Ui (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

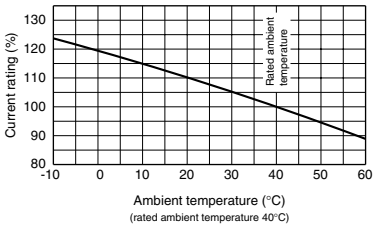


Internal Accessories

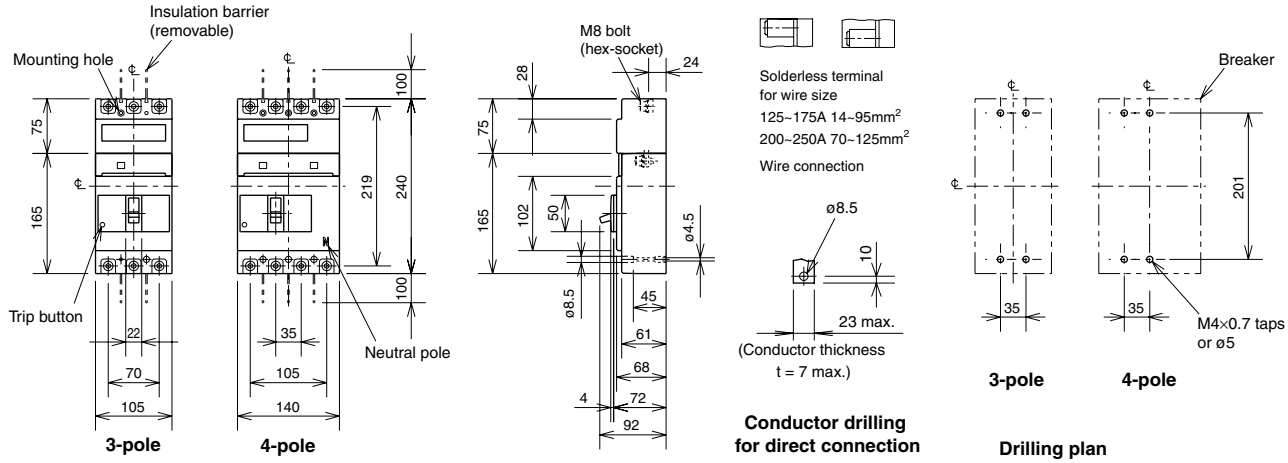


Remark: 1. Refer to page 34.

Ambient Compensating Curve



Front connection

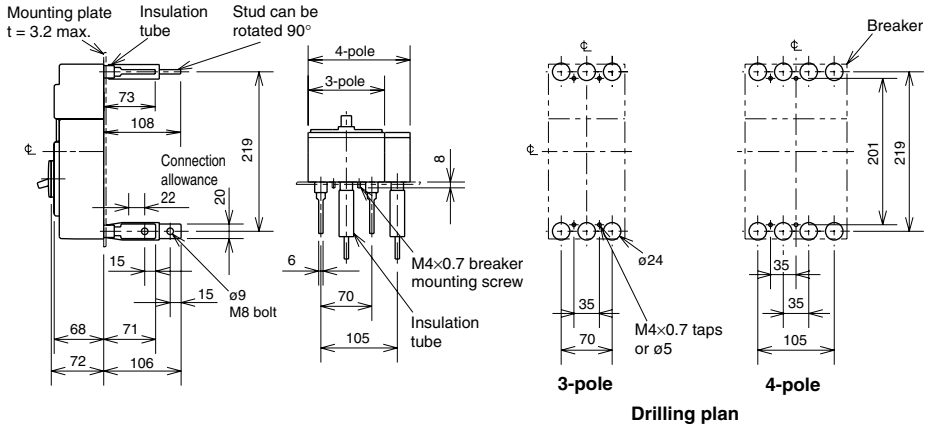


3-pole **4-pole**

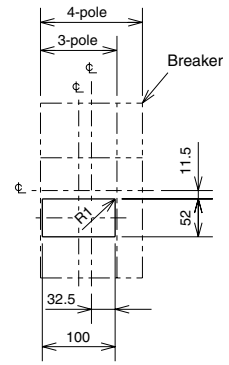
Conductor drilling for direct connection

Drilling plan

Rear connection

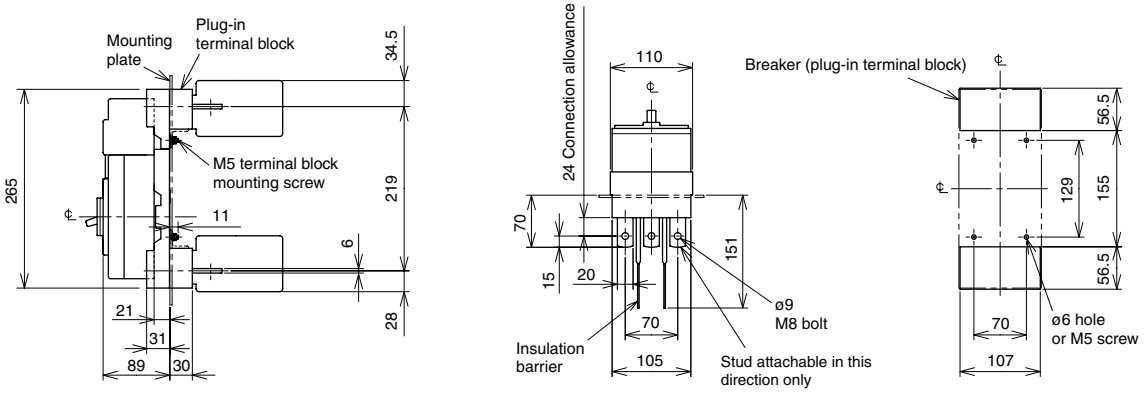


Drilling plan



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

Earth-leakage Circuit Breakers

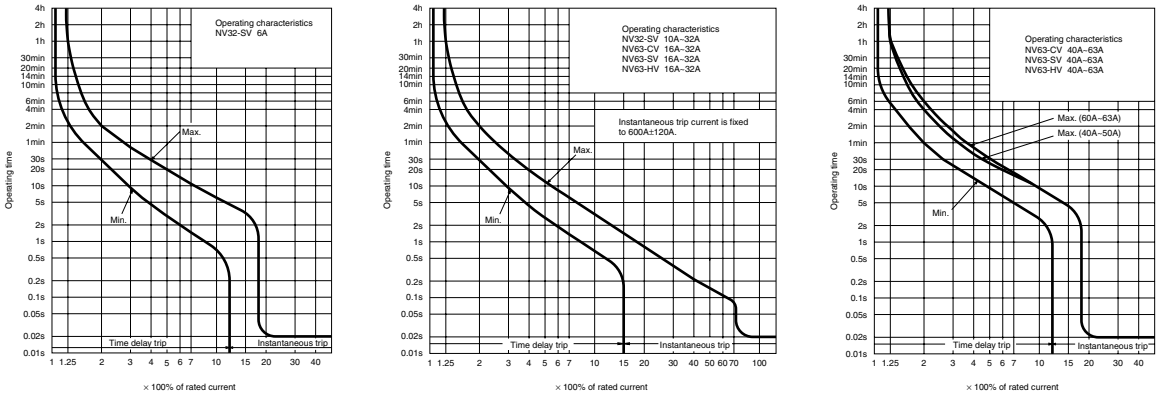
NV32-SV
NV63-CV
NV63-SV
NV63-HV

NV63-SV

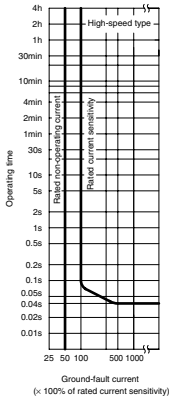
Type name			NV32-SV	NV63-CV		NV63-SV		NV63-HV
Rated current In (A)			(5) 6 10 (15) 16 20 25 (30) 32	(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63		(5) (10) (15) 16 20 25 (30) 32 40 50 (60) 63		(15) 16 20 25 (30) 32 40 50 (60) 63
Number of poles			3	2	3	2	3	3
Phase line			3ø3W, 1ø2W	1ø2W	3ø3W, 1ø2W	1ø2W	3ø3W, 1ø2W	3ø3W, 1ø2W
Rated operational voltage Ue (V)		AC	100-440	100-240	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	(15) 30 100/200/ 500 selectable	(15) 30 100/200/ 500 selectable
	Max operating time (s)	at IΔn	0.1	0.1		0.1		0.1
		at 5IΔn	0.04	0.04		0.04		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)		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
		AC 415V	5/5	—	2.5/2.5	—	7.5/7.5	10/8
		AC 400V	5/5	—	5/5	—	7.5/7.5	10/8
		AC 230V	10/10	7.5/7.5		15/15		25/19
		AC 200V	10/10	7.5/7.5		15/15		25/19
		AC 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

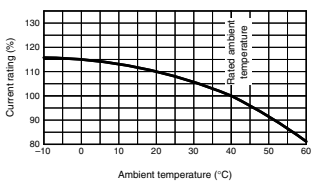


Earth-leakage Tripping Characteristics

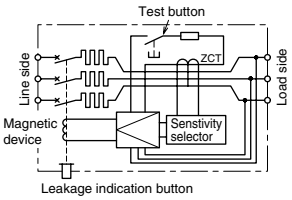


Internal Accessories

Ambient Compensating Curve



Internal Wiring Diagram



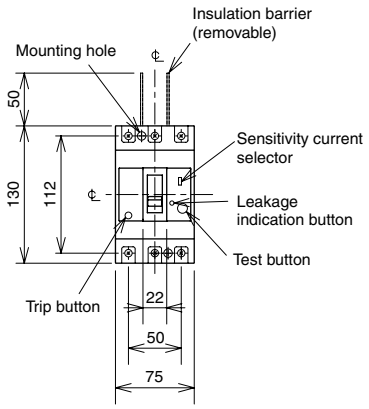
External Accessories

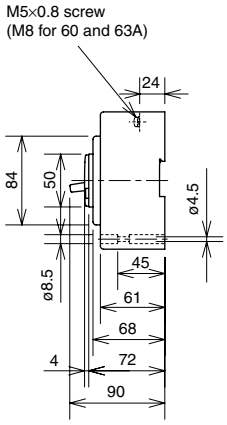
Accessories		Type name	Reference page
Operating handle	F	F-05SV	37
	V	V-05SV	38
	S	S-05SV	39
Handle lock device	LC	LC-05SV	41
	(*1) HL	HLF-05SV	
		HLN-05SV	
	HL-S	HLS-05SV	

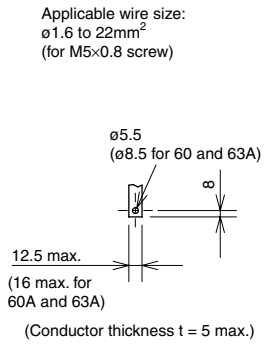
Accessories			Type name	Reference page
Mechanical interlock		MI	MI-05SV3	40
Terminal cover	Small	TC-S	TCS-05SV3	39
	Large	TC-L	TCL-05SV3	
			TCL-05SV3L	
	Skeleton	TTC	TTC-05SV3	
	Rear	BTC	BTC-05SV3	
	Plug-in	PTC	PTC-05SV3	
IEC 35mm rail mounting adapters			DIN-05SV	41

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

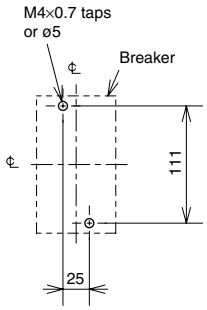
Front connection





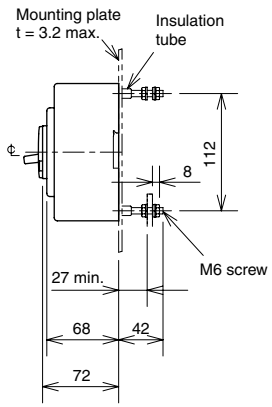


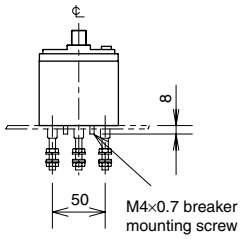
Conductor drilling for direct connection

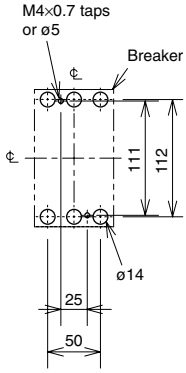


Drilling plan

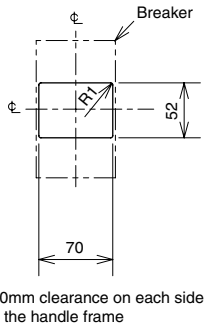
Rear connection





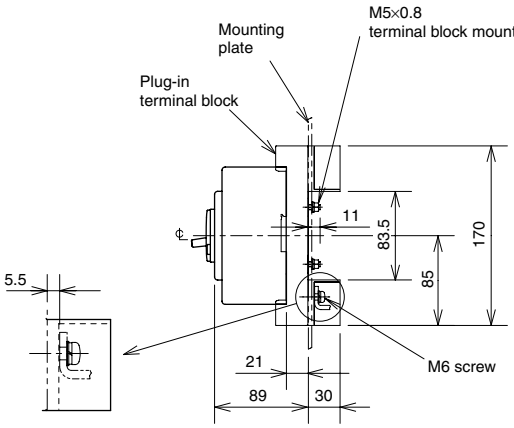


Drilling plan

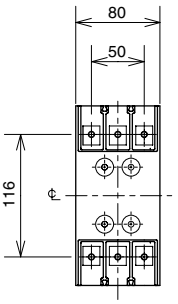


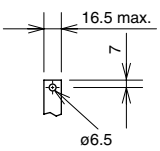
Front-panel cutout

Plug-in

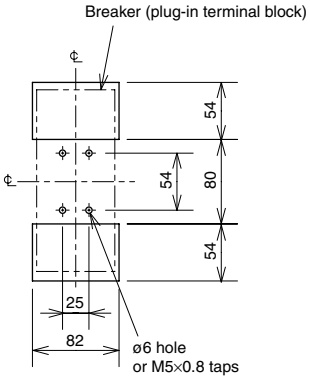


Details of terminal





Conductor drilling



Drilling plan

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

5. Characteristics and Dimensions

Earth-leakage Circuit Breakers

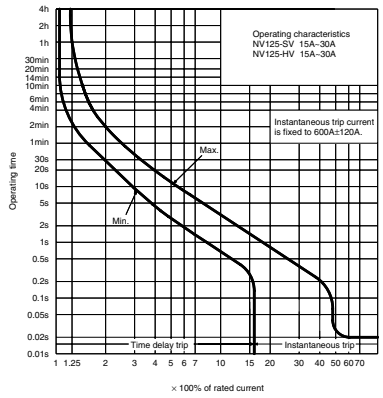
NV125-CV
NV125-SV
NV125-HV

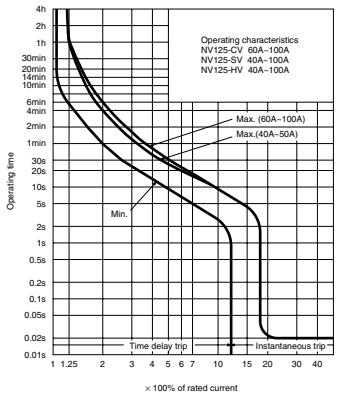
NV125-SV

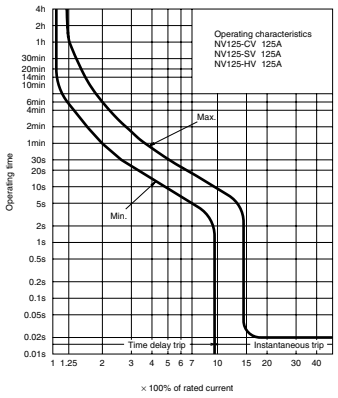
Type name				NV125-CV	NV125-SV		NV125-HV	
Rated current In (A)				(60) 63 (75) 80 100 125	(15) 16 20 30 32 40 50 (60) 63 (75) 80 100 125		(15) 16 20 (30) 32 40 50 (60) 63 75 80 100 125	
Number of poles				3	3	4	3	4
Phase line				3ø3W, 1ø2W	3ø3W, 1ø2W	3ø4W	3ø3W, 1ø2W	3ø4W
Rated operational voltage Ue (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	0.1	0.1		0.1	
			at 5IΔn	0.04	0.04		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)		440V	10/5	25/25		50/38	
			415V	10/5	30/30		50/38	
		AC	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.

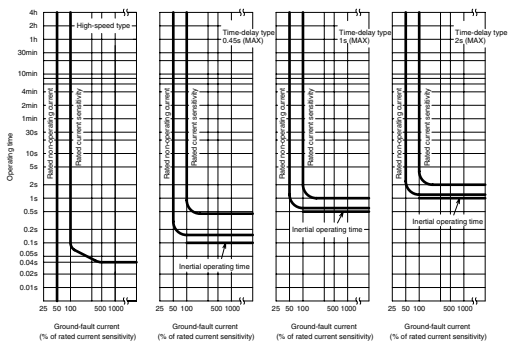
Operating Characteristics



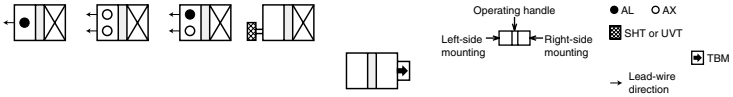




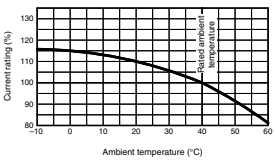
Earth-leakage Tripping Characteristics



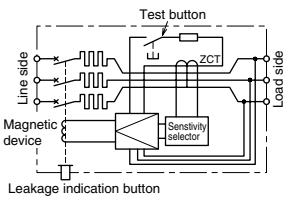
Internal Accessories



Ambient Compensating Curve



Internal Wiring Diagram



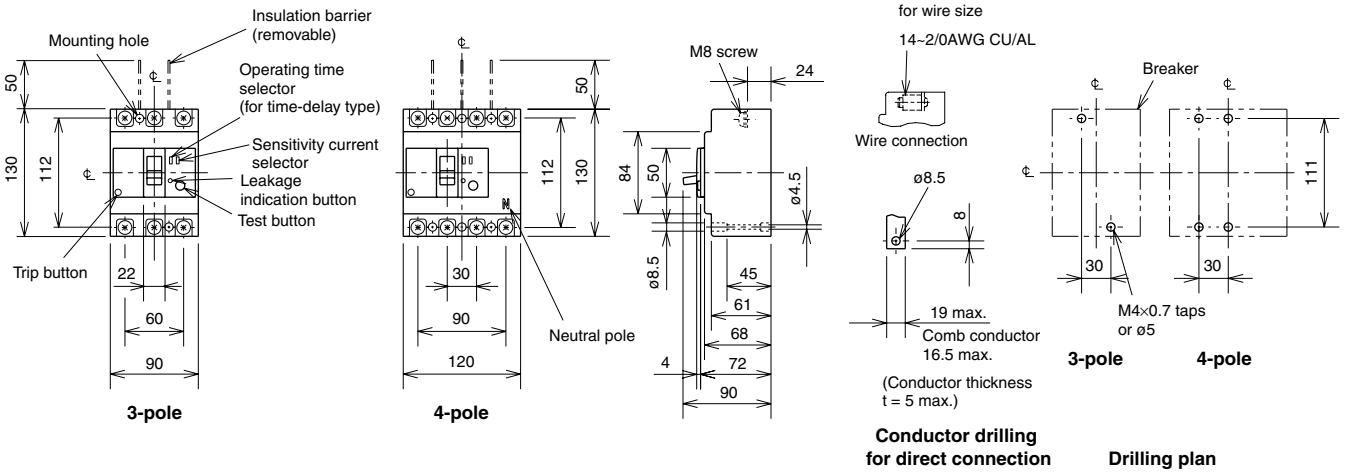
External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-1SV	37
	V	V-1SV	38
	S	S-05SV	39
Handle lock device	LC	LC-05SV	41
	(*1) HL	HLF-05SV HLN-05SV	
	HL-S	HLS-1SV	

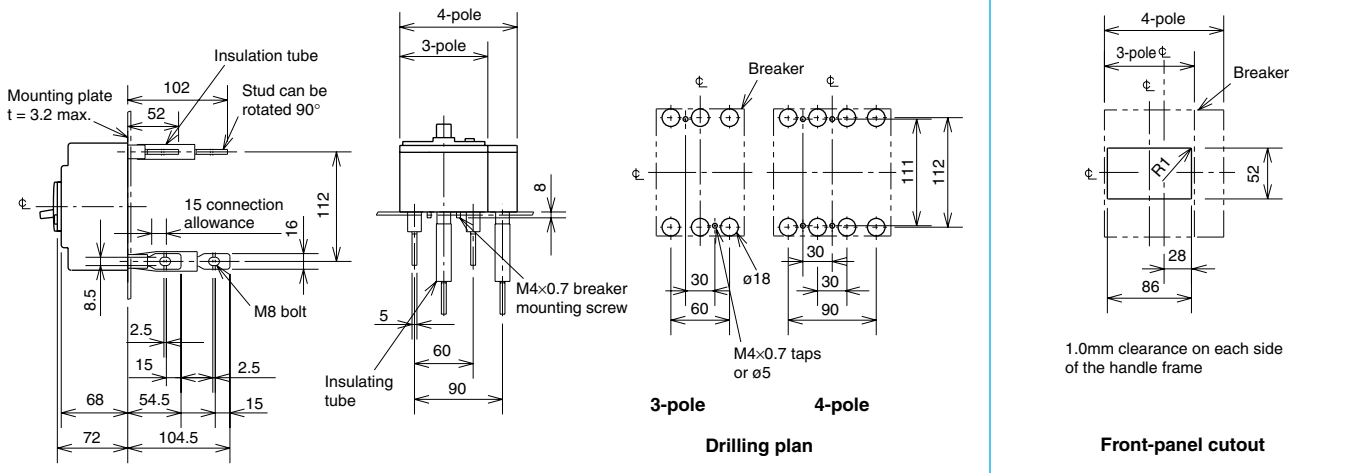
Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.

Accessories				Type name	Reference page
Mechanical interlock		MI	3P	MI-05SV3	40
			4P	MI-1SV4	
Terminal cover	Small	TC-S		TCS-1SV3	39
	Large	TC-L	3P	TCL-1SV3	
			4P	TCL-1SV4	
	Skeleton	TTC		TTC-1SV3	
	Rear	BTC		BTC-1SV3	
	Plug-in	PTC		PTC-1SV3	
Electrical operation device				(*2)	40

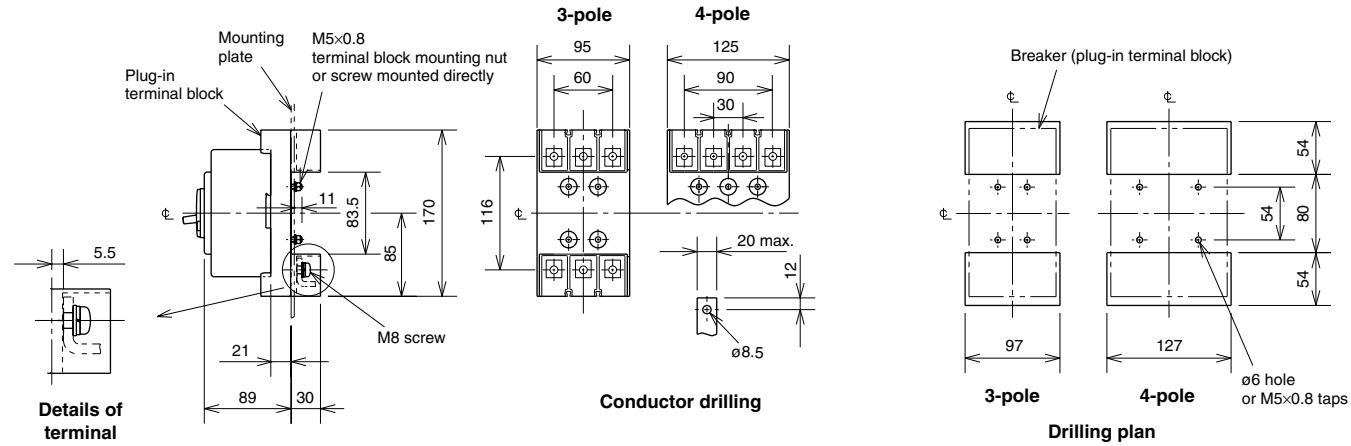
Front connection



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

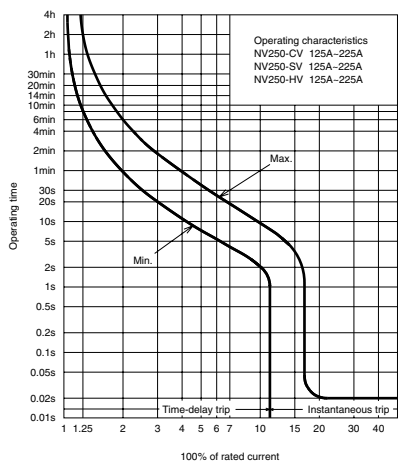
Earth-leakage Circuit Breakers

NV250-CV
NV250-SV
NV250-HV

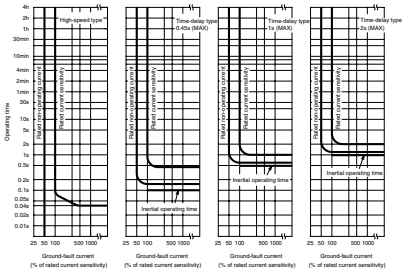
NV250-SV

Type name				NV250-CV	NV250-SV		NV250-HV	
Rated current In (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 Ue (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	0.1	0.1		0.1	
			at 5IΔn	0.04	0.04		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)	

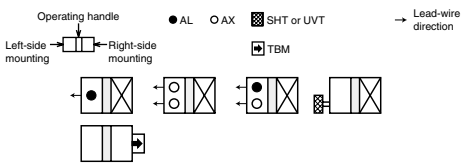
Operating Characteristics



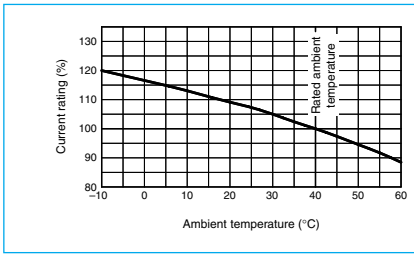
Earth-leakage Tripping Characteristics



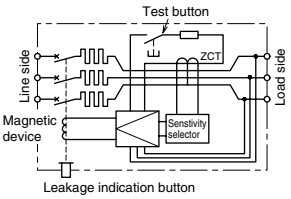
Internal Accessories



Ambient Compensating Curve



Internal Wiring Diagram



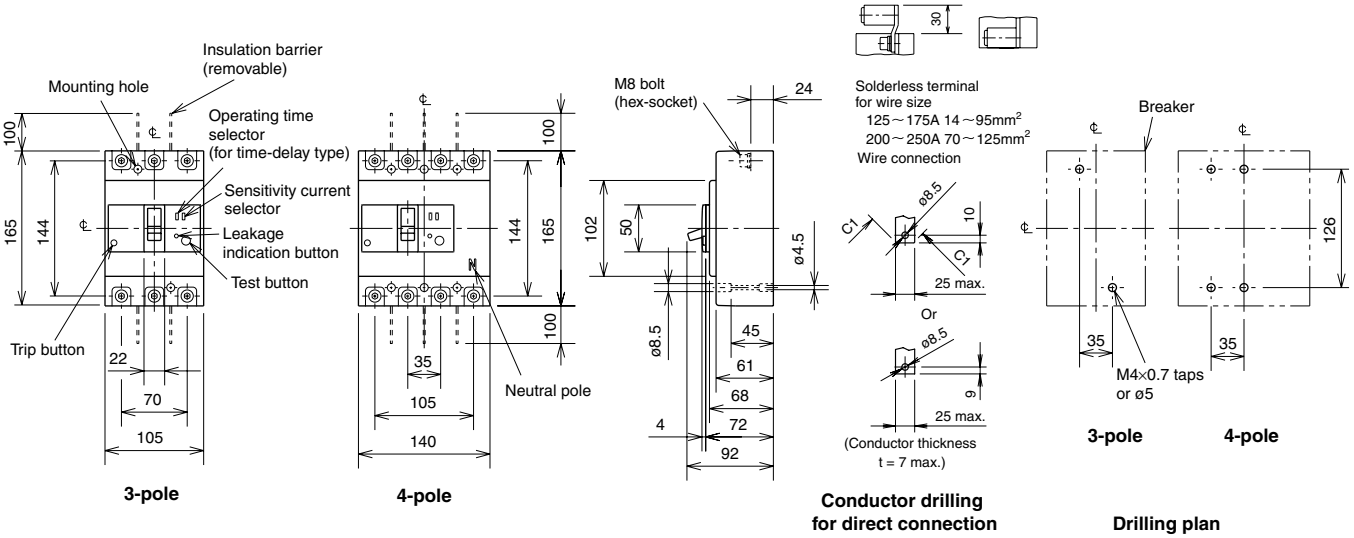
External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2SV	37
	V	V-2SV	38
	S	S-2SV	39
Handle lock device	LC	LC-05SV	41
	(*1) HL	HLF-05SV	
		HLN-05SV	
	HL-S	HLS-2SV	

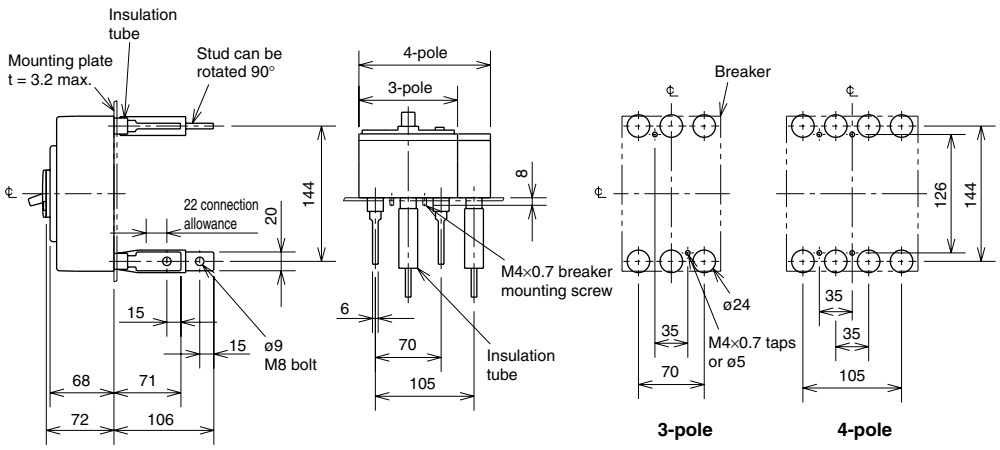
Accessories				Type name	Reference page
Mechanical interlock		MI	3P	MI-05SV3	40
			4P	MI-2SV4	
Terminal cover	Small	TC-S	3P	TCS-2SV3	39
	Large	TC-L	3P	TCL-2SV3	
				TCL-2SV3L	
			4P	TCL-2SV4	
	Skeleton	TTC	3P	TTC-2SV3	
	Rear	BTC	3P	BTC-2SV3	
	Plug-in	PTC	3P	PTC-2SV3	
Electrical operation device				(*2)	40

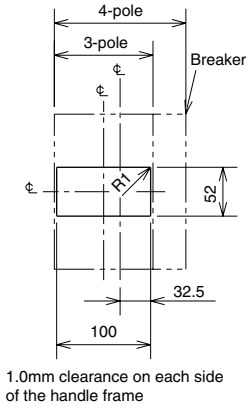
Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.

Front connection

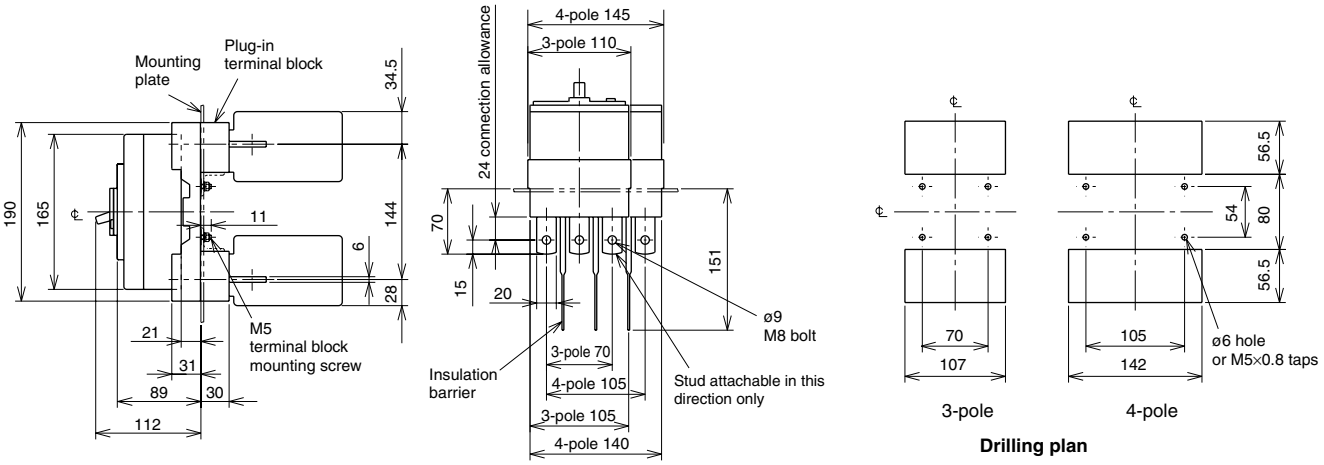


Rear connection





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

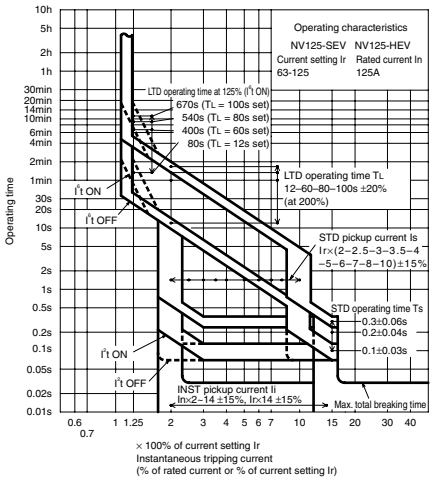
Earth-leakage Circuit Breakers

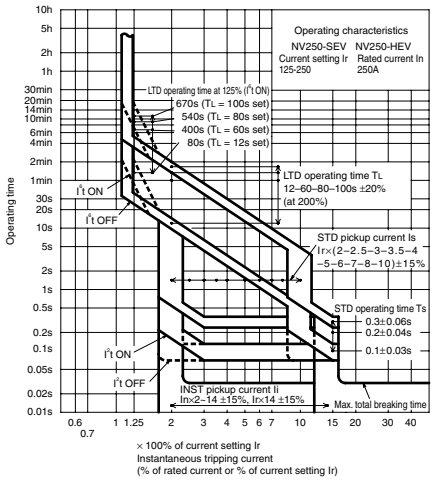
NV125-SEV
NV125-HEV
NV250-SEV
NV250-HEV

NV250-SEV

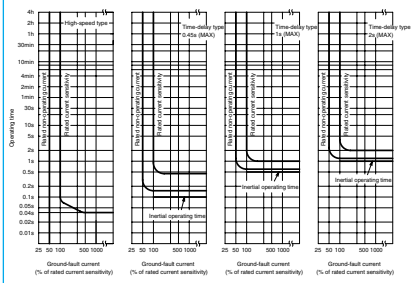
Type name				NV125-SEV	NV125-HEV	NV250-SEV	NV250-HEV
Rated current In (A)				63-125	63-125	125-250	125-250
Number of poles				3 / 4	3 / 4	3	3
Phase line type				3ø3W, 1ø3W, 1ø2W / 3ø4W	3ø3W, 1ø3W, 1ø2W / 3ø4W	3ø3W, 1ø2W	3ø3W, 1ø2W
Rated operational voltage Ui			V	440	440	440	440
Rated operational voltage Ue (V)			AC	100-440	100-440	100-440	100-440
High-speed type	Rated current sensitivity (mA)			(30) 100/200/500 selectable	(30) 100/200/500 selectable	(30) 100/200/500 selectable	(30) 100/200/500 selectable
	Max operating time (s)		at IΔn	0.1	0.1	0.1	0.1
			at 5IΔn	0.04	0.04	0.04	0.04
Time-delay type	Rated current sensitivity (mA)			(100/200/500 selectable)	(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)	(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)	(0.1/0.5/1.0)
Earth-leakage indication system				Mechanical type (button)	Mechanical type (button)	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

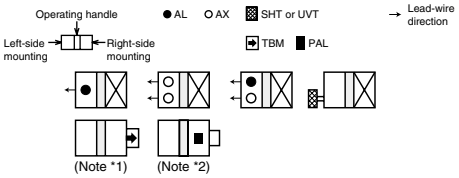




Earth-leakage Tripping Characteristics

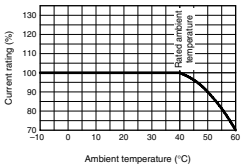


Internal Accessories



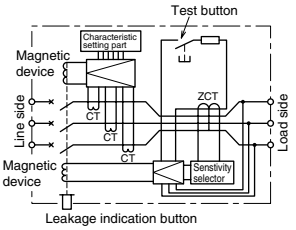
Notes: *1 For the 24VDC TBM only instruct us of a control voltage.
(The standard shared voltage is 100-240VAC/100-240VDC.)
*2 SLT equipped is standard. Control voltage (100-200VAC) is necessary.

Ambient Compensating Curve



The rated current does not have thermal characteristics. Reduce the current as shown in the curve on the left chart if the ambient temperature exceeds 40°C.

Internal Wiring Diagram



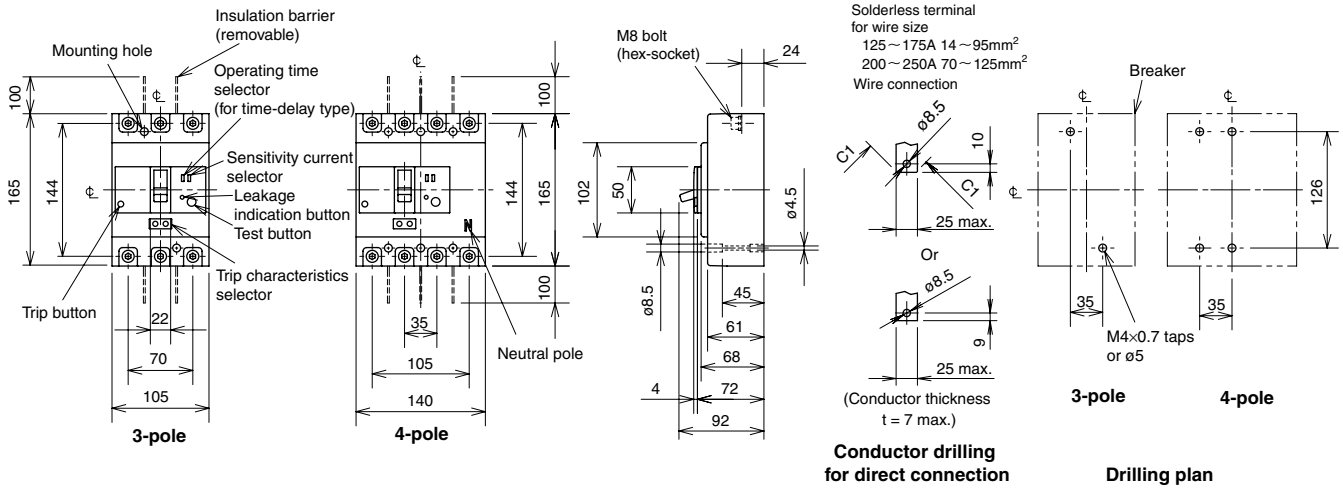
External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2SV	37
	V	V-2SV	38
	S	S-2SV	39
Handle lock device	LC	LC-05SV	41
	(*1) HLF	HLF-05SV	
	HL	HLN-05SV	
	HL-S	HLS-2SV	

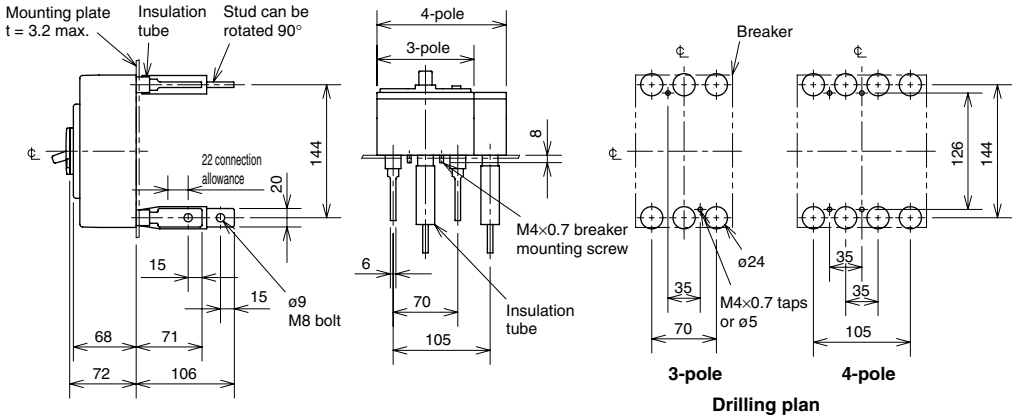
Notes: *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.

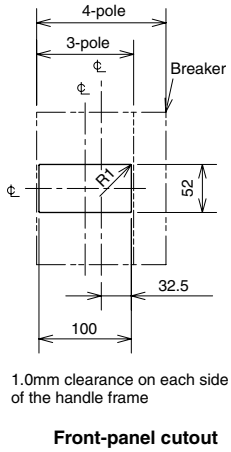
Accessories				Type name	Reference page
Mechanical interlock		MI	3P	MI-05SV3	40
			4P	MI-2SV4	
Terminal cover	Small	TC-S	3P	TCS-2SV3	39
	Large	TC-L	3P	TCL-2SV3	
				TCL-2SV3L	
			4P	TCL-2SV4	
	Skeleton	TTC	3P	TTC-2SV3	
	Rear	BTC	3P	BTC-2SV3	
	Plug-in	PTC	3P	PTC-2SV3	
Electrical operation device				(*2)	40

Front connection

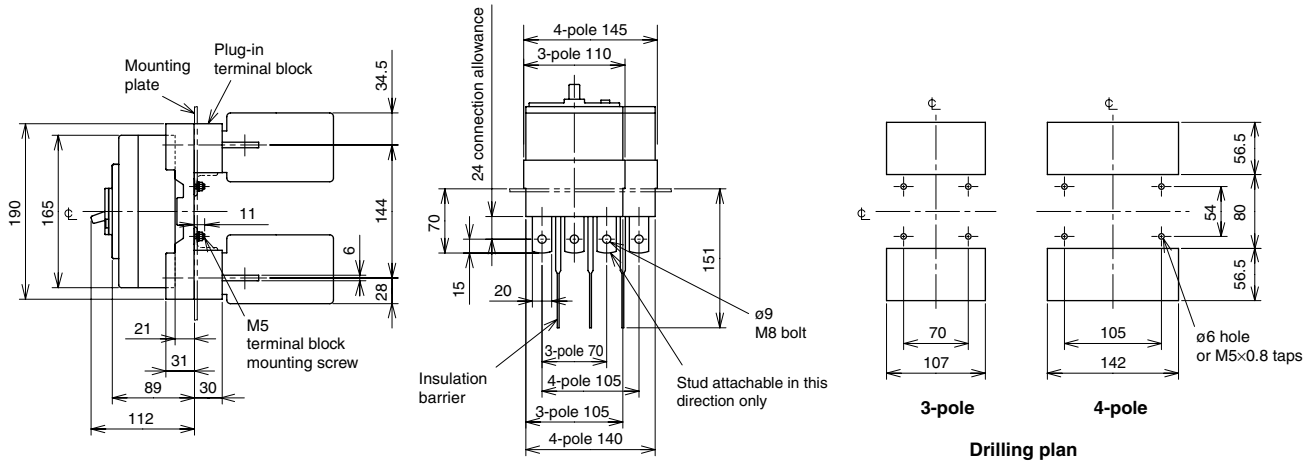


Rear connection





Plug-in



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”

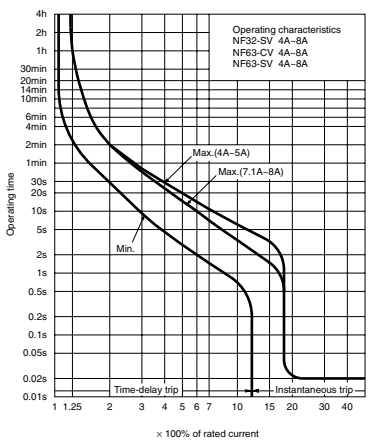
NF63-CV
NF32-SV
NF63-SV

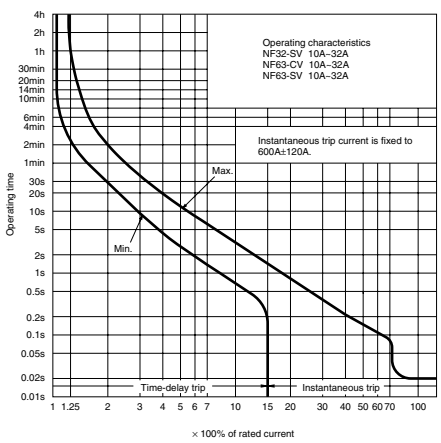
NF63-SV

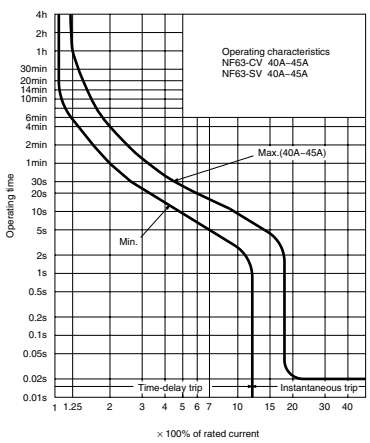
Type name				NF63-CV	NF32-SV	NF63-SV
Rated current In (A)				4 5 7.1 8 10 12 16 25 32 40 45	4 5 7.1 8 10 12 16 25 32 40 45	4 5 7.1 8 10 12 16 25 32 40 45
Number of poles				3	3	3
Rated insulation voltage Ui (V)				600	600	600
Rated short-circuit breaking capacity (kA)	JIS C 8201-2-1 Ann.1 / JIS C 8201-2-1 Ann.2 IEC 60947-2 EN 60947-2 (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
	GB 14048.2 (Icu/Ics)	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
			230V	7.5/7.5	7.5/7.5	15/15
	NK (Icu/Ics)	AC	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.

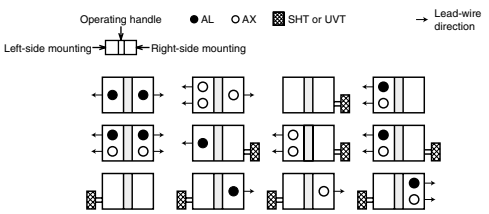
Operating Characteristics



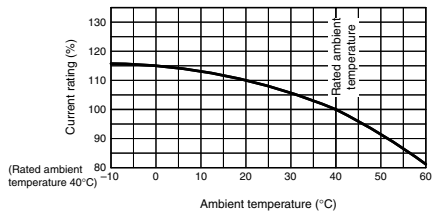




Internal Accessories



Ambient Compensating Curve



External Accessories

Accessories			Type name	Reference page
Operating handle	F	2P	F-05SV2	37
		3, 4P	F-05SV	
	V	2P	V-05SV2	38
		3, 4P	V-05SV	
	S		S-05SV	39
Handle lock device	LC		LC-05SV	41
	(*1) HL		HLF-05SV	
			HLN-05SV	
	HL-S		HLS-05SV	

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

Accessories				Type name	Reference page
Mechanical interlock		MI	2, 3P	MI-05SV3	40
			4P	MI-05SV4	
Terminal cover	Small	TC-S	2P	TCS-05SV2	39
			3P	TCS-05SV3	
	Large	TC-L	2P	TCL-05SV2	
				TCL-05SV2L	
			3P	TCL-05SV3	
				TCL-05SV3L	
			4P	TCL-05SV4	
	Skeleton	TTC	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

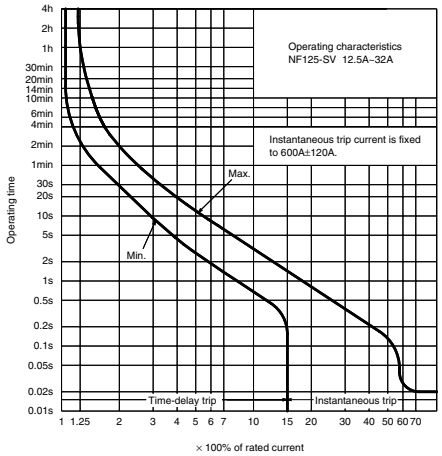
NF125-SV

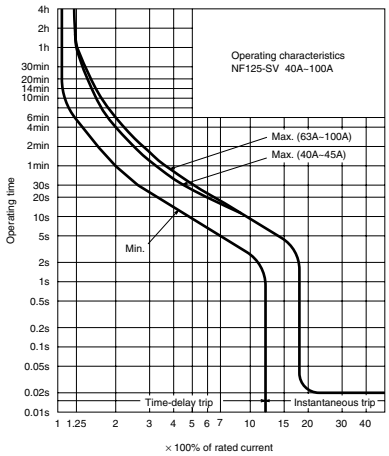
NF125-SV

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
	JIS C 8201-2-1 Ann.2	AC	415V 30/30
	IEC 60947-2 EN 60947-2 (Icu/Ics)	AC	400V 30/30
		AC	380V 30/30
		AC	230V 50/50
	GB 14048.2 (Icu/Ics)	AC	415V 30/30
		AC	400V 30/30
		AC	380V 30/30
		AC	230V 50/50
	NK (Icu/Ics)	AC	450V 25/25
		AC	240V 50/50
Standard attached parts (front connection)			Mounting screw: M4×0.7×55 (3P: 2pcs) Insulation barrier: (3P: 2pcs)

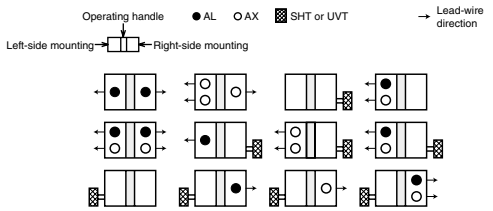
Remark: 1. Refer to page 66 for the external dimensions.

Operating Characteristics

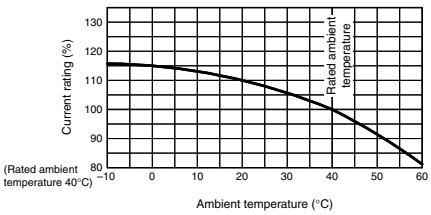




Internal Accessories



Ambient Compensating Curve



External Accessories

Accessories			Type name	Reference page
Operating handle	F	3P	F-1SV	37
	V	3P	V-1SV	38
	S		S-05SV	39
Handle lock device	LC		LC-05SV	41
	(*1) HL		HLF-05SV	
			HLN-05SV	
	HL-S		HLS-1SV	

Accessories				Type name	Reference page
Mechanical interlock		MI	3P	MI-05SV3	40
Terminal cover	Small	TC-S	3P	TCS-1SV3	
	Large	TC-L	3P	TCL-1SV3	39
	Skeleton	TTC	3P	TTC-1SV3	
	Rear	BTC	3P	BTC-1SV3	
	Plug-in	PTC	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.

5. Characteristics and Dimensions

Motor-protection Breakers

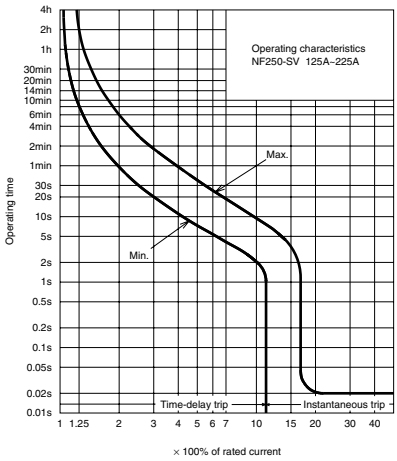
NF250-SV

NF250-SV

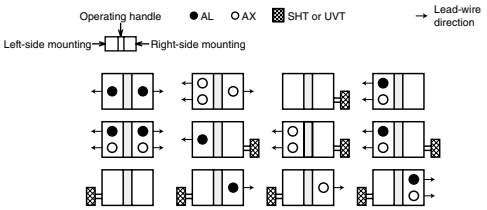
Type name				NF250-SV
Rated current In (A)				125 150 175 200 225
Number of poles				3
Rated insulation voltage Ui (V)				690
Rated short-circuit breaking capacity (kA)	JIS C 8201-2-1 Ann.1 JIS C 8201-2-1 Ann.2 IEC 60947-2 EN 60947-2 (Icu/Ics)	AC	440V	36/36
			415V	36/36
			400V	36/36
			380V	36/36
			230V	85/85
	GB 14048.2 (Icu/Ics)	AC	415V	36/36
			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.

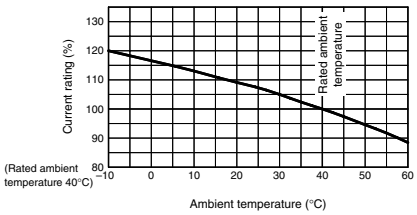
Operating Characteristics



Internal Accessories



Ambient Compensating Curve



External Accessories

Accessories		Type name	Reference page
Operating handle	F	F-2SV	37
	V	V-2SV	38
	S	S-2SV	39
Handle lock device	LC	LC-05SV	41
	(*1) HL	HLF-05SV HLN-05SV	
	HL-S	HLS-2SV	

Accessories				Type name	Reference page
Mechanical interlock		MI	2, 3P	MI-05SV3	40
Terminal cover	Small	TC-S	3P	TCS-2SV3	39
	Large	TC-L	3P	TCL-2SV3 TCL-2SV3L	
	Skeleton	TTC	3P	TTC-2SV3	
	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.

MEMO

Changes for the Better

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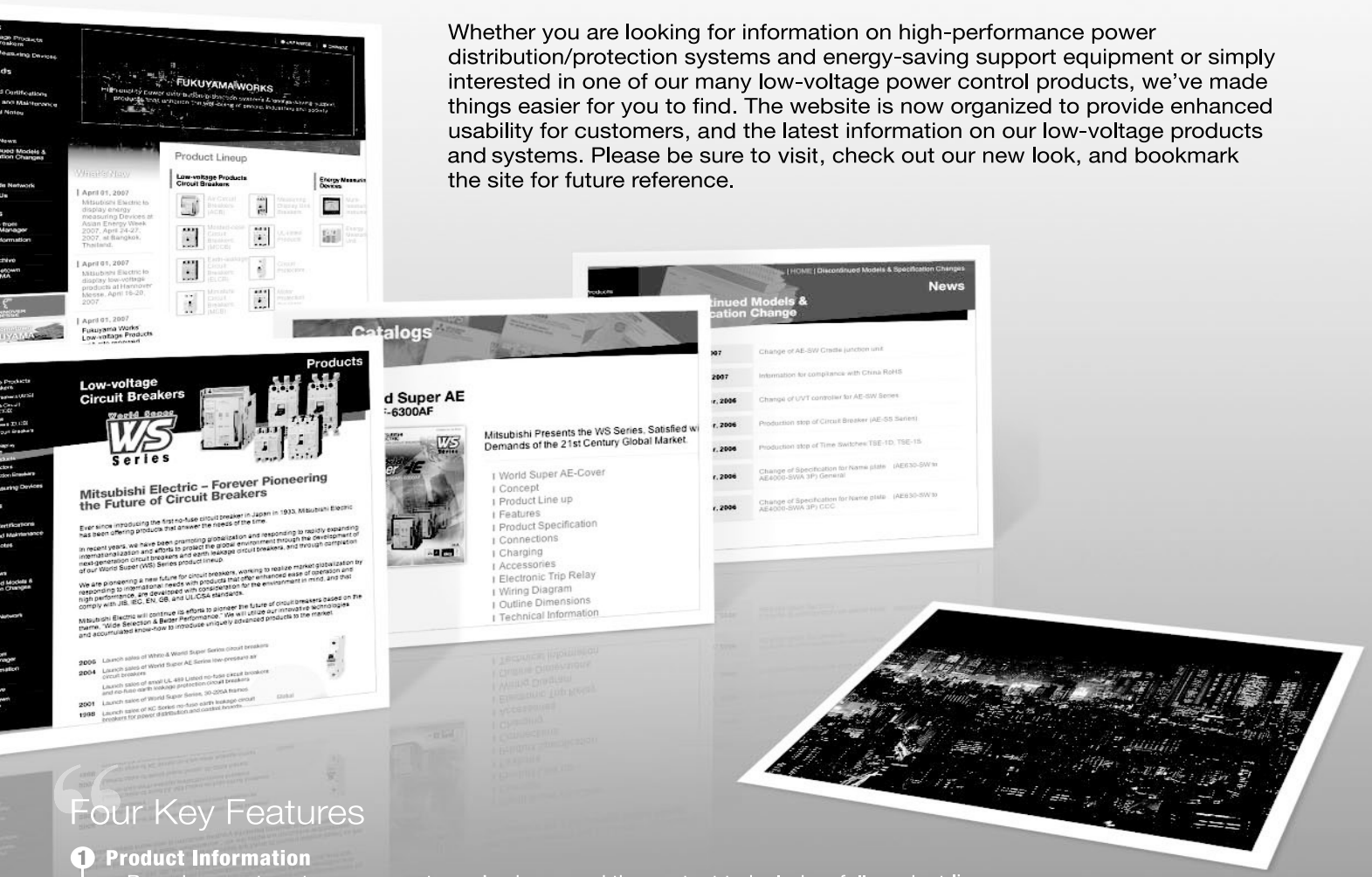


Whether you are looking for information on high-performance power distribution/protection systems and energy-saving support equipment or simply interested in one of our many low-voltage power control products, we've made things easier for you to find. The website is now organized to provide enhanced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

Four Key Features

1 Product Information

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

Low-voltage Circuit Breakers

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

Energy Measuring Devices

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

2 Downloads

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

3 News

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

4 Support

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

Empowering Industries

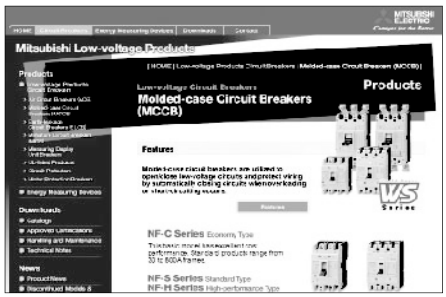
Product Line-up

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

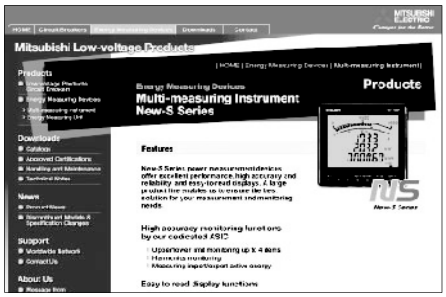
Circuit Breakers

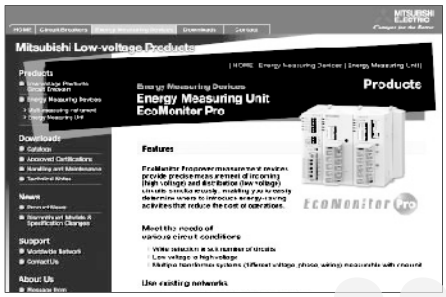
- Air Circuit Breakers (ACB)
- Molded-case Circuit Breakers (MCCB)
- Earth-leakage Circuit Breakers (ELCB)
- Miniature Circuit Breakers (MCB)
- Measuring Display Unit Breakers
- UL-listed Products
- Circuit Protectors
- Motor Protection Breakers



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

Service Network

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Indonesia	P. T. Sahabat Indonesia	P.O.Box 5045 Kawasan Industri Pergudangan, Jakarta, Indonesia	+62-(0)21-6610651-9
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Lebanon	Comptoir d'Electricite Generale-Liban	Cebaco Center - Block A Autostrade Dora, P.O. Box 11-2597 Beirut - Lebanon	+961-1-240445
Malaysia	Mittric Sdn Bhd	5 Jalan Pemberita U1/49, Temasya Industrial Park, Glenmarie 40150 Shah Alam, Selangor, Malaysia	+603-5569-3748
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
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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.

eco Changes 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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