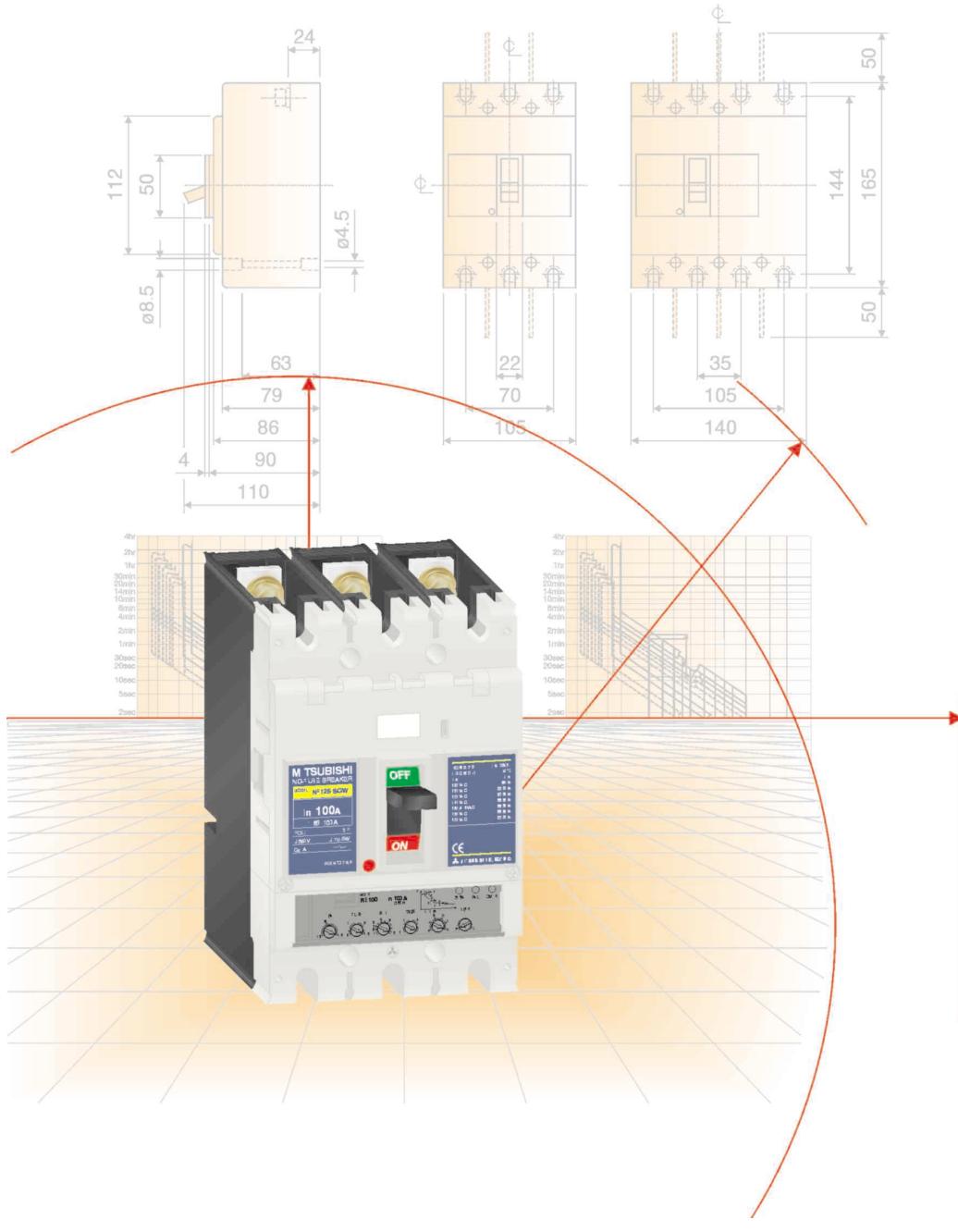


**Low Voltage
Switchgears**
**Moulded-Case
Circuit Breakers**
Disconnectors



**WSS, PSS &
Super Series
3 A – 1600 A**

Technical Catalogue

2004

Circuit Breakers

The new World Super Series WSS completes the wide range of circuit breakers from MITSUBISHI ELECTRIC.

Switch over to highest performance

► S/H types

The S/H types are the standard type which have a wide range of rating current and high breaking capacity. Rated currents 3–1600 A, adjustable from 16 A up to 1600 A.

► R/U types

Highest breaking capacities up to 200 kA at AC 500 V is obtained with type NF-UGW.
The I_{cu} value is 100 % the I_{cs} value (IEC/EN 60947-2).

► C types

Low-cost, low fault level range offers significant cost savings.
From 400 to 800 A ratings there are adjustable solid state types.

► DSN types

Standard S type MCCBs without the automatic tripping element with switching capacity which is 6 times the rated current I_N .

Further Publications within the LVS, PLC and inverter range

Technical Catalogues

SUPER AE Technical Catalogue

Product catalogue for air circuit breakers from 1000 A to 6300 A rated current (art no. 62093)

MS-N Technical Catalogue

Product catalogue for low voltage contactors and relays from 20 A to 1000 A rated current (art no. 62306)

PLC and Inverter Technical Catalogues

Product catalogues for programmable logic controllers and frequency inverters (more details on request)

Additional Services

Current information on updates, alterations, new items, and technical support you will find on MITSUBISHI ELECTRIC's web pages (www.mitsubishi-automation.com).

In the products section of the MITSUBISHI home site various documentations of the whole product range by MITSUBISHI ELECTRIC as well as the current version of this catalogue on hand are available as download. The content is updated daily and to date is provided in German and English.

About this product catalogue

Due to the constantly growing product range, technical alteration, and new or changed characteristical features, this catalogue is updated frequently.

Texts, figures and diagrams shown in this product catalogue are intended exclusively for explanation and assistance in planning and ordering the Moulded Case Circuit Breakers and Disconnectors of the WSS, PSS and SS series and the associated accessories. Only the manuals supplied with the breakers are relevant for installation, commissioning and handling of the circuit breakers and the accessories. The information given in this documentation must be read before installation and commissioning of the modules.

Should questions arise with regard to the planning of modules described in this product catalogue, do not hesitate to contact the german branch of the MITSUBISHI ELECTRIC EUROPE B.V. in Ratingen or one of its distributors (see cover page).

© MITSUBISHI ELECTRIC EUROPE B.V. 01/2004 (4th edition)

WSS, PSS & SUPER SERIES

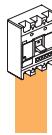
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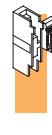
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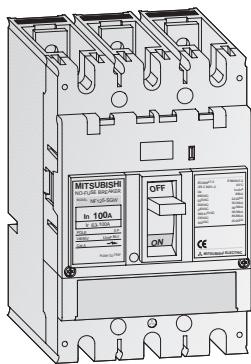
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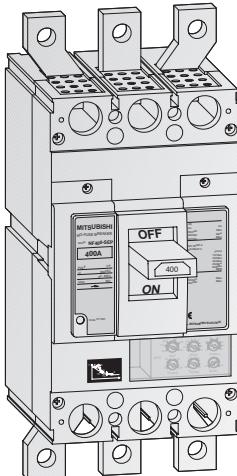
WSS, PSS and SS – The Extensive Breaker Series from Mitsubishi Electric

The circuits of the Mitsubishi breaker series are amongst the smallest compact circuit breakers in the world with electronic overload indication of this kind.

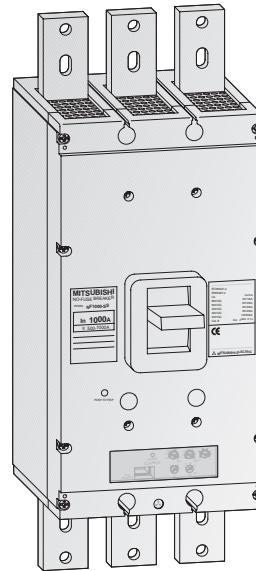
The system is based, among other things, on the well-known and proven microprocessor technology.



NF250-SGW RE, 3p



NF400-SEP, 3p



NF1000-SS, 3p

WSS – World Super Series

The new WSS breaker series meets national and international protection ratings according to VDE, EN, and IEC standards for industrial applications as well as for extended shipping demands.

The new tripping technology guarantees a high reliability and highest protection.

- 16 to 250 A in one model size (3- and 4-pole)
- interchangeable relay unit (thermal type or electronic type)
- available in fixed and plug-in versions
- breaking capacity
Ics = 100 % Icu, up to 690 V

PSS – Progressive Super Series

The proven Progressive Super Series features technical know-how and the microprocessor technology tried and tested in longstanding experience.

The fully enclosed circuit breakers provide an increased safety and at the same time decreased switching times.

- 400 to 800 A
- 2 model sizes (3- and 4-pole)
- electronic trip system
- available in fixed and plug-in versions
- additional disconnectors available

SS – Super Series

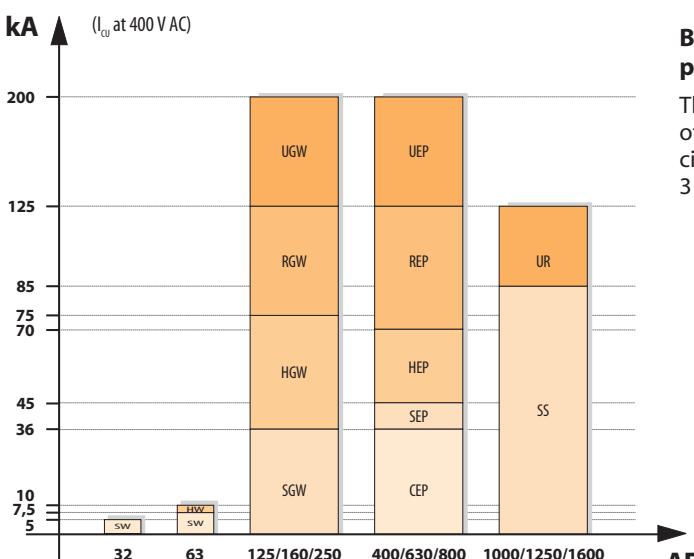
The proven standard series for a high breaking performance providing an optimum protection for transformer and generator feed in, and output breakers.

Circuit breakers can be used as section or disconnecting switch.

- 1000 to 1600 A
- 1 model size (3- and 4-pole)
- electronic trip system
- available in fixed and plug-in versions

Intelligent Breaking Technology for Your Safety

With its innovative breaking technology all Mitsubishi breakers offer greater safety and even faster circuit-breaking speed through the use of the latest switch-off technology and innovative engineering, with a newly developed electronic trip relay.



Breaking performance

The complete range of moulded case circuit breakers from 3 to 1600 A.

Outline

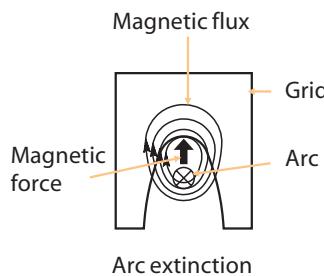
New breaking technology

With its new breaking technology the circuit breakers offer greater safety and even faster circuit-breaking speed through the use of the latest switch-off

technology and innovative engineering, with a newly developed electronic trip relay.

Arc-extinguishing device

Mitsubishi MCCBs feature excellent arc-extinguishing performance by virtue of the optimum combination of grid gap, shape, and material.

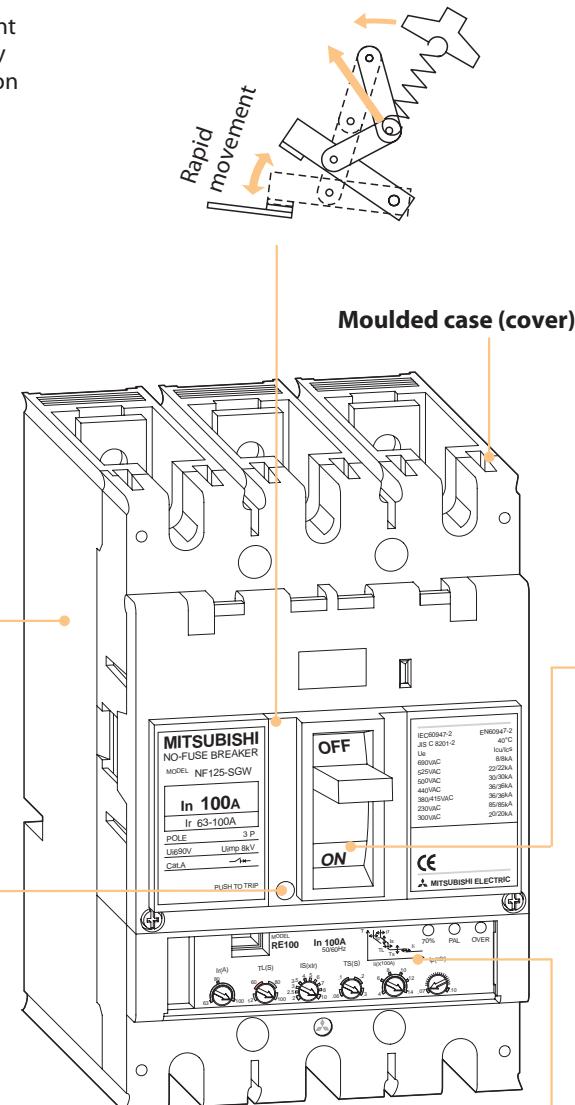


Arc runner

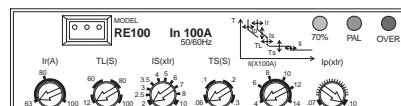
The arc is instantaneously transferred to the arc-extinguishing chamber (see the figure above) by the arc runner, which reduces damage to contacts and improves interrupting performance.

Trip button (push to trip)

Enables tripping mechanically from outside, for confirming the operation of the accessory switches and the manual resetting function.



Type NF125-SGW construction



Trip relay with control dials

Switching mechanism

The contacts open and close rapidly, regardless of the moving speed of the handle, minimizing contact wear and ensuring safety.

Handle

- Trip indication

The automatically tripped condition is indicated by the handle in the center position between ON and OFF; the yellow or white line cannot be seen in this position.

The figure shows the handle in tripped position.

- Resetting

Resetting after tripping is performed by first moving the handle OFF position to engage the mechanism, then returning the handle to ON to reclose the circuit.

- Trip-Free

Even if the handle is held at ON, the breaker will trip if an overcurrent flows.

- Contact on Mechanism

Even in the worst case in which welding occurs owing to an overcurrent, the breaker will trip and the handle will maintain its ON position, indicating the energized state.

Adjustable thermal trip current value

The setting can be changed by simply turning the control dials, providing the optimum characteristics for particular road conditions.

A Microcomputer and Mitsubishi's Original IC fulfill a New High Level of Safety

Safer and more reliable power

Electronic device loads, such as inverters, distort the current waveform. Mitsubishi's electronic breakers use a digital detector to measure the current's effective value and minimize overload tripping errors. This enables precise protection of the circuit.

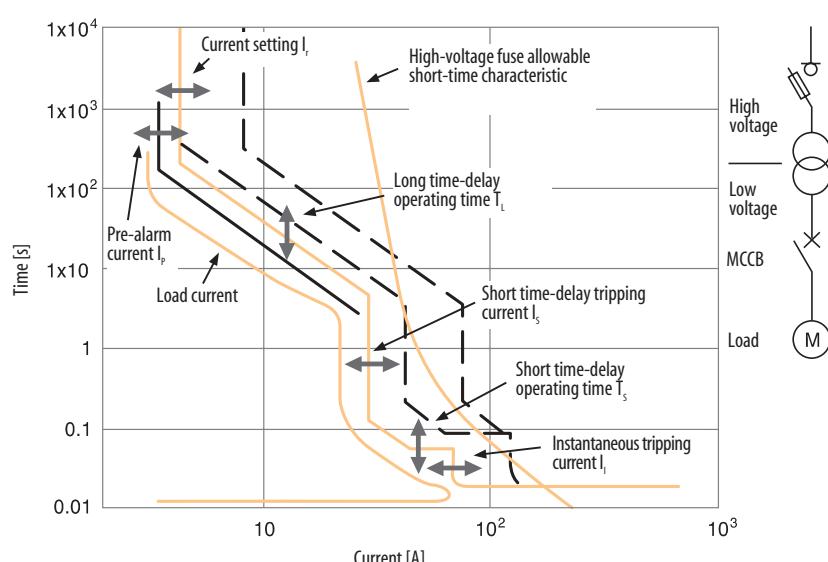
Alarm function monitors and anticipates interruptions

Our electronic moulded-case circuit breakers feature a pre-alarm system as standard. The pre-alarm outputs an alarm before the circuit breaker trip is activated. When the load current exceeds the set pre-alarm current, it outputs a pre-alarm signal (from a solid-state relay) and lights the LED.

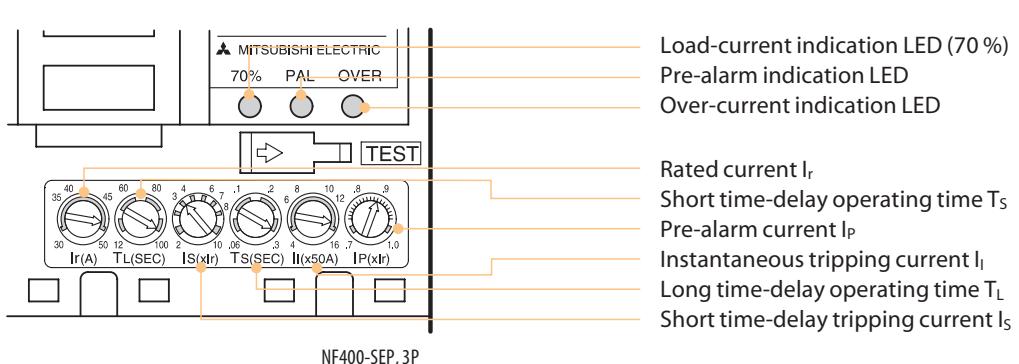
The pre-alarm module (with contact output) is optional with electronic molded-case and earth-leakage circuit breakers.

Improved protection against fluctuations in the load current

Our standard electronic trip relay offers a number of outstanding benefits. The user has a choice of six different parameters as tripping characteristics with the multiple coordinated protection method. Better protection can be obtained between the high-voltage fuse, OCR and the low voltage fuse.



Coordinated protection from multiple tripping characteristics



Portable tester facilitates checking and maintenance

The separately sold portable tester allows the user to check the four characteristics:

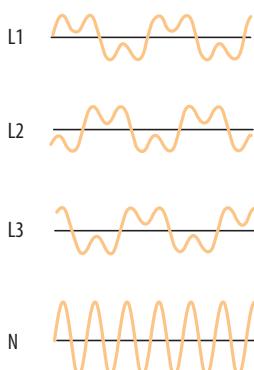
- 1. Long-delay tripping
- 2. Short-delay tripping
- 3. Instantaneous tripping
- 4. Pre-alarm characteristics

LEDs for load current, pre-alarm and over-current show the operating status.

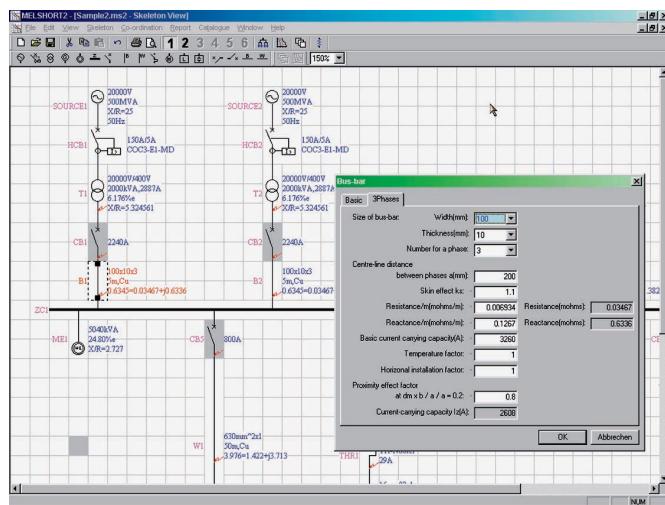
Overload protection and safety

The neutral-pole overload protection circuit is standard with 4-wire electronic moulded-case devices.

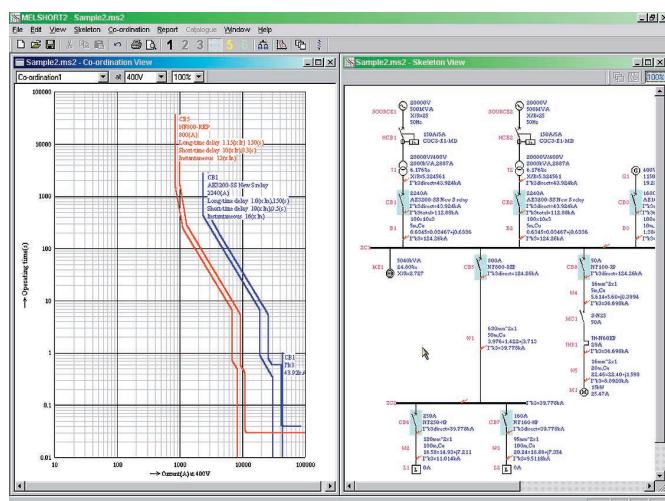
It prevents burn-out when the neutral-pole's load current is greater than the voltage pole in a 3-phase 4 wire circuit which is prone to distorted third-harmonic current flows.



Calculation and Selection Software MELSHORT2



Circuit diagram of the network to be calculated, with input field



Display of the trip curves of a circuit breaker in the network

MELSHORT2 – The New Calculation Software for Low-Voltage Switchgear

MELSHORT2 is a software package that provides all the functions needed for planning and dimensioning switchgear systems.

Increasingly demanding technical specifications and accountability regulations are making switchgear configuration much more critical than it used to be. In the past, software for calculating and dimensioning switchgear was helpful – nowadays it's absolutely essential.

Mitsubishi Electric's MELSHORT2 is a complete software package that provides all the functions needed for successful switchgear system configuration and layout. It supports all modern international electrical engineering standards and shines with simple and reliable operation.

The program calculates the short-circuit levels and currents at all necessary points for all switchgear components, including the power supply transformer and circuit breakers, the emergency generators, the individual motor and capacitor group branch circuits and all the other power distribution circuits, down to the last circuit breaker. This makes it possible to select the ideal breaker for every task, for optimum performance and cost-efficiency.

MELSHORT2 has a comprehensive range of powerful, easy-to-use functions, including:

- Selective shutdown
- Backup protection
- Coordination with the main power supply systems
- Allowance for the start-up currents of electric motors

These functions make it possible to optimise the configuration of your switchgear equipment for the specific requirements of your applications.

The calculated results, the hardware model suggestions and the wiring diagram with all the relevant values can be processed and used as documentation for the switchgear installation. Another welcome extra is the free Internet update service.

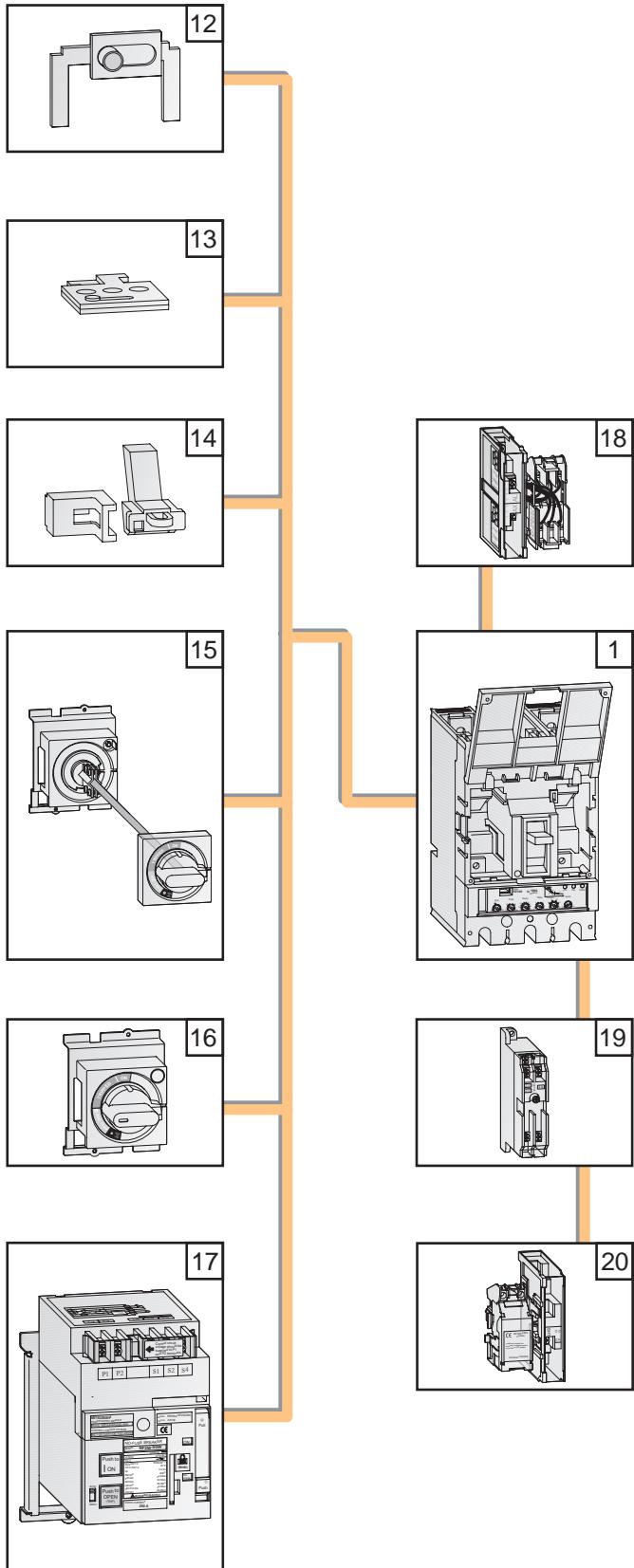
Specifications	MELSHORT2
Operating system	MS Windows 95/98/NT4.0/2000
Disk type	CD-ROM
Art. no.	129115

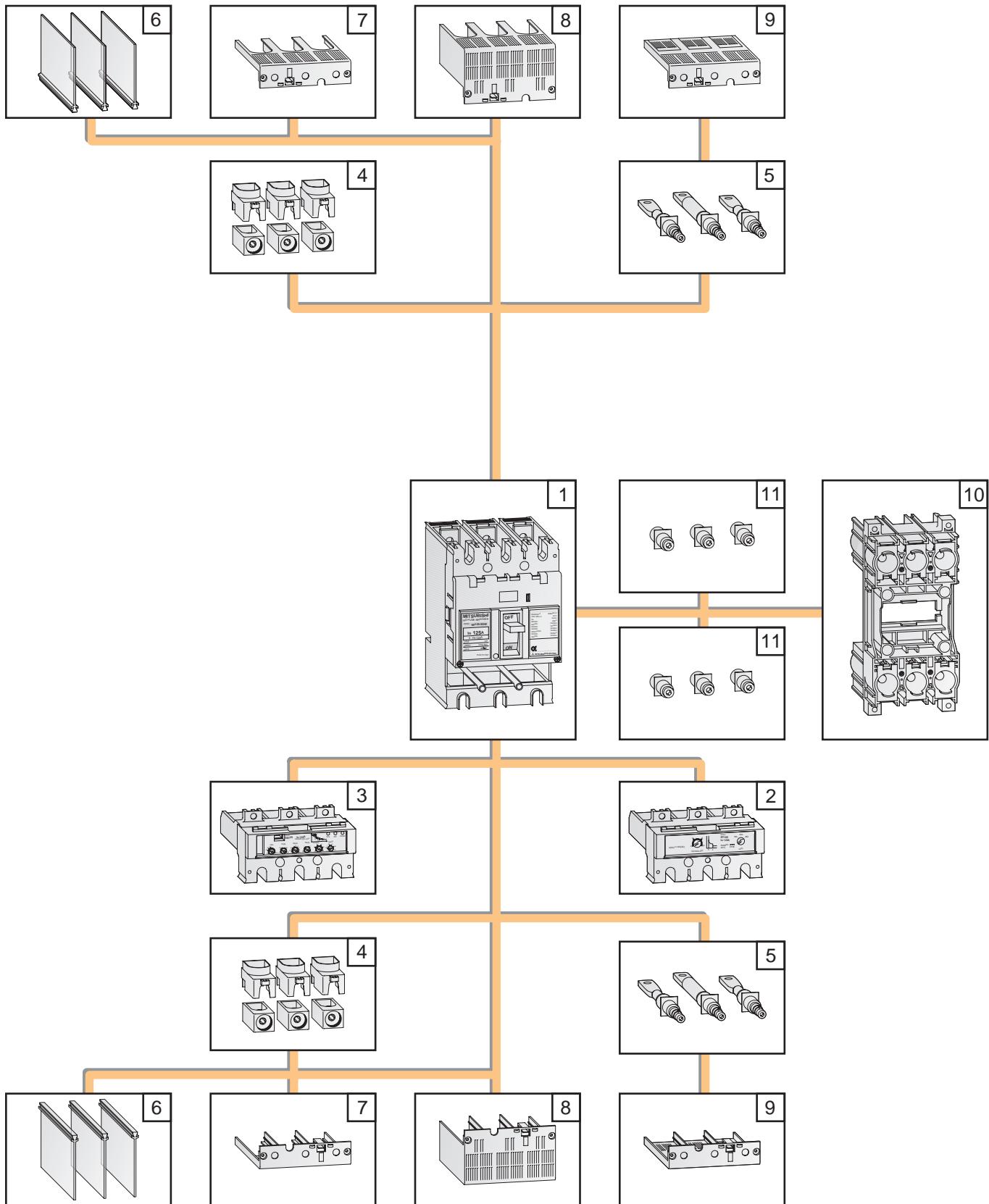
Product Skeleton of Accessories

MITSUBISHI ELECTRIC offers a wide range of accessories for the Moulded Case Circuit Breakers and Disconnectors to serve almost all variations of applications.

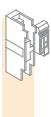
Detailed information on request.

1	Circuit Breaker	see page 12
2	Relay unit RT (Thermal type)	on request
3	Relay unit RE (Electronic type)	on request
4	Solderless (Box) terminals	see page 34
5	Rear connection studs	see page 34
6	Insulating barriers (BA-F)	see page 40
7	Small terminal covers (TC-S)	see page 39
8	Large terminal covers (TC-L)	see page 39
9	Rear terminal covers (BTC)	see page 39
10	Plug-in base (PM)	see page 34
11	Connections for Plug-in	see page 34
12	Mechanical interlock (MI)	see page 40
13	OFF Lock with 3 padlocks (HL)	see page 38
14	Handle lock device (LC, HLF, HLN, HLS)	see page 38
15	Variable-depth operating handle, V type	see page 35
16	Rotary operating handle, R type	see page 35
17	Electrical operating device (MDS)	see page 37
18	Alarm and Auxiliary switches (AL, AX)	see page 26
19	Under voltage trip device (UVT)	see page 30
20	Shunt trip device (SHT)	see page 28





Model Overview and Specifications



Type / Series		WSS series					
		NF32-SW	NF63-SW	NF125-SGW RT	NF125-SGW RE	NF160-SGW RT	NF160-SGW RE
S series	Rated current I_n max. [A]	32	63	125*	125*	160*	160*
	Rated insulation voltage U_i [V]	AC 600	600	690	690	690	690
	Number of poles	3	3 / 4	3 / 4	3 / 4	3 / 4	3 / 4
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	690 V 500 V 440 V (I_{cu} / I_{cs}) 230 V	— 2.5 / 1 2.5 / 1 400 V 5 / 2 7.5 / 4	8 / 8 30 / 30 36 / 36 36 / 36 85 / 85	8 / 8 30 / 30 36 / 36 36 / 36 85 / 85	8 / 8 30 / 30 36 / 36 36 / 36 85 / 85
	Dimensions WxHxD	[mm]	75x130x68	75/100x130x68	105/140x165x86	105/140x165x86	105/140x165x86
	Type		NF63-HW	NF125-HGW RT	NF125-HGW RE	NF160-HGW RT	NF160-HGW RE
	Rated current I_n max. [A]		63	125*	125*	160*	160*
H series	Rated insulation voltage U_i [V]		690	690	690	690	690
	Number of poles		3 / 4	3 / 4	3 / 4	3 / 4	3 / 4
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	690 V 500 V 440 V (I_{cu} / I_{cs}) 230 V	2.5 / 1 7.5 / 4 10 / 5 400 V 10 / 5	20 / 20 50 / 50 65 / 65 75 / 75 25 / 13	20 / 20 50 / 50 65 / 65 75 / 75 100 / 100	20 / 20 50 / 50 65 / 65 75 / 75 100 / 100
	Dimensions WxHxD	[mm]		75/100x130x68	105/140x165x86	105/140x165x86	105/140x165x86
	Type			NF125-RGW RT			
	Rated current I_n max. [A]			100			
	Rated insulation voltage U_i [V]			690			
	Number of poles			3			
R series	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	690 V 500 V 440 V (I_{cu} / I_{cs}) 230 V	25 / 25 125 / 125 125 / 125 125 / 125 125 / 125			
	Dimensions WxHxD	[mm]			105x240x86		
	Type				NF125-UGW RT		
	Rated current I_n max. [A]			100			
	Rated insulation voltage U_i [V]			690			
	Number of poles			3 / 4			
	Dimensions WxHxD	[mm]			105/140x240x86		
U series	Type						
	Rated current I_n max. [A]			100			
	Rated insulation voltage U_i [V]			690			
	Number of poles			3 / 4			
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	690 V 500 V 440 V (I_{cu} / I_{cs}) 230 V	30 / 30 200 / 200 200 / 200 200 / 200 200 / 200			
	Dimensions WxHxD	[mm]			105/140x240x86		
	Type						
C series	Rated current I_n max. [A]						
	Rated insulation voltage U_i [V]						
	Number of poles						
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	690 V 500 V 440 V (I_{cu} / I_{cs}) 230 V				
	Dimensions WxHxD	[mm]					
	Type						
	DSN32-SW	DSN63-SW	DSN125-SGW	DSN160-SGW			
Disconnectors	Rated current I_n max. [A]	32	63	125	160		
	Rated insulation voltage U_i [V]	AC/DC 600	600	690	690		
	Rated voltage U_e [V]	AC (50/60 Hz) / DC	500 / 250	500 / 250	690 / 300	690 / 300	
	Number of poles	3	3 / 4	3 / 4	3 / 4	3 / 4	
	Max. switching current [A] (breaking)	AC/DC	256 / 128	504 / 252	1000 / 500	1280 / 640	
	Dimensions WxHxD		75x130x68	75/120x130x68	105/140x165x86	105/140x165x86	

① DC on request

② When using solderless terminals: see reduced data on page 16

* adjustable

WSS series		PSS series			SS series		
NF250-SGW RT	NF250-SGW RE	NF400-SEP	NF630-SEP	NF800-SEP	NF1000-SS	NF1250-SS	NF1600-SS
250*	250*	400*	630*	800*	1000*	1250*	1600*
690	690	690	690	690	690	690	690
3 / 4	3 / 4	3 / 4	3 / 4	3 / 4	3 / 4	3 / 4	3 / 4
8 / 8	8 / 8	10 / 10 ^②	10 / 10	10 / 10	25 / 13	25 / 13	25 / 13
30 / 30	30 / 30	30 / 30 ^②	30 / 30	30 / 30	65 / 33	65 / 33	65 / 33
36 / 36	36 / 36	42 / 42 ^②	42 / 42	42 / 42	85 / 43	85 / 43	85 / 43
36 / 36	36 / 36	45 / 45^②	45 / 45	45 / 45	85 / 43	85 / 43	85 / 43
85 / 85	85 / 85	85 / 85 ^②	85 / 85	85 / 85	125 / 63	125 / 63	125 / 63
105/140x165x86	105/140x165x86	140/185x257x103	210/280x275x103	210/280x275x103	210/280x406x140	210/280x406x140	210/280x406x140
NF250-HGW RT	NF250-HGW RE	NF400-HEP	NF630-HEP	NF800-HEP			
250*	250*	400*	630*	800*			
690	690	690	690	690			
3 / 4	3 / 4	3 / 4	3 / 4	3 / 4			
20 / 20	20 / 20	10 / 10	15 / 15	15 / 15			
50 / 50	50 / 50	50 / 50	50 / 50	50 / 50			
65 / 65	65 / 65	65 / 65	65 / 65	65 / 65			
75 / 75	75 / 75	70 / 70	70 / 70	70 / 70			
100 / 100	100 / 100	100 / 100	100 / 100	100 / 100			
105/140x165x86	105/140x165x86	140/185x257x103	210/280x275x103	210/280x275x103			
NF250-RGW RT		NF400-REP	NF630-REP	NF800-REP			
225		400*	630*	800*			
690		690	690	690			
3		3	3	3			
25 / 25		15 / 10	20 / 15	20 / 15			
125 / 125		70 / 35	70 / 35	70 / 35			
125 / 125		125 / 63	125 / 63	125 / 63			
125 / 125		125 / 63	125 / 63	125 / 63			
125 / 125		150 / 75	150 / 75	150 / 75			
105x240x86		140x257x103	210x275x103	210x275x103			
NF250-UGW RT		NF400-UEP	NF630-UEP	NF800-UEP	NF1250-UR		
225		400*	630*	800*	1250*		
690		690	690	690	690		
3 / 4		3 / 4	3 / 4	3 / 4	3 / 4		
30 / 30		35 / 35	35 / 35	35 / 35	—		
200 / 200		170 / 170	170 / 170	170 / 170	85 / 42		
200 / 200		200 / 200	200 / 200	200 / 200	125 / 65		
200 / 200		200 / 200	200 / 200	200 / 200	125 / 65		
200 / 200		200 / 200	200 / 200	200 / 200	170 / 85		
105/140x240x86		140/280x297/322x200	210/280x322x200	210/280x322x200	240/310x406x144		
		NF400-CEP	NF630-CEP	NF800-CEP			
		400*	630*	800*			
		600	600	600			
		3	3	3			
		—	—	—			
		15 / 8	18 / 9	18 / 9			
		25 / 13	36 / 18	36 / 18			
		36 / 18	36 / 18	36 / 18			
		50 / 25	50 / 25	50 / 25			
		140x257x103	210x275x103	210x275x103			
DSN250-SGW		DSN400-SP	DSN630-SP	DSN800-SP	DSN1000-SS	DSN1250-SS	DSN1600-SS
250		400	630	800	1000	1250	1600
690		690	690	690	660	660	660
690 / 300		690 / 250	690 / 250	690 / 250	660 / 250	660 / 250	660 / 250
3 / 4		3 / 4	3 / 4	3 / 4	3 / 4	3 / 4	3 / 4
2000 / 1000		3200 / 1600	5040 / 2520	6400 / 3200	8000 / 14000	10000 / 5000	12800 / 6400
105/140x165x86		140/185x257x103	210/280x275x103	210/280x275x103	210/280x406x140	210/280x406x140	210/280x406x140

* adjustable



Specifications of Molded-Case Circuit Breakers 3-125 A

Type	(Reference for Order information on p. 22)	NF32-SW (1)	NF63-SW (2)	NF63-HW (3)	NF125-SGW RT (4)	NF125-SGW RE (5)
Frame (A)	32	63	63	125	125	
Rated current I_n [A] at ambient temperature	40 °C	3, 4, 6, 10, 16, 20, 25, 32 Fixed	3, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63 Fixed	10, 16, 20, 25, 32, 40, 50, 63 Fixed	16–25, 25–40, 40–63, 63–100, 80–125 Adjustable	16–32, 32–63, 63–100, 75–125 Adjustable
Number of poles		3	3 / 4	3 / 4	3 / 4	3 / 4
Rated insulation voltage U_i [V]	AC	600	600	690	690	690
Rated breaking capacity [kA] (I_{cu} / I_{cs})	690 V AC (50/60 Hz) IEC/EN 60947-2	—	—	2.5 / 1	8 / 8	8 / 8
	500 V	2.5 / 1	7.5 / 4	7.5 / 4	30 / 30	30 / 30
	440 V	2.5 / 1	7.5 / 4	10 / 5	36 / 36	36 / 36
	400 V	5 / 2	7.5 / 4	10 / 5	36 / 36	36 / 36
	230 V	7.5 / 4	15 / 8	25 / 13	85 / 85	85 / 85
	DC	300 V	—	—	20 / 20	—
Utilization category		A	A	A	A	A
Rated impulse withstand voltage U_{imp} [kV]		6	6	6	8	8
Pollution degree		2	2	2	3	3
Reverse connection		●	●	●	●	●
Suitable for isolation	—	●	●	●	●	●
Dimensions [mm]			a	75	75 / 100	75 / 100
		b	130	130	130	165
		c	68	68	68	86
		ca	90	90	90	110
Weight [kg]			0.55	0.60 / 0.70	0.60 / 0.70	2.0 / 2.6
Cassette-type accessories	Alarm switch (AL)	●	●	●	●	●
	Auxiliary switch (AX)	●	●	●	●	●
	Shunt trip (SHT)	●	●	●	●	●
	Undervoltage trip (UVT)	●	●	●	●	●
Accessories connection	with terminal block (SLT)	●	●	●	●	●
	with internal terminal type	●	●	●	●	●
Installation and connection	Screw terminal (standard)	●	●	●	●	●
	Front Solderless terminal	—	—	—	●	●
	Busbar terminal	—	—	—	—	—
	Rear (B)	●	●	●	●	●
Plug-in	Rear (PM)	●	●	●	—	—
	Rear front IP 20 with auto trip (PM-IP)	—	—	—	●	●
Built-in accessories	Pre-alarm-contact output ^① (PAL)	—	—	—	—	●
	Overcurrent trip alarm ^① (OAL)	—	—	—	—	●
External operating handle	Door mounting (V)	●	●	●	●	●
	Mounted on breaker (R)	—	—	—	●	●
Electrical operation device (MDS)		—	—	—	●	●
Handle lock device	Handle lock for use with padlock (HL)	●	●	●	●	●
	(HL-S)	●	●	●	●	●
Terminal cover	Lock cover (LC)	●	●	●	●	●
	Large (TC-L)	●	●	●	●	●
	Small (TC-S)	●	●	●	●	●
	For rear connection (BTC)	●	●	●	●	●
Mechanical interlock (MI)	For plug-in (PTC)	●	●	●	●	●
	(MI)	●	●	●	●	●
Insulating barrier	Between phase (Standard) (BA-F)	●	●	●	●	●
Adapter	for IEC 35 mm rail	●	●	●	—	—
Marine approval ^② for 3 pole breakers		LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB
Automatic tripping device		Hydraulic-magnetic	Hydraulic-magnetic	Hydraulic-magnetic	Thermal-magnetic	Electronic
Trip button		Equipped	Equipped	Equipped	Equipped	Equipped

^① Both PAL and OAL is not available. Only one specified. ^② Others on request. ^③ On request.

Missing specifications accord. to IEC/EN 60947-2 on request.

NF125-HGW RT (6)	NF125-HGW RE (7)	NF125-RGW RT (8)	NF125-UGW RT (9)
125	125	125	125
16–25, 25–40, 40–63, 63–100, 80–125 Adjustable	16–32, 32–63, 63–100, 75–125 Adjustable	16–25, 25–40, 40–63, 63–100 Adjustable	16–25, 25–40, 40–63, 63–100 Adjustable
3 / 4	3 / 4	3	3 / 4
690	690	690	690
20 / 20	20 / 20	25 / 25	30 / 30
50 / 50	50 / 50	125 / 125	200 / 200
65 / 65	65 / 65	125 / 125	200 / 200
75 / 75	75 / 75	125 / 125	200 / 200
100 / 100	100 / 100	125 / 125	200 / 200
40 / 40	—	—	—
A	A	A	A
8	8	8	8
3	3	3	3
●	●	●	●
●	●	●	●
105 / 140	105 / 140	105	105 / 140
165	165	240	240
86	86	86	86
110	110	110	110
2.0 / 2.6	2.0 / 2.6	3.1	3.1 / 3.9
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
—	—	—	—
●	●	●	● / —
—	—	—	— / ●
●	●	●	● / —
—	●	—	—
—	●	—	—
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
—	—	—	—
LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB
Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic
Equipped	Equipped	Equipped	Equipped



Specifications of Molded-Case Circuit Breakers 160–250 A

Type	(Reference for Order information on p. 23)	NF160-SGW RT (10)	NF160-SGW RE (11)	NF160-HGW RT (12)	NF160-HGW RE (13)
Frame (A)		160	160	160	160
Rated current I_n [A] at ambient temperature	40 °C	125–160 Adjustable	80–160 Adjustable	125–160 Adjustable	80–160 Adjustable
Number of poles		3 / 4	3 / 4	3 / 4	3 / 4
Rated insulation voltage U_i [V]	AC	690	690	690	690
Rated breaking capacity [kA] (I_{cu} / I_{cs}) IEC/EN 60947-2	690 V	8 / 8	8 / 8	20 / 20	20 / 20
	500 V	30 / 30	30 / 30	50 / 50	50 / 50
	440 V	36 / 36	36 / 36	65 / 65	65 / 65
	400 V	36 / 36	36 / 36	75 / 75	75 / 75
	230 V	85 / 85	85 / 85	100 / 100	100 / 100
Utilization category	DC	300 V	20 / 20	—	40 / 40
					—
Rated impulse withstand voltage U_{imp} [kV]		8	8	8	8
Pollution degree		3	3	3	3
Reverse connection		●	●	●	●
Suitable for isolation	—/—	●	●	●	●
Dimensions [mm]	a	105 / 140	105 / 140	105 / 140	105 / 140
	b	165	165	165	165
	c	86	86	86	86
	ca	110	110	110	110
Weight [kg]		2.0 / 2.6	2.0 / 2.6	2.0 / 2.6	2.0 / 2.6
Cassette-type accessories	Alarm switch (AL)	●	●	●	●
	Auxiliary switch (AX)	●	●	●	●
	Shunt trip (SHT)	●	●	●	●
	Undervoltage trip (UVT)	●	●	●	●
Accessories connection	with terminal block (SLT)	●	●	●	●
	with internal terminal type	●	●	●	●
Installation and connection	Screw terminal (standard)	●	●	●	●
	Front Solderless terminal	●	●	●	●
	Busbar terminal	—	—	—	—
	Rear (B)	●	●	●	●
Plug-in	Rear (PM)	—	—	—	—
	Rear front IP 20 with auto trip (PM-IP)	●	●	●	●
Built-in accessories	Pre-alarm-contact output ^① (PAL)	—	●	—	●
	Overcurrent trip alarm ^② (OAL)	—	●	—	●
External operating handle	Door mounting (V)	●	●	●	●
	Mounted on breaker (R)	●	●	●	●
Electrical operation device	(MDS)	●	●	●	●
	Handle lock for use with padlock (HL)	●	●	●	●
Handle lock device	(HL-S)	●	●	●	●
	Lock cover (LC)	●	●	●	●
Terminal cover	Large (TC-L)	●	●	●	●
	Small (TC-S)	●	●	●	●
	For rear connection (BTC)	●	●	●	●
	For plug-in (PTC)	●	●	●	●
Mechanical interlock (MI)		●	●	●	●
Insulating barrier Between phase (Standard) (BA-F)		●	●	●	●
Adapter for IEC 35 mm rail		—	—	—	—
Others	Marine approval ^③ for 3 pole breakers	—	—	—	—
	Automatic tripping device	Thermal-magnetic	Electronic	Thermal-magnetic	Electronic
	Trip button	Equipped	Equipped	Equipped	Equipped

^① Both PAL and OAL is available. Only one specified. ^② Others on request. ^③ On request.

Missing specifications accord. to IEC/EN 60947-2 on request.

NF250-SGW RT (14)	NF250-SGW RE (15)	NF250-HGW RT (16)	NF250-HGW RE (17)	NF250-RGW RT (18)	NF250-UGW RT (19)
250	250	250	250	250	250
125–160, 160–250 Adjustable	125–250 Adjustable	125–160, 160–250 Adjustable	125–250 Adjustable	125–160, 160–225 Adjustable	125–160, 160–225 Adjustable
3 / 4	3 / 4	3 / 4	3 / 4	3	3 / 4
690	690	690	690	690	690
8 / 8	8 / 8	20 / 20	20 / 20	25 / 25	30 / 30
30 / 30	30 / 30	50 / 50	50 / 50	125 / 125	200 / 200
36 / 36	36 / 36	65 / 65	65 / 65	125 / 125	200 / 200
36 / 36	36 / 36	75 / 75	75 / 75	125 / 125	200 / 200
85 / 85	85 / 85	100 / 100	100 / 100	125 / 125	200 / 200
20 / 20	—	40 / 40	—	—	—
A	A	A	A	A	A
8	8	8	8	8	8
3	3	3	3	3	3
●	●	●	●	●	●
●	●	●	●	●	●
105 / 140	105 / 140	105 / 140	105 / 140	105	105 / 140
165	165	165	165	240	240
86	86	86	86	86	86
110	110	110	110	110	110
2.0 / 2.6	2.0 / 2.6	2.0 / 2.6	2.0 / 2.6	3.1	3.1 / 3.9
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
—	—	—	—	—	—
●	●	●	●	●	●
—	—	—	—	—	— / ●
●	●	●	●	●	● / —
—	●	—	●	—	—
—	●	—	●	—	—
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	● / —
●	●	●	●	●	●
●	●	●	●	●	●
—	—	—	—	—	—
LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB
Thermal-magnetic	Electronic	Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic
Equipped	Equipped	Equipped	Equipped	Equipped	Equipped



Specifications of Molded-Case Circuit Breakers 400–630 A

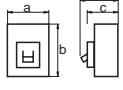
Type	(Reference for Order information on p. 23)	NF400-CEP (20) 400	NF400-SEP (21) 400	NF400-HEP (22) 400	NF400-REP (23) 400
Frame (A)					
Rated current I_n [A] at ambient temperature	40 °C	200–400 Adjustable	200–400 Adjustable	200–400 Adjustable	200–400 Adjustable
Number of poles		3	3 / 4	3 / 4	3
Rated insulation voltage U_i [V]	AC	600	690	690	690
Rated breaking capacity [kA] (I_{cu} / I_{cs})	IEC/EN 60947-2	690 V —	10 / 10 (5 / 5) ②	10 / 10	15 / 10
		500 V 15 / 8	30 / 30 (25 / 25) ②	50 / 50	70 / 35
		440 V 25 / 13	42 / 42 (36 / 36) ②	65 / 65	125 / 63
		400 V 36 / 18	45 / 45 (36 / 36) ②	70 / 70	125 / 63
		230 V 50 / 20	85 / 85 (65 / 65) ②	100 / 100	150 / 75
Utilization category		B	B	B	B
Rated short-time withstand current I_{cw} [kA/s]		5 / 0.25	5 / 0.25	5 / 0.25	5 / 0.25
Rated impulse withstand voltage U_{imp} [kV]		8	8	8	8
Pollution degree		3	3	3	3
Reverse connection		●	●	●	●
Suitable for isolation	—	●	●	●	●
Dimensions [mm]			a 140	140 / 185	140 / 185
		b 257	257	257	257
		c 103	103	103	103
		ca 155	155	155	155
Weight [kg]		6.0	6.0 / 7.8	6.0 / 7.8	6.0
Cassette-type accessories	Alarm switch (AL)	●	●	●	●
	Auxiliary switch (AX)	●	●	●	●
	Shunt trip (SHT)	●	●	●	●
	Undervoltage trip (UVT)	●	●	●	●
Accessories connection	with terminal block (SLT)	●	●	●	●
	with internal terminal type ③	●	●	●	●
Installation and connection	Front Busbar terminal (standard)	●	●	●	●
	Rear (B)	●	●	●	●
	Plug-in Rear (PM)	●	●	●	●
Built-in accessories	Pre-alarm-contact output (PAL)	●	●	●	●
	Trip indicator (TI)	●	●	●	●
External operating handle	Door mounting (V)	●	●	●	●
	Mounted on breaker (R)	●	●	●	●
Electrical operation device	Spring-charge type (MDS)	●	●	●	●
Handle lock device	Handle lock for use with padlock (HL)	●	●	●	●
	(HL-S)	●	●	●	●
Terminal cover	Large (TC-L)	●	●	●	●
	For rear connection (BTC)	●	●	●	●
Mechanical interlock (MI)		●	●	●	●
Insulating barrier	Between phase (Standard) (BA-F)	●	●	●	●
Others	Marine approval ④ for 3 pole breakers	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, DNV, AB	LR, GL, BV, AB
	Automatic tripping device	Electronic	Electronic	Electronic	Electronic
	Trip button	Equipped	Equipped	Equipped	Equipped

① DC type on request. ② In case of solderless terminal, interrupting capacity reduces. ③ On request. ④ Others on request.

Missing specifications accord. to IEC/EN 60947-2 on request.



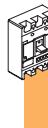
■ Specifications of Molded-Case Circuit Breakers 800–1600 A

Type	(Reference for Order information on p. 23)	NF800-CEP 800	(30)	NF800-SEP 800	(31)	NF800-HEP 800	(32)	NF800-REP 800	(33)
Frame (A)		800		800		800		800	
Rated current I_n [A] at ambient temperature	40 °C	400–800 Adjustable		400–800 Adjustable		400–800 Adjustable		400–800 Adjustable	
Number of poles		3		3 / 4		3 / 4		3	
Rated insulation voltage U_i [V]	AC	600		690		690		690	
Rated breaking capacity [kA]	IEC/EN 60947-2	690 V — 500 V 18 / 9 440 V 36 / 18 400 V 36 / 18 230 V 50 / 25	AC ^① (50/60 Hz)	10 / 10 30 / 30 42 / 42 45 / 45 85 / 85		15 / 15 50 / 50 65 / 65 70 / 70 100 / 100		20 / 15 70 / 35 125 / 63 125 / 63 150 / 75	
Utilization category		B		B		B		B	
Rated short-time withstand current I_{cw} [kA/s]		9.6 / 0.25		9.6 / 0.25		9.6 / 0.25		9.6 / 0.25	
Rated impulse withstand voltage U_{imp} [kV]		8		8		8		8	
Pollution degree		3		3		3		3	
Reverse connection		●		●		●		●	
Suitable for isolation —— ^② —		●		●		●		●	
Dimensions [mm]		a 210 b 275 c 103 ca 155		210 / 280 275 103 155		210 / 280 275 103 155		210 275 103 155	
Weight [kg]		10.9		10.9 / 14.2		10.9 / 14.2		10.9	
Cassette-type accessories	Alarm switch (AL) Auxiliary switch (AX) Shunt trip (SHT) Undervoltage trip (UVT)	● ● ● ●		● ● ● ●		● ● ● ●		● ● ● ●	
Accessories connection	with terminal block (SLT) with internal terminal type ^③	● ●		● ●		● ●		● ●	
Installation and connection	Front Busbar terminal (Standard) Rear (B) Plug-in Rear (PM)	● ● ●		● ● ●		● ● ●		● ● ●	
Built-in accessories	Pre-alarm-contact output (PAL) Trip indicator (TI)	● ●		● ●		● ●		● ●	
External accessories	Door mounting (V) Mounted on breaker (R)	● ●		● ●		● ●		● ●	
Electrical operation device	Spring-charge type (MDS)	●		●		●		●	
Handle lock device	Handle lock for use with padlock (HL) (HL-S)	● ●		● ●		● ●		● ●	
Terminal cover	Large (TC-L) For rear connection (BTC)	● ●		● ●		● ●		● ●	
Mechanical interlock	(MI)	●		●		●		●	
Insulating barrier	Between phase (Standard) (BA-F)	●		●		●		●	
Others	Marine approval ^④ for 3 pole breakers Automatic tripping device Trip button	LR, GL, BV, DNV, AB Electronic Equipped		LR, GL, BV, DNV, AB Electronic Equipped		LR, GL, BV, AB Electronic Equipped		LR, GL, BV, AB Electronic Equipped	

^① DC type on request. ^② On request. ^③ Others on request. ^④ Assembly by factory. ^⑤ TC-N.

Missing Specifications accord. to IEC/EN 60947-2 on request.

NF800-UEP 800	(34)	NF1000-SS 1000	(34)	NF1250-SS 1250	(35)	NF1250-UR 1250	(36)	NF1600-SS 1600	(37)
400–800 Adjustable		500–1000 Adjustable		600–1250 Adjustable		600–700–800– 1000–1200–1250 Adjustable		800–1600 Adjustable	
3 / 4		3 / 4		3 / 4		3 / 4		3 / 4	
690		690		690		690		690	
35 / 35		25 / 13		25 / 13		—		25 / 13	
170 / 170		65 / 33		65 / 33		85 / 42		65 / 33	
200 / 200		85 / 43		85 / 43		125 / 65		85 / 43	
200 / 200		85 / 43		85 / 43		125 / 65		85 / 43	
200 / 200		125 / 63		125 / 63		170 / 85		125 / 63	
B		B		B		B		B	
9.6 / 0.25		20 / 0.3		20 / 0.3		— ^②		20 / 0.3	
8		8		8		8		8	
3		3		3		3		3	
●		●		●		●		●	
●		—		—		—		—	
210 / 280		210 / 280		210 / 280		240 / 310		210 / 280	
322		406		406		406		406	
200		140		140		144		140	
252		190		190		194		190	
27.6 / 33.7		23.5 / 30.7		23.5 / 30.7		37.2 / 46.7		34.5 / 41.2	
●		●		●		●		●	
●		●		●		●		●	
●		●		●		●		●	
●		●		●		●		●	
●		●		●		●		●	
●		●		●		●		●	
●		● ^④		● ^④		● ^④		● ^④	
—		● ^④		● ^④		● / — ^④		—	
●		●		●		●		●	
●		●		●		●		●	
—		●		●		●		●	
—		●		●		●		●	
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●		—		—		—		—	
●		●		●		●		●	
●		●		●		●		●	
—		LR, GL, AB		LR, GL, AB		—		—	
Electronic		Electronic		Electronic		Electronic		Electronic	
Equipped		Equipped		Equipped		Equipped		Equipped	



Specifications of Disconnectors DSN, IEC 60947-3, EN 60947-3

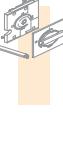
Type	(Reference for Order information on p. 23)	DSN32-SW	(38)	DSN63-SW	(39)	DSN125-SGW	(40)	DSN160-SGW	(41)	DSN250-SGW	(42)
Rated current I_n [A]	40 °C	32		63		125		160		250	
Number of poles		3		3 / 4		3 / 4		3 / 4		3 / 4	
Rated insulation voltage U_i [V]	AC	600		600		600		690		690	
	DC	250		250		250		250		250	
Rated voltage U_e [V]	AC	500		600		690		690		690	
	DC	250		250		300		300		300	
Rated impulse withstand voltage U_{imp} [kV]	kV	6		6		8		8		8	
Pollution degree		2		2		2		2		2	
Utilization category		AC-23A, DC-23A		AC-23A, DC-23A		AC-23A, DC-23A		AC-23A, DC-23A		AC-23A, DC-23A	
Making and braking current	Making current cycles	AC / DC	A	320 / 128		630 / 252		1250 / 500		1600 / 640	
	Breaking current cycles	AC / DC	A	5		5		3 / 5		3 / 5	
Operational performance	Without current			10000		10000		50000		40000	
	With current (440 V / 690 V)			6000 / —		6000 / —		30000 / 1000		20000 / 1000	
Short-time withstand current I_{cw}	1 s	A		1000		1000		2000		3000	
Short-circuit making capacity I_{cm}	1 s	A		1500		1500		3000		4000	
Max. switching current ^①	AC / DC		A	192 / 80		378 / 157.5		750 / 312.5		960 / 400	
	cycles			12		12		12		12	
Suitable for isolation	—	a		●		●		●		●	
Dimensions [mm]				a	75	75 / 100		75 / 100		90 / 120	
				b	130	130		165		165	
				c	68	68		68		68	
				ca	90	90		110		110	
Weight [kg]				0.55		0.60		2.0 / 2.6		2.0 / 2.6	
Cassette-type accessories	Alarm switch	(AL)		●		●		●		●	
	Auxiliary switch	(AX)		●		●		●		●	
	Shunt trip	(SHT)		●		●		●		●	
	Undervoltage trip	(UVT)		●		●		●		●	
Accessories connection	with terminal block	(SLT)		●		●		●		●	
	with internal terminal type ^②			●		●		●		●	
Installation and connection	Front	Busbar terminal		● ^③		● ^③		● ^③		● ^③	
		Solderless terminal		—		—		●		●	
		Busbar terminal		●		●		●		●	
	Rear	(B)		●		●		●		●	
	Plug-in	Rear	(PM)	●		●		●		●	
		Rear front IP 20 with auto trip	(PM-IP)	—		—		●		●	
External accessories	Door mounting	(V)		●		●		●		●	
	Mounted on breaker	(R)		—		—		●		●	
	Electrical operation device	(MDS)		—		—		●		●	
	Handle lock device	Handle lock for use with padlock	(HL)	●		●		●		●	
		(HL-S)		●		●		●		●	
		Lock cover	(LC)	●		●		●		●	
	Terminal cover	Large	(TC-L)	●		●		●		●	
		Small	(TC-S)	●		●		● / —		● / —	
		For rear connection	(BTC)	●		●		● / —		● / —	
	Mechanical interlock	(MI)		●		●		●		●	
	Insulating barrier	Between phase (Standard)	(BA-F)	●		●		●		●	
	Adapter for IEC 35 mm rail			●		●		—		—	
Corresponding type of circuit breaker			DNF32-SW		DNF63-SW		DNF125-SGW		DNF160-SGW		DNF250-SGW

^① This performance is accordance with IEC60947-2 clause 7.2.4.1. ^② On request. ^③ Standard.

Missing specifications accord. to IEC/EN 60947-2 on request.

DSN400-SP	(43)	DSN630-SP	(44)	DSN800-SP	(45)	DSN1000-SS	(46)	DSN1250-SS	(47)	DSN1600-SS	(48)
400		630		800		1000		1250		1600	
3 / 4		3 / 4		3 / 4		3 / 4		3 / 4		3 / 4	
690		690		690		690		690		690	
250		250		250		250		250		250	
690		690		690		690		690		690	
250		250		250		250		250		250	
8		8		8		8		8		8	
3		3		3		3		3		3	
AC-23A, DC-23A		AC-23A, DC-23A		AC-23A, DC-23A		AC-23A, DC-23A		AC-23A, DC-23A		AC-23A, DC-23A	
4000 / 1600		6300 / 2520		8000 / 3200		10000 / 4000		12500 / 5000		16000 / 6400	
3 / 5		3 / 5		3 / 5		3 / 5		3 / 5		3 / 5	
3200 / 1600		5040 / 2520		6400 / 3200		8000 / 4000		10000 / 5000		12800 / 6400	
3 / 5		3 / 5		3 / 5		3 / 5		3 / 5		3 / 5	
4000		4000		2500		2500		2500		2500	
1000		1000		500		500		500		500	
6000		8000		10000		12000		12000		16000	
10200		13600		17000		24000		24000		32000	
2400 / 1000		3780 / 1575		4800 / 2000		6000 / 2500		7500 / 3125		9600 / 4000	
12		12		12		12		12		12	
●		●		●		—		—		—	
140 / 185		210 / 280		210 / 280		210 / 280		210 / 280		210 / 280	
257		275		275		406		406		406	
103		103		103		140		140		140	
155		155		155		190		190		190	
5.7 / 7.5		8.5 / 12.5		10.9 / 14.2		23.0 / 30.2		23.0 / 30.2		34.0 / 40.7	
●		●		●		●		●		●	
●		●		●		●		●		●	
●		●		●		●		●		●	
●		●		●		●		●		●	
●		●		●		●		●		●	
●		●		●		●		●		●	
—		—		—		—		—		—	
—		—		—		—		—		—	
● ^①		● ^①		● ^①		● ^①		● ^①		● ^①	
●		●		●		● ^④		● ^④		● ^④	
●		●		●		● ^④		● ^④		● ^④	
—		—		—		—		—		—	
●		●		●		●		●		●	
●		●		●		●		●		●	
●		●		●		●		●		●	
●		●		●		●		●		●	
—		—		—		—		—		—	
●		●		●		● ^⑤		● ^⑤		—	
—		—		—		—		—		—	
●		●		●		●		●		●	
●		●		●		●		●		●	
●		●		●		●		●		●	
—		—		—		—		—		—	
NF400-SEP		NF630-SEP		NF800-SEP		NF1000-SS		NF1250-SS		NF1600-SS	

BASICS



Order Information for Moulded-Case Circuit Breakers 3–125 A

Ref. ^①	Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
S series with hydraulic-magnetic tripping device, fixed, AC				
1	NF32-SW	3 A	146309	—
		4 A	146310	—
		6 A	146311	—
		10 A	146312	—
		16 A	146313	—
		20 A	146314	—
		25 A	146315	—
		32 A	146316	—
2	NF63-SW	3 A	146317	146331
		4 A	146318	146332
		6 A	146319	146333
		10 A	146320	146335
		16 A	146321	146337
		20 A	146322	146339
		25 A	146324	146340
		32 A	146326	146341
		40 A	146327	146342
		50 A	146328	146343
		63 A	146329	146344
H series with hydraulic-magnetic tripping device, fixed, AC				
3	NF63-HW	10 A	146345	146354
		16 A	146346	146355
		20 A	146347	146356
		25 A	146348	146357
		32 A	139745	146358
		40 A	146350	146359
		50 A	146352	146360
		63 A	146353	146361

Ref. ^①	Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
S series with thermal-magnetic tripping device, AC, DC				
4	NF125-SGW RT	16–25 A	139672	139677
		25–40 A	139673	139678
		40–63 A	139674	139679
		63–100 A	139675	139680
		80–125 A	139676	139682
S series with electronic tripping device, adjustable, AC				
5	NF125-SGW RE	16–32 A	139684	139685
		32–63 A	137493	139687
		63–100 A	137496	137500
		75–125 A	137498	137502
H series with thermal-magnetic tripping device, adjustable, AC, DC				
6	NF125-HGW RT	16–25 A	139692	139698
		25–40 A	139694	139699
		40–63 A	139695	139700
		63–100 A	139696	139701
		80–125 A	139697	139702
H series with electronic tripping device, AC				
7	NF125-HGW RE	16–32A	139703	139709
		32–63A	139704	139710
		63–100A	139705	139711
		75–125A	139707	139712
R series with thermal-magnetic tripping device, adjustable, AC				
8	NF125-RGW RT	16–25 A	139706	—
		25–40 A	139708	—
		40–63 A	139721	—
		63–100 A	139722	—
U series with thermal-magnetic tripping device, adjustable, AC				
9	NF125-UGW RT	16–25 A	139723	139727
		25–40 A	139724	139728
		40–63 A	139725	139729
		63–100 A	139726	139730

^① Reference to breaker specifications on p. 12ff.

Order Information for Moulded-Case Circuit Breakers 160–250 A

Ref. ^①	Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
S series with thermal-magnetic tripping device, AC, DC				
10	NF160-SGW RT	125–160 A	139713	139714
S series with electronic tripping device, AC				
11	NF160-SGW RE	80–160 A	139715	139716
H series with thermal-magnetic tripping device, AC, DC				
12	NF160-HGW RT	125–160 A	139717	139718
H series with electronic tripping device, adjustable, AC				
13	NF160-HGW RE	80–160 A	139719	139720
S series with thermal-magnetic tripping device, adjustable, AC, DC				
14	NF250-SGW RT	125–160 A	139681	139686
		160–250 A	139683	139688
S series with electronic tripping device, adjustable, AC				
15	NF250-SGW RE	125–250 A	137503	137505

Ref. ^①	Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
H series with thermal-magnetic tripping device, adjustable, AC, DC				
16	NF250-HGW RT	125–160 A	139689	139691
		160–250 A	139690	139693
H series with electronic tripping device, adjustable, AC				
17	NF250-HGW RE	125–250 A	137506	137507
R series with thermal-magnetic tripping device, adjustable, AC				
18	NF250-RGW RT	125–160 A	139731	—
		160–225 A	139732	—
U series with thermal-magnetic tripping device, adjustable, AC				
19	NF250-UGW RT	125–160 A	139733	139735
		160–225 A	139734	139736

Order Information for Moulded-Case Circuit Breakers 400–800 A

Ref. ^①	Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
C series with electronic tripping device, adjustable, AC				
20	NF400-CEP	200–400 A	139945	—
25	NF630-CEP	300–630 A	139953	—
30	NF800-CEP	400–800 A	139961	—
S series with electronic tripping device, adjustable, AC				
21	NF400-SEP	200–400 A	139949	139950
26	NF630-SEP	300–630 A	139957	139958
31	NF800-SEP	400–800 A	139965	139966
H series with electronic tripping device, adjustable, AC				
22	NF400-HEP	200–400 A	139946	139947
27	NF630-HEP	300–630 A	139954	139955
32	NF800-HEP	400–800 A	139962	139963

Ref. ^①	Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
R series with electronic tripping device, adjustable, AC				
23	NF400-REP	200–400 A	139948	—
28	NF630-REP	300–630 A	139956	—
33	NF800-REP	400–800 A	139964	—
U series with electronic tripping device, adjustable, AC				
24	NF400-UEP	200–400 A	139951	139952
29	NF630-UEP	300–630 A	139959	139960
34	NF800-UEP	400–800 A	139967	139968

Order Information for Moulded-Case Circuit Breakers 1000–1600 A

Ref. ^①	Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
SS/UR series with electronic tripping device, adjustable, AC				
35	NF1000-SS	500–1000 A	141448	141458
36	NF1250-SS	600–1250 A	141454	141461
37	NF1250-UR	600–700–800–1000–1200–1250 A	141463	141470
38	NF1600-SS	800–1600 A	141456	141462

Order Information for Disconnectors DSN series 32–1600 A

Ref. ^①	Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
Disconnectors (no tripping device)				
39	DSN32-SW	32 A	146308	—
40	DSN63-SW	63 A	139737	139738
41	DSN125-SGW	125 A	139739	139740
42	DSN160-SGW	160 A	139741	139742
43	DSN250-SGW	250 A	139743	139744
44	DSN400-SP	400 A	139929	139930
45	DSN630-SP	630 A	139931	139942
46	DSN800-SP	800 A	139943	139944
47	DSN1000-SS	1000 A	141471	141474
48	DSN1250-SS	1250 A	141472	141476
49	DSN1600-SS	1600 A	141473	141478

^① Reference to breaker specifications on p. 14ff.



Internal Accessories

Modular cassette type accessories

The new arrangement and design of pluggable accessories such as indicator and auxiliary contacts allows you to modify the circuit in a way that saves time and space – at any time, even when built in and ready for operation.

Alarm switch (AL)

Provides for indication that the MCCB has tripped.

Lead-wire terminal block (SLT)

The terminal block is used for bringing out the connections of the internal accessories.

The cassette type accessories are also available as internal terminal type without terminal block. The connection cables are lead out of the breaker housing in line-side direction. So it is possible to mount several breakers easy side-by-side in a row.

The presence of separate circuit chambers makes the system even safer.

Thus cassette type accessories ensure flexibility when upgrading circuits.

The cassette type accessories are available in several versions and fit for breaker series from 32 A up to 800 A:

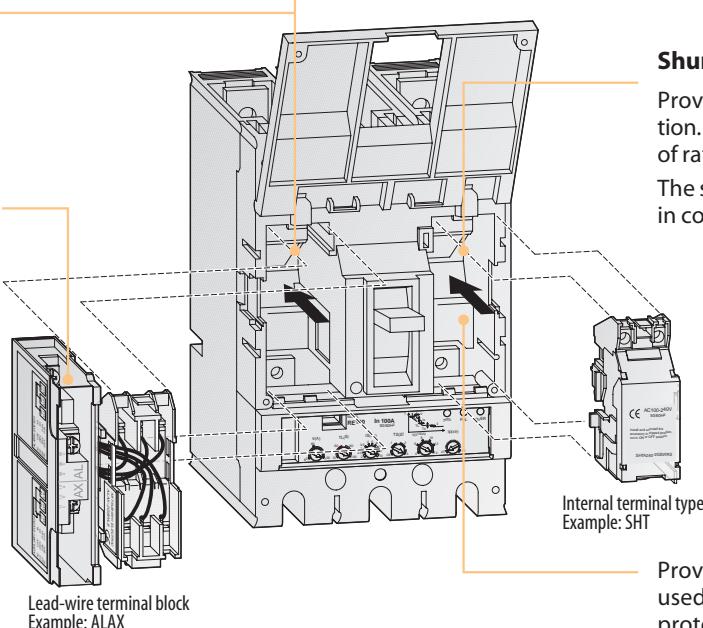
- alarm switch (AL)
- auxiliary switch (AX)
- alarm and auxiliary switch (AL+AX)
- shunt trip device (SHT)
- undervoltage trip device (UVT)

with lead-wire terminal block as standard.

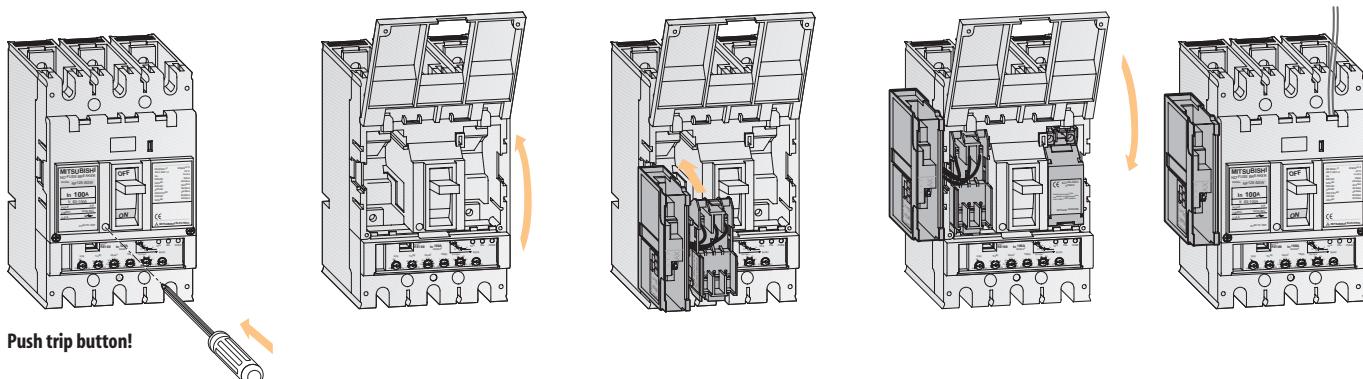
In addition you can choose the lead-wire version or the internal terminal type as an option.

Auxiliary switch (AX)

Provides for indication of whether the breaker is ON or OFF.



Simple Installation



How to install:

1. Push the trip button (PTT) to trip the breaker and loosen the front cover screws.
2. Open the front cover.
3. Install the cassette(s).
4. Close the front cover and tighten the screws.
5. Check the correct function.

Caution!

- Always ensure the breaker is tripped when installing accessories.
- Please entrust installation to an experienced person.
- Please refer to the instruction manual in the box.

For the breakers of the Super Series, 1000 A up to 1600 A, please contact your Distributor.

Overview of Internal Accessories

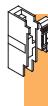
Cassette-type internal accessory	Function	Catalogue reference
AL (Alarm switch)	The alarm switch AL indicates that the breaker has tripped.	page 26
AX (Auxiliary switch)	The auxiliary switch AX indicates whether the breaker is ON or OFF.	page 26
SHT (Shunt trip)	The shunt trip SHT trips the breaker automatically by remote. A cut-off switch is integrated. The allowable tripping voltage is 70% to 110% of the rated voltage for both AC and DC.	page 28
UVT (Undervoltage trip)	The undervoltage trip UVT trips the breaker automatically when the voltage drops. The tripping voltage is 35% to 70% of the rated voltage. When the voltage recovers to 85% of the rated voltage or above, the UVT can be reset and the breaker closed.	page 30



Connection of the Control Wires

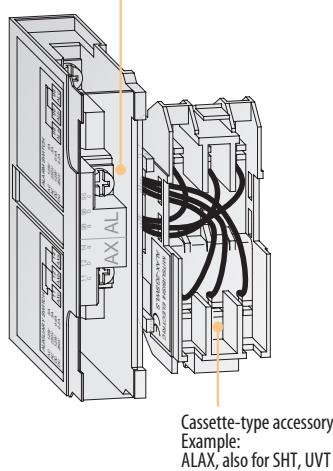
For the connection of the control wires MITSUBISHI ELECTRIC offers you two ways:

- Lead-wire terminal block (SLT)
- Internal terminal type for direct connection.



Lead-Wire Terminal Block (SLT)

Lead-wire terminal block SLT with screw terminals



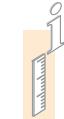
Application

All cassette-type accessories are standardly equipped with the Lead-wire terminal block SLT.

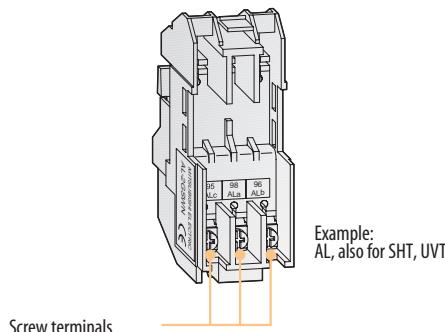
The terminal cover for the lead-wire terminals is available for the safety of live parts.

It is available for front connection type, rear connection type and plug-In type.

- Correspondent terminals are not necessary.
- Uneven arrangement of terminal screws is adopted for easier wiring.
- Tightening check of a terminal screw is easy.
- Terminal cover of a terminal block is standard equipment (co-packed).



Internal Terminal Type for Direct Connection



Application

Optional the cassette-type accessories are available as internal terminal type without terminal block.

The control wires can be connected to the integrated screw terminals and can be lead out of the breaker housing in line-side direction.

- Quick install and de-install of the internal accessories is possible without demounting the breaker.
- Mounting of several breakers side-by-side in a row is possible.
- Thus the screw terminals for control wires are inside of the breaker housing, no special terminal cover for the screw terminals is necessary.

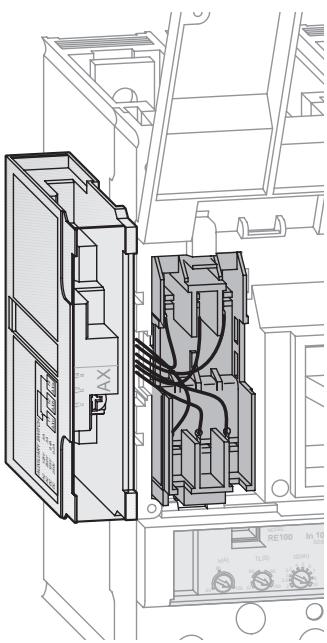


Figure shows Lead-wire terminal block type (SLT).

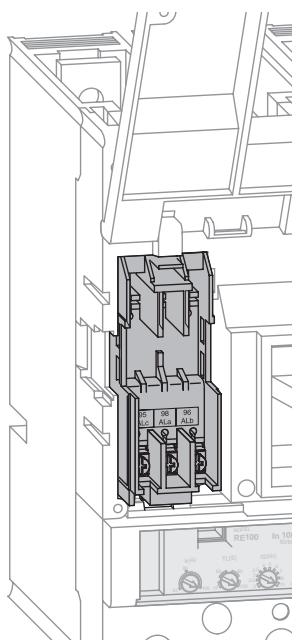


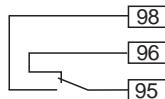
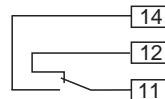
Figure shows Internal terminal type.

Application

The alarm switch AL indicates that the breaker has tripped.
The auxiliary switch AX indicates whether the breaker is ON or OFF.
The alarm and auxiliary switch ALAX is a combination of the alarm switch AL and the auxiliary switch AX in one housing.

- AL, AX and ALAX standard types are for left-side mounting and equipped with lead-wire terminal block SLT.
- Internal terminal type is also available.
- Please specify, if right-side mounted type or type with flying leads is needed.

Contact plans

(1 W)
Alarm switch AL(1 W)
Auxiliary switch AX

Switching Operation

Alarm switch (AL) operation

Main MCCB conditions	Alarm contacts
OFF or ON	
Trip	

ALa 98 (open)
ALc 95 (DC+) ^①
ALb 96 (closed)

ALa 98 (closed)
ALc 95 (DC+) ^①
ALb 96 (open)

① When DC use, polarity must be considered.

Auxilliary switch (AX) operation

Main MCCB conditions	Auxilliary contacts
OFF or Trip	
ON	

AXa 14 (open)
AXc 11 (DC+) ^①
AXb 12 (closed)

AXa 14 (closed)
AXc 11 (DC+) ^①
AXb 12 (open)

AL, AX switching capacities

Type of Micro-switch for	Voltage (V AC)	Resistive loads (A)	Inductive load (A)	Voltage (V DC) ^①	Resistive loads (A)	Inductive load (A)
AL/AX/ALAX-05-6	460	—	—	250	0.2	0.2
	250	3	2	125	0.4	0.4
	125	5	3	30	4	3
AL/AX/ALAX-12	460	5	2	250	0.3	0.3
	250	10	10	125	0.6	0.6
	125	10	10	30	10	6

① When DC use, polarity must be considered.

Order Information for Alarm Switch and Auxiliary Switch

Type	Contacts	Breaker type	Mounted on	Art. no.
Alarm switch AL with lead-wire terminal block SLT				
AL-05WLS	1 W	NF/DSN32-63		146379
AL-2GSWLS	1 W	NF/DSN125-250		139505
AL-4SPLS	1 W	NF/DSN400-800		126530
AL2-4SPLS	2 W	NF/DSN400-800	Left side	127134
AL3-6SPLS	3 W	NF/DSN630-800		127135
AL-12SS2L	1 W	NF/DSN1000-1600		10485

Alarm switch AL for direct connection

AL-2GSWN	1 W + 1 W	NF/DSN125-250	Left side	139508
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Auxiliary switch AX with lead-wire terminal block SLT

AX-05WLS	1 W	NF/DSN32-63		146380
AX2-05SWLS	2 W	NF/DSN125-250		146382
AX-2GSWLS	1 W	NF/DSN125-250		139504
AX2-2GSWLS	2 W	NF/DSN125-250		139506
AX-4SPLS	1 W	NF/DSN400-800		124588
AX2-4SPLS	2 W	NF/DSN400-800	Left side	126528
AX3-6SPLS	3 W	NF/DSN630-800		126529
AX4-6SPLS	4 W	NF/DSN630-800		127133
AX-12SSL	1 W			10487
AX-12SS2L	2 W	NF/DSN1000-1600		11492
AX-12SS3L	3 W			11495

Auxiliary switch AX for direct connection

AX-2GSWN	1 W	NF/DSN125-250	Left side	139507
AX2-2GSWLN	2 W			139510

Type	Contacts AL AX	Breaker type	Mounted on	Art. no.
Alarm switch and Auxiliary switch ALAX with lead-wire terminal block SLT				
ALAX-05WLS	1 W + 1 W	NF/DSN32-63		146381
ALAX-2GSWLS	1 W + 1 W	NF/DSN125-250		137510
ALAX-4SPLS	1 W + 1 W	NF/DSN400-800		126531
AL2AX2-4SPLS	2 W + 2 W	NF/DSN400-800	Left side	127136
ALAX-12SSL	1 W + 1 W	NF/DSN1000-1600		9437
AL1AX2-12SSL	1 W + 2 W	NF/DSN1000-1600		43865

Alarm switch and Auxiliary switch ALAX for direct connection

ALAX-2GSWN	1 W + 1 W	NF/DSN125-250	Left side	139509
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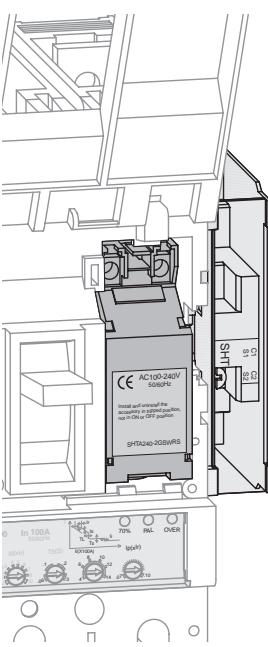


Figure shows Lead-wire terminal block type (SLT).

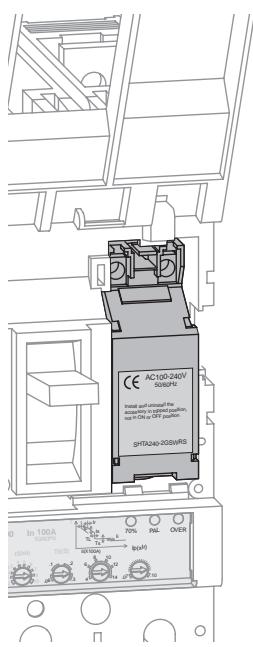


Figure shows Internal terminal type.

Application

The shunt trip device SHT trips the breaker automatically by remote. A cut-off switch is integrated.

The allowable tripping voltage range is 70% to 110% of the rated voltage for both AC and DC.

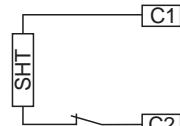
The SHT is standardly mounted on the right side of the breaker and equipped with lead-wire terminal block SLT.

Please specify, if left-side mounted type or type with flying leads is needed (optional available).

Please consider, the shunt trip device SHT for 3-pole and 4-pole breakers is different in the length of wires based on the outline dimension of the breaker.

For dimensions and tightening please refer to page 59.

Contact plan



With cut-off switch

Coil ratings

MCCB type ^①	Cut-off switch	Voltage (V) ^②	Input ^③ AC (VA)	DC (W)	Operating time (msec) ^④
NF32-SW NF63-SW NF63-HW NF125-SGW RT/RE NF125-HGW RT/RE NF125-RGW RT/UGW RT	Equipped	AC 24 AC 100–120 AC 200–240 AC 380–450 (50 / 60 Hz) DC 24, DC 110	120	50	≤15
NF160-SGW RT/RE NF160-HGW RT/RE NF250-SGW RT/RE NF250-HGW RT/RE NF250-RGW RT/UGW RT	Equipped			60	
NF400-CEP / SEP / HEP / REP / UEP NF630-CEP / SEP / HEP / REP / UEP NF800-CEP / SEP / HEP / REP / UEP	Equipped	AC 24–48 / DC 24–48 AC 100–450 / DC 100–450 AC 380–550 (50 / 60 Hz)	100 V: 20 200 V: 50 330 V: 120 450 V: 170	100 V: 10 200 V: 35	5–15
NF1000-SS NF1250-SS/UR NF1600-SS	Equipped	AC 100–120 AC 200–240 AC 380–450 (50 / 60Hz) DC 24, DC 110	200	70	7–15

^① Also for DSN types.

^② Other voltages on request

^③ For the SHT operating power capacity, any voltage drop in the input electric power must not be below the allowable operating voltage range.

^④ The operating time includes all the time up to the moment the main contact of the breaker disconnects after a voltage has been applied to the shunt trip devices.

Order Information for Shunt Trip Devices SHT

With lead-wire terminal block SLT, mounted on right-side

For 3-pole breaker			For 4-pole breaker			Rated voltage
Type	Breaker type	Art. no.	Type	Breaker type	Art. no.	
SHTA048-05SWRS	NF/DSN32-63	146383	SHTA048-05WRFS	NF/DSN32-63	146384	AC 24–48 V
SHTA240-05SWRS		146385	SHTA240-05WRFS		146386	AC 100–240 V
SHTA550-05SWRS		146387	SHTA550-05WRFS		146388	AC 380–550 V
SHTD012-05SWRS		146389	SHTD012-05WRFS		146390	DC 12 V
SHTD036-05SWRS		146391	SHTD036-05WRFS		146392	DC 24–36 V
SHTD048-05SWRS		146393	SHTD048-05WRFS		146394	DC 36–48 V
SHTD125-05SWRS		146395	SHTD125-05WRFS		146396	DC100–125 V
SHTD250-05SWRS		146397	SHTD250-05WRFS		146398	DC220–250 V
SHTA048-2GSWRS	NF/DSN125-250	139513	SHTA048-2GSWRFS	NF/DSN125-250	139514	AC 24–48 V
SHTA240-2GSWRS		139515	SHTA240-2GSWRFS		139516	AC 100–240 V
SHTA550-2GSWRS		139517	SHTA550-2GSWRFS		139518	AC 380–550 V
SHTD012-2GSWRS		139519	SHTD012-2GSWRFS		139520	DC 12 V
SHTD036-2GSWRS		139521	SHTD036-2GSWRFS		139522	DC 24–36 V
SHTD048-2GSWRS		139523	SHTD048-2GSWRFS		139524	DC 36–48 V
SHTD125-05GSWRS		139525	SHTD125-2GSWRFS		139526	DC100–125 V
SHTD250-05GSWRS		139527	SHTD250-2GSWRFS		139528	DC220–250 V
SHT-4SPRS	NF/DSN400-800	126552	SHT-4SPRFS	NF/DSN400	126555	AC 100–450 V / DC 100–200 V
SHT48-4SPRS		126263	SHT48-4SPRFS		126554	AC 24–48 V / DC 24–48 V
SHTA550-4SPRS		126553	SHTA550-4SPRFS		126556	AC 380–550 V
—	—	—	SHT-6SPRFS	NF/DSN630-800	126558	AC 100–450 V / DC100–200 V
—	—	—	SHT48-6SPRFS		126557	AC 24–48 V / DC 24–48 V
—	—	—	SHTA550-6SPRFS		126559	AC 380–550 V
SHT-12SSRA120	NF/DSN1000–1600	11442	SHT-12SSRA120F	NF/DSN1000–1600	11443	AC 100–120 V, 50/60 Hz
SHT-12SSRA240		9489	SHT-12SSRA240F		11444	AC 200–240 V, 50/60 Hz
SHT-12SSRA450		9983	SHT-12SSRA450F		11447	AC 380–450 V, 50/60 Hz
SHT-12SSRD024		15027	SHT-12SSRD024F		43231	DC 24 V
SHT-12SSRD110		16329	SHT-12SSRD110F		43232	DC 110 V

For direct connection, mounted on right-side

For 3-/4-pole breaker			
Type	Breaker type	Rated voltage	Art. no.
SHTA048-2GSWRN	NF/DSN125-250	AC 24–48 V	139529
SHTA240-2GSWRN		AC 100–240 V	139530
SHTA550-2GSWRN		AC 380–550 V	139531
SHTD012-2GSWRN		DC 12 V	139532
SHTD036-2GSWRN		DC 24–36 V	139533
SHTD048-2GSWRN		DC 36–48 V	139534
SHTD125-2GSWRN		DC 100–125 V	139535
SHTD250-2GSWRN		DC 220–250 V	139536



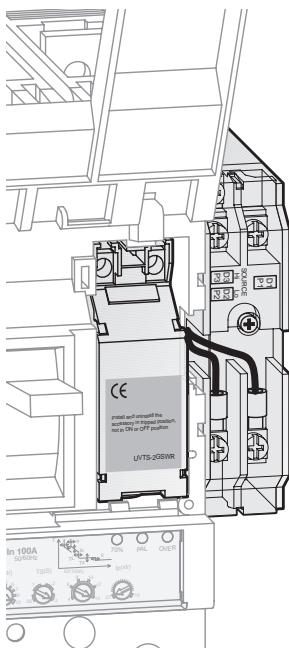


Figure shows Lead-wire terminal block type (SLT).

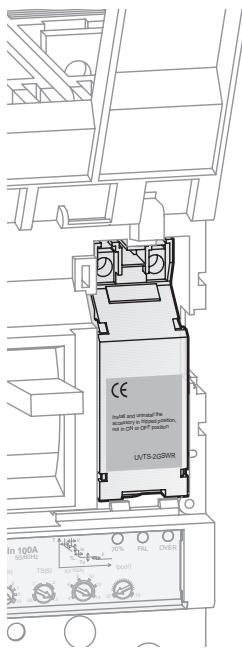


Figure shows Internal terminal type.

Application

The undervoltage trip UVT trips the breaker automatically when the voltage drops. The tripping voltage is 35% to 70% of the rated voltage. When the voltage recovers to 85% of the rated voltage or above, the UVT can be reset and the breaker closed.

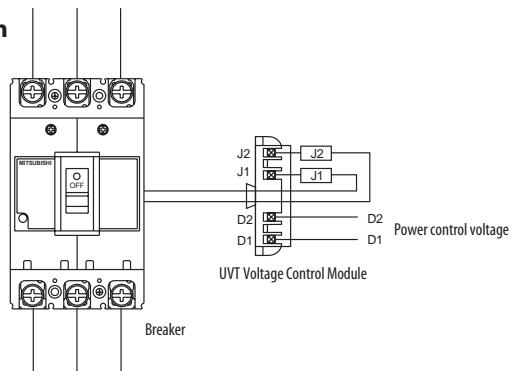
The UVT is standardly mounted on the right side of the breaker and equipped with lead-wire terminal block SLT.

Please specify, if left-side mounted type or type with flying leads is needed.

Please consider, the undervoltage trip UVT for 3-pole and 4-pole breaker is different in the length of wires based on the outline dimension of the breaker.

For dimensions and tightening please refer to page 59.

Contact plan



Coil ratings

Breaker type ^①	For synchronous closing	Voltage (V) ^② Standard	Input (VA)	Operating time ^③ (msec)	Making/breaking data Breaker OFF	Breaker ON
NF32-SW NF63-SW NF125-SGW RT/RE NF125-HGW RT/RE NF125-RGW RT/UGW RT NF160-SGW RT/RE NF160-HGW RT/RE NF250-SGW RT/RE NF250-HGW RT/RE NF250-RGW RT/UGW RT	●	AC 100–120 AC 200–240 AC 220–240 AC 380–450 AC 400–440 (50 / 60 Hz)	5	≤30	35–70 % U_N	min. 85 % U_N
NF400-CEP / SEP / HEP / REP / UEP NF630-CEP / SEP / HEP / REP / UEP NF800-CEP / SEP / HEP / REP / UEP	●	DC 24, DC 110		5–30		
NF1000-SS, NF1250-SS / UR NF1600-SS	— ^④			5–35		

^① Also for DSN types.

^② Other voltages on request.

^③ The operating time is the time from the start of operating the breaker since the undervoltage trip went from voltage to no-voltage condition.

^④ On request, please see page 31.

UVTs with Time delay on request.

Types of UVTs

Breaker type	No. of Poles	Rated voltages						DC 24 / 48 V	DC 100 / 110 V	DC 110 / 125 V
		AC 24 / 48 V	AC 100–110 / 120–130 V	AC 200–220 / 230–250 V	AC 380–415 / 440–480 V	AC 500–550 / 600 V				

Instantaneous trip type, with lead-wire terminal block SLT

NF/DSN32–63	3	UVTNA048-055WRS	UVTNA130-055WRS	UVTNA250-055WRS	UVTNA480-055WRS	UVTNA600-055WRS	UVTND048-055WRS	UVTND110-055WRS	UVTND125-055WRS
	4	UVTNA048-055WRFs	UVTNA130-055WRFs	UVTNA250-055WRFs	UVTNA480-055WRFs	UVTNA600-055WRFs	UVTND048-055WRFs	UVTND110-055WRFs	UVTND125-055WRFs
NF/DSN125–250	3	UVTSA048-2GSWRS	UVTSA130-2GSWRS	UVTSA250-2GSWRS	UVTSA480-2GSWRS	UVTSA600-2GSWRS	UVTSD048-2GSWRS	UVTSD110-2GSWRS	UVTSD125-2GSWRS
	4	UVTSA048-2GSWRFS	UVTSA130-2GSWRFS	UVTSA250-2GSWRFS	UVTSA480-2GSWRFS	UVTSA600-2GSWRFS	UVTSD048-2GSWRFS	UVTSD110-2GSWRFS	UVTSD125-2GSWRFS

Instantaneous trip type, for direct connection

NF/DSN125–250	3/4	UVTSA048-2GSWRN	UVTSA130-2GSWRN	UVTSA250-2GSWRN	UVTSA480-2GSWRN	UVTSA600-2GSWRN	UVTSD048-2GSWRN	UVTSD110-2GSWRN	UVTSD125-2GSWRN
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Breaker type	No. of Poles	Rated voltages						DC 24 V	DC 110 V
		AC 110–120 V	AC 220–240 V	AC 400–440 V					

Instantaneous trip type, with lead-wire terminal block SLT

NF/DSN400–800	3	UVTA120-4SPS	UVTA240-4SPS	UVTA4-4SPS	UVTD24-4SPS	UVTD110-4SPS
NF/DSN400	4	UVTA120-4SPRFS	UVTA240-4SPRFS	UVTA4-4SPRFS	UVTD24-4SPRFS	UVTD110-4SPRFS
NF/DSN630–800	4	UVTA120-6SPRFS	UVTA240-6SPRFS	UVTA4-6SPRFS	UVTD24-6SPRFS	UVTD110-6SPRFS
NF/DSN1000–1600	3	UVT-12SSRA120	UVT-12SSRA240 UVTSC-12SSRA240	UVT-12SSRA415	UVT-12SSRD024	UVT-12SSRD110
	4	UVT-12SSRA120F	UVT-12SSRA240F	UVT-12SSRA415F	UVT-12SSRD024F	UVT-12SSRD110F

Breaker type	No. of Poles	Rated voltages						DC 24 / 48 V	DC 100–110 V
		AC 24 / 48 V	AC 100–120 / 200–240 / 380–450 V	AC 200–250 / 380–450 / 460–550 V	AC 380–450 / 460–550 / 600–690 V				

Short-time delay type, with lead-wire terminal block SLT, short-time delay adjustable in steps 0.1–0.3–0.5 sec

NF/DSN32–63	3	UVTNA048-055WRSU05	UVTNA450-055WRSU05	UVTNA550-055WRSU05	UVTNA690-055WRSU05	UVTND048-055WRSU05	UVTND110-055WRSU05
	4	UVTNA048-055WRFsU05	UVTNA450-055WRFsU05	UVTNA550-055WRFsU05	UVTNA690-055WRFsU05	UVTND048-055WRFsU05	UVTND110-055WRFsU05
NF/DSN125–250	3	UVTSA048-2GSWRSU05	UVTSA450-2GSWRSU05	UVTSA550-2GSWRSU05	UVTSA690-2GSWRSU05	UVTSD048-2GSWRSU05	UVTSD110-2GSWRSU05
	4	UVTSA048-2GSWRFSU05	UVTSA450-2GSWRFSU05	UVTSA550-2GSWRFSU05	UVTSA690-2GSWRFSU05	UVTSD048-2GSWRFSU05	UVTSD110-2GSWRFSU05

Short-time delay type, for direct connection, short-time delay adjustable in steps 0.1–0.3–0.5 sec

NF/DSN125–250	3/4	UVTSA048-2GSWRNU05	UVTSA450-2GSWRNU05	UVTSA550-2GSWRNU05	UVTSA690-2GSWRNU05	UVTSD048-2GSWRNU05	UVTSD110-2GSWRNU05
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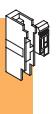
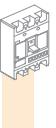
Breaker type	No. of Poles	Rated voltages						DC 24 / 48 V	DC 100–110 V
		AC 100–120 / 200–240 / 380–450 V	AC 200–250 / 380–450 / 460–550 V	AC 380–450 / 460–550 / 600–690 V					

Long-time delay type, with lead-wire terminal block SLT, long-time delay adjustable in steps 0.5–1.0–3.0 sec

NF/DSN32–63	3	UVTNA450-055WRSU30	UVTNA550-055WRSU030
	4	UVTNA450-055WRFsU30	UVTNA550-055WRFsU30
NF/DSN125–250	3	UVTSA450-2GSWRSU30	UVTSA550-2GSWRSU30
	4	UVTSA450-2GSWRFSU30	UVTSA550-2GSWRFSU30

Long-time delay type, for direct connection, long-time delay adjustable in steps 0.5–1.0–3.0 sec

NF/DSN125–250	3/4	UVTSA450-2GSWRNU30	UVTSA550-2GSWRNU30
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Order Information for Undervoltage Tripping Devices UVT

Undervoltage tripping device UVT, instantaneous trip type, synchronous closing, mounted on right-side

with lead-wire terminal block SLT, for 3-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTNA048-05SWRS	NF/DSN32-63	AC 24 / 48 V	146399
UVTNA130-05SWRS		AC 100–110 / 120–130 V	146401
UVTNA250-05SWRS		AC 200–220 / 230–250 V	146403
UVTNA480-05SWRS		AC 380–415 / 440–480V	146405
UVTNA600-05SWRS		AC 500–550 / 600 V	146407
UVTND048-05SWRS		DC 24 / 48 V	146409
UVTND125-05SWRS		DC 110 / 125 V	146411
UVTSA048-2GSWRS	NF/DSN125-250	AC 24 / 48 V	139537
UVTSA130-2GSWRS		AC 100–110 / 120–130 V	139539
UVTSA250-2GSWRS		AC 200–220 / 230–250 V	139541
UVTSA480-2GSWRS		AC 380–415 / 440–480V	139543
UVTSA600-2GSWRS		AC 500–550 / 600 V	139545
UVTSD048-2GSWRS		DC 24 / 48 V	139547
UVTSD110-2GSWRS		DC 100 / 110 V	139548
UVTSD125-2GSWRS		DC 110 / 125 V	139550
UVTA120-4SPS	NF/DSN400-800	AC 100–110 V	126566
UVTA240-4SPS		AC 220–240 V	126567
UVTA4-4SPS		AC 400–440 V	126568
UVTD24-4SPS		DC 24 V	126575
UVTD110-4SPS		DC 110 V	126576
UVT-12SSRA120 ^①	NF/DSN1000-1600	AC 110–120 V	11423
UVT-12SSRA240 ^①		AC 200–240 V	9426
UVT-12SSRA415 ^①		AC 380–450 V	11426
UVT-12SSRD024 ^①		DC 24 V	11890
UVT-12SSRD110 ^①		DC 110 V	17300
UVTSC-12SSRA120	NF/DSN1000-1600	AC 200–240 V	15525

with lead-wire terminal block SLT, for 4-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTNA048-05SWRFS	NF/DSN 63	AC 24 / 48 V	146400
UVTNA130-05SWRFS		AC 100–110 / 120–130 V	146402
UVTNA250-05SWRFS		AC 200–220 / 230–250 V	146404
UVTNA480-05SWRFS		AC 380–415 / 440–480V	146406
UVTNA600-05SWRFS		AC 500–550 / 600 V	146408
UVTND048-05SWRFS		DC 24 / 48 V	146410
UVTND125-05SWRFS		DC 110 / 125 V	146412
UVTSA048-2GSWRFS	NF/DSN125-250	AC 24 / 48 V	139538
UVTSA130-2GSWRFS		AC 100–110 / 120–130 V	139540
UVTSA250-2GSWRFS		AC 200–220 / 230–250 V	139542
UVTSA480-2GSWRFS		AC 380–415 / 440–480 V	139544
UVTSA600-2GSWRFS		AC 500–550 / 600 V	139546
UVTSD048-2GSWRFS		DC 24 / 48 V	137508
UVTSD110-2GSWRFS		DC 100 / 110 V	139549
UVTSD125-2GSWRFS		DC 110 / 125 V	139551
UVTA120-4SPRFS	NF/DSN400	AC 110–120 V	126569
UVTA240-4SPRFS		AC 220–240 V	126570
UVTA4-4SPRFS		AC 400–440 V	126571
UVTD24-4SPRFS		DC 24 V	126577
UVTD110-4SPRFS		DC 110 V	126578
UVTA120-6SPRFS	NF/DSN630-800	AC 110–120 V	126572
UVTA240-6SPRFS		AC 220–240 V	126573
UVTA4-6SPRFS		AC 400–440 V	126574
UVTD24-6SPRFS		DC 24 V	126579
UVTD110-6SPRFS		DC 110 V	126580
UVT-12SSRA120 ^①	NF/DSN1000-1600	AC 110–120 V	11425
UVT-12SSRA240 ^①		AC 200–240 V	10954
UVT-12SSRA415 ^①		AC 380–450 V	11428
UVT-12SSRD024F ^①		DC 24 V	20011
UVT-12SSRD110F ^①		DC 110 V	127668

for direct connection, for 3- and 4-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTSA048-2GSWRN	NF/DSN125-250	AC 24 / 48 V	139552
UVTSA130-2GSWRN		AC 100–110 / 120–130 V	139553
UVTSA250-2GSWRN		AC 200–220 / 230–250 V	139554
UVTSA480-2GSWRN		AC 380–415 / 440–480 V	139555
UVTSA600-2GSWRN		AC 500–550 / 600 V	139556
UVTSD048-2GSWRN		DC 24 / 48 V	139557
UVTSD110-2GSWRN		DC 100 / 110 V	139558
UVTSD125-2GSWRN		DC 110 / 125 V	139559

^① for synchronous closing on request

Order Information for Undervoltage Tripping Devices UVT

Undervoltage tripping device UVT, short-time delay type, adjustable in steps 0.1–0.3–0.5 sec, mounted on right-side with lead-wire terminal block SLT, for 3-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTNA048-05SWRSU05	NF/DSN32–63	AC 24 / 48 V	146413
UVTNA450-05SWRSU05		AC 100–120 / 200–240 / 380–450 V	146425
UVTNA550-05SWRSU05		AC 200–250 / 380–450 / 460–550 V	146427
UVTNA690-05SWRSU05		AC 380–450 / 460–550 / 600–690 V	146429
UVTND048-05SWRSU05		DC 24 / 48 V	146431
UVTND110-05SWRSU05		DC 100–110 V	146433
UVTS048-2GSWRSU05	NF/DSN125–250	AC 24 / 48 V	139560
UVTS450-2GSWRSU05		AC 100–120 / 200–240 / 380–450 V	139562
UVTS550-2GSWRSU05		AC 200–250 / 380–450 / 460–550 V	139564
UVTS690-2GSWRSU05		AC 380–450 / 460–550 / 600–690 V	139566
UVTS048-2GSWRSU05		DC 24 / 48 V	139568
UVTS0110-2GSWRSU05		DC 100–110 V	139569

with lead-wire terminal block SLT, for 4-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTNA048-05SWRSU05	NF/DSN32–63	AC 24 / 48 V	146424
UVTNA450-05SWRSU05		AC 100–120 / 200–240 / 380–450 V	146426
UVTNA550-05SWRSU05		AC 200–250 / 380–450 / 460–550 V	146428
UVTNA690-05SWRSU05		AC 380–450 / 460–550 / 600–690 V	146430
UVTND048-05SWRSU05		DC 24 / 48 V	146432
UVTND110-05SWRSU05		DC 100–110 V	146434
UVTS048-2GSWRSU05	NF/DSN125–250	AC 24 / 48 V	139561
UVTS450-2GSWRSU05		AC 100–120 / 200–240 / 380–450 V	139563
UVTS550-2GSWRSU05		AC 200–250 / 380–450 / 460–550 V	139565
UVTS690-2GSWRSU05		AC 380–450 / 460–550 / 600–690 V	139567
UVTS048-2GSWRSU05		DC 24 / 48 V	137509
UVTS0110-2GSWRSU05		DC 100–110 V	139570

for direct connection, for 3- and 4-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTS048-2GSWRNU05	NF/DSN125–250	AC 24 / 48 V	139571
UVTS450-2GSWRNU05		AC 100–120 / 200–240 / 380–450 V	139572
UVTS550-2GSWRNU05		AC 200–250 / 380–450 / 460–550 V	139573
UVTS690-2GSWRNU05		AC 380–450 / 460–550 / 600–690 V	139574
UVTS048-2GSWRNU05		DC 24 / 48 V	139575
UVTS0110-2GSWRNU05		DC 100–110 V	139576

Undervoltage tripping device UVT, long-time delay type, adjustable in steps 0.5–1.0–3.0 sec, mounted on right-side

with lead-wire terminal block SLT, for 3-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTNA450-05SWRSU30	NF/DSN32–63	AC 100–120 / 200–240 / 380–450 V	146435
UVTNA550-05SWRSU30		AC 200–250 / 380–450 / 460–550 V	146437
UVTS450-2GSWRSU30	NF/DSN125–250	AC 100–120 / 200–240 / 380–450 V	139577
UVTS550-2GSWRSU30		AC 200–250 / 380–450 / 460–550 V	139579

with lead-wire terminal block SLT, for 4-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTNA450-05SWRSU30	NF/DSN32–63	AC 100–120 / 200–240 / 380–450 V	146436
UVTNA550-05SWRSU30		AC 200–250 / 380–450 / 460–550 V	146438
UVTS450-2GSWRSU30	NF/DSN125–250	AC 100–120 / 200–240 / 380–450 V	139578
UVTS550-2GSWRSU30		AC 200–250 / 380–450 / 460–550 V	139580

for direct connection, for 3- and 4-pole breakers

Type	Breaker type	Rated voltage	Art. no.
UVTS450-2GSWRNU30	NF/DSN125–250	AC 100–120 / 200–240 / 380–450 V	139581
UVTS550-2GSWRNU30		AC 200–250 / 380–450 / 460–550 V	139582



Accessories for Connection and Installation

If no connection method is specified with the order, we deliver the standard fixed-installation type with front connection.

The front-connection model can be modified to other types (excluding plug-in) with special purchase options.

More details on request.

Connection Types				
Installation	Fixed		Plug-in	
Connection	Front (F)	Rear (B)	Rear (PM)	
Appearance				
	Standard	Option	Option	

Available Terminal Connections

Frame size	Front (Standard)	Rear	Solderless terminals	Plug-in
32–250 A	●	●	● ^①	●
400–800 A	●	●	—	●
1000–1600 A	●	— ^②	—	— ^②

^① Only for frame sizes 125/160/250 A

^② On request, modified at factory.

■ Connection Accessories

Rear studs ST

Type	No. of Poles	Breaker type	Art. no.
ST-05SW3	3	NF/DSN32–63	146441
ST-05SW4	4		146442
ST-2GSW3	3	NF/DSN125–250	139591
ST-2GSW4	4		139592
ST-4SP3	3	NF/DSN400	126640
ST-4SP4	4		126641
ST-6SP3	3	NF/DSN630–800	126642
ST-6SP4	4		126643

Plug-in sets PM

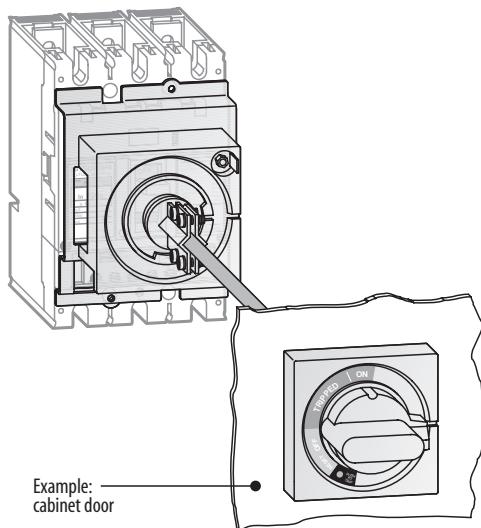
Type	No. of Poles	Breaker type	Protection degree	Art. no.
PM-05SW3	3	NF/DSN32–63	—	146443
PM-05SW4	4		—	146444
PM-2GSWIP3	3	NF/DSN125–250	IP 20	137511
PM-2GSWIP4	4		—	137512
PM-4SP3	3	NF/DSN400	—	126267
PM-4SP4	4		—	126636
PM-6SP3	3	NF/DSN630	—	126268
PM-6SP4	4		—	126637
PM-8SP3	3	NF/DSN800	—	126638
PM-8SP4	4		—	126639

Solderless terminals SL

Type	No. of Poles	Breaker type	Art. no.	Packing unit	Connected wire size	Used for
SL-2GSW3	3	NF/DSN125–250	139593	1 Set = 3 pcs.	2.5–185 mm ²	Cu/Al
SL-2GSW4	4		139594	1 Set = 4 pcs.		

More types available on request.

V-Type Operating Handle



Application

The V-type operating handle is used to operate the breaker which is installed in a cabinet. With the installed V-type operating handle the breaker can be locked (with up to 3 padlocks, Ø 8 mm max., padlocks are not included) in OFF position only.

The door is locked when the breaker is ON and can only be opened when the breaker is in OFF position.

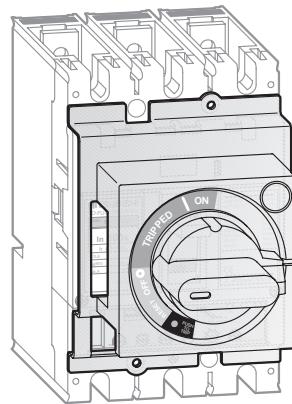
The V-type operating handle is available in the following colour combinations:

Handle and front in black/black and handle and front in red/yellow, or red/black, see also the following table.

- Protection degree (in accord. to IEC/EN 60 529): see table below.
- Variable axle length.
- For dimensions see page 60.

Specifications	V-type operating handle											
	V05SWN	V05SWEN	V2GSWN	V2GSWEN	V2GUWN	V2GUWEN	V4SP	V4SPE	V6SP	V6SPE	V101	V101E
Breaker type	NF/DSN32-63		NF/DSN125/160/250-SGW/HGW		NF125/250-RGW/UGW		NF/DSN400		NF/DSN630-800		NF/DSN1000-1600	
Colour: handle/front	black	red/yellow	black	red/yellow	black	red/yellow	black	red/black	black	red/black	black	red/black
Protection degree	IP65	IP65	IP65	IP65	IP65	IP65	IP54	IP54	IP54	IP54	IP50	IP50
Art. no.	146457	146458	137513	139627	139626	139628	126623	126624	126627	126628	11659	11663

R-Type Operating Handle



Application

The R-type operating handle is to be mounted directly on the breaker.

With the installed R-type operating handle the breaker can be locked (with up to 3 padlocks, Ø 8 mm max., padlocks are not included) in OFF position only.

The R-type operating handle is available in the following colour combinations:

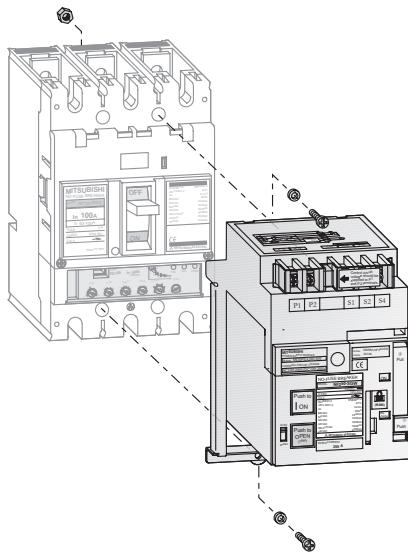
Handle and front in black/black and handle and front in red/yellow, or red/black, see also the following table.

- For dimensions see page 60.

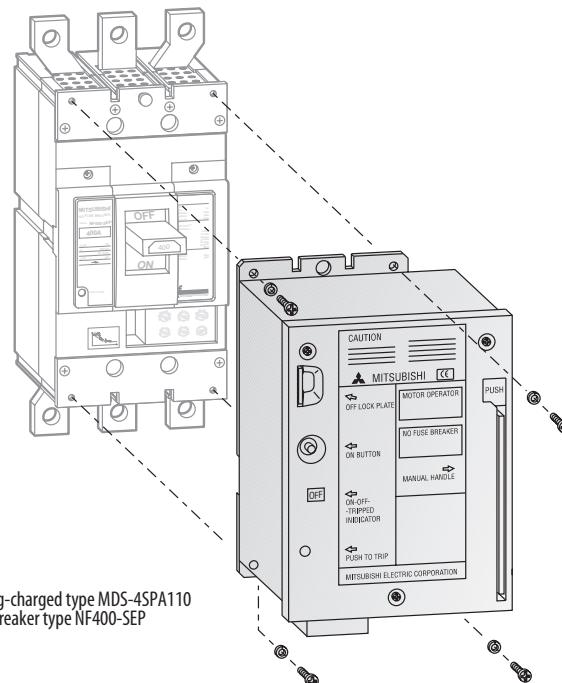
Specifications	R-type operating handle										
	R2GSWN	R2GSWEN	R2GUWN	R2GUWEN	R4SP	R4SPE	R6SP	R6SPE	R101	R101E	
Breaker type	NF/DSN125/160/250-SGW/HGW		NF125/250-RGW/UGW		NF/DSN400		NF/DSN630-800		NF/DSN1000-1600		
Colour: handle/front	black	red/yellow	black	red/yellow	black	red/black	black	red/black	black	red/black	
Art. no.	139622	139624	139623	139625	126625	126626	126629	126630	11620	11623	

Electrically Operated Breakers – Overview

Spring-charged types MDS



Spring-charged type MDSAD240-NF2GSWE
and breaker type NF250-SGW



Spring-charged type MDS-4SPA110
and breaker type NF400-SEP

Specifications		MDS.../MDSA...	MDS-4.../8...	MDS-16...	
Breaker type ①	NF-S/H series	NF125-SGW / HGW NF160-SGW / HGW NF250-SGW / HGW	NF400-SEP / HEP / REP NF630-SEP / HEP / REP NF800-SEP / HEP / REP	NF1000-SS NF1250-SS NF1600-SS	
	NF-R/U series	NF125-RGW / UGW NF250-RGW / UGW	NF400-UEP, NF630-UEP, NF800-UEP	NF1250-UR	
	NF-C series	—	NF400-CEP, NF630-CEP, NF800-CEP	—	
Rated operating voltage (V) (allowable voltage range 85–110%) ②		DC 24 V DC48–60V AC100–240V / DC100–250V	AC 100/110 V, 200/220 V (AC 240 V) DC 100/110 V (DC 125 V)	AC 100/110 V, 200/220 V DC 100/110 V	
Operating current (A, eff.) ③	DC	100 / 110 V	OFF: 1.0 (3.0)	ON: 8.0	OFF: 1.0 (3.0) ON: 9.0
	AC	100 / 110 V	OFF: 1.0 (3.0)	ON: 8.0	OFF: 1.0 (3.0) ON: 8.0
		200 / 200 V	OFF: 0.5 (1.5)	ON: 7.0	OFF: 0.5 (1.5) ON: 7.0
Operating time (sec.)		ON operating OFF operating	0.05–0.1 (self holding) 0.6 and less (self holding)	0.05 3 and less (self holding)	0.07 3 and less (self holding)
Spring charging		1.2 and less	—	—	—
Transformer capacity required (VA)		150	700	700	
Endurance voltage (V)		1500	1500	1500	

① Also usable for Disconnectors DSN with 3 and 4 poles.

② The voltages in parentheses () are special options and might require an external resistor. For details, consult your distributor.

③ The values in parentheses () show starting current.

General precautions for motor-operated electrical MCCBs

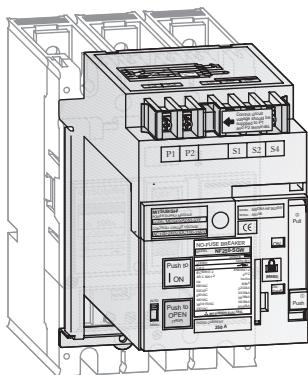
- The motor operated types should not be operated 10 times consecutively (one on/off counts as an operation).
- The operating voltage should be between 85 – 110 % of the rated control voltage.
- The current breaker position ON, OFF or TRIPPED will be shown with a special display on the motor.
- The dielectric strength of the electrical operating circuits is 1500 V. When performing a dielectric strength test simultaneously with another device at a voltage over 1500 V, the operating circuit terminal should be disconnected.

Automatic Reset

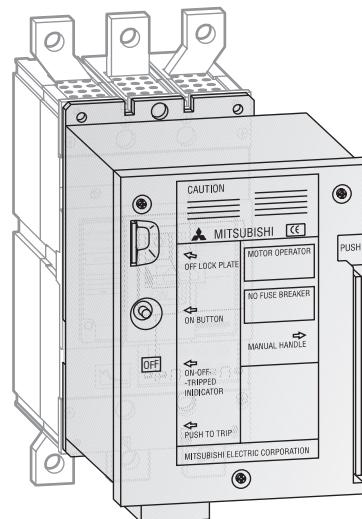
If the breaker is an auto reset type, it contains a built-in alarm switch and the off-control circuit close when the breaker is tripped. Since the breaker automatically resets itself after tripping, the power is easily restored by switching on the breaker again. With a UVT mounted, however, auto reset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

- More details on request.

■ Spring-Charged Type MDS

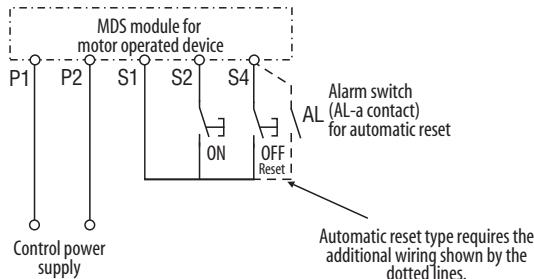


Spring-charged type
MDS.....NF2GSWE
and breaker type NF250-SGW



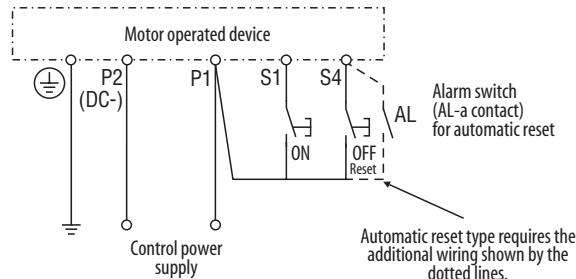
Spring-charged type
MDS-4SP.... and
breaker type NF400-SEP

Control circuit for MDS....-NF2GSWE



Automatic reset type requires the additional wiring shown by the dotted lines.

Control circuit for MDS-4/8/16 S....



Automatic reset type requires the additional wiring shown by the dotted lines.

Spring-Charged Type

Electrical operation

When the ON switch is closed, the coil is releasing the latch mechanism, and the breaker is turned to ON.

When the OFF switch is closed, a relay operates to start a motor which turns the breaker OFF (RESET) and charges the spring at the same time.

Manual operation

When the ON button (on the front of the spring-charged type) is pressed, the latch mechanism is cancelled and the circuit breaker set momentarily to ON by the force of spring.

OFF operation (RESET operation)

The circuit breaker can be set to OFF (RESET) by pressing the leaf spring, pulling out the manual handle and moving it back and forth more than ten times. This charges the spring at the same time.

Cautions during electrical operation

When an electrical-operation device is mounted in a breaker or removed from a breaker, this device must be returned to the discharged state after tripping of the breaker.

A MCCB with an electrical-operation device will not trip in the OFF state "PUSH TO TRIP" is used. This does not indicate that the breaker is faulty.

Since it takes 3 sec to switch off a breaker provided with this device, if the breaker needs to be opened urgently by remote control, a breaker fitted with an SHT or UVT should be used.

The breaker is equipped with a relay for the prevention of pumping.

Control circuit

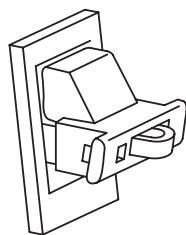
For breakers with automatic resetting capability, add the connection indicated by the dotted line in the diagrams.

- More details on request.

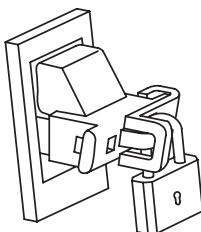
Type	Breaker type	Rated voltage	Art. no.
MDS024-NF2GSWE	NF/DSN125-250	DC 24 V	139583
MDS060-NF2GSWE	NF/DSN125-250	DC48-60V	139584
MDSAD240-NF2GSWE	NF/DSN125-250	AC100-240V / DC100-250V	137514
MDS-4SPA110	NF/DSN400	AC 100-110 V	126617
MDS-4SPA230	NF/DSN400	AC 230 V	126616
MDS-4SPD110	NF/DSN400	DC 100-110 V	126620
MDS-8SPA110	NF/DSN630-800	DC 100-110 V	126619
MDS-8SPA230	NF/DSN630-800	AC 230 V	126618
MDS-8SPD110	NF/DSN630-800	DC 100-110 V	126622
MDS-16SSA110	NF/DSN1000-1600	AC 100-110 V	11463
MDS-16SSA220	NF/DSN1000-1600	AC 220 V	9430
MDS-16SSD110	NF/DSN1000-1600	DC 100-110 V	11464



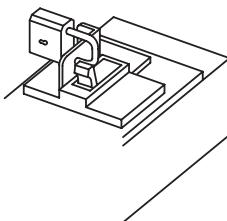
Handle Lock Devices



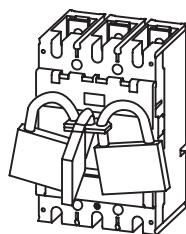
LC-2GSW



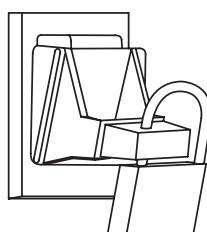
HLF-2GSW



HLS-2GSW



HLF3-2GSW



HL-4SP

Application

The handle lock device HL is used to lock the handle of the breaker against switching by not-allowed persons. The function of protection is given everytime.

Different types are available.

- All handle lock devices can be mounted regardless of the number of poles.
- Padlocks are not included.
- More details on request.

Handle lock device LC type

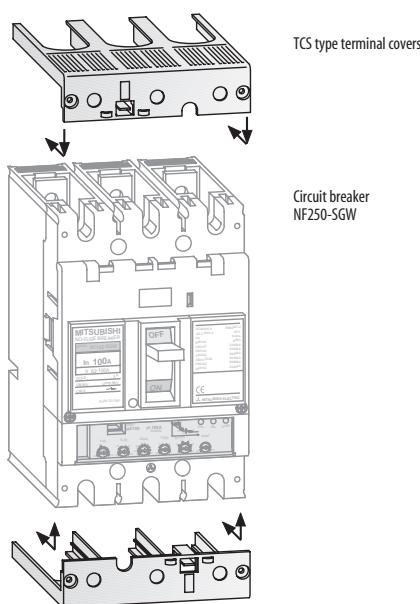
- The handle lock can be used without padlock as a lock cover.

Handle lock device HL type

- The handle lock HL type can be used for 3- and 4-pole breaker types.
- The handle locks can be used without padlock as lock covers.
- The HLF types are used for OFF-lock and the HLN types are used for ON-lock.
- The handle lock HLF3 type enables the user to lock the handle with up to three padlocks against switching.
- The HLS types are used for OFF-lock only.

Type	Breaker type	Art. no.
LC-05SW	NF/DSN32-63	146453
LC-2GSW	NF/DSN125-250	139613
HLF-05SW	NF/DSN32-63	146454
HLF-2GSW	NF/DSN125-250	139614
HLF3-2GSW	NF/DSN125-250	139615
HLN-05SW	NF/DSN32-63	146455
HLN-2GSW	NF/DSN125-250	139616
HLS-05SW	NF/DSN32-63	146456
HLS-2GSW	NF/DSN125-250	139617
HL-4SP	NF/DSN400-800	87973
HL-4CP	NF400-CEP	12635
HL12SS	NF/DSN100-1600	11673

■ Terminal Covers



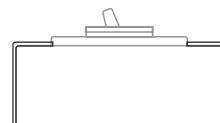
Application

The terminal covers are used to avoid exposure of charged parts.

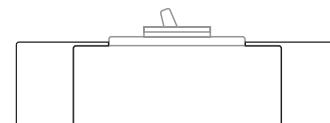
Different types are available:

- for front connection as small terminal covers TCS or large terminal covers TCL, TCN, TTC (see figures below)
- for rear connection as closed type BTC
- for plug-in as PTC
- One set includes two pieces of terminal covers.
- Colour: TCS/TCL/BTC and PTC white; TCN transparent
- For dimensions please refer to page 61.
- More types/details on request.

Small terminal covers
TCS



Large terminal covers
TCL, TCN, TTC



Small terminal covers TCS

(1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
TCS-05SW3W	3	NF/DSN32-63	white	IP20	146447
TCS-05SW4W	4				146448
TCS-2GSW3W	3	NF/DSN125-250	white	IP40	139605
TCS-2GSW4W	4				139606

Large terminal covers TCL/TCN

(1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
TCL-05SW3W	3	NF/DSN32-63	white	IP20	146445
TCL-05SW4W	4				146446
TCL-2GSW3W	3	NF/DSN125-250	white	IP40	139603
TCL-2GSW4W	4				139604
TCL-4SP3W	3		white	IP20	152148
TCL-4SP3	3	NF/DSN400	black		124584
TCL-4SP4	4		transparent	IP20	126646
TCL-6SP3	3	NF/DSN630-800	transparent	IP20	126647
TCL-6SP4	4				126648
TCN-12SS3	3	NF/DSN1000-1250 (fixed with screws)	transparent	IP20	9420
TCN-12SS4	4				9421

Large terminal covers TTC

(1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
TTC-2GSW3	3	NF/DSN125-250	transparent	IP40	139611
TTC-2GSW4	4				139612

Terminal covers rear connection studs BTC

(1 set = 2 pieces)

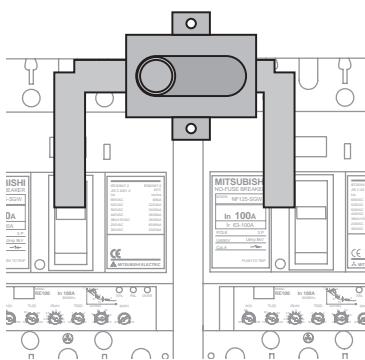
Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
BTC-05SW3W	3	NF/DSN32-63	white	IP20	146449
BTC-05SW4W	4				146450
BTC-2GSW3W	3	NF/DSN125-250	white	IP40	139607
BTC-2GSW4W	4				139608
BTC-4SP3W	3	NF/DSN400	white	IP20	152149
BTC-4SP4	4		transparent		152150
BTC-6SP3	3	NF/DSN630-800	transparent	IP20	152152
BTC-6SP4	4				152153

Terminal covers for 3-pole plug-in type PTC

(1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
PTC-05SW3W	3	NF/DSN32-63	white	IP20	146451
PTC-05SW4W	4				146452
PTC-2GSW3W	3	NF/DSN125-250	white	IP40	139609
PTC-2GSW4W	4				139610

■ Mechanical Interlock MI (Front)



Application

With two breakers, use a panel-mounted mechanical interlock for one-way only input. It is usable for front, rear, and plug-in types.

A breaker-mounting mechanical to mount on the breaker main unit can be made to order.

- More details on request.

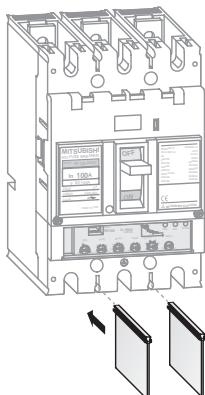
Mechanical interlocks for 3-pole breakers

Specifications	MI-05SW3	MI-4SP3	MI-6SP3	MI-10SS3 P-220	MI-16SS3 P-315
For use between two breakers of	125/160/250 AF	400 AF	630–800 AF	1000–1250 AF	1600 AF
Art. no.	139619	126631	126632	11699	11700

Mechanical interlocks for 4-pole breakers

Specifications	MI-2SW4	MI-4SP4	MI-6SP4	MI-10SS3 P-290	MI-16SS3 P-426
For use between two breakers of	125/160/250 AF	400 AF	630–800 AF	1000–1250 AF	1600 AF
Art. no.	139620	126633	126634	13495	12072

■ Isolation Barriers (Standard)

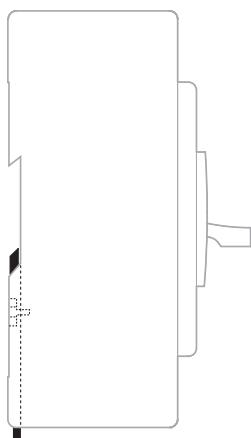


Application

The isolation barriers are used to avoid short-circuits between the terminals of the breaker due to dust or leakage current. Every breaker is equipped with isolation barriers as standard.

- More details on request.

■ IEC 35 mm Rail Mounting Adapter



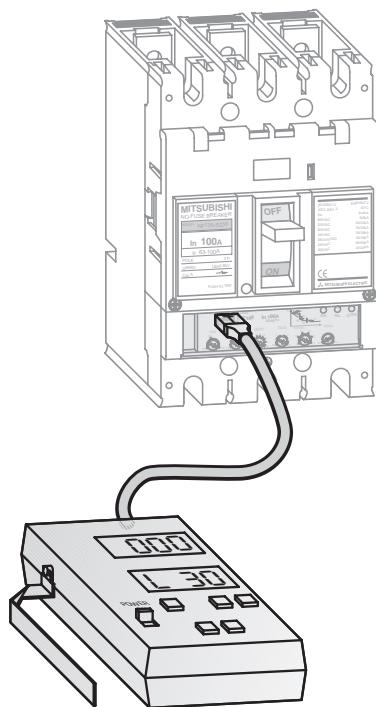
Application

The IEC 35 mm rail mounting adapter is used to mount the breaker on a IEC 35 mm mounting rail.

It is available for 3-pole breakers NF/DSN32–63.

Specifications	DIN-05SW
For 3-pole breakers	NF/DSN32–63
Art. no.	146459 (packing unit 10 pcs)

■ Tester for Electronic Breakers



Application

The portable tester unit can be used to check the tripping characteristics of the electronic breakers.

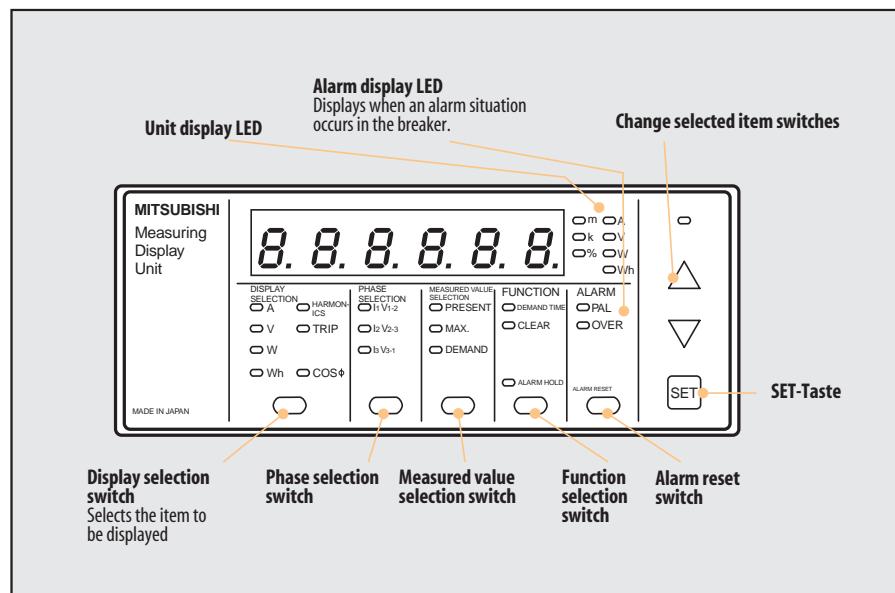
It is available in two sizes:

- Y-250 is for breakers from 100 A up to 800 A
- Y-150 is for breakers from 1000 A up to 1600 A.

Specifications	Y-250	Y-150
for electronic breakers	100 A–800 A	1000 A–1600 A
Art. no.	68181	13752



■ Measuring Display Unit MDU

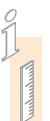
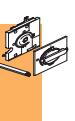
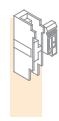
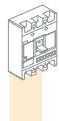


Application

- The measuring display unit (MDU) is for use with electronic MCCBs and ELCBs. It monitors a wide range of load current characteristics.
- The MDU can also be installed separately from the breaker main unit.
- The measured values and/or the alarm signal output can be transmitted via Mitsubishi's FA network CC-Link (option). The electric energy can be manufactured as pulsed output (option).
- The Measuring Display unit is available for 225 AF, 400 AF, 630 AF, and 800 AF breakers.

For more details contact your local distributor.

■ Measuring display unit MDU (continued)



Specification	NF225-SPM	NF400-SEPM NF400-HEPM	NF630-SEPM NF630-HEPM	NF800-SEPM NF800-HEPM	NV225-SPM	NV400-SEPM	NV630-SEPM	NV800-SEPM
Measurement display								
Each phase load current, Present value, average value, maximum average value	●	●	●	●	●	●	●	●
Each phase line voltage, Present value, average value, maximum average value	●	●	●	●	●	●	●	●
Electric power, Present value, maximum average value	●	●	●	●	●	●	●	●
Electric power, One hour value, present value, maximum average value	●	●	●	●	●	●	●	●
Electric energy, Accumulated total value	●	●	●	●	●	●	●	●
Power factor, Present value	●	●	●	●	●	●	●	●
Higher harmonic electric current, Third, fifth, seventh and total: present value, maximum average value	—	●	●	●	—	●	●	●
Total higher harmonic electric current, Present value, average value, maximum average value	—	●	●	●	—	●	●	●
Earth-leakage current	—	—	—	—	●	●	●	●
Fault current/cause ①	—	●	●	●	—	●	●	●
Load current measurement range	338 A	800 A	1260 A	1600 A	338 A	800 A	1260 A	1600 A
Time interval (average)	0 – 15 min., selectable in 1 minute units							
Earth-leakage fault current measurement range	—							
Voltage measurement range	690V	690V	690V	690V	484V	484V	484V	484V
Alarm (LED display) ②								
Pre-alarm PAL (auto reset) ③	—	●	●	●	—	●	●	●
Earth-leakage pre-alarm EPAL (auto reset) ④	—	—	—	—	—	●	●	●
Overcurrent alarm OVER	—	●	●	●	—	●	●	●
Others								
Power supply	100/240 V AC (50/60 Hz, 100 V DC, 200 V DC)							
Art. no.	On request							

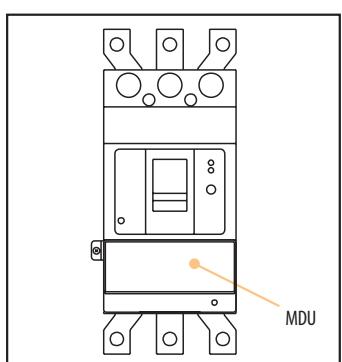
- ① Fault cause can also be manufactured as contact output.
 ② Contact output alarm signals (PAL, EPAL) can also be made to order. (option) The lead-wire terminal block is attached.
 ③ Contact output self-holding alarm output can also be made to order.
 ④ The earth-leakage pre-alarm EPAL sensitivity current is also selectable.
 ⑤ Transmittable data over the CC-Link (option) include breaker measurements, displays, and alarms.

Installation

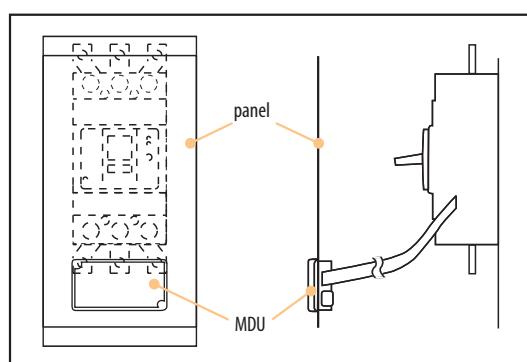
The measuring VT and CT are installed within the circuit breaker, thus offering savings on space and wiring.

The measuring display unit can be installed on the circuit breaker or onto the panel.

Installed on the main unit

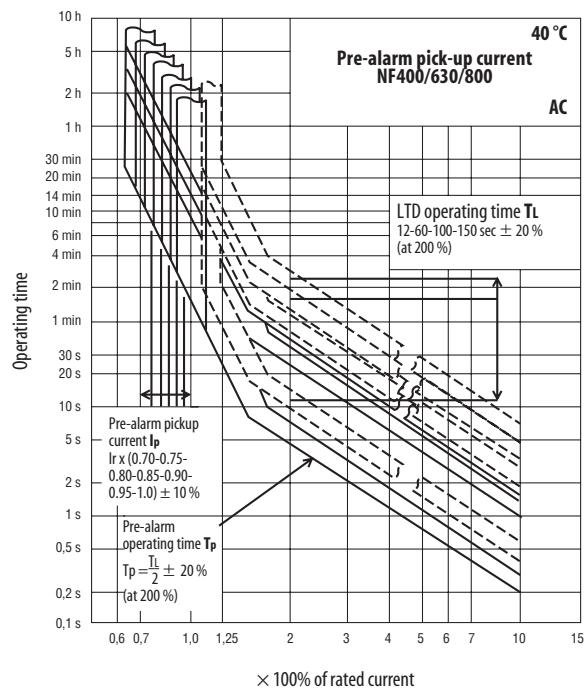
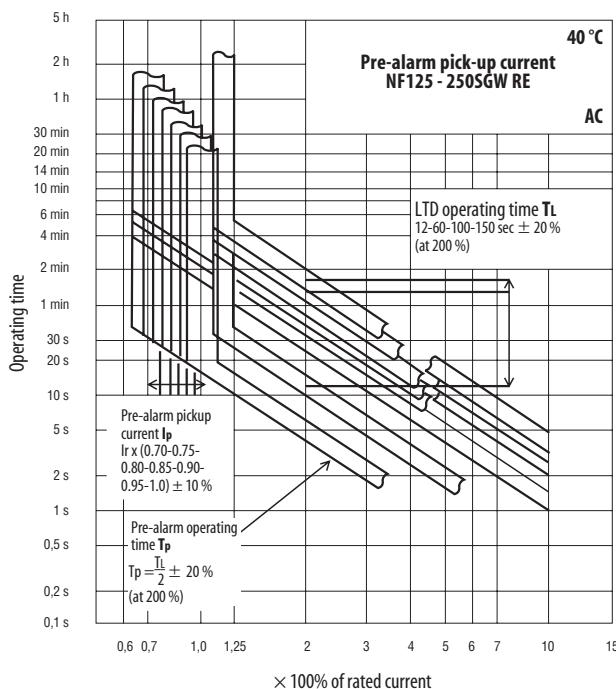


Installed on the panel



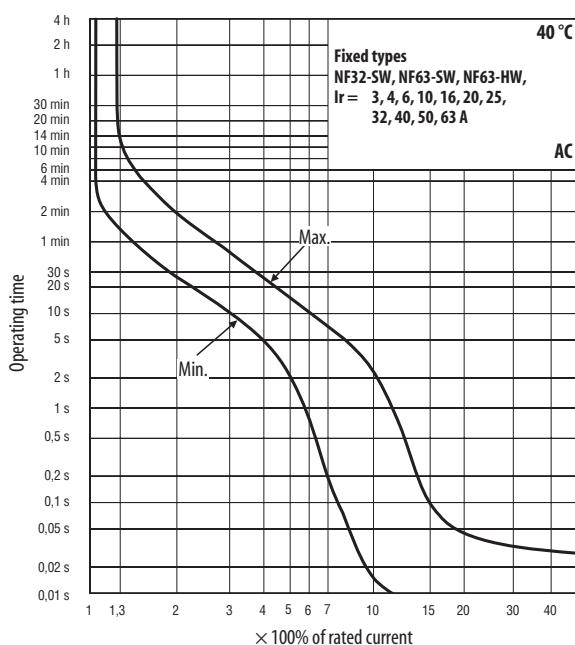
■ Pre-alarm Characteristics

Operation characteristics



■ NF32-SW, NF63-SW, NF63-HW

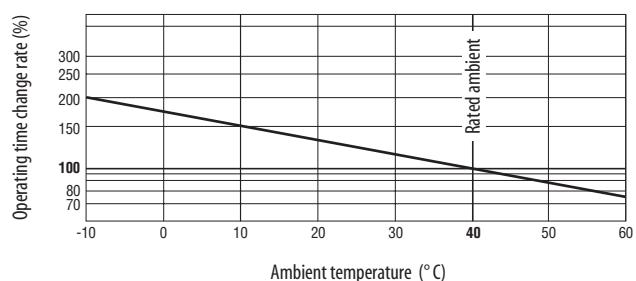
Operation characteristics



Temperature compensation characteristics

NF32-SW, NF63-SW, NF63-HW

Operating time change correction, regarding to rated ambient temperature



■ NF125-SGW RT, NF125-HGW RT, NF160-SGW RT, NF160-HGW RT, NF250-SGW RT, NF250-HGW RT

Operation characteristics

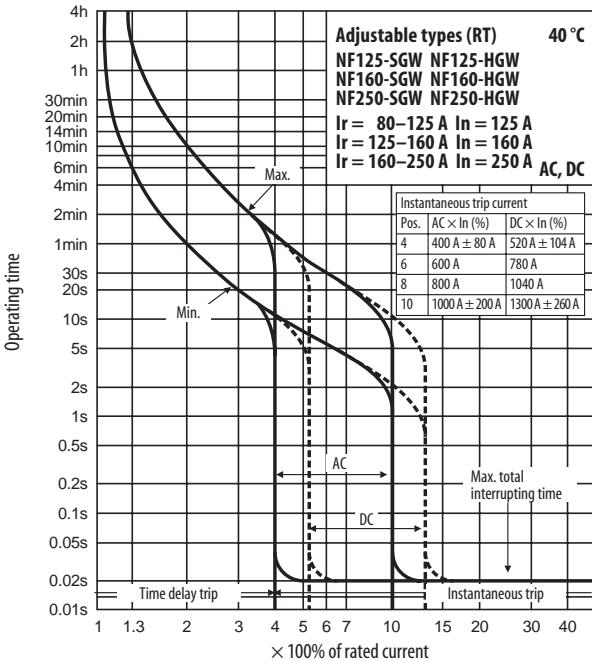
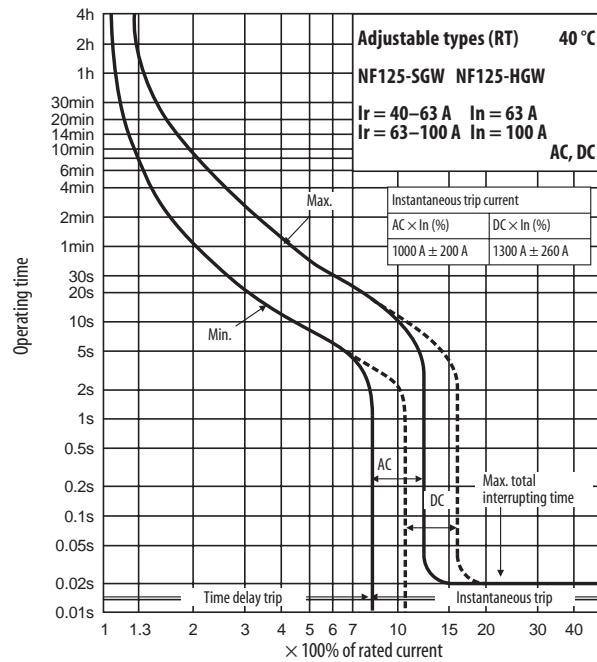
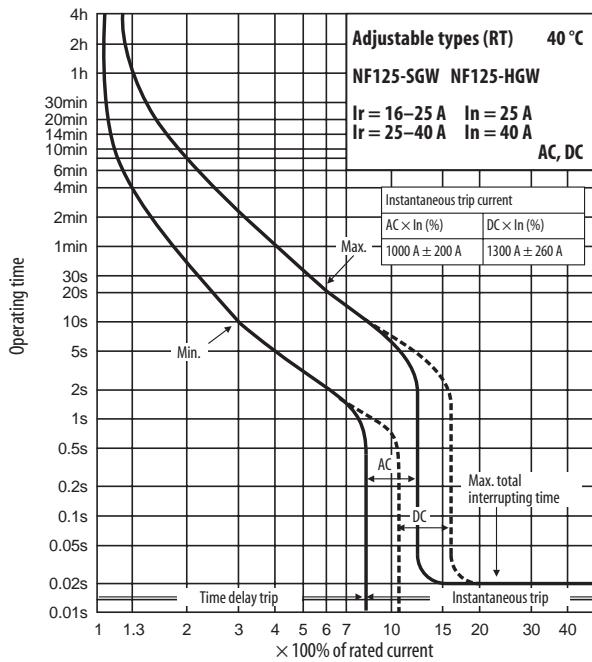
BASICS

SELECTOR

MODULES

MODULES

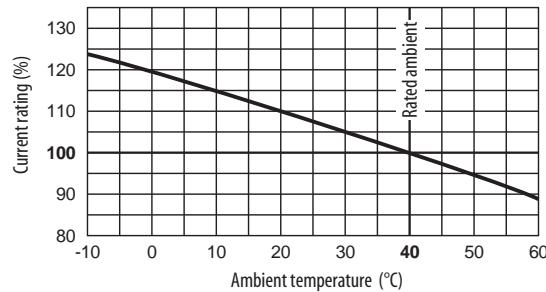
INFORMATION



Temperature compensation characteristics

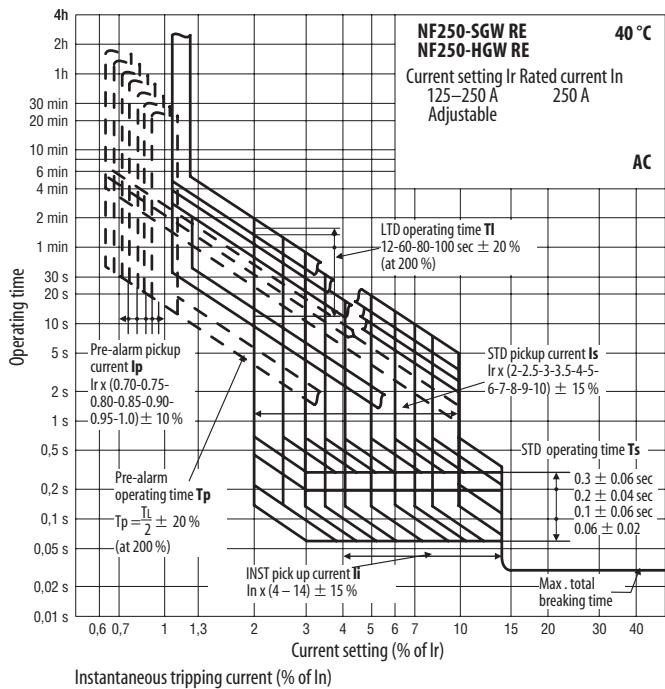
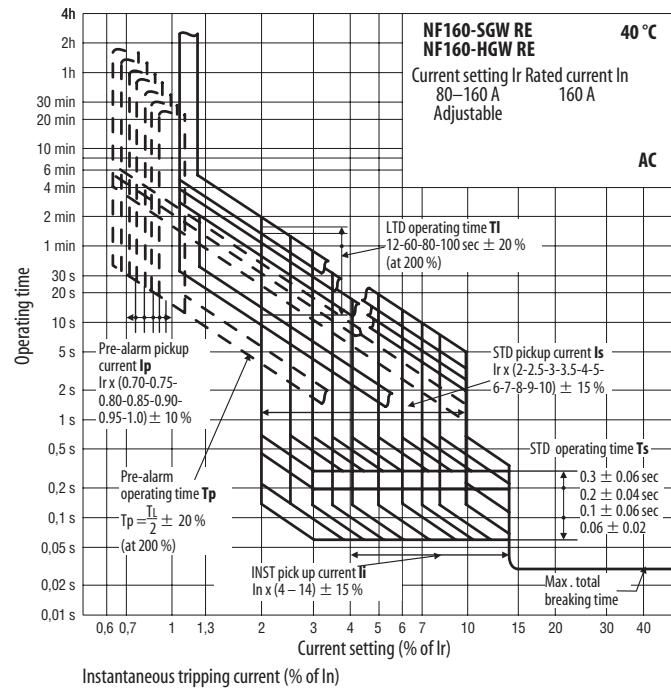
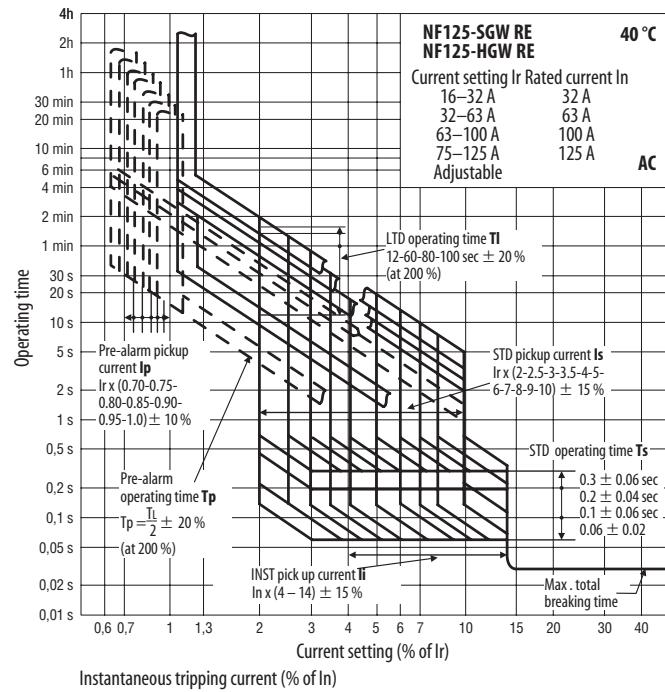
NF125-SGW RT, NF125-HGW RT,
NF160-SGW RT, NF160-HGW RT,
NF250-SGW RT, NF250-HGW RT

Current rating correction, regarding to rated ambient temperature



■ NF125-SGW RE, NF125-HGW RE, NF160-SGW RE, NF160-HGW RE, NF250-SGW RE, NF250-HGW RE

Operation characteristics

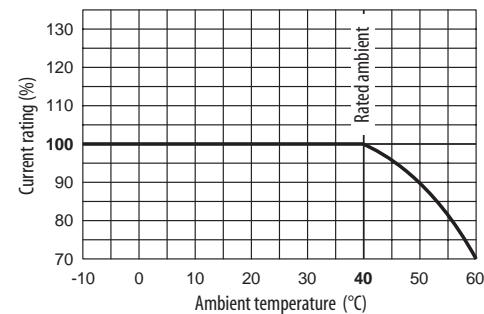


Temperature compensation characteristics

NF125-SGW RE, NF125-HGW RE,
NF160-SGW RE, NF160-HGW RE,
NF250-SGW RE, NF250-HGW RE



Current rating correction, regarding to rated ambient temperature



OPERATION CHARACTERISTICS

■ NF125-RGW RT, NF125-UGW RT, NF250-RGW RT, NF250-UGW RT

Operation characteristics

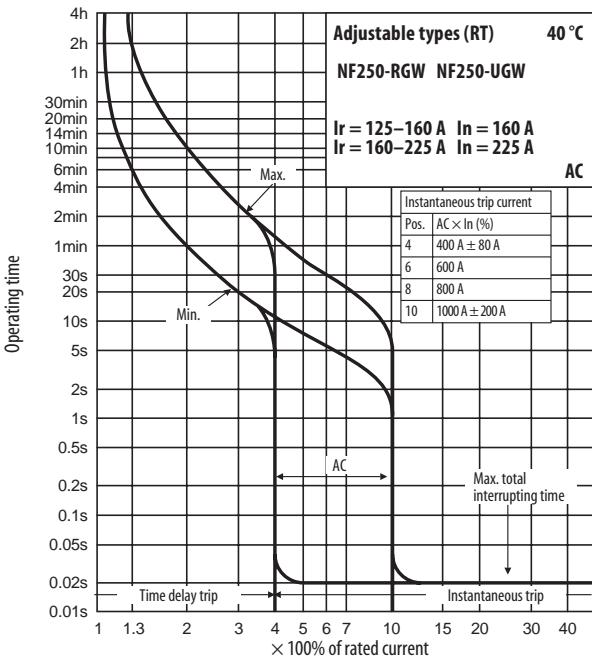
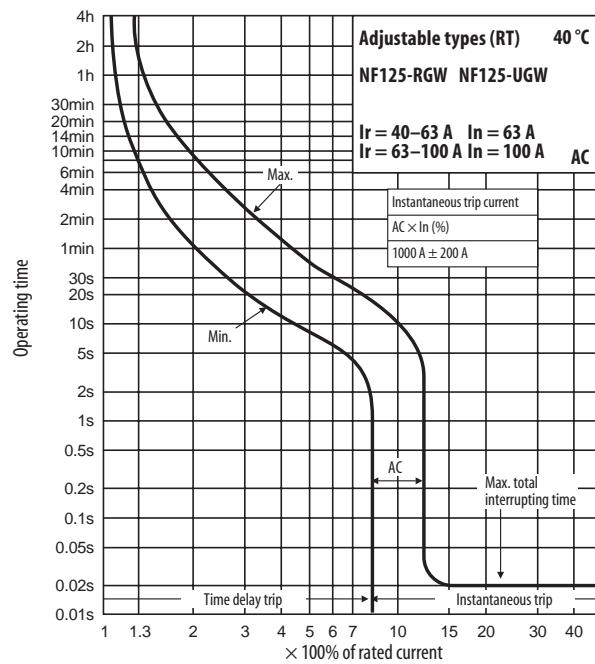
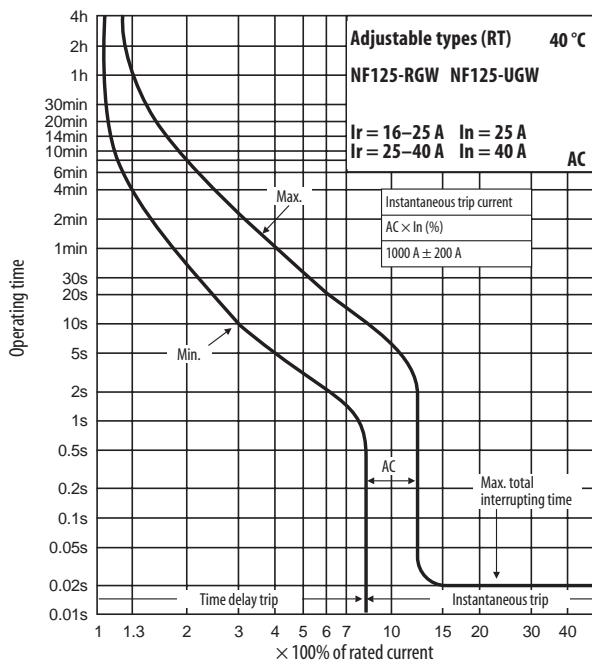
BASICS

SELECTOR

MODULES

MODULES

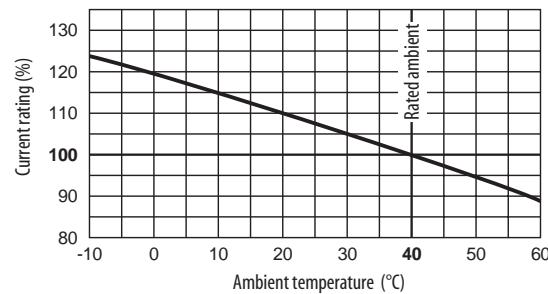
INDIVIDUAL



Temperature compensation characteristics

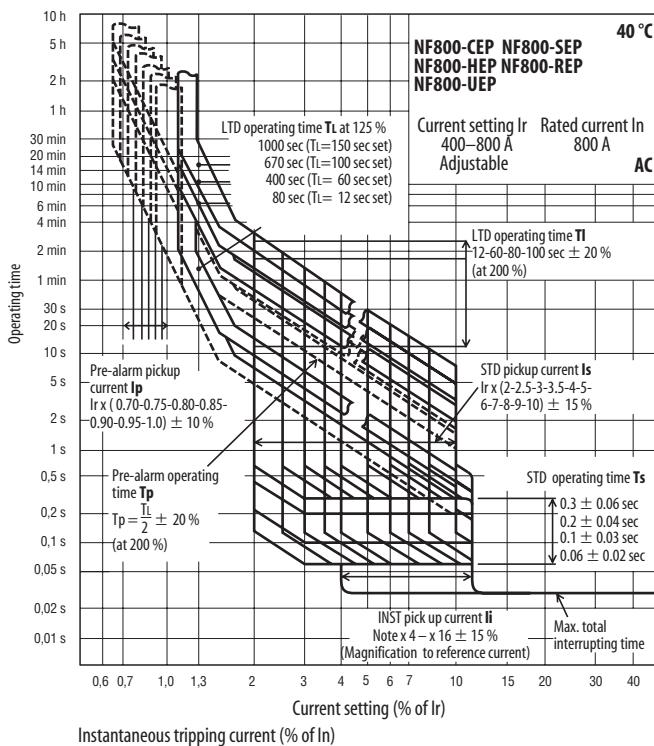
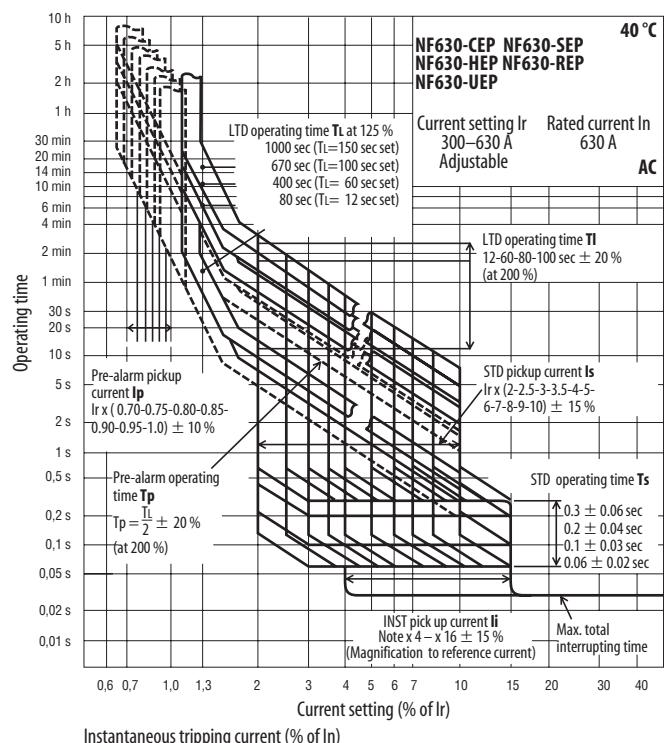
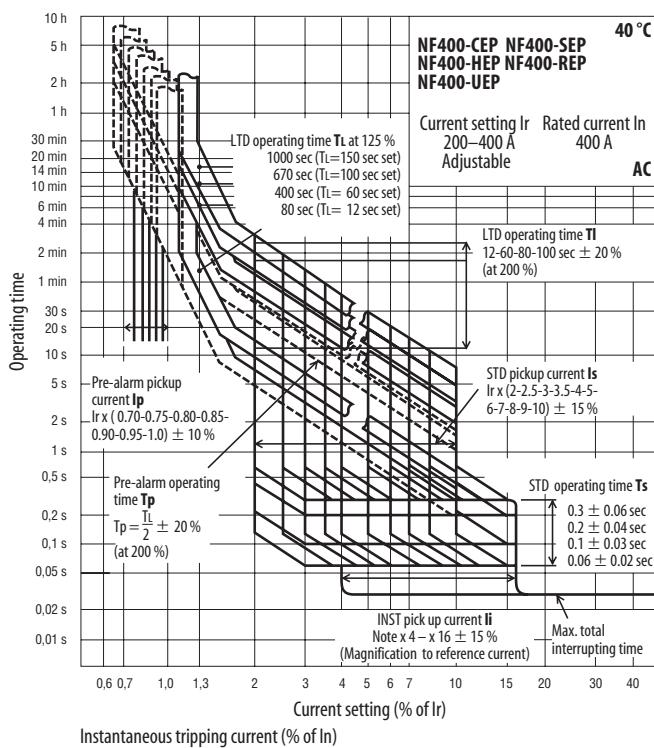
NF125-SGW RT, NF125-HGW RT,
NF160-SGW RT, NF160-HGW RT,
NF250-SGW RT, NF250-HGW RT

Current rating correction, regarding to rated ambient temperature



■ NF400-CEP/SEP/HEP/REP/UEP, NF630-CEP/SEP/HEP/REP/UEP, NF800-CEP/SEP/HEP/REP/UEP

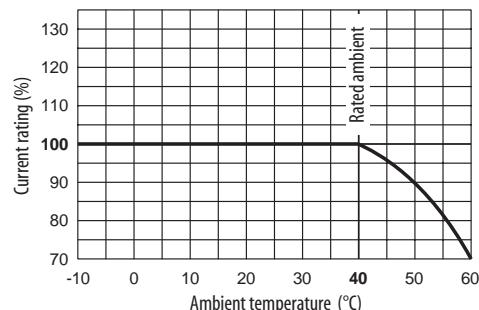
Operation characteristics



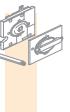
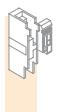
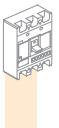
Temperature compensation characteristics

For all breakers on pages 47 and 48.

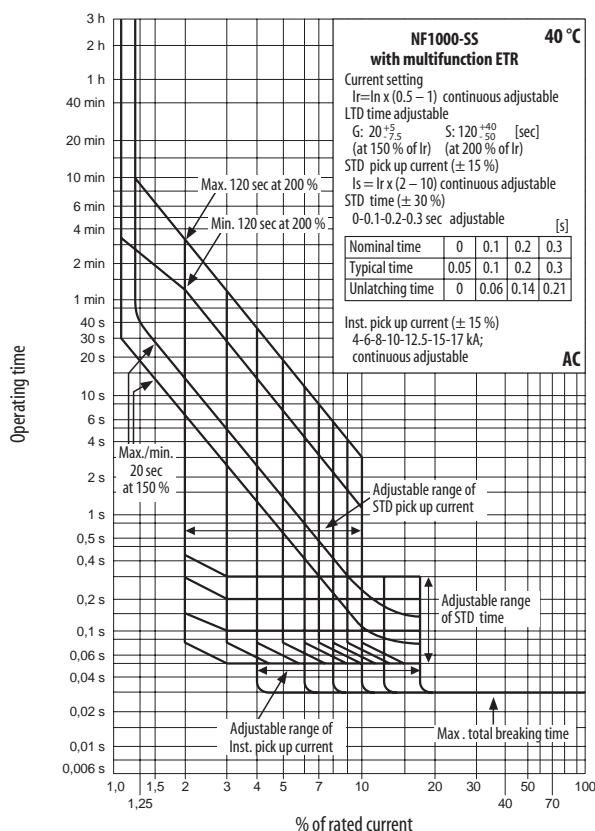
Current rating correction, regarding to rated ambient temperature



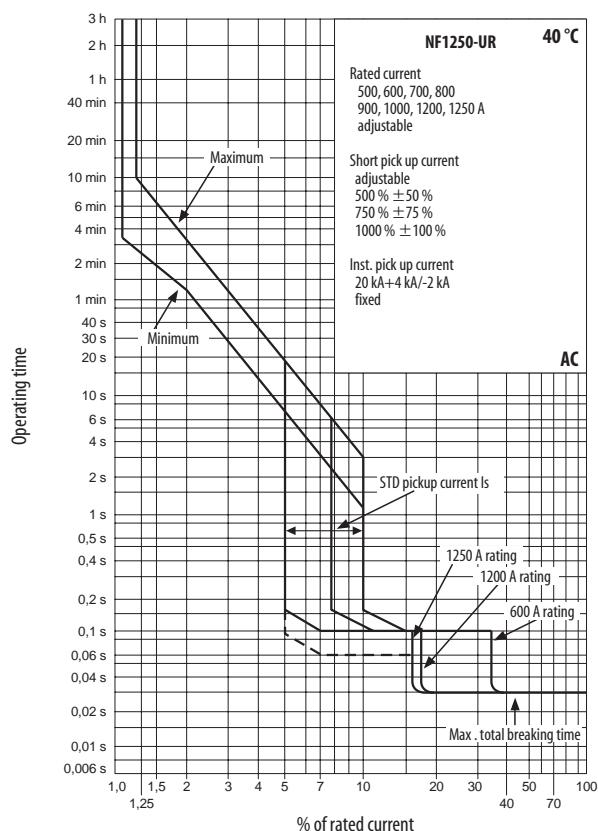
OPERATION CHARACTERISTICS



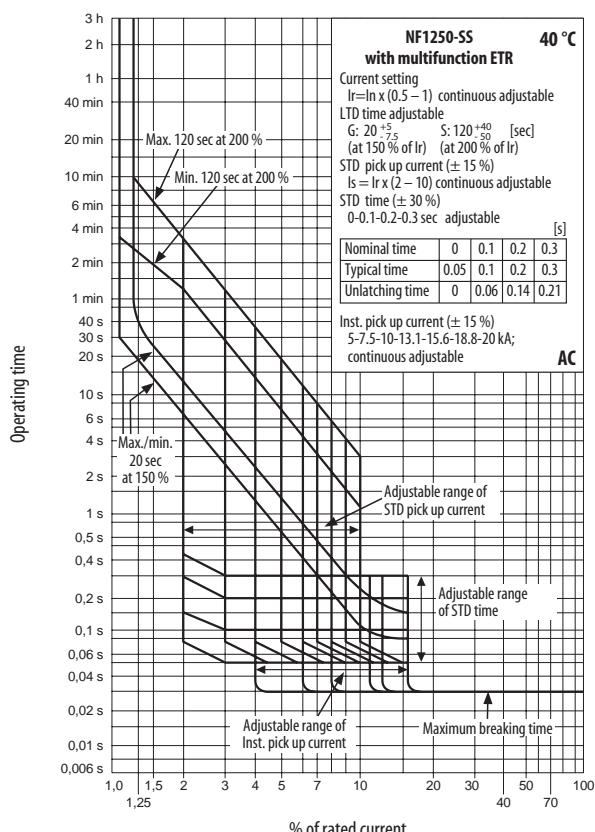
NF1000-SS



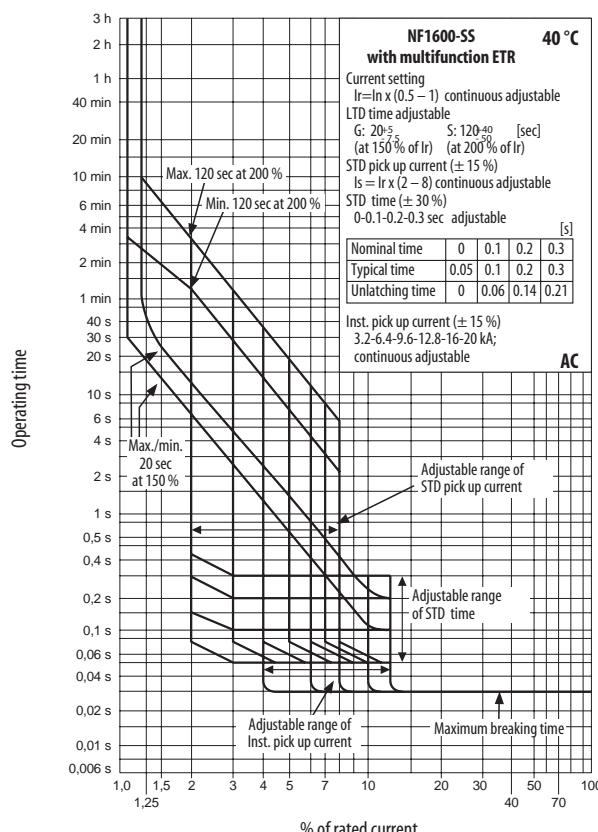
NF1250-UR



NF1250-SS

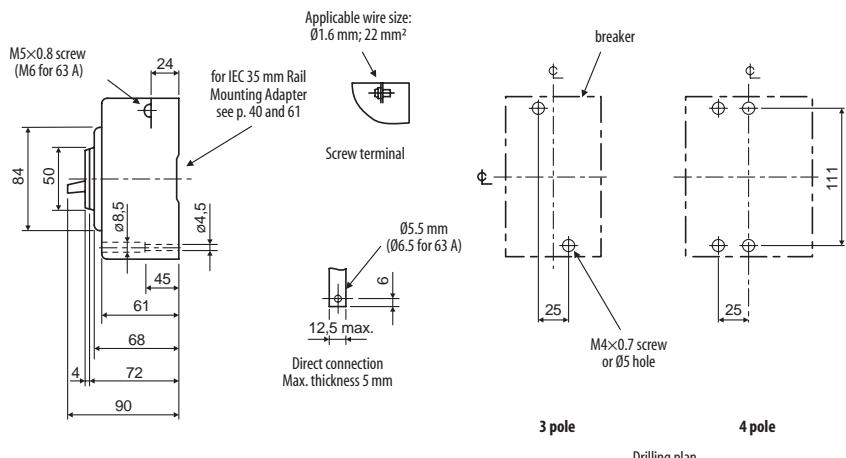
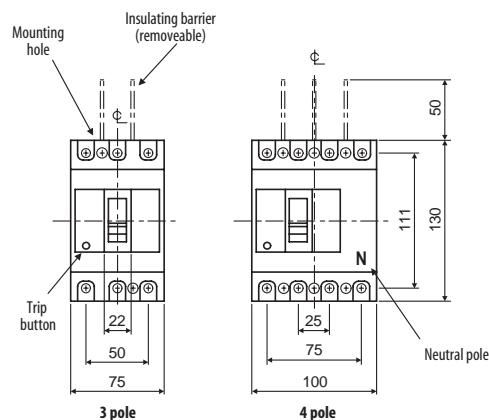


NF1600-SS

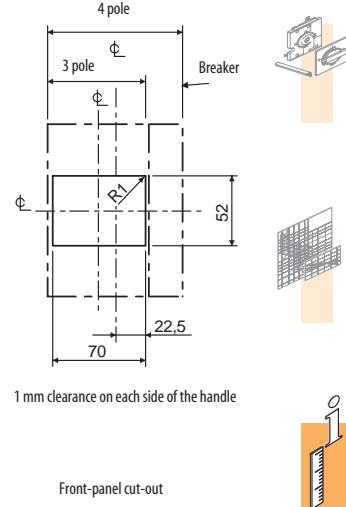
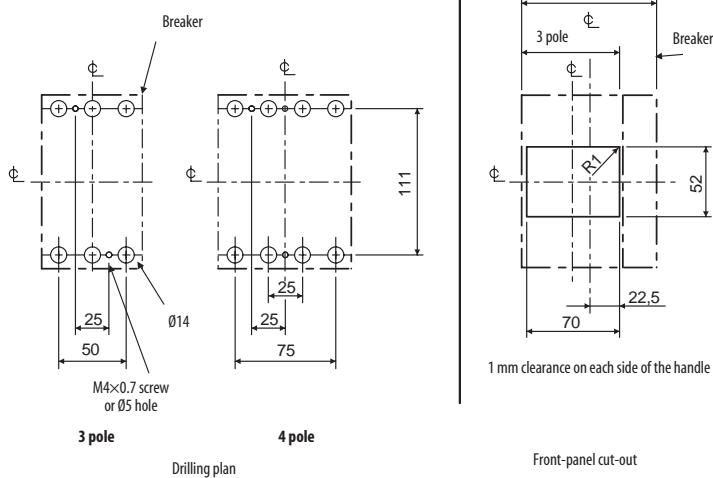
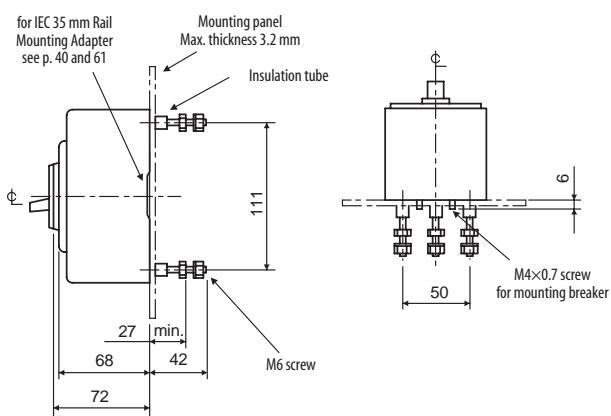


■ NF32-SW, NF63-SW, NF63-HW, DSN32-SW, DSN63-SW

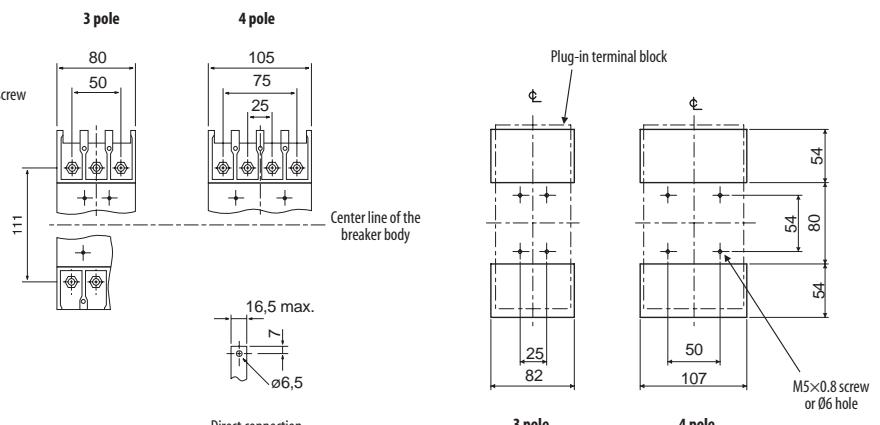
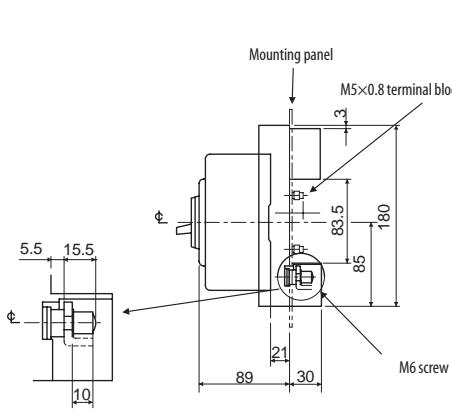
Front connection



Rear connection



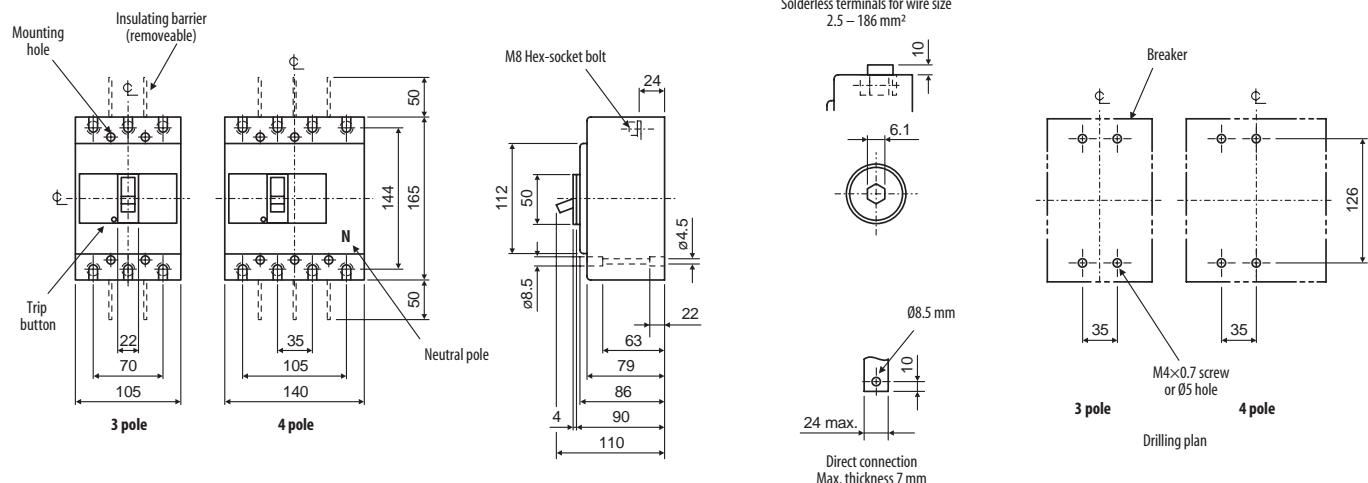
Plug-in



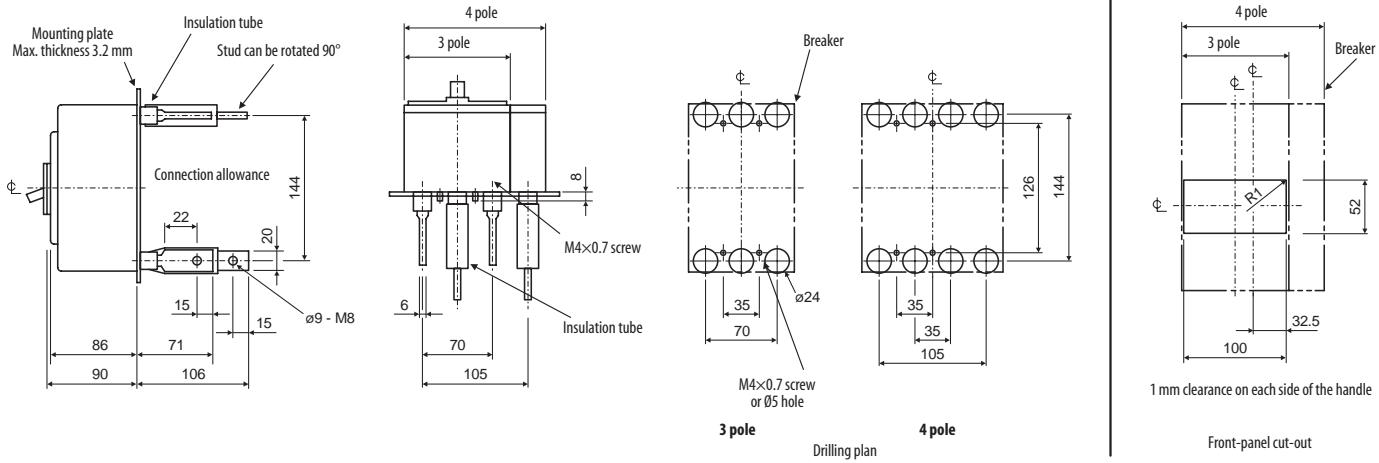
All dimensions in mm

■ NF125-SGW RE/RT, NF125-HGW RE/RT, NF160-SGW RE/RT, NF160-HGW RE/RT, NF250-SGW RE/RT, NF250-HGW RE/RT, DSN125-SGW, DSN160-SGW, DSN250-SGW

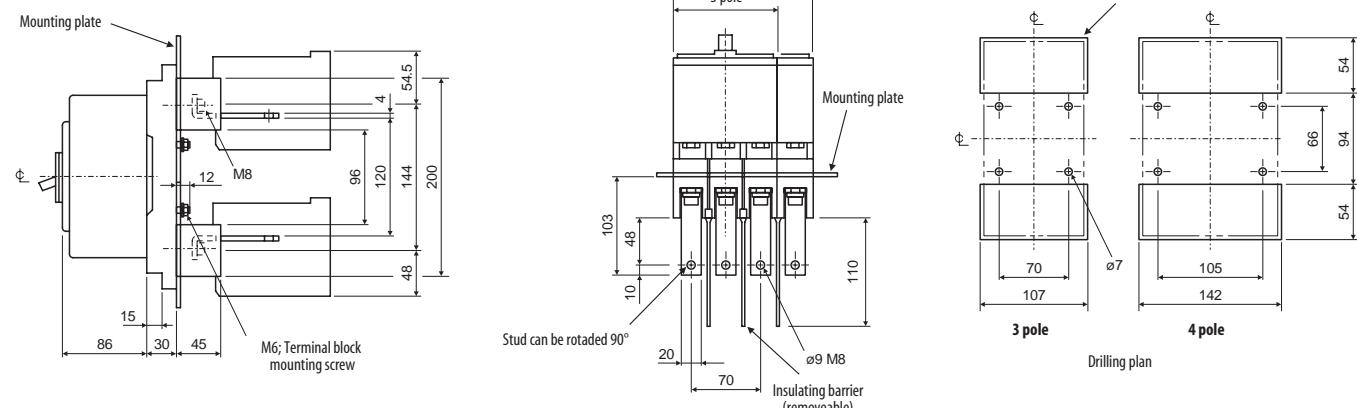
Front connection



Rear connection



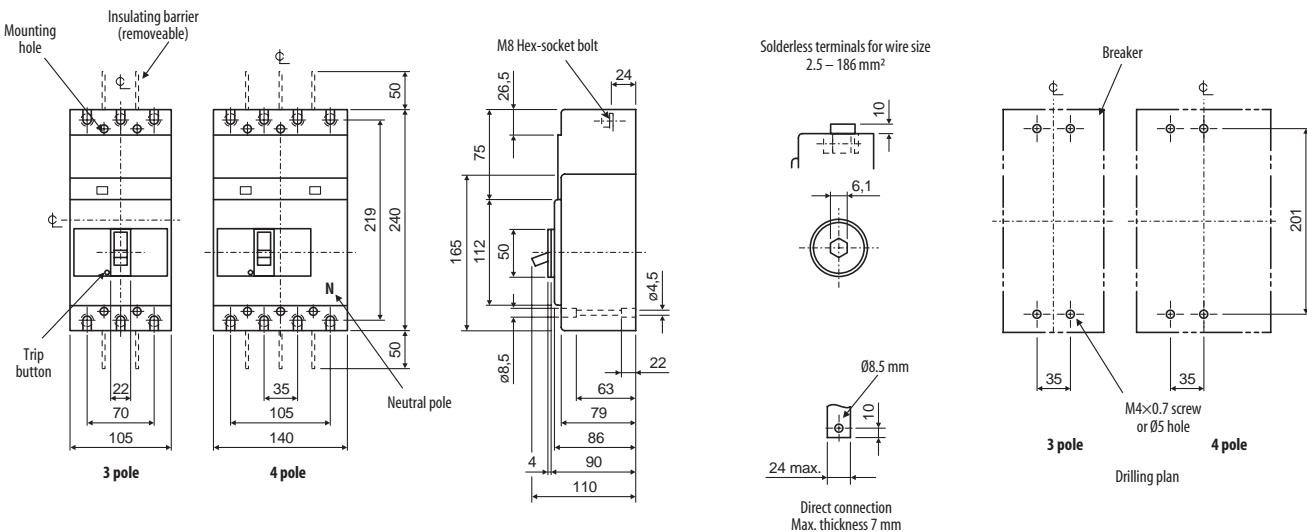
Plug-in



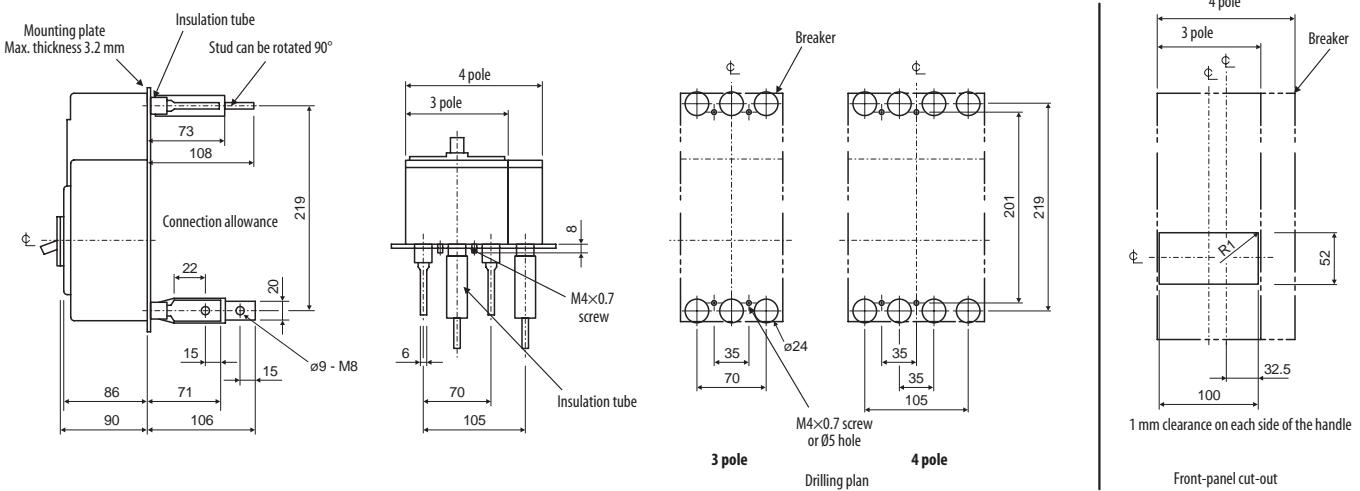
All dimensions in mm.

■ NF125-RGW RT, NF125-UGW RT, NF250-RGW RT, NF250-UGW RT

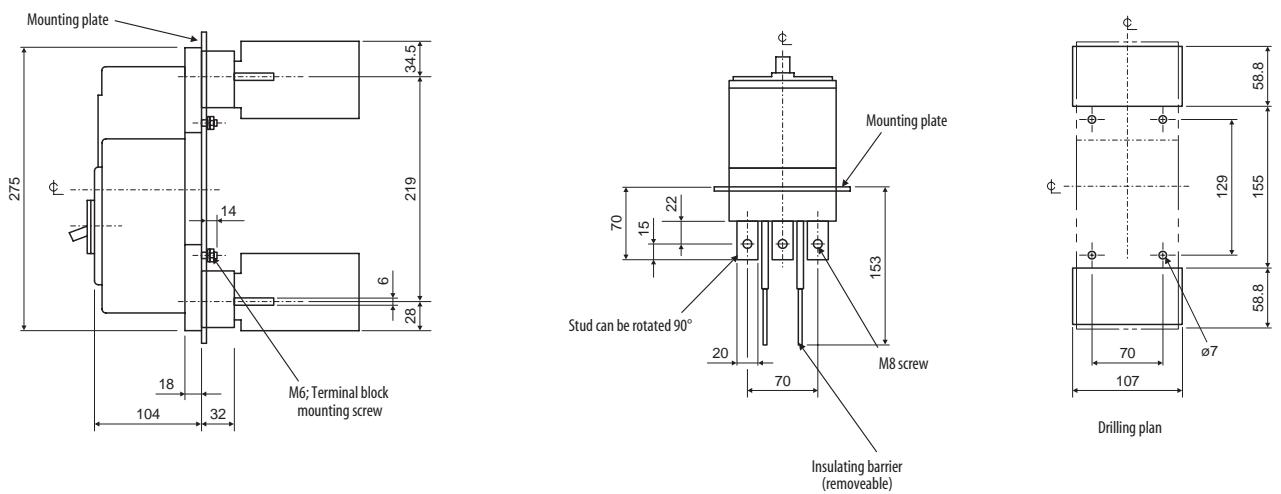
Front connection



Rear connection



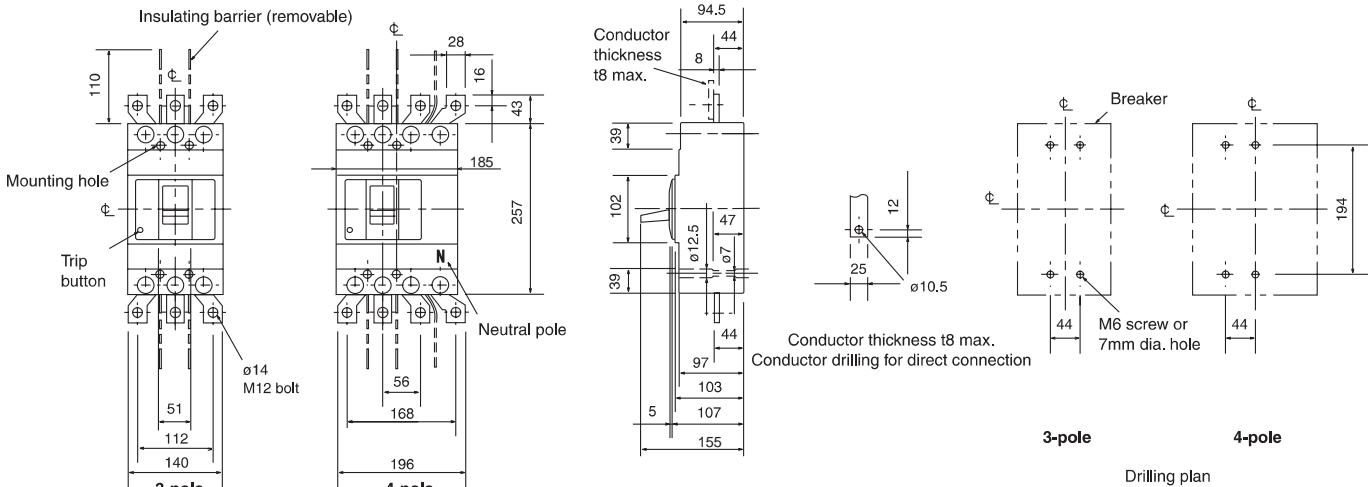
Plug-in



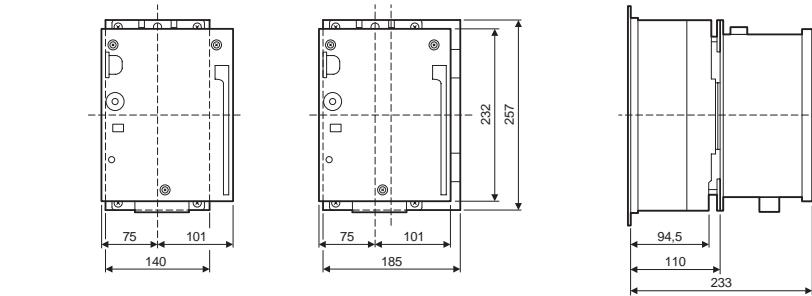
All dimensions in mm

■ NF400-CEP, NF400-SEP, NF400-HEP, NF400-REP, DSN400-SP

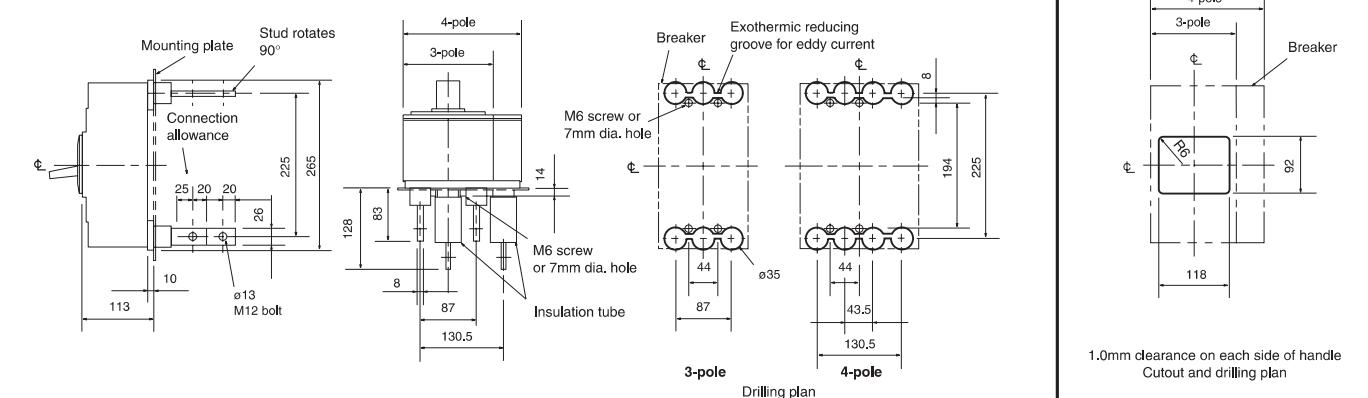
Front connection



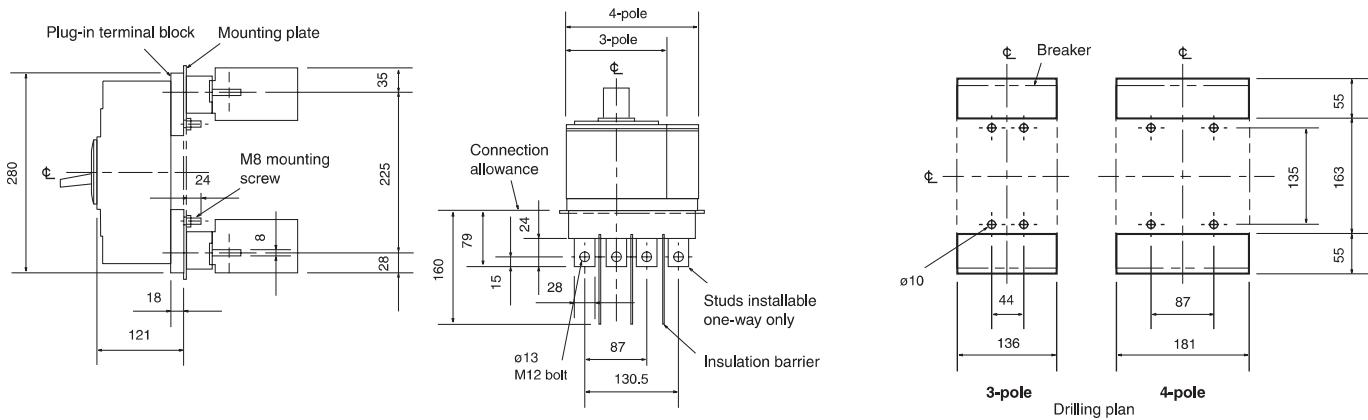
Front connection with mounted motor drive MDS



Rear connection



Plug-in

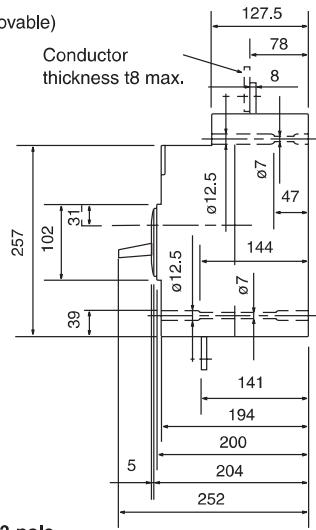
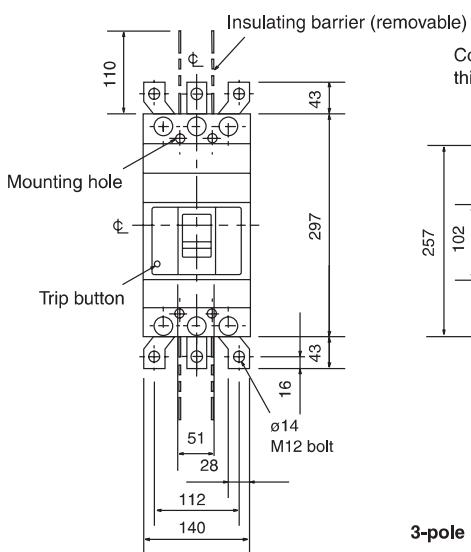


All dimensions in mm

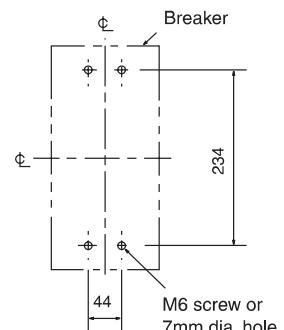
■ NF400-UEP (3-pole type)

Remark: 4-pole type please see page 55.

Front connection

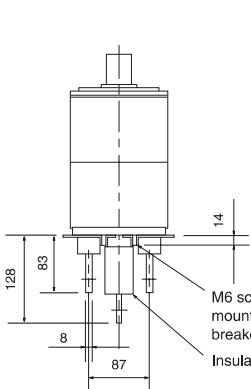
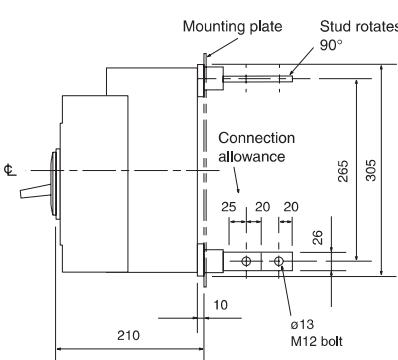


Conductor thickness t8 max.
Conductor drilling for direct connection



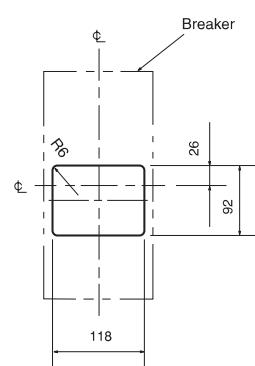
3-pole Drilling plan

Rear connection



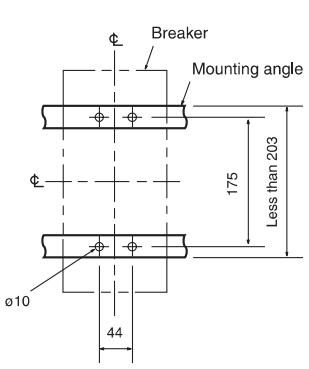
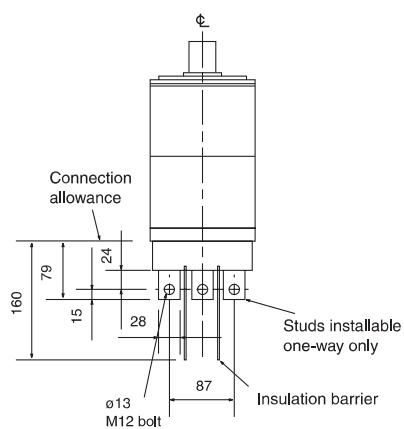
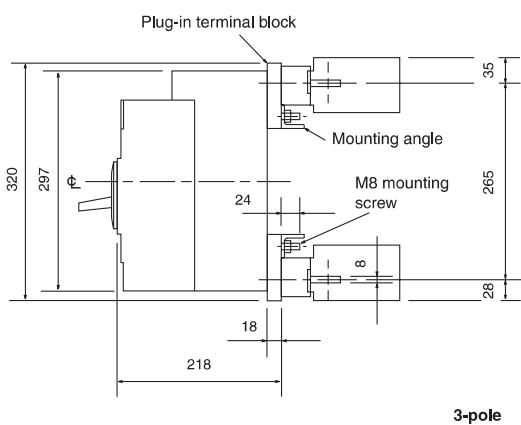
The diagram illustrates a mechanical assembly, likely a breaker component. It features two rows of circular elements, possibly contacts or washers, arranged horizontally. The top row has three elements, and the bottom row has four. Vertical dashed lines indicate the centers of these elements. A central vertical axis is labeled with a dimension of 87. To the left, a label 'hole' points to a vertical line. Above the top row, a label 'Breaker' is positioned above the text 'Exothermic reducing groove for eddy current'. Below the top row, a dimension of 44 is shown. To the right of the bottom row, a dimension of 35 is labeled as 'ø35'. On the far right, two vertical dimensions are given: 234 above a horizontal line and 265 below it.

Drilling plan



1.0mm clearance on each side of handle
Cutout and drilling plan

Plug-in



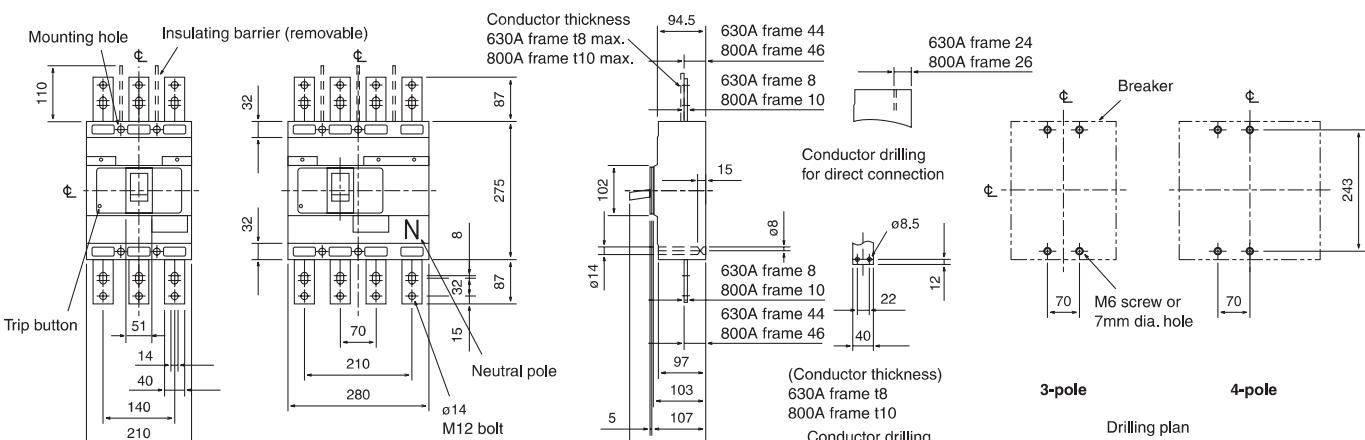
Drilling plan

All dimensions in mm

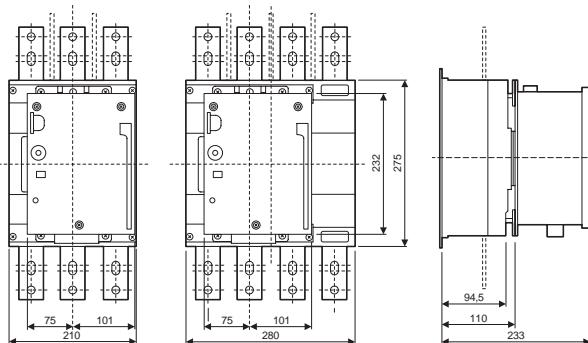
DIMENSIONS

■ NF630-CEP, NF630-SEP, NF630-HEP, NF630-REP, NF800-CEP, NF800-SEP, NF800-HEP, NF800-REP, DSN630-SP, DSN800-SP

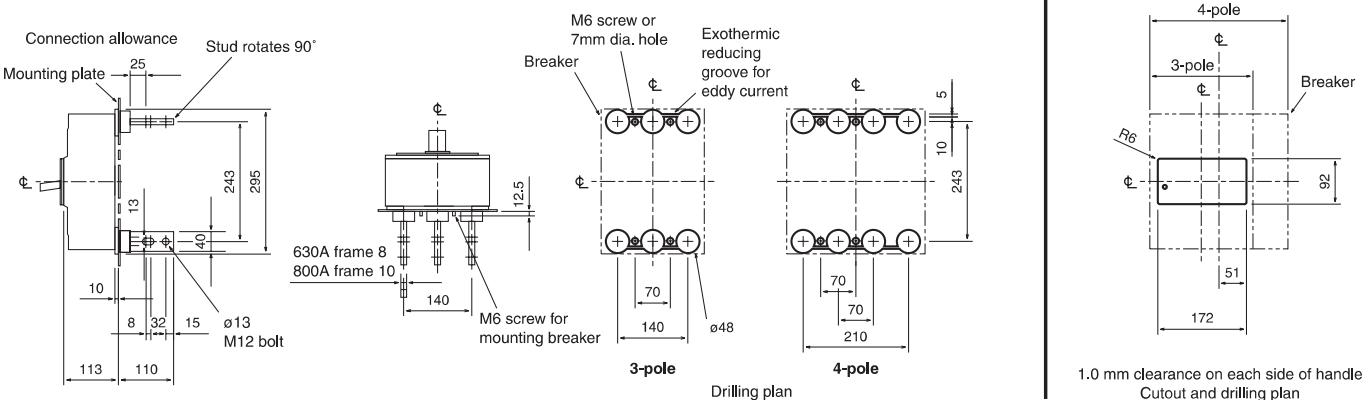
Front connection



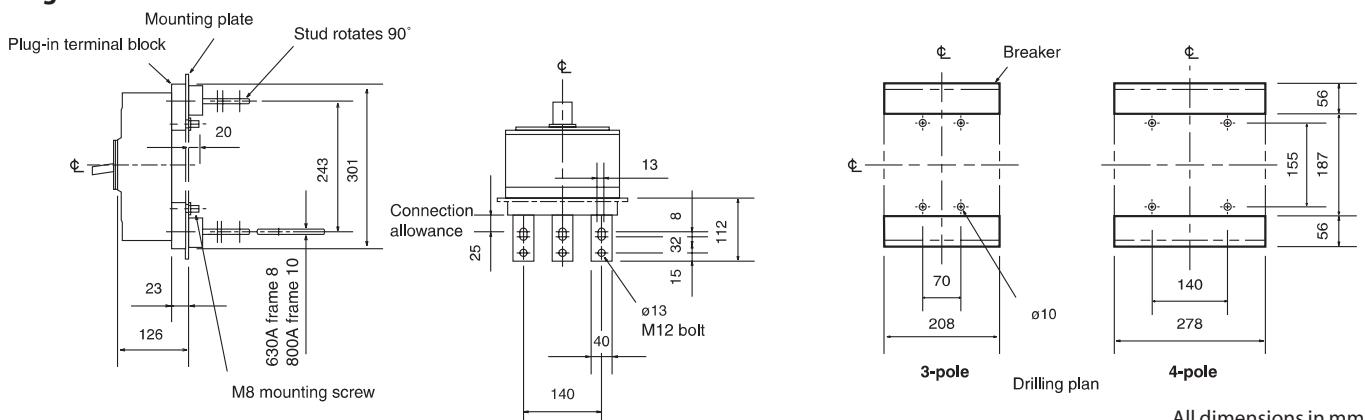
Front connection with mounted motor drive MDS



Rear connection

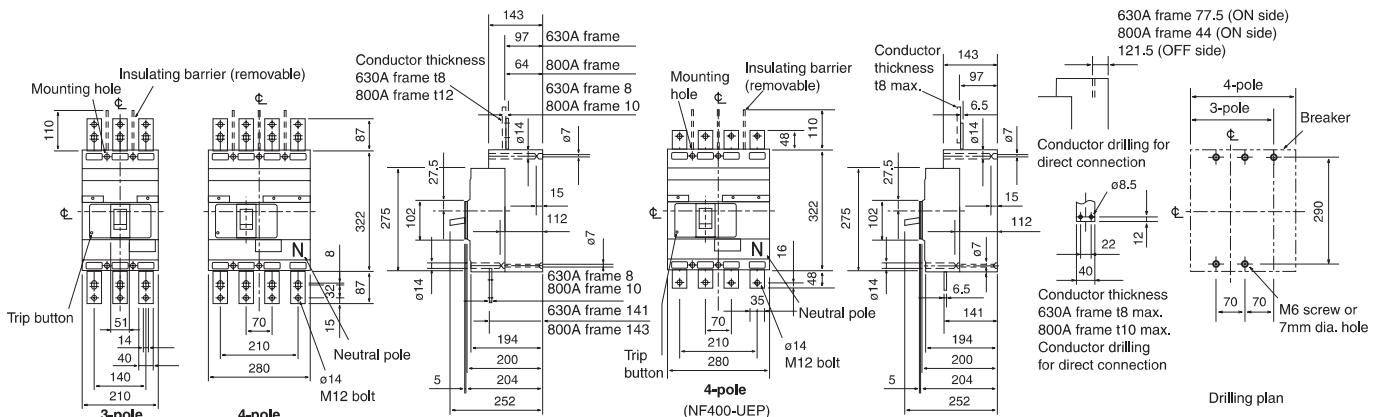


Plug-in

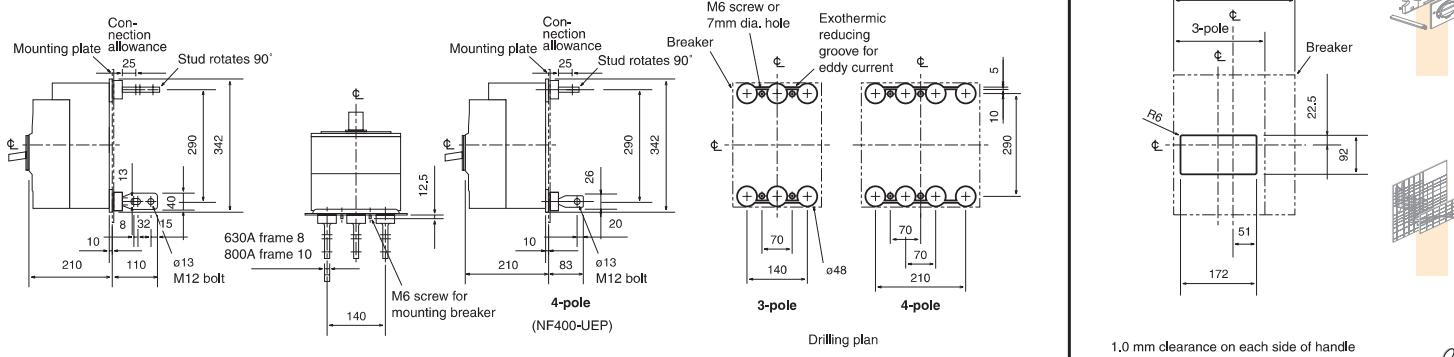


■ NF400-UEP (4-pole type), NF630-UEP, NF800-UEP

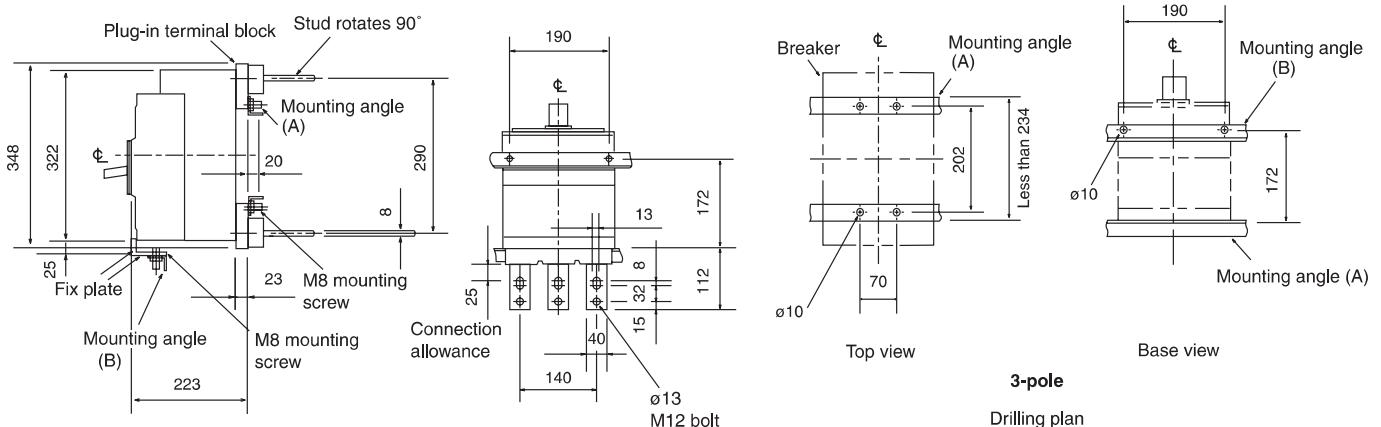
Front connection



Rear connection



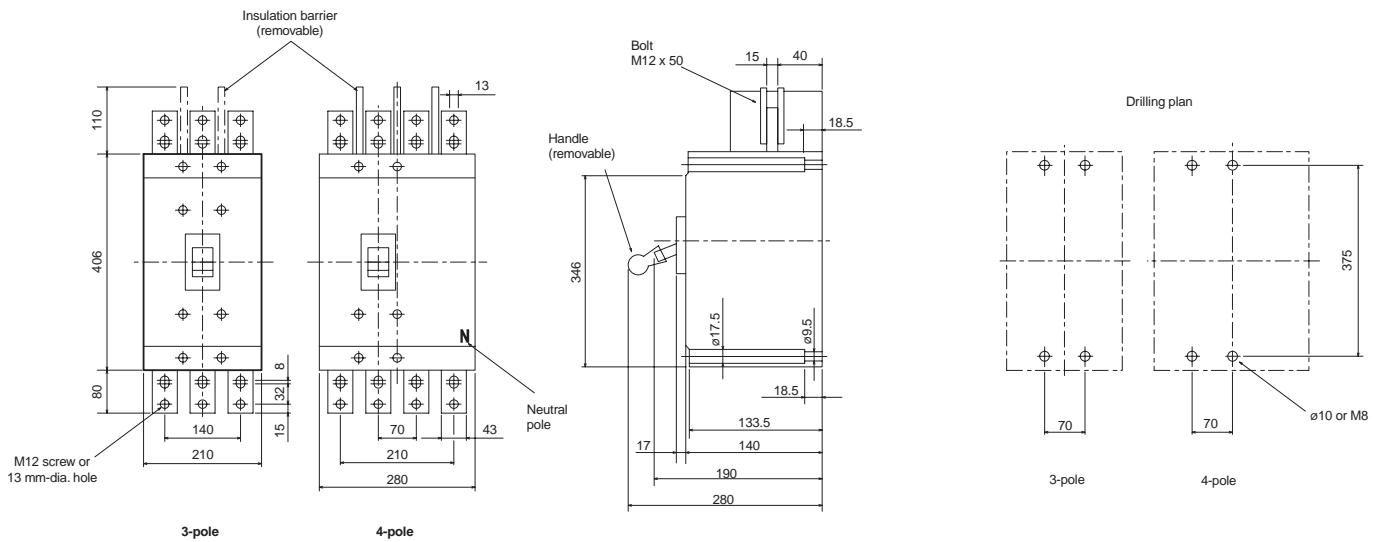
Plug-in (except for NF800-UEP)



All dimensions in mm.

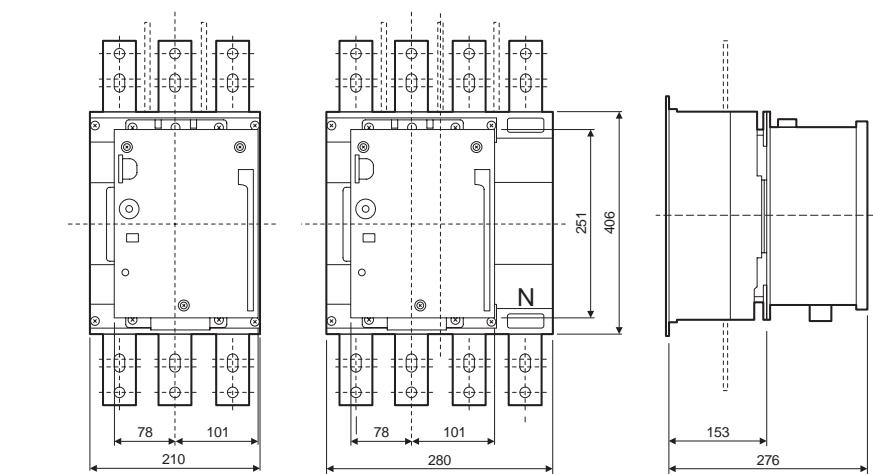
■ NF1000-SS, NF1250-SS, DSN1000-SS, DSN1250-SS

Front connection

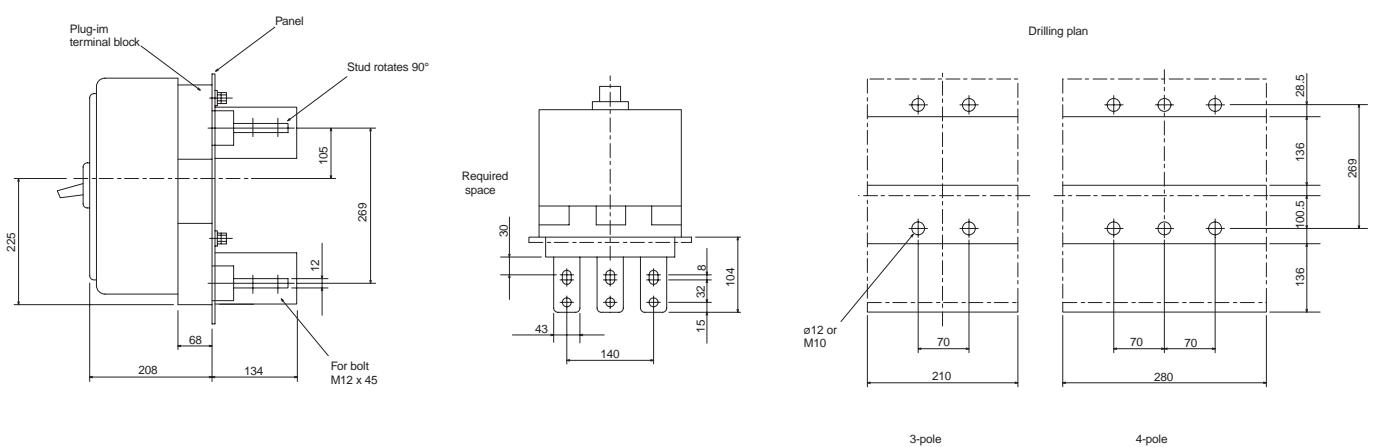


Rear connection on request.

Front connection with mounted motor drive MDS



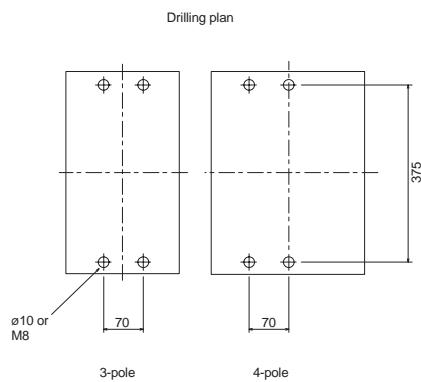
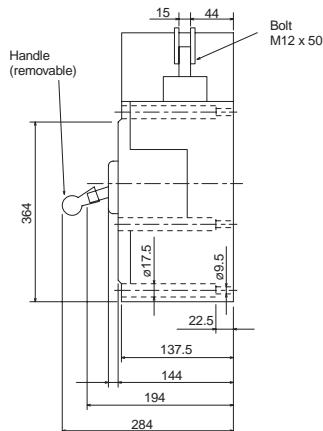
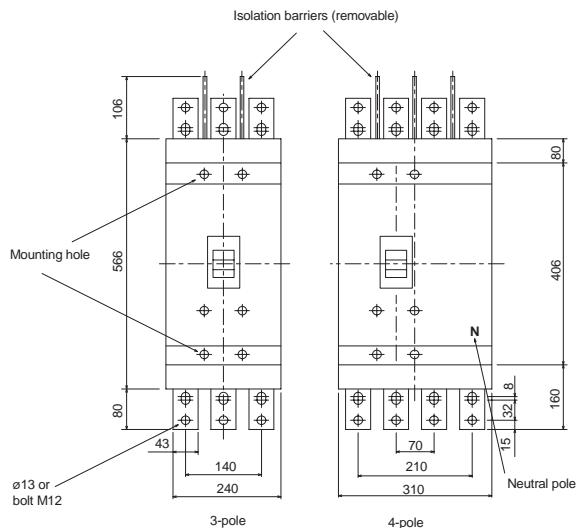
Plug-in



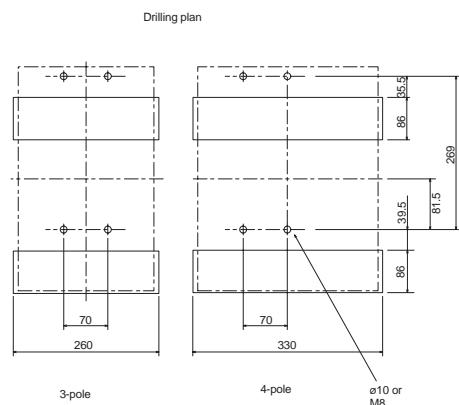
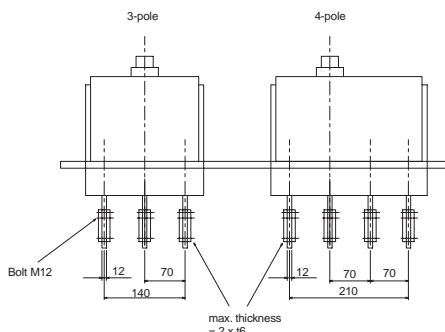
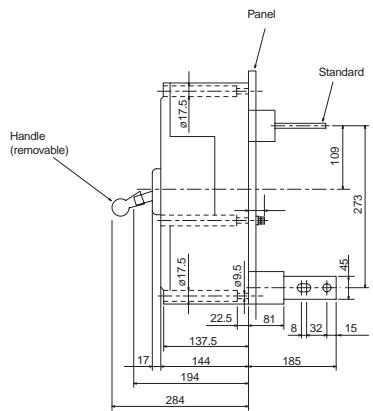
All dimensions in mm

■ NF1250-UR

Front connection

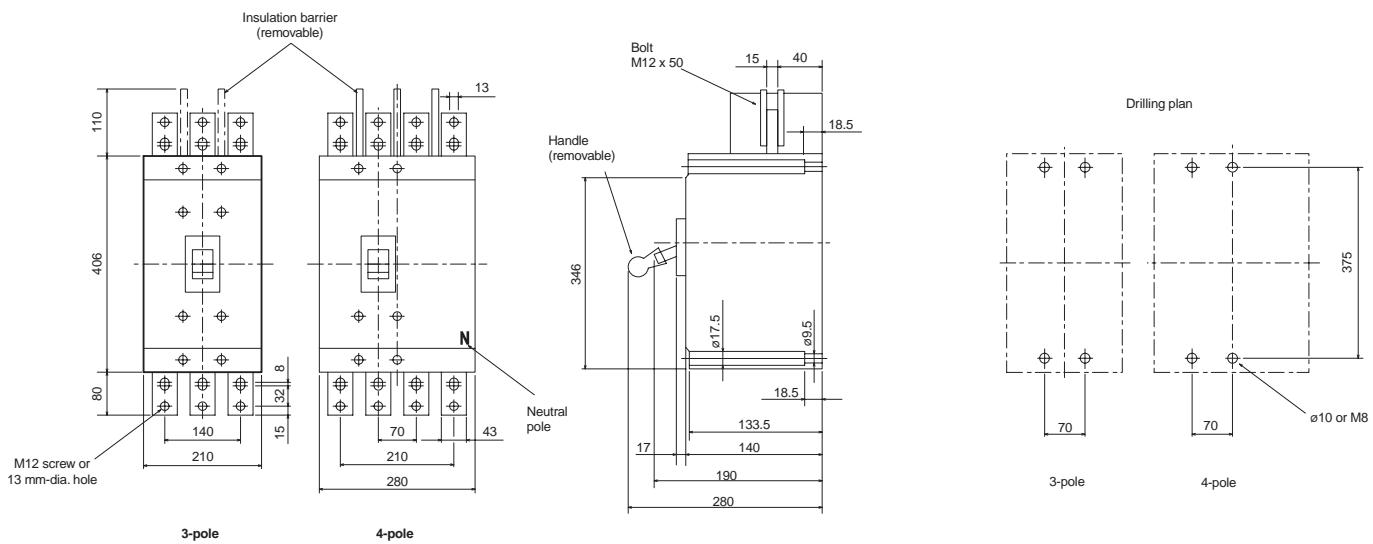


Rear connection



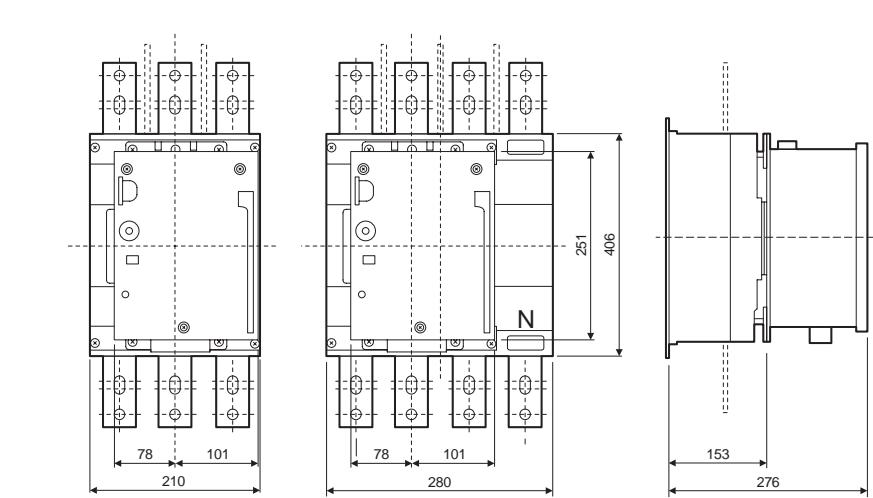
■ NF1000-SS, NF1250-SS, DSN1000-SS, DSN1250-SS

Front connection

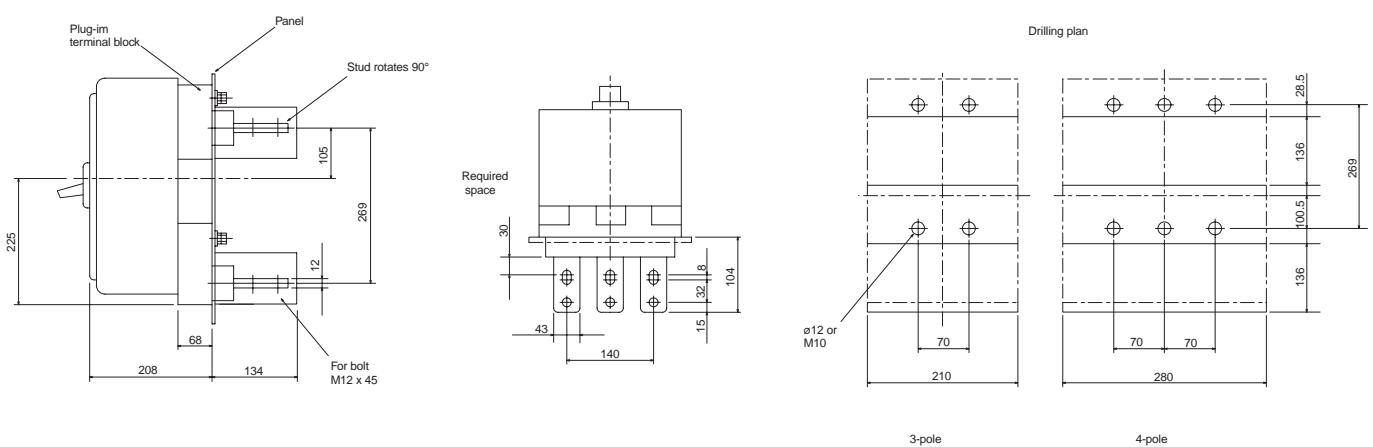


Rear connection on request.

Front connection with mounted motor drive MDS



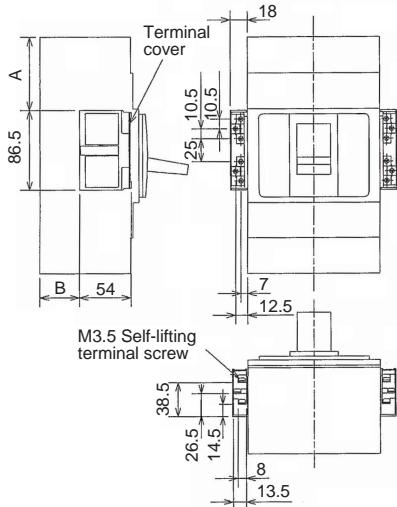
Plug-in



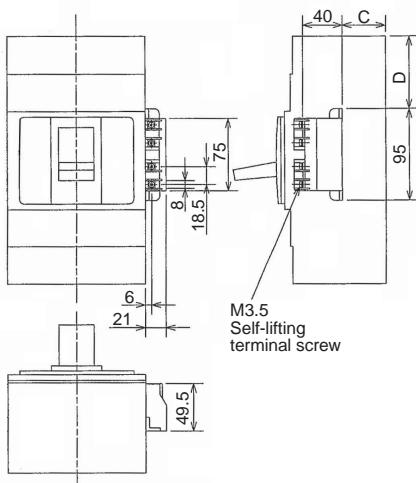
All dimensions in mm

■ Lead-Wire Terminal Block SLT

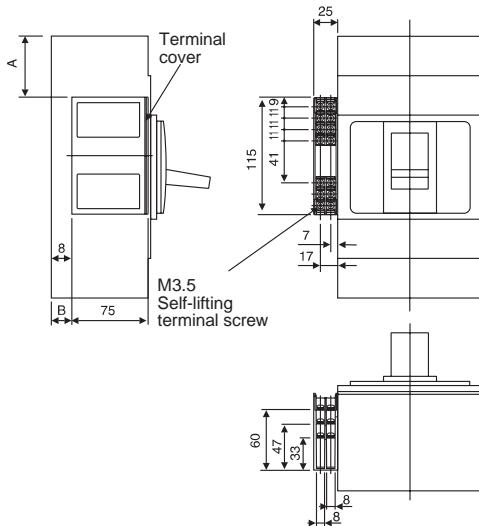
**AL, AX, ALAX with 1, 2 W (left-side mounted)
SHT (right-side mounted)**



UVT (right-side mounted)



AL3, AX3, AX4, AL2AX2 with 3 and 4 W



Dimensions for AL, AX, SHT and UVT

Type	A	B	C	D
NF32-SW, NF63-SW/HW	17.5	7	4	13
NF125-SGW/HGW	25	25	22	20.5
NF125-RGW/UGW	100	25	22	95.5
NF160-SGW/HGW	25	25	22	20.5
NF250-SGW/HGW	25	25	22	20.5
NF250-RGW/UGW	100	25	22	95.5
NF400-CEP/SEP/HEP/REP	79.5	41	44	75
NF400-UEP (3 P)	119.5	138	141	115
NF630-CEP/SEP/HEP/REP, NF800-CEP/SEP/HEP/REP	88.5	41	44	84
NF400-UEP (4 P), NF630-UEP, NF800-UEP	135.5	138	141	131
NF1000-SS NF1250-SS NF1600-SS	173	62.5	59.5	168.5

Tightening torque for terminal screws M3.5: 0.9–1.2 Nm
AL, AX and SHT are vertical lead-wire terminal block SHT.
UVT is horizontal lead-wire terminal block LT.



Dimensions for AL3, AX3, AX4, AL2AX2

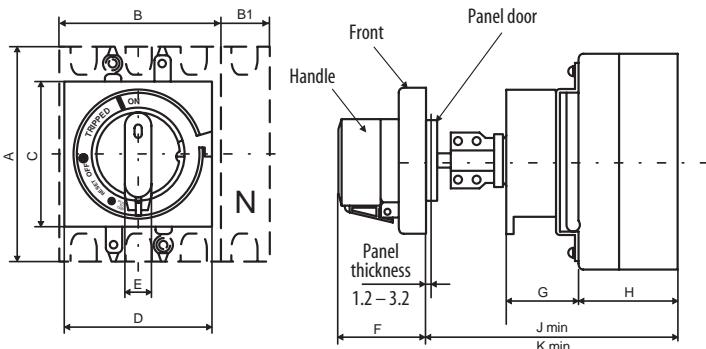
Breaker type	A	B
NF400-SEP	20	60
NF400-UEP (3 P)	117	100
NF630-CEP/SEP/HEP/REP, NF800-CEP/SEP/HEP/REP	20	69
NF400-UEP (4 P), NF630-UEP, NF800-UEP	117	116

Tightening torque for terminal screws M3.5: 0.9–1.2 Nm

All dimensions in mm

■ External Operating Handle – V Type

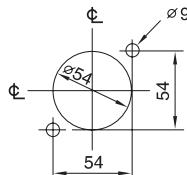
External dimensions



Drilling plan

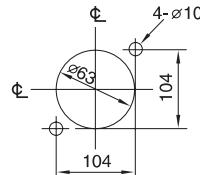
NF32-250

Center of breaker's handle



NF400-1600

Center of breaker's handle

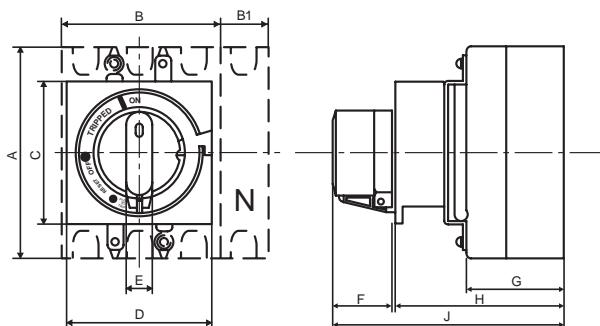


Type	Breaker type	Dimensions [mm]											
		A	B/B1	C	D	E	F	G	H	J	K		
V05SW(E)N	NF32-63	130	75/100	90	90	16	54	44	61	125	—		
V2SGW(E)N	NF125-250-SGW/HGW	165	105/140	90	90	16	54	46	79	172	536		
V2GUW(E)N	NF125/250-RGW/UGW	240	105/140	More details on request.									
V4SP(E)	NF400	257	140/196	140	140	25	62	76	97	217	539		
V6SP(E)	NF630-800	275	210/280	140	140	25	62	76	97	217	539		
V101(E)	NF1000-1600	406	210/280	176	210	—	62	56	140	275	562		

More details on request.

■ External Operating Handle – R Type

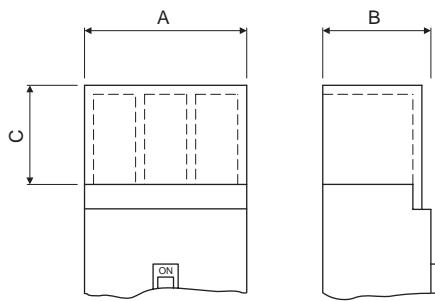
External dimensions



Type	Breaker type	Dimensions [mm]										
		A	B/B1	C	D	E	F	G	H	J		
R2GSW(E)N	NF125-250-SGW/HGW	165	105/140	88	88	16	37	79	125	162		
R2GUW(E)N	NF125/250-RGW/UGW	240	105/140	88	88	16	37	79	125	162		
R4SP(E)	NF400	257	140/196	128	140	25	43	97	174	218		
R6SP(E)	NF630-800	275	210/280	128	140	25	43	97	174	218		
R101(E)	NF1000-1600	406	210/280	176	210	—	62	140	196	246		

More details on request.

■ Terminal Covers



Small terminal covers TCS

Type	A	B	C
TCS-05SW3W	75	65.5	5
TCS-05SW4W	100	65.5	5
TCS-2GSW3W	105	84	6.5
TCS-2GSW4W	140	84	6.5

Large terminal covers TCL/TCN

Type	A	B	C
TCL-05SW3W	75	65.5	25
TCL-05SW4W	100	65.5	25
TCL-2GSW3W	105	84	40
TCL-2GSW4W	140	84	40
TCL-4SP3W	171	99.5	110
TCL-4SP3	171	99.5	110
TCL-4SP4	240	104.5	110
TCL-6SP3	224	103.5	155
TCL-6SP4	294	103.5	155
TCN-12SS3	220	150	139
TCN-12SS4	290	150	139

Large terminal covers TTC, transparent

Type	A	B	C
TTC-2GSW3	105	84	6.5
TTC-2GSW4	140	84	6.5

Terminal covers BTC

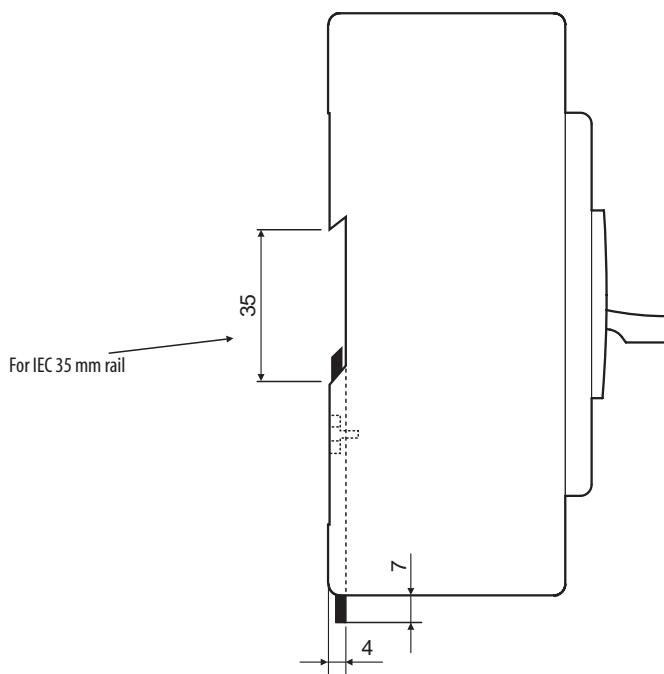
Type	A	B	C
BTC-05SW3W	75	65.5	5
BTC-05SW4W	100	65.5	5
BTC-2GSW3W	105	84	6.5
BTC-2GSW4W	140	84	6.5
BTC-4SP3W	On request		
BTC-4SP4	On request		
BTC-6SP3	On request		
BTC-6SP4	On request		

Terminal covers PTC

Type	A	B	C
PTC-05SW3W	75	65.5	6.5
PTC-05SW4W	100	65.5	6.5
PTC-2GSW3W	105	84	6.5
PTC-2GSW4W	140	84	6.5

More details on request.

■ Adapter for IEC 35 mm Rail



All dimensions in mm

ORDER FORM

MITSUBISHI ELECTRIC EUROPE B.V.
Industrial Automation
Gothaer Str. 8
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For your order please exclusively use the item names and order numbers (art. no.) specified in this catalogue.

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