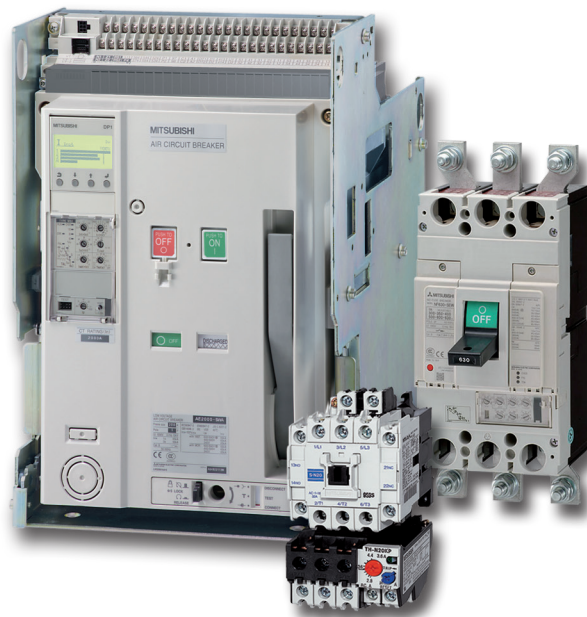


LVS

Low Voltage Switchgears

The complete solution
for line and load side



**SUPER AE Air Circuit Breakers / WSS and WS-V Moulded-Case
Circuit Breakers / MS-N Magnetic Contactors /**

Breakthrough technology



Standards are at the center of our product development.

75 years of experience

Mitsubishi Electric has been active in the low voltage switchgear (LVS) market since 1933. Ever since Mitsubishi Electric developed and manufactured the first moulded-case circuit breakers, the company has been committed to research and development in this field, making it one of the world's leading manufacturers of circuit breakers.

Innovation

Groundbreaking research and design has resulted in innovative LV switchgear, providing users with greater quality, safety and reliability. Today's LV products feature meticulously designed technology: even the casing material is used in the PA (Polymer Ablation type Auto-Puffer) to provide greater safety and high voltage breaking performance.

Meeting global norms and standards

Mitsubishi Electric's low voltage switchgears meet all the standards and specifications laid down in the EU Low Voltage Directive 73/23/EEC and the Machinery Directive 98/37/EC. Needless to say, all the units carry the CE mark and are certified as conforming to UL, cUL and GOST.

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Section 2: Technical Informations

Six stoutly reasons for Mitsubishi Electric LVS



High performance

The one class higher performance of the Mitsubishi Electric low voltage switchgears realizes superb breaking performance. Hence the safety of valuable circuits can be securely maintained.



High reliability

Safe and fault-free operation is guaranteed by various protective mechanisms and safety functions. Reliability is provided due to high operating durability.



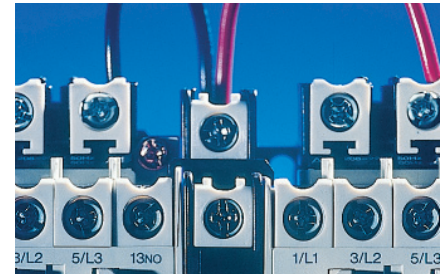
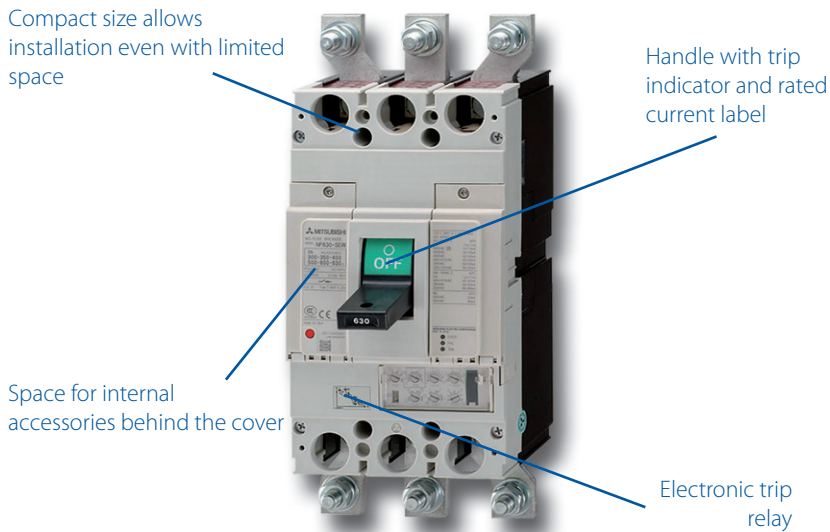
Global

In addition to complying with well-known international norms and standards, the low voltage switchgears are also certified by several marine approvals.

Air circuit breaker of the Super AE-SW series

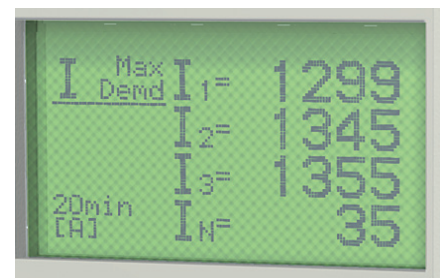


Moulded-case circuit breaker of the NF-SW series

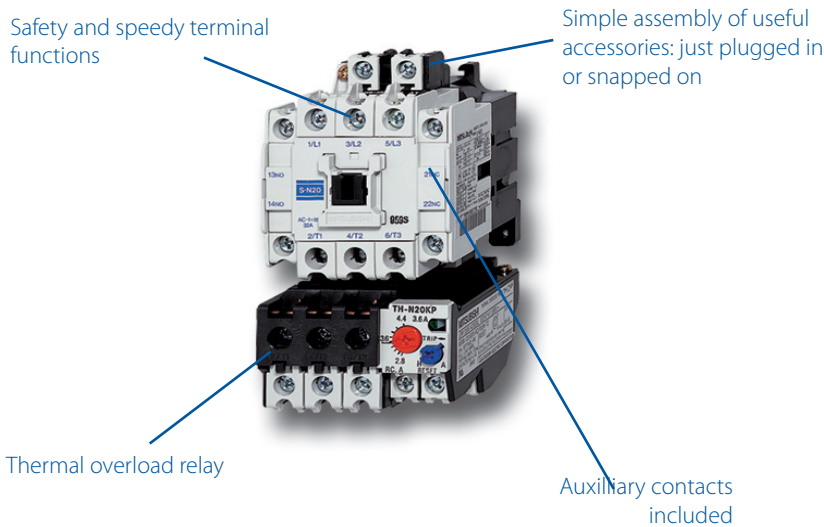


Best solution

The high flexibility of the various line-up, the plenty of accessories and the easy installation enable always the best solution for each application.



Magnetic contactor with mounted thermal overload relay of the MS-N series



Intelligent

The main functions, including trip status, alarm and load current are displayed on the LCD screen of the SUPER AE and can also be output as signals.

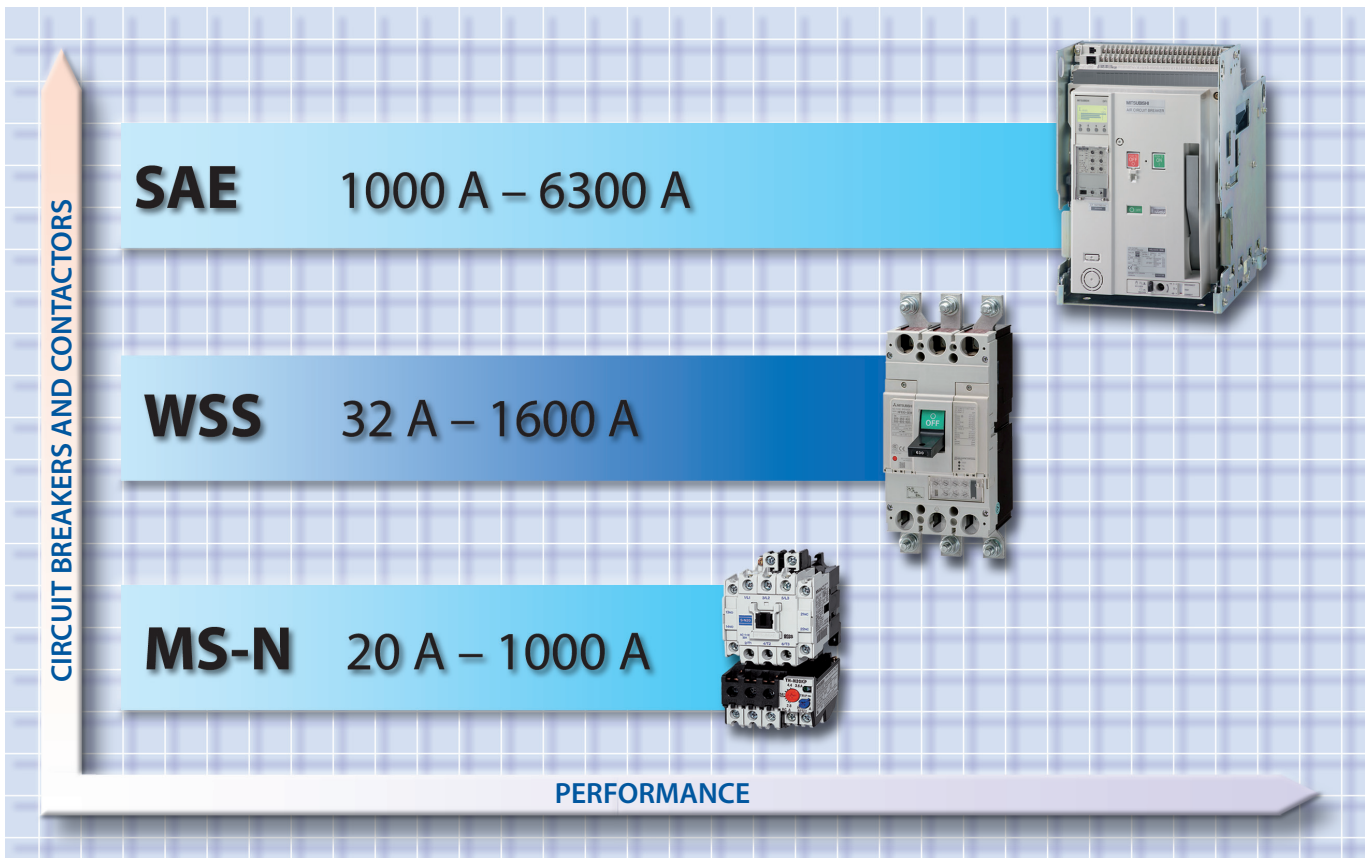


Customer friendly

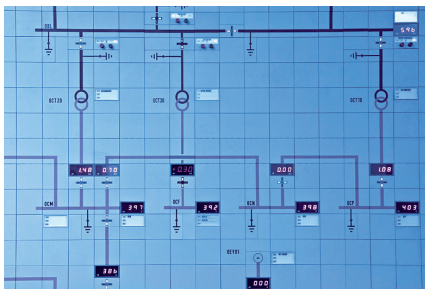
Functionality, compatibility and perfect mechanical design are the main features of the low voltage switchgears supplied by Mitsubishi Electric .

Not all features are available on all LVS. Please check applicability.

A complete solution for line and load side



A diverse product range helps you make the right product choice.



Mitsubishi Electric breakers are used worldwide in modern power distribution systems.

Pioneering the future

In recent years, we have been promoting globalization and responding to rapidly expanding internationalization and efforts to protect the global environment through the development of next-generation circuit breakers and earth leakage circuit breakers, and through completion of our World Super (WS) Series product lineup.

We are pioneering a new future for circuit breakers, working to realize market globalization by responding to international needs with products that offer enhanced ease of operation and high performance, are developed with consideration for the environment in mind.

Mitsubishi Electric offers a complete solution for line and load side distribution, ranging from air circuit breakers to moulded-case breakers and magnetic contactors.

■ **Air Circuit Breakers (ACB's)**

Low-voltage air circuit breakers can be used as the main circuit breakers of power distribution systems for buildings, factories, ships, and more to realize high-level circuit monitoring and friendly networking.

Mitsubishi Electric's compact Super AE units come in a broad spectrum of performance categories from 1000 to 6300 Amps. The basic unit is available as a fixed or "draw out" design, which can be augmented with options for enhanced overload control, network and energy consumption.

■ **Molded-Case Circuit Breakers (MCCB's)**

Molded-case circuit breakers are utilized to open/close low-voltage circuits and protect wiring by automatically closing circuits when overloading or short-circuiting occurs.

Mitsubishi Electric's MCCBs of the World Super Series (WSS) provide protection across the current range from 3 to 1600 Amps. Each unit is available in a fixed or slot-in design and has a range of additional options such as electronic trips.



Reliable and secure switching performance even in complex high-power systems

■ **Contactors and Relays**

Mitsubishi Electric contactor range is made of magnetic contactors, thermal overload relays and contactor relays for reliable motor protection.

The MS-N range of LV switchgears is a reliable and customizable solution for load side connection. These space-efficient products are up to 25 % smaller than similar units. In addition the MS-N range has enhanced performance. For example, the magnetic contactors withstand voltage drops of up to 35 % while still, ensuring reliable operation.

The MS-N units can be customised with a wide range of options, including thermal overload relays, time delay modules, auxiliary contacts and trip indicators to suit the users specific needs.



Mitsubishi Electric SUPER AE are virtually maintenance free



Moulded-case circuit breakers in a compact housing

SUPER AE – Air Circuit Breakers



Mitsubishi Electric Air Circuit Breakers are built for the global demands of the 21st century

Very user-friendly design

All breakers in the series are available in both 3 and 4 pole versions with fixed or draw-out configurations to suit your individual requirements. There are only three standard sizes, making planning much easier.

The range of air circuit breakers and load interrupter switches is complemented by a comprehensive range of accessories. In contrast to earlier models it is now possible to save space by installing some accessories (for example the UVT undervoltage trip) inside the breaker unit.

All live components in the vicinity of the control connections have IP20 protection rating.

Individually configured protection

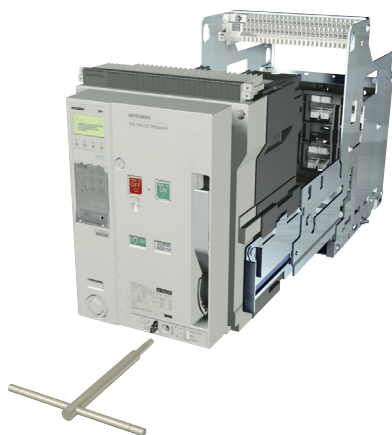
The circuit breakers are delivered with an electronic trip relay. It is available in versions for all standard power supply voltages. Optional modules are also available for most common applications like protecting transformers, cables, motors and generators. This ensures optimum protection for long time, short time and instantaneous tripping.

In addition to options like pre-alarm, ground fault and earth leakage protection, the electronic trip relay provides complete protection against overloads and short circuits. The protection characteristic can be adjusted individually for the needs of your application.

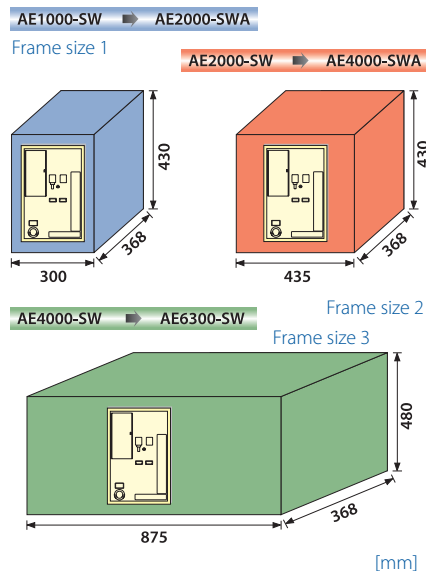
The main functions, including trip status, alarm and load current are displayed on the LCD screen and can also be output as signals. For easy and quick recognition of alarms, the screen automatically turns red when a fault is detected.



All parameters can be adjusted individually, ensuring that an optimum selectivity for every application is achieved.



Draw-out type breaker SUPER AE-SW

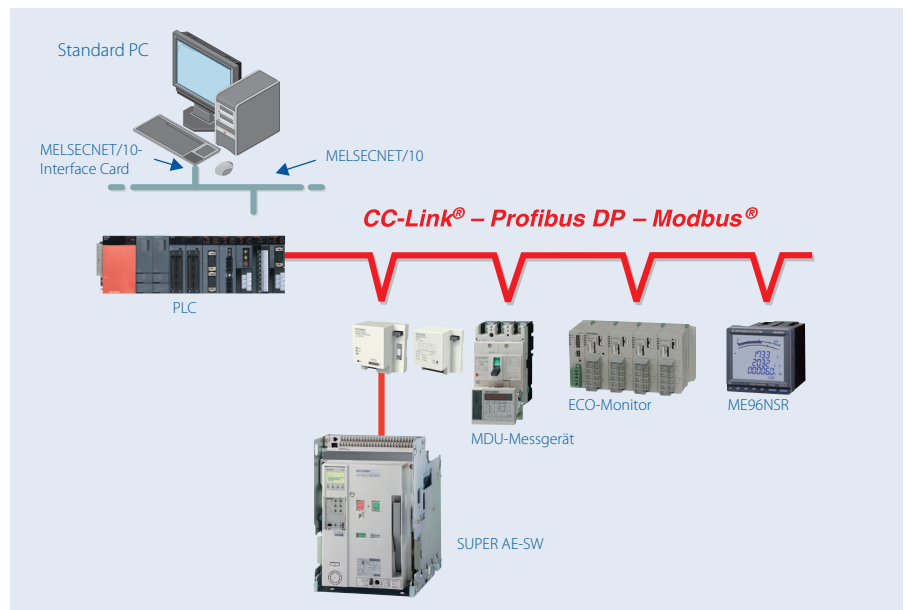


[mm]

Broad performance range

The growing demand for power naturally increases the levels of short circuit currents in power distribution systems. The SUPER AE series breakers deliver excellent protection against thermal and mechanical damage. The rated surge withstand capability (I_{imp}) is 12 kV. With a short circuit breaking capacity of 65 – 85 kA they cover the great majority of applications, providing very high-quality protection for your systems.

The small number of components and high production standards ensure a long service life. The breakers of the SUPER AE series are virtually maintenance-free.



The SUPER AE in network configurations

Comprehensive communications capabilities

Together with optional network interface modules the SUPER AE can now become a fully integrated part of the total network and system concept. In addition to Profibus/DP and CC-Link®, an interface module for MODBUS® is also available.

The SUPER AE's network modules enable the monitoring and control of a number of different parameters including voltage and current performance values. In addition, the networking connection can also be used to report alarm and error messages from the breaker back to a centralized control point like a PLC or a SCADA system.

In combination with an additional I/O module the breaker can be switched on and off remotely via the network. A drawout position switch can also be checked for the current drawout position via the network.

SUPER AE series at a glance

Power range
1000–6300 A

Bemessungsisolationsspannung
1000 V AC

Rated operation voltage
690 V AC

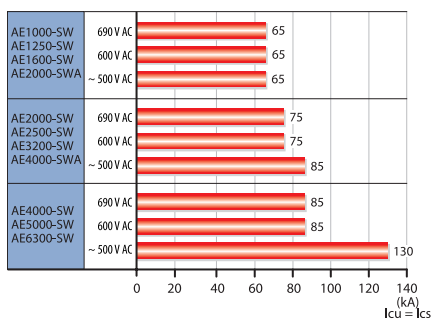
Number of poles
3, 4

Available types
Drawout type, fixed type

Network links*
Profibus/DP, CC-Link®, MODBUS®

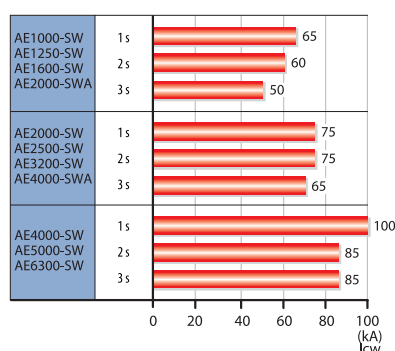
*optional

$I_{cu} = I_{cs}$



Rated short circuit breaking capacity I_{cs}

I_{cw}



Rated short time withstand current I_{cw}



Profibus/DP module

WSS – Moulded-Case Circuit Breakers



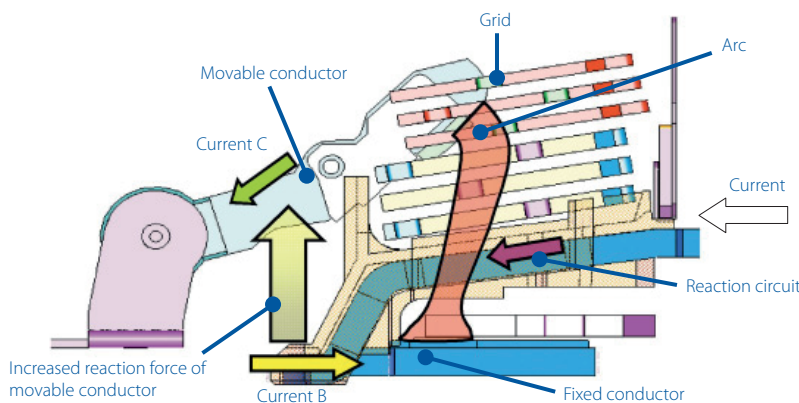
Distinguished and secure breaking performance where reliability is needed



New model with 75 kA replaces old 50 kA model by maintaining the same size

Molded-case circuit breakers are utilized to open/close low-voltage circuits and protect wiring by automatically closing circuits when overloading or short-circuiting occurs.

Mitsubishi Electric is pioneering a new future for circuit breakers, working to realize market globalization by responding to international needs with products that offer enhanced ease of operation, high performance, and complying with various standards such as JIS, IEC, EN, GB, UL/CSA standards.



Expanded ISTAC breaking technology

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

Mitsubishi Electric breakers of the WS-V and WSS series are available in 4 different versions which can be used for a wide range of applications:

■ NF-C economy type

Basic model with excellent cost performance. Standard products range from 30 to 250 A frames.

■ NF-S standard type

Standard model lineup, with products from 32 to 250 A frames

■ NF-H/-L high-performance type

High performance model lineup, with products from 63 –250 A frames

■ NF-U/-R ultra current-limiting type

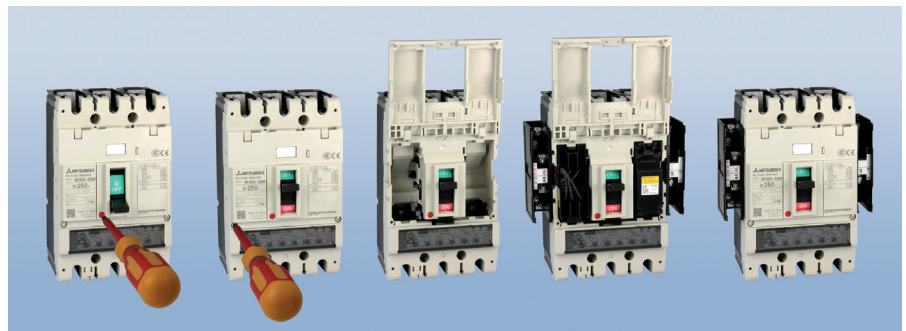
Realizing the world's maximum breaker capacity of 200 kA, this high breaking capacity breaker is the optimum model for backup shutdown.

Higher performance

The advanced technology of the WS series is based on a proven Mitsubishi Electric patent, and in consideration of the layout of the current leads provides excellent opening cycles of the main conductors.

The new circuit breaking technology "Expanded ISTAC" upgrades current limiting performance for a higher breaking capacity. With higher breaking capacity, lower class models can be used, thus leading to cost reduction of switch panels and machines.

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



Easy installation of modular cassette type accessories.

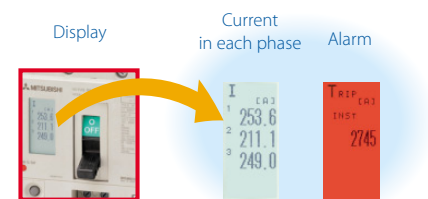
Vizualization of current flow

Mitsubishi Electric electronic circuit breakers of the WS-V-series with display can display various measurement items. This will enable energy management through permanent visualization of the current in each phase, which leads to energy saving.

The easy to read display is on the circuit breaker body and shows diverse circuit informations. With the help of this display, detailed setting can be done easily. When an alarm occurs, the display turns red, so the affected breaker can be recognized quickly.

Thus cassette type accessories ensure flexibility when upgrading circuits. The cassette type accessories are available in 5 different versions and fit for breaker series from 30 up to 800 AF:

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



Clear and distinctly readable display

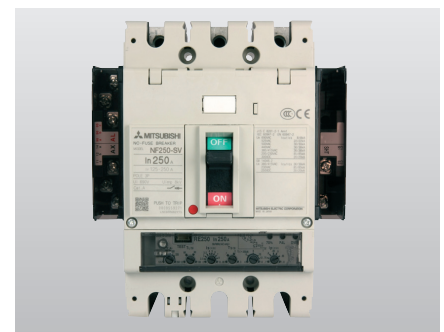
Compact design

The thermal adjustable circuit breakers and electronic circuit breakers of the WS-V series are very compact in size. Comparing to the predecessor series, these breakers contribute to a simplification of design and the reduction of the panel size.

250AF circuit breakers fixed types, thermal adjustable types and electronic types are the same size, leading to the standardization of panel design.

Environment friendly

All circuit breakers of the WS-V series are eco-friendly designed without any hazardous substances. The circuit breakers comply with RoHS regulation. The body of the circuit breakers are made of thermo-plastic materials that are easy to recycle (some models are partially made of thermoset materials). The major plastic parts bear material identifications so that they can be recycled easily.



Breaker with accessories

Modular and standardized accessories

The arrangement and design of pluggable accessories such as indicator and auxiliary contacts allows the user to modify the circuit in a way that saves time and space – at any time, even when built in and ready for operation. The presence of separate circuit chambers makes the system even safer.

Unlike the previous models the types of internal accessories has been reduced from 3 types to 1 type. The standardization of internal accessories contributes to the reduction of stock and delivery time.

WSS series at a glance

Power range
3–1600 A

Rated insulation voltage
500–690 V AC

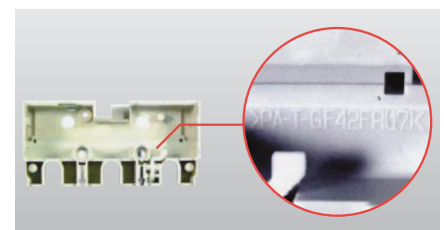
Rated operation voltage
up to 690 V AC, 300 V DC

Number of poles
3, 4

Tripping device
Thermal magnetic, electronic

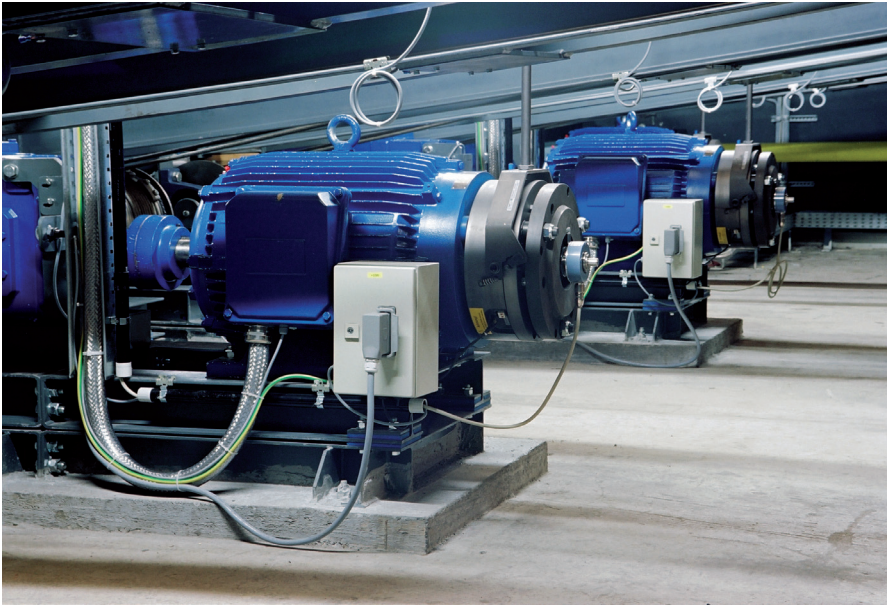
Network links*
CC-Link®

*optional



Use of various recyclable materials

MS-N – Magnetic Contactors



Mitsubishi Electric magnetic contactors protect your investment

Reliable motor protection

Compact dimensions, modular expansion options and a power-saving design – those are the key characteristics of Mitsubishi Electric's low-voltage switchgear products. The MS-N series includes magnetic contactors, thermal overload relays and contactor relays. DIN installation rail support and standardised terminal spacing make installation and wiring particularly simple.

Incorporation of CAN terminal for simple wiring

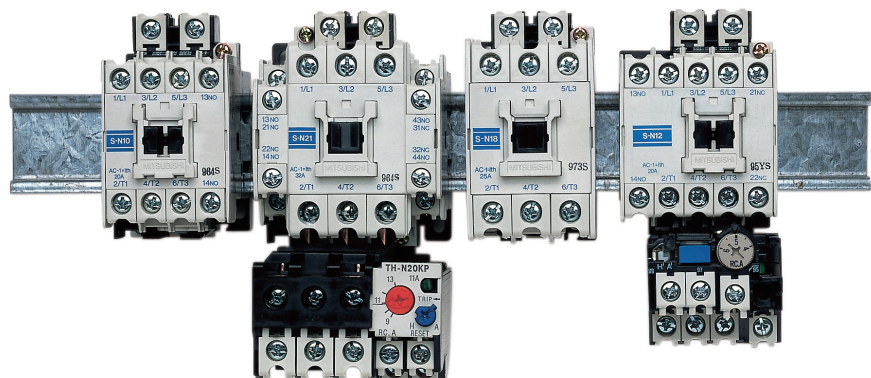
By adopting a CAN terminal, there is no need to remove the screws. The integrated terminal screw and screw holder set in a plastic screw holder, prevent the loss of screw. When each pole is moved and the screw loosened, the screw naturally sets in the screw holder. This is Mitsubishi Electric's original patented CAN terminal.

Unified design

The design of the MS-N Series is unified with a white front face brightening the inside of the panel and providing a cleaner image.

Reduced arc space

By developing a new extinguishing mechanism, the arc space has been reduced to approximately 1/3 against the previous generation. The new contactors are now significantly smaller, reducing the need for costly cubicle space and allowing the contactors to fit easily and neatly into small recesses of a machine or cabinet.



Easy mounting and wiring

MS-N new series contactors, starters and relays can all be mounted on DIN rail (35 mm width). For easy wiring coil terminals of those are arranged on upper side of contactors, moreover distance between center of the rail and the coil terminals are unified to 38.5 mm.

With this new wiring technology, we have designed wiring that is simple and safe for your fingers. Even a line with ring cable sockets can now be assembled fast and without any problems. The clamping screws cannot get lost.

Simple inspection

A visual check of the circuit contacts, all can be done by removing the front cover. You can check the installation after assembly.

The new contacts have led to a considerable improvement of the life and reliability of the auxiliary contacts.

Improved magnet

Use of a spiral kick-out spring improves the dynamic balance of the moving parts, extending the core life and generally stabilizing the core movement. Through the use of modern technology, the efficiency of the magnet has been improved. The contactor can withstand a voltage drop of 35 % with the contact closed.

Improved safety

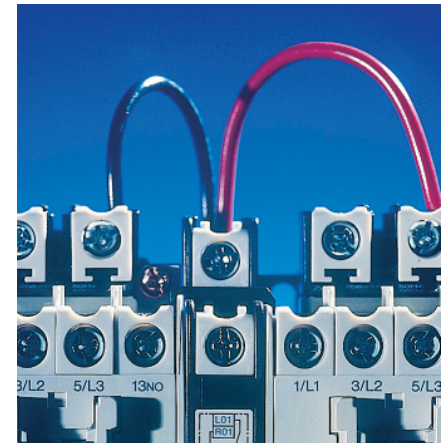
The arc blowoff has been improved for safety and space conservation. This was possible due to a new extinguishing structure, that eliminates arcing toward the front (in the direction of the control panel door) when current is cut off. This new element improved safety and potentially saves space.

Considerably accessories

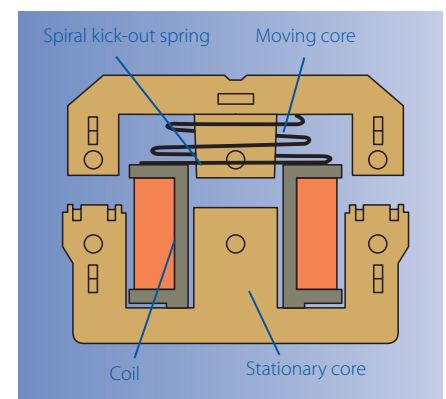
A cleverly compiled programme of accessories ensures use for a very wide range of applications and requirements. Here too, very simple assembly was a key aspect: the accessory is not screwed but plugged in or snapped on.

Here are some examples of the accessory that is available for the MS-N series:

- Auxiliary contact blocks for front and side assembly
- Surge absorbers for coils
- Mechanical interlocks
- Pneumatic timers
- DC interface modules
- Single units for overload relays
- Connecting wire kit for reversing



Easy wiring for all contactors



Efficient electromagnet thanks to advanced engineering

MS-N series at a glance

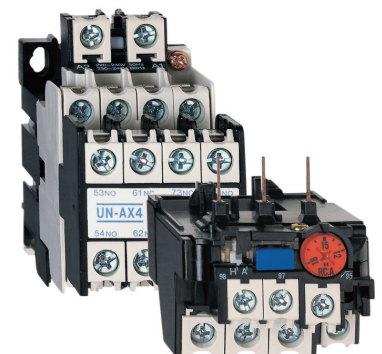
Power range
20–1000 A

Operating voltage
280–440 V AC (50/60 Hz)

Integrated auxiliary contacts
1–4 (NO and/or NC)

Options

Auxiliary contact blocks, surge absorbers, interlocks, timers, and many more



A selection of relays for optimum motor protection characteristics is available optionally.

A wide field of applications



Mitsubishi Electric low voltage switchgears are used in a wide range of areas.

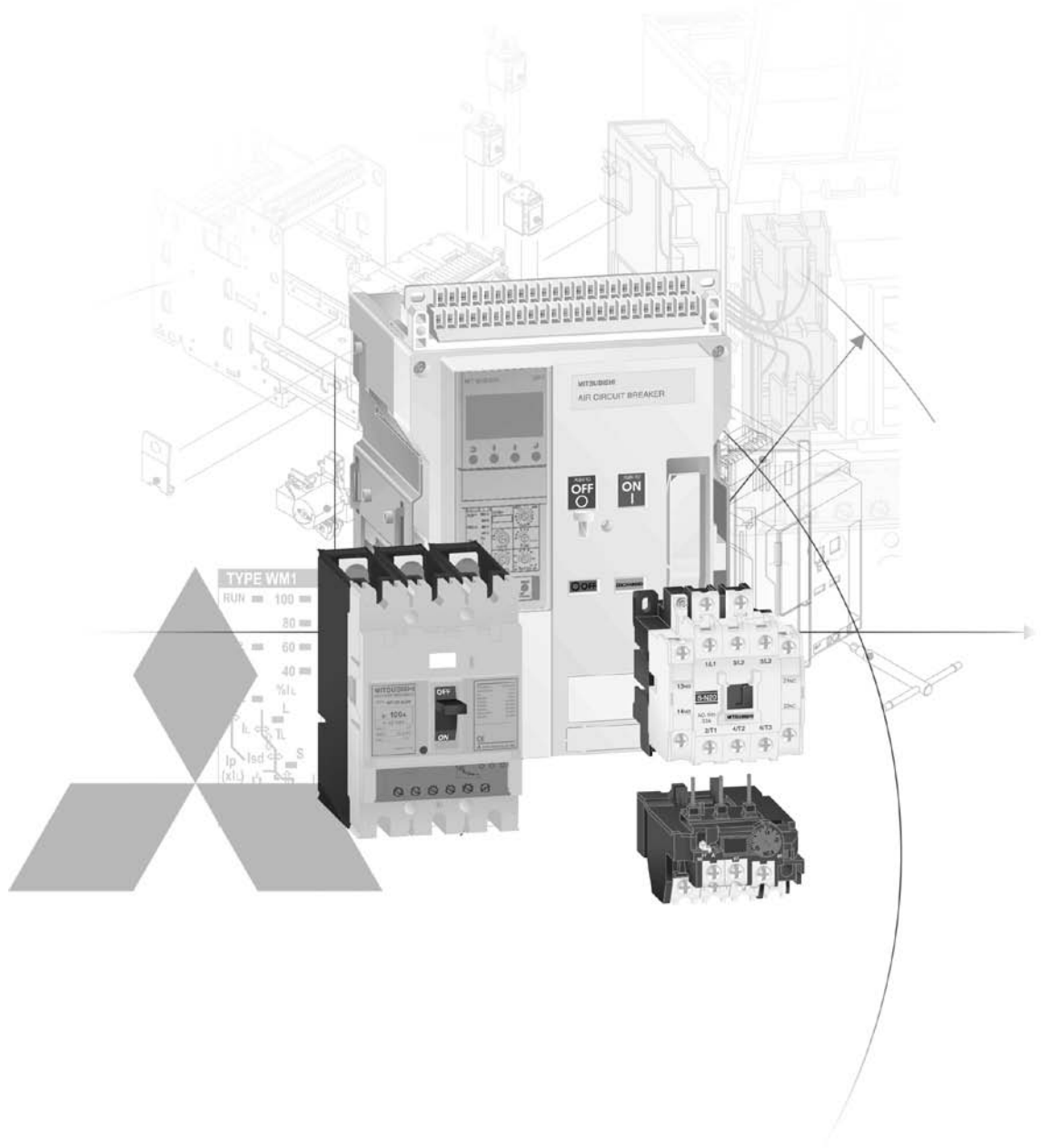
Mitsubishi Electric operates eight branches in Europe, where it has maintained a presence for more than 25 years and developed a constantly growing and far-extending network comprising links to other companies and reliable partnerships.

On the technical side, three manufacturing and automation centres form the basis of tailored automated solutions, further centres already being planned.

A Europe-wide network, the European Service Group (ESG), provides interfaces to experienced engineers and offers distributors support throughout every phase of the project.

Mitsubishi Electric products are found in a variety of industrial, infrastructure and service sector contexts, ranging from critical applications in the pharmaceuticals industry to state-of-the-art leisure and entertainment facilities. Here are just a few examples of recent applications:

- Agriculture
 - Irrigation systems
 - Plant handling systems
 - Sawmills
- Building management
 - Smoke detection monitoring
 - Ventilation and temperature control
 - Lift (elevator) control
 - Automated revolving doors
 - Telephone management
 - Energy management
 - Swimming pool management
- Construction
 - Steel bridge manufacturing
 - Tunnel boring systems
- Food and drink
 - Bread manufacture (mixing/baking)
 - Food processing (washing/sorting/slicing/packaging)
- Leisure
 - Multiplex cinema projection
 - Animated mechatronics (museums/theme parks)
- Medical
 - Respiration machine testing
 - Sterilization
- Pharmaceutical/chemical
 - Dosing control
 - Pollution measurement systems
 - Cryogenic freezing
 - Gas chromatography
 - Packaging
- Plastics
 - Plastic welding systems
 - Energy management systems for injection moulding machines
 - Loading/unloading machines
 - Blow moulding test machines
 - Injection moulding machines
- Printing
- Textiles
- Transportation
 - Sanitation on passenger ships
 - Sanitation on rail rolling stock
 - Fire tender, pump management
 - Waste disposal truck management
- Utilities
 - Waste water treatment
 - Fresh water pumping



Technical Information Section

Further Publications within the Industrial Automation Range

Brochures

FX Family

Product catalogue for programmable logic controllers and accessories for the MELSEC FX family

HMI Family

Product catalogue for operator terminals, supervision software and accessories

FR Family

Product catalogue for frequency inverters and accessories

MR Family

Product catalogue for servo amplifiers and servo motors as well as motion controller and accessories

Q/L Family

Product catalogues for programmable logic controllers and accessories for the further MELSEC PLC series

Robots Family

Product catalogue for industrial robots and accessories

Automation Book

Overview on all Mitsubishi Electric automation products, like frequency inverters, servo/motion, robots etc.

Further service supplies

This product catalogue is designed to give an overview of the extensive range of Mitsubishi Electric Low-voltage Switchgears, Air-Circuit Breakers, Moulded-case Circuit Breakers, Magnetic Contactors, Thermal Overload Relays and Contactor Relays and its related accessories. If you cannot find the information you require in this catalogue, there are a number of ways you can get further details on configuration and technical issues, pricing and availability.

For technical issues visit the <https://eu3a.mitsubishielectric.com> website.

Our website provides a simple and fast way of accessing further technical data and up to the minute details on our products and services. Manuals and catalogues are available in several different languages and can be downloaded for free.

For technical, configuration, pricing and availability issues contact our distributors and partners.

Mitsubishi Electric partners and distributors are only too happy to help answer your technical questions or help with configuration building. For a list of Mitsubishi Electric partners please see the back of this catalogue or alternatively take a look at the "contact us" section of our website.

About this product catalogue

This catalogue is a guide to the range of products available. For detailed configuration rules, system building, installation and configuration the associated product manuals must be read. You must satisfy yourself that any system you design with the products in this catalogue is fit for purpose, meets your requires and conforms to the product configuration rules as defined in the product manuals.

Specifications are subject to change without notice. All trademarks acknowledged.

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Low Voltage Switchgears

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II Moulded-case Circuit Breakers, Disconnectors

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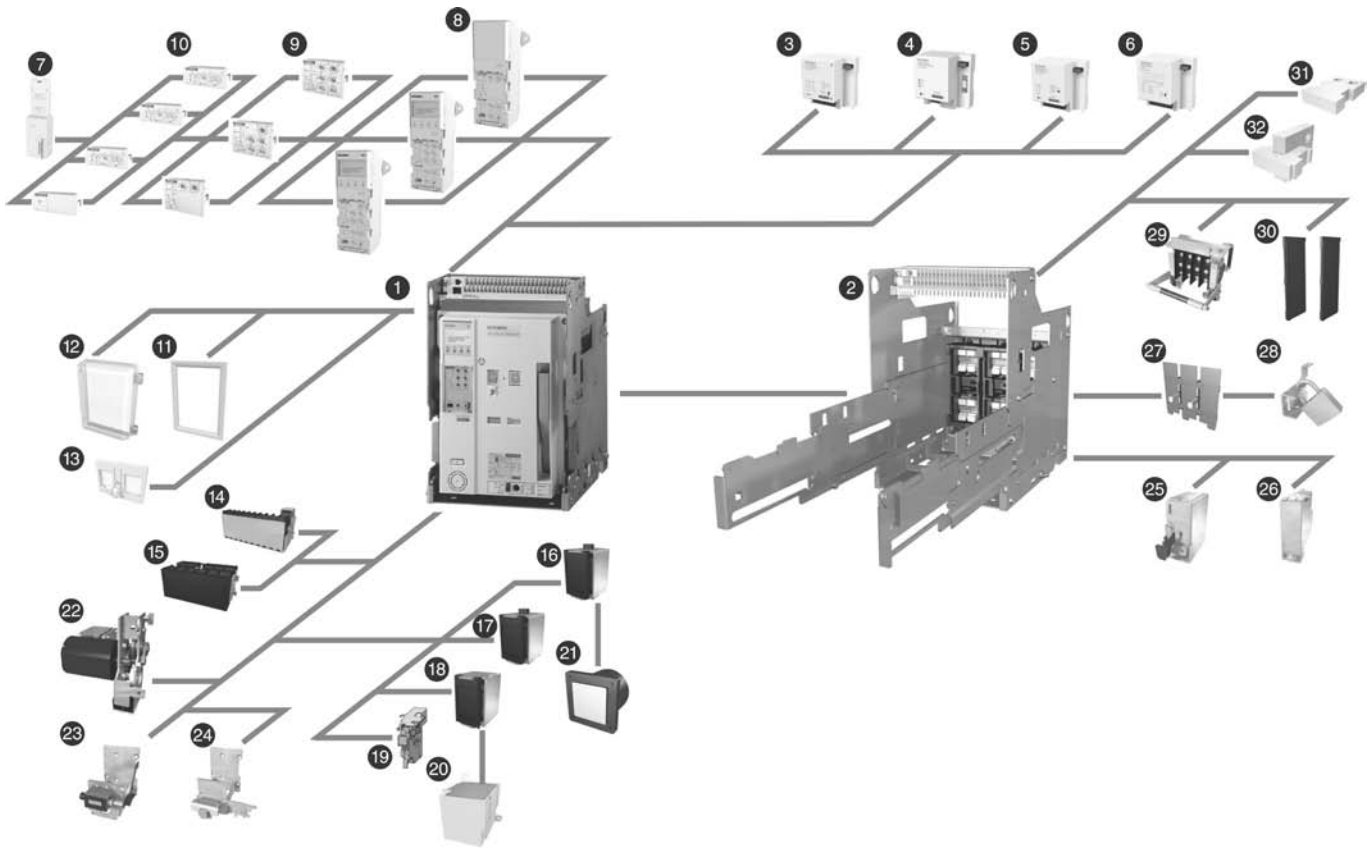
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Product skeleton of accessories for SUPER AE series air circuit breakers

Mitsubishi Electric offers a wide range of accessories for the Air Circuit Breakers to serve almost all variations of applications.

1
SAE – Base Units

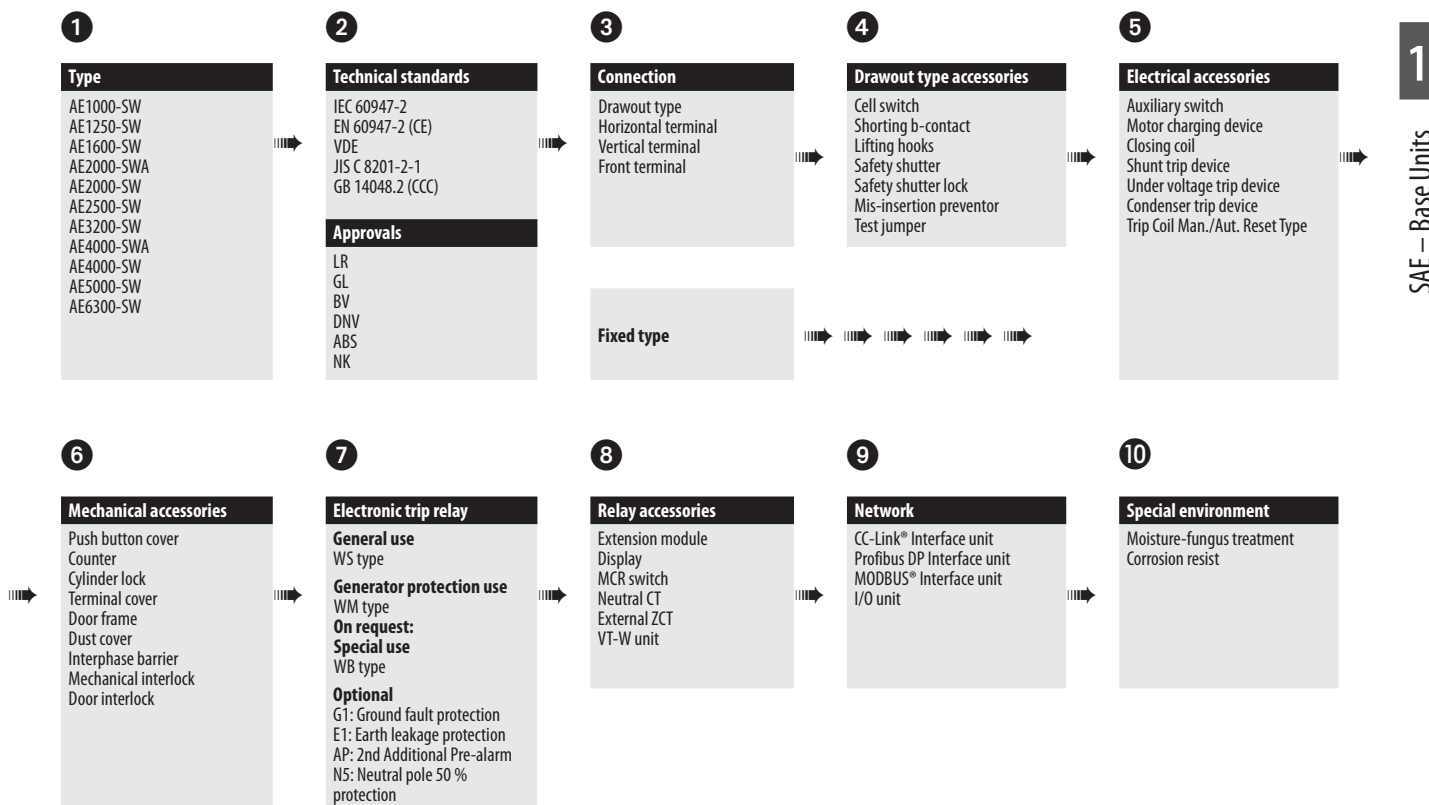


Position	Name
1	Air circuit breaker
2	Cradle
3	CC-Link® Interface unit
4	Profibus DP Interface unit
5	MODBUS® Interface unit
6	I/O unit
7	Extension module
8	ETR unit
9	Main setting module
10	Optional setting module
11	Door frame (DF)

Position	Name
12	Dust cover (DUC)
13	Push button cover (BC-L)
14	Auxiliary switch standard (AX)
15	Auxiliary switch high capacity type (HAX)
16	Shunt trip device (SHT)
17	Closing coil (CC)
18	Under voltage trip device (UVT)
19	Trip coil (TC (OCR-Alarm))
20	UVT-controller (U-CON)
21	Condenser trip device (COT)
22	Motor charging device (MD)

Position	Name
23	Counter (CNT)
24	Cylinder lock (CYL)
25	Door interlock (DI)
26	Mechanical interlock (MI)
27	Safety shutters (SST)
28	Safety shutter lock (SST-LOCK)
29	Cell switch (CL)
30	Interphase Barrier (BA)
31	Horizontal terminal
32	Vertical terminal

Product introduction of accessories for SUPER AE series air circuit breakers



For details on our full range including accessories contact your local distributor

Specifications

SUPER AE – WORLD SUPER SERIES		Breaker type	AE 1000- SW		AE 1250- SW		AE 1600- SW		AE 2000- SWA		
Frame size		A	1000		1250		1600		2000		
Rated insulation voltage (AC V) 50/60 Hz		U_i			1000						
Rated operating voltage (AC V) 50/60 Hz		U_e			690						
Rated impulse withstand voltage (kV)		U_{imp}			12						
Pollution degree					3						
Number of poles		P	3	4	3	4	3	4	3	4	
Rated current I_n (CT rating)			1000		1250		1600		2000		
Adjustment range Rated current I_r (A)	General use (current rating adjustable 0.5 to 1.0 x I_n 0.05 step)		500-550-600-650- 700-750-800-850- 900-950-1000		625-687.5-750-812.5- 875-937.5-1000-1062.5-1125- 1187.5-1250		800-880-960-1040- 1120-1200-1280-1360- 1440-1520-1600		1000-1100-1200-1300- 1400-1500-1600-1700- 1800-1900-2000		
	Generator protection (current rating fixed)		$400 \leq I_r \leq 1000$		$800 \leq I_r \leq 1250$		$1000 \leq I_r \leq 1600$		$1250 \leq I_r \leq 2000$		
Rated current of neutral pole	(A)		1000		1250		1600		2000		
IEC 60947-2, EN 60947-2, VDE, JIS C 8201-2-1	Ultimate breaking capacity I_{cu} (kA rms)	690 V AC	65		65		65		65		
		600 V AC	65		65		65		65		
		240–500 V AC	65		65		65		65		
		With MCR	690 V AC	65		65		65		65	
			600 V AC	65		65		65		65	
			240–500 V AC	65		65		65		65	
		Without instantaneous	690 V AC	25 ^①		25 ^①		25 ^①		25 ^①	
			500 V AC	25 ^①		25 ^①		25 ^①		25 ^①	
		Rated service breaking capacity I_{cs} (kA rms) % I_{cu}									
		Rated making capacity I_{cm} (kA, peak)	690 V AC	143		143		143		143	
600 V AC	143		143		143		143				
240–500 V AC		143		143		143		143			
	With MCR	690 V AC	143		143		143		143		
		600 V AC	143		143		143		143		
		240–500 V AC	143		143		143		143		
	Without instantaneous	690 V AC	52.5		52.5		52.5		52.5		
		500 V AC	52.5		52.5		52.5		52.5		
Disconnecter: switching capacity (6 x I_r at 690V AC)			○		○		○		○		
Rated short time withstand current (kA rms) I_{cw}	1s	65		65		65		65			
	2s	60		60		60		60			
	3s	50		50		50		50			
Maximum total breaking time	(ms)	40 ^⑤		40 ^⑤		40 ^⑤		40 ^⑤			
Closing time	(ms)	80		80		80		80			
Number of operating cycles (ON/OFF)	With rated current	500 V AC I_n	5000		5000		5000		1500		
	690 V AC I_n	5000		5000		5000		1500			
	Without rated current	25000		25000		25000		25000 ^④			
Connecting terminal	Horizontal terminal	○		○		○		—			
	Vertical terminal	○		○		○		○ ^③			
	Front terminal	○		○		○		—			
Dimensions (HxWxD mm)	Fixed type	3-pole			410x340x290						
		4-pole			410x425x290						
	Drawout type	3-pole			430x300x368						
		4-pole			430x385x368						
Weight (kg)	Fixed type	3-pole	41		41		42		47		
		4-pole	51		51		52		57		
	Drawout type (with cradle)	3-pole	64		64		65		70		
		4-pole	78		78		79		84		
	Cradle only	3-pole	26		26		26		31		
		4-pole	30		30		30		35		

① The columns for “without instantaneous” are the values when the bare main body and the external relay is combined.

② The number of operating cycles without rated current also include the number of operating cycles with rated current.

③ AE4000-SW, AE5000-SW, AE6300-SW, AE2000-SWA and AE4000-SWA apply for only vertical terminal of connecting terminal.

④ This value means number of operating cycles of ACB's body not including accessories.

⑤ Products with low rating types is available.

AE 2000- SW		AE 2500- SW		AE 3200- SW		AE 4000- SWA		AE 4000- SW		AE 5000- SW		AE 6300- SW	
2000		2500		3200		4000		4000		5000		6300	
		1000								1000			
		690								690			
		12								12			
		3								3			
3	4	3	4	3	4	3	4	3	4(HN, FN) ⑦	3	4(HN, FN) ⑦	3	4(HN, FN) ⑦
2000		2500		3200		4000		4000		5000		6300	
1000-1100-1200-1300-1400-1500-1600-1700-1800-1900-2000 ⑥		1250-1375-1500-1625-1750-1875-2000-2125-2250-2375-2500		1600-1760-1920-2080-2240-2400-2560-2720-2880-3040-3200		2000-2200-2400-2600-2800-3000-3200-3400-3600-3800-4000		2000-2200-2400-2600-2800-3000-3200-3400-3600-3800-4000		2500-2750-3000-3250-3500-3750-4000-4250-4500-4750-5000		3150-3465-3780-4095-4410-4725-5040-5355-5670-5985-6300	
800 ≤ I _r ≤ 2000		1600 ≤ I _r ≤ 2500		2000 ≤ I _r ≤ 3200		2500 ≤ I _r ≤ 4000		2500 ≤ I _r ≤ 4000		3150 ≤ I _r ≤ 5000		4000 ≤ I _r ≤ 6300	
2000		2500		3200		4000		2000 (4000) h		2500 (5000) h		3150 (6300) h	
75		75		75		75		85		85		85	
75		75		75		75		85		85		85	
85		85		85		85		130		130		130	
75		75		75		75		85		85		85	
75		75		75		75		85		85		85	
75		75		75		75		100		100		100	
45 ①		45 ①		45 ①		45 ①		65 ①		65 ①		65 ①	
45 ①		45 ①		45 ①		45 ①		65 ①		65 ①		65 ①	
		100 %								100 %			
165		165		165		165		187		187		187	
165		165		165		165		187		187		187	
187		187		187		187		286		286		286	
165		165		165		165		187		187		187	
165		165		165		165		187		187		187	
165		165		165		165		220		220		220	
94.5		94.5		94.5		94.5		143		143		143	
94.5		94.5		94.5		94.5		143		143		143	
○		○		○		○		○		○		○	
75		75		75		75		100		100		100	
75		75		75		75		85		85		85	
65		65		65		65		85		85		85	
40 ⑧		40 ⑧		40 ⑧		40 ⑧		50 ⑧		50 ⑧		50 ⑧	
80		80		80		80		80		80		80	
1500		1500		1000		500		1000		1000		1000	
1500		1500		1000		500		1000		1000		1000	
20000		20000		20000		20000		10000 (3P)/5000 (4P)		10000 (3P)/5000 (4P)		10000 (3P)/5000 (4P)	
○		○		○		—		—		—		—	
○		○		○		○ ③		○ ③		○ ③		○ ③	
○		○		○		—		—		—		—	
		410x475x290								414x873x290			
		410x605x290								414x1003 (1133)x290 ⑧			
		430x435x368				430x439x368				480x875x368			
		430x565x368				430x569x368				480x1005 (1135)x368 ⑧			
60	368	61	368	63		81		160		160		160	
72	75	73	99	75		99		180 (200) ⑧		180 (200) ⑧		180 (200) ⑧	
92	78	93	103	95		108		233		233		240	
113	116	114	136	116		136		256 (279) ⑧		256 (279) ⑧		263 (286) ⑧	
35	119	35	140	35		49		118		118		125	
43	44	43	61	43		61		133 (148) ⑧		133 (148) ⑧		140 (155) ⑧	

④ This value means the instantaneous breaking time at short-circuit interruption. As for accessories (SHT, UVT) refer to page 12 and 13.

⑦ 4 (HN) means the neutral poles current capacity is 50 % of the rated current, for 4-poles.

4 (FN) means the neutral poles current capacity is 100 % of the rated current, for 4-poles.

⑧ () shows the value for 4P FN type.

Remarks:

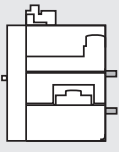
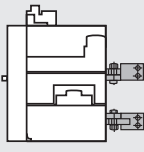
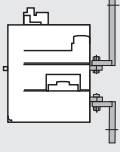
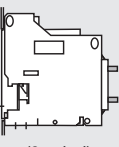
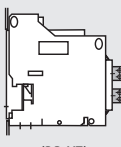
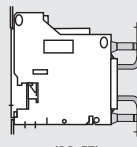
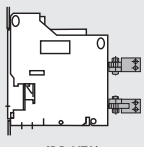
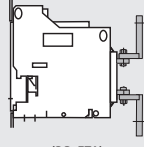
– All models conform the isolating function according to IEC 60947-2.

– Reverse connection is possible

Connections

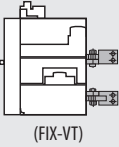
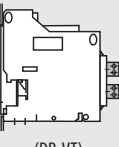
Connection arrangements

The following connecting methods are available for the **AE1000-SW – AE3200-SW**.

Connection	Horizontal connection	Vertical connection	Front connection	Vertical terminal adapter	Front terminal adapter
Mounting method	Standard	Optional	Optional	Accessory	Optional
Fixed type	 (Standard)	—	—	 (FIX-VTA)	 (FIX-FTA)
Drawout type	 (Standard)	 (DR-VT)	 (DR-FT)	 (DR-VTA)	 (DR-FTA)
Remark	Standard equipment (shipping version)	Special equipment (on request)	Special equipment (on request)	Available as accessory (refer to page 15)	Optional accessory (on request)

Connection image: AE1000 – 1600-SW, 3-pole type
 Standard Fixed type breakers AE1000/1250/1600/2000/2500/3200-SW are also available as Drawout type. Please order the corresponding cradle with the drawout mechanism (see table on next page)

The following connecting methods are available for the **AE2000-SWA, AE4000-SWA and AE4000-SW – AE6300-SW**.

Connection	Vertical connection
Mounting method	Standard
Fixed type	 (FIX-VT)
Drawout type	 (DR-VT)
Remark	Special equipment (on request)

Connection image: AE2000-SWA, 3-pole type
 For AE2000-SWA, AE4000-SWA, AE4000-SW, AE5000-SW and AE6300-SW models, vertical terminal **only** is available.

Available connections

Breakers		AE1000-SW	AE1250-SW	AE1600-SW	AE2000-SWA	AE2000-SW	AE2500-SW	AE3200-SW	AE4000-SWA	AE4000-SW	AE5000-SW	AE6300-SW
Connections												
Fixed type (FIX)	Horizontal	●	●	●	—	●	●	●	—	—	—	—
	FIX-VT	—	—	—	●	—	—	—	●	●	●	●
	FIX-VTA	○	○	○	—	○	○	○	—	—	—	—
	FIX-FTA	○	○	○	—	○	○	○	—	—	—	—
Drawout type (DR)	Horizontal	●	●	●	—	●	●	●	—	—	—	—
	DR-VT	○	○	○	●	○	○	○	●	●	●	●
	DR-FT	○	○	○	—	○	○	○	—	—	—	—
	DR-VTA	○	○	○	—	○	○	○	—	—	—	—
	DR-FTA	○	○	○	—	○	○	○	—	—	—	—

● Standard ○ Option — Not available

Order information – Air circuit breakers

Standard series AE-SW – Fixed type

Base unit equipment	Breaker	3-pole type	Art. no.	4-pole type	Art. no.
Shipping contents:	AE1000-SW	AE1000-SW 3P Fix, ETRBASE-P3, AX10	168373	AE1000-SW 4P Fix, ETRBASE-P3, AX10	168434
● Electronic trip Relay base unit	AE1250-SW	AE1250-SW 3P Fix, ETRBASE-P3, AX10	168435	AE1250-SW 4P Fix, ETRBASE-P3, AX10	168436
● Power supply PW3	AE1600-SW	AE1600-SW 3P Fix, ETRBASE-P3, AX10	168437	AE1600-SW 4P Fix, ETRBASE-P3, AX10	168438
● 10 auxiliary contacts (5 NO, 5 NC contacts)	AE2000-SW	AE2000-SW 3P Fix, ETRBASE-P3, AX10	168443	AE2000-SW 4P Fix, ETRBASE-P3, AX10	168444
● Automatic reset type trip coil (TCA-AL-W)	AE2500-SW	AE2500-SW 3P Fix, ETRBASE-P3, AX10	168445	AE2500-SW 4P Fix, ETRBASE-P3, AX10	168446
Further elements that must be ordered:	AE3200-SW	AE3200-SW 3P Fix, ETRBASE-P3, AX10	168447	AE3200-SW 4P Fix, ETRBASE-P3, AX10	168448
○ Main setting module for protection					
○ Accessories as required					

Cradle with the drawout mechanism

Cradle	For type	Art. no.
CRD163-W	Draw Out type AE1000-AE1600 3P	170078
CRD164-W	Draw Out type AE1000-AE1600 4P	170079
CRD323-W	Draw Out type AE2000-AE3200 3P	170080
CRD324-W	Draw Out type AE2000-AE3200 4P	170081
REC-FD-W	Drawout mechanism with drawout handle	169004

Air circuit breaker series AE-SWA

Base unit equipment	Breaker	Fixed type	Art. no.	Draw-out type	Art. no.
Shipping contents:	AE2000-SWA	AE2000-SWA 3P Fix, ETRBASE-P3, AX10	168439	AE2000-SWA 3P D/O, ETRBASE-P3, AX10	168441
● Electronic trip Relay base unit	AE2000-SWA	AE2000-SWA 4P Fix, ETRBASE-P3, AX10	168440	AE2000-SWA 4P D/O, ETRBASE-P3, AX10	168442
● Power supply PW3	AE4000-SWA	AE4000-SWA 3P Fix, ETRBASE-P3, AX10	168449	AE4000-SWA 3P D/O, ETRBASE-P3, AX10	168451
● 10 auxiliary contacts (5 NO, 5 NC contacts)	AE4000-SWA	AE4000-SWA 4P Fix, ETRBASE-P3, AX10	168450	AE4000-SWA 4P D/O, ETRBASE-P3, AX10	168452
● Automatic reset type trip coil (TCA-AL-W)					
Further elements that must be ordered:					
○ Main setting module for protection					
○ Accessories as required					

Air circuit breaker series AE4000 – 6300-SW – Fixed/Drawout type

Base unit equipment	Breaker	Fixed type 3/4-pole	Art. no.	Draw-out type 3/4-pole	Art. no.
Shipping contents:	AE4000-SW	AE4000-SW 3P Fix, ETRBASE-P3, AX10	205144	AE4000-SW 3P D/O, ETRBASE-P3, AX10	205153
● Electronic trip Relay base unit	AE5000-SW	AE5000-SW 3P Fix, ETRBASE-P3, AX10	205145	AE5000-SW 3P D/O, ETRBASE-P3, AX10	205154
● Power supply PW3	AE6300-SW	AE6300-SW 3P Fix, ETRBASE-P3, AX10	205146	AE6300-SW 3P D/O, ETRBASE-P3, AX10	205155
● 10 auxiliary contacts (5 NO, 5 NC contacts)	AE4000-SW HN	AE4000-SW HN 4P Fix, ETRBASE-P3, AX10	205147	AE4000-SW HN 4P D/O, ETRBASE-P3, AX10	205156
● Automatic reset type trip coil (TCA-AL-W)	AE4000-SW FN	AE4000-SW FN 4P Fix, ETRBASE-P3, AX10	205148	AE4000-SW FN 4P D/O, ETRBASE-P3, AX10	205157
Further elements that must be ordered:	AE5000-SW HN	AE5000-SW HN 4P Fix, ETRBASE-P3, AX10	205149	AE5000-SW HN 4P D/O, ETRBASE-P3, AX10	205158
○ Main setting module for protection	AE5000-SW FN	AE5000-SW FN 4P Fix, ETRBASE-P3, AX10	205150	AE5000-SW FN 4P D/O, ETRBASE-P3, AX10	205159
○ Accessories as required	AE6300-SW HN	AE6300-SW HN 4P Fix, ETRBASE-P3, AX10	205151	AE6300-SW HN 4P D/O, ETRBASE-P3, AX10	205160
	AE6300-SW FN	AE6300-SW FN 4P Fix, ETRBASE-P3, AX10	205152	AE6300-SW FN 4P D/O, ETRBASE-P3, AX10	205161

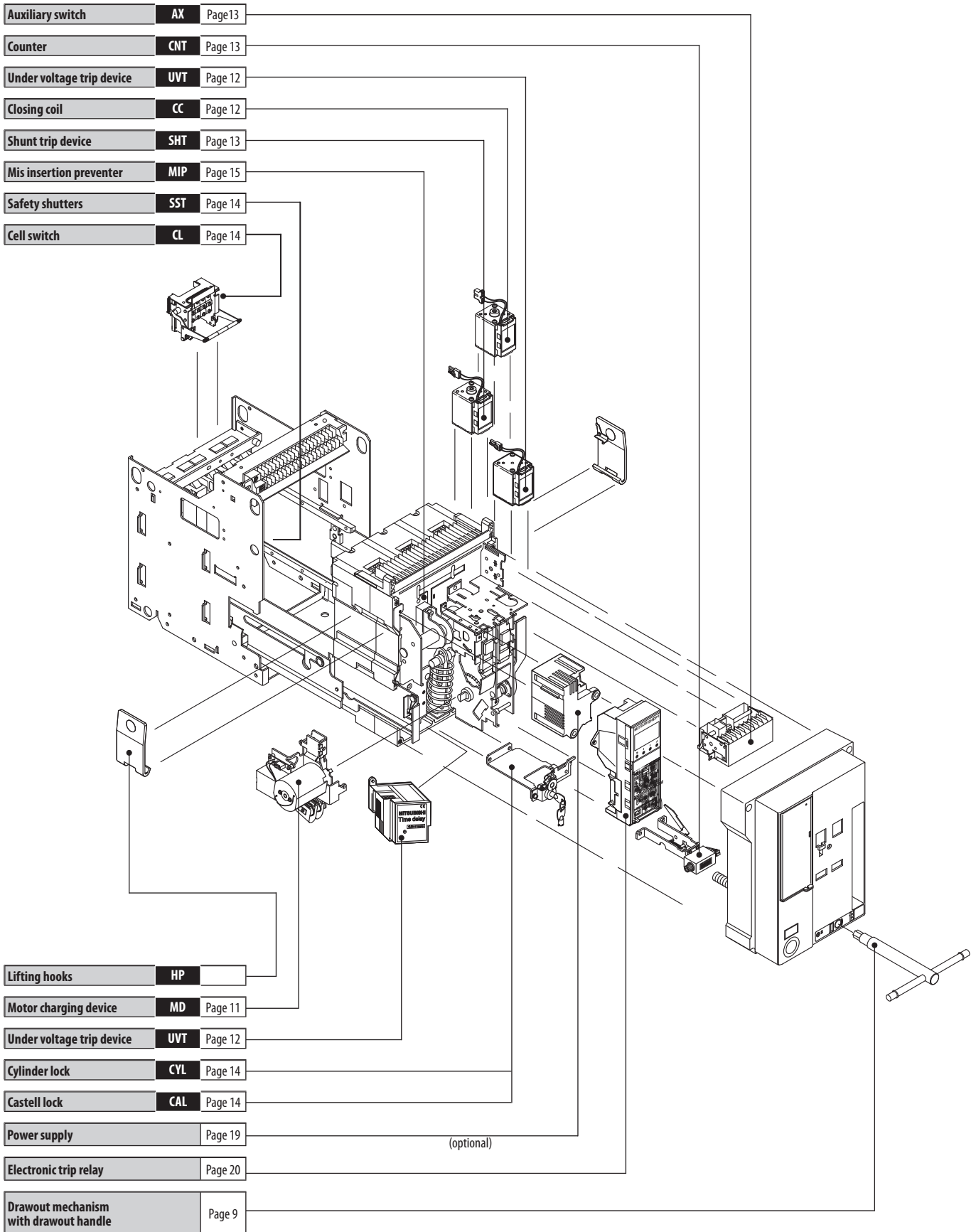
Switch-disconnector AE-SW – Fixed/Drawout type

Base unit equipment	Breaker	3-pole type	Art. no.	4-pole type	Art. no.
Shipping contents:	AE1000-SW	AE1000-SW 3P Fix, Bare, AX10	193919	AE1000-SW 4P Fix, Bare, AX10	193920
● 10 auxiliary contacts (5 NO, 5 NC contacts)	AE1250-SW	AE1250-SW 3P Fix, Bare, AX10	193921	AE1250-SW 4P Fix, Bare, AX10	193922
● Switching capacity I_{Rk6}	AE1600-SW	AE1600-SW 3P Fix, Bare, AX10	193923	AE1600-SW 4P Fix, Bare, AX10	193924
Further elements that must be ordered:	AE2000-SW	AE2000-SW 3P Fix, Bare, AX10	193929	AE2000-SW 4P Fix, Bare, AX10	193930
○ Accessories as required	AE2500-SW	AE2500-SW 3P Fix, Bare, AX10	193931	AE2500-SW 4P Fix, Bare, AX10	193932
	AE3200-SW	AE3200-SW 3P Fix, Bare, AX10	193933	AE3200-SW 4P Fix, Bare, AX10	193934
	AE2000-SWA	AE2000-SWA 3P Fix, Bare, AX10	193925	AE2000-SWA 4P Fix, Bare, AX10	193926
	AE4000-SWA	AE4000-SWA 3P Fix, Bare, AX10	193935	AE4000-SWA 4P Fix, Bare, AX10	193936
	AE2000-SWA	AE2000-SWA 3P D/O, Bare, AX10	193927	AE2000-SWA 4P D/O, Bare, AX10	193928
	AE4000-SWA	AE4000-SWA 3P D/O, Bare, AX10	193937	AE4000-SWA 4P D/O, Bare, AX10	193938

Overview and mounting positions of the main accessories

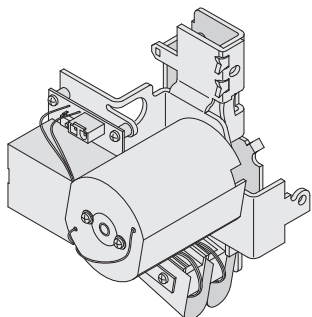
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SAE – Accessories



Overview and description on the optional accessories

Motor charging device (MD)



In addition to manual operation, the closing spring can be charged automatically by an electric motor every time the breaker is closed (ON charging method).

If the closing spring is to be charged automatically whenever the breaker is opened, then this can be done through an additional auxiliary contact (AXb) (OFF charging method). As soon as charging is completed, a visual display on the front says "CHARGED".

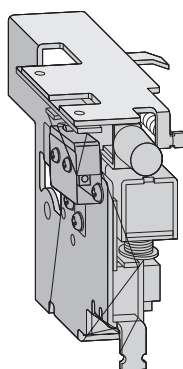
The "CHARGED" signal is also available via the 413 (TS+) and 414 (TS-) terminals (included in the standard MD configuration).

There is always the option of manual operation in an emergency. A closing coil (CC) is required for closing the breaker by remote control, and a shunt trip device (SHT) is required for opening it in this way.

This warrants the prevention of pumping, both electronically and mechanically. The circuit of the motor is separate from the ON/OFF circuit (CC, SHT).

Specifications	MD-AD125-W	MD-AD250-W	MD-AD125-4A4W-W	MD-AD250-4A4W-W	MD-DO24-W	MD-DO48-W
Rated voltage	100–125 V AC/DC	200–250 V AC/DC	100–125 V AC/DC	200–250 V AC/DC	24 V DC	48 V DC
Applicable voltage range (V)	85–137.5	170–275	85–137.5	170–275	18–26.4	36–52.8
Applied voltage (V)	100/125	200/250	100/125	200/250	24 V	48 V
Inrush current (peak value) (A)	10/12	5/6	10/12 12	7/8	22	14
Steady current (A)	3	1	4	2	6	3
Charging time (sec)	≤5	≤5	≤5	≤5	≤5	≤5
Criterion for power requirement (VA)	700/1000	700/1000	700/1000	700/1000	500	500
Order information	Art. no. 168514	168515	168516	168517	168518	168519

Trip coil (AL)



Automatic reset type (TCA-AL-W)

OCR alarm (AL) is provided as standard if ETR is equipped. OCR alarm (AL) is the contact (1a) of short-time operation (30 ms), being output when the breaker is tripped by the electronic trip relay.

Two types of automatic reset type (standard) and manual reset type (optional) are available. When ordering, specify either.

Manual reset type (TCM-AL-W)

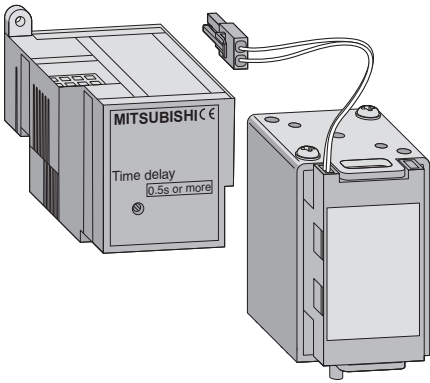
On the manual reset type (optional), the gray manual reset button will stick out to continuously output OCR alarm (AL) if the breaker is tripped by the electronic trip relay. After tripping, the breaker can not be turned on unless the manual reset button on the front side of the breaker is pressed for resetting.

Specifications	TCA-AL-W	TCM-AL-W
Voltage	AC (V)	125/240
	DC (V)	30/125/240
Resistive load	AC (A)	5/3
	DC (A)	4/0.4/0.2
Inductive load	AC (A)	3/2
	DC (A)	3/0.4/0.2
Order information	Art. no. 168535 (standard)	168536

Notes:

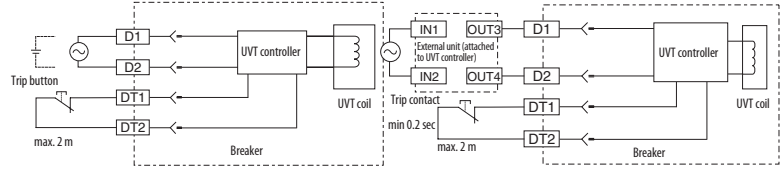
- Though the control power supply is unnecessary to activate OCR alarm (AL), the self-holding circuit is necessary since the contact output is activated for the short time (30 ms).
- This works when tripping occurs in LTD, STD, INST, GFR or ER.
- If any continuous output of OCR alarm (AL) is necessary, use the trip indicator (TI) output contact of the electronic trip relay.

Undervoltage trip device (UVT)



This is the device that automatically trips the breaker when the circuit voltage drops below the nominal voltage, and comprises a UVT coil and UVT controller.

Time range for tripping time:
INST (0.2 sec or less)/0.25 sec/0.5 sec/
0.8 sec/1.0 sec/1.5 sec/3 sec.



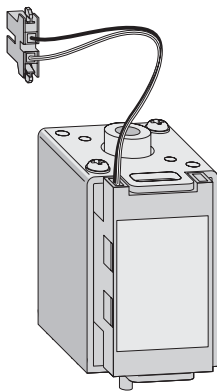
Specifications	UCON- D024B-W INST	UCON- D048B-W INST	UCON- D110B-W INST	UCON- D125B-W INST	UCON- D250B-W INST	UCON- A120B-W INST	UCON- A240B-W INST	UCON- A460B-W INST
Rated voltage (V)	24 (DC)	48 (DC)	100–110 (DC)	120–125 (DC)	220–250 (DC)	100–120 (AC)	200–240 (AC)	380–460 (AC)
Frequency	—					50/60 Hz		
Operating time (time delay)	□ INST (0.2 sec); □ 0.25 sec; □ 0.5 sec; □ 0.8 sec; □ 1.0 sec; □ 1.5 sec; □ 3.0 sec							
Pick-up voltage (V)	15.6–20.4	31.2–40.8	65–85	78–102	143–187	65–85	130–170	247–323
Drop-out voltage (V)	10.8–16.8	21.6–33.6	45–70	54–84	99–154	45–70	90–140	171–260
Trip function	With open circuit of DT1, DT2 terminals							
Power consumption (VA)	20							

Order information	Art. no.	203341	203342	203343	203344	203345	203346	203347	203348
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Accessories	UVT coil: art. no. 168525; UCON label: art. no. 168526 (Packing unit: 10 pcs)								
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- Notes:
- Please order for each UCON one UVT coil, and for delay setting one UCON label.
 - In case of 380–460V AC, the external unit is attached.
 - The operating time is a guarantee value when it drops from 85 % or more of rated voltage.
 - Time delay should be allowed for 1.5 s between applying the voltage to the UVT and closing the breaker.
 - If a remote trip function is required, remove the shorting bar (DT1–DT2) and connect a normally closed switch, rated 0.5 A at 150 V DC across them.
 - Usage ambient temperature is a range of max. 40 °C to -5 °C.

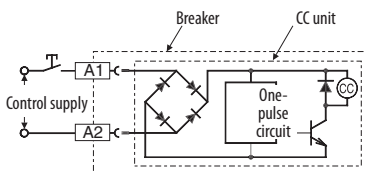
Closing coil (CC)



The closing coil is a device to close the breaker by remote control. Only one closing signal (about 100 msec.) is sent even when the closing coil supply is maintained ON.

- An interlock to prevent pumping is provided electrically.

- Closing time is from the initial energization of the closing coil to the completion of the closing of the main contacts.
- As CC is one-pulse driven, it is not necessary to insert AXb for burning prevention purposes. Inserting AXb will cause anti-pumping function to be ineffective.



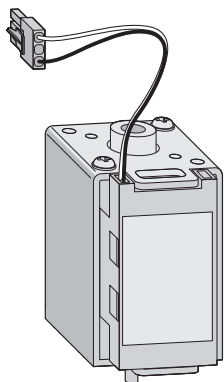
Diode rectifier is not used for control source 24–48 V DC.

Specifications	CC-D048-W	CC-AD250-W
Rated voltage (V)	24–48 DC	100–250 AC/DC
Applicable voltage range (V)	18–52.8	75–275
Operating voltage (V)	24/48	100/250
Inrush current	AC (A)	0.7/1.7 (AC 100 V 100 VA, AC 250 V 200 VA)
	DC (A)	0.8/1.8 (DC 100 V 100 W, DC 250 V 200 W)
Closing time ① (sec)	max. 0.08 or less	

Order information	Art. no.	168521	168520
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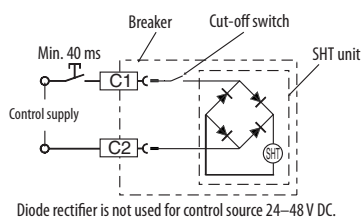
① In case of double rating of rated voltage, it is the value to the lower rating. Example: In case of DC 24 to 48, it is operating time to DC 24 V.

Shunt trip device (SHT)



The shunt trip device is used to open the breaker by remote control.

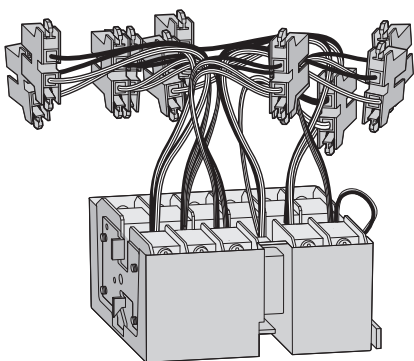
A cut-off switch is included (AX /HAX).



Specifications	SHT-D048-W	SHT-A500-W	SHT-AD250-W
Rated voltage (V)	24–48 DC	380–500 AC	100–250 (AC/DC)
Applicable voltage range (V)	16.8–52.8	266–550	70–275
Operating voltage (V)	24/48	380–500	100/250
Inrush current (peak value)	AC (A)	—	0.5/0.7 (AC 380 V 250 VA, AC 500 V 300VA)
	DC (A)	2.5/6.0 (DC 24 V 100 W, DC 48 V 200 W)	—
Closing time ① (sec)	max. 0.04 or less	max. 0.04 or less	max. 0.04 or less
Order information	Art. no. 168524	168523	168522

① In case of double rating of rated voltage, it is the value to the lower rating.
Example: In case of DC 24 to 48, it is operating time to DC 24 V.

Auxiliary switch (AX, HAX)



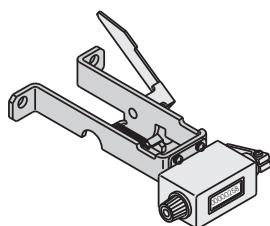
This is the contact that is used to remotely indicate the ON or OFF status of the breaker.

- The a and b contacts may turn simultaneously to ON instantaneously at the time of changing the contact; Pay attention to the contact state when designing circuits.

- The chattering time at the time of contact ON-OFF is below 0.025 sec.
- For special environment specification, the contact capacity gets deteriorated. Apply for further detail.

Specifications	AX-10-W		HAX-10-W		
Contact capacity (A)	Resistance	Inductive	Resistance	Inductive	
	AC 460 V	5	2	2.5	
	AC 250 V	10	10	10	
	AC 125 V	10	10	10	
	DC 250 V	0.3	0.3	3	1.5
	DC 125 V	0.6	0.6	10	6
	DC 30 V	10	6	10	10
Maximum number of contacts	5a5b		5a5b		
Order information	Art. no. 168962 (standard)	168961			

Counter (CNT)

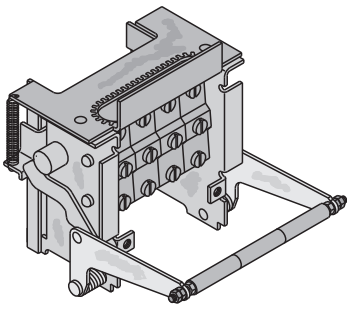


This is a mechanical counter which registers the total number of operating cycles (with 1 ON/OFF switching operation = 1 operating cycle).

The number of operating cycles is displayed on the front of the unit.

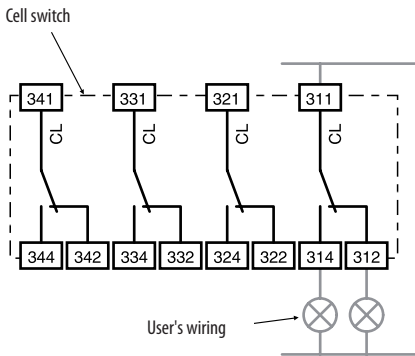
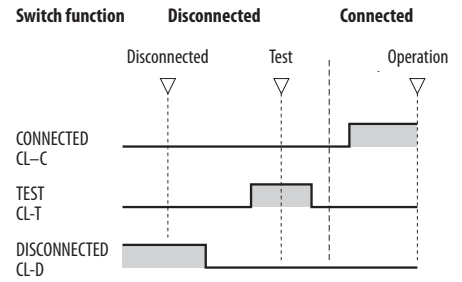
Specifications	CNT-W
Counter type	Mechanical
Display	5 digits
Order information	Art. no. 168538

Cell switch (CL)



The cell switches can be set for all the relevant positions, i.e. connected, test and disconnected.

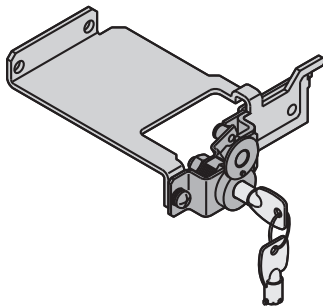
Each cell switch consists of 4 individual switches.



Specifications	CL-4-W		BIF-CL-W ①		
Load	Resistive	Inductive	Resistive	Inductive	
Contact capacity (A)	AC 460 V	5	5	2.5	
	AC 250 V	10	10	10	
	AC 125 V	10	10	10	
	DC 250 V	3	1.5	3	1.5
	DC 125 V	10	6	10	6
	DC 30 V	10	10	10	10
Maximum contacts	Total 4c				
Order information	Art. no.	168512	168575		

① BIF-CL only necessary for networks operation

Interlock device (CYL)



The interlock device locks the circuit breaker into the OFF position.

The relevant key can only be taken out in the OFF position of the circuit breaker, so that it can also be used for unlocking other breakers.

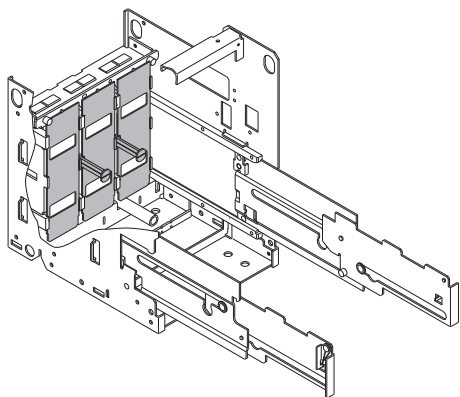
There are two locking options available:

- Cylinder lock (CYL)
- Castell lock (CAL) a

Specifications	CYL-WK-W	CYL-WK1-W	CYL-WK2-W	CYL-WK3-W	CYL-WK4-W	CYL-NK-W	
Interlock	Cylinder	Cylinder	Cylinder	Cylinder	Cylinder	Castell ①	
Closing	Basic	1	2	3	4	Basic	
Order information	Art. no.	168539	168540	168541	168542	168543	168544

① The closing basis for the Castell lock can be designed individually. Further details on request.

Safety shutters (SST)



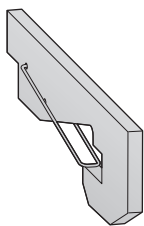
The safety shutters cover the main conductors of the cradle side (supply and load side) automatically when the circuit breaker is drawn out.

When checking the main circuit, the safety shutters on the supply and load sides can be opened independently of one another.

The safety shutters can also be locked with a mechanical locking device (SST LOCK). The padlocks have to be supplied by customer.

Specifications	SST-LOCK-W	SST-203-W	SST-204-W	SST-403-W	SST-404-W	
Breaker type	Drawout					
Number of poles	3/4	3	4	3	4	
Order information	Art. no.	168510	168973	168974	168975	168976

Vertical terminal adapter (VTA)

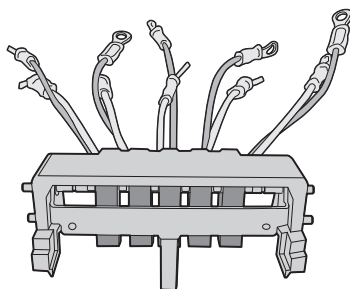


To obtain the right draw out configuration, it is extremely important that the breaker unit specifications (type, current rating, optional accessories, etc.) should match the cradle.

Mis-insertion is prevented by a combination of matching components (on the breaker and the cradle).

Specifications		MIP-W
Material		Metal
Order information	Art. no.	168547

Shorting b-contact (SBC)

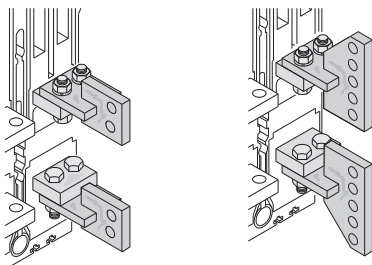


SBC-5-W

When moving the breaker from the connected to the test positions, this contact is used to short circuit auxiliary switch (Axb) thus maintaining the correct sequence of operation of the external control circuit.

Specifications	SBC-1-W	SBC-2-W	SBC-3-W	SBC-4-W	SBC-5-W	
Number of contacts	1	2	3	4	5	
Application (breaker)	All breakers					
Order information	Art. no.	168548	202337	202338	202339	202340

Vertical terminal adapter (VTA)

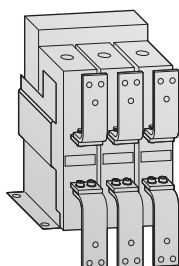


Vertical terminal adapters allow you to turn power connection by 90°.

For AE2000-SWA, AE4000-SWA, AE4000-SW, AE5000-SW and AE6300-SW models, vertical terminal only is available.

Specifications	VTA-02-W	VTA-03-W	VTA-32-W	
Application (breaker)	AE1000–AE1600-SW	AE2000–2500-SW	AE3200-SW	
Shipping contents	pieces 1	1	1	
Order information	Art. no.	168978	168979	168980

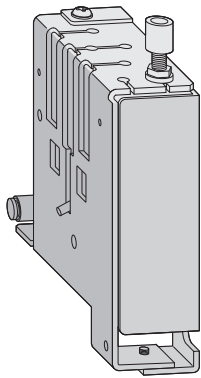
Front terminal adapter (FTA)



Front terminal adapters FTA allows a vertical connection for supply- and load-busbars.

Specifications	FTA-163F-W	FTA-164F-W	FTA-253F-W	FTA-254F-W	FTA-323F-W	FTA-324F-W	FTA-163D-W	FTA-164D-W	FTA-253D-W	FTA-254D-W	FTA-323D-W	FTA-324D-W	
Application (breaker)	AE1000–AE1600-SW	AE1000–AE1600-SW	AE2000–AE2500-SW	AE2000–AE2500-SW	AE3200-SW	AE3200-SW	AE1000–AE1600-SW	AE1000–AE1600-SW	AE2000–AE2500-SW	AE2000–AE2500-SW	AE3200-SW	AE3200-SW	
Pole	3	4	3	4	3	4	3	4	3	4	3	4	
Typ	Fixed						Drawout						
Shipping contents	pieces 6	8	6	8	6	8	6	8	6	8	6	81	
Order information	Art. no.	169331	169332	169333	169334	169335	169336	169337	169338	169339	169340	169341	169342

Mechanical interlock (MI)

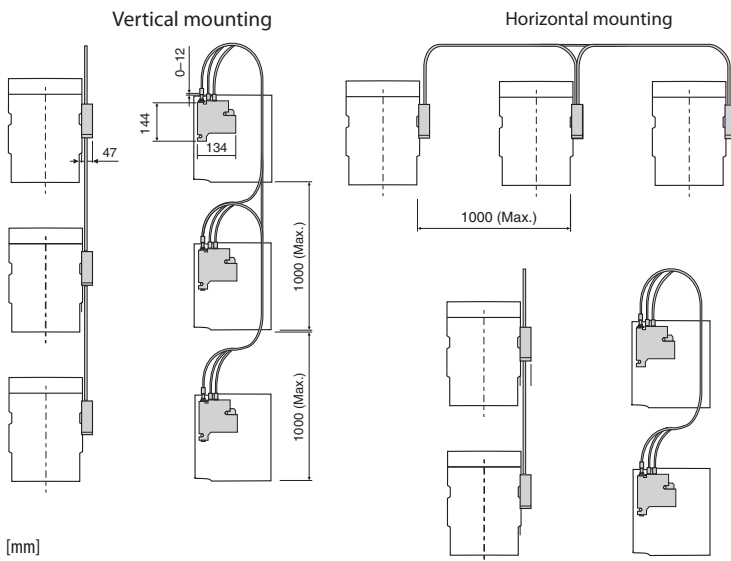


This is the device to prevent parallel charge of 2 or 3 units of breakers, and it can interlock the breakers mechanically without fail. All combinations are available among any models from AE1000-SW to AE4000-SWA.

Please apply for further details of AE4000-SW to AE6300-SW.

Further the interlock is possible among the different connection types or poles, such as fixed type or drawout type, 3 pole or 4 pole. In combination with electric interlock, the higher safety interlock system can be secured.

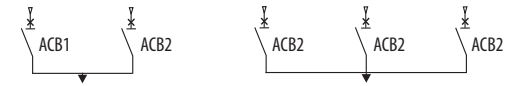
- In case of drawout type, the interlock works at “CONNECTED” position, and in another position the interlock is released, which is convenient for and easy maintenance and inspection of the breaker.
- When to turn OFF one breaker and then turn ON another breakers, please take an interval 0.5 seconds or more.
- MI for 3 breakers can not be installed to combine with Door Interlock (DI).



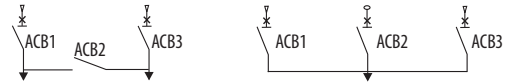
[mm]

Switching states (for 2 ACBs)

Type	①	②	③	Type	①	②	③	④
ACB 1	○		○	ACB 1	○		○	○
ACB 2	○	○		ACB 2	○	○		○
ACB 3	○	○	○	ACB 3	○	○	○	

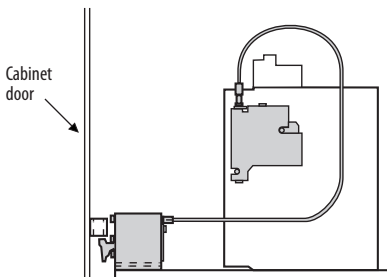


Type	①	②	③	④	⑤	⑥	⑦	Type	①	②	③	④	⑤
ACB 1	○		○				○	ACB 1	○		○	○	○
ACB 2	○	○		○			○	ACB 2	○	○		○	○
ACB 3	○	○	○		○			ACB 3	○	○	○		



Specifications	MI-203F-W	MI-204F-W	MI-403F-W	MI-404F-W	MI-203D-W	MI-204D-W	MI-403D-W	MI-404D-W	MI-IW-W
Application (breaker)	AE1000–1600-SW AE2000-SWA		AE2000–3200-SW AE4000-SWA		AE1000–1600-SW AE2000-SWA		AE2000–3200-SW AE4000-SWA		Wire set for all mechanical interlock devices required for combination of 3 ACBs
Breaker type	Fixed				Drawout				
Number of poles	3	4	3	4	3	4	3	4	
Order information	Art. no. 168963	168964	168965	168966	168967	168968	168969	168970	168971

Door interlock (DI)



This mechanical interlock device makes it impossible to open the panel door unless the circuit breaker is not switched off.

The device has been designed for panel doors with the groove on the left (standard). Locks for grooves on the right are available on request.

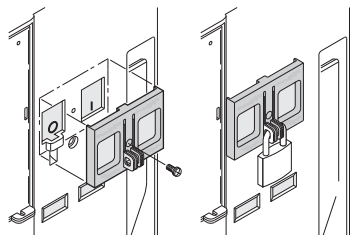
A wire-type mechanical interlock is used to allow flexibility in positioning breakers in the panel.

Note:

When using the door interlock (DI) the application of the mechanical interlock (MI) is not possible.

Specifications	DI-F-W	DI-D-W
Application (breaker)	For all breakers	For all breakers
Breaker type	Fixed	Drawout
Order information	Art. no. 168545	168546

■ Push button cover (BC-L)

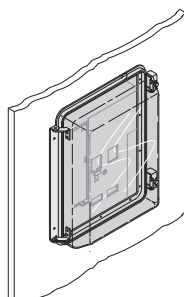


This mechanical device can be locked with a padlock or a seal (both is not included in the package) to protect the push buttons of the breaker unit against inadvertent ON/OFF operation.

The padlock has to be supplied by the customer.

Specifications		BCL-W
Material		Acrylic plate
Order information	Art. no.	168537

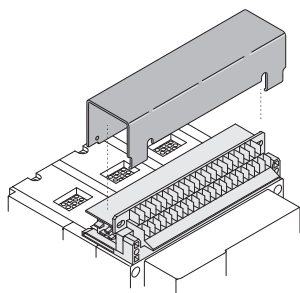
■ Dust cover (DUC)



The transparent dust cover is hinged onto the panel door. It has a screw lock and prevents dust and water entering into the circuit breaker.

Specifications		DUC-W
Material		IP 54
Order information	Art. no.	168960

■ Terminal cover (TTC)



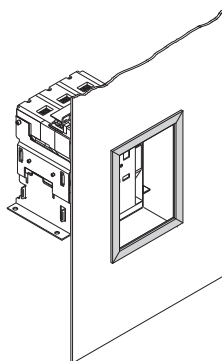
The terminal cover is a transparent cover for safety finger protection of control terminals.

The terminal cover prevents from careless touching to the live control terminals.

The TTC-F-W is included within the delivery of a fixed type AE-SW as standard.

Specifications		TTC-D-W	TTC-F-W
Application (breaker)		Dawout type	Fixed type
Protection		IP 20	IP 20
Order information	Art. no.	168549	168972 (Standard)

■ Door frame (DF)



The door frame improves the appearance, after cutting out the panel door to install the breaker. Details on request.

Specifications		DUC-W
Application (Breaker)		For all breakers
Material		Plastic
Protection		IP 20
Order information	Art. no.	168960

Current transformer (CT)

These current transformers (CT and sensor coil) are suitable for the main conductor and the N conductor.

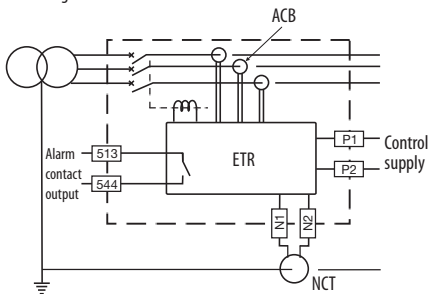
Current transformers of type CT-06□□□□ serve the reduction of $I_{N\ max}$ on an AE1000.

Specifications	CT-06-W 025	CT-06-W 031	CT-06-W 050	CT-06-W 063	CT-10-W 100	CT-12-W 125	CT-16-W 160	CT-20-W 125	CT-20-W 160	CT-20-W 200	CT-25-W 250	CT-32-W 320
Application (breaker) ①	AE1000-SW	AE1000-SW	AE1000-SW	AE1000-SW	AE1000-SW	AE1250-SW	AE1600-SW	AE2000-SW	AE2000-SW	AE2000-SW	AE2500-SW	AE3200-SW
Rated current $I_{N\ max}$ ② (A)	250	315	500	630	1000	1250	1600	1250	1600	2000	2500	3200
Order information	Art. no. 193939	193940	193941	193942	193943	193944	193945	193946	193947	193948	193949	193950

① Shipping contents includes CT and sensor coil for 1 pole. Other transformers on request.
 ② At 40 °C and 50/60 Hz

Neutral current transformer (NCT)

Block diagram with NCT function



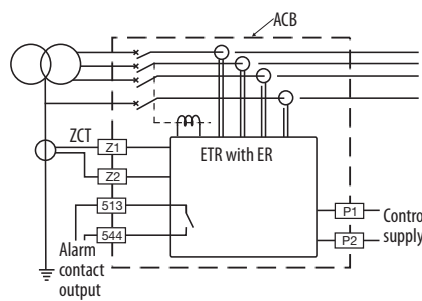
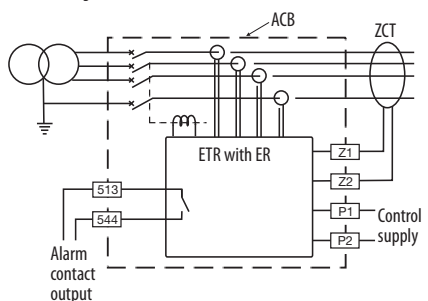
The neutral CT is used for ground fault protection when a 3 pole breaker is used on a 3 phase 4 wire system.

The Ground fault protection module type G1 should be used as optional setting module.

Specifications	NCT-06	NCT-10	NCT-12	NCT-16	NCT-20	NCT-25	NCT-32	NCT-40
Application (breaker)	AE630-SW	AE1000-SW	AE1250-SW AE2000-SW	AE1600-SW AE2000-SW	AE2000-SWA AE2000-SW	AE2500-SW	AE3200-SW	AE4000-SWA
Current range (A)	630	1000	1250	1600	2000	2500	3200	4000
Order information	Art. no. 168986	168987	168988	168989	168990	168991	168992	168993

External current transformer (ZCT/ZT)

Transformer ground wire method (ZCT)



This option is used to detect several amperes of earth leakage when used in combination with an electronic trip relay that has the earth leakage tripping (ER) option.

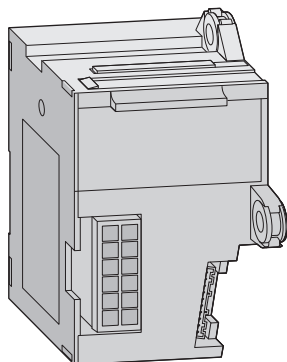
Two methods are available:

- ZCT: three-load phase conductors (and the neutral conductor in a 4-wire system) are passed through the ZCT
- ZT: The other method uses a smaller ZCT (only supply transformer ground wire passes through to earth).

Specifications	ZCT-163-W	ZCT-323-W	ZCT-324-W	ZT-15B-W	ZT-30B-W	ZT-40B-W	ZT-60B-W	ZT-80B-W	ZT-100B-W
Application	Load circuits			Transformer ground wire					
Hole diameter for wire ① (mm)	230x60 (oval)	370x108 (oval)	500x108 (oval)	∅ 15	∅ 30	∅ 40	∅ 60	∅ 80	∅ 100
Order information	Art. no. 168994	168995	168996	168997	168998	168999	169000	169001	169002

① Further details on request.

Internal power supply units (PW)

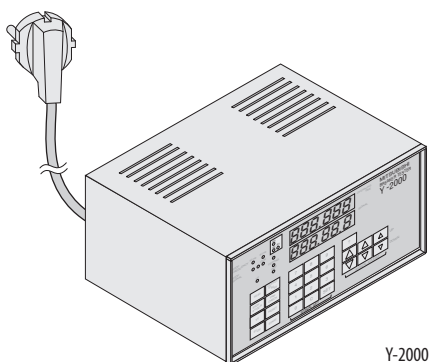


These power supplies are used for supplying the ETR base unit. They are equipped with 6 outputs (alarms and errors).

The PW3-W is included as standard power supply in the ACB's.

Specifications		PW3-W	PW4-W	PW5-W
Power supply	(V)	100–240 (AC) 100–125 (DC)	24–60 (DC)	100–240 (DC)
Output contacts		6	6	6 (SSR)
Order information	Art. no.	168985 (standard)	168562	168563

Field test device (Y-2000)



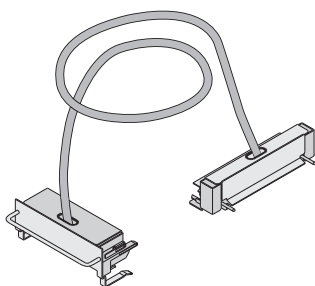
Y-2000

The electronic trip relay can be checked by this field test device when the breaker is at test or disconnect position. So it allows you to test the

trip relay without the breaker being connected to the main supply. The breaker will trip when tested.

Specifications	Y-2000
Power supply	100–240 V AC, 50/60 Hz
Test functions	LTD, INST, STD, Ground fault, pre-alarm
Test current signal setting	Continuously variable (10–2500 %)
Others	Ammeter, time counter
Order information	Art. no. 27496

Test jumper (TJ)



With the breaker taken out of its cradle, this device enables the breaker to be electrically opened and closed, and the operating sequence to be checked.

3 m length of cable is equipped as standard. Other lengths available on request.

Specifications	Test Jumper
Cable length	(m) 3 ^①
Order information	Art. no. 168977

^① Other lengths on request

Interphase barriers

Connections	AE1000-SW – AE1600-SW	AE2000-SWA	AE2000-SW – AE3200-SW	AE4000-SWA
Fixed type				
Horizontal (FIX)	●	×	●	×
Vertical terminal (FIX-VT)	×	▲	×	▲
Vertical terminal adaptor (VTA)	▲	×	▲	×
Front terminal adaptor (FIX-FTA)	▲	×	▲	×
Drawout type				
Horizontal (DR)	●	×	●	×
Vertical terminal (DR-VT)	●	▲	▲	▲
Front terminal (DR-FT)	—	×	▲	×
Vertical terminal adaptor (VTA)	▲	×	▲	×
Front terminal adaptor (DR-FTA)	▲	×	▲	×

● = Available for the insulation ▲ = Available for separating terminals × = Not existing type — = Attachment is impossible
For AE4000-SW to AE6300-SW not available

Introduction and selection

Power supply module

This module provides control source for Display module, Trip indicator and several indicators (LEDs). (Even when the control power source is off, the function of over current protection and ground fault protection are effective.)

The power supply modules provide 6 output contacts for external use (see page 22).

Display

Several measuring data (current, voltage, power etc) and alarms can be displayed with this module. (see page 28)

Main setting module

This module provides the function of over current protection. It is possible to select the two setting modules according to application (see page 24).

Neutral protection of rated current (100 %) function is standard at 4 pole breaker.

Optional setting module (option)

(figure shows G1)

Additional functions and characteristics can be selected by optional setting modules (see page 26).

Load current LED (standard)

This indicator displays the ETR situation (Run or Error)

RUN LED, ERR. LED (standard)

This indicator displays the ETR situation (Run or Error)

Pre-alarm (PAL) (standard)

This indicator displays the Pre-alarm situation when the setting current exceeds. If a power supply module with alarm contacts is installed, the output contact of Pre-alarm is available.

* The output is reset when the electric current goes below the set level after an alarm is set off

Trip indicator LED (standard)

This indicator displays the trip cause.

TEST terminal (standard)

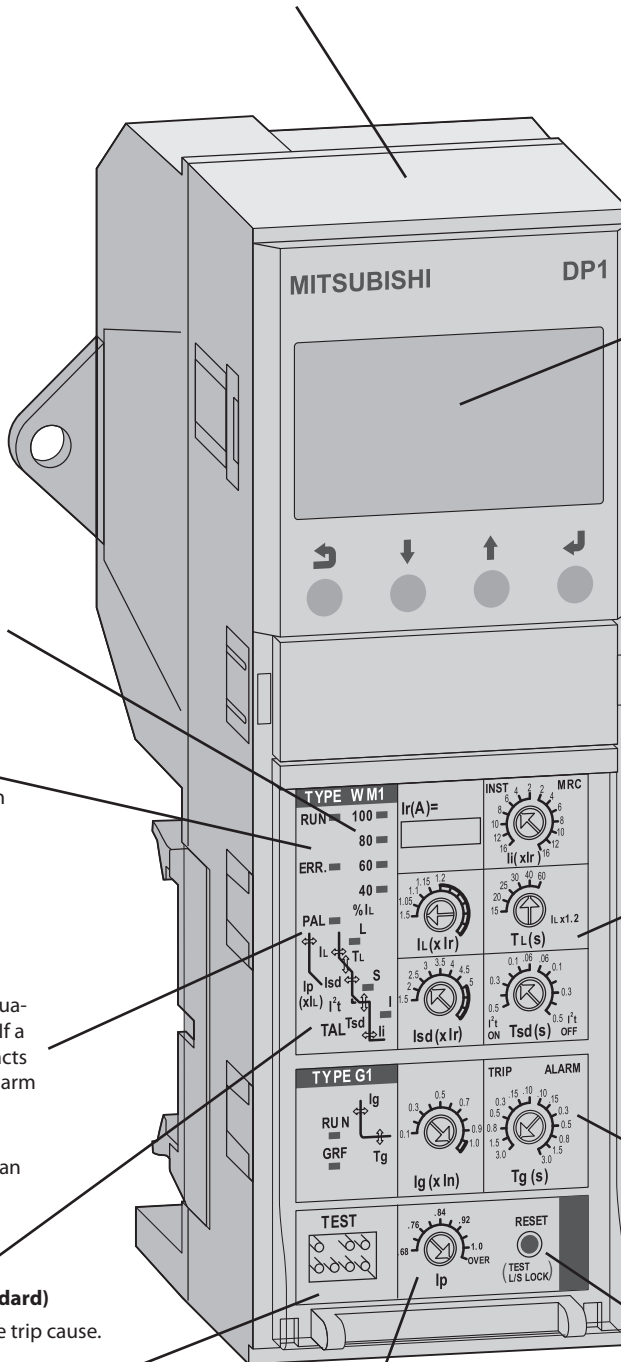
This terminal already installed as standard and is used for checking by the field test device Y-2000.

Pre-alarm current level setting dial (standard)

For setting the current level for Pre-Alarm. If current exceeds this level, pre-alarm is indicated.

RESET button (standard)

When push this reset button, trip indicator, and Pre-Alarm will be reset. And when the instantaneous test by field test device Y-2000 (optional) and push this reset button, as a result of LTD and STD function become ineffective.



Standard functions

■ OCR alarm (AL)

When it happens to trip by over current, ground fault (GFR) or Earth leakage (ER), this function issues a warning alarm.

■ Neutral pole overcurrent protection (NP)

When harmonics in load current are large, the current on neutral pole exceeding rated current may flow. Harmonics may cause some troubles.

Neutral pole overcurrent protection prevents them by operating at 100 % of rated current on neutral pole. Please see page 27 for 50 % neutral protection.

Special functions – optional

■ MCR: Making current release

Just under the breaker closing operation (from open to close), Instantaneous characteristic become effective, but after closing the breaker, instantaneous characteristic become ineffective.

When you order the MCR switch, MCR switch is built in the main body. If MCR switch is built in the main body and the adjust dial of INST/MCR on main setting module is set the MCR position, MCR function become effective (see page 27).

■ NCT

Neutral CT is required for Ground fault or Neutral pole protection, when 3 pole breaker is used for 3 phase 4 wires system. (see page 18)

■ ZCT

ZCT is required for a few amperes earth leakage protection, and is combining ER plug. (see page 18)

Characteristic table

Overview of tripping characteristics of main setting modules in combination with optional setting modules

	General protection Main setting module only	G1 Ground fault	E1 Earth leakage	AP 2nd additional Pre-alarm	N5 Neutral pole 50% protection
WS General use LTD+STD+INST/MCR					
WM Generator protection use LTD+STD+INST/MCR					

Note:
WB type for special use is available on request.

3 SAE – Electronic Trip Relay

Power supply modules

Product overview

Type	Rating	Alarm output contacts
P3	100–240 V AC 100–125 V DC	6 output contacts
P4	24–60 V DC	6 output contacts
P5	100–240 V AC	6 output contacts (SSR)

Note:
Over current protection and ground fault protection operates without control power source.

Contact capacity (Type code P3, P4)

Voltage (V)	Resistive load		Inductive load cosφ = 4.0 L/R = 7 ms
	cosφ = 1.0		
AC	240	1 A	0.5 A
	120	1 A	1 A
DC	125	0.1 A	0.05 A
	30	1 A	1 A

Contact capacity (Type code P5)

Voltage (V)	Normal current	Peak inrush current	ON resistance (max.)
AC	240	0.1 A	0.3 A
	120	0.1 A	0.3 A
DC	125	0.1 A	0.3 A
	30	0.1 A	0.3 A

Factory setting of 6 output contacts is as follows.

G1/E1/AP	LTD	STD/INST	PAL	TAL	ERR
Refer to lower table	Self-holding	Self-holding	Non Self-holding	Non Self-holding	Non Self-holding

Type	G1	E1	AP
TRIP side	Selfholding	Selfholding	—
ALARM side	Non Self-holding	Non Self-holding	Non Self-holding

Description:
Self-holding type: The output condition is held until it is reset.
Non self-holding type: The output is reset if it is returned to the normal condition.

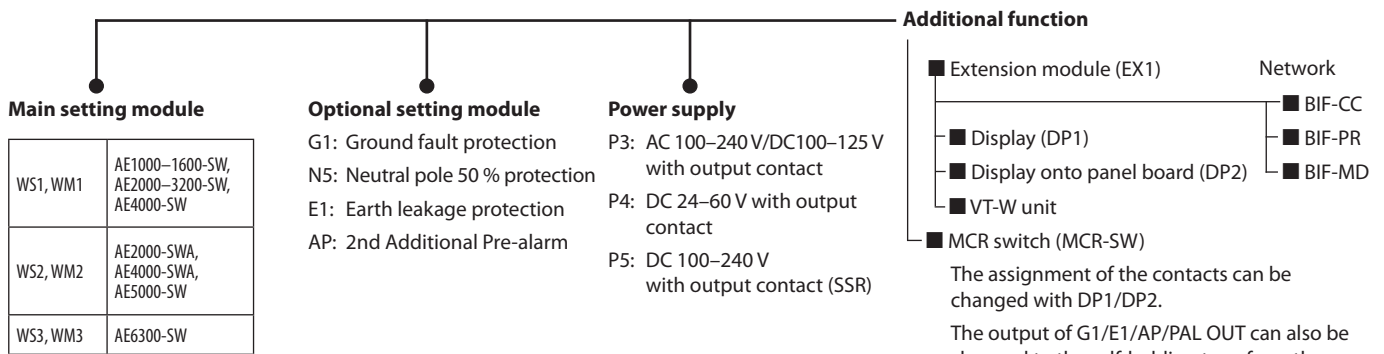
CT rating table

AE1000-SW		AE1250-SW		AE1600-SW		AE2000-SWA		AE2500-SW		AE3200-SW		AE4000-SWA		AE5000-SW		AE6300-SW	
1000 A		1250 A		1600 A		2000 A		2500 A		3200 A		4000 A		5000 A		6300 A	
250 A	315 A					AE2000-SW						AE4000-SW					
500 A	630 A					2000 A						4000 A					
						1250 A	1600 A										

Notes:

- AE1000-SW and AE2000-SW has low rating types, too.
- As for details of ratings, refer to pages 6 and 7.

Electronic trip relay (ETR configuration overview)



WS : General use

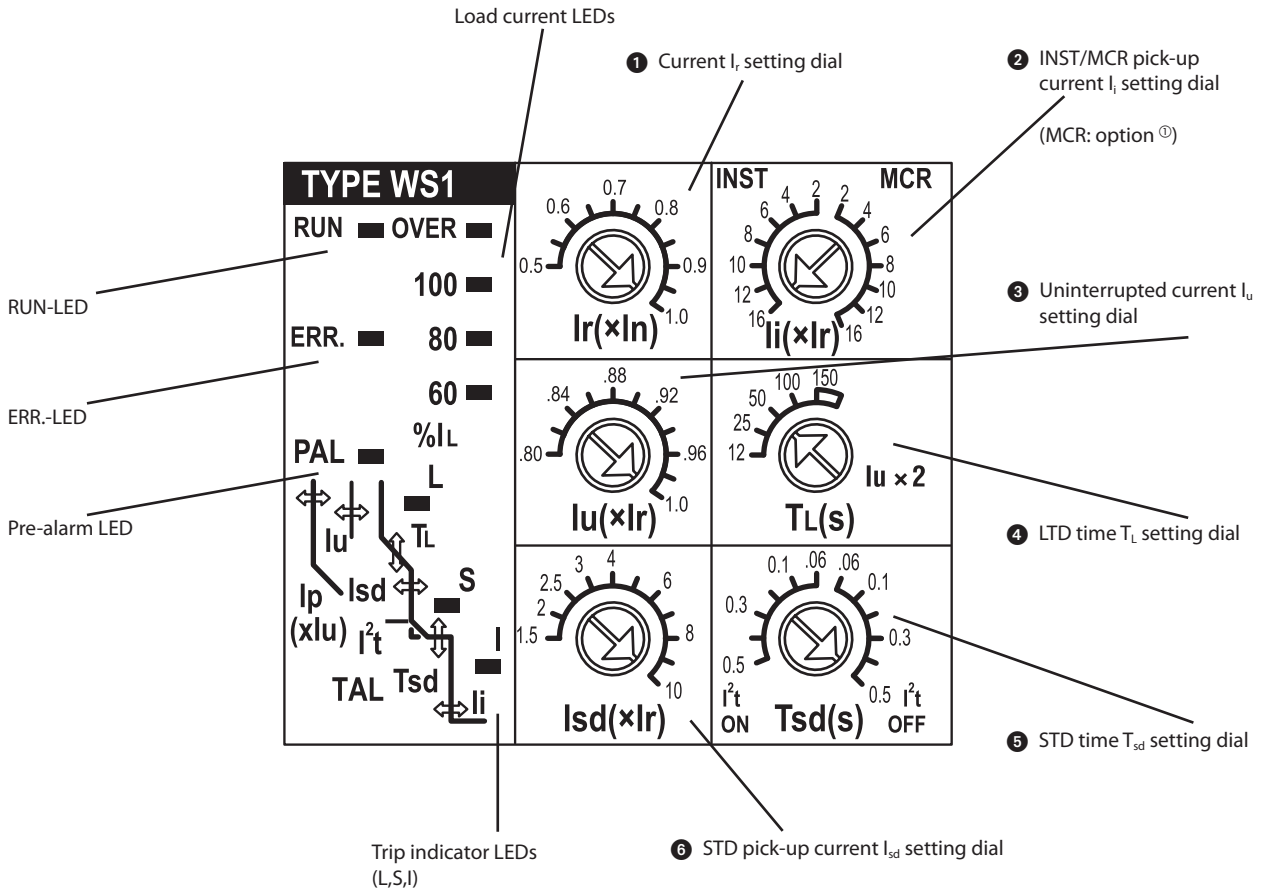
WM: Generator protection use

(WB: Special use: on request)

S types – General protection

3

SAE – Electronic Trip Relay



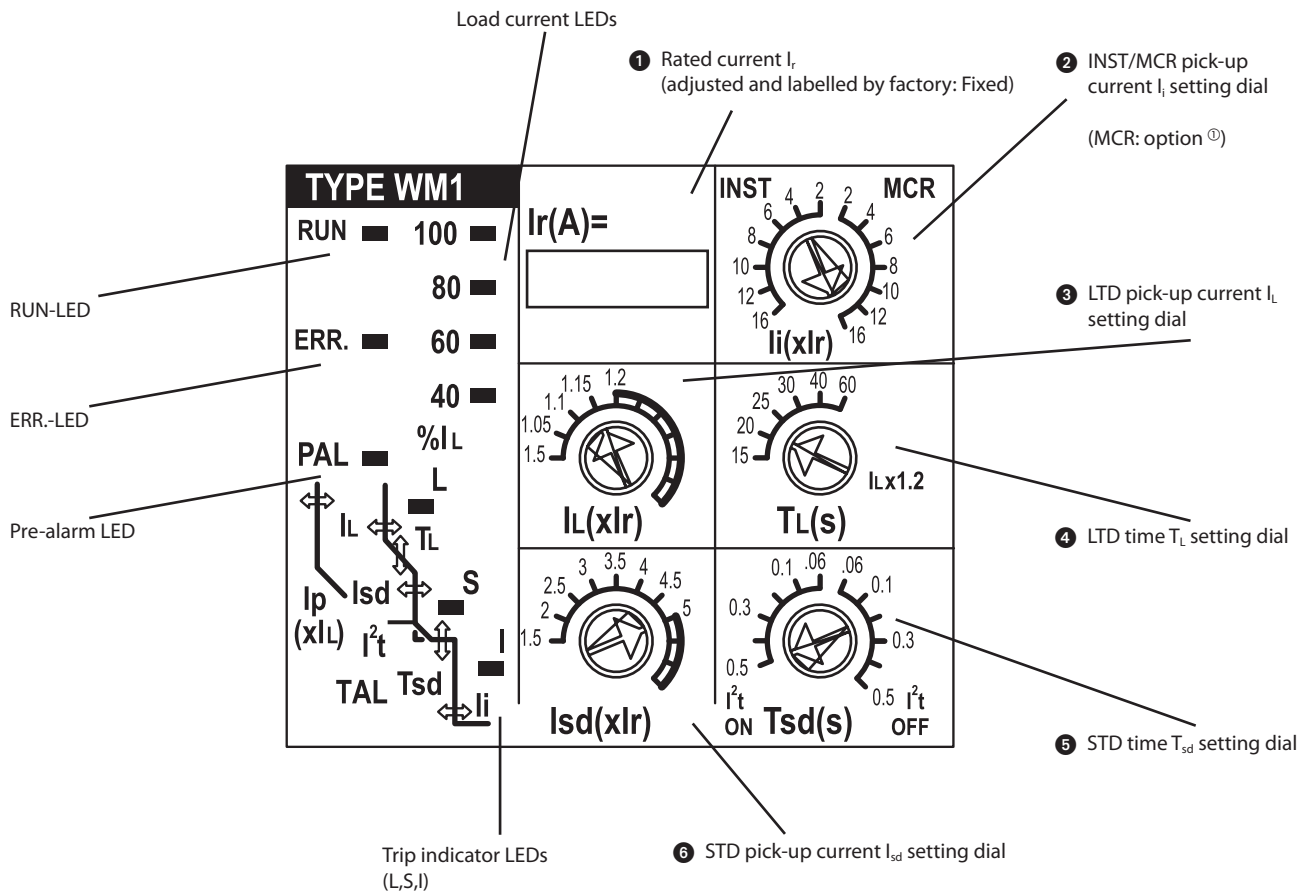
Adjustable setting range

No.	Setting item	Adjustable setting range	Accuracy	Setting for shipment
1	Current setting	I_r 0.5–1.0 (0.05 step) $\times I_n$ (CT rating)	—	1.0
3	Uninterrupted current	I_u 0.8–1.0 $\times I_r$ (0.02 step), Pick-up current: 1.15 $\times I_u$	1.05 $\times I_u$... Non Pick-up 1.25 $\times I_u$... Pick-up	1.0
4	LTD time	T_L 12–25–50–100–150 s at $I_u \times 2$	$\pm 20\%$	150
6	STD pick-up current	I_{sd} 1.5–2–2.5–3–4–5–6–7–8–9–10 $\times I_r$	$\pm 15\%$	10
5	STD time	T_{sd} 0.5–0.4–0.3–0.2–0.1–0.06–0.06–0.1–0.2–0.3–0.4–0.5 s (I ² t ON) (I ² t OFF) at $I_{sd} \times 1.5$	$\pm 20\%$ This means, it operates in the range between 0.04 and 0.08 s when the time set at 0.06 s.	0.5 (I ² t ON)
2	INST/MCR pick-up current	AE1000-SW–AE1600-SW AE2000-SW–AE3200-SW AE4000-SW WS1 16–12–10–8–6–4–2–2–4–6–8–10–12–16 $\times I_r$ (INST) (MCR) ^① AE2000-SWA, AE4000-SWA AE5000-SW WS2 12–10–8–6–4–2–2–4–6–8–10–12 $\times I_r$ (INST) (MCR) ^① AE6300-SW WS3 10–8–6–4–2–2–4–6–8–10 $\times I_r$ (INST) (MCR) ^①	$\pm 15\%$	WS1: 16 (INST) WS2: 12 (INST) WS3: 10 (INST)
	Pre-alarm current	I_p $I_u \times 0.68$ –1.0 (0.04 step) – OVER	$\pm 10\%$	OVER ^②
	Pre-alarm time	T_p 1/2 T_L (after 1/2 T_L , PAL contact output turns on.)	$\pm 20\%$	—

① Upper figure and table include optional MCR function.
② Pre-alarm current "OVER" setting is equal to 1.0.

Specifications	WS1-W	WS2-W	WS3-W
Main setting Module S type	WS1	WS2	WS3
Order information	Art. no. 168552	168553	205180

M types – Generator protection



3

SAE – Electronic Trip Relay

Adjustable setting range

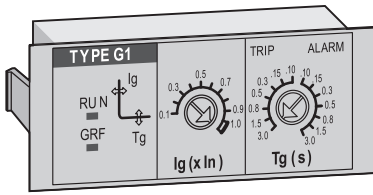
No.	Setting item	Adjustable setting range	Accuracy	Setting for shipment
1	Current setting	I_r 0.63–1.0 x I_n (Adjust by factory: Fixed)	—	Specify when ordering
3	ULTD pick-up current	I_L 1.0–1.05–1.1–1.15–1.2 x I_L	±5 %	1.0
4	LTD time	T_L 115–20–25–30–40–60 s at I_L x 1.2	±20 %	150
6	STD pick-up current	I_{sd} 1.5–2–2.5–3–3.5–4–4.5–5 x I_L	±15 %	10
5	STD time	T_{sd} 0.5–0.4–0.3–0.2–0.1–0.06 – 0.06–0.1–0.2–0.3–0.4–0.5 s (I^2t ON) (I^2t OFF) at I_{sd} x 1.5	±20 % This means, it operates in the range between 0.04 and 0.08 s when the time set at 0.06 s.	0.5 (I^2t ON)
2	INST/MCR pick-up current	AE1000-SW–AE1600-SW AE2000-SW–AE3200-SW AE4000-SW WM1 16–12–10–8–6–4–2 – 2–4–6–8–10–12–16 x I_L (INST) (MCR) ^① AE2000-SWA, AE4000-SWA AE5000-SWA WM2 12–10–8–6–4–2 – 2–4–6–8–10–12 x I_L (INST) (MCR) ^① AE6300-SW WM3 10–8–6–4–2 – 2–4–6–8–10 x I_L (INST) (MCR) ^①	±15 %	WM1: 16 (INST) WM2: 12 (INST) WM3: 10 (INST)
	Pre-alarm current	I_p I_n x 0.68–1.0 (0.04 step) – OVER	±5 %	OVER ^②
	Pre-alarm time	T_p 1/2 T_L (after 1/2 T_L , PAL contact output turns on.)	±20 %	—

① Upper figure and table include optional MCR function.
 ② Pre-alarm current "OVER" setting is equal to 1.0.

Specifications	WM1-W	WM2-W	WM3-W
Main setting Module S type	WM1	WM2	WM3
Order information Art. no.	168552	168553	205180

Note:
 WB type for special use is available on request.

■ Ground fault protection (GFR)



The ground fault protection (GFR) of several hundred amperes is possible.

This function can be selected for trip and alarm (no trip). Power supply is necessary for this function, even if there is not power supply, it can function at $0.2 \times I_n$ or higher.

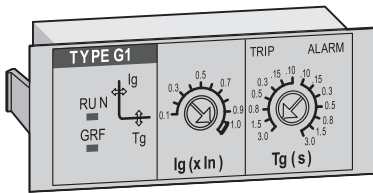
Specifications	G1-W
Optional setting Module	G1 (Ground fault protection module)
Order information	Art. no. 168558

3

SAE – Electronic Trip Relay

Setting item	Adjustable setting range	Accuracy	Setting for shipment
GFR pick-up current	I_g 0.1–0.2–0.3–0.4–0.5–0.6–0.7–0.8–0.9–1.0 I_n	$\pm 20\%$	1.0
GFR time	T_g 3–1.5–0.8–0.5–0.3–0.15–<0.1 – <0.1–0.15–0.3–0.5–0.8–1.5–3 s (at $1.5 \times I_g$) TRIP ALARM	$\pm 20\%$	3 s (TRIP)

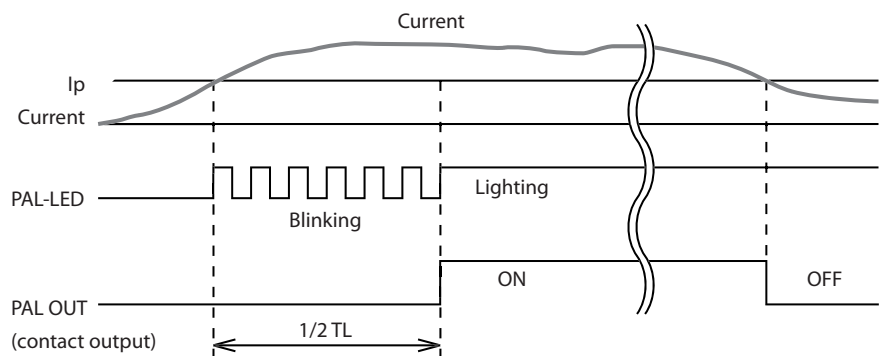
■ 2nd additional Pre-alarm (AP)



The Pre-Alarm (1st) function already installed in standard ETR, the 2nd additional Pre-Alarm function can be installed as option, thereby it is possible to monitor (observer) electric circuit in more detail by 2nd additional Pre-Alarm function.

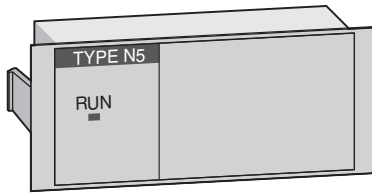
Specifications	AP-W
Optional setting Module	AP (2nd Pre-alarm module)
Order information	Art. no. 168560

Pre-alarm timing chart



Setting item	Adjustable setting range	Accuracy	Setting for shipment
2nd additional Pre-alarm pick-up current	I_{p2} 0.5–0.6–0.7–0.8–0.84–0.88–0.92–0.96–1.0 I_l (WS) 0.5–0.6–0.7–0.8–0.84–0.88–0.92–0.96–1.0 I_l (WM)	$\pm 10\%$ (WS) $\pm 5\%$ (WM)	1.0
2nd additional Pre-alarm time	T_{p2} 3–1.5–0.8–0.5–0.3–0.15–<0.1 – <0.1–0.15–0.3–0.5–0.8–1.5–3 s (at $1.5 \times I_p$) TRIP ALARM	$\pm 20\%$	0.9 x TL

Neutral pole 50 % protection (N5)

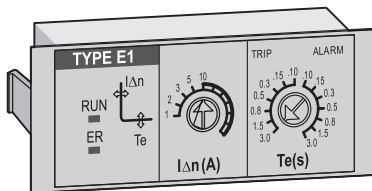


Neutral pole overcurrent protection (operating at 100 % of rated current) already installed in standard ETR.

But if you would like to operates at 50 % of rated current on neutral pole, neutral pole 50 % protection realizes it.

Specifications		N5-W
Optional setting Module		N5 (Neutrale pole protection module)
Order information	Art. no.	168561

Earth leakage protection (ER)

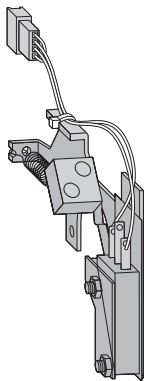


By combining the ETR with earth leakage protection (ER) and External ZCT, earth leakage protection is possible. Earth leakage protection, earth leakage tripping and earth leakage alarm can be selected. Control supply is necessary for this function.

Specifications		E1-W
Optional setting Module		E1 (Neutrale pole protection module)
Order information	Art. no.	168559

Setting item		Adjustable setting range	Accuracy	Setting for shipment
ER pick-up current	$I_{\Delta n}$	1–2–3–5–10 A	+0 % –30 %	10 A
ER time	T_e	$3-1.5-0.8-0.5-0.3-0.15-0.1$ (TRIP) $<0.1-0.15-0.3-0.5-0.8-1.5-3$ s (ALARM) (at $1.5 \times I_{\Delta n}$)	± 20 %	3 s (TRIP)

MCR switch (MCS-W)

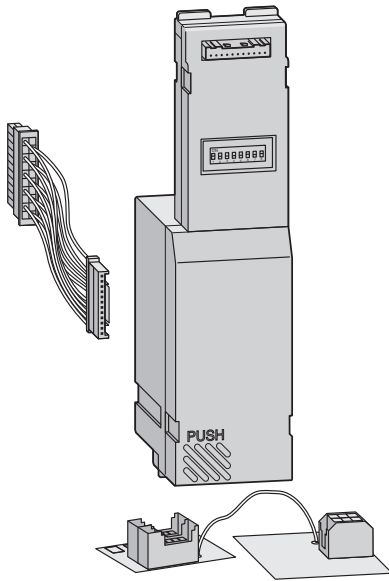


If MCR switch is built in the breaker and the dial for INST/MCR on Main setting module is set to any MCR position, MCR function is operative.

MCR function: During a closing operation of the breaker, Instantaneous characteristics is operative. And it becomes inoperative when the breaker is in the closed position.

Specifications		MCS-W
Optional setting Module		MCR
Order information	Art. no.	168570

Extension module (EX1)



This is the module that realizes various additional functions combining Display module (DP1/DP2), Interface unit (BIF-CC/ BIF-PR/ BIF-MD) and VT-W unit.

● Various measuring elements, high measuring accuracy

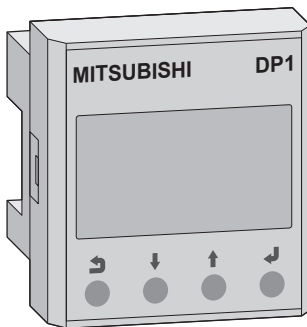
By adopting high-performance ASIC, various measuring elements (load current, voltage, energy, harmonics, etc.) and high measuring accuracy are realized.

● Communication function

2 display modules and 1 interface unit can be connected simultaneously by internal communication.

Setting item	Adjustable setting range
Type	Extension Module
Order information	Art. no. 168564

Display module (DP1/DP2)



This is the module that displays and sets various information, for example, measurement, trip and alarm, setting of output contacts and so on.

● Multi display of measuring element

It enables to easily monitor the comparison of each measuring element by multi display (load current 4 phases multi display and voltage multi display) on one screen.

● 2-colours back light

If trip or alarm occurred, back light colour changes from green to red automatically.

● Graphical display

By adopting dot matrix type LCD, graphical display such as bar graph display of load current, harmonic currents and characteristic curve are realized.

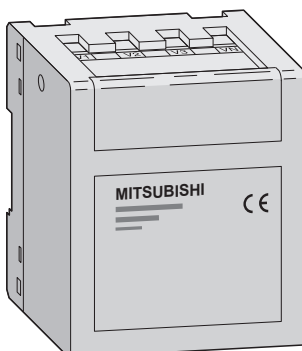
There are 2 types of this module. One is the ETR attachment type (DP1). Another is the panel attachment type (DP2) and is connected to extension terminals of control circuit by 2 m cable (5 m cable will be available on request).

Specification	DP1-W	DP2-W
Type	Display module for ETR assembly	Display module for Panel assembly
Order information	Art. no. 168565	168566

Notes:

- Extension module (EX1) is required.
- The VT-W measurement module is required to display the measured data except the electric current.

Measurement module (VT-W)

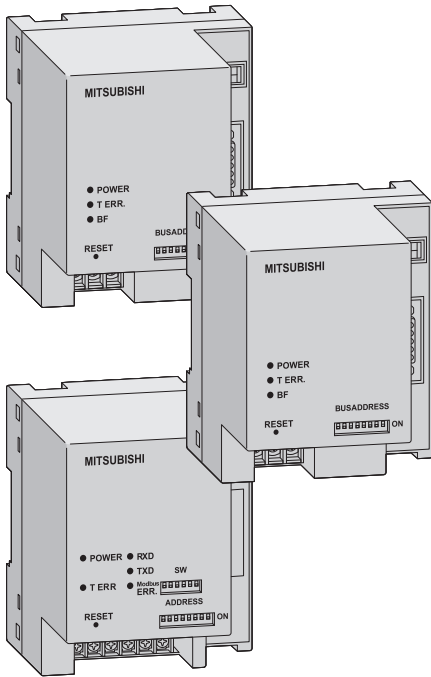


The VT-W measurement module enables to measure voltages, powers, energies, harmonic currents and etc. by connecting the ETR with Extension module (EX1).

It is to be placed separately outside the the breaker. A connection cable of 2 meters length is included.

Specifications	VT-W
Unit for	U/P/E/cos phi/earth leakage/average measuring/trip history/trip current measuring
Order information	Art. no. 168567

Interface unit (BIF-CC/BIF-PR/BIF-MD)



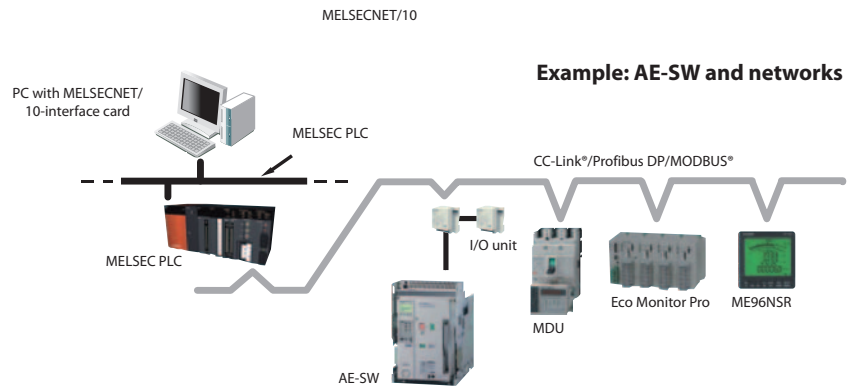
These Interface units can expand the future possibility in various communication and Intelligent control.^①

● **Applicable to various open networks.**

These units are applicable to various open network systems such as CC-Link®, Profibus DP and MODBUS® (RS485), which can be built in easily.

● **Intelligent control by Multi-data communication**

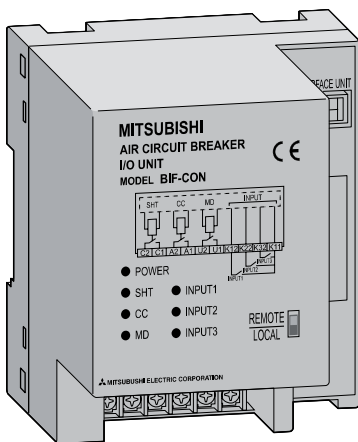
It comes into being the Intelligent control by Multi-data communication through these interface units to PLC/SCADA, which transfer the measurement information, setting values, error information and trip and alarm information.



Specifications	BIF-CC-W	BIF-PR-W	BIF-MD-W
Main setting Module S type	CC-Link network	Profibus DP network	Modbus network
Order information	Art. no. 168571	168572	168573

Notes:
 – Extension module (EX1) is required.
 – The VT-W unit is required to display the measured data except the electric current.

I/O unit (BIF-CON/BIF-CL)



The input & output controlling unit BIF-CON is available for the remote controlling and remote monitoring of the breaker condition through the various network systems.

With this BIF-CON in addition to the interface unit, it become possible to control the breaker

remotely, like a ON or OFF operations or Spring-charging. Further, by combining the drawout position switch (BIF-CL), the monitoring of drawout position become available in case of the breaker drawout type.

Function	Description	Note
Control	Breaker ON operation	1 a contact for CC
	Breaker OFF operation	1 a contact for SHT (not applicable for AC 380 – 500 V rating)
	Spring charge	1 a contact for MD
Monitor	Digital Input (DI) monitoring	In case of BIF-CC and BIF-MD, max.3 contacts monitoring are available. In case of BIF-PR, 1 contact monitoring is available.
	Breaker drawout position	Position: CONNECTED, TEST and DISCONNECTED BIF-CL is required.

Specifications	BIF-CON-W
Application	I/O unit network module
Order information	Art. no. 168574

Configuration table of ETR with EX1 and VT-W module

Combination sample	Display module + Extension module								Display module + Extension module + VT-W unit							
	① = EX1 ② = DP1 - ③ = DP2 ①								① = EX1 ② = DP1 - ③ = DP2,VT-W ①							
	WS				WM				WS				WM			
Type	NP	AP	G1	E1	NP	AP	G1	E1	NP	AP	G1	E1	NP	AP	G1	E1
① Main setting module	P3 – P5								P3 – P5							
② Optional setting module																
③ Power supply																
Load current (±2.5 %)	○								○							
Leakage current (±15 %) ③	—	—	—	○	—	—	—	○	—	—	—	○	—	—	—	○
Voltage (±2.5 %)	—								○							
Power (active, reactive, apparent) (±2.5 %)	—								○							
Power factor (±5 %)	—								○							
Energy (active, reactive) (±2.5 %)	—								○							
Harmonics current (±2.5 %)	—								○ (3.5 ... 19th)							
Frequency (±2.5 %)	—								○							
LTD	○				○				○				○			
STD	○				○				○				○			
INST	○								○							
GFR	—	—	○	—	—	—	○	—	—	—	○	—	—	—	○	—
ER	—	—	—	○	—	—	—	○	—	—	—	○	—	—	—	○
UVT	○ ②								○ ②							
PAL1	○								○							
PAL2	—	○	—	—	—	○	—	—	—	○	—	—	—	○	—	—
OVER	○								○							
GFR	—	—	○	—	—	—	○	—	—	—	○	—	—	—	○	—
EPAL	—	—	—	○	—	—	—	○	—	—	—	○	—	—	—	○
ER	—	—	—	○	—	—	—	○	—	—	—	○	—	—	—	○
LTD	○				○				○				○			
STD	○				○				○				○			
INST	○								○							
PAL1	○								○							
PAL2	—	○	—	—	—	○	—	—	—	○	—	—	—	○	—	—
GFR	—	—	○	—	—	—	○	—	—	—	○	—	—	—	○	—
EPAL	—	—	—	●	—	—	●	—	—	—	—	●	—	—	—	●
ER	—	—	—	○	—	—	—	○	—	—	—	○	—	—	—	○
Output contacts setting change	●								●							
Date & Time	●								●							
Demand time	●								●							
Alarm holding method	●								●							
Trip and alarm information	●								●							
Measurement information (min. and max. values)	●								●							
Main/Optional setting module information	○								○							
Error information	○								○							
CT rating	○								○							
Phase line method	○								○							
Normal connection or reverse connection	○								○							

○: can be displayed by DP1/DP2

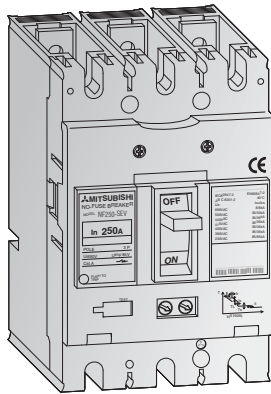
●: can be displayed and set by DP1/DP2

① 2 units of display modules can be attached.
 ② Display is available only when UVT module is attached.
 ③ Included the accuracy of ZCT.

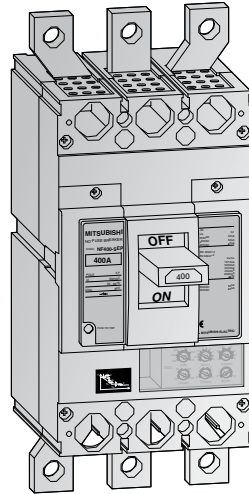
World Super Series WSS – The extensive breaker series from Mitsubishi Electric

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

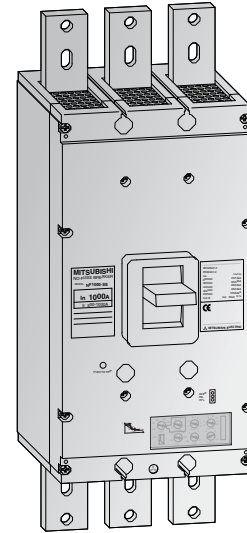
The system is based, among other things, on the well-known and proven microprocessor technology.



NF250-SEV, 3p



NF400-SEW, 3p



NF1000-SEW, 3p

4

MCCB Overview

WSS – World Super Series

The 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
- $I_{cs} = 100\% I_{cu}$, up to 690 V
- additional disconnectors available

The proven World Super Series features technical know-how and the micro-processor 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

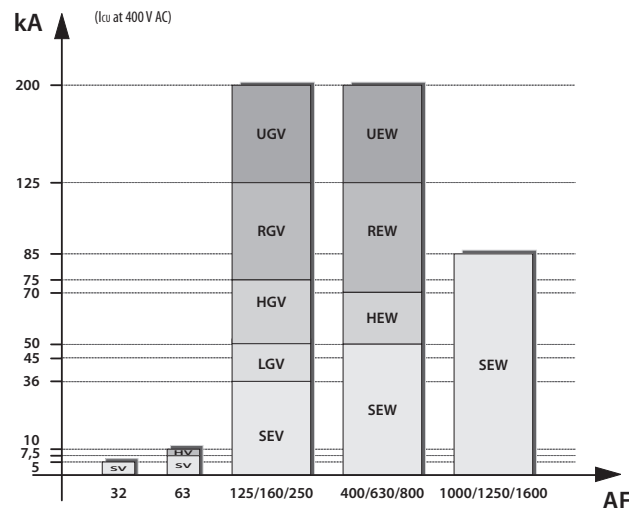
The proven standard series for a high breaking performance providing an optimum protection for transformer and generator feed in, and output breakers.

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 versions
- additional disconnectors available

Intelligent breaking technology for your safety

With its innovative breaking technology all Mitsubishi Electric 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

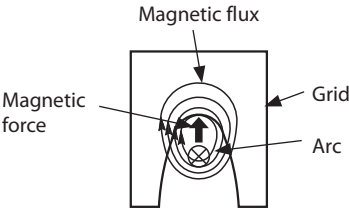
New breaking technology

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



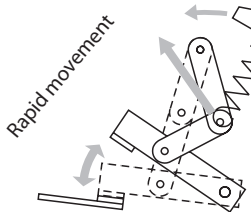
Arc extinction

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)

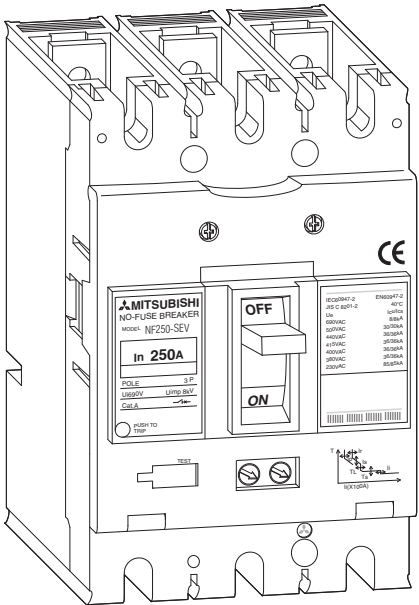
Enables tripping mechanically from outside, for confirming the operation of the accessory switches and the manual resetting function.



Switching mechanism

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

Moulded case (cover)



Type NF250-SEV construction

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 to ON, indicating the energizing 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 Electric'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 Electric'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.

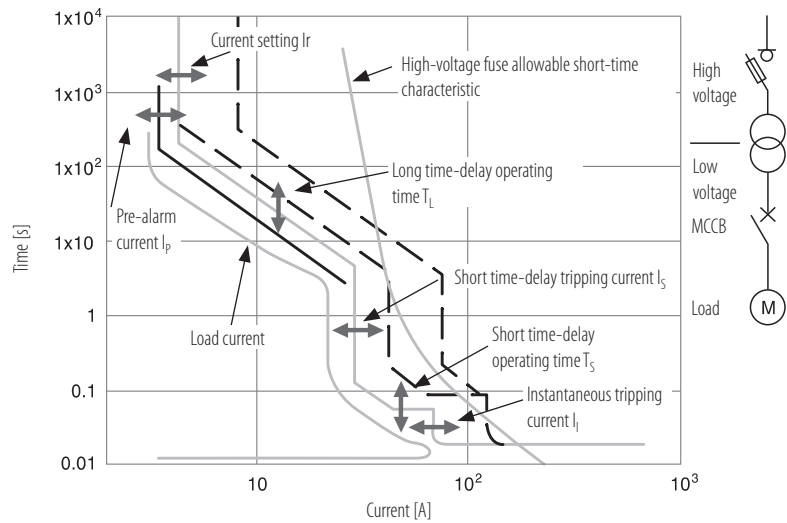
Alarm function monitors and anticipates interruptions

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.

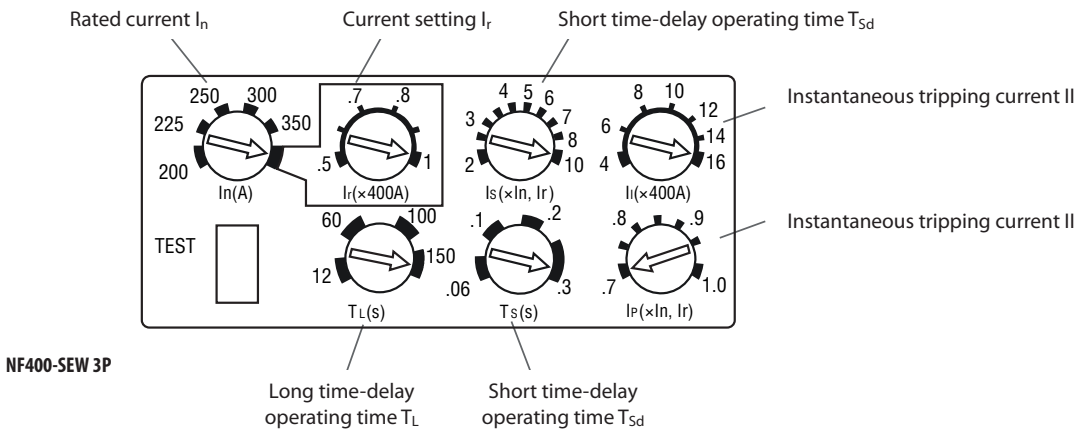
The pre-alarm module (with contact output) is optional available with electronic molded-case and earth-leakage circuit breakers (on request).

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:

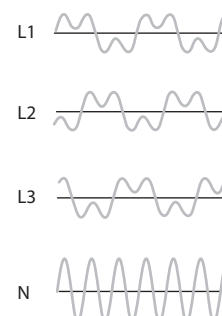
1. Long-delay tripping
2. Short-delay tripping
3. Instantaneous tripping
4. Pre-alarm characteristics

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

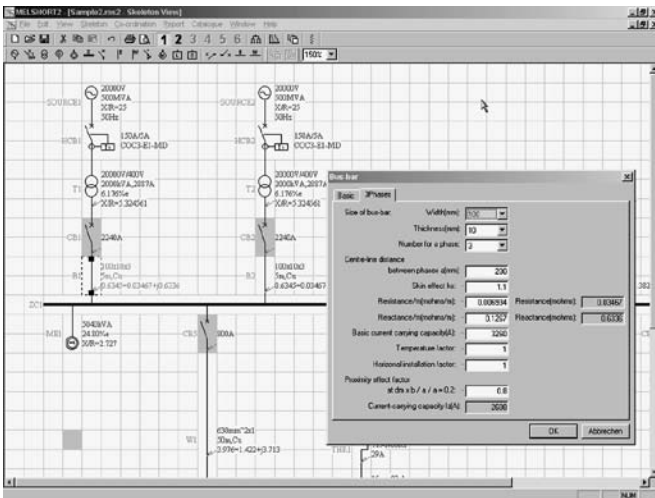
Overload protection and safety

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

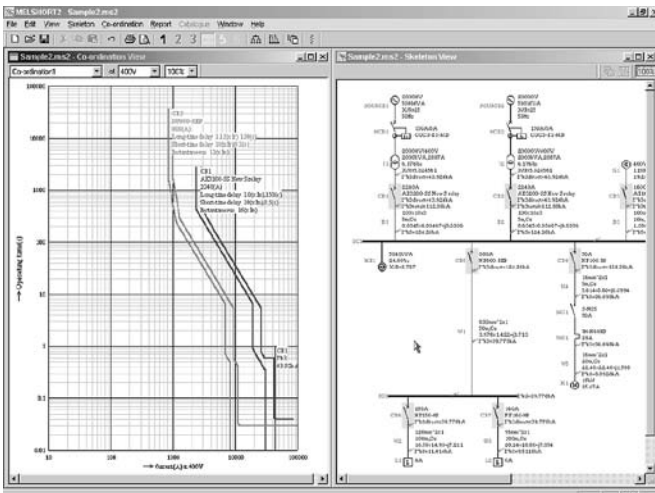
It prevents burn-out when the neutral-pole's load current is greater than the voltage pole in a 3-phase 4 wire circuit which is prone to distorted third-harmonic current flows.



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 switchgears

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. 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.

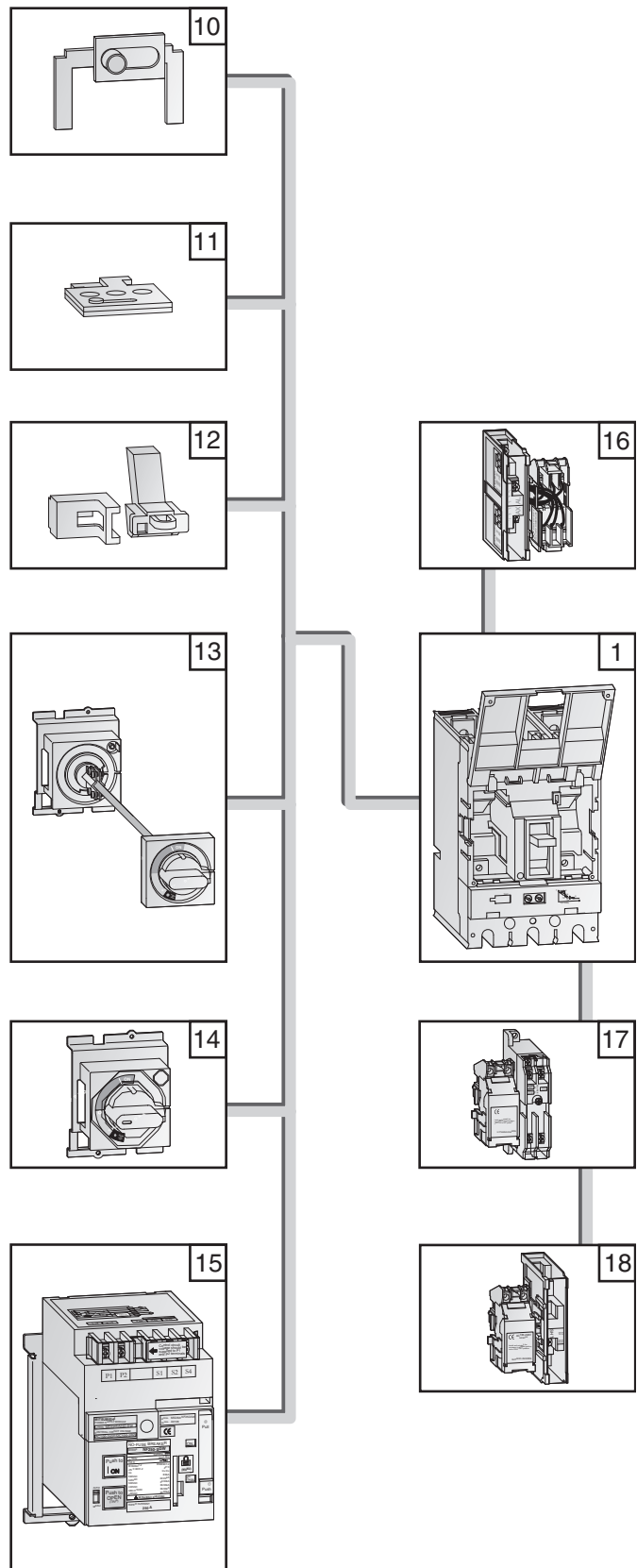
The calculated results, the hardware model suggestions and the wiring diagram with all the relevant values can be processed and used as documentation for the switchgear installation. Another welcome extra is the free Internet update service.

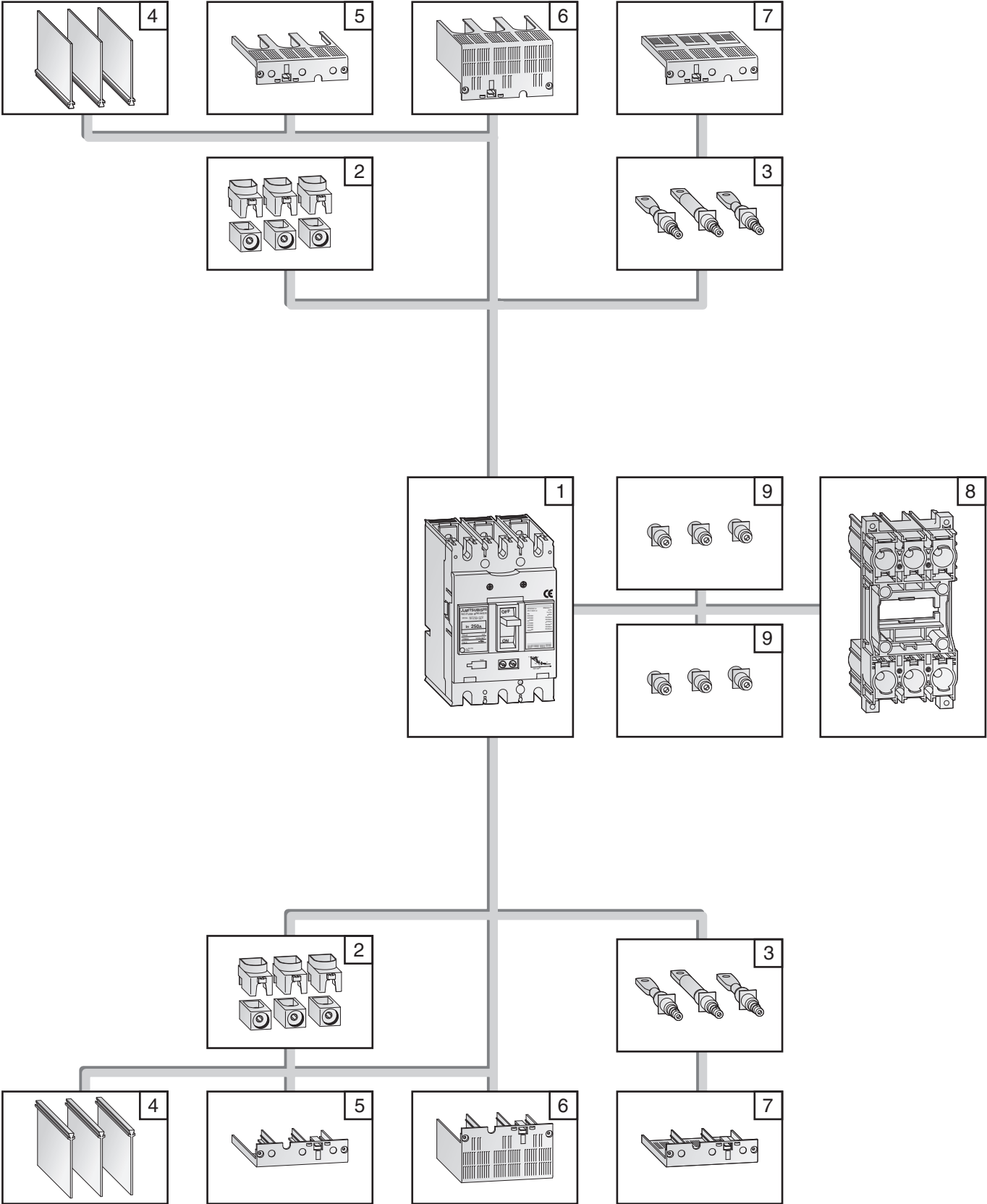
Specifications	MELSHORT2
Operating system	MS Windows 95/98/NT4.0/2000
Disk type	CD-ROM
Art. no.	129115

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 38
2	Solderless (Box) terminals	see page 61
3	Rear connection studs	see page 61
4	Insulating barriers (BA-F)	see page 68
5	Small terminal covers (TC-S)	see page 67
6	Large terminal covers (TC-L)	see page 67
7	Rear terminal covers (BTC)	see page 67
8	Plug-in base (PM)	see page 61
9	Connections for Plug-in	see page 61
10	Mechanical interlock (MI)	see page 68
11	OFF Lock with 3 padlocks (HL)	see page 64
12	Handle lock device (LC, HLF, HLN, HLS)	see page 64
13	Variable-depth operating handle, V type	see page 62
14	Rotary operating handle, R type	see page 63
15	Electrical operating device (MDS)	see page 66
16	Alarm and Auxiliary switches (AL, AX)	see page 54
17	Under voltage trip device (UVT)	see page 58
18	Shunt trip device (SHT)	see page 56





Model overview and specifications

Type/Series		NF32-SV	NF63-SV	WS-V series			
				NF125-SGV	NF125-SEV	NF160-SGV	
S series	Rated current I_n max. [A]	32	63	125*	125*	160*	
	Rated insulation voltage U_i [V]	AC 600	600	690	690	690	
	Number of poles	3	3/4	3/4	3/4	3/4	
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	AC ① (50/60 Hz)	690 V	—	—	8/8
				500 V	2.5/2.5	7.5/7.5	30/30
				440 V	2.5/2.5	7.5/7.5	36/36
				400 V	5/5	7.5/7.5	36/36
(I_{cu}/I_{cs})	230 V	7.5/7.5	15/15	85/85	85/85		
Dimensions WxHxD	[mm]	75x130x68	75/100x130x68	105/140x165x68	105/140x165x68	105/140x165x68	
Type				NF125-LGV	NF160-LGV		
L series	Rated current I_n max. [A]			125*		160*	
	Rated insulation voltage U_i [V]	AC		690		690	
	Number of poles			3/4		3/4	
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	AC ① (50/60 Hz)	690 V			8/8
				500 V			36/36
				440 V			50/50
				400 V			50/50
(I_{cu}/I_{cs})	230 V		90/90		90/90		
Dimensions WxHxD	[mm]			105/140x165x68		105/140x165x68	
Type				NF63-HV	NF125-HGV	NF125-HEV	
H series	Rated current I_n max. [A]		63	125*	125*	160*	
	Rated insulation voltage U_i [V]	AC		690	690	690	
	Number of poles			3/4	3/4	3/4	
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	AC ① (50/60 Hz)	690 V	2.5/2.5	10/8	10/8
				500 V	7.5/7.5	50/38	50/38
				440 V	10/8	65/65	65/65
				400 V	10/8	75/75	75/75
(I_{cu}/I_{cs})	230 V	25/19	100/100	100/100			
Dimensions WxHxD	[mm]		75/100x130x68	105/140x165x68	105/140x165x68		
Type				NF125-RGV			
R series	Rated current I_n max. [A]			125*			
	Rated insulation voltage U_i [V]	AC		690			
	Number of poles			3			
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	AC ① (50/60 Hz)	690 V			
				500 V			
				440 V		125/125	
				400 V		150/150	
(I_{cu}/I_{cs})	230 V		150/150				
Dimensions WxHxD	[mm]		105x165x68				
Type				NF125-UV			
U series	Rated current I_n max. [A]			125			
	Rated insulation voltage U_i [V]	AC		690			
	Number of poles			3/4			
	Rated breaking capacity [kA]	IEC 947-2 EN 60 947-2 VDE 0660	AC ① (50/60 Hz)	690 V		10/10	
				500 V		200/200	
				440 V		200/200	
				400 V		200/200	
(I_{cu}/I_{cs})	230 V		200/200				
Dimensions WxHxD	[mm]		105/140x240x68				
Type		DSN32-SV	DSN63-SV	DSN125-SGV	DSN160-SGV		
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	
	Max. switching current [A] (breaking)	AC/DC	256/128	504/252	1000/500	1280/640	
	Dimensions WxHxD	[mm]	75x130x68	75/120x130x68	105/140x165x68	105/140x165x68	

① DC on request


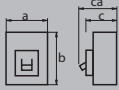
② In case of solderless terminal, interrupting capacity reduces.

* adjustable

WS-V series		WSS series					
NF250-SGV	NF250-SEV	NF400-SEW	NF630-SEW	NF800-SEW	NF1000-SEW	NF1250-SEW	NF1600-SEW
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	50/50 ②	50/50	50/50	85/43	85/43	85/43
85/85	85/85	85/85 ②	85/85	85/85	125/63	125/63	125/63
105/140x165x68	105/140x165x68	140/185x257x103	140/185x257x103	210/280x275x103	210/280x406x140	210/280x406x140	210/280x406x140
NF250-LGV							
250*							
690							
3/4							
8/8							
36/36							
50/50							
50/50							
90/90							
105/140x165x68							
NF250-HGV		NF400-HEW	NF630-HEW	NF800-HEW			
250*	250*	400*	630*	800*			
690	690	690	690	690			
3/4	3/4	3/4	3/4	3/4			
10/8	10/8	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			
105/140x165x68	105/140x165x68	140/185x257x103	140/185x257x103	210/280x275x103			
NF250-RGV		NF400-REW	NF630-REW	NF800-REW			
250*		400*	630*	800*			
690		690	690	690			
3		3	3	3			
—		15/10	20/15	20/15			
—		70/35	70/35	70/35			
125/125		125/63	125/63	125/63			
150/150		125/63	125/63	125/63			
150/150		150/75	150/75	150/75			
105x165x68		140x257x103	140x257x103	210x275x103			
NF250-UV		NF400-UEW		NF800-UEW			
250		400*		800*			
690		690		690			
3/4		3/4		3/4			
15/15		35/35		35/35			
200/200		170/170		170/170			
200/200		200/200		200/200			
200/200		200/200		200/200			
200/200		200/200		200/200			
105/140x240x68		140/280x297/322x200		210/280x322x200			
DSN250-SGV		DSN400-SW	DSN630-SW	DSN800-SW	DSN1000-SW	DSN1250-SW	DSN1600-SW
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
105/140x165x68		140/185x257x103	140/185x257x103	210/280x275x103	210/280x406x140	210/280x406x140	210/280x406x140

* adjustable

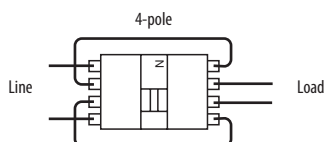
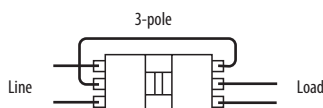
Specifications of Moulded-Case Circuit Breakers 3–125 A

Type		NF32-SV	NF63-SV	NF63-HV	NF125-SGV	NF125-SEV		
Frame (A)		32	63	63	125	125		
Rated data	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	16–20, 20–25, 25–32, 32–40, 35–50, 45–63, 56–80, 70–100, 90–125 Adjustable	16–32, 32–63, 63–125 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] <small>(I_{cu}/I_{cs})</small>	IEC/EN 60947-2 AC (50/60 Hz)	690 V	—	2.5/2.5	8/8	8/8	
			500 V	2.5/2.5	7.5/7.5	7.5/7.5	30/30	30/30
			440 V	2.5/2.5	7.5/7.5	10/8	36/36	36/36
			400 V	5/5	7.5/7.5	10/8	36/36	36/36
			230 V	7.5/7.5	15/15	25/19	85/85	85/85
	DC	250 V	2.5/2.5	7.5/7.5	7.5/7.5 ^④	20/20 ^④	—	
	Utilization category	A	A	A	A	A		
Rated impulse withstand voltage U_{imp} [kV]	8	8	8	8	8			
Pollution degree	3	3	3	3	3			
Reverse connection	●	●	●	●	●			
Suitable for isolation 	●	●	●	●	●			
Dimensions [mm]		a	75	75/100	75/100	105/140	105/140	
		b	130	130	130	165	165	
		c	68	68	68	68	68	
		ca	90	90	90	92	92	
		Weight [kg]	0.65	0.75/1,0	0.75/1,0	1.6/2.0	1.7/2.2	
Mechanical data	Cassette-type accessories	Alarm switch (AL)	●	●	●	●	●	
		Auxiliary switch (AX)	●	●	●	●	●	
		Shunt trip (SHT)	●	●	●	●	●	
		Under-voltage trip	—	—	—	—	—	
	Accessories connection	Non-synchronous closing (UVT-N)	—	—	—	—	—	
		Synchronous closing (UVT-S)	●	●	●	●	●	
	with terminal block (SLT)	with terminal block	●	●	●	●	●	
		with internal terminal type	●	●	●	●	●	
	Installation and connection	Screw terminal (standard)	Front	●	●	●	●	●
			Solderless terminal	—	—	—	●	●
Busbar terminal			—	—	—	—	—	
Rear (B)		Rear	●	●	●	●	●	
		Plug-in (PM)	●	●	●	—	—	
Plug-in (PM-IP)	Rear front IP 20 with auto trip	—	—	—	●	●		
Built-in accessories	Pre-alarm-contact output ^① (PAL)	—	—	—	—	—		
	Overcurrent trip alarm ^① (OAL)	—	—	—	—	—		
External accessories	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)	●	●	●	●	●	
		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 phases (Standard) (BA-F)	●	●	●	●	●			
Adapter for IEC 35 mm rail	●	●	●/—	—	—			
Others	CE marking	Self-declaration	Self-declaration	Self-declaration	Self-declaration	Self-declaration		
	CCC recognition	Recognized	Recognized	Recognized	Recognition in process	Recognized		
	Automatic tripping device	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Electronic		
	Trip button	Equipped	Equipped	Equipped	Equipped	Equipped		


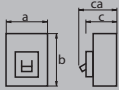
① Both PAL and OAL is not available. Only one specified. ② Others on request. ③ On request. ④ Use of 3- or 4-pole breaker for DC, see wiring diagram on the next page.
Missing specifications accord. to IEC/EN 60947-2 on request.

NF125-LGV	NF125-HGV	NF125-HEV	NF125-RGV	NF125-UV
125	125	125	125	125
16-20, 20-25, 25-32, 32-40, 35-50, 45-63, 56-80, 70-100, 90-125 Adjustable	16-20, 20-25, 25-32, 32-40, 35-50, 45-63, 56-80, 70-100, 90-125 Adjustable	16-32, 32-63, 63-125 Adjustable	16-20, 20-25, 25-32, 32-40, 40-50, 50-63, 63-80, 80-100, 100-125 Adjustable	15, 20, 30, 40, 50, 60, 75, 100, 125 Fixed
3/4	3/4	3/4	3	3/4
690	690	690	690	690
8/8	10/8	10/8	125/125	10/10
36/36	50/38	50/38	150/150	200/200
50/50	65/65	65/65	150/150	200/200
50/50	75/75	75/75	150/150	200/200
90/90	100/100	100/100	150/150	200/200
20/20 ^②	40/40 ^②	—	—	—
A	A	A	A	A
8	8	8	8	8
3	3	3	3	3
●	●	●	●	●
●	●	●	●	●
105/140	105/140	105/140	105	90/120
165	165	165	165	191
68	68	68	68	68
92	92	92	92	92
1.6/2.0	1.6/2.0	1.7/2.2	1.8	1.5/1.9
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
—	—	—	—	—
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
—	—	—	—	—
●	●	●	●	●/—
—	—	—	—	—
—	—	—	—	—
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
—	—	—	—	—
Self-declaration	Self-declaration	Self-declaration	Self-declaration	Self-declaration
Recognition in process	Recognition in process	Recognized	Recognition in process	—
Thermal-magnetic	Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic
Equipped	Equipped	Equipped	Equipped	Equipped

Use of 3- and 4-pole breakers for DC



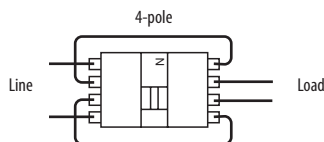
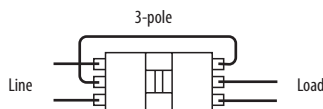
Specifications of moulded-casecircuit breakers 160–250 A

Type		NF160-SGV	NF160-LGV	NF160-HGV	NF250-SGV	NF250-SEV	
Frame (A)		160	160	160	250	250	
Rated data	Rated current I_n [A] at ambient temperature 40 °C	125–160 Adjustable	125–160 Adjustable	125–160 Adjustable	125–160, 140–200, 175–250 Adjustable	80–160, 125–250 Adjustable	
	Number of poles	3/4	3/4	3/4	3/4	3/4	
	Rated insulation voltage U_i [V]	AC 690	690	690	690	690	
	Rated breaking capacity [kA] (IEC/EN 60947-2)	690 V	8/8	8/8	10/8	8/8	8/8
		500 V	30/30	36/36	50/38	30/30	30/30
		440 V	36/36	50/50	65/65	36/36	36/36
		400 V	36/36	50/50	75/75	36/36	36/36
		230 V	85/85	90/90	100/100	85/85	85/85
	(I_{cu}/I_{cs})	DC 250 V	20/20 ^②	20/20 ^②	40/40 ^②	—	—
	Utilization category	A	A	A	A	A	
Rated impulse withstand voltage U_{imp} [kV]	8	8	8	8	8		
Pollution degree	3	3	3	3	3		
Reverse connection		●	●	●	●	●	
Suitable for isolation 		●	●	●	●	●	
Mechanical data	Dimensions [mm] 	a	105/140	105/140	105/140	105/140	105/140
		b	165	165	165	165	165
		c	68	68	68	68	68
		ca	92	92	92	92	92
		Weight [kg]	1.6/2.0	1.6/2.0	1.6/2.0	1.6/2.0	1.7/2.2
	Cassette-type accessories	Alarm switch (AL)	●	●	●	●	●
		Auxiliary switch (AX)	●	●	●	●	●
		Shunt trip (SHT)	●	●	●	●	●
		Under-voltage trip	Non-synchronous closing (UVT-N)	—	—	—	—
		Synchronous closing (UVT-S)	●	●	●	●	●
Accessories connection	with terminal block (SLT)	●	●	●	●	●	
	with internal terminal type	●	●	●	●	●	
Installation and connection	Front	Screw terminal (standard)	●	●	●	●	●
		Solderless terminal	●	●	●	●	●
		Busbar terminal	—	—	—	—	—
	Rear	(B)	●	●	●	●	●
		(PM)	●	●	●	—	—
Plug-in	Rear front IP 20 with auto trip (PM-IP)	—	—	—	●	●	
Built-in accessories	Pre-alarm-contact output ^① (PAL)	—	—	—	—	●	
	Overcurrent trip alarm ^① (OAL)	—	—	—	—	●	
External accessories	External operating handle	Door mounting (V)	●	●	●	●	●
		Mounted on breaker (R)	●	●	●	●	●
	Electrical operation device	(MDS)	●	●	●	●	●
		Handle lock for use with padlock (HL)	●	●	●	●	●
		(HL-S)	●	●	●	●	●
	Handle lock device	Lock cover (LC)	●	●	●	●	●
		Large (TC-L)	●	●	●	●	●
	Terminal cover	Small (TC-S)	●	●	●	●	●
		For rear connection (BTC)	●	●	●	●	●
		For plug-in (PTC)	●	●	●	●	●
	Mechanical interlock (MI)	●	●	●	●	●	
	Insulating barrier Between phases (Standard) (BA-F)	●	●	●	●	●	
	Adapter for IEC 35 mm rail	—	—	—	—	—	
	Others	CE marking	Self-declaration	Self-declaration	Self-declaration	Self-declaration	Self-declaration
CCC recognition		Recognition in process	Recognition in process	Recognition in process	Recognition in process	Recognized	
Automatic tripping device		Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Electronic	
Trip button		Equipped	Equipped	Equipped	Equipped	Equipped	


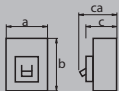
① Both PAL and OAL is not available. Only one specified. ② Others on request. ③ On request. ④ Use of 3- or 4-pole breaker for DC, see wiring diagram on the next page. Missing specifications accord. to IEC/EN 60947-2 on request.

NF250-LGV	NF250-HGV	NF250-HEV	NF-250-RGV	NF250-UV
250	250	250	250	250
125-160, 140-200, 175-250 Adjustable	125-160, 140-200, 175-250 Adjustable	80-160, 125-250 Adjustable	125-160, 160-200, 200-250 Adjustable	125, 150, 175, 200, 225, 250 Fixed
3/4	3/4	3/4	3	3/4
690	690	690	690	690
8/8	10/8	10/8	—	15/15
36/36	50/38	50/38	—	200/200
50/50	65/65	65/65	125/125	200/200
50/50	75/75	75/75	150/150	200/200
90/90	100/100	100/100	150/150	200/200
20/20 ^②	40/40 ^②	—	—	—
A	A	A	A	A
8	8	8	8	8
3	3	3	3	3
●	●	●	●	●
●	●	●	●	●
105/140	105/140	105/140	105	105/140
165	165	165	165	240
68	68	68	68	68
92	92	92	92	92
1.6/2.0	1.6/2.0	1.7/2.2	1.8	2.7/3.7
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
—	—	—	—	—
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
—	—	—	—	—
●	●	●	●	●
—	—	—	—	—
—	—	●	—	—
—	—	—	—	—
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
—	—	—	—	—
Self-declaration	Self-declaration	Self-declaration	Self-declaration	Self-declaration
Recognition in process	Recognition in process	Recognized	Recognition in process	—
Thermal-magnetic	Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic
Equipped	Equipped	Equipped	Equipped	Equipped

Use of 3- and 4-pole breakers for DC




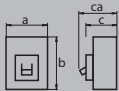
Specifications of moulded-case circuit breakers 400–630 A

Type		NF400-SEW	NF400-HEW	NF400-REW		
Frame (A)		400	400	400		
Rated data	Rated current I_n [A] at ambient temperature 40 °C	200–400 Adjustable	200–400 Adjustable	200–400 Adjustable		
	Number of poles	3/4	3/4	3		
	Rated insulation voltage U_i [V]	AC 690	690	690		
	Rated breaking capacity [kA] IEC/EN 60947-2 AC ^① (50/60 Hz)	690 V	10/10 (5/5) ^②	10/10	15/10	
		500 V	30/30 (25/25) ^②	50/50	70/35	
		440 V	42/42 (36/36) ^②	65/65	125/63	
		400 V	50/50 (36/36)^②	70/70	125/63	
	(I_{cu}/I_{cs})	230 V	85/85 (65/65) ^②	100/100	150/75	
	Utilization category		B	B	B	
	Rated short-time withstand current I_{cw} [kA/s]		5/0.25	5/0.25	5/0.25	
Rated impulse withstand voltage U_{imp} [kV]		8	8	8		
Pollution degree		3	3	3		
Reverse connection		●	●	●		
Suitable for isolation 		●	●	●		
Mechanical data	Dimensions [mm] 	a	140/185	140/185	140	
		b	257	257	257	
		c	103	103	103	
		ca	155	155	155	
		Weight [kg]		6.0/7.8	6.0/7.8	6.0
	Cassette-type accessories	Alarm switch (AL)	●	●	●	
		Auxiliary switch (AX)	●	●	●	
		Shunt trip (SHT)	●	●	●	
		Under-voltage trip	Non-synchronous closing (UVT-N)	●	●	●
			Synchronous closing (UVT-S)	●	●	●
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	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 phases (Standard) (BA-F)	●	●	●		
Others	Marine approval ^④ for 3 pole breakers	LR, GL, BV, DNV, AB	LR, GL, BV, AB	LR, GL, BV, AB		
	Automatic tripping device	Electronic	Electronic	Electronic		
	Trip button	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.

NF400-UEW	NF630-SEW	NF630-HEW	NF630-REW
400	630	630	630
200–400 Adjustable	300–630 Adjustable	300–630 Adjustable	300–630 Adjustable
3/4	3/4	3/4	3
690	690	690	690
35/35	10/10	35/18	20/15
170/170	30/30	50/50	70/35
200/200	42/42	65/65	125/63
200/200	50/50	70/70	125/63
200/200	85/85	100/100	150/75
B	B	B	B
5/0.25	7.6/0.25	7.6/0.25	7.6/0.25
8	8	8	8
3	3	3	3
U	U	U	U
U	U	U	U
140/280	140/185	140/185	140
297/322	257	257	257
200	103	103	103
252	155	155	155
16.7/26.1	6.5/8.3	6.5/8.3	6.5
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●/—	●	●	●
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●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
LR, GL, BV, AB	LR, GL, BV, AB	LR, GL, BV, AB	LR, GL, BV, AB
Electronic	Electronic	Electronic	Electronic
Equipped	Equipped	Equipped	Equipped


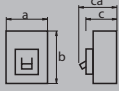
Specifications of moulded-case circuit breakers 800–1600 A

Type		NF800-SEW	NF800-HEW	NF800-REW		
Frame (A)		800	800	800		
Rated data	Rated current I_n [A] at ambient temperature 40 °C	400–800 Adjustable	400–800 Adjustable	400–800 Adjustable		
	Number of poles	3/4	3/4	3		
	Rated insulation voltage U_i [V]	AC 690	690	690		
	Rated breaking capacity [kA]	IEC/EN 60947-2 AC ^① (50/60 Hz)	690 V 10/10	15/15	—	
			500 V 30/30	50/50	70/35	
			440 V 42/42	65/65	125/63	
			400 V 50/50	70/70	125/63	
	(I_{cu}/I_{cs})	230 V 85/85	100/100	150/75		
	Utilization category	B	B	B		
	Rated short-time withstand current I_{cw} [kA/s]	9.6/0.25	9.6/0.25	9.6/0.25		
	Rated impulse withstand voltage U_{imp} [kV]	8	8	8		
Pollution degree	3	3	3			
Reverse connection	●	●	●			
Suitable for isolation 	●	●	●			
Dimensions [mm]		a	210/280	210		
		b	275	275		
		c	103	103		
		ca	155	155		
		Weight [kg]	10.9/14.2	10.9/14.2	10.9	
	Cassette-type accessories	Alarm switch (AL)	●	●	●	
		Auxiliary switch (AX)	●	●	●	
		Shunt trip (SHT)	●	●	●	
		Under-voltage trip	Non-synchronous closing (UVT-N)	●	●	●
			Synchronous closing (UVT-S)	●	●	●
Accessories connection		with terminal block (SLT)	●	●	●	
	with internal terminal type ^②	●	●	●		
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	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 phases (Standard) (BA-F)	●	●				
Others	Marine approval ^③ for 3 pole breakers	LR, GL, BV, DNV, AB	LR, GL, BV, AB	LR, GL, BV, AB		
	Automatic tripping device	Electronic	Electronic	Electronic		
	Trip button	Equipped	Equipped	Equipped		

① DC type on request. ② On request. ③ Others on request. ④ Assembly by factory.
Missing Specifications accord. to IEC/EN 60947-2 on request.

NF800-U EW	NF1000-SEW	NF1250-SEW	NF1600-SEW
800	1000	1250	1600
400-800 Adjustable	500-1000 Adjustable	600-1250 Adjustable	800-1600 Adjustable
3/4	3/4	3/4	3/4
690	690	690	690
35/35	25/13	25/13	25/13
170/170	65/33	65/33	65/33
200/200	85/43	85/43	85/43
200/200	85/43	85/43	85/43
200/200	125/63	125/63	125/63
B	B	B	B
9.6/0.25	20/0.3	20/0.3	20/0.3
8	8	8	8
3	3	3	3
●	●	●	●
●	●	●	●
210/280	210/280	210/280	210/280
322	406	406	406
200	140	140	140
252	190	190	190
27.6/33.7	23.5/30.7	23.5/30.7	34.5/41.2
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
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●	●	●	●
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●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
—	LR, GL, AB	LR, GL, AB	—
Electronic	Electronic	Electronic	Electronic
Equipped	Equipped	Equipped	Equipped

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

Type		DSN32-SV	DSN63-SV	DSN125-SGV	DSN160-SGV	DSN250-SGV	
Rated data	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]	600	600	690	690	690	
	Rated voltage U_e [V]	AC	500	500	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	3	3	3	
	Utilization category	AC-23A, DC-23A	AC-23A, DC-23A	AC-23A, DC-23A	AC-23A, DC-23A	AC-23A, DC-23A	
	Making and breaking current	Making current AC/DC cycles	A 320/128	630/252	1250/500	1600/640	2500/1000
		Breaking current AC/DC cycles	A 256/128	504/252	1000/500	1280/640	2000/1000
	Operational performance	Without current	10000	15000	50000	40000	25000
		With current (440 V/690 V)	6000/—	8000/—	30000/1000	20000/1000	10000/1000
Short-time withstand current I_{cw}	1 s	A 1000	1000	2000	3000	4000	
Short-circuit making capacity I_{cm}	1 s	A 1500	1500	3000	4000	6000	
Max. switching current ①	AC/DC cycles	A 192/80	378/155	750/315	960/400	1500/625	
		12	12	12	12	12	
Suitable for isolation 		●	●	●	●	●	
Mechanical data	Dimensions [mm] 	a	75	75/100	105/140	105/140	105/140
		b	130	130	165	165	165
		c	68	68	86	86	86
		ca	90	90	110	110	110
		Weight [kg]	0.55	0.6/0.7	2.0/2.6	2.0/2.6	2.0/2.6
	Cassette-type accessories	Alarm switch (AL)	●	●	●	●	●
		Auxiliary switch (AX)	●	●	●	●	●
		Shunt trip (SHT)	●	●	●	●	●
	Accessories connection	Undervoltage trip (UVT)	●	●	●	●	●
		with terminal block (SLT)	●	●	●	●	●
Installation and connection	Screw terminal	with internal terminal type ②	—	—	●	●	
		Front	● ^c	● ^c	● ^c	● ^c	● ^c
		Solderless terminal	—	—	●	●	●
	Busbar terminal	●	●	●	●	●	
		Rear (B)	●	●	●	●	●
	Plug-in	Rear (PM)	●	●	—	—	—
Rear front IP 20 with auto trip (PM-IP)	—	—	●	●	●		
External accessories	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)	●	●	●	●	●
		Lock cover (LC)	●	●	●	●	●
	Terminal cover	Large (TC-L)	●	●	●	●	●
		Small (TC-S)	●	●	●/—	●/—	●
		For rear connection (BTC)	●	●	●/—	●/—	●
	Mechanical interlock (MI)	●	●	●	●	●	
Insulating barrier Between phases (Standard) (BA-F)	●	●	●	●	●		
Adapter for IEC 35 mm rail	●	●	—	—	—		
Corresponding type of circuit breaker	NF32-SV	NF63-SV	NF125-SGV	NF160-SGV	NF250-SGV		

① This performance is accordance with IEC60947-2 clause 7.2.4.1. ② On request. ③ Standard. ④ Assembly by factory. ⑤ TC-N. Missing specifications accord. to IEC/EN 60947-2 on request.

DSN400-SW	DSN630-SW	DSN800-SW	DSN1000-SW	DSN1250-SW	DSN1600-SW
400	630	800	1000	1250	1600
3/4	3/4	3/4	3/4	3/4	3/4
690	690	690	690	690	690
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
6000	6000	4000	3000	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	140/185	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	6.2/8.0	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-SW	NF630-SW	NF800-SW	NF1000-SW	NF1250-SW	NF1600-SW

Order information for moulded-case circuit breakers 3–125 A

Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
------	--------------------	-------------------------	-------------------------

S series with thermal-magnetic tripping device, fixed, AC

NF32-SV	3 A	254680	—
	4 A	254681	—
	5 A	254682	—
	6 A	254683	—
	10 A	254684	—
	15 A	254685	—
	16 A	254686	—
	20 A	254687	—
	25 A	254688	—
	30 A	254689	—
32 A	254690	—	

NF63-SV	3 A	254739	254752
	4 A	254740	254753
	5 A	254741	254754
	6 A	254742	254755
	10 A	254743	254756
	15 A	254744	254757
	16 A	254745	254758
	20 A	254746	254759
	25 A	254747	254760
	30 A	253075	254761
	32 A	254748	254762
	40 A	254749	254763
	50 A	253073	254764
	60 A	254750	254765
	63 A	254751	254766

H series with thermal-magnetic tripping device, fixed, AC

NF63-HV	10 A	254778	254789
	15 A	254779	254790
	16 A	254780	254791
	20 A	254781	254792
	25 A	254782	254793
	30 A	254783	254794
	32 A	254784	254795
	40 A	254785	254796
	50 A	254786	254797
	60 A	254787	254798
63 A	254788	254799	

Type	Rated current (In)	Art. no. 3 pole type	Art. no. 4 pole type
------	--------------------	-------------------------	-------------------------

S series with thermal-magnetic tripping device, AC, DC

NF125-SGV	16–20 A	254908	254917
	20–25 A	254909	254918
	25–32 A	254910	254919
	32–40 A	254911	254920
	35–50 A	254912	254921
	45–63 A	254913	254922
	56–80 A	254914	254923
	70–100 A	254915	254924
	90–125 A	254916	254925

NF125-LGV	16–20 A	254935	254943
	20–25 A	254936	254944
	25–32 A	254937	254945
	32–40 A	254938	254946
	35–50 A	254939	254947
	45–63 A	254940	254948
	56–80 A	254941	254949
	70–100 A	254942	254950
	90–125 A	255195	254951

H series with thermal-magnetic tripping device, AC, DC

NF125-HGV	16–20 A	254961	254970
	20–25 A	254962	254971
	25–32 A	254963	254972
	32–40 A	254964	254973
	35–50 A	254965	254974
	45–63 A	254966	254975
	56–80 A	254967	254976
	70–100 A	254968	254977
	90–125 A	254969	254978

H series with electronic tripping device, adjustable, AC

NF125-HEV	16–32 A	255030	255033
	32–63 A	255031	255034
	63–125 A	255032	255035

R series with thermal-magnetic tripping device, AC, DC

NF125-RGV	16–20 A	254988	—
	20–25 A	254989	—
	25–32 A	254990	—
	32–40 A	254991	—
	40–50 A	254992	—
	50–63 A	254993	—
	63–80 A	254994	—
	80–100 A	254995	—
	100–125 A	254996	—

U series with thermal-magnetic tripping device, fixed, AC, DC

NF125-UV	15 A	255006	255015
	20 A	255007	255016
	30 A	255008	255017
	40 A	255009	255018
	50 A	255010	255019
	60 A	255011	255020
	75 A	255012	255021
	100 A	255013	255022
	125 A	255014	255023

Order information for moulded-case circuit breakers 160–250 A

Type	Rated current (I _n)	Art. no. 3 pole type	Art. no. 4 pole type
S series with thermal-magnetic tripping device, adjustable, AC, DC			
NF160-SGV	125–160 A	255040	255041
L series with thermal-magnetic tripping device, adjustable, AC, DC			
NF160-LGV	125–160 A	255043	255044
H series with thermal-magnetic tripping device, adjustable, AC, DC			
NF160-HGV	125–160 A	255046	255047
S series with thermal-magnetic tripping device, adjustable, AC, DC			
NF250-SGV	125–160 A	255118	255121
	140–200 A	255119	255122
	175–250 A	255120	255123
S series with electronic tripping device, adjustable, AC			
NF250-SEV	80–160 A	255166	255168
	125–250 A	255167	255169
L series with thermal-magnetic tripping device, adjustable, AC, DC			
NF250-LGV	125–160 A	255127	255130
	140–200 A	255128	255131
	175–250 A	255129	255132

Type	Rated current (I _n)	Art. no. 3 pole type	Art. no. 4 pole type
H series with thermal-magnetic tripping device, adjustable, AC, DC			
NF250-HGV	125–160 A	255136	255139
	140–200 A	255137	255140
	175–250 A	255138	255141
H series with electronic tripping device, adjustable, AC			
NF250-HEV	80–160 A	255170	255172
	125–250 A	255171	255173
R series with thermal-magnetic tripping device, adjustable, AC, DC			
NF250-RGV	125–160 A	255145	—
	160–200 A	255146	—
	175–250 A	255147	—
U series with thermal-magnetic tripping device, fixed, AC, DC			
NF250-UV	125 A	255154	255160
	150 A	255155	255161
	175 A	255156	255162
	200 A	255157	255163
	225 A	255158	255164
	250 A	255159	255165

Order information for moulded-case circuit breakers 400–1600 A

Type	Rated current (I _n)	Art. no. 3 pole type	Art. no. 4 pole type
S series with electronic tripping device, adjustable, AC			
NF400-SEW	200–400 A	204780	204781
NF630-SEW	300–630 A	204789	204790
NF800-SEW	400–800 A	204797	204798
H series with electronic tripping device, adjustable, AC			
NF400-HEW	200–400 A	204782	204783
NF630-HEW	300–630 A	204791	204792
NF800-HEW	400–800 A	204799	204800

Type	Rated current (I _n)	Art. no. 3 pole type	Art. no. 4 pole type
R series with electronic tripping device, adjustable, AC			
NF400-REW	200–400 A	204784	—
NF630-REW	300–630 A	204793	—
NF800-REW	400–800 A	204801	—
U series with electronic tripping device, adjustable, AC			
NF400-U EW	200–400 A	204785	204786
NF800-U EW	400–800 A	204802	204803

Order information for moulded-case circuit breakers 1000–1600 A

Type	Rated current (I _n)	Art. no. 3 pole type	Art. no. 4 pole type
SS/UR series with electronic tripping device, adjustable, AC			
NF1000-SEW	500–1000 A	204810	204811
NF1250-SEW	600–1250 A	204812	204813
NF1600-SEW	800–1600 A	204814	204815

Order information for disconnectors DSN series 32–1600 A

Type	Rated current (I _n)	Art. no. 3 pole type	Art. no. 4 pole type
Disconnectors (no tripping device)			
DSN32-SV	32 A	254669	—
DSN63-SV	63 A	254722	254723
DSN125-SGV	125 A	254897	254898
DSN160-SGV	160 A	255037	255038
DSN250-SGV	250 A	255113	255114
DSN400-SW	400 A	204778	204779
DSN630-SW	630 A	204787	204788
DSN800-SW	800 A	204794	204795
DSN1000-SW	1000 A	204804	204805
DSN1250-SW	1250 A	204806	204807
DSN1600-SW	1600 A	204808	204809

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.

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.

6

MCCB – Accessories

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.

Alarm switch (AL)

Provides for indication that the MCCB has tripped.

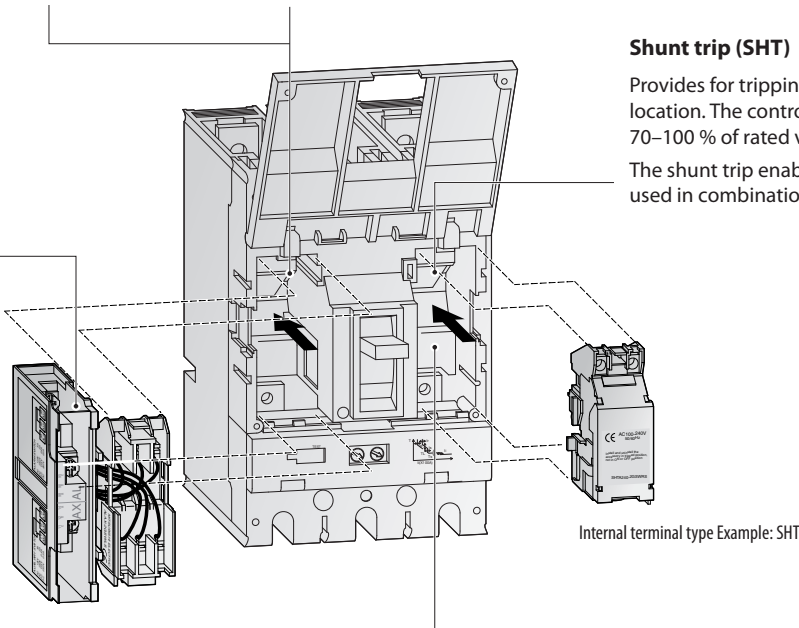
Auxiliary switch (AX)

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

Shunt trip (SHT)

Provides for tripping from a remote location. The control voltage range is 70–100 % of rated voltage.

The shunt trip enables an MCCB to be used in combination with an ELR.



Lead-wire terminal block
Example: ALAX

Internal terminal type Example: SHT

Undervoltage trip (UVT)

The tripping voltage is 35–70 % of the rated voltage. When the voltage recovers to at least 85 %, the breaker can be closed or reset.

Provides for electrical interlock, and is used where electrical machines need to be protected against voltage drop.

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 54
AX (Auxiliary switch)	The auxiliary switch AX indicates whether the breaker is ON or OFF.	Page 54
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 56
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 58

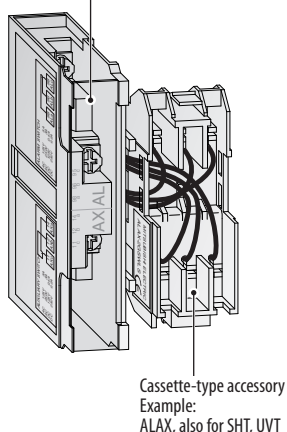
Connection of the control wires

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



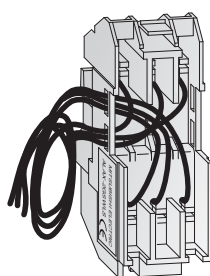
Application

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

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



Example:
ALAX, also for SHT, UVT

Application

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

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

- 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 control wires are fixed inside of the breaker housing, no special terminal cover for the screw terminals is necessary.

Alarm switch and auxiliary switch

(Mounted on left side)

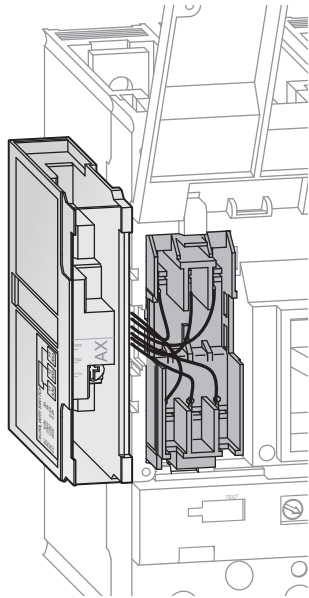


Figure shows Lead-wire terminal block type (SLT).

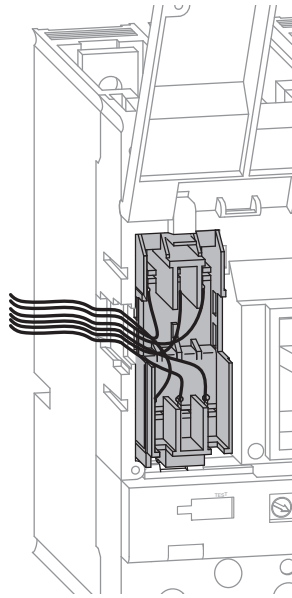


Figure shows Internal terminal type.

Application

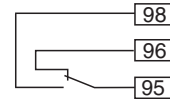
The alarm switch AL indicates that the breaker has tripped.

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.

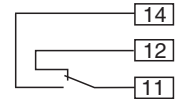
- AL, AX and ALAX standard types are for left-side mounting and equipped with lead-wire terminal block SLT.
- Internal terminal type is also available.
- Please specify, if right-side mounted type or type with flying leads is needed.

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

① When DC use, polarity must be considered.

Auxiliary switch (AX) operation

Main MCCB conditions	Alarm contacts
OFF or ON 	 AXa 14 (open) AXc 11 (DC+) a AXb 12 (closed)
Trip 	 AXa 14 (closed) AXc 11 (DC+) a 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-05-8	460	—	—	250	0.2	0.2
	250	3	2	125	0.4	0.4
	125	5	3	30	4	3
AL/AX/ALAX-10	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-05SVLS	1 W	NF/DSN32–63 NF/DSN125–250	Left side	267212
AL-4SWLS	1 W	NF/DSN400–800		205763
AL2-4SWLS	2 W	NF/DSN400–800		205764
AL3-8SWLS	3 W	NF/DSN800		205765
AL-10SWL	1 W	NF/DSN1000–1600		205766

Alarm switch AL for direct connection				
AL-05SV	1 W	NF/DSN32–63 NF/DSN125–250	Left side	267210

Auxiliary switch AX with lead-wire terminal block SLT				
AX-05SVLS	1 W	NF/DSN32–63 NF/DSN125–250	Left side	267238
AX2-05SVLS	2 W	NF/DSN32–63 NF/DSN125–250		146382
AX-4SWLS	1 W	NF/DSN400–800		205767
AX2-4SWLS	2 W	NF/DSN400–800		205768
AX3-8SWLS	3 W	NF/DSN800 NF400-UEW 4P		205769
AX4-8SWLS	4 W	NF/DSN800 NF400-UEW 4P		205770
AX-10SWLS	1 W	NF/DSN1000–1600		205771
AX2-10SWLS	2 W	NF/DSN1000–1600		205772
AX3-10SWLS	3 W	NF/DSN1000–1600		205773

Auxiliary switch AX for direct connection				
AX-05SV	1 W	NF/DSN32–63 NF/DSN125–250	Left side	267236
AX2-05SVLS	2 W	NF/DSN32–63 NF/DSN125–250		267246

Type	Contacts AL AX	Breaker type	Mounted on	Art. no.
Alarm switch and Auxiliary switch ALAX with lead-wire terminal block SLT				
ALAX-05SVLS	1 W + 1 W	NF/DSN32–63 NF/DSN125–250	Left side	146381
ALAX-4SWLS	1 W + 1 W	NF/DSN400–800 NF400-UEW 4P		205774
AL2AX2-4SWLS	2 W + 2 W	NF/DSN400–800 NF400-UEW 4P		205775
ALAX-10SWL	1 W + 1 W	NF/DSN1000–1600		205776
AL1AX2-10SWL	1 W + 2 W	NF/DSN1000–1600		205777

Alarm switch and Auxiliary switch ALAX for direct connection				
ALAX-2GSWN	1 W + 1 W	NF/DSN125–250	Left side	139509

Shunt trip device SHT

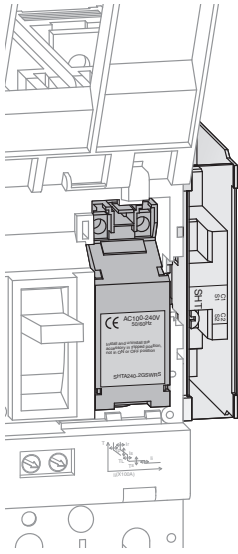


Figure shows Lead-wire terminal block type (SLT).

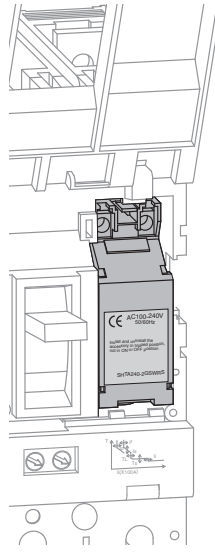


Figure shows Internal terminal type.

Application

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

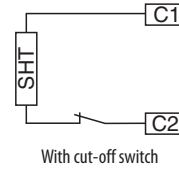
The allowable tripping voltage range is 70 % to 110 % of the rated voltage for both AC and DC.

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

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.

Contact plans



Coil ratings

MCCB type ①	Cut-off switch	Voltage (V) ②	Input ③		Operating time (msec) ④
			AC (VA)	DC (W)	
NF32-SV NF63-SV NF63-HV	Equipped	AC 24–48 AC 100–240 AC 380–550 (50/60 Hz) DC 100–125	120	50	≤15
NF125-SGV/SEV NF125-HGV/HEV NF125-RGV/UGV NF160-SGV/SEV NF160-HGV/HEV NF250-SGV/SEV NF250-HGV/HEV NF250-RGV/UGV	Equipped			60	
NF400-SEW/HEW/REW/UEW NF630-SEW/HEW/REW NF800-CEW/SEW/HEW/REW/UEW	Equipped	AC 24–48/DC 24–48 AC 100–450/DC 100–200 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-SEW NF1250-SEW NF1600-SEW	Equipped	AC 100–120 AC 200–240 AC 380–450 (50/60Hz) DC 100	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 device SHT

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

For 3-pole breaker			For 4-pole breaker			
Type	Breaker type	Art. no.	Type	Breaker type	Art. no.	Rated voltage
SHTA048-05SVRS	NF/DSN32-63 NF/DSN125-250	267479	SHTA048-05SVRFS	NF/DSN32-63 NF/DSN125-250	267480	AC 24-48 V
SHTA240-05SVRS		267484	SHTA240-05SVRFS		267485	AC 100-240 V
SHTA550-05SVRS		267489	SHTA550-05SVRFS		267490	AC 380-550 V
SHTD012-05SVRS		267494	SHTD012-05SVRFS		267495	DC 12 V
SHTD036-05SVRS		267499	SHTD036-05SVRFS		267500	DC 24-36 V
SHTD048-05SVRS		267504	SHTD048-05SVRFS		267505	DC 36-48 V
SHTD125-05SVRS		267509	SHTD125-05SVRFS		267510	DC 100-125 V
SHTD250-05SVRS		267514	SHTD250-05SVRFS		267515	DC 220-250 V
SHT-4SWRS	NF/DSN400-800	205778	SHT-4SWRFS	NF/DSN400-630	205779	AC 100-450 V/ DC 100-200 V
SHT48-4SWRS		205780	SHT48-4SWRFS		205781	AC 24-48 V/ DC 24-48 V
SHTA550-4SWRS		205782	SHTA550-4SWRFS		205783	AC 380-550 V
—	—	—	SHT-8SWRFS	NF/DSN800 NF400-UEW 4P	205784	AC 100-450 V/ DC 100-200 V
			SHT48-8SWRFS		205785	AC 24-48 V/ DC 24-48 V
			SHTA550-8SWRFS		205786	AC 380-550 V
SHTA120-10SWRS	NF/DSN1000-1600	205787	SHTA120-10SWRFS	NF/DSN1000-1600	205788	AC 100-120 V
SHTA240-10SWRS		205789	SHTA240-10SWRFS		205790	AC 200-240 V
SHTA450-10SWRS		205791	SHTA450-10SWRFS		205792	AC 380-450 V
SHTD024-10SWRS		205793	SHTD024-10SWRFS		205794	DC 24 V
SHTD110-10SWRS		205795	SHTD110-10SWRFS		205796	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/DSN32-63 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

Undervoltage tripping device UVT

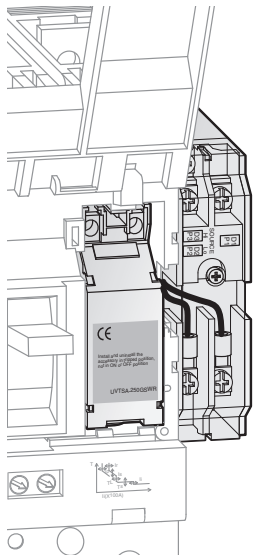


Figure shows Lead-wire terminal block type (SLT).

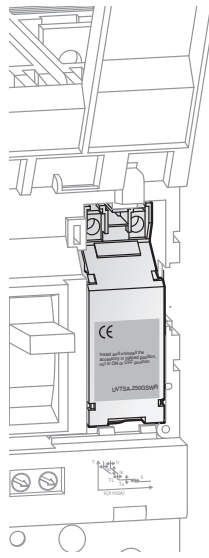


Figure shows Internal terminal type.

Application

The undervoltage tripping device 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 mounted on the right side of the breaker and equipped with lead-wire terminal block SLT as standard.

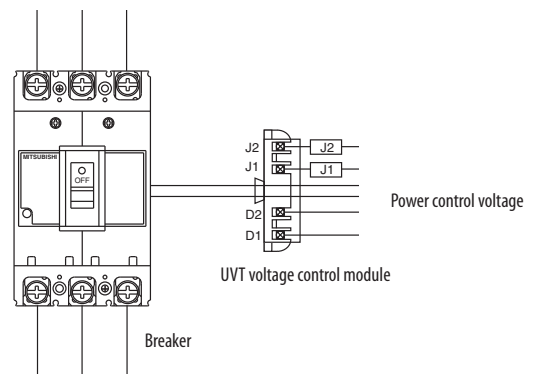
Please specify, if left-side mounted type or type with flying leads is needed.

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.

6

MCCB – Accessories

Contact plans



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-SV NF63-SV NF125-SGV/REV NF125-HGV/HEV NF125-RGV/UV NF160-SGV/REV NF160-HGV/HEV NF250-SGV/REV NF250-HGV/REV NF250-RGV/UV	●	AC 100–120 AC 200–240 AC 220–240 AC 380–450 AC 400–440 (50/60 Hz) DC 24, DC 110	5	≤30	35–70 % U _N	min. 85 % U _N
NF400-SEW/HEW/REW/UEW NF630-SEW/HEW/REW NF800-CEW/SEW/HEW/REW/UEW	●	AC 100–110/120–130 AC 200–220/230–250 AC 380–415/440–480 (50/60 Hz) DC100/110	5	5–30 (Instantaneous type)		
NF1000-SEW NF1250-SEW NF1600-SEW	● ④	AC 100–120/200–240/380–450 AC 200–250/380–450/460–550 (50/60 Hz)	5	5–35 (Time delay type with 3 voltage inputs)		

- 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 DC version on request.
UVTs with Time delay on request.

Types of UVTs

Breaker type	No. of Poles	Rated voltages					
		AC 24 V DC 24 V	AC 48 V DC 48 V	AC 100–130 V DC 100–130 V	AC 200–220 V/ AC 230–250 V	AC 380–415 V/ AC 440–480 V	AC 500–550 V/ AC 600 V
Instantaneous trip type, with lead-wire terminal block SLT							
NF/DSN32–63	3	UVTSAD024-05SVRS	UVTSAD048-05SVRS	UVTSAD130-05SVRS	UVTSA250-05SVRS	UVTSA480-05SVRS	UVTSA600-05SVRS
NF/DSN125–250	4	UVTSAD024-05SVRFS	UVTSAD048-05SVRFS	UVTSAD130-05SVRFS	UVTSA250-05SVRFS	UVTSA480-05SVRFS	UVTSA600-05SVRFS

Breaker type	No. of Poles	Rated voltages				
		AC 100–110 V/ AC 120–130 V	AC 200–220 V/ AC 230–250 V	AC 380–415 V/ AC 440–480 V	DC 24/48 V	DC 100/110 V
Instantaneous trip type, with lead-wire terminal block SLT						
NF/DSN400–800	3	UVTSA130-4SWS	UVTSA250-4SWS	UVTSA480-4SWS	UVTSD048-4SWS	UVTSD110-4SWS
NF/DSN400–630	4	UVTSA130-4SWRFS	UVTSA250-4SWRFS	UVTSA480-4SWRFS	UVTSD048-4SWRFS	UVTSD110-4SWRFS
NF/DSN800	4	UVTSA130-8SWRFS	UVTSA250-8SWRFS	UVTSA480-8SWRFS	UVTSD048-8SWRFS	UVTSD110-8SWRFS
NF/DSN1000–1600	3	UVTSA130-10SWRS	UVTSA250-10SWRS	UVTSA480-10SWRS	UVTND048-10SWRS	UVTND110-10SWRS
	4	UVTSA130-10SWRFS	UVTSA250-10SWRFS	UVTSA480-10SWRFS	UVTND048-10SWRFS	UVTND110-10SWRFS

Breaker type	No. of Poles	Rated voltages					
		AC 24/48 V	AC 120/240/450 V	AC 250/450/550 V	AC 450/550/690 V	DC 24/48 V	DC 100 –110 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	UVTSA048-05SVRSU05	UVTSA450-05SVRSU05	UVTSA550-05SVRSU05	UVTSA690-05SVRSU05	UVTSD048-05SVRSU05	UVTSD110-05SVRSU05
NF/DSN125–250	4	UVTSA048-05SVRFSU05	UVTSA450-05SVRFSU05	UVTSA550-05SVRFSU05	UVTSA690-05SVRFSU05	UVTSD048-05SVRFSU05	UVTSD110-05SVRFSU05

Breaker type	No. of Poles	Rated voltages					
		AC 24/48 V	AC 120/240/450 V	AC 250/450/550 V	AC 450/550/690 V	DC 24/48 V	DC 100 –110 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	UVTSA048-05SVRSU30	UVTSA450-05SVRSU30	UVTSA550-05SVRSU30	UVTSA690-05SVRSU30	UVTSD048-05SVRSU30	UVTSD110-05SVRSU30
NF/DSN125–250	4	UVTSA048-05SVRFSU30	UVTSA450-05SVRFSU30	UVTSA550-05SVRFSU30	UVTSA690-05SVRFSU30	UVTSD048-05SVRFSU30	UVTSD110-05SVRFSU30

UVTN...: non-synchronous closing type

UVTS...: synchronous closing type

Types for direct connection on request.

Order information for undervoltage tripping devices UVT

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

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

Type	Breaker type	Rated voltage	Art. no.
UVTSAD024-05SVRS	NF/DSN32–250	AC 24 V DC 24 V	267615
UVTSAD048-05SVRS	NF/DSN32–250	AC 48 V DC 48 V	267620
UVTSAD130-05SVRS	NF/DSN32–250	AC 100–130 V DC 100–130 V	267625
UVTSA250-05SVRS	NF/DSN32–250	AC 200–220 V/ AC 230–250 V	267600
UVTSA480-05SVRS	NF/DSN32–250	AC 380–415 V/ AC 440–480 V	267605
UVTSA600-05SVRS	NF/DSN32–250	AC 500–550 V/ AC 600 V	267610
UVTSA130-4SWS	NF/DSN400–800	AC 100–110/120–130 V	205951
UVTSA250-4SWS	NF/DSN400–800	AC 200–220/230–250 V	205953
UVTSA480-4SWS	NF/DSN400–800	AC 380–415/440–480 V	205828
UVTSD048-4SWS	NF/DSN400–800	DC 24/48 V	205932
UVTSD110-4SWS	NF/DSN400–800	DC 100/110 V	205934
UVTSA130-10SWRS	NF/DSN1000–1600	AC 100–110/120–130 V	205941
UVTSA250-10SWRS	NF/DSN1000–1600	AC 200–220/230–250 V	205943
UVTSA480-10SWRS	NF/DSN1000–1600	AC 380–415/440–480 V	205945
UVTND048-10SWRS	NF/DSN1000–1600	DC 24/48 V	205947
UVTND110-10SWRS	NF/DSN1000–1600	DC 100/110 V	205949

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

Type	Breaker type	Rated voltage	Art. no.
UVTSAD024-05SVRFS	NF/DSN63–250	AC 24 V DC 24 V	267616
UVTSAD048-05SVRFS	NF/DSN63–250	AC 48 V DC 48 V	267621
UVTSAD130-05SVRFS	NF/DSN63–250	AC 100–130 V DC 100–130 V	267626
UVTSA250-05SVRFS	NF/DSN63–250	AC 200–220 V/ AC 230–250 V	267601
UVTSA480-05SVRFS	NF/DSN63–250	AC 380–415 V/ AC 440–480 V	267606
UVTSA600-05SVRFS	NF/DSN63–250	AC 500–550 V/ AC 600 V	267611
UVTSA130-4SWRFS	NF/DSN400–630	AC 100–110/120–130 V	205952
UVTSA250-4SWRFS	NF/DSN400–630	AC 200–220/230–250 V	205954
UVTSA480-4SWRFS	NF/DSN400–630	AC 380–415/440–480 V	205955
UVTSD048-4SWRFS	NF/DSN400–630	DC 24/48 V	205933
UVTSD110-4SWRFS	NF/DSN400–630	DC 100/110 V	205935
UVTSA130-8SWRFS	NF/DSN800	AC 100–110/120–130 V	205936
UVTSA250-8SWRFS	NF/DSN800	AC 200–220/230–250 V	205937
UVTSA480-8SWRFS	NF/DSN800	AC 380–415/440–480 V	205938
UVTSD048-8SWRFS	NF/DSN800	DC 24/48 V	205939
UVTSD110-8SWRFS	NF/DSN800	DC 100/110 V	205940
UVTSA130-10SWRFS	NF/DSN1000–1600	AC 100–110/120–130 V	205942
UVTSA240-10SWRFS	NF/DSN1000–1600	AC 200–220/230–250 V	205944
UVTSA480-10SWRFS	NF/DSN1000–1600	AC 380–415/440–480 V	205946
UVTND048-10SWRFS	NF/DSN1000–1600	DC 24/48 V	205948
UVTND110-10SWRFS	NF/DSN1000–1600	DC 100/110 V	205950

Undervoltage tripping device UVT, short-time delay type, non-synchronous closing, mounted on right-side

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

Type	Breaker type	Rated voltage	Art. no.
UVTSA048-05SVRSU05	NF/DSN32–250	AC 24/48 V	267690
UVTSA450-05SVRSU05	NF/DSN32–250	AC 120/240/450 V	267695
UVTSA550-05SVRSU05	NF/DSN32–250	AC 250/450/550 V	267700
UVTSA690-05SVRSU05	NF/DSN32–250	AC 450/550/690 V	267705
UVTSD048-05SVRSU05	NF/DSN32–250	DC 24/48 V	267710
UVTSD110-05SVRSU05	NF/DSN32–250	DC 100–110 V	267715

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

Type	Breaker type	Rated voltage	Art. no.
UVTSA048-05SVRFSU05	NF/DSN63–250	AC 24/48 V	267691
UVTSA450-05SVRFSU05	NF/DSN63–250	AC 120/240/450 V	267696
UVTSA550-05SVRFSU05	NF/DSN63–250	AC 250/450/550 V	267701
UVTSA690-05SVRFSU05	NF/DSN63–250	AC 450/550/690 V	267706
UVTSD048-05SVRFSU05	NF/DSN63–250	DC 24/48 V	267711
UVTSD110-05SVRFSU05	NF/DSN63–250	DC 100–110 V	267716

Undervoltage tripping device UVT, long-time delay type, non-synchronous closing, mounted on right-side

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

Type	Breaker type	Rated voltage	Art. no.
UVTSA048-05SVRSU30	NF/DSN32–250	AC 24/48 V	267720
UVTSA450-05SVRSU30	NF/DSN32–250	AC 120/240/450 V	267725
UVTSA550-05SVRSU30	NF/DSN32–250	AC 250/450/550 V	267730
UVTSA690-05SVRSU30	NF/DSN32–250	AC 450/550/690 V	267735
UVTSD048-05SVRSU30	NF/DSN32–250	DC 24/48 V	267740
UVTSD110-05SVRSU30	NF/DSN32–250	DC 100–110 V	267745

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

Type	Breaker type	Rated voltage	Art. no.
UVTSA048-05SVRFSU30	NF/DSN63–250	AC 24/48 V	267721
UVTSA450-05SVRFSU30	NF/DSN63–250	AC 120/240/450 V	267726
UVTSA550-05SVRFSU30	NF/DSN63–250	AC 250/450/550 V	267731
UVTSA690-05SVRFSU30	NF/DSN63–250	AC 450/550/690 V	267736
UVTSD048-05SVRFSU30	NF/DSN63–250	DC 24/48 V	267741
UVTSD110-05SVRFSU30	NF/DSN63–250	DC 100–110 V	267746

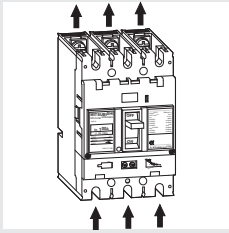
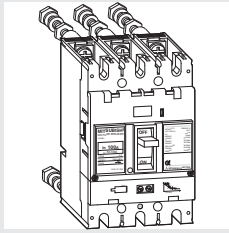
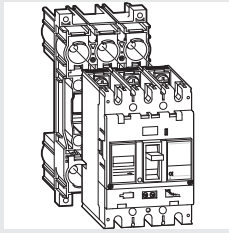
Models for direct connection on request.

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-05SV3	3	For W75 models	267533
ST-05SV4	4		267534
ST-1SV3	3	For W90 models	267537
ST-1SV4	4		267538
ST-2SV3	3	For W105 models	267540
ST-2SV4	4		267541
ST-4SW3	3	NF/DSN400	205956
ST-4SW4	4		205957
ST-6SW3	3	NF/DSN630	205958
ST-6SW4	4		205959
ST-8SW3	3	NF/DSN800	205960
ST-8SW4	4		205961

Solderless terminals SL

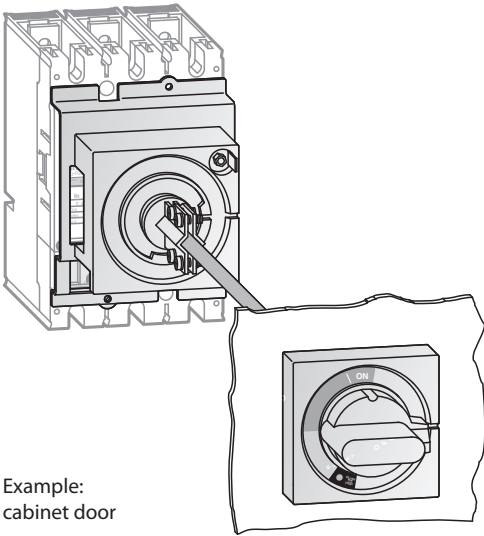
Type	No. of Poles	Breaker type	Connected wire size	Art. no.
SL-1SV3L	3	For W90 models	2.5–25 mm ²	267516
SL-1SV3G	3		25–70 mm ²	267517
SL-1SV4L	4		2.5–25 mm ²	267518
SL-1SV4G	4	For W105 models	25–70 mm ²	267519
SL-2SV3B	3		2.5–16 mm ²	267520
SL-2SV3L	3		14–95 mm ²	267521
SL-2SV3G	3	For W105 models	70–125 mm ²	267522
SL-2SV4B	4		2.5–16 mm ²	267523
SL-2SV4L	4		14–95 mm ²	267524
SL-2SV4G	4	NF-UV	70–125 mm ²	267525
SL-2UV3B	3		2.5–16 mm ²	267526
SL-2UV3L	3		14–95 mm ²	267527
SL-2UV3G	3	NF-UV	70–125 mm ²	267528
SL-2UV4B	4		2.5–16 mm ²	267529
SL-2UV4L	4		14–95 mm ²	267530
SL-2UV4G	4		70–125 mm ²	267531

Plug-in sets PM

Type	No. of Poles	Breaker type	Art. no.	
PLT-05SV		NF/DSN32–250	For W75 models	267426
PLT-2RV		NF/DSN32–250	For W105 models	267427
PMD-05SV3	3	NF/DSN32–250	For W75 models	267429
PMD-05SV4	4	NF/DSN32–250	For W75 models	267430
PMDN-05SV3H	3	NF/DSN32–250	For W75 models	267441
PMDN-1SV3	3	NF/DSN32–250	For W90 models	267447
PMDN-1SV4	4	NF/DSN32–250	For W105 models	267448
PMDN-2SV3	3	NF/DSN32–250	For W105 models	267450
PMDN-2SV4	4	NF/DSN32–250	For W105 models	267451
PMN-05SV3H	3	NF/DSN32–250	For W75 models	267456
PMN-05SV3L	3	NF/DSN32–250	For W75 models	267457
PMN-05SV4H	4	NF/DSN32–250	For W75 models	267458
PMN-05SV4L	4	NF/DSN32–250	For W75 models	267459
PMN-1SV3	3	NF/DSN32–250	For W90 models	267461
PMN-1SV4	4	NF/DSN32–250	For W90 models	267462
PMN-2SV3	3	NF/DSN32–250	For W105 models	267464
PMN-2SV4	4	NF/DSN32–250	For W105 models	267465
PMN-2UV3	3	NF-UV	For W105 models	267467
PM-4SW3	3	NF/DSN400		205962
PM-4SW4	4			205963
PM-6SW3	3	NF/DSN630		205964
PM-6SW4	4			205965
PM-8SW3	3	NF/DSN800		205966
PM-8SW4	4			205967

W75 = Breaker width 75 mm
 W90 = Breaker width 90 mm
 W105 = Breaker width 105 mm
 More types available on request.

V-type operating handles



Example:
cabinet door

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 IP65.
- Variable axle length.

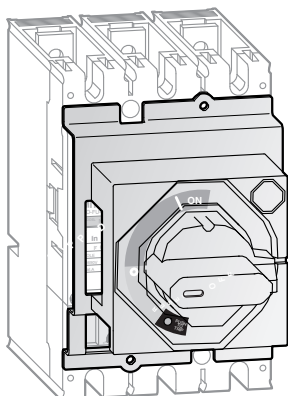
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MCCB – Accessories

Specifications	V-type operating handle										
	V-05SV	V-05SVE	V-2SV	V-2SVE	V-2UV	V-2UVE	V-4S	V-4SE	V-8S	V-8SE	
Breaker type	NF/DSN32-63		NF/DSN125-250		NF/DSN125-250-UV		NF/DSN400-630		NF/DSN800		
Colour: handle/front	black	red/yellow	black	red/yellow	black	red/yellow	black	red/yellow	black	red/yellow	
Order information	Art. no.	267747	267749	267755	267756	267757	267758	225420	225421	225424	225425

Specifications	Adjustment unit				
	V-AD3S	V-AD3L	V-AD5S	V-AD5L	
Breaker type	NF/DSN32-250		NF/DSN400-800		
Length (mm)	318	518	300	539	
Order information	Art. no.	225426	225427	235194	235235

F-type operating handles



Application

The F-type operating handles are to be mounted directly on the breaker.

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

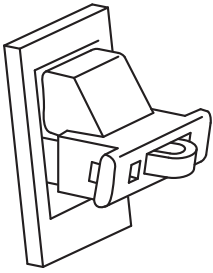
The operating handle is available in the following colour combinations:

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

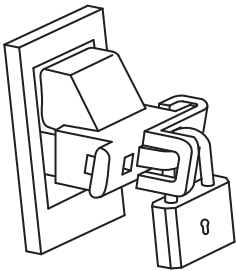
F-type operating handles

Name	Specifications	Breaker type	Art. No.
F-05SV LF DF	Operating handle Type F. OFF position lock, OFF position open, ON side of breaker is upper	NF/DSN32-63 3P / 4P	267263
F-05SV LF DF Y	Operating handle Type F. OFF position lock, OFF position open, ON side of breaker is left		267264
F-05SV LF DF Z	Operating handle Type F. OFF position lock, OFF position open, ON side of breaker is right		267265
F-05SV LF DR	Operating handle Type F. OFF position lock, RESET position open, ON side of breaker is upper		267266
F-05SV LF DR Y	Operating handle Type F. OFF position lock, RESET position open, ON side of breaker is left		267267
F-05SV LF DR Z	Operating handle Type F. OFF position lock, RESET position open, ON side of breaker is right		267268
F-05SVE LF DF	Operating handle Type F Emergency. OFF position lock, OFF position open, ON side of breaker is upper	NF/DSN32-63 3P / 4P	267287
F-05SVE LF DF Y	Operating handle Type F Emergency. OFF position lock, OFF position open, ON side of breaker is left		267288
F-05SVE LF DF Z	Operating handle Type F Emergency. OFF position lock, OFF position open, ON side of breaker is right		267289
F-05SVE LF DR	Operating handle Type F Emergency. OFF position lock, RESET position open, ON side of breaker is upper		267290
F-05SVE LF DR Y	Operating handle Type F Emergency. OFF position lock, RESET position open, ON side of breaker is left		267291
F-05SVE LF DR Z	Operating handle Type F Emergency. OFF position lock, RESET position open, ON side of breaker is right		267292
F-2SV LF DF	Operating handle Type F. OFF position lock, OFF position open, ON side of breaker is upper	NF/DSN125-250 3P / 4P	267359
F-2SV LF DF Y	Operating handle Type F. OFF position lock, OFF position open, ON side of breaker is left		267360
F-2SV LF DF Z	Operating handle Type F. OFF position lock, OFF position open, ON side of breaker is right		267361
F-2SV LF DR	Operating handle Type F. OFF position lock, RESET position open, ON side of breaker is upper		267362
F-2SV LF DR Y	Operating handle Type F. OFF position lock, RESET position open, ON side of breaker is left		267363
F-2SV LF DR Z	Operating handle Type F. OFF position lock, RESET position open, ON side of breaker is right		267364
F-2SVE LF DF	Operating handle Type F Emergency. OFF position lock, OFF position open, ON side of breaker is upper	NF/DSN125-250 3P / 4P	267371
F-2SVE LF DF Y	Operating handle Type F Emergency. OFF position lock, OFF position open, ON side of breaker is left		267372
F-2SVE LF DF Z	Operating handle Type F Emergency. OFF position lock, OFF position open, ON side of breaker is right		267373
F-2SVE LF DR	Operating handle Type F Emergency. OFF position lock, RESET position open, ON side of breaker is upper		267374
F-2SVE LF DR Y	Operating handle Type F Emergency. OFF position lock, RESET position open, ON side of breaker is left		267375
F-2SVE LF DR Z	Operating handle Type F Emergency. OFF position lock, RESET position open, ON side of breaker is right		267376
F-4S LF DF	Operating handle Type F. OFF position lock, OFF position open, ON side of breaker is upper	NF/DSN400-630 3P / 4P	225402
F-4SE LF DF	Operating handle Type F Emergency. OFF position lock, OFF position open, ON side of breaker is upper		225403
F-8S LF DF	Operating handle Type F. OFF position lock, OFF position open, ON side of breaker is upper	NF/DSN800 3P / 4P	225404
F-8SE LF DF	Operating handle Type F Emergency. OFF position lock, OFF position open, ON side of breaker is upper		225405
F-RCS	Release protection for operating handle Type F	All F-types handles	267385

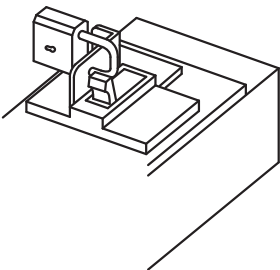
■ Handle lock devices



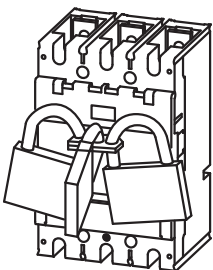
LC-05SV



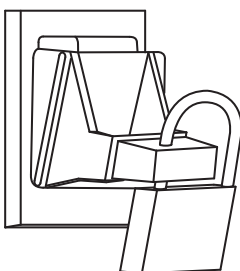
HLF-05SV



HLS-05SW



HLS-05SW



HL-4SW

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 every time.

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.

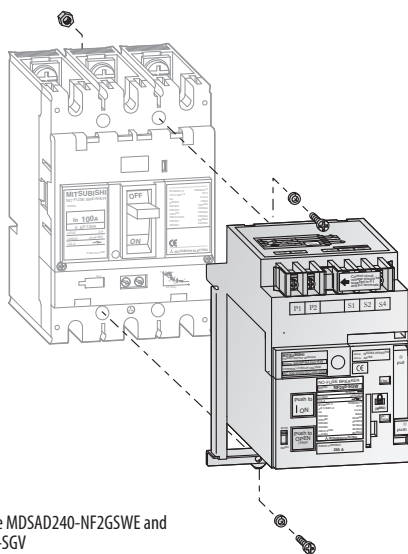
Handle lock device HL type

- 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.

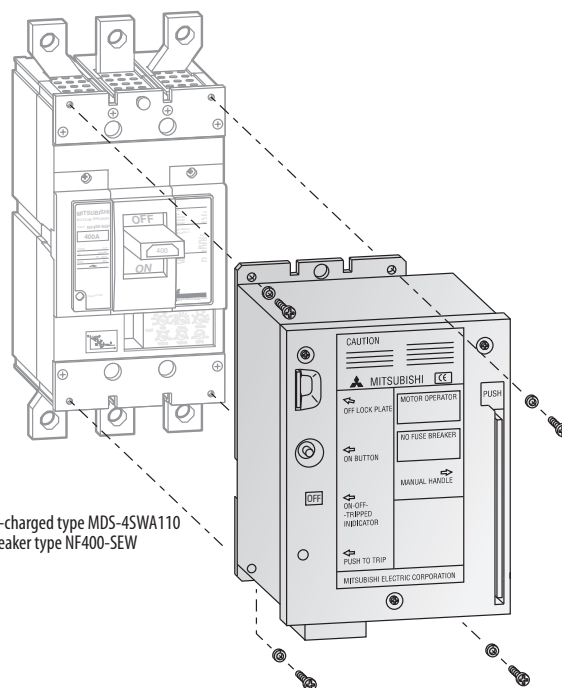
Type	Breaker type	Art. no.
LC-05SV	NF/DSN32–250	267761
HLF-05SV	NF/DSN32–250	267396
HLN-05SV	NF/DSN32–250	267397
HLS-05SW	NF/DSN32–250, W75, W90, 3P, 4P	267398
HLS-05SV2	NF/DSN32–250, W75, W90, 2P	267399
HL-4SW	NF/DSN400–800	205975
HL-10SW	NF/DSN100–1600	205976

Electrically operated breakers – overview

Spring-charged types MDS



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



Spring-charged type MDS-4SWA110 and breaker type NF400-SEW

Specifications		MDSD.../MDSA...	MDS-4.../8...	MDS-16...
Breaker type ①	NF-S/H series	NF125-SGV/LGV/HGV NF125-SEV/LEV/HEV	NF400-SEW/HEW/REW NF630-SEW/HEW/REW NF800-SEW/HEW/REW	NF1000-SEW NF1250-SEW NF1600-SEW
	NF-R/U series	NF125-RGV/REV/UV NF250-RGV/REV/UV	NF400-UEW, NF800-UEW	—
Rated operating voltage (V) (allowable voltage range 85–110 %) ②		DC 24 V Compatible with 100–240 V AC/ 100–250 V DC	AC 100/110 V, 200/220 V (AC 240 V) DC 100/110 V (DC 125 V)	AC 100/110 V, 200/220 V (AC 240 V) DC 100/110 V (DC 125 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 200/200 V	OFF: 1.0 (3.0) ON: 10.0 OFF: 0.5 (1.5) ON: 8.0	OFF: 1.0 (3.0) ON: 10.0 OFF: 0.5 (1.5) ON: 8.0
Operating time (sec.)	ON operating	0.05–0.1 (self holding)	0.05	0.07
	OFF operating	0.6 and less (self holding)	3 and less (self holding)	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.

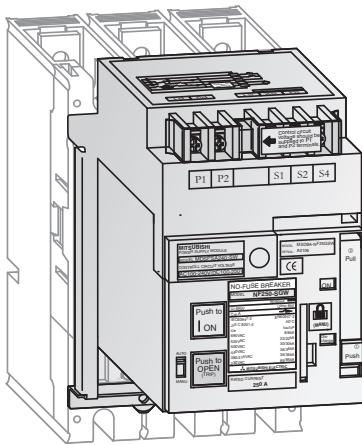
The dielectric strength of the electrical operating circuits is 1500 V. When performing a dielectric strength test simultaneously with another device at a voltage over 1500 V, the operating circuit terminal should be disconnected.

Automatic Reset

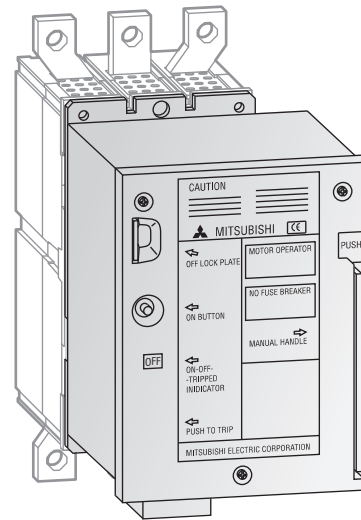
If the breaker is an auto reset type, it contains a built-in alarm switch and the off-control circuit close when the breaker is tripped. Since the breaker automatically resets itself after tripping, the power is easily restored by switching on the breaker again. With a UVT mounted, however, auto reset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

● More details on request.

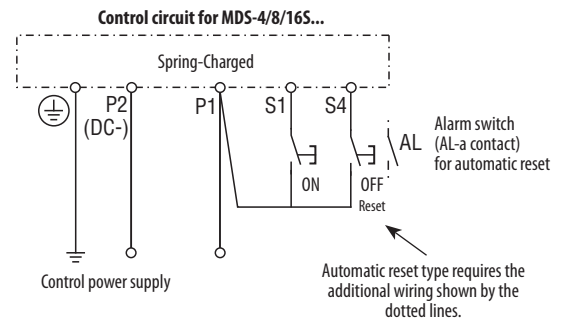
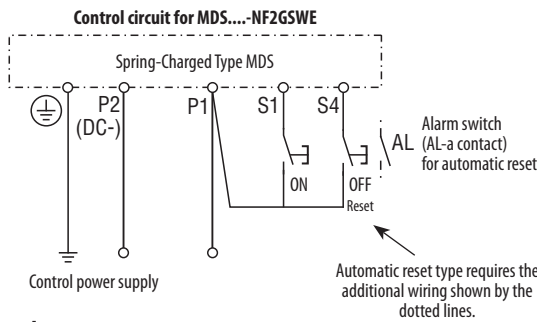
Spring-charged type MDS



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



Spring-charged type MDS-4SW.... and breaker type NF400-SEW



Spring-charged type

Electrical operation

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

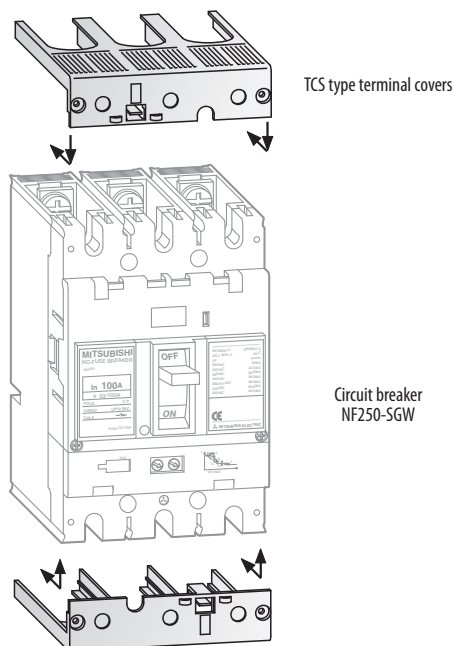
Control circuit

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

- More details on request.
- Control power supply modules on request.

Type	Breaker type	Rated voltage	Art. no.
MDSAD240-NF1SVE	NF/DSN125-250 W90	AC 100-240 V/DC 100-250 V	267401
MDSAD240-NF2SVE	NF/DSN125-250 W105	AC 100-240 V/DC 100-250 V	267402
MDSAD240-NF2UVE	NF250-UV W105	AC 100-240 V/DC 100-250 V	267403
MDS024-NF1SVE	NF/DSN125-250 W90	DC 24 V	267406
MDS024-NF2SVE	NF/DSN125-250 W105	DC 24 V	267407
MDS060-NF1SVE	NF/DSN125-250 W90	DC 48-60 V	267410
MDS060-NF2SVE	NF/DSN125-250 W105	DC 48-60 V	267411
MDS060-NF2UVE	NF250-UV W105	DC 48-60 V	267412
MDS-4SWA110	NF/DSN400-630	AC 100-110 V	205968
MDS-4SWA240	NF/DSN400	AC 230 V	205969
MDS-4SWD110	NF/DSN400	DC 100-110 V	205970
MDS-8SWA110	NF/DSN800	DC 100-110 V	205971
MDS-8SWA240	NF/DSN630-800	AC 230 V	205972
MDS-8SWD110	NF/DSN630-800	DC 100-110 V	205973
MDS-16SSA110	NF/DSN1000-1600	AC 100-110 V	11463
MDS-16SSA220	NF/DSN1000-1600	AC 230 V	9430
MDS-16SSD110	NF/DSN1000-1600	DC 100-110 V	11464

Terminal covers



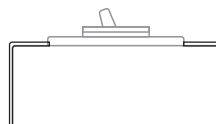
Application

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

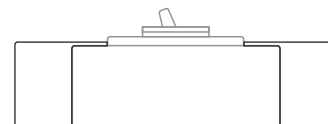
Different types are available:

- for front connection as small terminal covers TCS or large terminal covers TCL, 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: black, white or transparent
- More types/details on request.

Small terminal covers
TCS



Large terminal covers
TCL, TTC



Small terminal covers TCS (1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
TCS-05SV3	3	NF/DSN32–250 W75			267552
TCS-05SV4	4	NF/DSN32–250 W75			267553
TCS-1SV3	3	NF/DSN32–250 W90			267555
TCS-1SV4	4	NF/DSN32–250 W90			267556
TCS-2SV3	3	NF/DSN32–250 W105			267557
TCS-2SV4	4	NF/DSN32–250 W105			267558

Large terminal covers TTC (1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
TTC-05SV3	3	NF/DSN32–250 W75			267560
TTC-05SV4	4	NF/DSN32–250 W75			267561
TTC-1SV3	3	NF/DSN32–250 W90	transparent		267563
TTC-1SV4	4	NF/DSN32–250 W90	transparent		267564
TTC-2SV3	3	NF/DSN32–250 W105			267565
TTC-2SV4	4	NF/DSN32–250 W105			267566

Large terminal covers TCL (1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
TCL-05SV3	3	NF/DSN32–250 W75			267543
TCL-05SV4	4	NF/DSN32–250 W75			267544
TCL-1SV3	3	NF/DSN32–250 W90			267546
TCL-1SV4	4	NF/DSN32–250 W90			267547
TCL-2SV3	3	NF/DSN32–250 W105 3-pole up to 200A max 100 mm ²			267548
TCL-2SV3L	3	NF/DSN32–250 W105 3-pole up to 250A max 150 mm ²			267549
TCL-2SV4	4	NF/DSN32–250 W105			267550
TCL-4SW3	3	NF/DSN400–630	black	IP20	205977
TCL-4SW4	4	NF/DSN400–630	transparent	IP20	205978
TCL-8SW3	3	NF/DSN800	transparent	IP20	205979
TCL-8SW4	4	NF/DSN800	transparent	IP20	205980
TCL-8UW3	3	NF/DSN800	transparent	IP20	205981
TCL-8UW4	4	NF/DSN800	transparent	IP20	205982
TCL-10SW3	3	NF/DSN1000–1250 (fixed with screws)	transparent	IP20	205983
TCL-10SW4	4	NF/DSN1000–1250 (fixed with screws)	transparent	IP20	205984

Terminal covers rear for connection studs BTC (1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
BTC-05SV3	3	NF/DSN32/63 3P W75			267254
BTC-05SV4	4	NF/DSN32/63 4P W75			267255
BTC-1SV3	3	NF/DSN125 3P W90			267257
BTC-1SV4	4	NF/DSN125 4P W90			267258
BTC-2SV3	3	NF/DSN125/160/250 2,3P W105			267259
BTC-2SV4	4	NF/DSN125/160/250 4P W105			267260
BTC-4SW3	3	NF/DSN400–630	transparent	IP20	205985
BTC-4SW4	4	NF/DSN400–630	transparent	IP20	205986
BTC-8SW3	3	NF/DSN800	transparent	IP20	205987
BTC-8SW4	4	NF/DSN800	transparent	IP20	205988

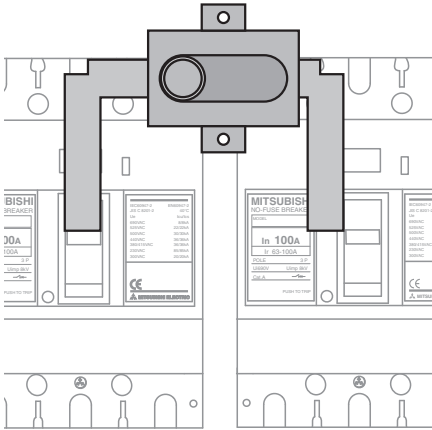
Terminal covers for plug-in type PTC (1 set = 2 pieces)

Type	No. of poles	Breaker type	Colour	Protection degree	Art. no.
PTC-05SV3	3	NF/DSN32–250 W75			267469
PTC-05SV4	4	NF/DSN32–250 W75			267470
PTC-1SV3	3	NF/DSN32–250 W90			267472
PTC-1SV4	4	NF/DSN32–250 W90			267473
PTC-2SV3	3	NF/DSN32–250 W105			267474
PTC-2SV4	4	NF/DSN32–250 W105			267475

W75 = Breaker width 75 mm
W90 = Breaker width 90 mm
W105 = Breaker width 105 mm

■ Mechanical interlock MI

(Front side installation)



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.

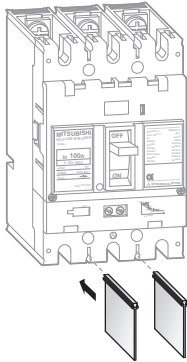
- More details on request.

Type	No. of poles	For use between two breakers of	Art. no.
MI-05SV3	3	For W75, W90 und W105; 3 poles. Panel mounting.	267418
MI-05SV4	4		267419
MI-05SVFB3	3	For W75; 3 poles. Breaker mounting.	267421
MI-1SV4	4		267422
MI-1SVFB3	3	For W90; 4 poles. Panel mounting.	267423
MI-2SV4	4		267424
MI-2SVFB3	3	For W90; 3 poles. Breaker mounting.	267425
MI-4SW3	3		400 AF
MI-4SW4	4	630–800 AF	205990
MI-8SW3	3		205991
MI-8SW4	4	1000–1250 AF	205992
MI-10SW3	3		205993
MI-10SW4	4	1600 AF	205994
MI-16SW3	3		205995
MI-16SW4	4	205996	

6

MCCB – Accessories

■ Isolation barriers (standard) BAF



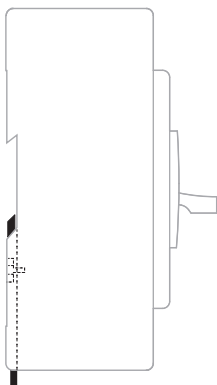
Application

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.

Specifications	BAF-05SV	BAF-2SV
For breaker type	V series W75 type	V series W90/105 type
Connection type	For front connection	For front connection
Order information	Art. no. 267248	267249

■ IEC 35 mm rail mounting adapter



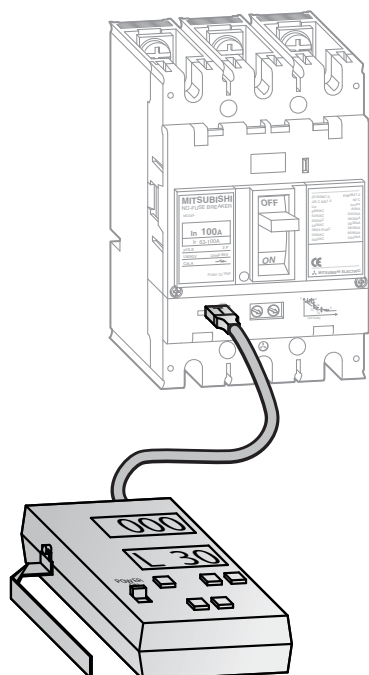
Application

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
Order information	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 from 125 A up to 1600 A.

- More details on request.

Specifications	Y-250	Y-350
For electronic breakers	W series 125–1600 A	V series 125–250 A
Order information	Art. no. 68181	267770

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

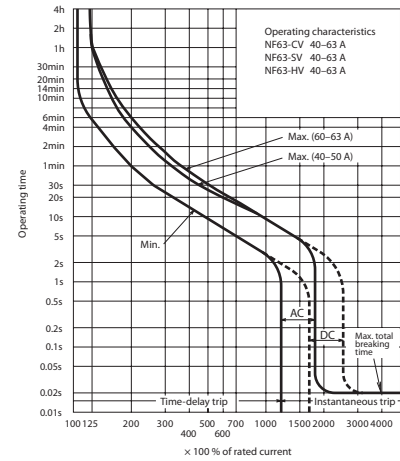
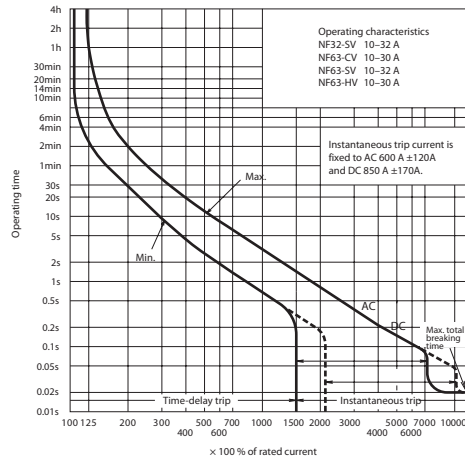
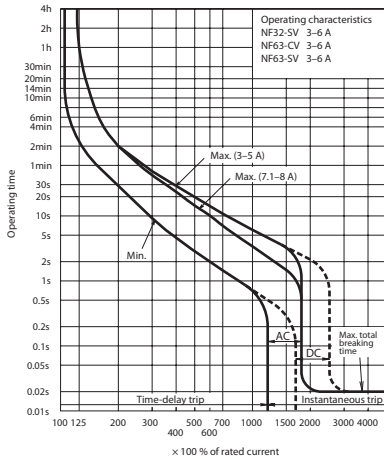


NF63-SV

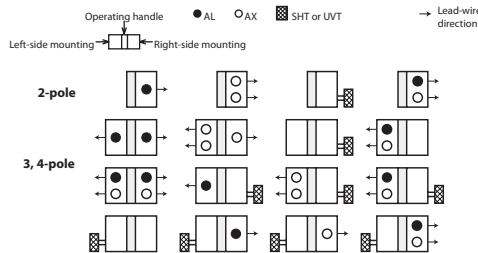
Type name	NF32-SV	NF63-SV	NF63-CV	NF63-HV			
Rated current In [A]	3, 4, (5), 6, 10, (15), 16, 20, 25, (30), 32	3, 4, (5), 6, 10, (15), 16, 20, 25, (30), 32, 40, 50, (60), 63	3, 4, (5), 6, 10, (15), 16, 20, 25, (30), 32, 40, 50, (60), 63	10, (15), 16, 20, 25, (30), 32, 40, 50, (60), 63			
Number of poles	3	3	3 4	3 4			
Rated insulation voltage Ui [V]	600	600	600	600			
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2	AC	690 V	–	–	–	2.5/2.5
			500 V	2.5/2.5	2.5/2.5	7.5/7.5	7.5/7.5
			440 V	2.5/2.5	2.5/2.5	7.5/7.5	10/8
			415 V	2.5/2.5	2.5/2.5	7.5/7.5	10/8
			400 V	5/5	5/5	7.5/7.5	10/8
			380 V	5/5	5/5	7.5/7.5	10/8
			230 V	7.5/7.5	7.5/7.5	15/15	25/19
			DC 250 V *1	2.5/2.5	2.5/2.5	7.5/7.5	7.5/7.5
Standard attached parts (front connection)	Mounting screw: M4×0.7×55 (2 and 3P: 2pcs, 4P: 4pcs) Insulation barrier: (2P: 1pc, 3P: 2pcs, 4P: 3pcs) (*2)						

Notes: *1 Use two poles for three- and four-pole products. Not available for use with connection as shown at the bottom of page 41.
*2 Supplied with NF63-SV and NF63-HV.

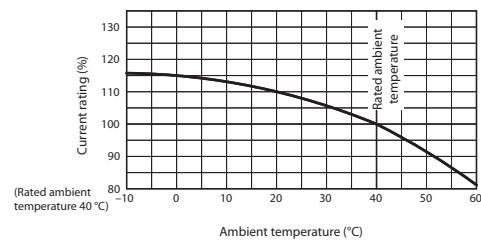
Operating characteristics



Internal accessories



Ambient compensating curve

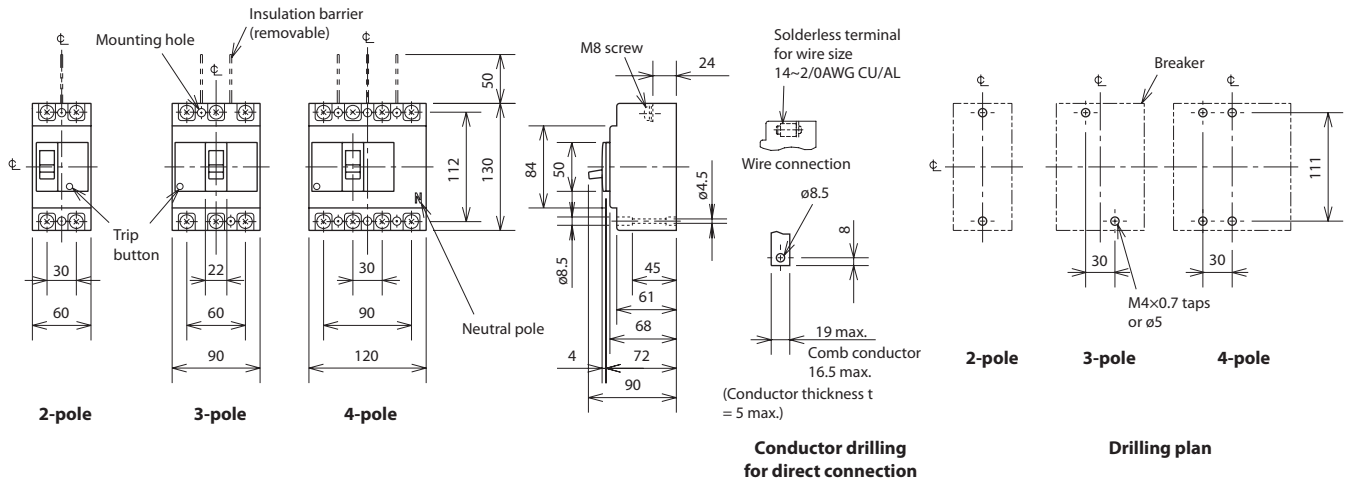


External accessories

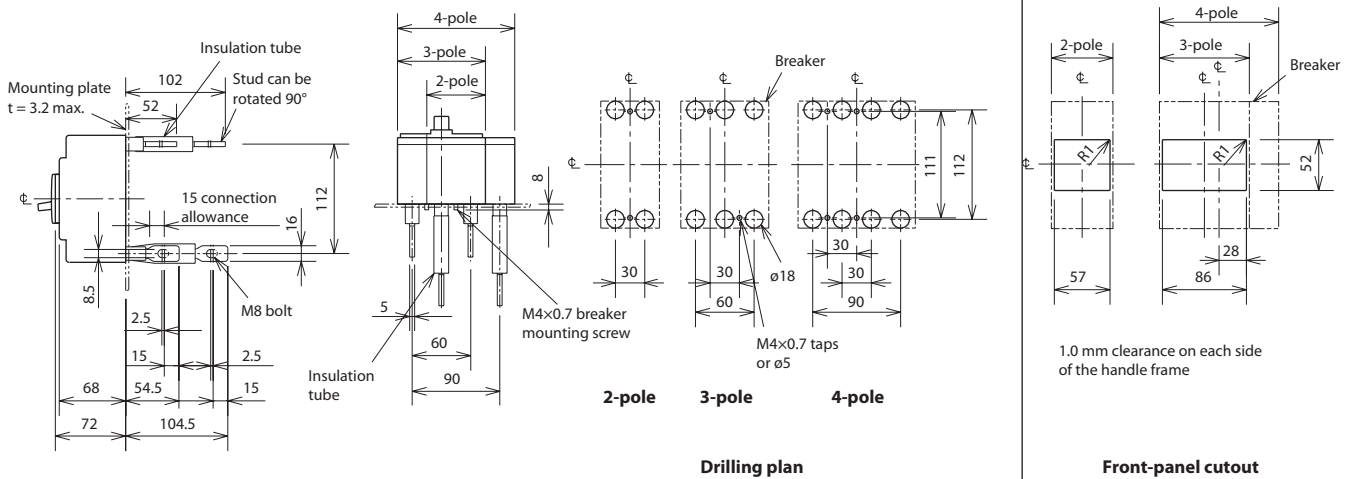
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F 3, 4P	F-1SV	Mechanical interlock	3P	MI-05SV3
	V 3, 4P	V-1SV		4P	MI-05SV4
Handle lock device	LC	LC-05SV	Terminal cover	Small	TC-S 3P
	HL (*1)	HLF-05SV		3P	TCS-1SV3
		HLN-05SV		4P	TCL-1SV4
		HLS-1SV		3P	TTC-1SV3
			Rear	BTC 3P	BTC-1SV3
			Plug-in	PTC 3P	PTC-1SV3
			Electrical operation device	MDS (*2)	66

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

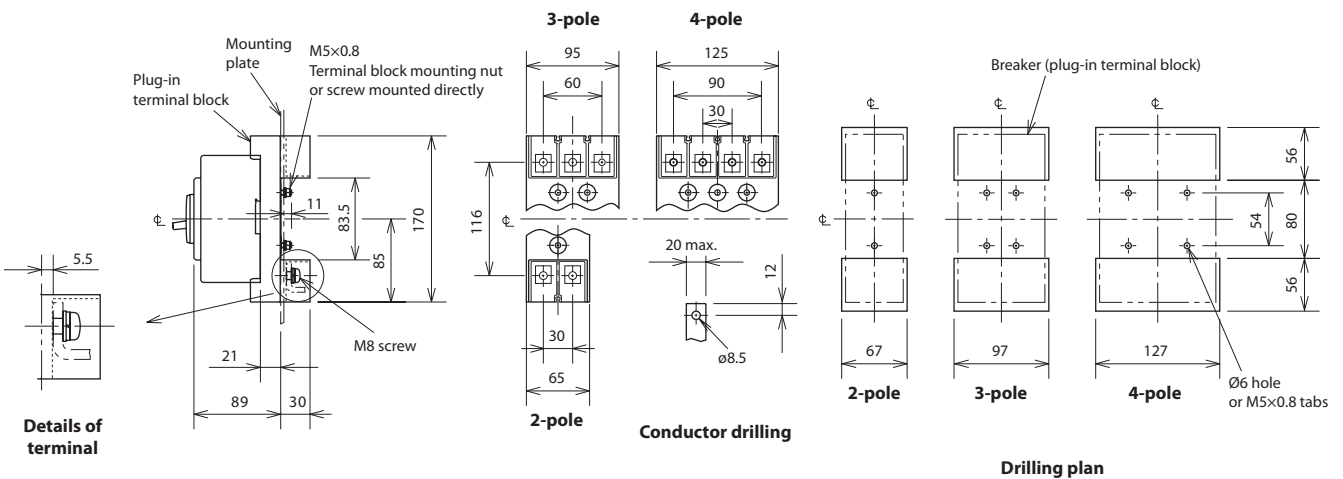
Front connection



Rear connection



Plug-in



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

[mm]

NF125-SGV, NF160-SGV, NF250-SGV, NF125-LGV, NF160-LGV, NF250-LGV

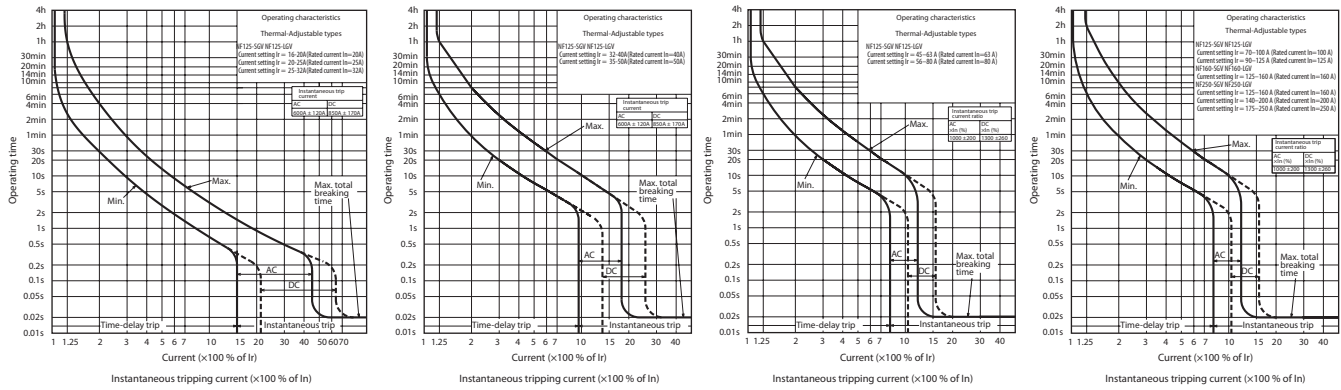


NF250-SGV

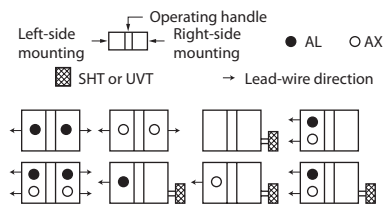
Type name	NF125-SGV	NF160-SGV	NF250-SGV	NF125-LGV	NF160-LGV	NF250-LGV
Rated current I _n [A]	16–20, 25–25–32 32–40, 35–50, 45–63 56–80, 70–100, 90–125	125–160	125–160 140–200 175–250	16–20, 25–25–32 32–40, 35–50, 45–63 56–80, 70–100, 90–125	125–160	125–160 140–200 175–250
Number of poles	3 4	3 4	3 4	3 4	3 4	3 4
Rated insulation voltage U _i [V]	690	690	690	690	690	690
Rated short-circuit breaking capacity [kA]	690 V	8/8	8/8	8/8	8/8	8/8
	500 V	30/30	30/30	30/30	36/36	36/36
	440 V	36/36	36/36	36/36	50/50	50/50
	415 V	36/36	36/36	36/36	50/50	50/50
	400 V	36/36	36/36	36/36	50/50	50/50
	380 V	36/36	36/36	36/36	50/50	50/50
	230 V	85/85	85/85	85/85	90/90	90/90
	200 V	85/85	85/85	85/85	90/90	90/90
	DC *1	300 V	20/20	20/20	20/20	20/20
	Standard attached parts (front connection)	Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)				

Note: *1 When wired as shown at the bottom of page 41, three-pole models can be used for up to 500VDC, and 4-pole models for up to 600V DC.

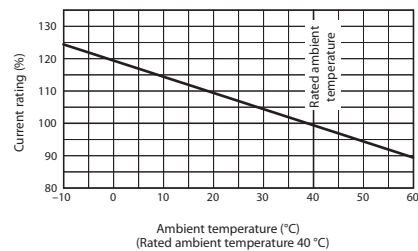
Operating characteristics



Internal accessories



Ambient compensating curve

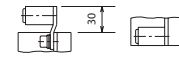
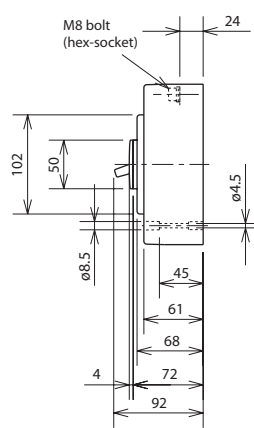
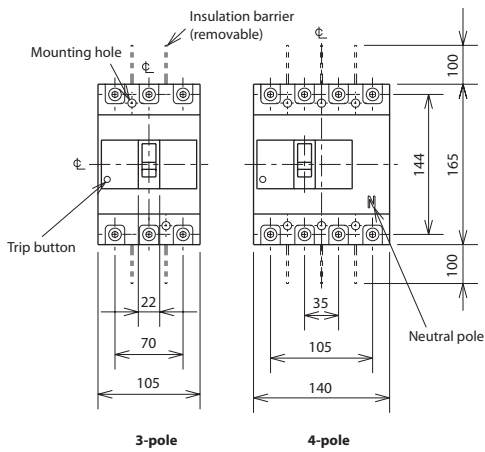


External accessories

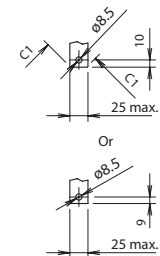
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Operating handle	F	F-2SV	Mechanical interlock	3P	MI-05SV3
	V	V-2SV		4P	MI-2SV4
Handle lock device	LC	LC-05SV	Terminal cover	Small	TC-S
	HL (*1)	HLF-05SV		3P	TCL-2SV3
		HLN-05SV		4P	TCL-2SV3L
	HLS-2SV	3P		TTC-2SV3	
				Rear	BTC
			Plug-in	PTC	67
			Electrical operation device	MDS (*2)	66

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

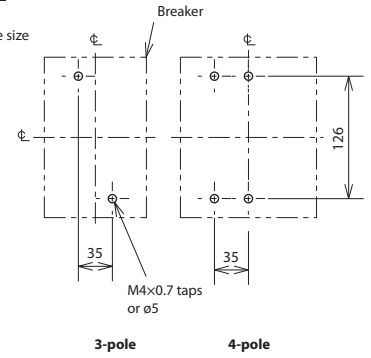
Front connection



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

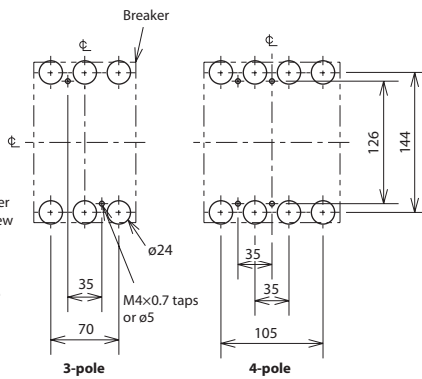
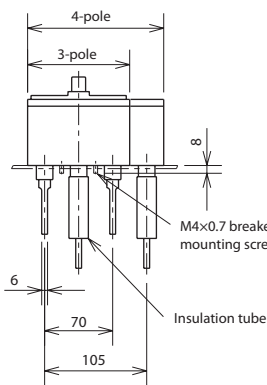
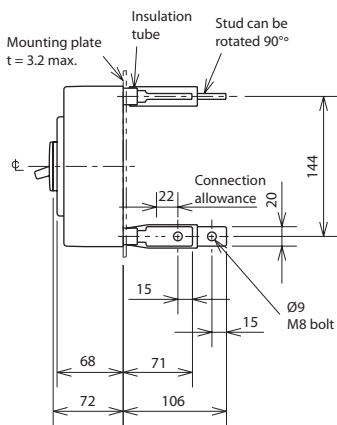


(Conductor thickness t = 7 max.)

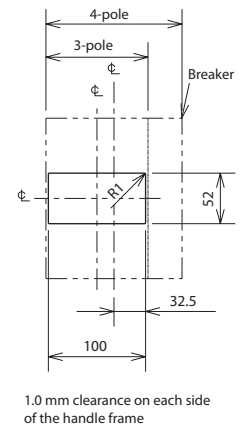


Drilling plan

Rear connection



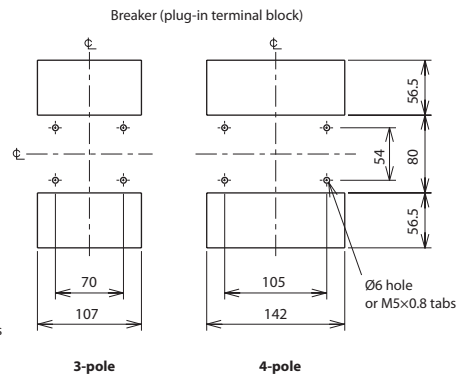
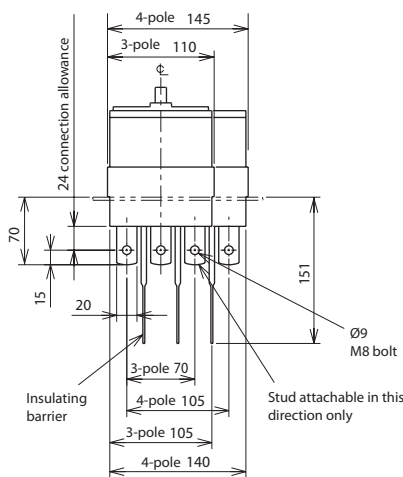
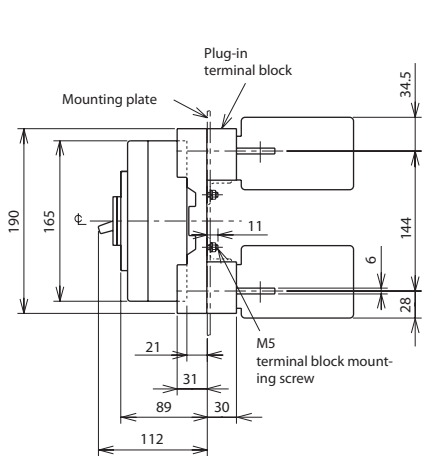
Drilling plan



1.0 mm clearance on each side of the handle frame

Front-panel cutout

Plug-in



Drilling plan

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

[mm]

NF125-HGV, NF160-HGV, NF250-HGV, NF125-RGV, NF250-RGV

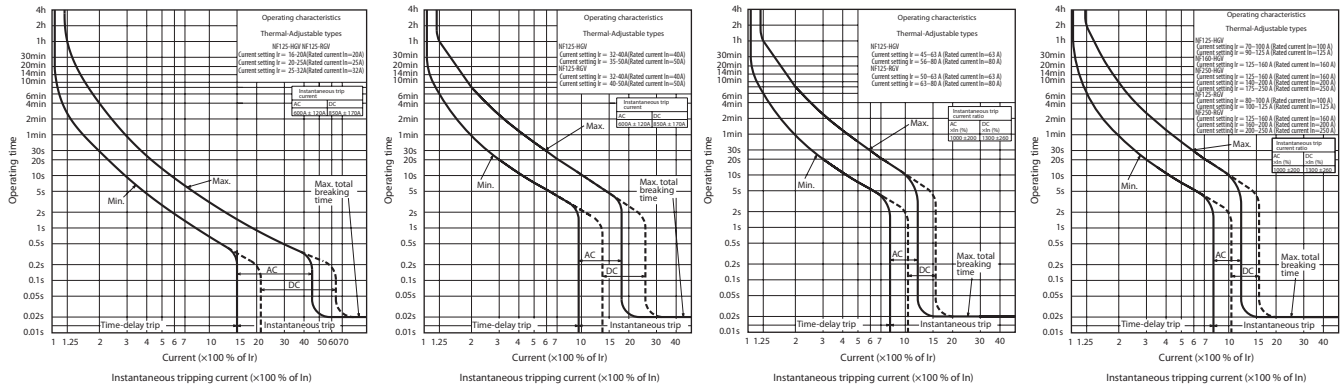


NF250-HGV

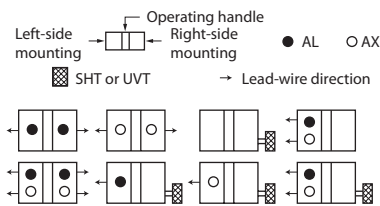
Type name	NF125-HGV	NF160-HGV	NF250-HGV	NF125-RGV	NF250-RGV			
Rated current I_n [A]	16–20, 20–25, 25–32 32–40, 35–50, 45–63 56–80, 70–100, 90–125	125–160	125–160 140–200 175–250	16–20, 20–25, 25–32 32–40, 35–50, 45–63 56–80, 70–100, 90–125	125–160			
Number of poles	3 4	3 4	3 4	3	3			
Rated insulation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

Note: *1 When wired as shown at the bottom of page 41, three-pole models can be used for up to 500 V DC, and 4-pole models for up to

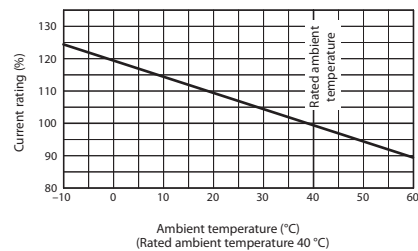
Operating characteristics



Internal accessories



Ambient compensating curve

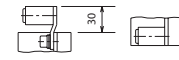
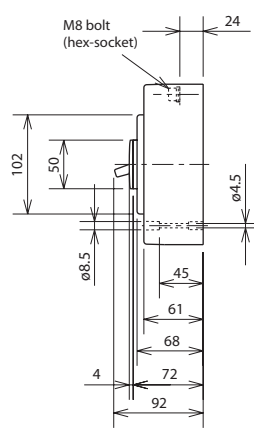
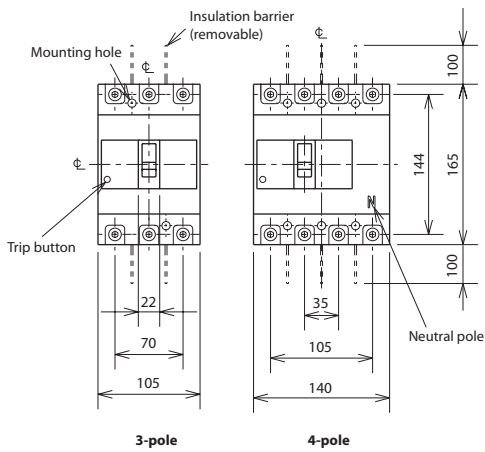


External accessories

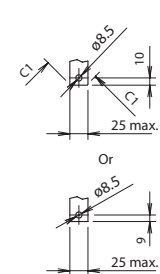
Accessories	Type name	Reference page	Accessories	Type name	Reference page			
Operating handle	F	F-2SV	63	Mechanical interlock	3P	MI-05SV3	68	
	V	V-2SV	62		4P	MI-2SV4		
Handle lock device	LC	LC-05SV	64	Terminal cover	Small	TC-S	3P	TCS-2SV3
	HL (*1)	HLF-05SV			3P	TCL-2SV3		
	HLN-05SV	4P			TCL-2SV3L			
HL-S	HLS-2SV	4P	TCL-2SV4		67			
			Skeleton		TTC	3P	TTC-2SV3	
			Rear	BTC	3P	BTC-2SV3		
			Plug-in	PTC	3P	PTC-2SV3		
			Electrical operation device	MDS (*2)		66		

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

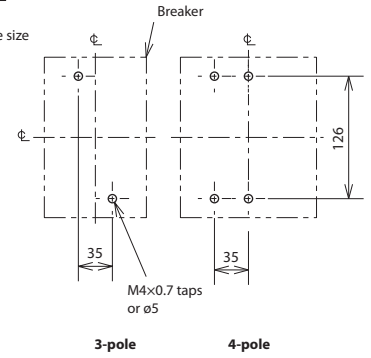
Front connection



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

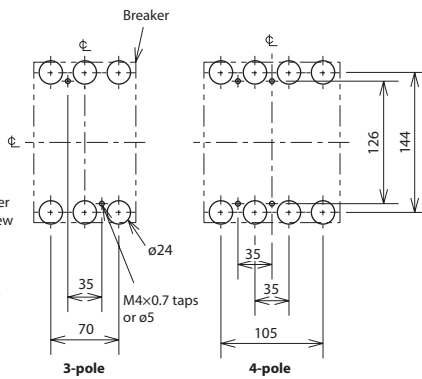
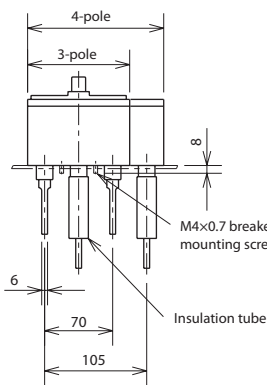
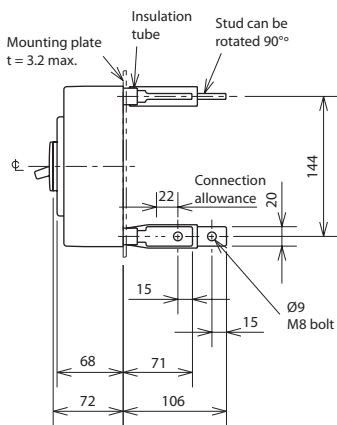


(Conductor thickness $t = 7$ max.)

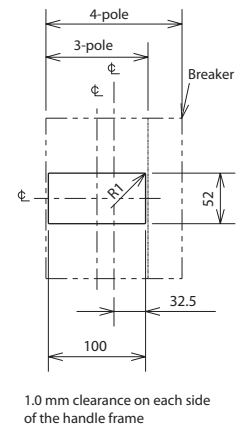


Drilling plan

Rear connection

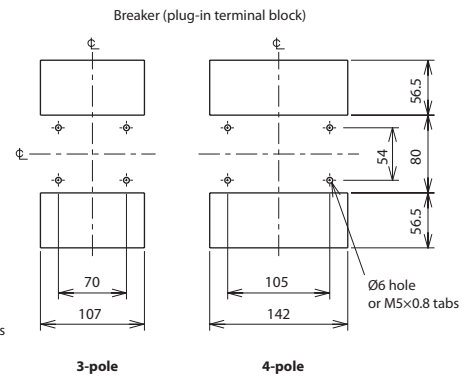
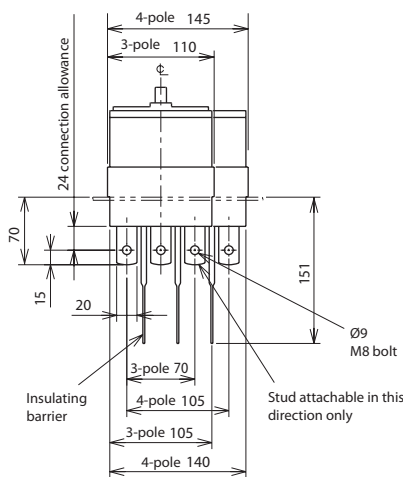
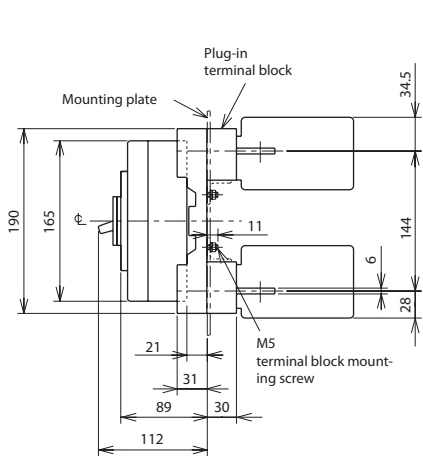


Drilling plan



Front-panel cutout

Plug-in



Drilling plan

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

[mm]

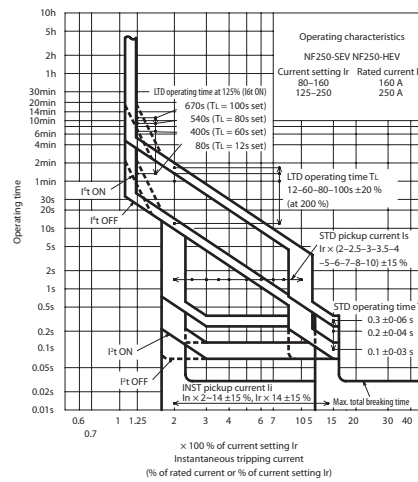
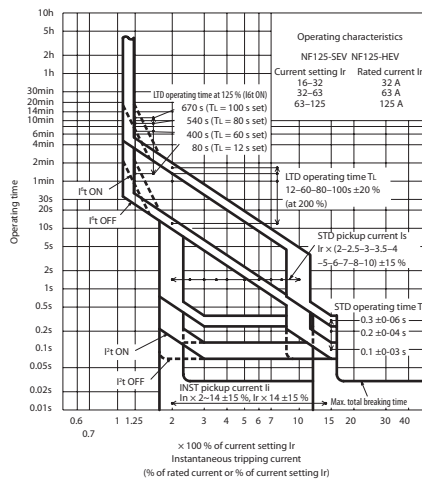
NF125-SEV, NF250-SEV, NF125-HEV, NF250-HEV



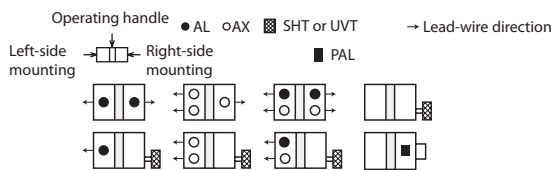
NF125-SEV

Type name	NF125-SEV		NF250-SEV		NF125-HEV		NF250-HEV	
Rated current I_n [A]	16–32, 32–63, 63–125		80–160, 125–250		16–32, 32–63, 63–125		80–160, 125–250	
Number of poles	3	4	3	4	3	4	3	4
Rated insulation voltage U_i [V]	690		690		690		690	
Rated short-circuit breaking capacity [kA] IEC/EN 60947-2 (I_{cu}/I_{cs})	AC	690 V	8/8	10/8	8/8	10/8	8/8	10/8
		500 V	30/30	50/38	30/30	50/38	30/30	50/38
		440 V	36/36	65/65	36/36	65/65	36/36	65/65
		415 V	36/36	70/70	36/36	70/70	36/36	70/70
		400 V	36/36	75/75	36/36	75/75	36/36	75/75
		380 V	36/36	75/75	36/36	75/75	36/36	75/75
		230 V	85/85	100/100	85/85	100/100	85/85	100/100
DC *1	300 V	—	—	—	—	—	—	
Standard attached parts (front connection)	Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)							

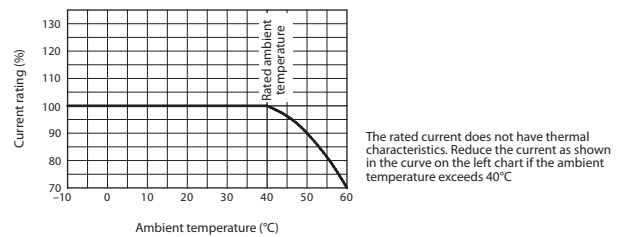
Operating characteristics



Internal accessories



Ambient compensating curve



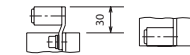
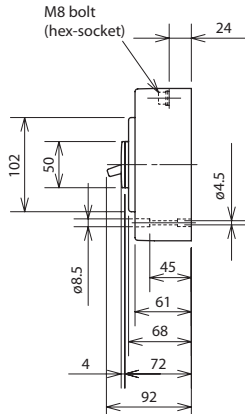
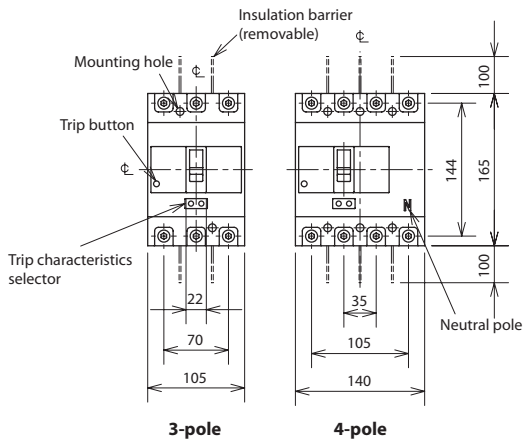
External accessories

Accessories	Type name	Reference page	
Operating handle	F	F-2SV	63
	V	V-2SV	62
Handle lock device	LC	LC-05SV	64
	HL (*1)	HLF-05SV	
		HLN-05SV	
		HLS-2SV	

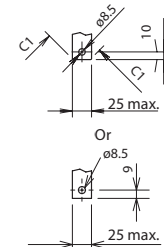
Accessories	Type name	Reference page		
Mechanical interlock	MI	MI-05SV3	68	
		MI-2SV4		
Terminal cover	Small	TC-S	67	
		TC-S		TCS-2SV3
	Large	TC-L		TCL-2SV3
				TCL-2SV3L
				TCL-2SV4
				TCL-2SV4
Electrical operation device	Skeleton	TTC	TTC-2SV3	
	Rear	BTC	BTC-2SV3	
	Plug-in	PTC	PTC-2SV3	
			MDS (*2)	66

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

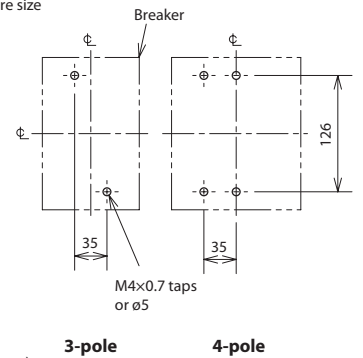
Front connection



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



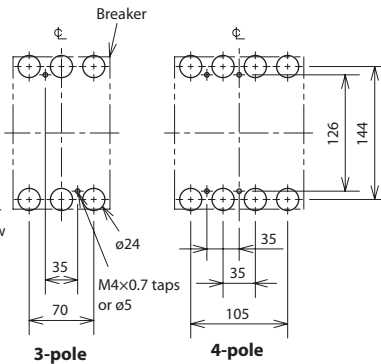
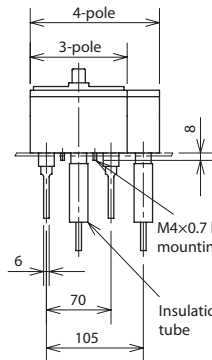
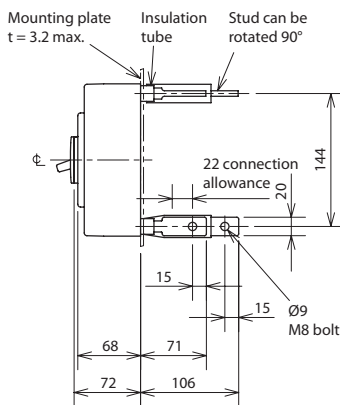
(Conductor thickness t = 7 max.)



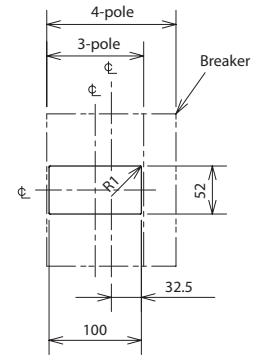
Conductor drilling for direct connection

Drilling plan

Rear connection



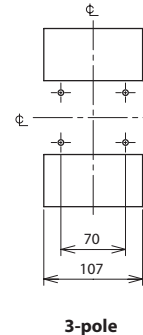
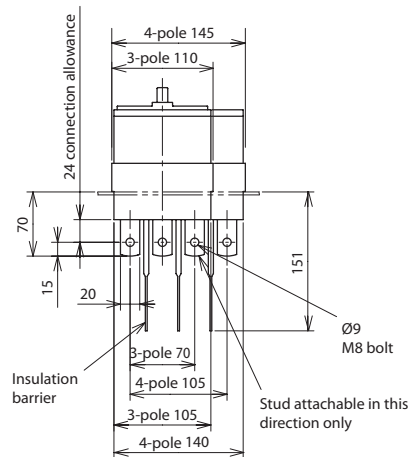
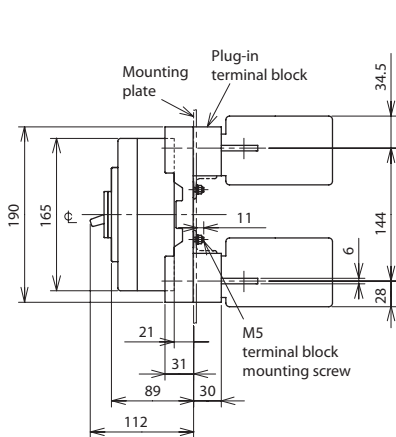
Drilling plan



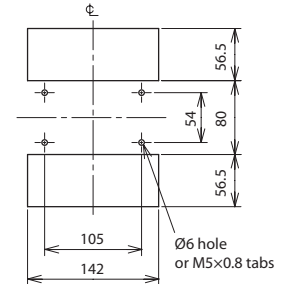
1.0 mm clearance on each side of the handle frame

Front-panel cutout

Plug-in



3-pole



4-pole

Drilling plan

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

[mm]

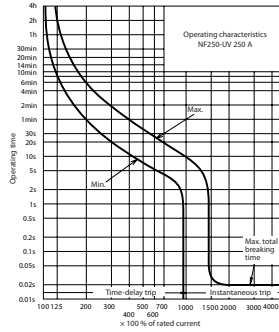
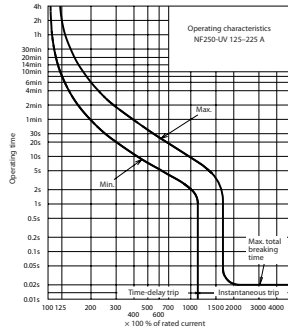
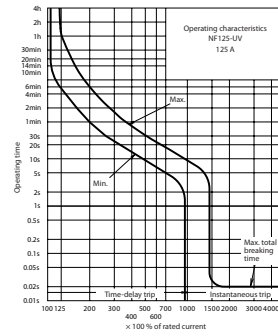
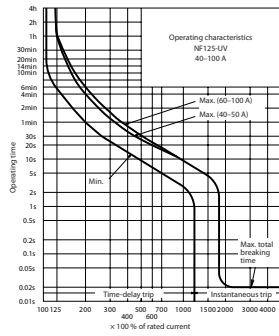
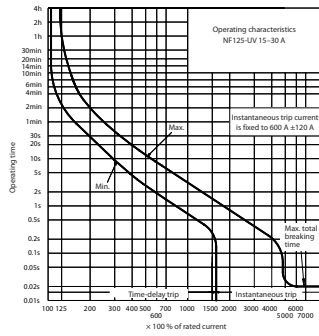
NF125-UV, NF250-UV



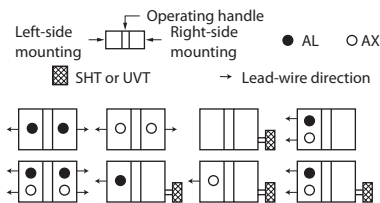
NF125-UV

Type name	NF125-UGV	NF250-UGV		
Rated current I_n [A]	15, 20, 30, 40, 50, 60, 75, 100, 125	125, 150, 175, 200, 225, 250		
Number of poles	3 4	3 4		
Rated insulation voltage U_i [V]	690	690		
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2 (I _{ca} /I _{cs}) AC	690 V	10/10	15/15
		500 V	200/200	200/200
		440 V	200/200	200/200
		415 V	200/200	200/200
		400 V	200/200	200/200
		380 V	200/200	200/200
		230 V	200/200	200/200
DC *1	300 V	—	—	
Standard attached parts (front connection)	Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) M4×0.7×73 (3P: 2pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)			

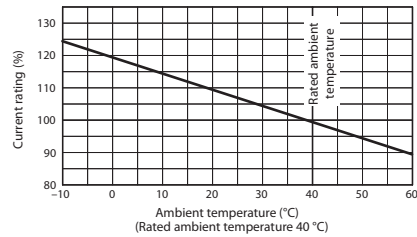
Operating characteristics



Internal accessories



Ambient compensating curve



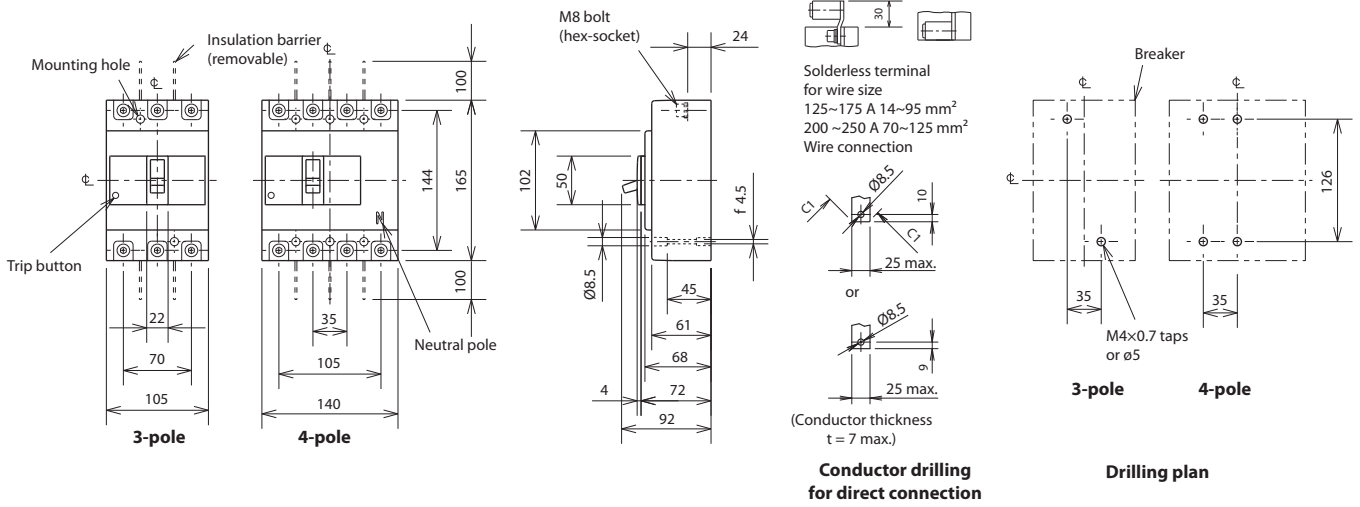
External accessories

Accessories	Type name	Reference page
Operating handle	F	F-1UV 63
	V	V-1UV 62
Handle lock device	LC	LC-05SV 64
	HL (*1)	HLF-05SV
		HLN-05SV
	HL-S	HLS-05SV

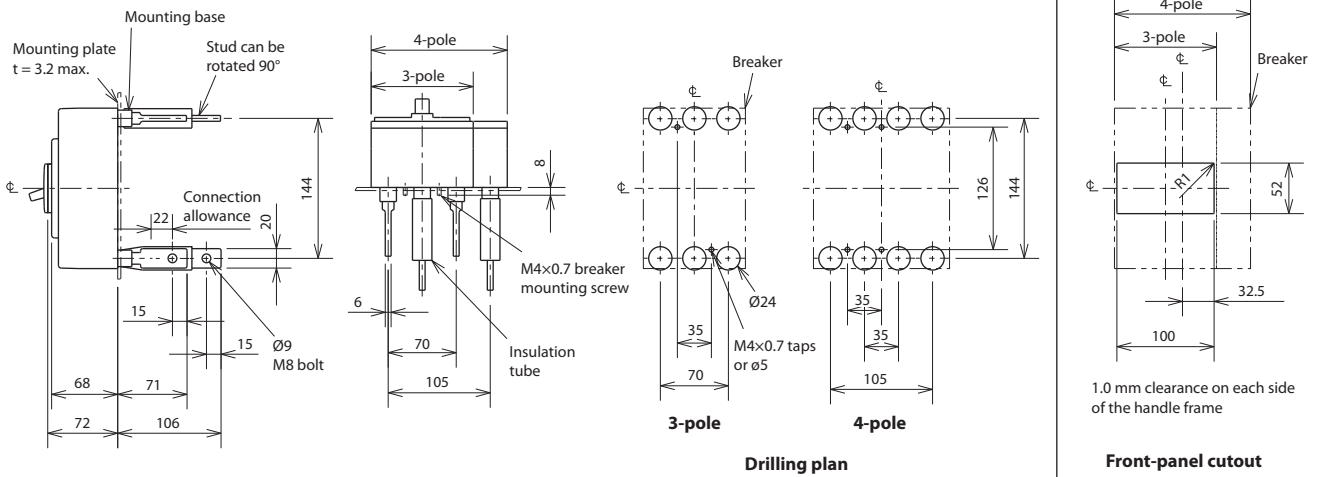
Accessories	Type name	Reference page
Mechanical interlock	MI 3P	MI-05SV3 68
	MI 4P	MI-05SV4
Terminal cover	Small TC-S 3P	TCS-1SV3 67
	Large TC-L 3P	TCL-1SV3
		TCL-1SV4
	Skeleton TTC 3P	TCL-1SV3
	Rear BTC 3P	BTC-1SV3
	Plug-in PTC 3P	PTC-1SV3
Electrical operation device	MDS (*2)	66

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

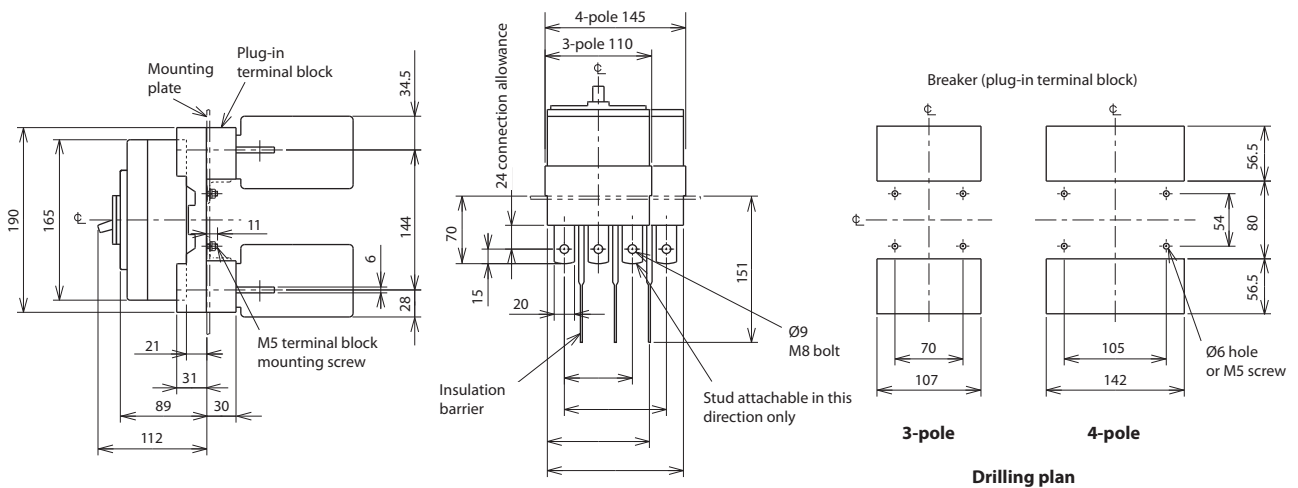
Front connection



Rear connection



Plug-in



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

[mm]

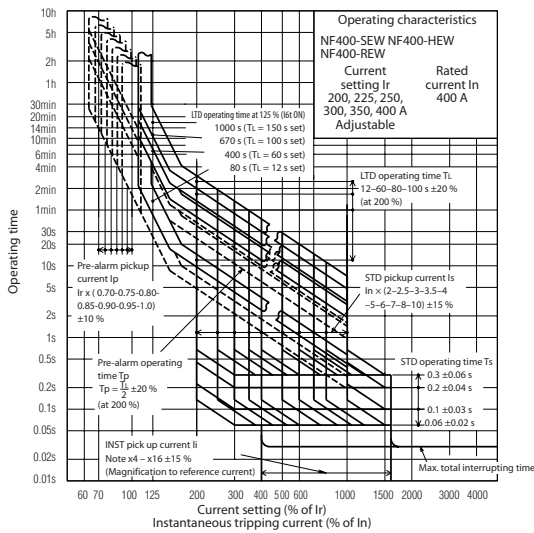
NF400-SEW, NF400-HEW, NF400-REW



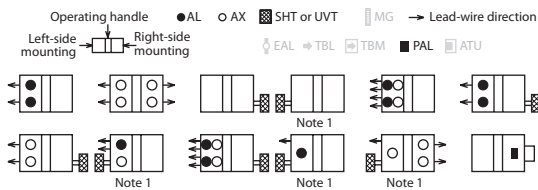
NF400-SEW

Type name	NF400-SEW	NF400-HEW	NF400-REW			
Rated current I _n [A]	200, 225, 250, 300, 350, 400	200, 225, 250, 300, 350, 400	200, 225, 250, 300, 350, 400			
Number of poles	3 4	3 4	3			
Rated insulation voltage U _i [V]	690	690	690			
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2 (I _{ca} /I _{cs})	AC	690 V	10/10	35/18	—
			500 V	30/30	50/50	70/35
			440 V	42/42	65/65	125/63
			415 V	50/50	70/70	125/63
			400 V	50/50	70/70	125/63
			380 V	50/50	70/70	125/63
			230 V	85/85	100/100	150/75
			200 V	85/85	100/100	150/75
DC	250 V	—	—	—		
Standard attached parts (front connection)	Mounting screw: M6×72 (4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)					

Operating characteristics

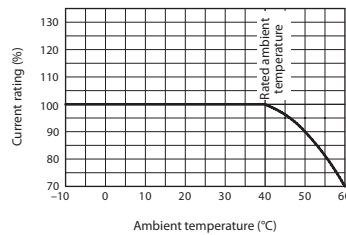


Internal accessories



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

Ambient compensating curve



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

External accessories

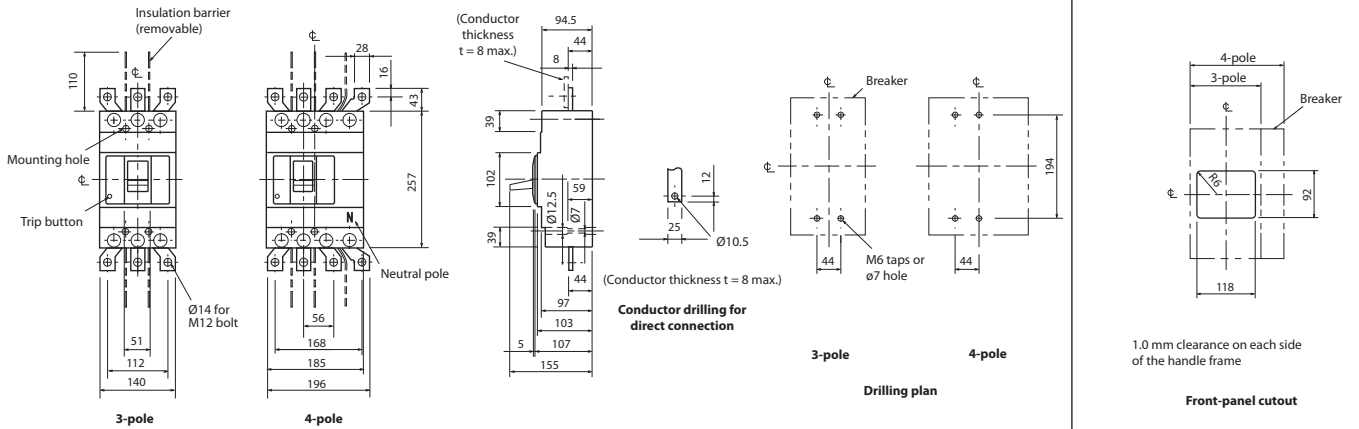
Accessories	Type name	Reference page
Operating handle	F	F-4S 63
	V	V-4S 62
	HL (*1)	HLF-4SW
Handle lock device	HLN-4SW	64
	HLS-4SW	

Accessories	Type name	Reference page
Mechanical interlock	MI 3P	MI-4SW3 68
	MI 4P	MI-4SW4
Large	TC-L 3P	TCL-4SW3
	TC-L 4P	TCL-4SW4
Skeleton	TTC 3P	TTC-4SW3 67
	TTC 4P	TTC-4SW4
Rear	BTC 3P	BTC-4SW3
	BTC 4P	BTC-4SW4
Electrical operation device	MDS (*2)	66

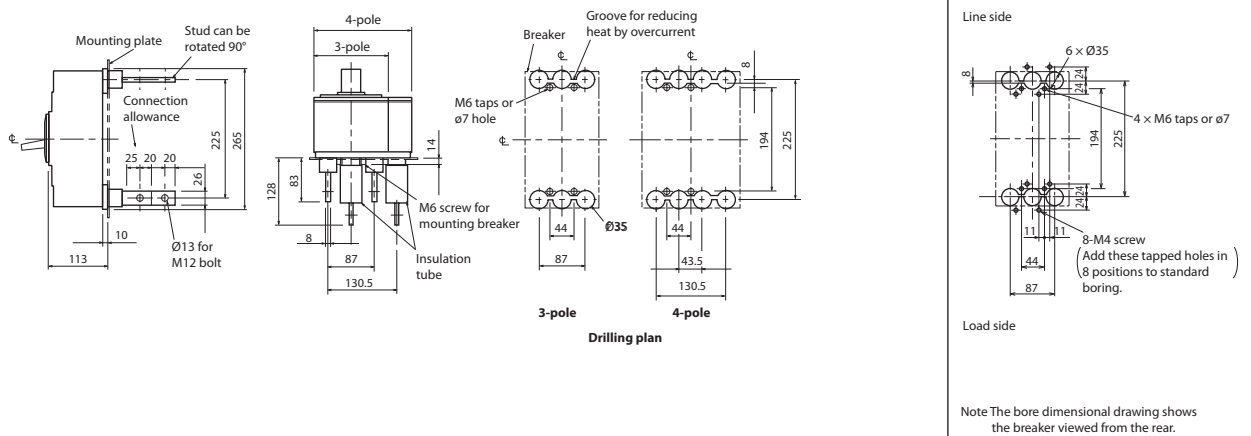
Notes *1 HLF types are used for OFF-lock and HLN types for ON-lock.

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

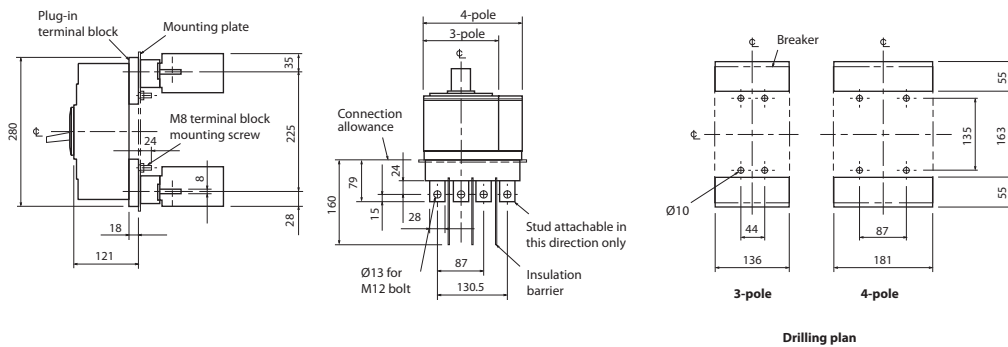
Front connection



Rear connection



Plug-in



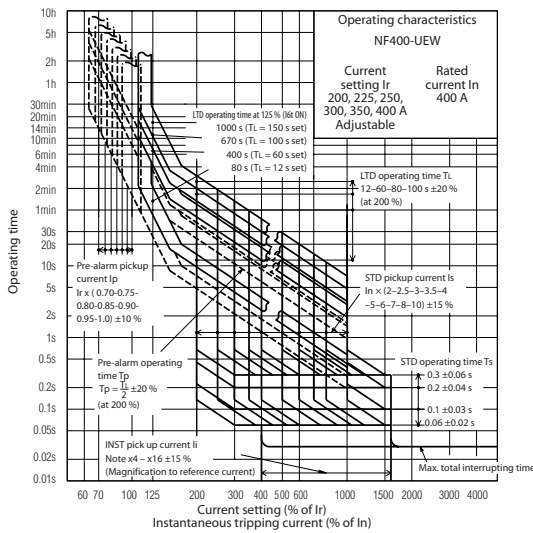
NF400-U EW



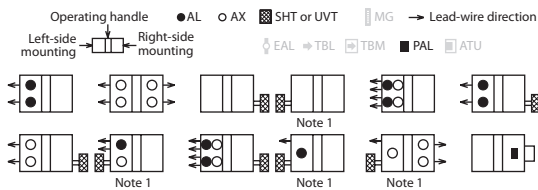
NF400-U EW

Type name		NF400-U EW		
Rated current I_n [A]		200, 225, 250, 300, 350, 400		
Number of poles		3		
Rated insulation voltage U_i [V]		690		
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2 (I _{sc} /I _{cs})	AC	690 V	—
			500 V	170/170
			440 V	200/200
			415 V	200/200
			400 V	200/200
			380 V	200/200
			230 V	200/200
			200 V	200/200
	DC	250 V	—	
Standard attached parts (front connection)		Mounting screw: M6×65 (2pcs), M6×174 (2pcs) Insulation barrier: (3P: 4pcs)		

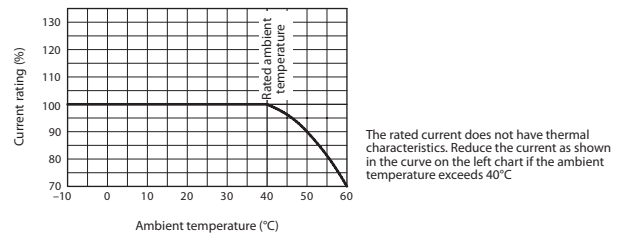
Operating characteristics



Internal accessories



Ambient compensating curve

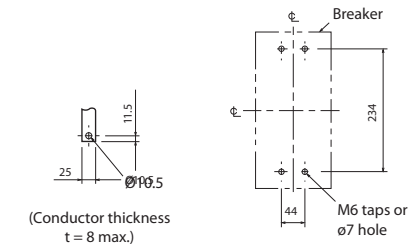
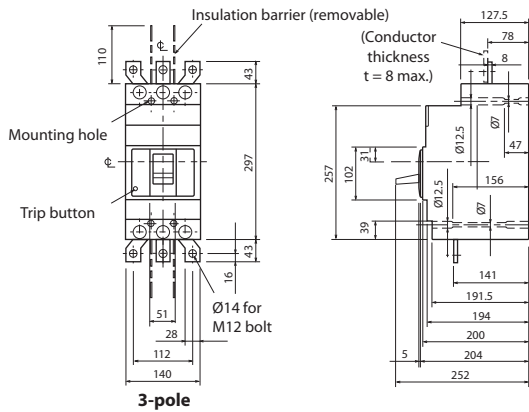


External accessories

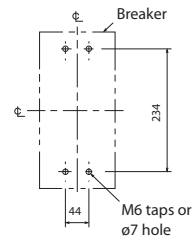
Accessories	Type name	Reference page	Accessories	Type name	Reference page		
Operating handle	F	F-4U	63	Mechanical interlock	MI 3P	MI-4SW3	68
	V	V-4U	62		Large	TC-L 3P	TCL-4SW3
Handle lock device	HL (*1)	HLF-4SW	64		Skeleton	TTC 3P	TTC-4SW3
		HLN-4SW		Rear	BTC 3P	BTC-4SW3	
		HLS-4SW		Electrical operation device	MDS (*2)	66	

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

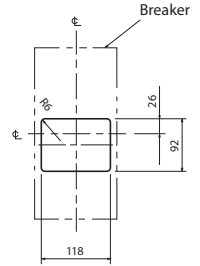
Front connection



Conductor drilling for direct connection

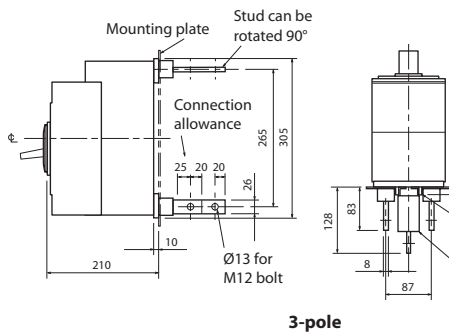


3-pole Drilling plan

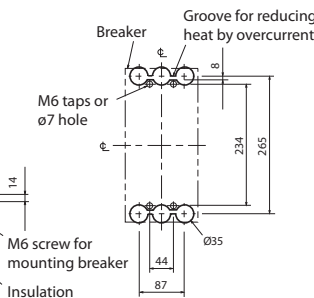


1.0 mm clearance on each side of the handle frame
Front-panel cutout

Rear connection

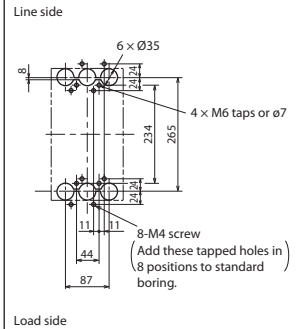


3-pole



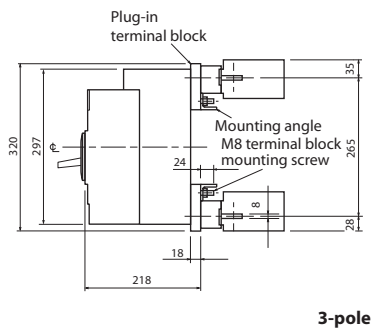
Drilling plan

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

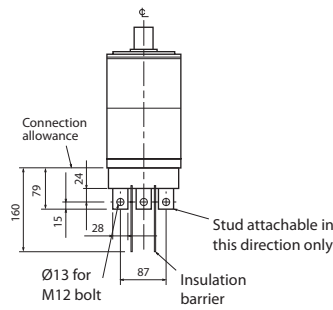


Note The bore dimensional drawing shows the breaker viewed from the rear.

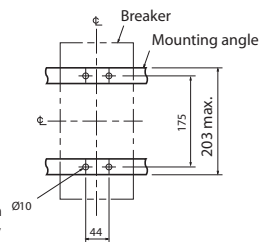
Plug-in



3-pole



3-pole Drilling plan



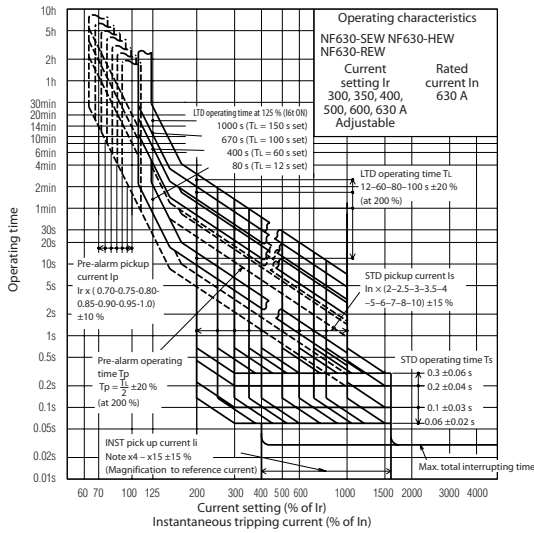
NF630-SEW, NF630-HEW, NF630-REW



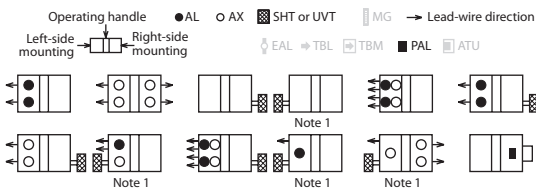
NF630-SEW

Type name	NF630-SEW	NF630-HEW	NF630-REW			
Rated current I _n [A]	300, 350, 400, 500, 600, 630	300, 350, 400, 500, 600, 630	300, 350, 400, 500, 600, 630			
Number of poles	3 4	3 4	3			
Rated insulation voltage U _i [V]	690	690	690			
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2 (I _{ka} /I _{cs})	AC	690 V	10/10	35/18	—
			500 V	30/30	50/50	70/35
			440 V	42/42	65/65	125/63
			415 V	50/50	70/70	125/63
			400 V	50/50	70/70	125/63
			380 V	50/50	70/70	125/63
			230 V	85/85	100/100	150/75
			200 V	85/85	100/100	150/75
DC	250 V	—	—	—		
Standard attached parts (front connection)	Mounting screw: M6×72 (4pcs) Insulation barrier: (3P: 4pcs, 4P: 6pcs)					

Operating characteristics

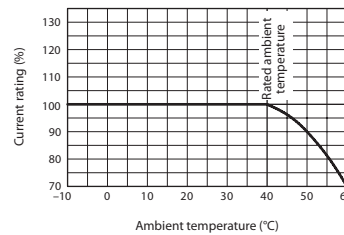


Internal accessories



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

Ambient compensating curve



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

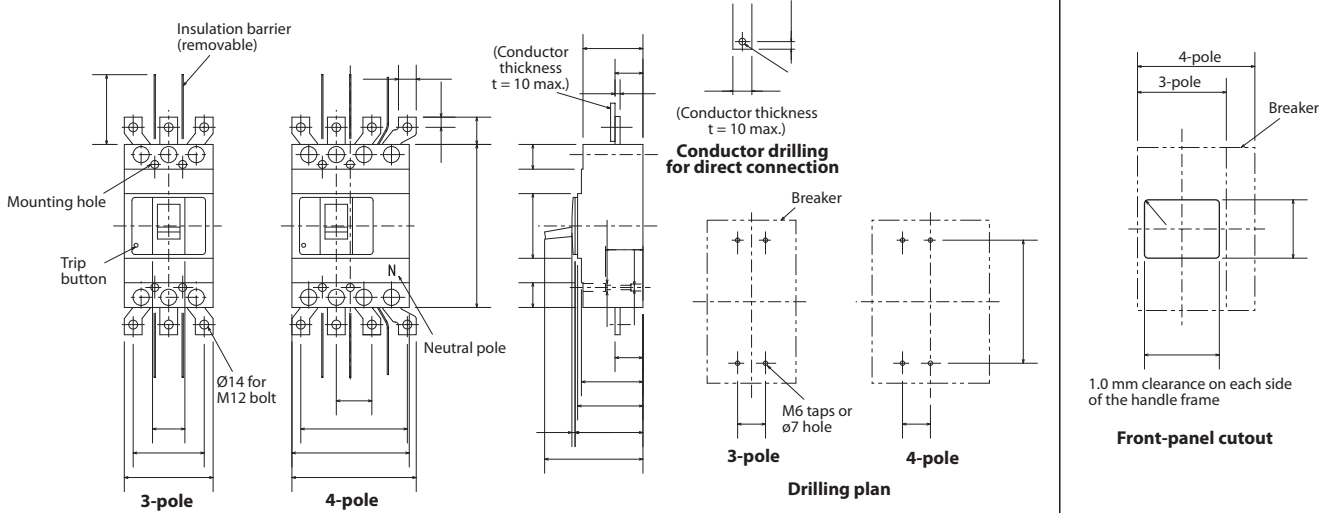
External accessories

Accessories	Type name	Reference page
Operating handle	F	F-4S 63
	V	V-4S 62
Handle lock device	HL (*1)	HLF-4SW 64
	HL-S	HLS-4SW

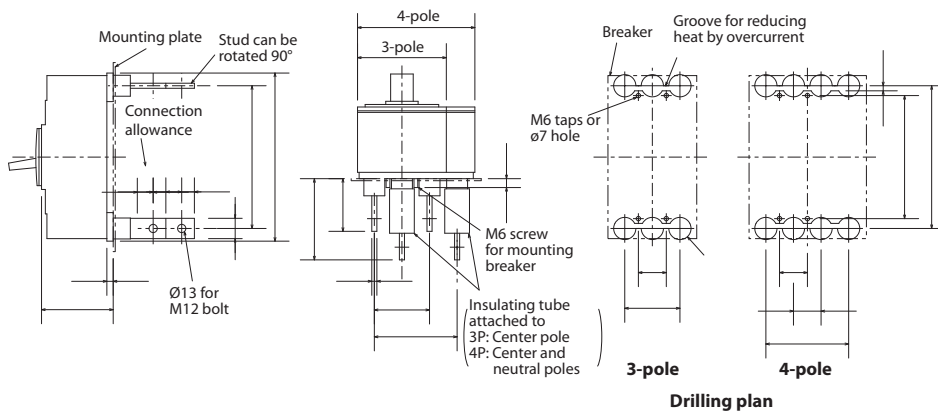
Accessories	Type name	Reference page
Mechanical interlock	MI 3P	MI-4SW3 68
	MI 4P	MI-4SW4
Terminal cover	Large TC-L 3P	TCL-4SW3
	Skeleton TTC 3P	TTC-4SW3
	4P	TTC-4SW4 67
	Rear BTC 3P	BTC-4SW3
	4P	BTC-4SW4
Electrical operation device	MDS (*2)	66

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

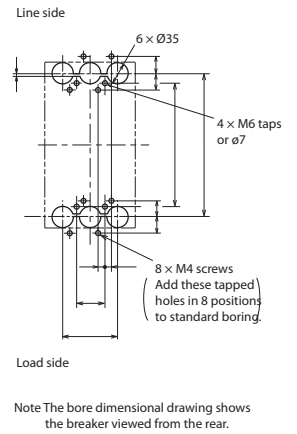
Front connection



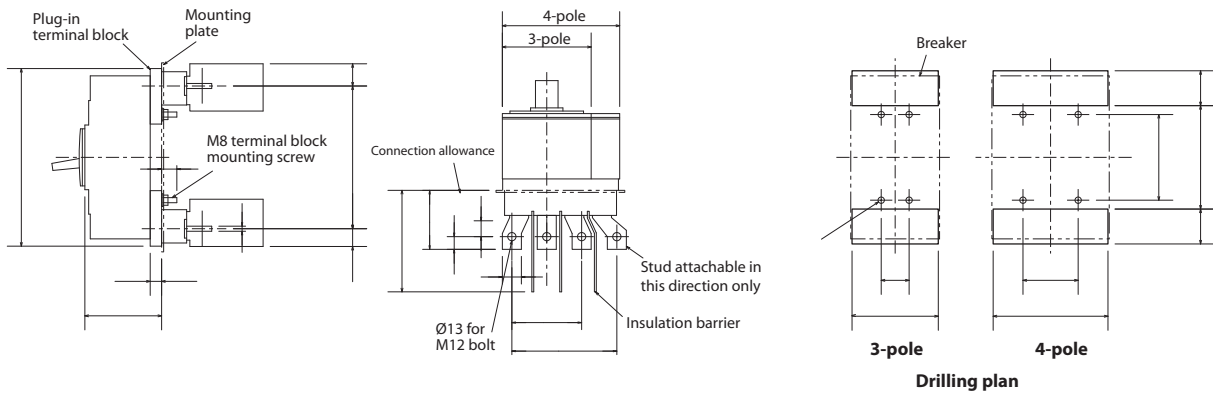
Rear connection



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



Plug-in



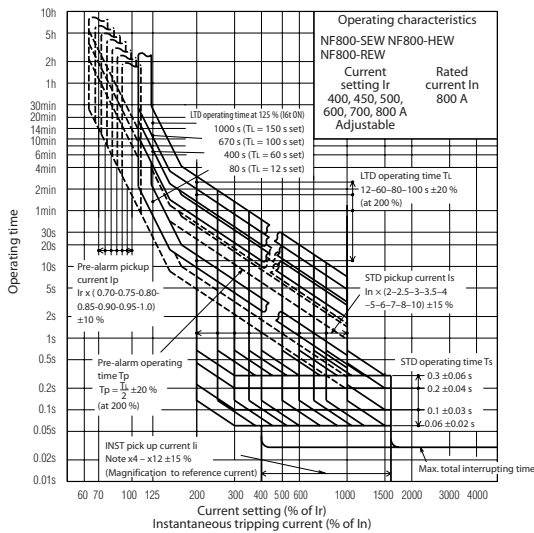
NF800-SEW, NF800-HEW, NF800-REW



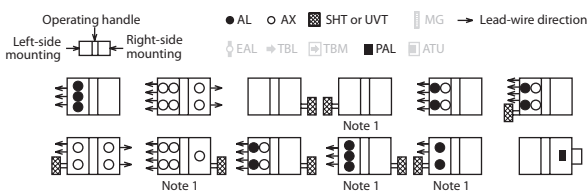
NF800-SEW

Type name	NF800-SEW	NF800-HEW	NF800-REW			
Rated current I _n [A]	400, 450, 500, 600, 700, 800	400, 450, 500, 600, 700, 800	400, 450, 500, 600, 700, 800			
Number of poles	3 4	3 4	3			
Rated insulation voltage U _i [V]	690	690	690			
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2 (I _{ca} /I _{cs})	AC	690 V	10/10	15/15	—
			500 V	30/30	50/50	70/35
			440 V	42/42	65/65	125/63
			415 V	50/50	70/70	125/63
			400 V	50/50	70/70	125/63
			380 V	50/50	70/70	125/63
			230 V	85/85	100/100	150/75
			200 V	85/85	100/100	150/75
DC	250 V	—	—	—		
Standard attached parts (front connection)	Mounting screw: M6×35 (4pcs) Insulation barrier: (3P: 2pcs, 4P: 3pcs)					

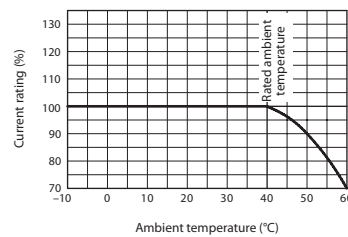
Operating characteristics



Internal accessories



Ambient compensating curve



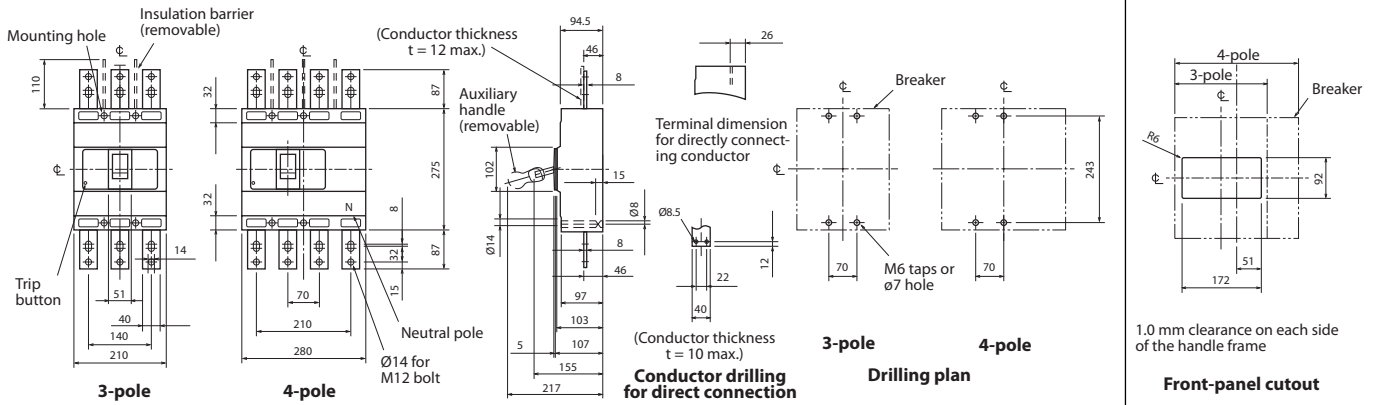
External accessories

Accessories	Type name	Reference page
Operating handle	F	F-8S
	V	V-8S
Handle lock device	HL (*1)	HLF-4SW
		HLN-4SW
	HL-S	HLS-8SW

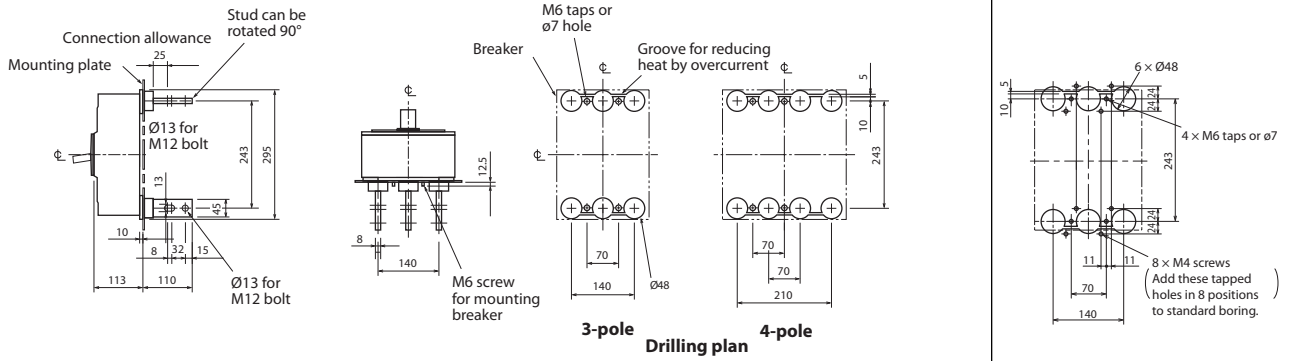
Notes *1 HLF types are used for OFF-lock and HLN types for ON-lock.
*2 Specify the working voltage. Refer to the reference page for type name.

Accessories	Type name	Reference page	
Mechanical interlock	MI 3P	MI-8SW3	
	MI 4P	MI-8SW4	
Terminal cover	Large	TC-L 3P	TCL-8SW3
		TC-L 4P	TCL-8SW4
	Skeleton	TTC 3P	TTC-8SW3
		TTC 4P	TTC-8SW4
	Rear	BTC 3P	BTC-8SW3
		BTC 4P	BTC-8SW4
Electrical operation device	MDS (*2)	66	

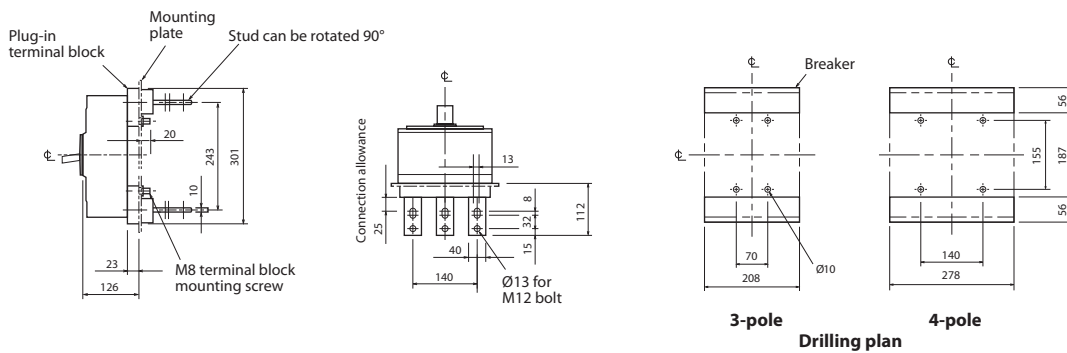
Front connection



Rear connection



Plug-in



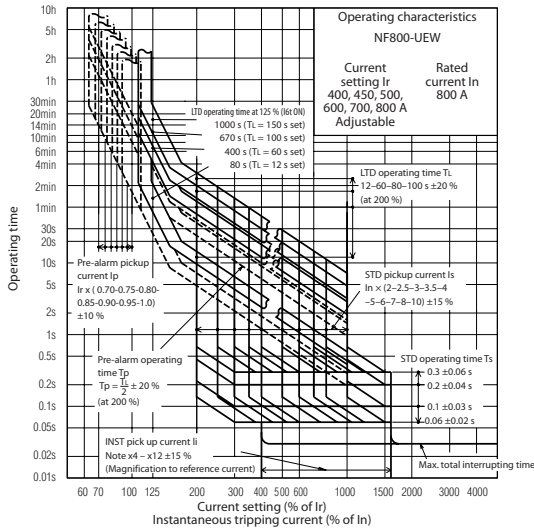
NF800-U EW



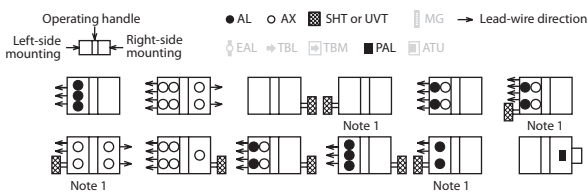
NF800-U EW

Type name		NF800-U EW			
Rated current I _n [A]		400, 450, 500, 600, 700, 800			
Number of poles		3	4		
Rated insulation voltage U _i [V]		690			
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2 (I _{ka} /I _{cs})	AC	690 V	35/35	
			500 V	170/170	
			440 V	200/200	
			415 V	200/200	
			400 V	200/200	
			380 V	200/200	
			230 V	200/200	
			200 V	200/200	
			DC	300 V	—
			Standard attached parts (front connection)		Mounting screw: 3P: M6×35, M6×132 (2pcs each) 4P: M6×35 (3pcs), M6×132 (2pcs) Insulation barrier: (3P: 2pcs, 4P: 3pcs)

Operating characteristics

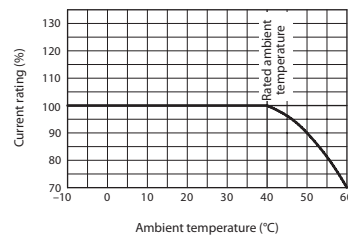


Internal accessories



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

Ambient compensating curve



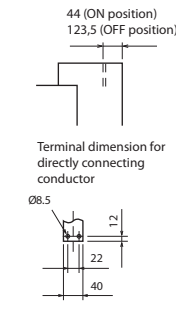
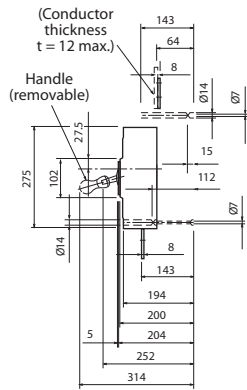
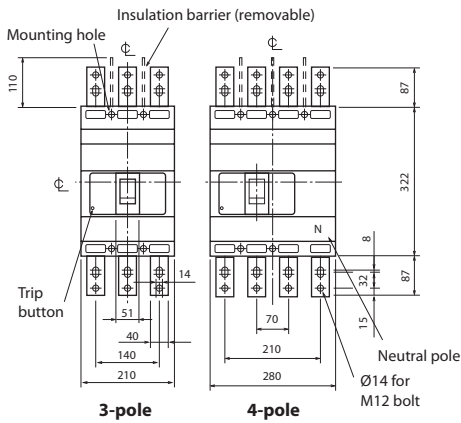
The rated current does not have thermal characteristics. Reduce the current as shown in the curve on the left chart if the ambient temperature exceeds 40°C

External accessories

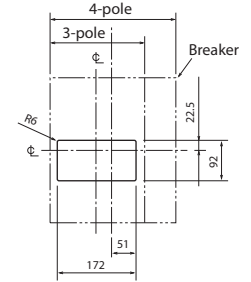
Accessories	Type name	Reference page	Accessories	Type name	Reference page	
Operating handle	F	F-8U	63	Terminal cover	Large TC-L 3P TCL-8UW3	67
Handle lock device	HL	HL-4SW	64	4P	TCL-8UW4	
	HL-S	HLS-8UW		3P	BTC-8SW3	
Mechanical interlock	MI	MI-8SW3	68	Rear	4P	BTC-8SW4
	3P	MI-8SW4		Electrical operation device	MDS (*1)	66

Notes *1 Specify the working voltage. Refer to the reference page for type name.

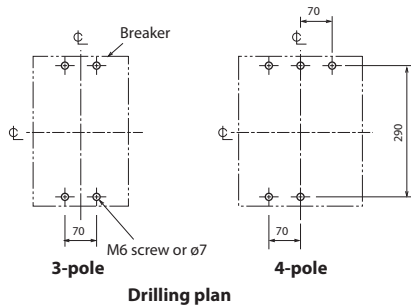
Front connection



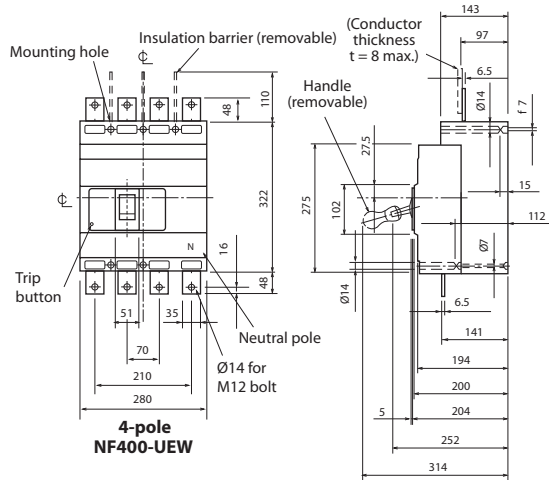
(Conductor thickness t = 10 max.)
Conductor drilling for direct connection



1.0mm clearance on each side of the handle frame
Front-panel cutout

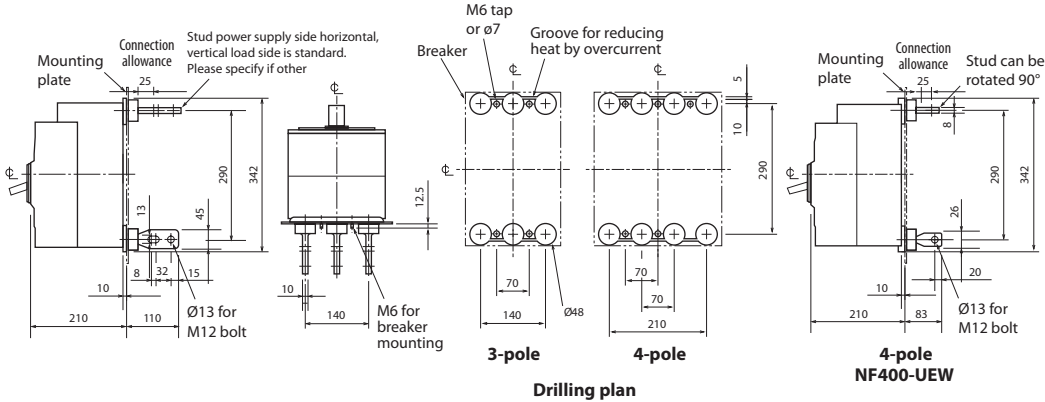


Drilling plan



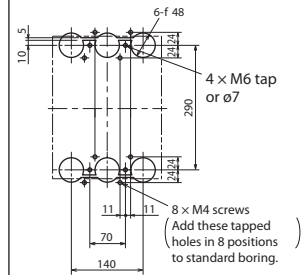
4-pole NF400-UEW

Rear connection



Drilling plan

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



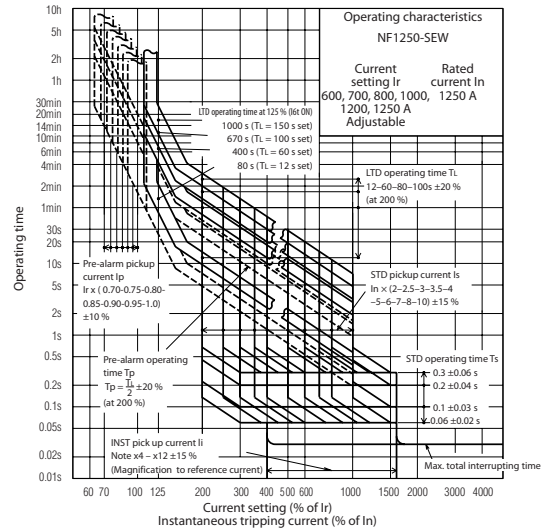
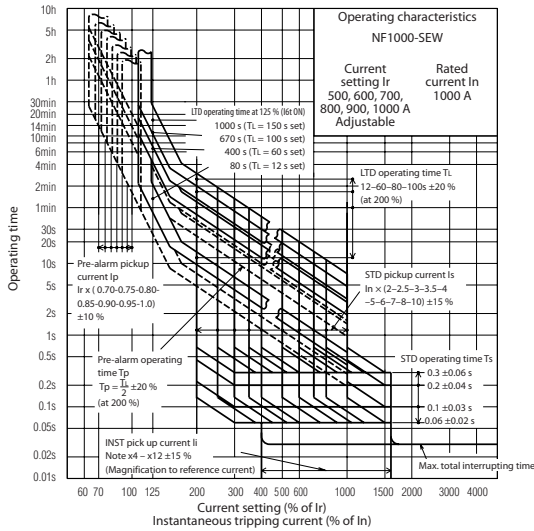
NF1000-SEW, NF1250-SEW



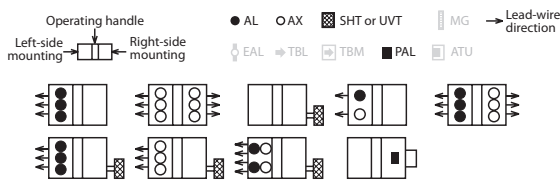
NF1000-SEW

Type name	NF1000-SEW	NF1250-SEW		
Rated current I _n [A]	500, 600, 700, 800, 900, 1000	600, 700, 800, 1000, 1200, 1250		
Number of poles	3 4	3 4		
Rated insulation voltage U _i [V]	690	690		
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2 (I _{ca} /I _{cs}) AC	690 V	25/13	25/13
		500 V	65/33	65/33
		440 V	85/43	85/43
		415 V	85/43	85/43
		400 V	85/43	85/43
		380 V	85/43	85/43
		230 V	125/63	125/63
		200 V	125/63	125/63
DC	250 V	—	—	
Standard attached parts (front connection)	Mounting screw: M8×40 (4pcs each) Insulation barrier: (3P: 2pcs, 4P: 3pcs)			

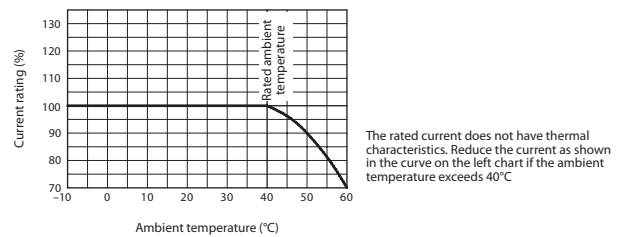
Operating characteristics



Internal accessories



Ambient compensating curve

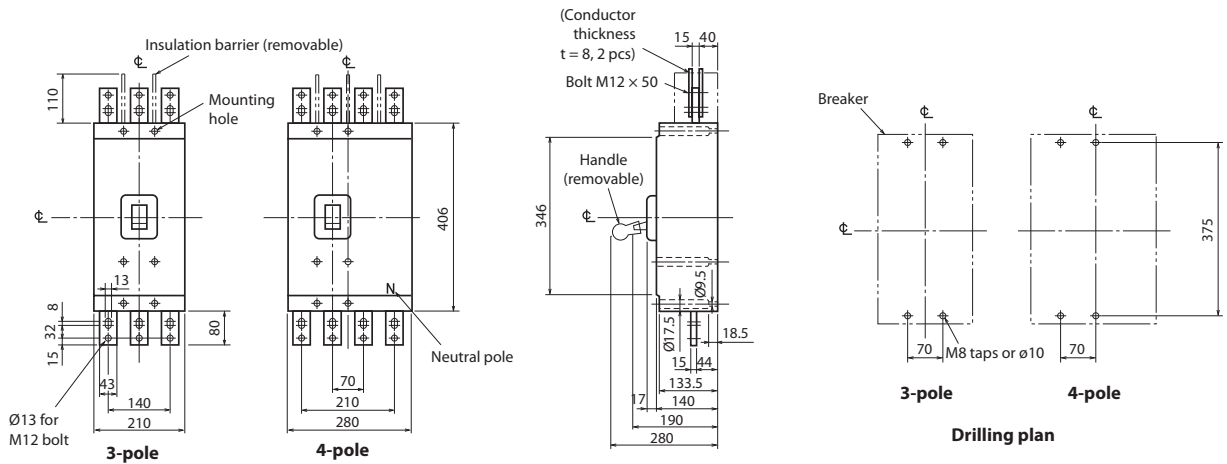


External accessories

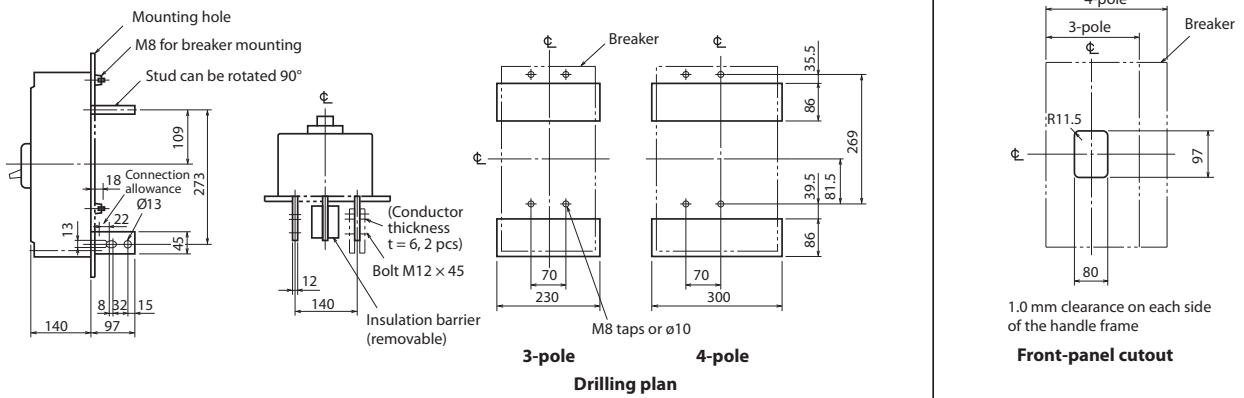
Accessories	Type name	Reference page	Accessories	Type name	Reference page
Handle lock device	HL	HL (on request)	64	Terminal cover	Large TC-L 3P TCL-10SW3 67
Mechanical interlock	MI	MI-10SW3 68	Terminal cover	4P TCL-10SW4	67
			Electrical operation device	MDS (*1)	66

Notes *1 Specify the working voltage. Refer to the reference page for type name.

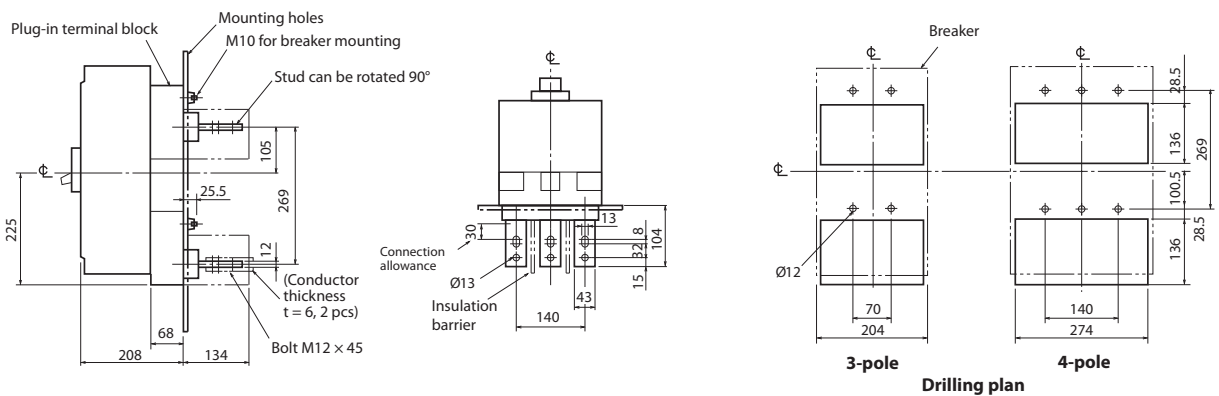
Front connection



Rear connection



Plug-in



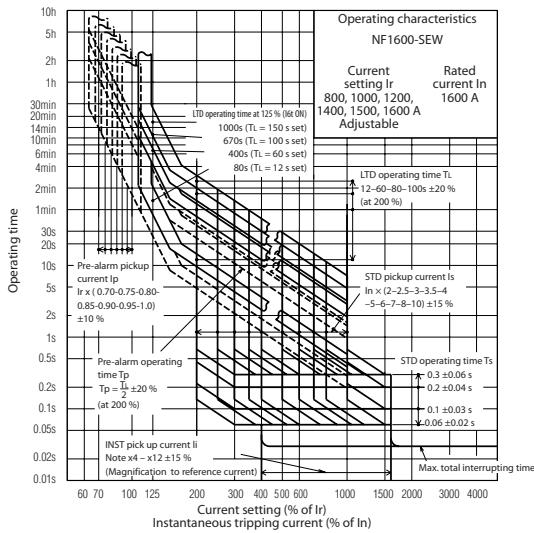
NF1600-SEW



NF1600-SEW

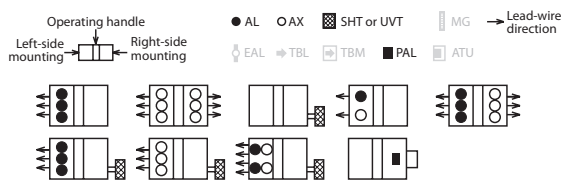
Type name		NF1600-SEW	
Rated current I_n [A]		800, 1000, 1200, 1400, 1500, 1600	
Number of poles		3	4
Rated insulation voltage U_i [V]		690	
Rated short-circuit breaking capacity [kA]	IEC/EN 60947-2 AC (I_{cu}/I_{cs})	690 V	25/13
		500 V	65/33
		440 V	85/43
		415 V	85/43
		400 V	85/43
		380 V	85/43
		230 V	125/63
		200 V	125/63
	DC	250 V —	
Standard attached parts (front connection)		Mounting screw: M8×40 (4pcs each) Insulation barrier: (3P: 2pcs, 4P: 3pcs)	

Operating characteristics

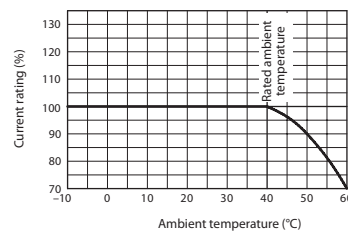


7 MCCB – Characteristics & Dimensions

Internal accessories



Ambient compensating curve



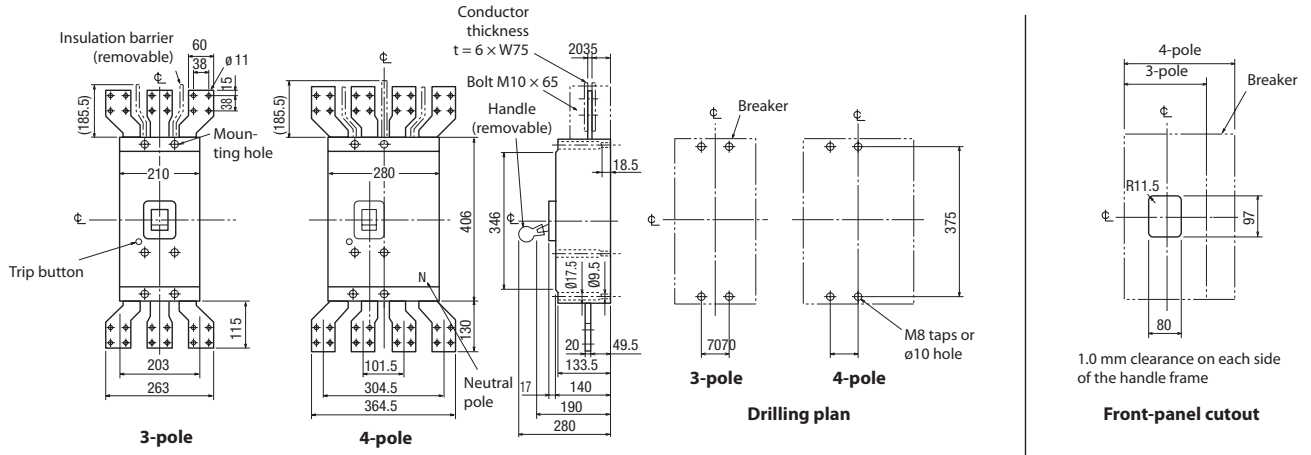
The rated current does not have thermal characteristics. Reduce the current as shown in the curve on the left chart if the ambient temperature exceeds 40°C

External accessories

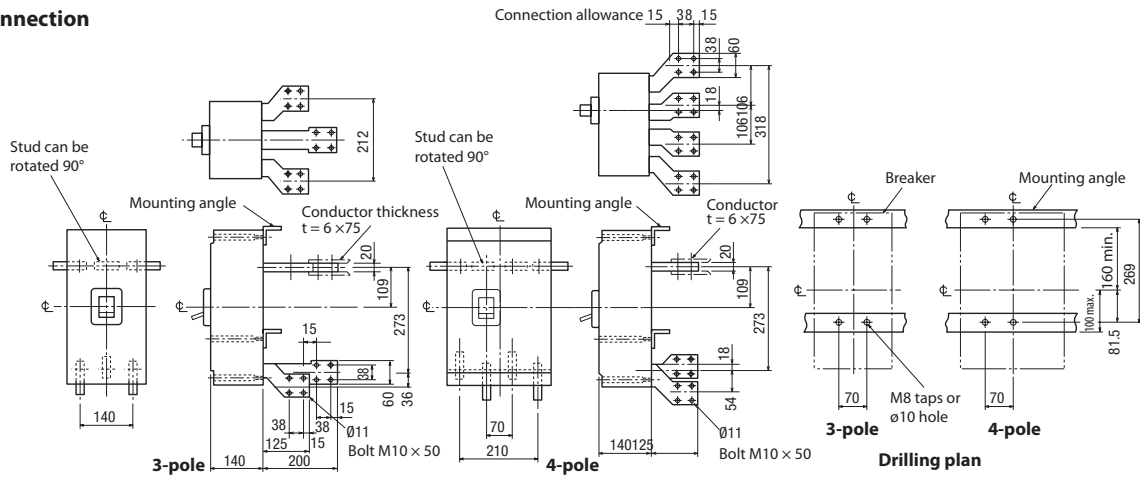
Accessories	Type name	Reference page
Handle lock device HL	HL (on request)	64
Mechanical interlock MI	3P MI-16SW3	68
	4P MI-16SW4	
Electrical operation device	MDS (*1)	66

Notes *1 Specify the working voltage. Refer to the reference page for type name.

Front connection

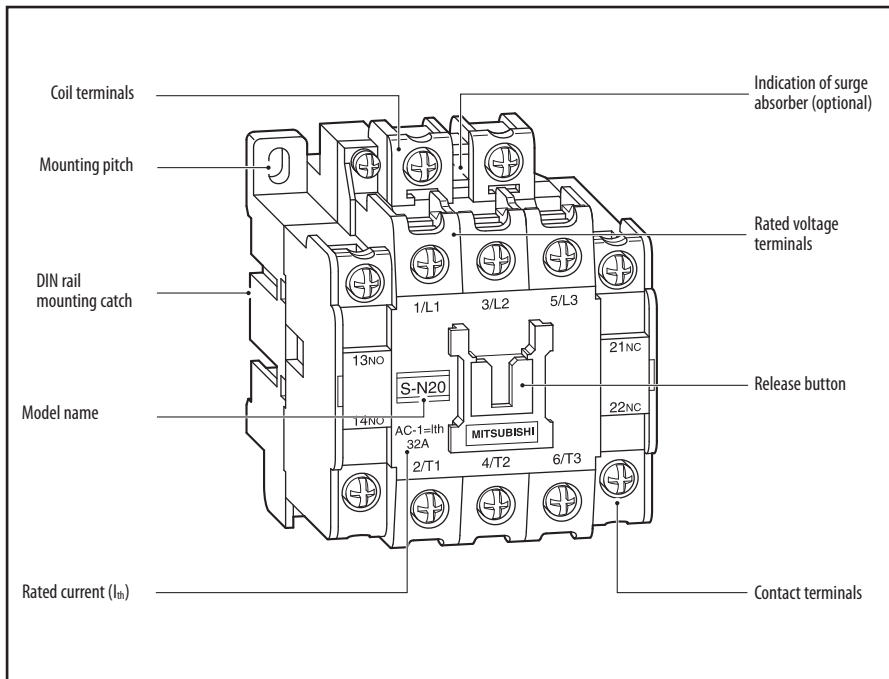


Rear connection



General purpose contactors

General purpose contactors



The main benefits:

- Easy mounting and wiring
- Easy inspection
- Built-in surge absorber
- Safety and speedy terminal functions
- Thermo plastic improves the barrier strength
- Coil boasts lower coil consumption
- Improvement of Electromagnet
- (DC electromagnet with AC operation)
- Less noise nor surge from coil
- Conform to IEC947-4-1, EN-Standards
- Mounting of the contactors is described on page 113.

Handling of the contactors

S-N10CX to S-N65CX units can all be mounted on DIN rail (35 mm wide).

A variety of blocks and optional features are available including:

- Standard front clip-on auxiliary contact blocks (4-pole-type and 2-pole-type)
- Low-level signal front-clip-on auxiliary contact blocks
- Side clip-on auxiliary contact blocks

- Surge absorbers (varistor and CR models)
- Surge absorbers with LED operating indicators
- Mechanical interlocks

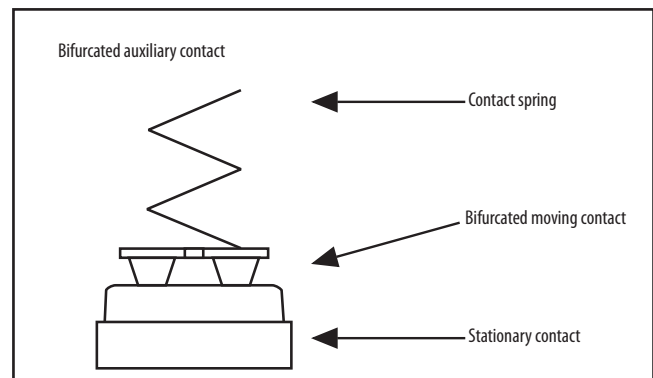
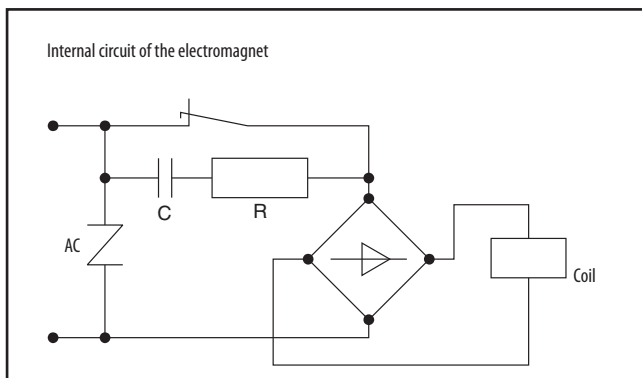
Compact arc quenching and magnet layout greatly reduces installation space.

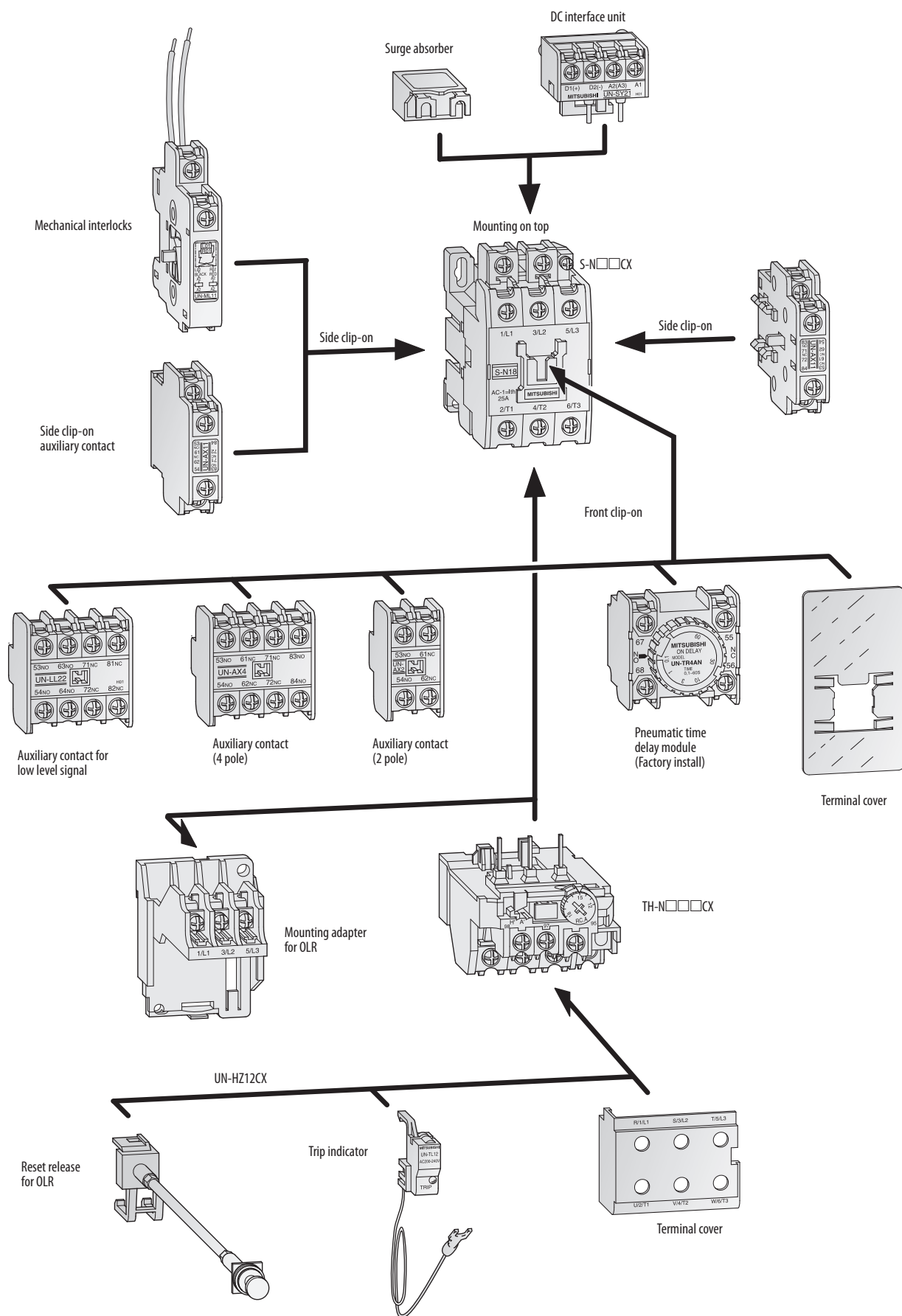
The coil rating is displayed in a location readily visible even after the unit is installed onto the panel.

Contacts are visible when the cover is removed, allowing them to be checked easily.

Contactors coils have ultra-wide range of ratings

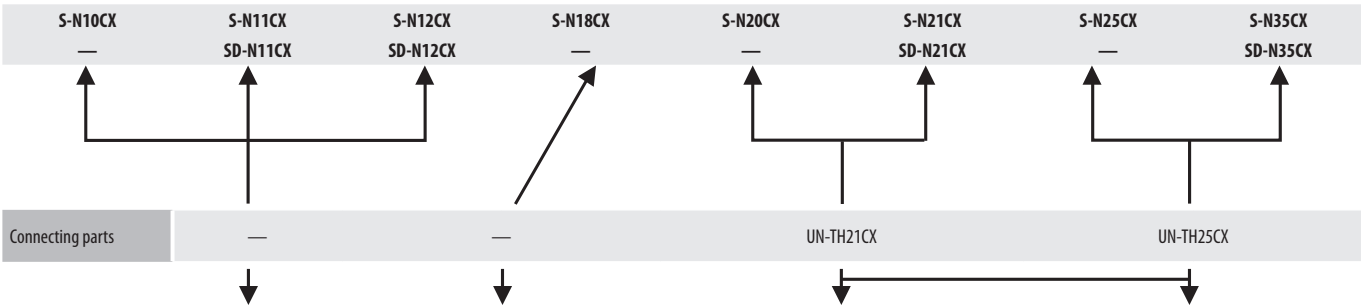
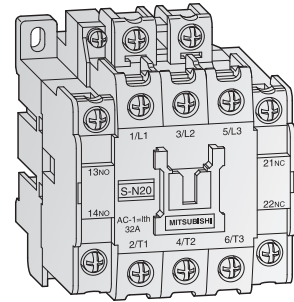
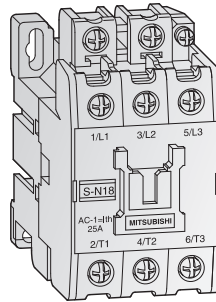
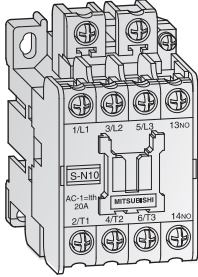
The number of coil types has been cut by two-thirds and there is no need to re-wire for different frequencies. The coil also withstands large voltage drops.





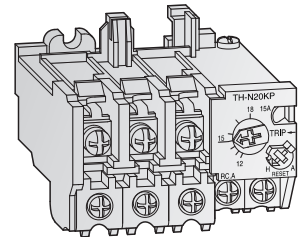
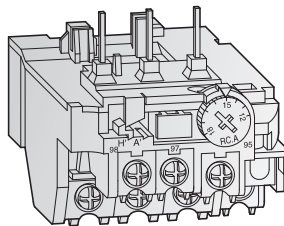
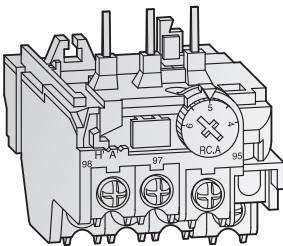
Three-phase motor ratings IEC category AC3 for Contactors

Contactor	AC-operated	S-N10CX	S-N11CX	S-N12CX	S-N18CX	S-N20CX	S-N21CX	S-N25CX	S-N35CX
	DC-operated	—	SD-N11CX	SD-N12CX	—	—	SD-N21CX	—	SD-N35CX
AC 380–440 V	kW	4	5.5	5.5	7.5	11	11	15	18.5
Rated continuous current Ith	A	20	20	20	25	32	32	50	60
Auxiliary contacts (standard)		1 NO or 1 NC	1 NO or 1 NC	1 NO + 1 NC	—	1 NO + 1 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC



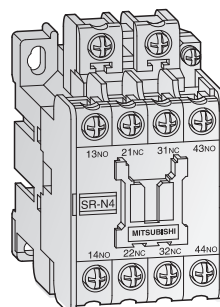
Thermal Overload Relays

Type	TH-N12KPCX	TH-N18KPCX	TH-N20KPCX	TH-N20TAKPCX
Setting range	0.1 – 13 A	1 – 18 A	0.2 – 22 A	18 – 40 A

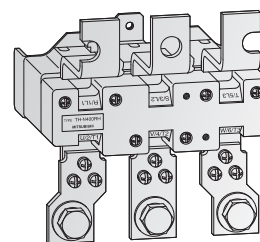
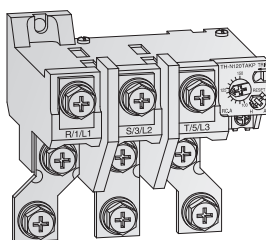
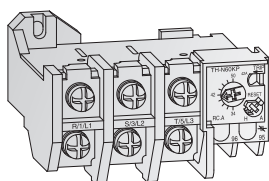
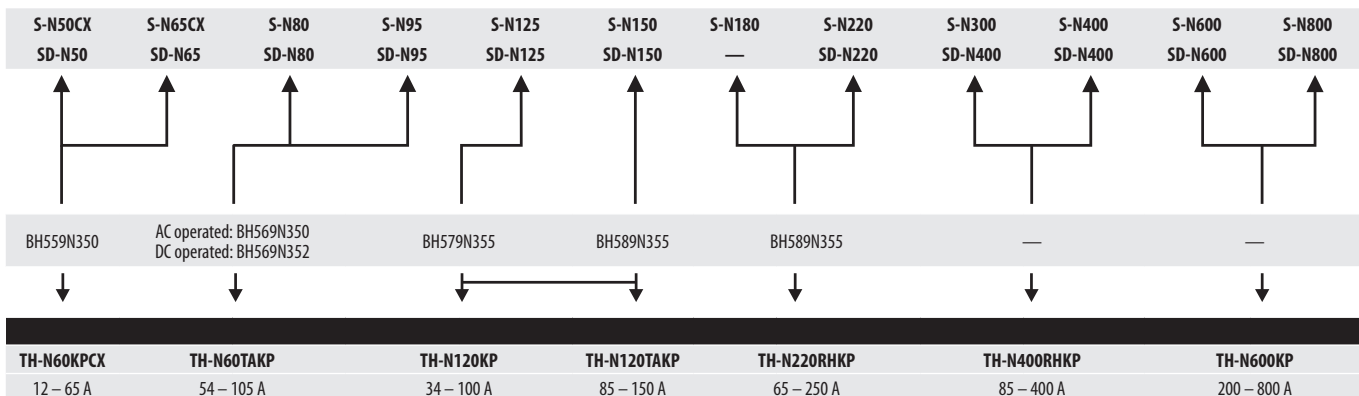
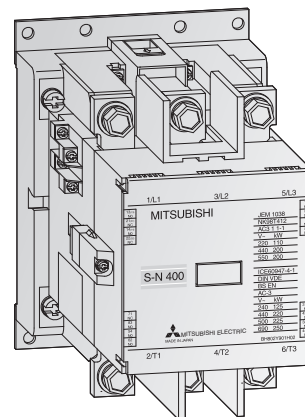
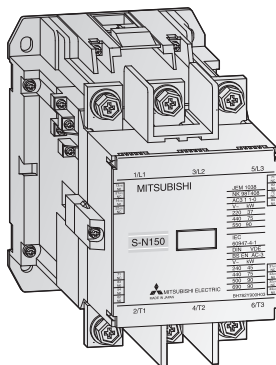
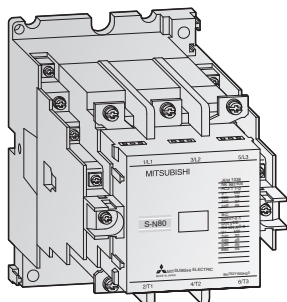


Contactor Relays

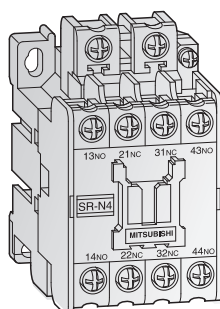
AC-operated type	SR-N4CX 4A	SR-N4CX 3A1B	SR-N4CX 2A2B
Auxiliary contacts	4 NO	3 NO, 1 NC	2 NO, 2 NC



S-N50CX	S-N65CX	S-N80	S-N95	S-N125	S-N150	S-N180	S-N220	S-N300	S-N400	S-N600	S-N800
SD-N50	SD-N65	SD-N80	SD-N95	SD-N125	SD-N150	—	SD-N220	SD-N300	SD-N400	SD-N600	SD-N800
22	30	45	55	60	75	90	132	160	220	330	440
80	100	135	150	150	200	260	260	350	450	800	1000
2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC	2 NO + 2 NC



SRD-N4CX 4A	SRD-N4CX 3A1B	SRD-N4CX 2A2B
4 NO	3 NO, 1 NC	2 NO, 2 NC



Specifications			S-N10CX AC□□□V1A	S-N10CX AC□□□V1B	S-N11CX AC□□□V1A	S-N11CX AC□□□V1B	S-N12CX AC□□□V	S-N18CX AC□□□V	S-N20CX AC□□□V	S-N21CX AC□□□V	S-N25CX AC□□□V	S-N35CX AC□□□V
Rated data												
Rated continuous current Ith	A		20	20	20	20	20	25	32	32	50	60
Rated motor capacity 3-phase Category AC-3	220–240 V	kW (A)	2.5 (11)	2.5 (11)	3.5 (13)	3.5 (13)	3.5 (13)	4.5 (18)	5.5 (22)	5.5 (22)	7.5 (30)	11 (40)
	380–440 V	kW (A)	4 (9)	4 (9)	5.5 (12)	5.5 (12)	5.5 (12)	7.5 (16)	11 (22)	11 (22)	15 (30)	18.5 (40)
	500	kW (A)	4 (7)	4 (7)	5.5 (9)	5.5 (9)	5.5 (9)	7.5 (13)	11 (17)	11 (17)	15 (24)	18.5 (32)
	690 V	kW (A)	4 (5)	4 (5)	5.5 (7)	5.5 (7)	5.5 (7)	7.5 (9)	7.5 (9)	7.5 (9)	11 (12)	15 (17)
Rated capacity for resistive loads 3ph, Category AC-1	220–240 V	kW (A)	7.5 (20)	7.5 (20)	7.5 (20)	7.5 (20)	7.5 (20)	9.5 (25)	12 (32)	12 (32)	18 (50)	20 (60)
	380–440 V	kW (A)	7 (11)	7 (11)	8.5 (13)	8.5 (13)	8.5 (13)	13 (20)	20 (32)	20 (32)	30 (50)	35 (60)
	500–550 V	kW (A)	7 (8)	7 (8)	9.5 (11)	9.5 (11)	9.5 (11)	13 (16)	25 (32)	25 (32)	40 (50)	50 (60)
	690 V	kW (A)	7 (6)	7 (6)	8 (8)	8 (8)	8 (8)	11 (10)	30 (32)	30 (32)	50 (50)	60 (60)
Rated capacity for jogging of AC motors 3-ph, Cat. AC-4 (electrical life is approx. 200,000 oper.)	220–240 V	kW	0.75	0.75	1.1	1.1	1.1	1.5	2.2	2.2	3	3.7
	380–440 V	kW	1.1	1.1	1.5	1.5	1.5	2.2	3.7	3.7	5.5	5.5
	500–550 V	kW	1.1	1.1	1.5	1.5	1.5	2.2	3.7	3.7	5.5	5.5
	690 V	kW	1.1	1.1	1.5	1.5	1.5	2.2	3.7	3.7	5.5	5.5
Max. current for AC-4 duty at 440 V	A	6	6	9	9	9	9	13	13	13	17	24
Rated curr. for DC non-ind. loads, Category DC-1, 100 oper./hour max. 500,000 oper.	48 V	A	10	10	12	12	12	12	20	20	25	35
	110 V	A	8	8	12	12	12	12	20	20	25	35
	220 V	A	8	8	12	12	12	12	20	20	22	30
Rated curr. for DC motors Category DC-2 & DC-4, 100 oper./ hour, max. 500,000 oper.	48 V	A	6	6	10	10	10	10	20	20	25	30
	110 V	A	4	4	8	8	8	8	15	15	20	20
	220 V	A	2	2	4	4	4	4	8	8	10	10
Rated capacity for 3-ph, capacitors, 15 oper./hour max. 100,000 oper. a (ambient temp.: 40 °C)	220–240 V	kvar	2.2	2.2	3	3	3	4	5.5	5.5	8.5	12
	380–440 V	kvar	3.3	3.3	4	4	4	6	10	10	14	20
	550 V	kvar	4	4	5	5	5	6	10	10	14	20
	690 V	kvar	3.3	3.3	4.5	4.5	4.5	5.5	10	10	14	20
Current; 3-ph, cos φ = 0.35, 240/440 V	Making	A	110/110	110/110	130/120	130/120	130/120	180/180	220/220	220/220	300/300	400/400
	Breaking	A	100/72	100/72	120/100	120/100	120/100	180/130	220/220	220/220	300/240	400/320
Rated insulation voltage	V	690	690	690	690	690	690	690	690	690	690	690
Electrical data												
Coil consumption (at rated coil voltage)	Inrush	VA	60	60	60	60	60	60	90	90	110	110
	Sealed	VA	10	10	10	10	10	10	15	15	13	13
	Watts	W	3.5	3.5	3.5	3.5	3.5	3.5	5.3	5.3	5.3	5.3
Switching frequency	Category AC-1	oper./h	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
	Cat. AC2; AC-3	oper./h	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
	Category AC-4	oper./h	600	600	600	600	600	600	600	600	600	600
Operating time (at rated coil voltage)	Closing	ms	15	15	15	15	15	15	15	15	15	15
	Opening	ms	10	10	10	10	10	10	10	10	10	10
Mechanical data												
Electrical life (Category AC-3)	Oper. (million)		1	1	1	1	1	1	1	1	1	1
Mechanical life			10	10	10	10	10	10	10	10	10	10
Main terminal (contactor)	mm ²		1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–6	1–6	1–6	2–16	2–16
Main terminal (overload relay)	mm ²		1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–6	1–6	1–6	2–16	2–16
Control terminal	mm ²		1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5
Busbar width	mm		—	—	—	—	—	—	—	—	—	—
Standard auxiliary contacts	NO		1	—	1	—	1 ^②	—	1	2	2	2
	NC		—	1	—	1	1 ^②	—	1	2	2	2
Weight	kg		0.3	0.3	0.3	0.3	0.32	0.33	0.4	0.4	0.52	0.52
Dimensions (WxHxD)	mm		43x78x78	43x78x78	43x78x78	43x78x78	53x78x78	43x79x81	63x81x81	63x81x81	75x89x91	75x89x91
Order information ^③	AC 24 V	Art. no.	52566	52571	52576	52581	52586	57390	52591	52596	59365	59370
	AC 48 V		52567	52572	52577	52582	52587	57391	52592	52597	59366	59371
	AC 100 V		—	—	—	—	—	—	—	—	—	—
	AC 120 V		52568	52573	52578	52583	52588	57392	52593	52598	59367	59372
	AC 200 V		—	—	—	—	—	—	—	—	—	—
	AC 230 V		52569	52574	52579	52584	52589	57393	52594	52599	59368	59373
	AC 400 V		52570	52575	52580	52585	52590	57394	52595	52600	59369	59374

① Peak value of inrush current <2000 % of the effective value for rated current of capacitors. Selection is invalid for the circuit of parallel capacitors which are controlled individually.
 ② Special with 2 NO and without NC; on request.
 ③ Voltage range please see page 80.
 ④ 660 A at ambient temperature 40–55 °C.

S-N50CX AC□□□V	S-N65CX AC□□□V	S-N80 AC□□□V	S-N95 AC□□□V	S-N125 AC□□□V	S-N150 AC□□□V	S-N180 AC□□□V	S-N220 AC□□□V	S-N300 AC□□□V	S-N400 AC□□□V	S-N600 AC□□□V	S-N800 AC□□□V
Rated data											
80	100	135	150	150	200	260	260	350	450	800 [Ⓔ]	1000 [Ⓔ]
15 (55)	18.5 (65)	22 (85)	30 (105)	37 (125)	45 (150)	55 (180)	75 (250)	90 (300)	125 (400)	190 (630)	220 (800)
22 (50)	30 (65)	45 (85)	55 (105)	60 (120)	75 (150)	90 (180)	132 (250)	160 (300)	220 (400)	330 (630)	440 (800)
25 (38)	37 (60)	45 (75)	55 (85)	60 (90)	90 (140)	110 (180)	132 (200)	160 (250)	225 (350)	330 (500)	500 (720)
22 (26)	30 (38)	45 (52)	55 (65)	60 (70)	90 (100)	110 (120)	132 (150)	200 (220)	250 (300)	330 (420)	500 (630)
30 (80)	35 (100)	50 (135)	55 (150)	55 (150)	75 (200)	95 (260)	95 (260)	130 (350)	170 (450)	250 (660)	300 (800)
50 (80)	65 (100)	85 (135)	90 (150)	90 (150)	130 (200)	170 (260)	170 (260)	230 (350)	290 (450)	430 (660)	530 (800)
65 (80)	85 (100)	110 (135)	120 (150)	120 (150)	170 (200)	220 (260)	220 (260)	300 (350)	380 (450)	570 (660)	700 (800)
80 (80)	100 (100)	135 (135)	150 (150)	150 (150)	200 (200)	260 (260)	260 (260)	350 (350)	450 (450)	660 (660)	900 (800)
5.5	7.5	7.5	11	15	18.5	22	22	37	45	65	75
7.5	11	15	18.5	22	30	37	45	60	75	110	130
7.5	11	15	18.5	22	37	45	55	60	90	130	130
7.5	11	15	18.5	22	30	50	55	75	90	130	150
32	47	62	75	90	110	150	180	220	300	400	630
50	65	80	93	120	150	180	220	300	400	630	800
50	65	80	93	100	150	180	220	300	400	630	800
40	50	60	70	80	150	180	220	300	300	630	800
35	40	60	90	90	130	180	220	280	280	630	630
30	35	50	80	80	120	150	150	200	200	630	630
12	15	20	50	50	80	100	100	150	150	630	630
20	20	35	35	38	50	60	60	95	115	190	190
40	40	60	60	65	80	120	120	150	200	350	350
30	35	48	60	65	80	150	150	200	250	350	350
30	40	50	60	65	80	150	150	200	200	400	400
550/460	650/620	850/850	1050/1050	1250/1250	1500/1500	1800/1800	2500/2500	3000/3000	4000/4000	6500/6500	8000/8000
550/460	650/620	800/750	930/930	1000/1000	1200/1200	1450/1450	2000/2000	2400/2400	3200/3200	5040/5040	6400/6400
690	690	690	690	690	690	1000	1000	1000	1000	1000	1000
Electrical data											
132	132	225	225	320	320	480	480	480	480	800	800
17	17	22	22	26	26	44	44	54	54	100	100
2.8	2.8	3.3	3.3	3.5	3.5	5	5	7.3	7.3	15	15
1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
600	600	600	300	300	300	300	300	300	300	300	300
25	25	27	27	25	27	30	30	35	35	65	65
53	53	75	75	85	85	100	100	120	120	75	75
Mechanical data											
1	1	1	1	1	1	1	1	1	0.5	0.5	0.5
5	5	5	5	5	5	5	5	5	5	5	5
2–25	2–25	2–50	(2–60) [Ⓔ]	(6–70) [Ⓔ]	(6–95) [Ⓔ]	(10–120) [Ⓔ]	(10–150) [Ⓔ]	(25–240) [Ⓔ]	(25–240) [Ⓔ]	(70–325) [Ⓔ]	(70–325) [Ⓔ]
2–25	2–25	2–50	2–50	(6–70) [Ⓔ]	(6–95) [Ⓔ]	(10–120) [Ⓔ]	(10–150) [Ⓔ]	(25–240) [Ⓔ]	(25–240) [Ⓔ]	—	—
1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–4	1–4
—	—	15	15	15	20	25	25	30	30	35	35
2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	2	2
1.1	1.1	1.8	1.8	2.5	3.2	5.5	5.5	9.5	9.5	27	27
88x106x106	88x106x106	100x124x127	100x124x127	100x150x136	120x160x145	138x204x174	138x204x174	163x243x195	163x243x195	290x310x234	290x310x234
113609	113633	113630	113645	113650	113654	—	—	—	—	—	—
113610	113636	113631	113646	—	—	—	—	—	—	—	—
113621	113611	113627	113642	113647	113651	113656	113659	113662	113665	113668	113672
—	—	—	—	—	—	—	—	—	—	—	—
113607	113632	113628	113643	113648	113652	113657	113660	113663	113666	113669	113673
—	—	—	—	—	—	—	—	—	—	—	—
113608	113635	113629	113644	113649	113653	113658	113661	113664	113667	113670	113674

For specifications of the standard auxiliary contacts refer to page 102.

Specifications			SD-N11CX 1A DC24V	SD-N11CX 1B DC24V	SD-N12CX DC24V	SD-N21CX DC24V	SD-N35CX DC24V	SD-N50 DC24V	SD-N65 DC24V
Rated data									
Rated continuous current Ith	A		20	20	20	32	60	80	100
Rated motor capacity 3-phase Category AC-3	220–240 V	kW (A)	3.5 (13)	3.5 (13)	3.5 (13)	5.5 (22)	11 (40)	15 (55)	18.5 (65)
	380–440 V	kW (A)	5.5 (12)	5.5 (12)	5.5 (12)	11 (22)	18.5 (40)	22 (50)	30 (65)
	500	kW (A)	5.5 (9)	5.5 (9)	5.5 (9)	11 (17)	18.5 (32)	25 (38)	37 (60)
	690 V	kW (A)	5.5 (7)	5.5 (7)	5.5 (7)	7.5 (9)	15 (17)	22 (26)	30 (38)
Rated capacity for resistive loads 3ph, Category AC-1	220–240 V	kW (A)	7.5 (20)	7.5 (20)	7.5 (20)	12 (32)	20 (60)	30 (80)	35 (100)
	380–440 V	kW (A)	8.5 (13)	8.5 (13)	8.5 (13)	20 (32)	35 (60)	50 (80)	65 (100)
	500 V–550 V	kW (A)	9.5 (11)	9.5 (11)	9.5 (11)	25 (32)	50 (60)	65 (80)	85 (100)
	690 V	kW (A)	8 (8)	8 (8)	8 (8)	30 (32)	60 (60)	80 (80)	100 (100)
Rated capacity for jogging of AC motors 3-ph, Cat. AC-4 (electrical life is approx. 200,000 oper.)	220–240 V	kW	1.1	1.1	1.1	2.2	3.7	5.5	7.5
	380–440 V	kW	1.5	1.5	1.5	3.7	5.5	7.5	11
	500–550 V	kW	1.5	1.5	1.5	3.7	5.5	7.5	11
	690 V	kW	1.5	1.5	1.5	3.7	5.5	7.5	11
Max. current for AC-4 duty at 440 V	A		9	9	9	13	24	32	47
Rated curr. for DC non-ind. loads, Category DC-1, 100 oper./hour max. 500,000 oper.	48 V	A	12	12	12	20	35	50	65
	110 V	A	12	12	12	20	35	50	65
	220 V	A	12	12	12	20	30	40	50
Rated curr. for DC motors Category DC-2 & DC-4, 100 oper./ hour, max.500,000 oper.	48 V	A	10	10	10	20	30	35	40
	110 V	A	8	8	8	15	20	30	35
	220 V	A	4	4	4	8	10	12	15
Rated capacity for 3-ph, capacitors, 15 oper./hour max. 100,000 oper. a (ambient temp.: 40 °C)	220–240 V	kvar	3	3	3	5.5	12	17	19
	380–440 V	kvar	4	4	4	10	20	25	32
	550 V	kvar	5	5	5	10	20	30	35
	690 V	kvar	4.5	4.5	4.5	10	20	30	40
Current; 3-ph, cos φ = 0.35, 240/440 V	Making	A	130/120	130/120	130/120	220/220	400/400	550/460	650/620
	Breaking	A	120/100	120/100	120/100	220/220	400/320	550/460	650/620
Rated insulation voltage	V		690	690	690	690	690	690	690
Electrical data									
Coil consumption (at rated coil voltage)	Inrush	VA	7	7	7	16	18	24	24
	Sealed	VA	7	7	7	16	18	24	24
Switching frequency	Category AC-1	oper./h	1,800	1,800	1,800	1,800	1,800	1,200	1,200
	Cat. AC2; AC3	oper./h	1,800	1,800	1,800	1,800	1,800	1,200	1,200
	Category AC-4	oper./h	600	600	600	600	600	600	600
Operating time (at rated coil voltage)	Closing	ms	45	45	45	33	50	57	57
	Opening	ms	10	10	10	12	13	15	15
Mechanical data									
Electrical life (Category AC-3)	Oper. (million)		1	1	1	1	1	1	1
Mechanical life			10	10	10	10	10	5	5
Main terminal (contactor)	mm ²		1–2.5	1–2.5	1–2.5	1–6	2–16	2–25	2–25
Main terminal (overload relay)	mm ²		1–2.5	1–2.5	1–2.5	1–6	2–16	2–25	2–25
Control terminal	mm ²		1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5
Busbar width	mm		—	—	—	—	—	—	—
Standard auxiliary contacts	NO		1	—	1 ^②	2	2	2	2
	NC		—	1	1 ^②	2	2	2	2
Weight	kg		0.62	0.62	0.64	0.72	0.85	2.1	2.1
Dimensions (WxHxD)	mm		43x78x110	43x78x110	53x78x110	63x81x113	75x89x123	88x110x133	88x110x133
Order information ^⑥	Art. no.		52601	52602	52603	52604	58533	113675	113678

- ① Peak value of inrush current <2000 % of the effective value for rated current of capacitors. Selection is invalid for the circuit of parallel capacitors which are controlled individually.
- ② Special with 2 NO and without NC; on request
- ③ 660 A at ambient temperature 40–55 °C.
- ④ 800 A ambient temperature 40–55 °C.
- ⑤ Conductor size in parentheses indicate compression terminal style not for bare clamping.
- ⑥ Other coil voltages on request (please see page 102).

SD-N80 DC24V	SD-N95 DC24V	SD-N125 D 24V	SD-N150 DC24V	SD-N220 DC24V	SD-N300 DC24V	SD-N400 DC24V	SD-N600 DC24V	SD-N800 DC24V
Rated data								
135	150	150	200	260	350	450	800 c	1000 d
22 (85)	30 (105)	37 (125)	45 (150)	75 (250)	90 (300)	125 (400)	190 (630)	220 (800)
45 (85)	55 (105)	60 (120)	75 (150)	132 (250)	160 (300)	220 (400)	330 (630)	440 (800)
45 (75)	55 (85)	60 (90)	90 (140)	132 (200)	160 (250)	225 (350)	330 (500)	500 (720)
45 (52)	55 (65)	60 (70)	90 (100)	132 (150)	200 (220)	250 (300)	330 (420)	500 (630)
50 (135)	55 (150)	55 (150)	75 (200)	95 (260)	130 (350)	170 (450)	250 (660)	300 (800)
85 (135)	90 (150)	90 (150)	130 (200)	170 (260)	230 (350)	290 (450)	430 (660)	530 (800)
110 (135)	120 (150)	120 (150)	170 (200)	220 (260)	300 (350)	380 (450)	570 (660)	700 (800)
135 (135)	150 (150)	150 (150)	200 (200)	260 (260)	350 (350)	450 (450)	660 (660)	900 (800)
7,5	11	15	18,5	22	37	45	65	75
15	18,5	22	30	45	60	75	110	130
15	18,5	22	37	55	60	90	130	150
15	18,5	22	30	55	75	90	130	150
62	75	90	110	180	220	300	400	630
80	93	120	150	220	300	400	630	800
80	93	100	150	220	300	400	630	800
60	70	80	150	220	300	300	630	800
60	90	90	130	220	280	280	630	630
50	80	80	120	150	200	200	630	630
20	50	50	80	100	150	150	630	630
24	30	38	50	60	95	115	190	190
40	55	65	80	120	150	200	350	350
48	60	65	80	150	200	250	350	350
50	60	65	80	150	200	200	400	400
850/850	1050/1050	1250/1250	1500/1500	2500/2500	3000/3000	4000/4000	6500/6500	8000/8000
800/750	930/930	1000/1000	1200/1200	2000/2000	2400/2400	3200/3200	5040/5040	6400/6400
690	690	690	690	1000	1000	1000	1000	1000
Electrical data								
27	27	31	31	41	55	55	600	600
27	27	31	31	41	55	55	75	75
1200	1200	1200	1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200	1200	1200	1200
600	300	300	300	300	300	300	300	300
75	75	125	135	145	175	175	105	105
18	18	22	37	40	55	55	80	80
Mechanical data								
1	1	1	1	1	1	0,5	0,5	0,5
5	5	5	5	5	5	5	5	5
2–50	(2–60)Ⓢ	(6–70)Ⓢ	(6–95)Ⓢ	(10–150)Ⓢ	(25–240)Ⓢ	(25–240)Ⓢ	(70–325)Ⓢ	(70–325)Ⓢ
2–50	2–50	(6–70)Ⓢ	(6–95)Ⓢ	(10–150)Ⓢ	(25–240)Ⓢ	(25–240)Ⓢ	—	—
1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–4	1–4
—	—	15	20	25	30	30	35	35
2	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2
3.3	3.3	4.3	4.3	7.5	13.5	13.5	28	28
100x134x158	100x134x158	100x150x161	120x160x170	138x204x200	163x243x220	163x243x220	375x310x234	375x310x234
113679	113681	113682	113683	113684	113686	113687	113688	on request

■ Specifications – standard auxiliary contacts

Rated data of auxiliary contacts			
Rated continuous current I _{th}		A	16
Rated operating current			
Category AC-15	AC 110 V	A	6
	AC 230 V	A	5
	AC 500 V	A	3
	AC 660 V	A	1,5
Category DC-13	DC 24 V	A	5
	DC 48 V	A	3
	DC 110 V	A	1.2 (0.8 for UN-AX2CX, UN-AX4CX, UN-AX11CX)
	DC 220 V	A	0.2

For detailed description please see page 114.

■ Environmental conditions

Environmental conditions for all contactors			
Ambient temperature	°C	-25 to +55	
Ambient humidity	RH	45 to 85 %	
Coil voltage tolerance	0.85 to 1.1 times rated coil voltage		
Vibration resistance	10–55 Hz	G	2
Shock resistance		G	5

■ Coil ratings

In case of special order:

The following tables show the devices which are additionally available.
Please contact Mitsubishi Electric for further information.

AC rated voltage – S-N10CX to S-N35CX

Rating	Range 50 Hz	Range 60 Hz	Standard
AC 24 V	24	24	●
AC 48 V	48–50	48–50	●
AC 100 V	100	100–110	
AC 120 V	110–120	115–120	●
AC 127 V	125–127	127	
AC 200 V	200	200–220	
AC 220 V	208–220	220	
AC 230 V	220–240	230–240	●
AC 260 V	240–260	260–280	
AC 380 V	346–380	380	
AC 400 V	380–415	400–440	●
AC 440 V	415–440	460–480	
AC 500 V	500	500–550	

For detailed description of the types please see page 98 and 99.

DC rated voltage – SD-N types

Rating	Range	Standard
DC 12 V	12	
DC 24 V	24	●
DC 48 V	48	
DC 100 V	100	
DC 110 V	110	
DC 125 V	120–125	
DC 200 V	200	
DC 220 V	220	

For detailed description of the types please see page 98 and 99.

AC rated voltage – S-N50CX to S-N800

Ordering designation	50/60 Hz	Standard
AC 24 V ①	24	
AC 48 V ①	48–50	
AC 100 V	100–127	●
AC 200 V	200–240	●
AC 300 V	260–350	
AC 400 V	380–440	●
AC 500 V	460–550	

① Available for S-N50CX to S-N150 only.

For detailed description of the types please see page 100.

Performance of S-N series contactors

Electrical life

The electrical life of the main contacts of a contactor is determined mainly by the circuit-opening duty it will perform.

The relationship between electrical life and rated current of Mitsubishi Electric contactors under normal and jogging duties of squirrel-cage motors is shown in the figures.

In the case of a mixture of normal and jogging duties, the expected contactor life can be determined as follows:

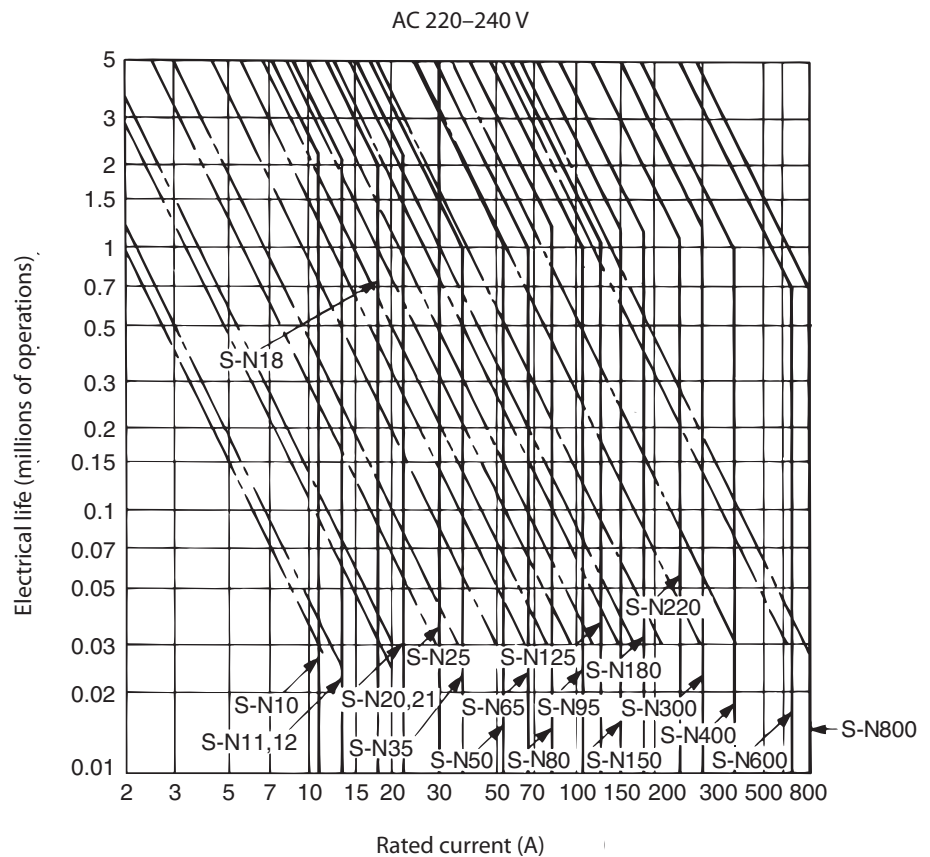
$$N = Nr/1 + \frac{\alpha}{100} (Nr/Ni - 1)$$

N: Life in the case of a % jogging duty

Nr: Life in the case of normal duty

Ni: Life in the case of 100 % jogging duty

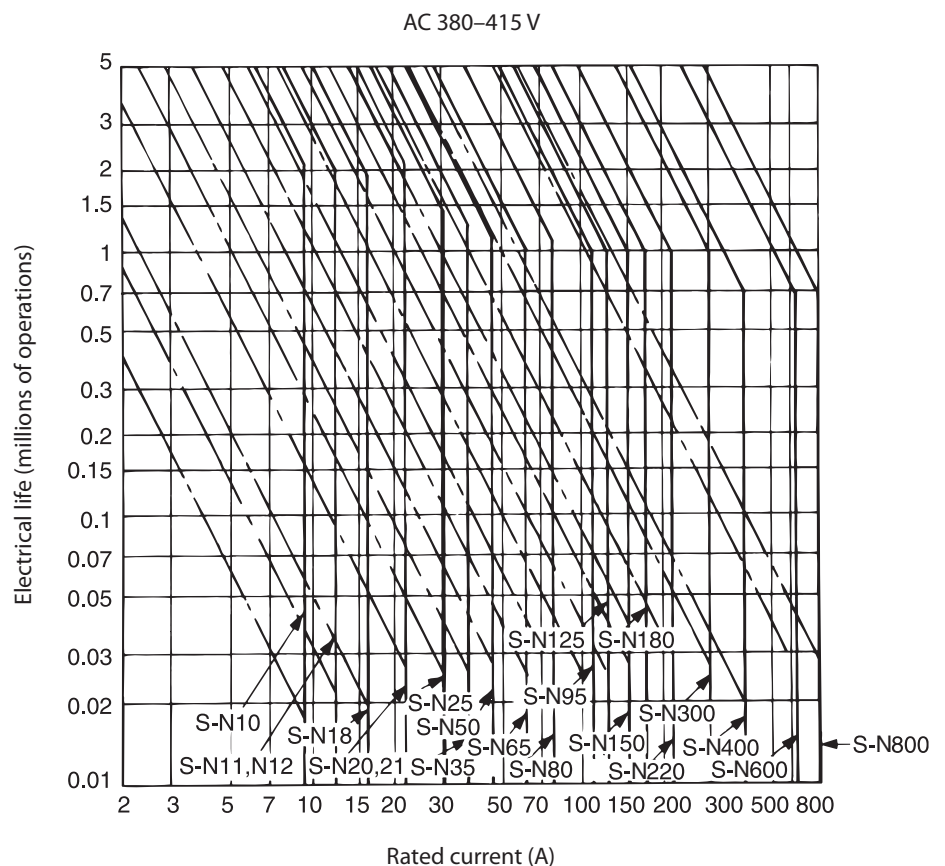
α : Percentage of jogging duty



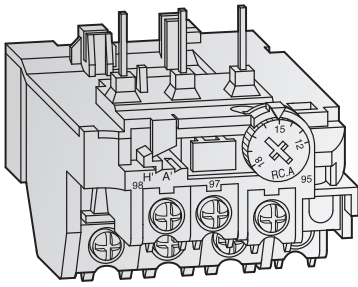
Electrical life versus rated operating current

— Normal duty, 6 le ON, 1e OFF, on-load factor 40 %, 1200 operations/hour (AC-3)

-.- Jogging duty, 6 le ON, 6 le OFF, on-load factor 7 %, 600 operations/hour (AC-4)-S-N10 to S-N300
300 operations/hour (AC-4)-S-N400 to S-N600
150 operations/hour (AC-4)-S-N800



■ Thermal overload relays description



TH-N18KPCX

A selection of relays for optimum motor protection characteristics

The thermal relay line-up includes the phase failure protection type models (three-element relays).

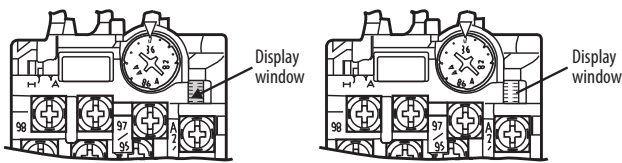
This array of protection characteristics allows you to choose the units suited to your motor protection needs.

Benefits:

- An operation indicator makes maintenance and inspection easy.
- 1 NO and 1 NC contact
- Rated current can be set easily
- Finger protection up to TH-N60KPCX
- Trip-free reset bar
- Convenient reset release (optional)

■ Display

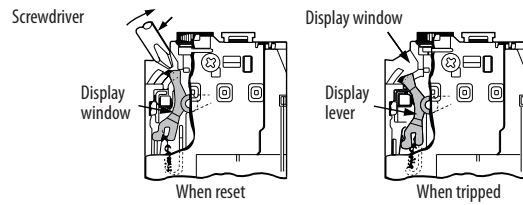
TH-N12KPCX, TH-N18KPCX



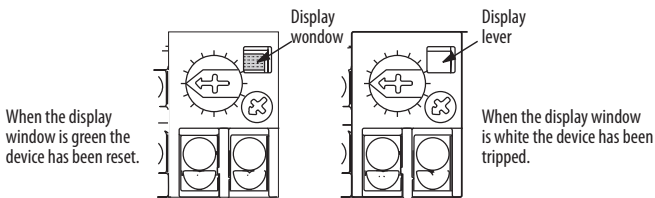
When the green of the display lever can be seen, the device has been reset.

■ External trip mechanism

TH-N12KPCX, TH-N18KPCX



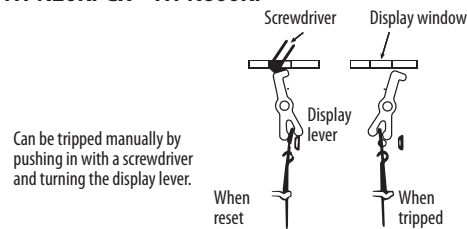
TH-N20KPCX – TH-N600KP



When the display window is green the device has been reset.

When the display window is white the device has been tripped.

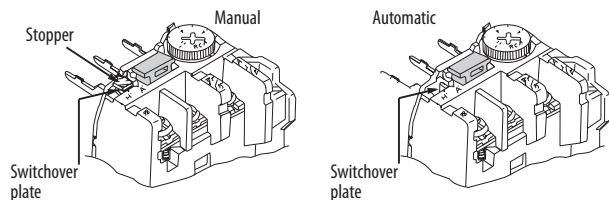
TH-N20KPCX – TH-N600KP



Can be tripped manually by pushing in with a screwdriver and turning the display lever.

■ Switching between automatic and manual reset

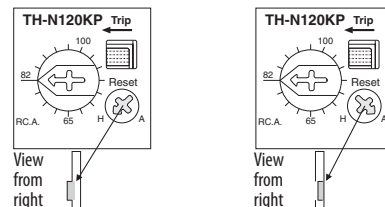
TH-N12KPCX – TH-N18KPCX



Switching from manual to automatic: Break the stopper off and then, slide the switchover plate to the right (to position "A") to immobilize the reset bar.

Switching from automatic to manual: Slide the switchover plate to the left (to position "H").

TH-N20KPCX – TH-N600KP



Switching from manual to automatic: Flip the stopper on the end of the reset bar down and then, after pushing it all the way in, rotate it counterclockwise 90° (to position "A").

Switching from automatic to manual: Rotate the reset bar 90° clockwise (to position "H") and the reset bar will pop out

■ Specifications

Specifications		TH-N12KPCX □□□ A	TH-N18KPCX □□□ A	TH-N20KPCX □□□ A ①	TH-N20TAKPCX □□□ A	TH-N60KPCX □□□ A	TH-N60TAKP □□□ A	TH-N120KP □□□ A	TH-N120TAKP □□□ A	TH-N220RHKP kkk A	TH-N400RHKP kkk A	TH-N600KP □□□ A ②
Rated data												
Max. setting current	A	13	18	22	40	65	105	100	150	220	400	800
Range of setting current	A	0.1–13	1–18	0.2–22	18–40	12–65	54–105	34–100	85–150	65–250	85–400	200–800
Rated insulation voltage	V	690	690	690	690	690	690	690	690	1000	1000	690
Auxiliary contacts	For all types: 1 NO + 1 NC											
Max. heater dissipation per current path	Min. setting	W	0.8	0.9	0.8	1.4	1.7	2.4	2.5	3.2	2.5	2.5
	Max. setting	W	1.8	2.2	2.2	3.5	4.9	5.2	7.1	8.6	6.0	6.0
Rated operating current of auxiliary contacts												
Category AC-15	NO contact	120 V	A	2	2	2	2	2	2	2	2	2
		240 V	A	1	1	1	1	1	1	1	1	1
		500 V	A	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	NC contact	120 V	A	2	2	3	3	3	3	3	3	3
		240 V	A	1	1	2	2	2	2	2	2	2
		500 V	A	0.5	0.5	1	1	1	1	1	1	1
Category DC-13	48 V	A	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
	110 V	A	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
	220 V	A	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Sizes												
Main terminal screw size	Line side	mm	—	—	M4	M4	M6	M6	M8	M8	—	M4
	Load side	mm	M3.5	M4	M4	M5	M6	M6	M8	M8	M10	M4
Max. conductor size	Main	Line side	mm ²	2.5 ^③	—	6	—	25	—	38	60	—
		Load side	mm ²	2.5	6	6	16	25	38	38	60	70
	Busbar	Line side	mm	—	—	—	—	15	—	20	20	—
		Load side	mm	—	—	—	—	15	20	20	20	25
Auxiliary contacts	mm ²	2.5	2.5	4	4	4	4	4	4	4	4	
Bimetal heating		Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Via CTs	Via CTs	Via CTs b
Weight	kg	0.11	0.14	0.14	0.2	0.26	0.32	0.48	0.75	2.5	2.7	0.14
Dimensions (WxHxD) ^④	mm	46x55x76.5	54x59x80	63x51x79	74x72x83.5	92x57x87	89x73.5x83.5	103x67x105	112x87x105	144x114x180	144x160x194	63x42x83.5
Order information	Art. no.	See page 106 for order information										

- ① Specifications for the TH-N20HZKPCX (for stand-alone) are the same as for the TH-N20KPCX.
 ② Used with current transformer (to be supplied by the customer), for further information, see table on bottom of the page.
 ③ When used with UN-HZ12CX.
 ④ Dimensions on request

■ Selection guide of the current transformers for TH-N600KP

For the TH-N600KP the customer has to use a transformer with specifications as described in the following table.

Specifications		250	330	500	660
Heater designation	A	250	330	500	660
Setting range	A	200 – 300	260 – 400	400 – 600	520 – 800
Current transformer ratio		400 / 5A	500 / 5A	750 / 5A	1,000 / 5A
Current transformer capacity		at least 15 VA	at least 15 VA	at least 15 VA	at least 15 VA
Recommended MITSUBISHI current transformer model number	Cable	CW-15L 400/5A 15 VA	CW-15L 500/5A 15 VA	CW-15L 750/5A 15 VA	—
	Bus bar	CW-15LM 400/5A 15 VA	CW-15LM 500/5A 15 VA	CW-15LM 750/5A 15 VA	CW-40LM 1000/5A 40 VA

Order information for Thermal overload relays

Range (A)	Heater designation	TH-N12KPCX □□□ A	TH-N18KPCX □□□ A	TH-N20KPCX □□□ A	TH-N20HZK-PCX □□□ A ⑩	TH-N20TAKPCX □□□ A	TH-N60KPCX □□□ A	TH-N60TAKP □□□ A	TH-N120KP □□□ A	TH-N120TAKP kkk A	TH-N220RHKP □□□ A	TH-N400RHKP □□□ A	TH-N600KP □□□ A ⑩
0.10–0.16	0.12A	52637											
0.14–0.22	0.17A	52638											
0.20–0.32	0.24A	52639		52656	63996								
0.28–0.42	0.35A	52640		52657	63997								
0.40–0.60	0.5A	52644		52658	63998								
0.55–0.85	0.7A	52645		52659	63999								
0.70–1.10	0.9A	52646		52660	64000								
1.00–1.60	1.3A	52647	57378	52661	64002								
1.40–2.00	1.7A	52648	57379	52662	64003								
1.70–2.50	2.1A	52649	57380	52663	64004								
2.00–3.00	2.5A	52650	57381	52664	64006								
2.80–4.40	3.6A	52651	57382	52665	64007								
4.00–6.00	5A	52652	57383	52666	64008								
5.20–8.00	6.6A	52653	57384	52667	64009								
7.00–11.0	9A	52654	57386	52668	64010								
9.00–13.0	11A	52655 ①	57388	52669	64011								
12.0–18.0	15A		57389	52671	64012		113709						
16.0–22.0	19A			52672 ②	64015								
18.0–26.0	22A					59393	113710						
24.0–34.0	29A					59394	113711						
30.0–40.0	35A					59395 ③	113712						
34.0–50.0	42A						113713		124425				
43.0–65.0	54A						113714		124426				
54.0–80.0	67A							113715	124427				
65.0–100	82A							113716 ④	124428		124432		
85.0–105	95A							113717 ④					
85.0–125	105A									124430	124433	124438	
100–150	125A									124431 ⑤	124434	124439	
120–180	150A										124435	124440	
140–220	180A										124436 ⑥	124441	
170–250	210A										124437 ⑥		
200–300	250A											124442	on request
260–400	330A											124443 ⑦	on request
400–600	500A												on request
520–800	660A												on request ⑧

Controlled modified with thermal overload relays correspond to motor starter combination ⑩ (see also the overview on pages 96 and 97)

Controlled	S-N10CX, S-N11CX, S-N12CX, SD-N11CX, SD-N12CX	S-N18CX	S-N20CX, S-N21CX, SD-N21CX – with UN-TH20 ⑩	–	S-N25CX, S-N35CX, SD-N35CX – with UN-TH25CX	S-N50CX, S-N65CX, S-N80, SD-N80, S-N95, SD-N95	S-N80, S-N95, SD-N80, SD-N95	S-N125, S-N150, SD-N125, SD-N150	S-N125, S-N180, S-N220, SD-N220	S-N180, S-N220, SD-N220	S-N300, S-N400, SD-N300, SD-N400	S-N600, S-N800, SD-N600, SD-N800
Controlled with connecting parts ⑩			S-N25CX, S-N35CX, SD-N35CX – with UN-TH25CX									

Stand-alone type ⑩	●	—	—	◇	—	●	○	○	○	○	○	○	○
With connecting part	UN-HZ12CX	—	—	—	—	—	—	—	—	—	—	—	—

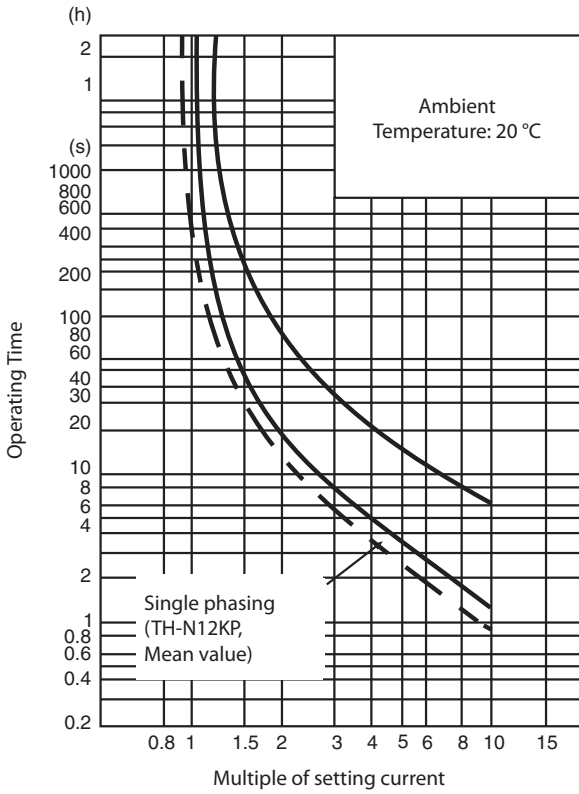
- ① Except for all S-N10.
- ② For all -N20 and all -N21 only.
- ③ For all -N35 only.
- ④ For all -N95 only.
- ⑤ For all -N150 only.
- ⑥ For all -N220 only.
- ⑦ For all -N400 only.
- ⑧ TH-N600KP must be used with the current transformers (to be supplied by the customer), see page 105.
- ⑨ For all -N800 only.
- ⑩ For the standard operation it is important to use the thermal overload relay with one of the mentioned contactors and if necessary with a connecting part.

- ⑪ For further information, see accessories on page 120.
- ⑫ Stand-alone
- ⑬ ● Stand-alone with finger protection
○ Stand-alone without finger protection
◇ Stand-alone only
– Stand-alone not possible
- ⑭ With finger protection

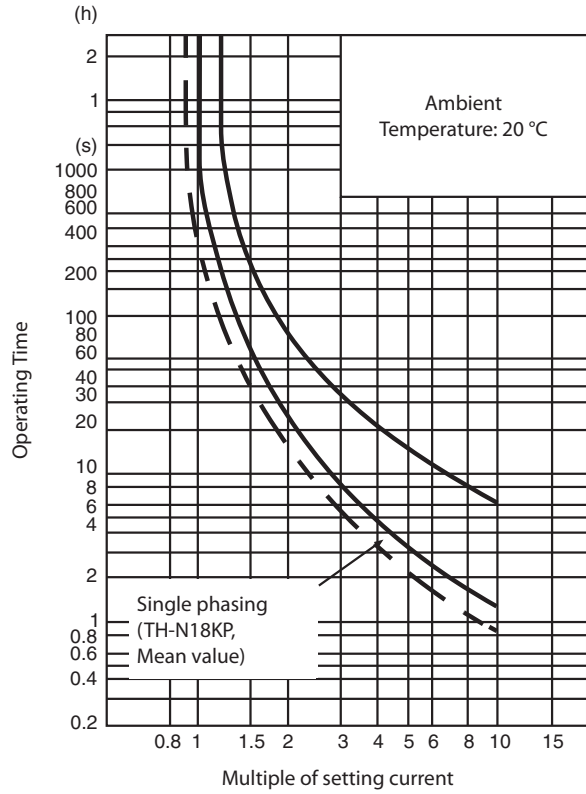
Range (A)	Heater designation	Max. fuse rating (AC 660 V) IEC 269-1 (A)			Standard wire size, (mm ²) recommended	Motor capacity (three phase 50/60 Hz, based on four poles) (kW)			
		aM	gG	gM		AC 220–240 V	AC 380 V	AC 400–440 V	AC 500 V
0.10–0.16	0.12 A	0.5	0.5	—	2				
0.14–0.22	0.17 A	0.5	1	—	2				
0.20–0.32	0.24 A	1	2	—	2	0.03	0.06	0.06	0.09
0.28–0.42	0.35 A	1	2	—	2	0.05	0.09	0.09	0.12
0.40–0.60	0.5 A	1	2	—	2	0.06	0.12	0.12	0.18
0.55–0.85	0.7 A	2	4	—	2	0.09	0.18	0.18	0.25
0.70–1.10	0.9 A	2	4	—	2	0.12	0.25	0.25	0.37
1.00–1.60	1.3 A	2	4	—	2	0.18	0.37	0.37; 0.55	0.55
1.40–2.00	1.7 A	4	6	—	2	0.25	0.55	0.75	0.75
1.70–2.50	2.1 A	4	6	—	2	0.37	0.75	—	1.1
2.00–3.00	2.5 A	6	10	—	2	0.55	1.1	1.1	1.5
2.80–4.40	3.6 A	6	10	—	2	0.75	1.5	1.5	2.2
4.00–6.00	5 A	8	16	—	2	1.1	2.2	2.2	3
5.20–8.00	6.6 A	12	20	—	2	1.5	3	3; 3.7	3.7
7.00–11.0	9 A	12	20	—	2	2.2	3.7; 4	3; 3.7	5.5
9.00–13.0	11 A	16	25	32M35	2	3	5.5	5.5	7.5
12.0–18.0	15 A	20	32	32M50	3.5	3.7	7.5	7.5; 9	9
16.0–22.0	19 A	25	40	32M63	3.5	5.5	11	11	11
18.0–26.0	22 A	40	63	32M63	5.5	5.5	11	11	15
24.0–34.0	29 A	50	80	63M80	8	7.5	15	15	18.5
30.0–40.0	35 A	63	80	63M80	8	9	18.5	18.5	22
34.0–50.0	42 A	63	100	100M100	14	11	22	22	30
43.0–65.0	54 A	80	125	100M125	22	15	30	30	37
54.0–80.0	67 A	100	160	100M160	22	18.5	37	37	45
65.0–100	82 A	125	200	100M200	38	22	45	45	55
85.0–105	95 A	—	200	100M200	38	30	55	55	—
85.0–125	105 A	—	250	200M250	50	30	55	55	75
100–150	125 A	—	250	200M250	60	37	75	75	90
120–180	150 A	—	315	200M315	—	45	90	90	110
140–220	180 A	—	400	—	—	55	110	110	132
170–250	210 A	—	500	—	—	75	132	132	—
200–300	250 A	—	630	—	—	75	132; 160	132; 160	160
260–400	330 A	—	630	—	—	90; 110	200	200	220; 250
400–600	500 A	—	800	—	—	132; 160	220; 250; 300	220; 250; 300	400
520–800	660 A	—	1000	—	—	200; 220	400	400	500

Characteristics of Thermal overload relays

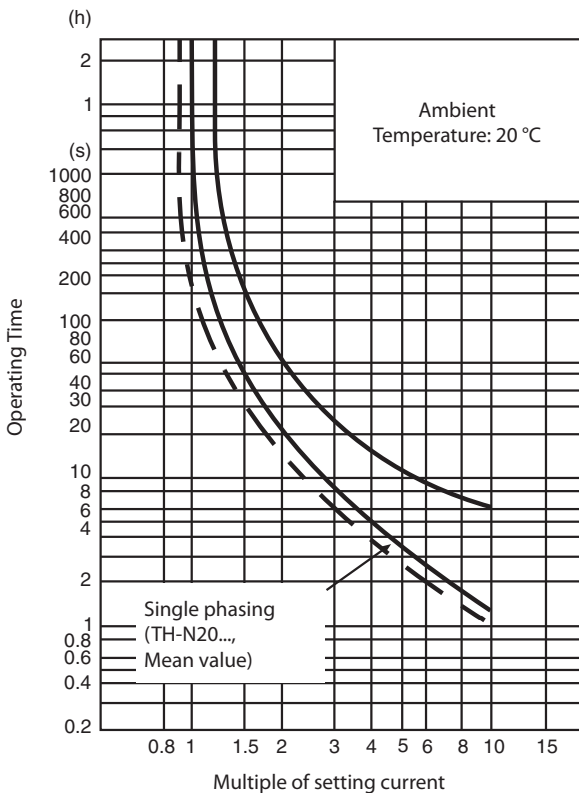
■ TH-N12KP



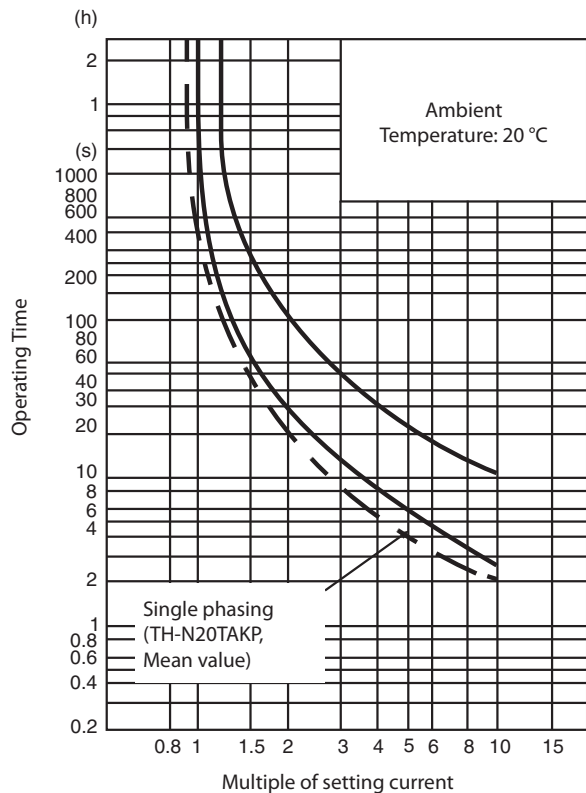
■ TH-N18KP



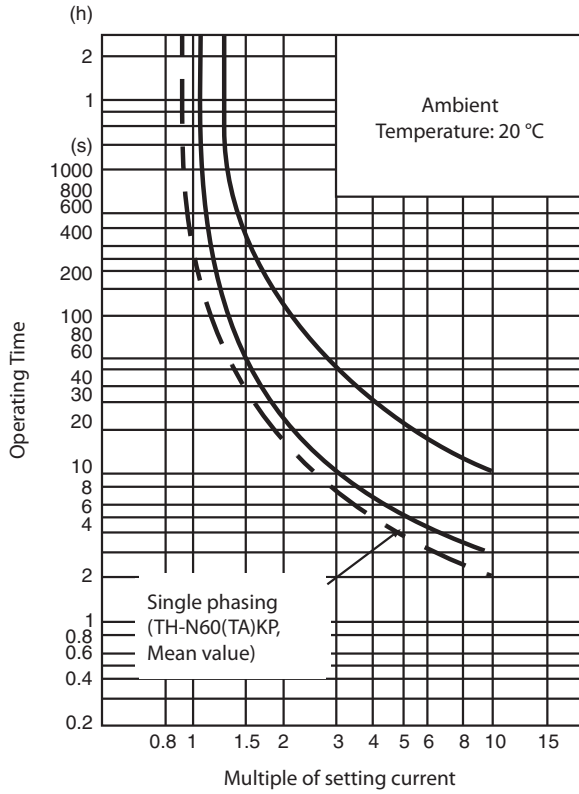
9 ■ TH-N20KP, TH-N20HZKP



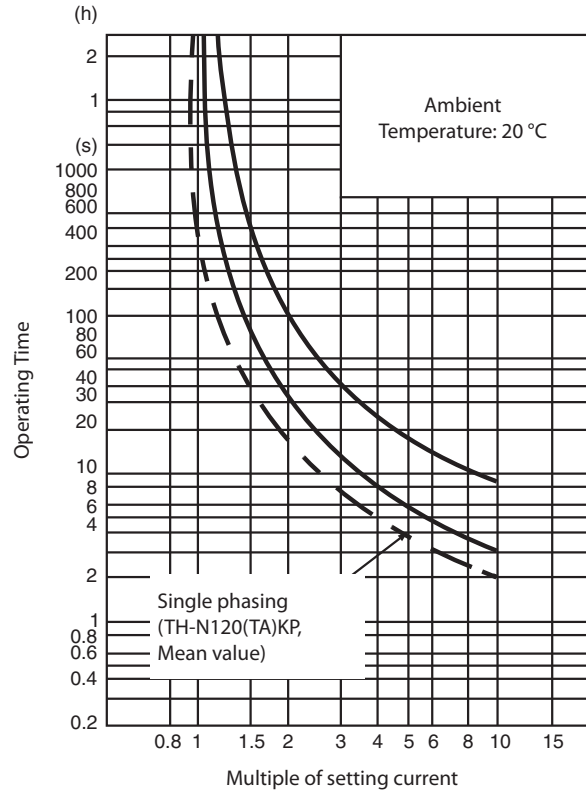
■ TH-N20TAKP



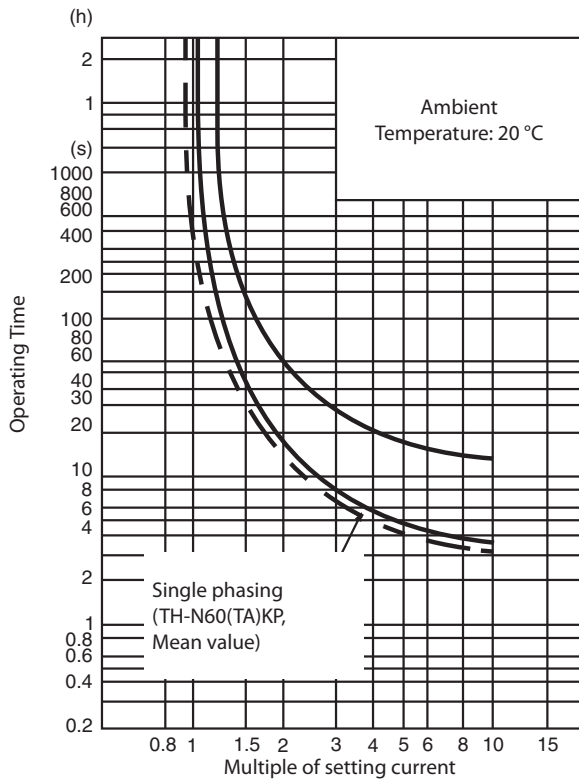
■ TH-N60KP, TH-N60TAKP



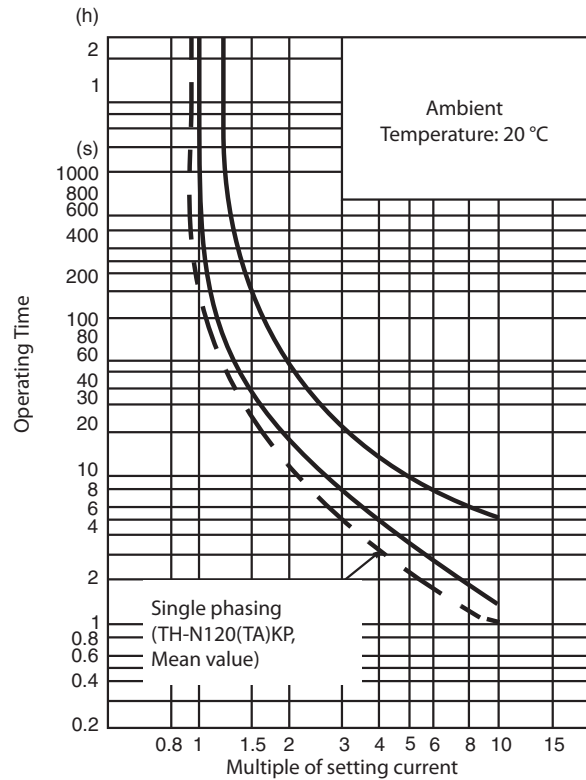
■ TH-N120KP, TH-N120TAKP



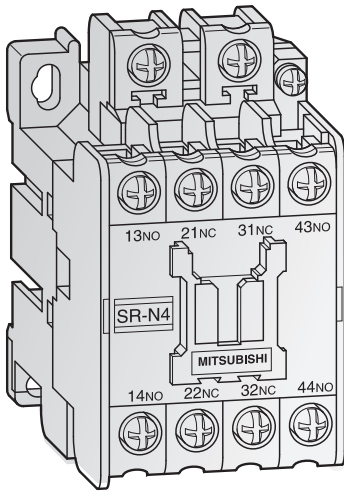
■ TH-N220RHKP, TH-N400RHKP



■ TH-N600KP



■ Contactor relay features



Contactor relays are designed for use in low voltage control circuit applications.

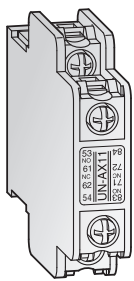
Benefits:

- High reliability: By adopting bifurcated moving contacts and by improving the shape of the contacts, contact performance has been made more reliable than ever.
- Different types as:
Standard, big capacity or overlap contact
- Various contact arrangement
- Long life
- Mountable on 35 mm DIN rails
- Dust-proof construction
- Easily visible coil ratings
- Easy wiring (self-rising terminal screws)
- Various accessories common with the series S-N contactors (front and side clip-on type additional auxiliary contact blocks, surge absorbers)
- Finger protected types are available (DIN 57106/VDE 0106 Part 100) (Suffix "CX")

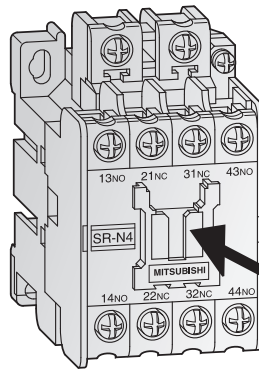
Our standard contactor relay version is with 4 auxiliary contacts.

With side clip-on or front clip-on a number of max. 8 auxiliary contacts is possible.

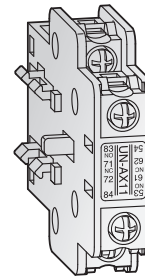
Type of auxiliary contact	Symbol	=	Code
Normally open	NO	=	A
Normally closed	NC	=	B



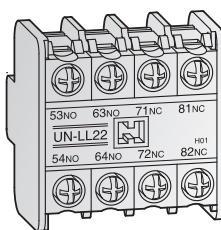
Auxiliary contact for Low level signal



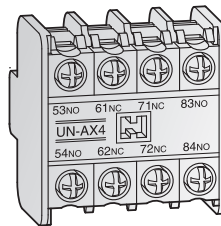
SR-N4



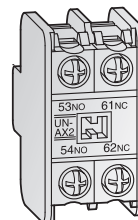
Side clip-on auxiliary contact



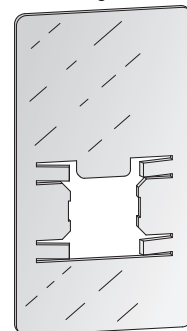
Auxiliary contact for Low level signal



Auxiliary contact (4 pole)



Auxiliary contact (2 pole)



Terminal cover

■ Specifications

Specifications		SR-N4CX AC□□V4A	SR-N4CX AC□□V3A1B	SR-N4CX AC□□V2A2B	SRD-N4CX DC24V4A	SRD-N4CX DC24V3A1B	SRD-N4CX DC24V2A2B
Contact arrangement							
Contact arrangement		4 NO	3 NO + 1 NC	2 NO + 2 NC	4 NO	3 NO + 1 NC	2 NO + 2 NC
Rated data							
Rated insulation voltage	V	690	690	690	690	690	690
Rated continuous current I _{th}	A	16	16	16	16	16	16
Rated operating current; Category AC-15 (coil load)	110 V	A 6	6	6	6	6	6
	230 V	A 5	5	5	5	5	5
	440 V	A 3	3	3	3	3	3
	550 V	A 3	3	3	3	3	3
Rated operating current; Category AC-12 (coil load)	110 V	A 16	16	16	16	16	16
	230 V	A 12	12	12	12	12	12
	440 V	A 5	5	5	5	5	5
	550 V	A 5	5	5	5	5	5
Rated operating current; Category DC-13 (large coil load)	24 V	A 5	5	5	5	5	5
	48 V	A 3	3	3	3	3	3
	110 V	A 0.8 (2) ①	0.8 (2) ①	0.8 (2) ①	0.8 (2) ①	0.8 (2) ①	0.8 (2) ①
Rated operating current; Category DC-14	220 V	A 0.2 (0.8) ①	0.2 (0.8) ①	0.2 (0.8) ①	0.2 (0.8) ①	0.2 (0.8) ①	0.2 (0.8) ①
	24 V	A 8	8	8	8	8	8
	48 V	A 3	3	3	3	3	3
Rated operating current; Category DC-12 (resistive load)	110 V	A 2 (4) ①	2 (4) ①	2 (4) ①	2 (4) ①	2 (4) ①	2 (4) ①
	220 V	A 0.4 (1) ①	0.4 (1) ①	0.4 (1) ①	0.4 (1) ①	0.4 (1) ①	0.4 (1) ①
	24 V	A 10	10	10	10	10	10
Rated operating current; Category DC-12 (resistive load)	48 V	A 8	8	8	8	8	8
	110 V	A 5 (8) ①	5 (8) ①	5 (8) ①	5 (8) ①	5 (8) ①	5 (8) ①
	220 V	A 1 (3) ①	1 (3) ①	1 (3) ①	1 (3) ①	1 (3) ①	1 (3) ①
Electrical data							
Coil consumption (at rated coil voltage)	Inrush	VA	60	60	60	—	—
	Sealed	VA	10	10	10	—	—
	Watts	W	3	3	3	7	7
Switching frequency	oper./h	1,800	1,800	1,800	1,800	1,800	1,800
Operating time (average)	Making	ms	15	15	15	50	50
	Breaking	ms	10	10	10	10	10
Mechanical data							
Electrical life	Oper. (million)	0.5	0.5	0.5	0.5	0.5	0.5
Mechanical life		10	10	10	10	10	10
Conductor size	mm ²	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5	1–2.5
Weight	kg	0.3	0.3	0.3	0.62	0.62	0.62
Dimensions (WxHxD) b	mm	43x78x78	43x78x78	43x78x78	43x78x110	43x78x110	43x78x110
Order information	AC24V	Art. no.	52607	52612	52617	—	—
	AC48V		52608	52613	52618	—	—
	AC120V		52609	52614	52619	—	—
	AC230V		52610	52615	52620	—	—
	AC400V		52611	52616	52621	—	—
Order information	DC24V	Art. no.	—	—	—	52622	52623
						52624	

① Parenthesized rated operating current is for switching the load in 2-pole series connection.

② Dimensions on request.

■ Environmental conditions

Environmental conditions for all contactor relays			
Ambient temperature	°C	-25 to +55	
Ambient humidity	RH	45 to 85 %	
Coil voltage tolerance		0.85 to 1.1 times rated coil voltage	
Vibration resistance	10–55 Hz	G	2
Shock resistance		G	5

■ Coil ratings

In case of special order:

The following tables show the devices which are additionally available.
Please contact Mitsubishi Electric for further information.

AC rated voltage (for SR-N)

50 Hz	60 Hz	Ordering designation	Standard
24	24	AC 24 V	●
48–50	48–50	AC 48 V	●
100	100–110	AC 100 V	
110–120	115–120	AC 120 V	●
125–127	127	AC 127 V	
200	200–220	AC 200 V	
208–220	220	AC 220 V	
220–240	230–240	AC 230 V	●
240–260	260–280	AC 260 V	
346–380	380	AC 380 V	
380–415	400–440	AC 400 V	●
415–440	460–480	AC 440 V	
500	500–550	AC 500 V	

For detailed description of the types please see page 111.

DC rated voltage (for SRD-N)

	Ordering designation	Standard
24	AC 24 V	●
48	AC 48 V	
100	AC 100 V	
110	AC 120 V	
120–125	AC 127 V	
200	AC 200 V	
220	AC 220 V	

For detailed description of the types please see page 111.

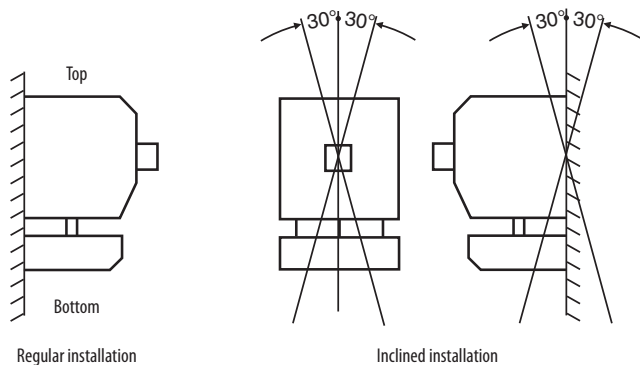
■ Mounting

Mounting attitude of contactors and contactor relays

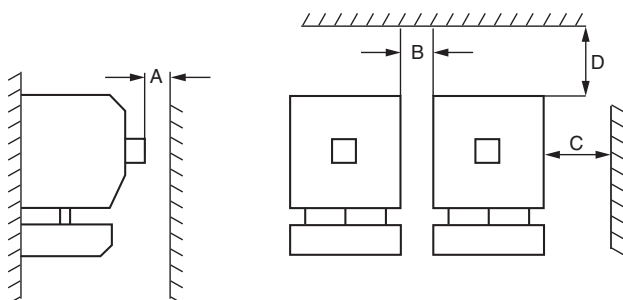
The construction and characteristics of contactors and contactor relays require that they be installed at the correct attitude. This attitude should not be changed, as the operating characteristics will be affected.

To assure proper performance, Mitsubishi Electric contactors and contactor relays should be mounted on a vertical supporting surface with the line terminals upwards and the load terminals downwards. The supporting surface may have a maximum inclination of 30° from the vertical in any direction.

Instruction in detail also for horizontal installation on request.



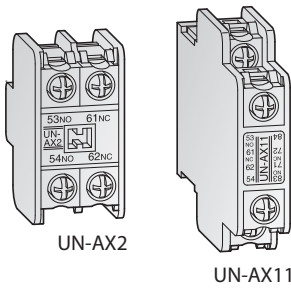
Minimal gaps for installation of contactor and contactor relays



Frame size	A	B	C	D
S-N10CX	5	5	10	15
S-N11CX, S-N12CX	5	5	10	15
S-N18CX	5	5	10	15
S-N20CX, S-N21CX	5	5	10	15
S-N25CX, S-N35CX	5	5	10	15
S-N50CX, S-N65CX	5	10	10	25
S-N80, S-N95	10	10	16	25
S-N125	10	12	16	25
S-N150	10	12	16	30
S-N180, S-N220	10	12	16	50
S-N300, S-N400	10	12	16	90
S-N600, S-N800	10	15	20	90

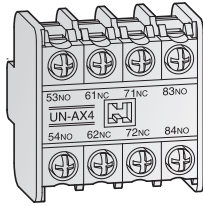
All dimensions in mm

■ Auxiliary contact blocks



UN-AX2

UN-AX11



UN-AX4

Application

All contactors can be extended by additional contacts which are available as a compact module.

When ordering please check that the auxiliary contact fits for your magnetic contactor.

The auxiliary contacts are simple and safe to extend by means of front or side clips.

Type of auxiliary contact	Symbol	Code
Normally open	NO =	A
Normally closed	NC =	B

Auxiliary contact blocks for S-N10CX to S-N65CX, SR-N4CX, SRD-N4CX

Specifications	UN-AX2CX 2A	UN-AX2CX 1A1B	UN-AX2CX 2B	UN-AX4CX 4A	UN-AX4CX 2A2B	UN-AX4CX 3A1B	UN-AX11CX	UN-LL22CX	
Contactors Contactor relays	S-N10CX	S-N10CX	S-N10CX	S-N10CX	S-N10CX	S-N10CX	S-N10CX,	S-N10CX	
	S-N11CX	S-N11CX	S-N11CX	S-N11CX	S-N11CX	S-N11CX	S-N11CX,	S-N11CX	
	S-N12CX	S-N12CX	S-N12CX	S-N12CX	S-N12CX	S-N12CX	S-N20CX,	S-N12CX	
	S-N18CX	S-N18CX	S-N18CX	S-N18CX	S-N18CX	S-N18CX	S-N21CX,	S-N18CX	
	S-N20CX	S-N20CX	S-N20CX	S-N20CX	S-N20CX	S-N20CX	S-N25CX,	S-N20CX	
	S-N21CX	S-N21CX	S-N21CX	S-N21CX	S-N21CX	S-N21CX	S-N35CX,	S-N21CX	
	S-N25CX	S-N25CX	S-N25CX	S-N25CX	S-N25CX	S-N25CX	S-N50CX,	S-N25CX	
	S-N35CX	S-N35CX	S-N35CX	S-N35CX	S-N35CX	S-N35CX	S-N65CX,	S-N35CX	
	S-N50CX	S-N50CX	S-N50CX	S-N50CX	S-N50CX	S-N50CX	SD-N11CX,	S-N50CX	
	S-N65CX	S-N65CX	S-N65CX	S-N65CX	S-N65CX	S-N65CX	SD-N21CX,	S-N65CX	
	SD-N11CX	SD-N11CX	SD-N11CX	SD-N11CX	SD-N11CX	SD-N11CX	SD-N35CX,	SD-N11CX	
	SD-N12CX	SD-N12CX	SD-N12CX	SD-N12CX	SD-N12CX	SD-N12CX	SD-N50CX,	SD-N12CX	
	SD-N21CX	SD-N21CX	SD-N21CX	SD-N21CX	SD-N21CX	SD-N21CX	SD-N65CX,	SD-N21CX	
	SD-N35CX	SD-N35CX	SD-N35CX	SD-N35CX	SD-N35CX	SD-N35CX	SR-N4CX,	SD-N35CX	
	SD-N50CX	SD-N50CX	SD-N50CX	SD-N50CX	SD-N50CX	SD-N50CX	SRD-N4CX	SD-N50CX	
	SD-N65CX	SD-N65CX	SD-N65CX	SD-N65CX	SD-N65CX	SD-N65CX		SD-N65CX	
	SR-N4CX	SR-N4CX	SR-N4CX	SR-N4CX	SR-N4CX	SR-N4CX		SR-N4CX	
	SRD-N4CX	SRD-N4CX	SRD-N4CX	SRD-N4CX	SRD-N4CX	SRD-N4CX		SRD-N4CX	
	Remarks								Low level signal (DC 5 V; 5 mA)
	Contact arrangement	2 NO	1 NO+ 1 NC	2 NC	4 NO	2 NO+ 2 NC	3 NO+ 1 NC	1 NO+ 1 NC	1 NO+ 1 NC ①
Clip-on type	Front ②③	Front ②③	Front ②③	Front ②③	Front ②③	Front ②③	Seite ②④	Front ②③	
Rated cont. curr. Ith	16	16	16	16	16	16	16	1	
Rated insulation voltage	690	690	690	690	690	690	690	250	
Category AC-15 (coil load)	AC 110 V	A	6	6	6	6	6	AC 240 V; 20 mA; (cos φ ≥ 0.95); DC 48 V; 100 mA; (L/R ≤ 1 ms); Min. oper. curr. DC 5 V; 5 mA	
	AC 230 V	A	5	5	5	5	5		
	AC 440 V	A	3	3	3	3	3		
Category DC-13 (large coil load)	DC 48 V	A	3	3	3	3	3	DC 5 V; 5 mA	
	DC 110 V	A	0.8	0.8	0.8	0.8	0.8		
	DC 220 V	A	0.2	0.2	0.2	0.2	0.2		
Mechanical life	oper.	10 mill.	10 mill.	10 mill.	10 mill.	10 mill.	10 mill.	2.5 mill.	
Electrical life	oper.	0.5 mill.	0.5 mill.	0.5 mill.	0.5 mill.	0.5 mill.	0.5 mill.	0.5 mill.	
Switching frequency	opr./hour	For all types: 1.800							
Perm. amb. temperature	°C	For all types: -25—+55							
Perm. amb. humidity	RH	For all types: 45–85 %							
Conductor size	mm ²	For all types: 1.0–2.5							
Order information	Art. no.	52625	52626	52627	52628	52629	52630	52631	52632

- ① Contact reliability may be decreased if it is operated more than 1 million operations.
- ② Front clip-on and side clip-on should not be mounted both.
- ③ Maximum 1 piece of auxiliary contact block can be mounted on a Contactor/Relay.
- ④ Maximum 2 pieces of auxiliary contact blocks can be mounted on a Contactor/Relay.

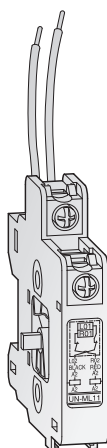
Auxiliary contact blocks (continued)

Auxiliary contact blocks for S-N80 to S-N800

Specifications	UN-AX80	UN-AX150	UN-AX600
Contactors	S-N80 S-N95 S-N125 SD-N80 SD-N95 SD-N125	S-N150 S-N180 S-N220 S-N300 S-N400 SD-N150 SD-N180 SD-N220 SD-N300 SD-N400	S-N600 S-N800 SD-N600 SD-N800
Contact arrangement	1 NO + 1 NC	1 NO + 1 NC	2 NO + 2 NC
Clip-on type	Side	Side	Side
Rated cont. curr. Ith	A 16	16	16
Rated insulation voltage	V 690	690	690
Category	AC 110 V A 6	6	6
AC-15 (Coil load)	AC 230 V A 5	5	5
	AC 440 V A 3	3	3
Category	DC 48 V A 3	3	3
DC-13 (large coil load)	DC 110 V A 0.8	0.8	0.8
	DC 220 V A 0.2	0.2	0.2
Mechanical life	oper. 10 mill.	10 mill.	10 mill.
Electrical life	oper. 0.5 mill.	0.5 mill.	0.5 mill.
Switching frequency	opr./hour For all types: 1,800		
Perm. amb. temperature	°C For all types: -25 to +55		
Perm. amb. humidity	RH For all types: 45 % to 85 %		
Conductor size	mm ² For all types: 1.0 to 2.5		
Order information	Art. no. 113691	113702	113703

Maximum 2 pieces of auxiliary contact blocks can be mounted on a Contactor/Relay.

Mechanical interlocks



Application

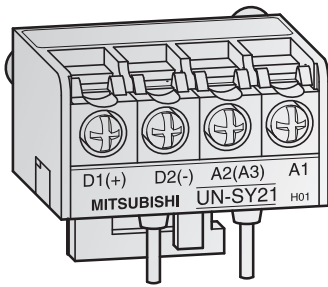
Two contactors are safely and simply secured against one another through mechanical interlocking.

The mechanical interlocks are simple and safe to mount by means of side clips.

On UN-ML11CX the relevant interlock status can also be obtained through an electric query.

Specifications	UN-ML11CX	UN-ML21	UN-ML80	UN-ML150	UN-ML220
Contactors	S-N10CX S-N11CX SD-N11CX	S-N18CX S-N20CX S-N21CX S-N25CX S-N35CX SD-N21CX SD-N35CX S-N50CX S-N65CX SD-N50 SD-N65	S-N80 S-N95 S-N125 SD-N80 SD-N95 SD-N125	S-N150 SD-N150	S-N180 S-N220 S-N300 S-N400 SD-N220 SD-N300 SD-N400
Order information	Art. no. 52633	52634	124294	125991	124293

DC interface modules



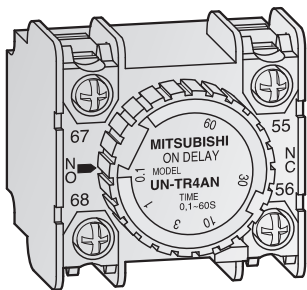
Application

Despite the low current requirements of our contactors and contactor relays, a number of PLC types with transistor outlets only allow direct control via the DC interface module.

In accordance to the used contactor it can be mounted directly on the contactor or on a separate location.

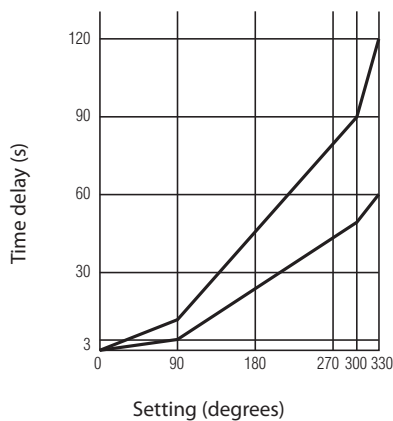
Specifications	UN-SY21CX	UN-SY22CX	UN-SY31	UN-SY32	UN-SY11	UN-SY12
Contactors	S-N10CX S-N11CX S-N12CX S-N18CX S-N20CX S-N21CX S-N25CX S-N35CX SR-N4CX	S-N10CX S-N11CX S-N12CX S-N18CX S-N20CX S-N21CX S-N25CX S-N35CX SR-N4CX	S-N50CX S-N65CX	S-N50CX S-N65CX	S-N80 S-N95 S-N125 S-N150 S-N180 S-N220 S-N300 S-N400	S-N80 S-N95 S-N125 S-N150 S-N180 S-N220 S-N300 S-N400
Output	Solid state	Relay	Solid state	Relay	Solid state	Relay
Mounting to contactor	Direct	Direct	Direct	Direct	Separate	Separate
Order information	Art. no. 52635	52636	On request	On request	On request	On request

Pneumatic time delay module



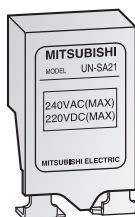
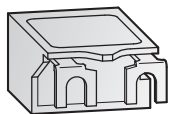
Application

The pneumatic time delay modules are designed for attachment for the front clip on to the series S-N-contactors and SR-N contactor relays.



Specifications	UN-TR4ANCX
Adjustable delay time range	s 0.1 to 60
Rated cont. curr. Ith	10
Rated oper. current	AC 110 V A 5
Category AC-15	AC 230 V A 3
	AC 440 V A 1
Rated oper. current	AC 110 V A 6
Category AC-12	AC 230 V A 4
	AC 440 V A 1.5
Rated operating current	DC 24 V A 1
Category DC-13	DC 48 V A 0.5
	DC 110 V A 0.3
	DC 220 V A 0.15
Rated operating current	DC 24 V A 2
Category DC-12	DC 48 V A 1
	DC 110 V A 0.6
	DC 220 V A 0.3
Rated insulation voltage	VAC 660
Mechanical life/electrical life	1 million operations/1 million operations
Repeat accuracy	% ±10
Min. pause time	ms 500
Permissible ambient temperature	-5—+55 °C
Conductor size	mm ² 1.0–2.5
Contactors	AC-operated S-N10CX, S-N11CX, S-N18CX, SR-N4CX
	DC-operated SD-N11CX, SRD-N4CX
Type of delay	ON delay
Weight	kg 0.06
Dimensions (WxHxD)	mm 45x42x45
Order information	Art. no. 54160

Surge absorbers



Application

Surge absorbers serve the purpose of avoiding currency surges when coils are switched off.

They can be mounted safely and easily behind the terminal strips.

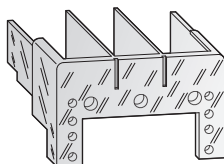
Contactors and relays with built-in surge absorbers, varistor-type are available on your request.

For S-N50 up to S-N800 the surge absorber are implemented as standard (refer to page 94).

Specifications	UN-SA21 AC□□□V	UN-SA22 AC□□□V	UN-SA23 AC□□□V	UN-SA25 AC□□□V	UN-SA13 DC□□□V	UN-SA721 AC□□□V	UN-SA722 AC□□□V	UN-SA725 AC□□□V	UN-SA713 DC□□□V
Contactors	S-N10CX S-N11CX S-N12CX S-N18CX S-N20CX S-N21CX S-N25CX S-N35CX SD-N11CX SD-N12CX SD-N21CX SD-N35CX SR-N4CX SRD-N4CX	S-N10CX S-N11CX S-N12CX S-N18CX S-N20CX S-N21CX S-N25CX S-N35CX SD-N11CX SD-N12CX SD-N21CX SD-N35CX SR-N4CX SRD-N4CX	S-N10CX S-N11CX S-N12CX S-N18CX S-N20CX S-N21CX S-N25CX S-N35CX SR-N4CX	S-N10CX S-N11CX S-N18CX S-N20CX S-N21CX S-N25CX S-N35CX SD-N11CX SD-N12CX SD-N21CX SD-N35CX SR-N4CX SRD-N4CX		SD-N11CX SD-N12CX SD-N21CX SD-N35CX SRD-N4CX	SD-N50 SD-N65	SD-N50 SD-N65	SD-N50 SD-N65
Voltage range	For AC 200 V AC 24–240 V DC 24–220 V For AC 400 V AC 24–480 V	For AC 200 V AC 50–240 V DC 60–220 V	For AC 200 V AC 24–240 V	For AC 048 V AC 24–50 V DC 24–60 V For AC 200 V AC 24–240 V DC 24–220 V	For DC 200 V DC 24–220 V	For AC 048 V DC 24–60 V	For AC100V DC 24–125 V	For AC 048 V DC 24–60 V	For DC 200 V DC 24–220 V
Varistor	●	—	—	—	—	●	—	—	—
Varistor with operating indicator (LED)	—	●	—	—	—	—	●	—	—
Varistor and CR	—	—	—	●	—	—	—	●	—
CR	—	—	●	—	●	—	—	—	●
Order information	AC 48 V	—	—	On request	—	On request	—	On request	—
	AC 100 V	—	—	—	—	On request	On request	On request	—
	AC 200 V	Art. no. 52605	On request	56152	70340	—	On request	On request	—
	AC 400 V	52606	—	—	—	—	—	—	—
	DC 200 V	—	—	—	—	65340	—	—	On request

Note:
For other voltage ranges please contact Mitsubishi Electric.

Terminal covers



Application

The terminal covers warrant protection against contacts being accidentally touched.

These covers are to retrofit contactors which do not have a terminal cover (like types without "CX" designation).

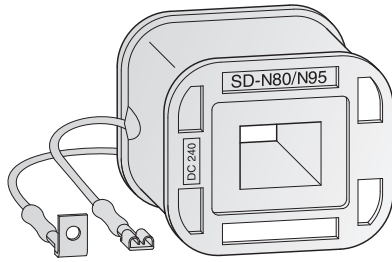
Specifications	UN-CZ500 ①	UN-CZ800 ①	UN-CZ1250 ①	UN-CZ1500 ①	UN-CZ2200 ①	UN-CZ3000 ①
Contactors	SD-N50/N65	S-N80/N95, SD-N80/N95	S-N125, SD-N125	S-N150, SD-N150	S-N180/N220, SD-N220	S-N300/N400, SD-N300/N400
Order information	Art. no. 127116	113704	113705	113706	113707	113708

① 2 pcs. are required for one contactor.

Specifications	UN-CZ501 ②	UN-CZ801 ②	UN-CZ1251 ②	UN-CZ1501 ②	UN-CZ2201 ②	UN-CZ3001 ②
Contact and Thermal Overheat Relay	SD-N50/N65, TH-N	SD-N80/N95, TH-N	SD-N125, TH-N	SD-N150, TH-N	SD-N180/N220, TH-N	SD-N300/N400, TH-N
Order information	Art. no. 127117	125994	125995	125996	125997	125998

② This part is only for the load side (1 piece). For the line side one UN-CZ□□0 is required.

■ Replacement coils



Application

If, for technical or logistic reasons, a coil needs to be replaced, then this can be done fast and safely, as it involves very simple operations.

When ordering please check for the right voltage classification.

Changing procedure is done for

- S-N10 to S-N95, SD-N11 to SD-N95, SR-N4 and SRD-N4 by loosening a number of screws
- S-N125 to S-N800, SD-N125 to SD-N800 by replacing the coil cartridge.

AC-operated coils

Specifications	S-N11-COIL AC□□□V	S-N21-COIL AC□□□V	S-N35-COIL AC□□□V	S-N50-COIL AC□□□V	S-N80-COIL AC□□□V	S-N125-COIL AC□□□V	S-N180-COIL AC□□□V	S-N300-COIL AC□□□V	S-N600-COIL AC□□□V		
Contactors	S-N10CX S-N11CX S-N12CX S-N18CX SR-N4CX	S-N20CX S-N21CX	S-N25CX S-N35CX	S-N50CX S-N65CX	S-N80 S-N95	S-N125 S-N150	S-N180 S-N220	S-N300 S-N400	S-N600 S-N800		
Weight	kg	0.06	0.08	0.08	0.27	0.6	0.46	0.6	0.9	2.0	
Order information	Art. no.	AC 24 V	56756	56719	59376	125881	125888	125895	—	—	—
		AC 48 V	56757	56720	59377	125885	125892	125899	—	—	—
		AC 100 V	56758	56721	59378	125878	125886	125893	125900	125915	125920
		AC 120 V	56759	56722	59380	—	—	—	—	—	—
		AC 127 V	56760	56724	59381	—	—	—	—	—	—
		AC 200 V	56679	56725	59382	125880	125887	125894	125901	125916	125921
		AC 220 V	56680	56726	59383	—	—	—	—	—	—
		AC 230 V	56713	56727	59384	—	—	—	—	—	—
		AC 260 V	56714	56728	59385	—	—	—	—	—	—
		AC 300 V	On request	On request	On request	125882	125889	125896	125912	125917	125922
		AC 380 V	56715	56729	59386	—	—	—	—	—	—
		AC 400 V	56716	56730	59387	125883	125890	125897	125913	125918	125923
		AC 440 V	56717	56731	59388	—	—	—	—	—	—
AC 500 V	56718	56732	59389	125884	125891	125898	125914	125919	125924		

For information about the voltage range refer to page 102.

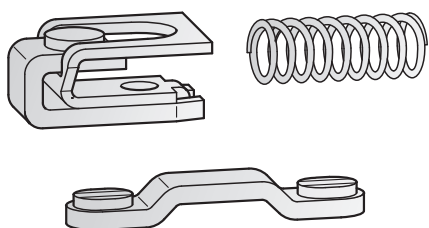
Note:

For other voltage ranges please contact Mitsubishi Electric.

DC-operated coils

Specifications	SD-N11-COIL DC□□□V	SD-N21-COIL DC□□□V	SD-N35-COIL DC□□□V	SD-N50-COIL DC□□□V	SD-N80-COIL DC□□□V	SD-N125-COIL DC□□□V	SD-N220-COIL DC□□□V	SD-N300-COIL DC□□□V	SD-N600-COIL DC□□□V		
Contactors	SD-N11CX SD-N12CX SRD-N4CX	SD-N21CX	SD-N35CX	SD-N50 SD-N65	SD-N80 SD-N95	SD-N125 SD-N150	SD-N220	SD-N300 SD-N400	SD-N600 SD-N800		
Weight	kg	0.23	0.24	0.23	0.8	0.6	0.9	1.4	2.0	6.0	
Order information	Art. no.	DC 12 V	56733	56741	61984	—	—	—	—	—	
		DC 24 V	56734	56742	61985	125930	125937	125945	125952	125959	125966
		DC 48 V	56735	56743	61986	125931	125938	125946	125953	125960	125967
		DC 100 V	56736	56744	61987	125925	125932	125939	125947	125954	125961
		DC 110 V	56737	56746	61988	125926	125933	125940	125948	125955	125962
		DC 125 V	56738	56749	61989	125927	125934	125941	125949	125956	125963
		DC 200 V	56739	56751	61990	125928	125935	125943	125950	125957	125964
		DC 220 V	56740	56753	61991	125929	125936	125944	125951	125958	125965

Replacement contact kits



Application

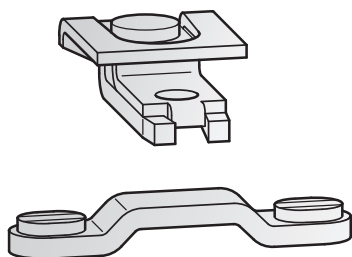
If used correctly, the contact kit does not need replacing during the lifetime stated in the documentation. However, should this still be required, then it can be done fast and without any problems, as it involves no more than a few simple operations.

The kits consist of 3 moving contacts and 6 stationary contacts.

Main contact kit

Specifications	BH-719N300	BH-729N300	BH-739N300	BH-749N300	BH-749N301	BH-749N303	BH-759N300	BH-759N302	BH-759N301	BH-759N303	BH-769N300	
Contactors	S-N10CX S-N11CX S-N12CX SD-N11CX SD-N12CX	S-N18CX	S-N20CX S-N21CX SD-N21CX	S-N25CX	S-N35CX	SD-N35CX	S-N50CX	SD-N50	S-N65CX	SD-N65	S-N80	
Weight	kg	0.03	0.05	0.05	0.07	0.07	0.07	0.11	0.11	0.11	0.1	
Order information	Art. no.	56754	59390	56755	59391	59392	62053	125971	125973	125975	125976	125977

Specifications	BH-769N301	BH-769N303	BH-779N300	BH-779N301	BH-789N300	BH-799N300	BH-799N301	BH-609N300	BH-609N301	BH-619N300	BH-619N301	
Contactors	S-N95	SD-N95	S-N125	SD-N125	S-N150 SD-N150	S-N180	S-N220 SD-N220	S-N300 SD-N300	S-N400 SD-N400	S-N600 SD-N600	S-N800 SD-N800	
Weight	kg	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.8	2.5	2.5	
Order information	Art. no.	125979	125980	125981	125982	125983	125984	125985	125986	125987	125988	125989



Application

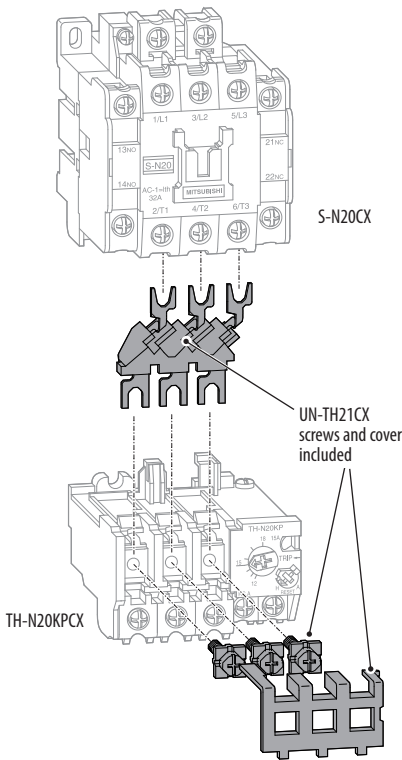
If used correctly, the bifurcated moving contact warrants a maximum of contact safety and the longest possible lifetime.

Nevertheless, auxiliary contacts can be replaced safely and without any problems.

Auxiliary contact kit

Specifications	BH-719N310	BH-719N311	BH-729N310	BH-739N310	BH-739N311	BH-539N315	BH-579N312	UN-AX150	UN-AX600	
Contactors	S-N10CX S-N11CX SD-N11CX	S-N10CX S-N11CX SD-N11CX	S-N12CX SD-N12CX	S-N20CX	S-N21CX S-N25CX S-N35CX SD-N21CX SD-N35CX	S-N50CX to S-N95 SD-N50 to SD-N95	S-N125 SD-N125	S-N150 to S-N400 SD-N150 to SD-N400	S-N600 S-N800 SD-N600 SD-N800	
Kit contents	Bifurcated moving contacts	1	1	2	2	4	4	4	—	—
	Stationary contacts	2	2	4	4	8	8	8	—	—
	Contact block	—	—	—	—	—	—	—	1	1
Contact arrangement	1 NO	1 NC	1 NO 1 NC	1 NO 1 NC	2 NO 2 NC	2 NO 2 NC	2 NO + 2 NC	1 NO + 1 NC	2 NO + 2 NC	
Weight	kg	0.01	0.01	0.02	0.02	0.03	0.02	0.02	0.04	0.1
Order information	Art. no.	On request	On request	On request	On request	On request	On request	On request	113702	113703

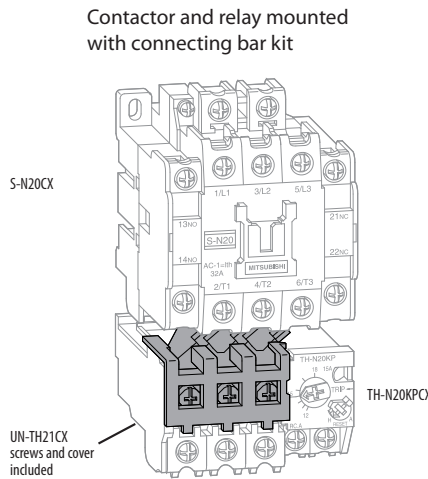
■ Connecting parts for contactors to thermal overload relays



Application

For connection between the contactor and the thermal overload relay.

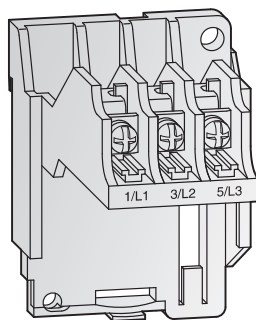
Connecting bars and mounting plate are included in the OLR of TH-N220RHKP and TH-N400RHKP for S-N180, S-N220, SD-N220, S-N300, SD-N300, S-N400, SD-N400.



Connecting bar kit

Specifications	UN-TH21CX	UN-TH25CX	BH559N350	BH569N350	BH569N352	BH579N355	BH589N355
Contactors	S-N20CX S-N21CX SD-N21CX	S-N25CX S-N35CX SD-N25CX SD-N35CX	S-N50CX SD-N50 S-N65CX SD-N65	S-N80 S-N95	SD-N80 SD-N95	S-N125 SD-N125	S-N150 SD-N150
Thermal overload relay	TH-N20KPCX	TH-N20KPCX, TH-N20TAKPCX	TH-N60KPCX	TH-N60KPCX, TH-N60TAKP	TH-N60KPCX, TH-N60TAKP	TH-N120KP, TH-N120TAKP	TH-N120KP, TH-N120TAKP
Weight	kg 0.02	0.02	0.02	0.04	0.04	0.36	0.36
Order information	Art. no. 141108	63695	126000	126001	126002	126003	126004

■ Separate mounting adapter

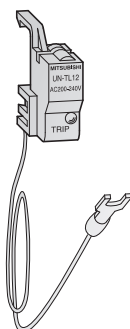


Application

For the stand-alone application the thermal overload relay TH-N12KPCX must be use with the separate mounting adapter UN-HZ12CX.

Specifications	UN-HZ12CX
Thermal overload relays	TH-N12KPCX
Order information	Art. no. 52673

Trip indicator



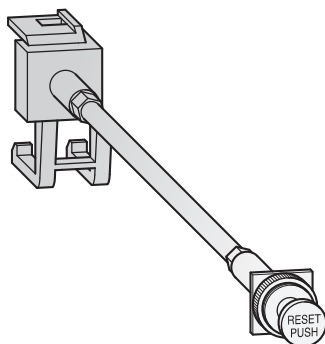
Application

An LED lights up to help you find and identify a thermal overload relay that has been actuated.

The trip indicator consists of a cable (length approx. 100 mm) and an indication module which can be mounted separately from the conductor.

Specifications	UN-TL15 DC 24 V	UN-TL15 AC 100 V	UN-TL15 AC 200 V	UN-TL20 DC 24 V	UN-TL20 AC 100 V	UN-TL20 AC 200 V	UN-TL60 DC 24 V	UN-TL60 AC 100 V	UN-TL60 AC 200 V
Thermal overload relay	TH-N12KPCX, TH-N18KPCX	TH-N12KPCX, TH-N18KPCX	TH-N12KPCX, TH-N18KPCX	TH-N20KPCX, TH-N20TAKPCX	TH-N20KPCX, TH-N20TAKPCX	TH-N20KPCX, TH-N20TAKPCX	TH-N60KP to TH-N600KP	TH-N60KP to TH-N600KP	TH-N60KP to TH-N600KP
Voltage	V AC 24 / DC 24	AC 100–127	AC 200–240	AC 24 / DC 24	AC 100–127	AC 200–240	AC 24 / DC 24	AC 100–127	AC 200–240
Order information	Art. no.	On request	On request	On request	On request	On request	On request	On request	On request

Reset release



Application

The reset release allows you to reset the actuated thermal overload relay safely and without any problems while the cabinet door or drawer is shut.

It has to be mounted directly on the thermal overload relay.

Specifications	UN-RR205	UN-RR405	UN-RR555	UN-RR705	UN-RR200	UN-RR400
Thermal overload relay	TH-N12KPCX TH-N18KPCX	TH-N12KPCX TH-N18KPCX	TH-N12KPCX TH-N18KPCX	TH-N12KPCX TH-N18KPCX	TH-N20KPCX TH-N20TAKPCX	TH-N20KPCX TH-N20TAKPCX
Length	mm 200	400	550	700	200	400
Order information	Art. no.	52675	52676	52677	52678	52679

Specifications	UN-RR550	UN-RR700	UN-RR206	UN-RR400	UN-RR556	UN-RR706
Thermal overload relay	TH-N20KPCX TH-N20TAKPCX	TH-N20KPCX TH-N20TAKPCX	TH-N60KP to TH-N600KP	TH-N60KP to TH-N600KP	TH-N60KP to TH-N600KP	TH-N60KP to TH-N600KP
Length	mm 550	700	200	400	550	700
Order information	Art. no.	52681	52682	On request	On request	On request

Contactors and overload relays MS-N

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Moulded-case circuit breakers

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Breaker

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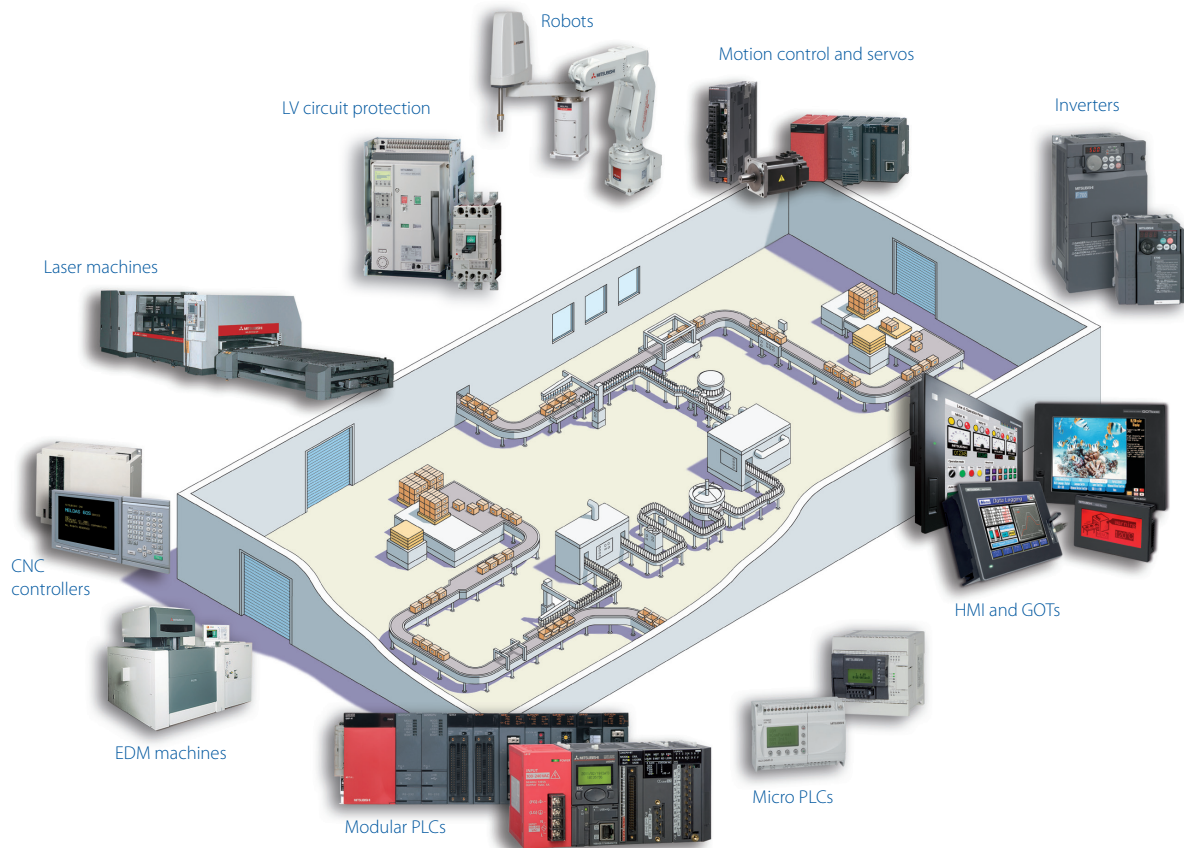
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European Offices

Mitsubishi Electric Europe B.V. Gothaer Straße 8 D-40880 Ratingen Phone: +49 (0)2102 / 486-0	Germany	Mitsubishi Electric Europe B.V. 52, bld. 3 Kosmodamianskaya nab 8 floor RU-115054 Moscow Phone: +7 495 / 721 2070	Russia
Mitsubishi Electric Europe B.V. Radlická 751/13e Avenir Business Park CZ-158 00 Praha 5 Phone: +420 251 551 470	Czech Rep.	Mitsubishi Electric Europe B.V. Carretera de Rubí 76-80 Apdo. 420 E-08190 Sant Cugat del Vallés (Barcelona) Phone: +34 (0) 93 / 5653131	Spain
Mitsubishi Electric Europe B.V. 25, Boulevard des Bouvets F-92741 Nanterre Cedex Phone: +33 (0)1 / 55 68 55 68	France	Mitsubishi Electric Europe B.V. (Scandinavia) Fjellievägen 8 SE-22736 Lund Phone: +46 (0) 8 625 10 00	Sweden
Mitsubishi Electric Europe B.V. Viale Colleoni 7 Palazzo Sirio I-20864 Agrate Brianza (MB) Phone: +39 039 / 60 53 1	Italy	Mitsubishi Electric Turkey Elektrik Ürünleri A.Ş. Şerifali Mahallesi Nutuk Sokak No:5 TR-34775 Ümraniye-İSTANBUL Phone: +90 (0)216 / 526 39 90	Turkey
Mitsubishi Electric Europe B.V. Westgate Business Park, Ballymount IRL-Dublin 24 Phone: +353 (0)1 4198800	Ireland	Mitsubishi Electric Europe B.V. Travellers Lane UK-Hatfield, Herts. AL10 8XB Phone: +44 (0)1707 / 28 87 80	UK
Mitsubishi Electric Europe B.V. Nijverheidsweg 23a NL-3641RP Mijdrecht Phone: +31 (0) 297250350	Netherlands	Mitsubishi Electric Europe B.V. Dubai Silicon Oasis United Arab Emirates - Dubai Phone: +971 4 3724716	UAE
Mitsubishi Electric Europe B.V. ul. Krakowska 50 PL-32-083 Balice Phone: +48 (0) 12 630 47 00	Poland		

Representatives

000 TECHNIKON Prospect Nezavisimosti 177-9 BY-220125 Minsk Phone: +375 (0)17 / 393 1177	Belarus	UTEKO A.B.E.E. 5, Mavrogenous Str. GR-18542 Piraeus Phone: +30 (0)211 / 1206-900	Greece	Fonseca S.A. R. João Francisco do Casal 87/89 PT-3801-997 Aveiro, Esqueira Phone: +351 (0)234 / 303 900	Portugal	Euro Energy Components AB Järnvägsgatan 36 SE-434 24 Kungälv Phone: +46 (0)300 / 69 00 40	Sweden	Cairo Electrical Group 9, Rostourm St. Garden City, 8th Floor Apt. 37 ET-165-11516 Maglis El-Shaab, Cairo-Egypt Phone: +20 2 279 23 203	Egypt
KONING & HARTMAN B.V. Woluwelaan 31 BE-1800 Wilvoorde Phone: +32 (0)2 / 257 02 40	Belgium	MELTRADE Kft. Fertő utca 14. HU-1107 Budapest Phone: +36 (0)1 / 431-9726	Hungary	Sirius Trading & Services RO-060841 Bucuresti, Sector 6 Phone: +40 (0)21 / 430 40 06	Romania	TRIELEC AG Mühlentalstr. 136 CH-8200 Schaffhausen Phone: +41 (0)52 / 625 84 25	Switzerland	CEG LIBAN Cebaco Center/Block A Autostrade DORA Lebanon-Beirut Phone: +961 (0)1 / 240 445	Lebanon
INEA RBT d.o.o. Stegne 11 SI-1000 Ljubljana Phone: +386 (0)1 / 513 8116	Bosnia and Herzegovina	TOO Kazpromavtomatika Ul. Zhambyla 28 KAZ-100017 Karaganda Phone: +7 7212 / 50 10 00	Kazakhstan	INEA SR d.o.o. Ul. Karadjordjeva 12/217 SER-11300 Smederevo Phone: +386 (026) 461 54 01	Serbia	OOO "CSC-AUTOMATION" 4-B, M. Raskovoyi St. UA-02660 Kiev Phone: +380 (0)44 / 494 33 44	Ukraine	CBI Ltd. Private Bag 2016 ZA-1600 Isando Phone: +27 (0)11 / 977 0770	South Africa
INEA CR Losinjska 4 a HR-10000 Zagreb Phone: +385 (0)1 / 36 940 - 01 / -02 / -03	Croatia	RIFAS UAB Tinklu q. 29A LT-3300 Panevezys Phone: +370 (0)45 / 582 728	Lithuania	SIMAP SK Jána Derku 1671 SK-911 01 Trenčín Phone: +421 (0)32 743 04 72	Slovakia				
AutoCont C.S. S.R.O. Kafkova 1853/3 CZ-702 00 Ostrava 2 Phone: +420 595 691 150	Czech Republic	ALFATRADE Ltd. 99, Paola Hill Malta-Paola PLA 1702 Phone: +356 (0)21 / 66 4242	Malta	INEA RBT d.o.o. Stegne 11 SI-1000 Ljubljana Phone: +386 (0)1 / 513 8116	Slovenia				
HANS FOLSGAARD A/S Theligaards Torv 1 DK-4600 Køge Phone: +45 4320 8600	Denmark	INTEHISIS SRL bld. Traian 23/1 MD-2060 Kishinev Phone: +35 (0)22 / 66 4242	Moldova						
PROVENDOR OY Teljänkatu 8 A3 FIN-28130 Pori Phone: +358 (0) 2 / 522 3300	Finland	IMTEGH Marine Netherlands B.V. Sluisjesdijk 155 NL-3087 AG Rotterdam Phone: +31 10 / 487 18 24	Netherlands						
KALAMARAKIS - SAPOUNAS S.A. Ionias & Neromilou Str. GR-13671 Chamomilos Achamas Athens Phone: +30 (0)2102 / 406000	Greece	SCANELEAS Leivrikasen 43B NO-5179 Godvik Phone: +47 (0)55 / 50 60 00	Norway						



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Mitsubishi Electric Europe B.V. / FA - European Business Group / Gothaer Straße 8 / D-40880 Ratingen / Germany / Tel.: +49(0)2102-4860 / Fax: +49(0)2102-4861120 / info@mitsubishi-automation.com / https://eu3a.mitsubishielectric.com

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