5. Accessories
Internal Accessories

1. Accessories

Table 5-1: Accessories

Internal accessories		Function	Applicable models	Cassette-type accessories
AL	Alarm switch	Electrically indicates the trip status of the circuit breaker.	NF-C·S·H·U, NV-C·S·H·U and MB series	●
AX	Auxiliary switch	Electrically indicates the ON-OFF status of the circuit breaker.		●
SHT	Shunt trip	Electrically trips the circuit breaker from a remote distance. Permissible working voltages are 70 to 110% of the AC rated voltage or 70 to 125% of the DC rated voltage.	NF-C·S·H·U and MB series	●
UVT	Undervoltage trip	Automatically trips the circuit breaker if the voltage is lowered. Working voltages are 70 to 35% of the UVT rated voltage. When the voltage recovers to 85% or higher, you can reset the device and restart operation.	NF-C·S·H·U, (∗1) NV-C·S·H·U and MB series	●
EAL	Earth-leakage alarm switch	Electrically indicates the trip status of the earth-leakage circuit breaker caused by a ground fault. If 250AF or less, this switch is available only for models with the vertical lead-wire terminal unit (SLT).	NV-C·S·H·U	–
TBM	Test button module	Allows remote testing by applying a voltage. An external sequence common to SHT can be used. (The standard configuration requires the vertical lead-wire terminal unit (SLT).)	NV-C·S·H·U	–
MG	Insulation switch	Enables measurement of insulation resistance between the terminals of the load while circuit breaker is turned OFF.	NV-C·S·H·U	–
PAL	Pre-alarm module	Indicates that the load current exceeds the pre-alarm setting current.	Electronic type	–
OAL	Overcurrent trip alarm switch	Indicates that the breaker has been tripped by overcurrent or short-circuit current.	Electronic type (SGW, HGW, RGW, UGW)	–

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

2. Switch Operation and Rating

Table 5-2: AL Switch Operation

Circuit breaker status	AL switch contact
OFF or ON	98/ALa (open) 96/ALb (closed) 95/ALc
Trip	98/ALa (closed) 96/ALb (open) 95/ALc

Table 5-3: AX Switch Operation

Circuit breaker status	AX switch contact
OFF or Trip	14/AXa (open) 12/AXb (closed) 11/AXc
ON	14/AXa (closed) 12/AXb (open) 11/AXc

Table 5-4: EAL Switch Operation

Circuit breaker status		EAL switch contact
Overcurrent, short-circuit trip or on or off	250A frame or less	EALa (open) EALc
	400A frame or more	EALa (open) EALb (closed) EALc
Ground-fault trip	250A frame or less	EALa (closed) EALc
	400A frame or more	EALa (closed) EALb (open) EALc

Table 5-5: MG Switch Operation

Circuit breaker status	MG switch status
OFF or Trip	MG switch (open)
ON	MG switch (closed)

Table 5-6: AL·AX·EAL Switch Rating (For EAL, 400AF and higher)

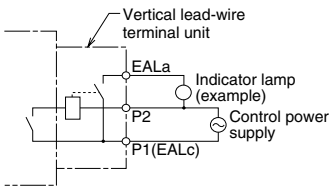
Switch type	AC			DC		
	Voltage (V)	Current (A)		Voltage (V)	Current (A)	
		Resistive load	Inductive load		Resistive load	Inductive load
S	460	–	–	250	0.2	0.2
	250	3	2	125	0.4	0.4
	125	5	3	30	4	3
V	460	5	2	250	0.3	0.3
	250	10	10	125	0.6	0.6
	125	10	10	30	10	6
X (∗1)	460	5	2.5	250	5	3
	250	10	10	125	10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

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

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

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

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



3. Maximum Number of Internally Mounted Accessories

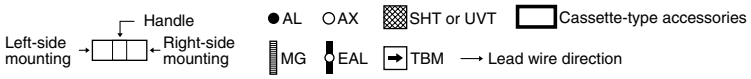


Table 5-8: Combinations of Accessories

Series		NF-C · S · H · U, MB			NV-C · S · H · U	
Type		NF30-CS MB30-CS	NF32-SW NF63-CW/SW/HW NF125-CW/SW	NF32-SW(3P) NF63-CW/SW/HW(3P) NF125-CW(3P), NF125-SW(3P, 4P) NF125-HW, NF125-SGW/HGW NF125-RGW/UGW NF160-SW/SGW/HW/HGW NF250-CW/SW/HW NF250-SGW/HGW NF250-RGW/UGW MB30-SW, MB50-CW/SW MB100-SW, MB225-SW	NV30-CS	NV32-SW NV63-CW/SW/HW NV125-CW/SW/HW NV250-CW/SW/HW NV250-SEW/HEW NV125-RW, NV250-RW
Poles		2, 3	2	2, 3, 4	3	3, 4
Accessories	AL	(∗7)			(∗7)	
	AX	(∗7)			(∗7)	
	AL + AX	(∗7) 3-pole product only		(∗1)	(∗7)	(∗1)
	SHT or UVT		(∗2)	(∗2) (∗3)		(∗2) (∗4) (∗6)
	AL + SHT or UVT			(∗2)		
	AX + SHT or UVT			(∗2)		
	AL + AX + SHT or UVT			(∗1) (∗2)		
	MG					
	AL + MG				(Note 7)	
	AX + MG					
	EAL					(∗5) (∗8)
	TBM					(∗8) (∗9)
	PAL					

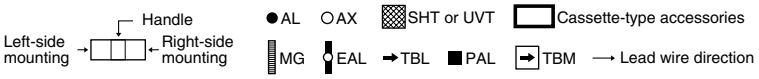
Circled numbers indicate the order of installation.

Note (∗1) Second AX can substitute the AL on the left-pole.
(∗2) Models with UVT require a UVT voltage module to be installed on the lead-wire terminal unit. (No such voltage module is required for SHT.) Part of UVT accessories is not of cassette type. (Details are available upon request.)
(∗3) UVTs for left-pole installation can be produced, if specified, for frame current values of 125A (excluding SGW/HGW/RGW/UGW).
(∗4) SHT cannot be installed.
(∗5) EALs are available only for models with the vertical lead-wire terminal unit (SLT). Specify a control power supply of either 100 or 200 V AC.
(∗6) Models NV250-SEW/HEW are not allowed to install the UVT device.
(∗7) The standard lead drawing is performed laterally. Load drawing is also available.
(∗8) Only the models with an SLT are available. EAL and PAL require a control power supply (shared 100 - 200 V AC).
For the 24 V DC TBM only, instruct us of a control voltage. (The standard shared voltage is 100 - 240 V AC/100 - 240 V DC.)
(∗9) Models CE marking cannot install the TBM device.

Remark: 1. Accessories of EAL, and TBM can be installed independent of installations of AL, AX, and MG. (Two units among EAL, and TBM cannot be installed at the same time.)

5. Accessories

Internal Accessories



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

Circled numbers indicate the order of installation.

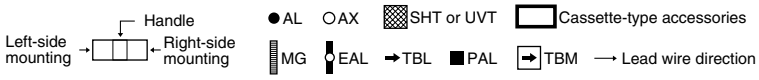
Note (∗1) SHT and UVT are right-pole mounting as standard. Please specify if left-pole mounting is required.

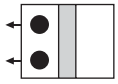
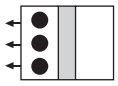
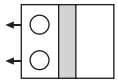
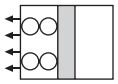
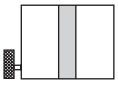
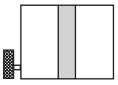
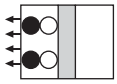
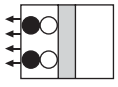
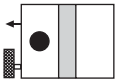
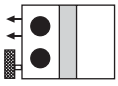
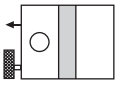
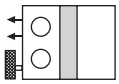
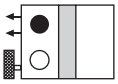
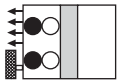
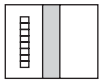
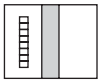
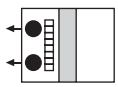
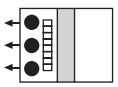
(∗2) UVT mounting requires a UVT voltage module (SHT requires no such voltage module).

(∗3) When mounting more than three left-pole mounting devices by SLT, or when mounting a SHT or UVT to the same pole as the AL, AX or AL + AX, a special type SLT is necessary.

(∗4) When mounting a UVT to the same pole as the AL, AX, or AL + AX, the UVT voltage module is separate.

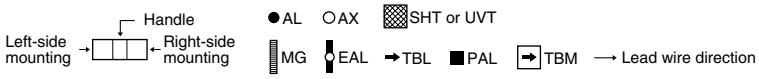
(∗5) SLT-equipped is standard. Control voltage (AC100~200V) is necessary. (In this case, no other accessories can be mounted to the breaker's right pole.)

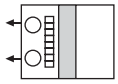
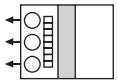
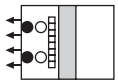
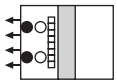
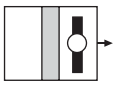
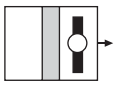
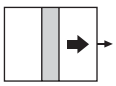
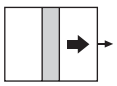
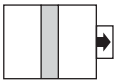
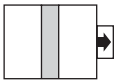


Series		NV-C · S · H	
Type		NV400-CW/SW NV400-SEW/HEW/REW NV630-CW/SW NV630-SEW/HEW	NV800-SEW/HEW
Poles		3, 4	
Switch type		S	
Accessories	AL		(∗2) 
	AX		(∗2) 
	SHT or UVT	(∗1) 	(∗1) 
	AL + AX	(∗2) 	(∗2) 
	AL + SHT or UVT	(∗1) (∗2) (∗3) 	(∗1) (∗2) (∗3) 
	AX + SHT or UVT	(∗1) (∗2) (∗3) 	(∗1) (∗2) (∗3)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

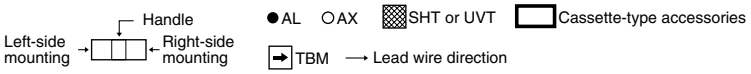
Note (∗1) UVT mounting requires a UVT voltage module (SHT requires no such voltage module).
(∗2) When mounting more than three left-pole mounting devices by SLT, or when mounting a SHT or UVT to the same pole as the AL, AX or AL + AX, a special type SLT is necessary.
(∗3) When mounting a UVT to the same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

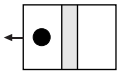
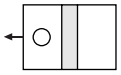
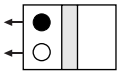
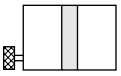
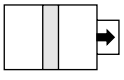
5. Accessories
Internal Accessories



Series		NV-C · S · H	
Type		NV400-CW/SW NV400-SEW/HEW/REW NV630-CW/SW NV630-SEW/HEW	NV800-SEW/HEW
Poles		3, 4	
Switch type		S	
Accessories	AX + MG		
	AL + AX + MG		
	EAL		
	TBL		
	TBM		
	PAL (contact output)	(∗1)  Option for NV400-SEW/HEW/REW NV630-SEW/HEW	(∗1)  Option for NV800-SEW/HEW

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

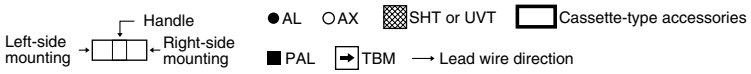


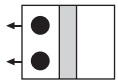
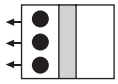
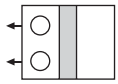
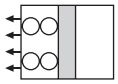
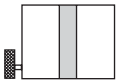
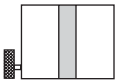
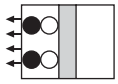
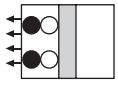
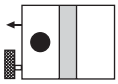
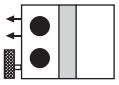
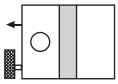
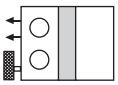
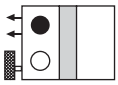
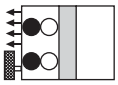
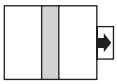
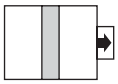
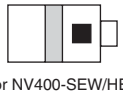
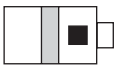
Series		NV-C · S · H · U for CE Marking
Type		NV32-SW NV63-CW/SW/HW NV125-CW/SW/HW NV250-CW/SW/HW NV125-RW, NV250-RW
Poles		3, 4
Accessories	AL	
	AX	
	AL + AX	 (∗1)
	SHT or UVT	 (∗2) (∗3)
	AL + SHT or UVT	
	AX + SHT or UVT	
	AL + AX + SHT or UVT	
	MG	
	AL + MG	
	AX + MG	
	EAL	
	TBM	 (∗4)
	PAL	

Note (∗1) The second AX can substitute the AL on the left-pole.
(∗2) Models with UVT require a UVT voltage module to be installed on the lead-wire terminal unit. (No such voltage module is required for SHT.) Part of UVT accessories is not of cassette type. (Details will be available upon request.)
(∗3) SHT cannot be installed.
(∗4) Only the models with an SLT are available.
For the 24 V DC TBM only, instruct us of a control voltage. (The standard shared voltage is 100 - 240 V AC/100 - 240 V DC.)
Remark: 1. Accessories of TBM can be installed independent of installations of AL, AX. (TBM cannot be installed at the same time.)

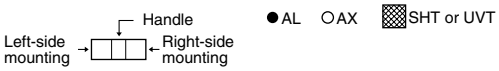
5. Accessories

Internal Accessories



Series		NV-C · S · H for CE Marking	
Type		NV400-CW/SW NV400-SEW/HEW/REW NV630-CW/SW NV630-SEW/HEW	NV800-SEW/HEW
Poles		3, 4	
Switch type		S	
Accessories	AL		(∗2) 
	AX		(∗2) 
	SHT or UVT	(∗1) 	(∗1) 
	AL + AX	(∗2) 	(∗2) 
	AL + SHT or UVT	(∗1) (∗2) (∗3) 	(∗1) (∗2) (∗3) 
	AX + SHT or UVT	(∗1) (∗2) (∗3) 	(∗1) (∗2) (∗3) 
	AL + AX + SHT or UVT	(∗1) (∗2) (∗3) 	(∗1) (∗2) (∗3) 
	TBM		
	PAL (contact output)	(∗4)  Option for NV400-SEW/HEW/REW NV630-SEW/HEW	(∗4)  Option for NV800-SEW/HEW

Note (∗1) UVT mounting requires a UVT voltage module (SHT requires no such voltage module).
(∗2) When mounting more than three left-pole mounting devices by SLT, or when mounting a SHT or UVT to the same pole as the AL, AX or AL + AX, a special-order SLT is necessary.
(∗3) When mounting a UVT to the same pole as the AL, AX or AL + AX. the UVT voltage module is separate.
(∗4) SLT-equipped is standard. Control voltage (AC100-200V) is necessary. (In this case, no other accessories can be mounted ti the breaker's right pole.)
Remark: 1. TBM can be mounted regardless of the number of AL, AX, SHT, UVT accessories. (However, two TBMs cannot be mounted simultaneously.)
2. The PAL's dimensions and specifications change for the NF-C/S and NV-C/S series.



Series		NV-C · S · H for UL Listed					
Type		NF50-SWU NF100-CWU NF100-SWU	NF50-SWU NF100-CWU NF100-SWU	NF-SFW NF-SJW NF-HJW	NF225-CWU	NF-SKW	NF-SLW
Poles		2	3			3	
Switch type		S				S	
Accessories	AL						(∗5)
	AX						(∗5)
	SHT or UVT	(∗1)	(∗1)	(∗1)	(∗2)	(∗2)	(∗2)
	AL + AX		(∗3)	(∗3)	(∗3)	(∗5)	(∗5)
	AL + SHT or UVT		(∗1)	(∗1)	(∗2)	(∗1) (∗4) (∗5) (∗6)	(∗1) (∗4) (∗5) (∗6)
	AX + SHT or UVT		(∗1)	(∗1)	(∗2)	(∗1) (∗4) (∗5) (∗6)	(∗1) (∗4) (∗5) (∗6)
	AL + AX + SHT or UVT		(∗1) (∗3)	(∗1) (∗3)	(∗2) (∗3)	(∗1) (∗4) (∗5) (∗6)	(∗1) (∗4) (∗5) (∗6)

Circled numbers indicate the order of installation.

Note (∗1) If a UVT is used, the UVT voltage module is installed on the lead wire terminal block. (The SHT requires no voltage module.)
(∗2) If a UVT is used, the UVT voltage module is installed on the lead wire terminal block. (The SHT requires no voltage module.) No cassette is attached to the UVT.
(∗3) The second AX can be installed instead of the AL on the left pole.
(∗4) The standard mounting of the SHT and the UVT is performed on the right pole. If mounting on the left pole is required, contact us. (The UVTs for interlocks are mounted on the left pole.)
(∗5) We can manufacture the SLTs used when 3 or more accessories are installed on the left pole and the SLTs used when the AL and the AX are attached on the same pole that is attached with the SHT or the UVT at your order.
(∗6) If a UVT is used and an AL, an AX or an AL + an AX are attached to the same pole that is attached with the UVT, the UVT voltage module is separately installed.

4. Shunt Trip (SHT)

Table 5-9: Standard Coil Rating

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

Note (∗1) Secure a sufficient input power so that the voltage will not drop below the permissible lower working voltage (70% of the lowest rated voltage).
(∗2) The operating time denotes the time from when the rated voltage is applied to SHT until when the main contact of the breaker starts to open.

Table 5-10: Coil Ratings (List of manufacturable special voltages)

MCCB type	AC (V)				DC (V)									AC/DC (V)
	24	24~48	48	380 ~550	12	24	24~36	36	36~48	48	110	125	220 ~250	24 ~48
NF-C • S • H • U MB 32(30) • 63A Frame 125A Frame 160 • 250A Frame	–	●	–	–	●	–	●	–	●	–	–	–	●	–
NF400-CW/SW/SEW/HEW/REW, NF630-CW/SW/SEW/HEW/REW NF800-SDW/CEW/SEW/HEW/REW, NF400-UEW, NF800-UEW NV400-CW/SW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW, NV800-SEW/HEW	–	–	–	●	●	–	–	–	–	–	–	–	–	●
NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	●	–	●	–	●	●	–	●	–	●	●	●	–	–

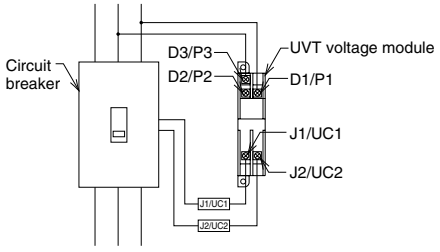
5. Undervoltage Trip (UVT)

Table 5-11: Coil Rating

Series	Voltage (V) (∗1)		Input power (VA)	Operating time (ms) (∗2) (∗3)
	Standard voltage	Special voltage (∗5)		
250AF and less	AC100-110/120-130 selectable 200-220/230-250 selectable 380-415/440-480 selectable (∗4) DC100/110 selectable	AC24/48 selectable 500-550/600 selectable DC24/48 selectable 110/125 selectable	5	30 or less
NF400-CW/SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW/UEW NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW NV800-SEW/HEW			5	5~30
NF1000-SEW NF1250-SEW/SDW NF1600-SEW/SDW			5	5~35

Note (∗1) A desired voltage can be selected by changing the terminal wiring.
(∗2) The operating time denotes the time from when no voltage is applied to UVT until when the main contact of the breaker starts to open.
(∗3) Time-delayed types can be produced. Details will be available upon request.
(∗4) Compatible to 50 and 60Hz
(∗5) Rated voltage differs according to make and country of manufacture.Please consult your dealer.

● **UVT Voltage Module**
The UVT voltage module is normally installed on the vertical lead-wire terminal unit (SLT). (A separate-mount type can be produced upon request.)



UVT Voltage Module Wiring Diagram
(Lead-Wire Connection)

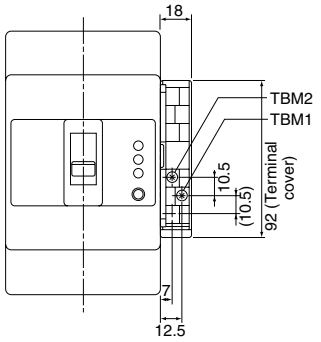
6. Test Button Module (TBM)

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

Table 5-12

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

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



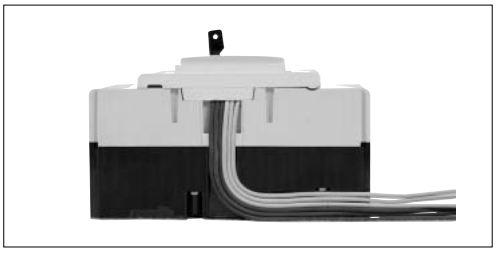
7. Lead-wire Specifications

Table 5-13

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

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

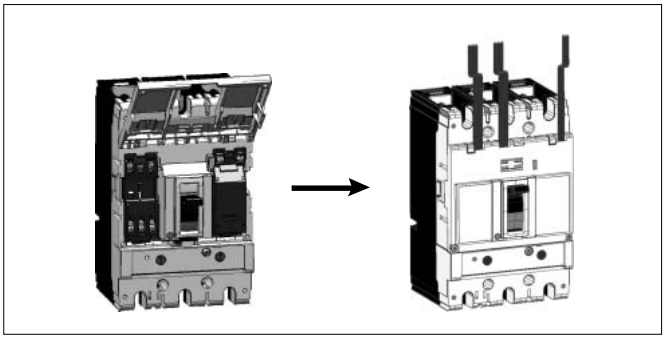
- Lead wires are normally extended laterally.
- Grooves are provided on the side of the breaker for extending lead wires on the side of the breaker (excluding models NF125-SGW/RGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/RGW/UGW, 400AF and higher).



8. Internal Terminal (INT)

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

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



9. Vertical Lead-wire Terminal Block (SLT)

- The circuit beaker can be mounted, being closely fitted to the unit.
- Terminal screws are arranged in a zigzag pattern, and screws can be tightened further after wiring.
- A terminal cover is provided.
- For models of front connection, rear connection, and plug-in type (excluding PLT).

■NFB

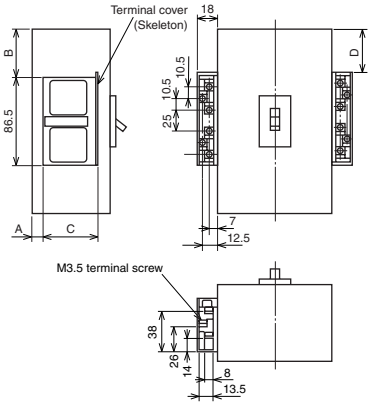


Table 5-14: Summary of Dimensions

Applicable models	A	B	C	D
NF30-CS, MB30-CS	4	4.5	44.5	4.5
NF32-SW, NF63-CW/SW/HW MB30-SW, MB50-CW/SW	7	17.5	54	17.5
NF50-SWU	7	27.5	54	27.5
NF125-CW/SW/HW	7	19	54	19
NF100-CWU, NF100-SWU	7	29	54	29
NF125-HGW, NF225-HGW	25	25	54	25
NF-SFW,NF-SJW, NF-HJW	25	35	54	35
NF250-CW/SW/HW, NF225-CWU, NF160-SW/HW	7	37	54	37
NF400-CW/SW/SEW/HEW/REW, NF-SKW, NF630-CW/SW/SEW/HEW/REW	41	79.5	54	79.5
NF800-CEW/SDW/SEW/HEW/REW, NF-SLW		88.5	54	88.5
NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW	62.5	173	52	173
NF400-UEW(3P)	138	119.5	54	119.5
NF400-UEW(4P), NF800-UEW		135.5	54	135.5

Remark: 1. Terminal screw tightening torque M3.5 ··· 0.9~1.2N·m

■NV

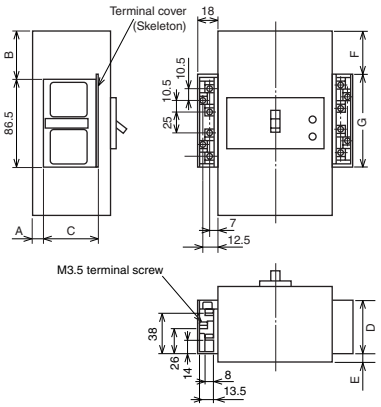


Table 5-15: Summary of Dimensions

Applicable models	A	B	C	D	E	F	G
NV30-CS	4	4.5	44.5	44.5	4	4.5	86.5
NV32-SW, NV63-CW/SW/HW	7	17.5	54	52	7	21.5	92
NV125-CW/SW/HW	7	19	54	54	7	19	86.5
NV250-CW/SW/HW, NV250-SEW/HEW, NV225-CWU	7	37	54	52	2.5	37	92
NV125-RW	7	80	54	54	7	80	86.5
NV250-RW	7	112	54	52	2.5	112	92
NV400-CW/SW/HW/HEW/REW, NV630-CW/SW/SEW/HEW	41	79.5	54	52	26.5	79.5	92
NV800-SEW/HEW	41	88.5	54	52	26.5	88.5	92

Remark: 1. Terminal screw tightening torque M3.5 ··· 0.9~1.2N·m
2. Lead-wire terminal block for TBL is attached to right-side.

■14 Terminals SLT

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

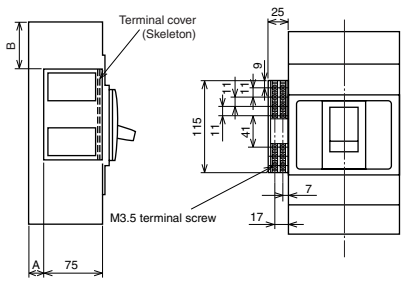


Table 5-16

Applicable models		A	B
NFB	NV		
NF400-CW/SW/SEW NF400-HEW/REW, NF-SKW NF630-CW/SW/SEW NF630-HEW/REW	NV400-CW/SW/SEW NV400-HEW/REW NV630-CW/SW/SEW/HEW	20	60
NF400-UEW(3P)	–	117	100
NF800-CEW/SDW/SEW NF800-HEW/REW, NF-SLW	NV800-SEW/HEW	20	69
NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	–	35	154
NF400-UEW(4P), NF800-UEW	–	117	116

Remark: 1. Terminal screw tightening torque M3.5 ··· 0.9~1.2N·m

10. Pre-Alarm Module (PAL)

This module gives an alarm when the load current exceeds a preset current level, securing a continuous power supply and preventing problems before they occur. Electronic breakers equipped with a digital ETR of 125 to 1600AF are optional (standard for some modules).

Table 5-17

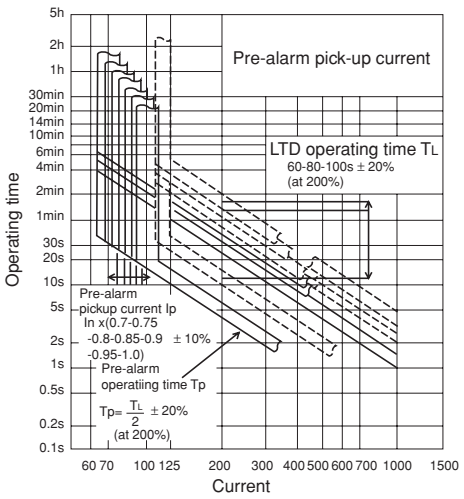
Type	Pre-alarm LED (Auto reset)	Solid-state relay (SSR) output-contact output (Auto reset)		Pre-alarm module-contact output (1a)		
			Switching capacity	(Self-holding)	Switching capacity	Reset system
NF125-SGW/HGW	Standard equipment	Option	24VDC 100-200VAC 20mA	Option	100VAC or 200VAC 2A	Press the reset switch or turn off control power.
NF160-SGW/HGW						
NF250-SGW/HGW						
NV250-SEW/HEW		—				
NF400-SEW NF400-HEW NF400-REW NF400-UEW NF630-SEW NF630-HEW NF630-REW NF800-CEW NF800-SEW NF800-HEW NF800-REW NF800-UEW NV400-SEW NV400-HEW NV400-REW NV630-SEW NV630-HEW NV800-SEW NV800-HEW		Option	24VDC 100-200VAC 20mA			
NF1000-SEW NF1250-SEW NF1600-SEW						

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

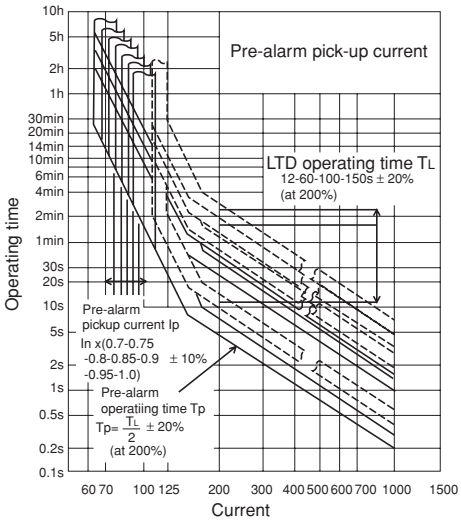
②Solid-state relay output — Open the upper cover of the circuit breaker, connect the lead-wire connector supplied, and use it as the lead wire outlet. In this case, only the lead wire outlet of the internal accessories can be attached to the right pole. (For flush-plate models, the outlet is already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

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

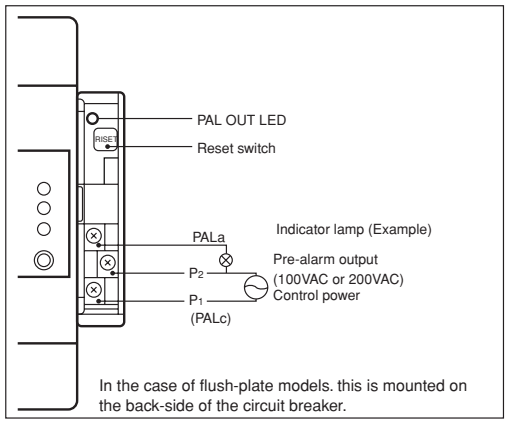
●Pre-alarm characteristics



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



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



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

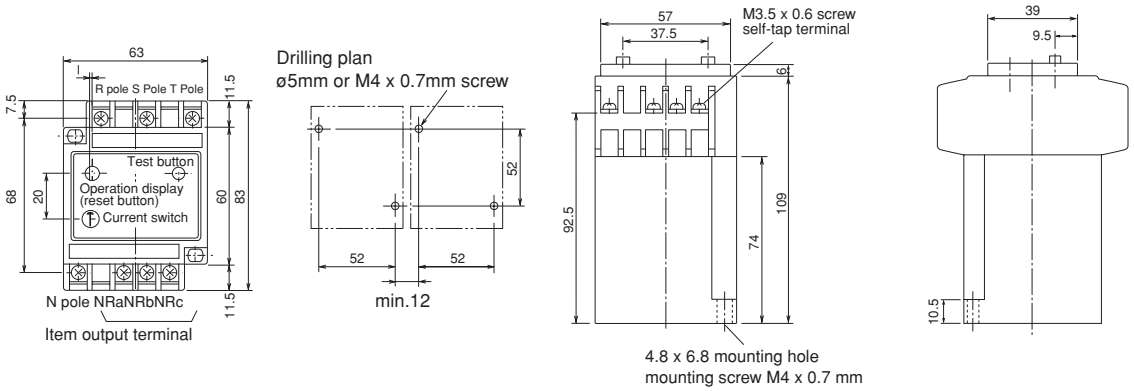
- In a 3-phase 4-wire circuits, the voltage rise of the circuit by phase failure of a neutral line is detected, and a contact output is taken out.

Table 5-18

Phase/wire type			3 ø 4W			
Rated voltage		VAC	415			
Usable supply voltage		VAC	304~484			
Tripping characteristics	Usable voltage (line voltage)	VAC	380	400	415	440
	Total operating overvoltage (phase voltage) (135% of total phase voltage)	VAC	296	312	323	343
	Total non-operating overvoltage (phase voltage) (120% of total phase voltage)	VAC	263	277	288	305
	Total overvoltage operating time	(s)	1			
	Overvoltage non-operating time	(s)	More than 0.1			
Trip indication method			Button			
Reset method			Reset button (open-phase display use)			
External output contacts			1c			

External output contacts	AC			DC	
	Voltage	cos ø		Voltage	L/R	
		1.0	0.4		0	0.007
	100, 120V	7A	7A	30V	7A	6A
	200, 240V	7A	7A	125V	0.6A	0.6A
	415V	5A	2A	250V	0.3A	0.3A

Remark: Using with a shunt-trip device (SHT) equipped breaker will improve tripping and phase protection.



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

Attaches to Main Body of Circuit Breaker

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

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

Door Lock Mechanism

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

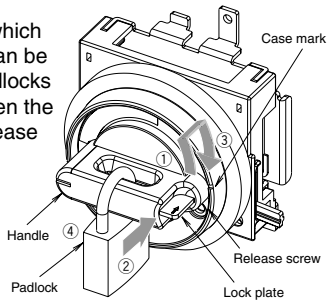
Operation Lock

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

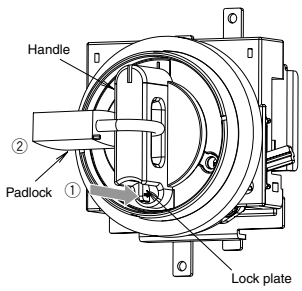
①**Turn the handle in the Reset direction to a position at which the marks on the lock plate and on the case are aligned.**
②**Push the lock plate in.**
③**While pushing the lock plate, return the handle to the OFF position.**
④**Lock by passing the padlock through the hole in the center of the handle.**

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

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



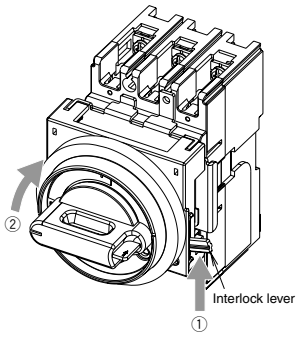
The ON/OFF lock specification enables the operation lock to be set even in the ON position. After pushing the lock plate with the handle in the ON position, attach the padlocks. Even in the case that the breaker has tripped after locking in the ON position, the operating handle displays the trip information.



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

Safety Device

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



Made-to-order

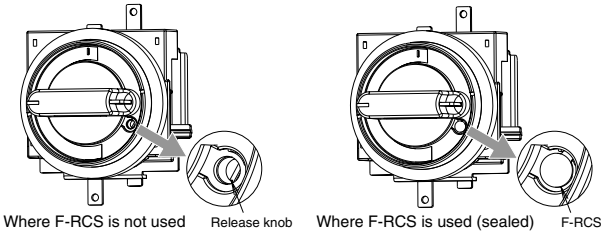
■Breaker mounting direction (Not including UL-listed products)
Even when a breaker is mounted horizontally, units can be made-to-order with the handle operation and ON/OFF indicators the same as standard vertical-mount models, and the same hole dimensions. Left- or right-facing power supply specifications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

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

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

Sealing-off the Release Knob

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



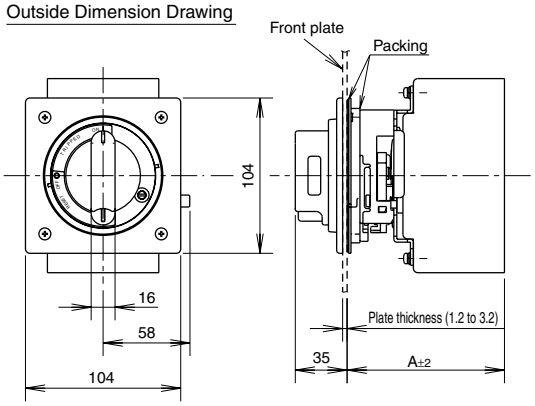
Note: For applicable lock devices, please refer to page 63.

5. Accessories
External Accessories

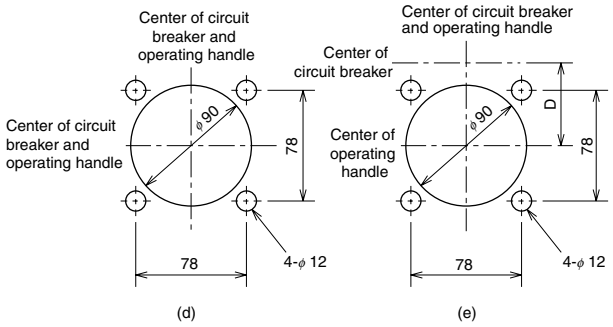
■Outside Dimension Drawing

250A Frame or Smaller

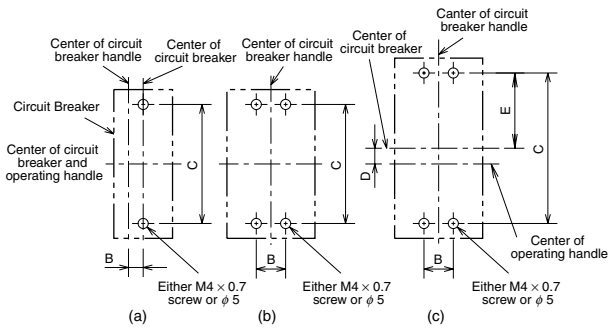
Outside Dimension Drawing



Front Plate Drilling Dimension Drawing

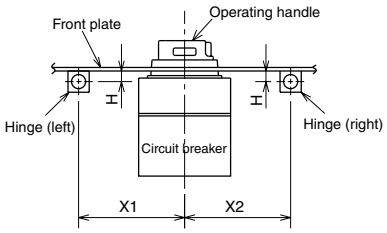


Circuit Breaker Mounting-Hole Drilling Dimension Drawing



Center of Hinge and Circuit Breaker

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



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

■Summary of Dimensions

Table 5-19

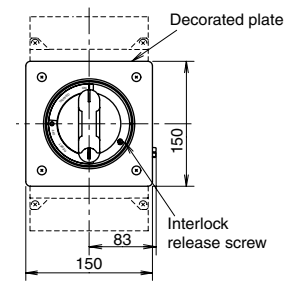
Type names	Applicable models (∗1)				Drilling plans	Dimensions (mm)				
	MCCB	Number of poles	ELCB/MCCB with ground fault protection	Number of poles		A	B	C	D	E
F-05S2, F-05SE2 (∗4)	NF32-SW, NF63-CW, NF63-SW, NF63-HW DSN32-SW, DSN63-CW, DSN63-SW	2	—	—	(a) (d)	105	12.5	111	—	—
F-05S, F-05SE	NF32-SW, NF63-CW,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

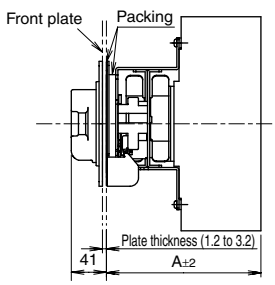
Note (∗1) As for applicable models other than those mentioned above, please contact us.
(∗2) Shows dimensions for front connection and rear connection types. For plug-in types, the reference surface changes.
(∗3) 4-pole plug-in type is a special type. For details, please contact us.
(∗4) When using with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

■Outside Dimension Drawing

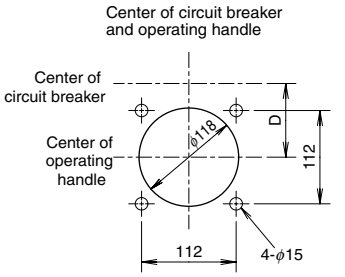
400~800A Frame

Outside Dimension Drawing

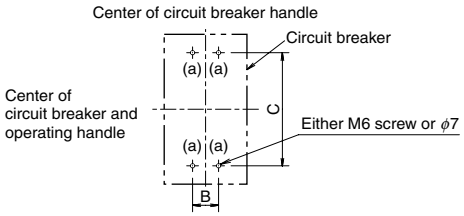




Front Plate Drilling Dimension Drawing

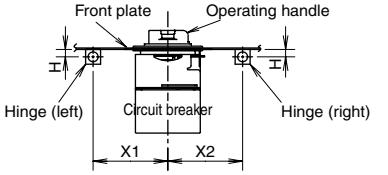


Circuit Breaker Mounting-Hole Drilling Dimension Drawing



Center of Hinge and Circuit Breaker

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



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

■Summary of Dimensions

Table 5-20

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

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

■Outside Dimension Drawing

Over 1000A Frame

Outside Dimension Drawing

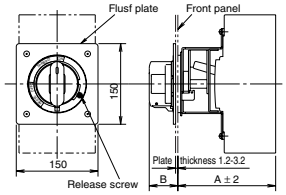
● Appearance (Color N1.5)

F4SW ~ F8UW

F10SW ~ F120UR4P

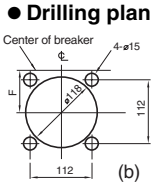
- Includes as standard a safety device which prevents breaker closing as long as the cover is open. (Specify if this safety feature is not required.)
- Indicates the tripping of the breaker even in ON-lock position--but only in cases when a single padlock (35mm, 40mm) is used.
- Degrees of protection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

● **External dimensions**

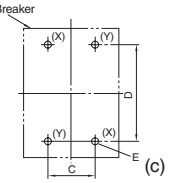


(a)

● **Drilling plan**



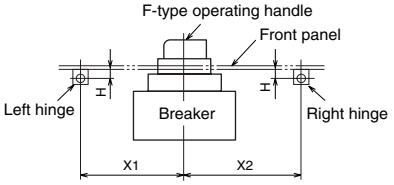
(b)



(c)

Center of Hinge and Circuit Breaker

Left hinge		Right hinge	
H	X1	H	X2
0 or more	(8H +150) or more	0 or more	(4H + 120) or more



The figure above shows the relationship between the hinge and breaker viewed from the load side of the breaker.

Table 5-21

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

Note (∗1) Handles with NV in the product name include a test button.
(∗2) Dustproof packing is also available as an option.
(∗3) Other optional handles can also be mounted.
(∗4) F4SW~F8UW are for isolation purposes. (Speify OFF lock only.)
(∗5) The figures show the dimensions of the front connection. Some connection and plug-in breakers have a different reference surface for mounting purposes.
(∗6) The standard type is equipped with a door-lock mechanism that allows the door to be opened only when OFF operation is carried out.
(∗7) In case of reset opened type use.

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

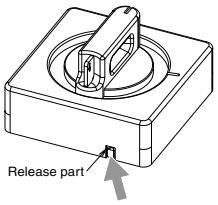
Operating handle attached to the panel door and control settings attached to the breaker body

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

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

Door Lock Mechanism

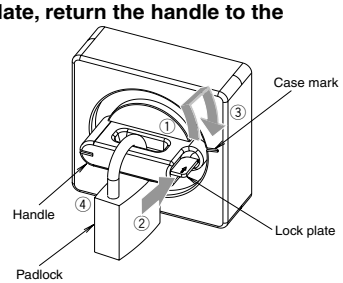
The panel door can be opened in the OFF position. In the ON and TRIP position, the panel door is locked so that it cannot be opened. However, you can still open the panel door in the ON and TRIP position by pushing the release tab in the direction of the arrow using a tool.



Operation Lock

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

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

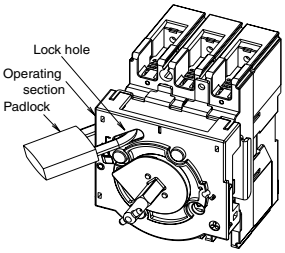


Three padlocks (35/40mm) which are commercially available can be installed.

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

Operation Lock While Panel Door Is Open

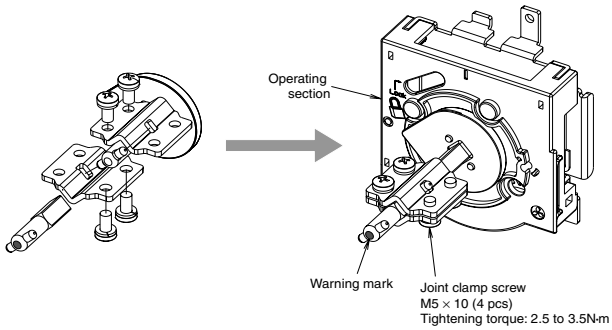
During checkup, etc. while the panel door is open, you can use the operation lock to prevent the breaker from being turned on by accident. Lock by passing a padlock through the lock hole of the operating section of the operating handle.



Adjustable Type

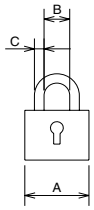
By mounting an adjustment unit V-AD3S or V-AD3L, separately available parts, to the built-in control settings, you can adjust the height between the breaker installation face and the panel door. Cut the shaft of the adjustment unit to fit the height.

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



Operation Lock Devices

(1) Padlock



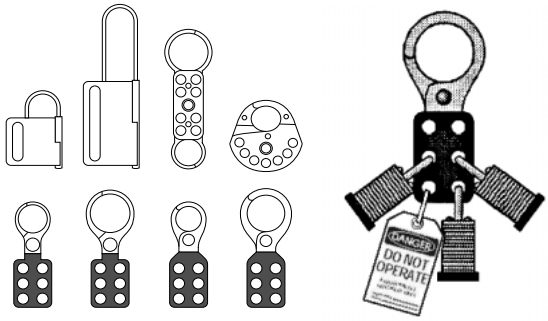
Padlock Dimensions

Use commercially available padlocks. (mm)

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

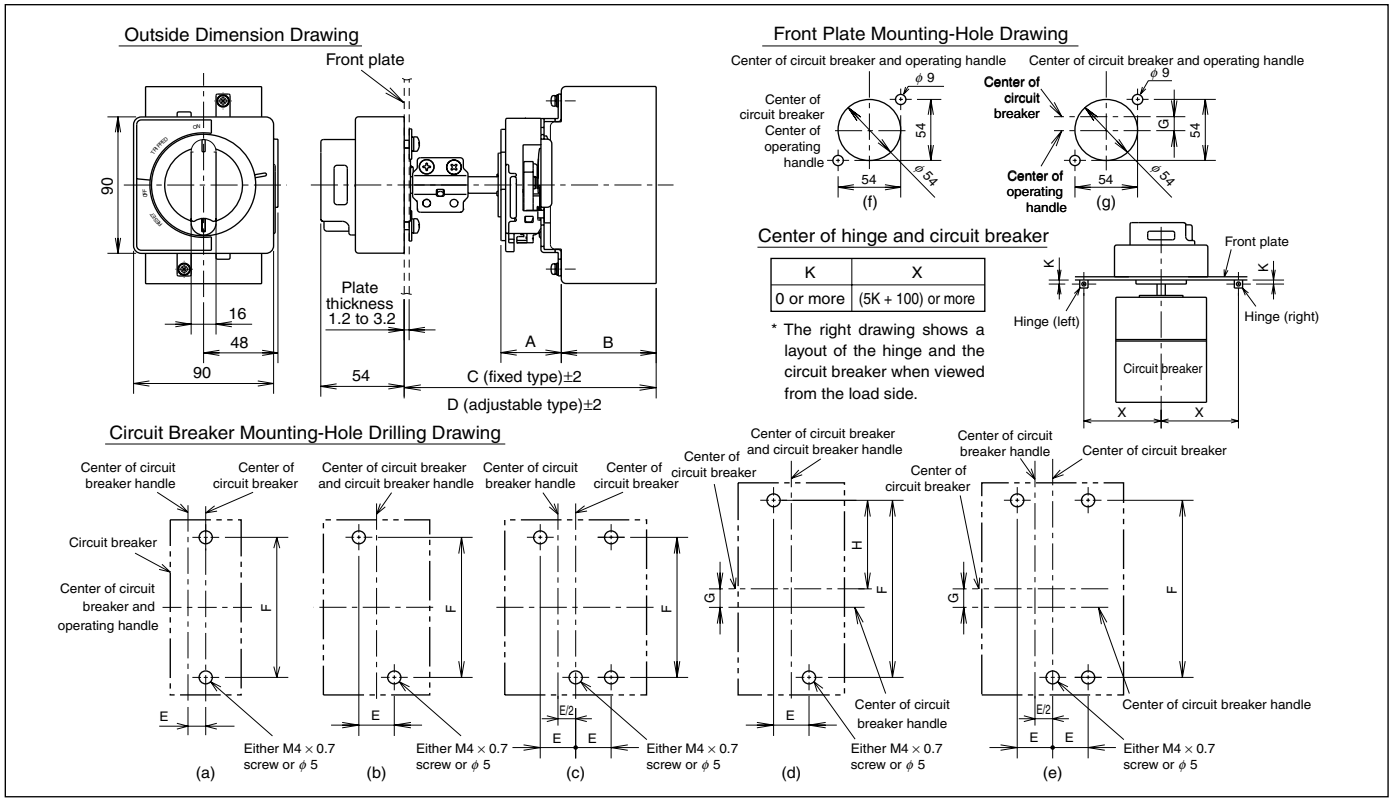
Dimension C: Maximum 8mm.

(2) Lockout Devices (Scissors Lock)



■Outside Dimension Drawing

250A Frame or Smaller



■Summary of Dimensions

Table 5-22

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

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

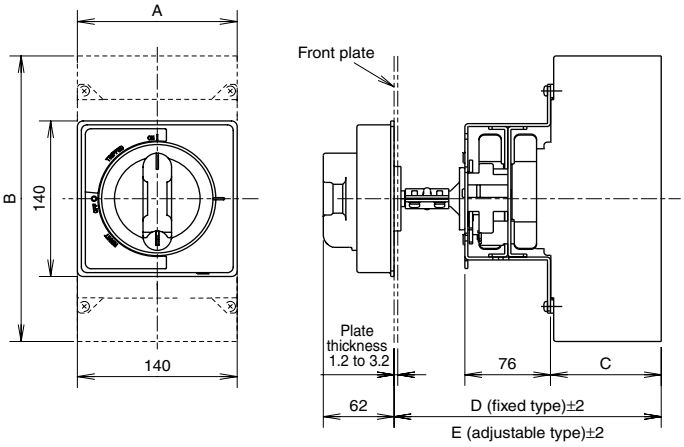
Remark: 1. Shows dimensions for front connection and rear connection types. For plug-in types, please contact us.

5. Accessories
External Accessories

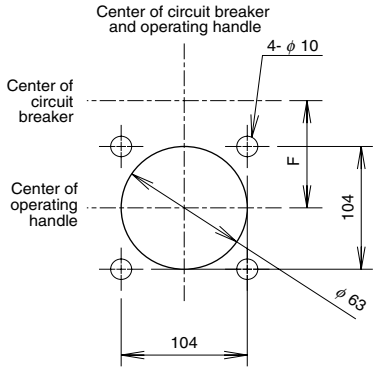
■Outside Dimension Drawing

400~800A Frame

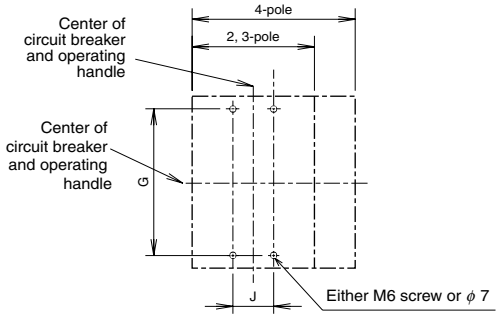
Outside Dimension Drawing



Front Plate Mounting-Hole Drawing

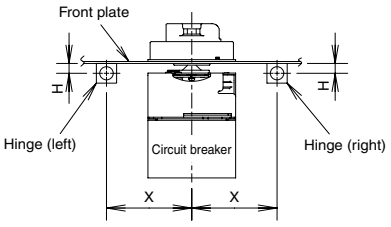


Circuit Breaker Mounting-Hole Drilling Drawing



Center of hinge and circuit breaker

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



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

■Summary of Dimensions

Table 5-23

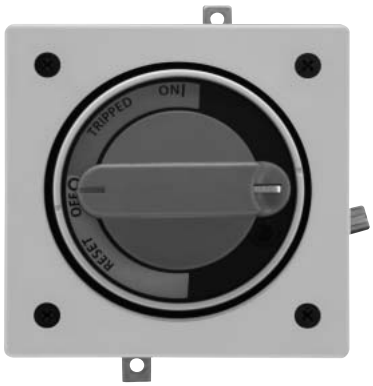
Type names	Applicable models (∗1)				Dimension (mm)								
	MCCB	Number of poles	ELCB/MCCB with ground fault protection	Number of poles	A	B	C	Fixed type D	Adjustable type (∗2) E (min.)	Adjustable type (∗2) E (max.)	F	G	J
V-4S, V-4SE	NF400-CW, NF400-SW, NF400-SEW, NF400-HEW, NF400-REW, DSN400-CW, DSN400-SW,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

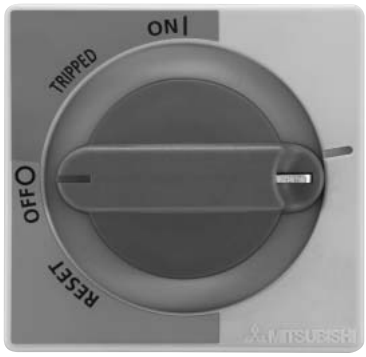
Note (∗1) As for applicable models other than those mentioned above, please contact us.
(∗2) As for the adjustable type, the dimensions shown above are those when the adjustment unit V-AD3L separately available is mounted.

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

■Appearance of 400~800A Frame

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





REFERENCE Requirements Regarding Operating Handles Covered by Standards Relating to Machinery

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

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

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

5. Accessories
External Accessories

■Operating Handles

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

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

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

Symbol	Specifications
LF	OFF-lock
LN	ON/OFF lock

Symbol	Specifications
DR	Reset open
DF	OFF open

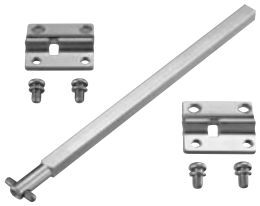
Symbol	Specifications
Blank	Power supply (upper)
Y	Power supply (left)
Z	Power supply (right)

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

■Adjustment Unit (for V-type operating handle)

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

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



■Release Protection (for F-type operating handle)

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

Type name
F-RCS

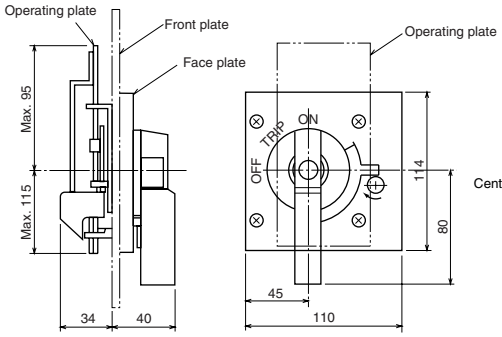
3. S-type Operating Handle

● Appearance (Color N1.5)

● The handle can be locked at either ON or OFF position. (Three padlocks (35mm, 40mm) can be installed. Off-position lock only specifications are also acceptable.)
● Digrees of protection (IEC 60529) IP5X

Remark: 1. Trip action can be displayed when the circuit breaker trips even if ON-position lock is selected (only in the case of a single padlock (35 mm)).

● Outside Dimension Diagram



● Front Plate Drilling Dimension Diagram

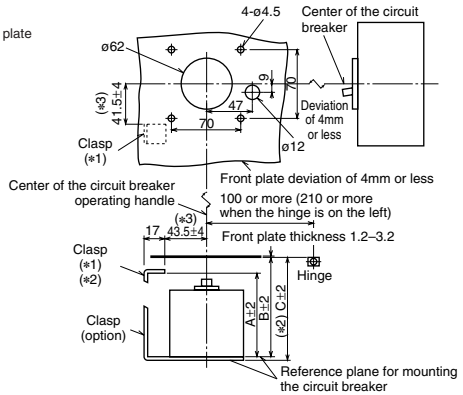


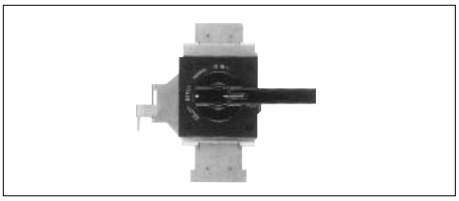
Table 5-24: Summary of Dimensions

Type name	Applicable models	Dimensions (mm)		
		A (∗4)	B (∗4)	C (∗4)
S05SW	NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW, MB30-SW, MB50-CW/SW	87	102	104.5
S1SW	NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, NV125-RW (∗5)			
S2SW	NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW NV250-SEW/HEW, MB225-SW, NV250-RW (∗5)	95	110	112.5
S2GSW	NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW	113	128	130.5

Note (∗1) The clasps are not supplied standardly, and should be prepared by users Details on dimensions and others will be available upon request.
(∗2) When the optional clasp is used.
(∗3) The tolerance from the center of ø62 is shown.
(∗4) The dimensions of the front-face type are shown. Some of the back-face and plug-in types have a different reference plane for mounting the circuit breaker.
(∗5) The front plate drilling dimensions for the U series differ from those shown above. Please consult us for their details.

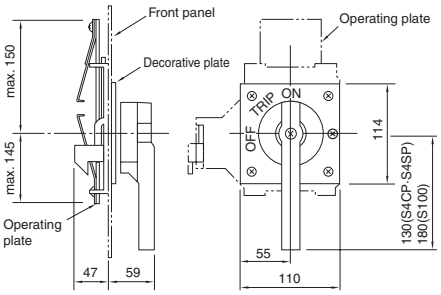
Remark: 1. Reset open-type
2. These are not suitable for isolation.

● Appearance (Color N1.5)



● Indicates the tripping of the breaker even in ON-lock position--but only in cases when a single padlock (35mm or 40mm) is used.
● Degrees of protection (in accordance with IEC 60529): IP5X.

● External dimensions



● Drilling plan

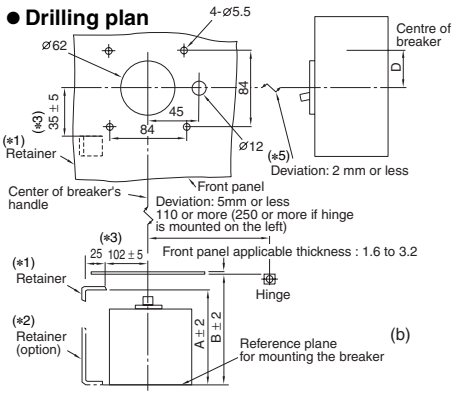


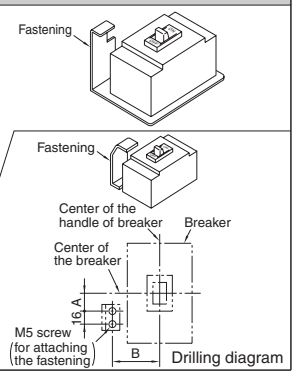
Table 5-25

Type	Breaker type	Fig		Dimensions (mm)			
		External dimensions	Drilling plan	A (∗4)	B (∗4)	C (∗4)	D
S4CW (∗5)	NF400-CW, NV400-CW	a	b	140	156	—	0
S4SW (∗5)	NF400-SW/SEW/HEW/REW, NV400-SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW NF800-CEW/SDW/SEW/HEW/REW, NV800-SEW/HEW	a	b	162	178	—	0
	NF400-UEW (3P)			259	275	—	20
	NF400-UEW (4P), NF800-UEW			259	275	—	23.5
S10SW	NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	a	b	199	215	—	0

Note (∗1) Retainers are not included. They must be provided by the customer.
(∗2) When using optional retainer.
(∗3) Shows the tolerance for the distance from the center of a 62mm dia. hole.
(∗4) The figures show the front-connection dimensions. Some rear-connection and plug-in breakers have a different reference surface for mounting purposes.
(∗5) S4CW and S4SW are for isolation purposes. (Specify OFF lock only.) The tolerance is less than 5mm. It does not conform to isolation purposes, however, if the deviation is more than 2mm.

Remark: 1. Reset open-type

●Surface plate interlocking fastening (separately available)

Operation handle series	Type	Breaker type		Dimensions (mm)		Drilling diagram and referential diagram
		MCCB	ELCB	A	B	
S-type	TG-S05SW	NF32-SW NF63-CW/SW/HW MB30-SW, MB50-CW/SW NF125-CW/SW/HW MB100-SW	NV32-SW NV63-CW/SW/HW NV125-CW/SW/HW	–	–	
	TG-S1UW (∗1)	NF125-RGW/UGW	NV125-RW			
	TG-S2SW (∗1)	NF160-SW/HW NF250-CW/SW/HW NF250-SEW/HEW,MB225-SW	NV250-CW/SW/HW NV250-SEW/HEW			
	TG-S2UW (∗1)	NF250-RGW/UGW	NV250-RW			
	TG-S2GSW (∗1)	NF125-SGW/HGW NF160-SGW/HGW NF250-SGW/HGW NF-SFW, NF-SJW, NF-HJW	–			
	TG-S4CW	NF400-CW	NV400-CW			
	TG-S4SW	NF400-SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW	NV400-SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW NV800-SEW/HEW	67	119	
	TG-S4UW	NF400-UEW (3P)	–	67	119	
		NF400-UEW (4P), NF800-UEW	–	87	119	
	TG-S10	NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	–	67	119	

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

5. Accessories

External Accessories

Ordering information

V – 1 S UL E 2
1) 2) 3) 4) 5) 6)

1) V : V-type Operating handle

2) 1 : Frame size of breaker
- 05····· NF32-SW, NF63-CW/SW/HW, MB30-SW, MB50-CW/SW, DSN32-SW, DSN63-CW/SW, NV32-SW, NV63-CW/SW/HW
- 1····· NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, DSN125-CW/SW, NV125-RW
- 2····· NF160-SW/HW, NF250-CW/SW/HW, MB225-SW, NV250-CW/SW/HW/SEW/HEW, DSN250-CW/SW, NV250-RW NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW, DSN125-SGW, DSN160-SGW, DSN250-SGW, NF125-RGW/UGW, NF250-RGW/UGW
- 4····· NF400-CW/SW/SEW/HEW/REW, DSN400-CW/SW, NV400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW, DSN630-CW/SW, NV630-CW/SW/SEW/HEW
- 8····· NF800-CEW/SDW/SEW/HEW/REW, NV800-SEW/HEW, DSN800-CW/SW

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

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

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

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

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

1) S : Operating handle type

2) 1 : Frame size of breaker
- 05····· NF32-SW, NF63-CW/SW/HW, MB30-SW, MB50-CW/SW, DSN32-SW, DSN63-CW/SW, NV32-SW, NV63-CW/SW/HW
- 1····· NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, DSN125-CW/SW, NV125-RW
- 2····· NF160-SW/HW, NF250-CW/SW/HW, MB225-SW, NV250-CW/SW/HW/SEW/HEW, DSN250-CW/SW, NV250-RW
- 2G···· NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW, DSN125-SGW, DSN160-SGW, DSN250-SGW
- 4····· NF400-CW/SW/SEW/HEW/REW, DSN400-CW/SW, NV400-CW/SW/SEW/HEW/REW, NF400-UEW NF630-CW/SW/SEW/HEW/REW, DSN630-CW/SW, DSN800-CW/SW, NF800-CEW/SDW/SEW/HEW/REW, NV630-CW/SW/SEW/HEW, NV800-SEW/HEW, NF400-UEW(4P) NF630-UEW, NF800-UEW

3) SW : Series name
- SW indicate WSS C, S and H series
- CW indicate WSS 400A frame C series

4) A : Handle lock position
- Blank····· ON/OFF position lock
- A····· OFF position lock only

S 10 SW
1) 2) 3)

1) S : Operating handle type

2) 10 : Frame size of breaker
- 10····· NF1000-SS/SSD, NF1250-SS/SSD, NF1600-SS/SSD, NF1250-UR

3) SW : Series name — SW indicate WSS

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

1) F : F-type Operating handle

2) 1 : Frame size of breaker
- 05····· NF32-SW, NF63-CW/SW/HW, MB30-SW, MB50-CW/SW, DSN32-SW, DSN63-CW/SW, NV32-SW, NV63-CW/SW/HW
- 1····· NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, DSN125-CW/SW, NV125-RW
- 2····· NF160-SW/HW, NF250-CW/SW/HW, MB225-SW, NV250-CW/SW/HW/SEW/HEW, DSN250-CW/SW, NV250-RW NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW, DSN125-SGW, DSN160-SGW, DSN250-SGW, NF125-RGW/UGW, NF250-RGW/UGW
- 4····· NF400-CW/SW/SEW/HEW/REW, DSN400-CW/SW, NV400-CW/SW/SEW/HEW/REW, NF400-UEW NF630-CW/SW/SEW/HEW/REW, DSN630-CW/SW, NV630-CW/SW/SEW/HEW
- 8····· NF800-CEW/SDW/SEW/HEW/REW, NV800-SEW/HEW, NF400-UEW(4P), NF800-UEW, DSN800-CW/SW

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

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

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

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

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

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

9) Y : Mounting direction
- Blank····· Vertically type (ON side of breaker is upper)
- Y····· Horizontally type (ON side of breaker is left)
- Z····· Horizontally type (ON side of breaker is right)

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

1) F : Operating handle type

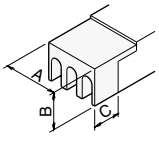
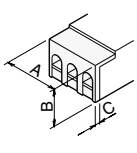
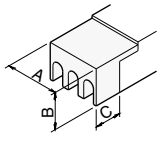
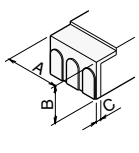
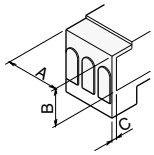
2) 10 : Frame size of breaker
- 10····· NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW

3) SW : Series name — SW indicate WSS

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

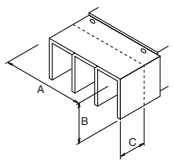
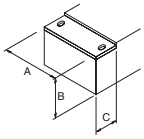
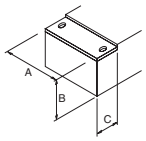
4. Terminal Cover

Table 5-26

Breaker type			Large terminal cover (TC-L)	Small terminal cover (TC-S)	Transparent terminal cover (TTC)	Rear terminal cover (BTC)	Plug-in terminal cover (PTC)
							
NF30-CS, MB30-CS	2P	IP20	TCL-03CS2W (43.5×30.5×25)	TCS-03CS2W (43.5×30.5×5)	TTC-03CS2 (43.5×30.5×25)	BTC-03CS2W (43.5×30.5×6.5)	—
NF30-CS, NV30-CS, MB30-CS	3P		TCL-03CS3W (67×30.5×25)	TCS-03CS3W (67×30.5×5)	TTC-03CS3 (67×30.5×25)	BTC-03CS3W (67×30.5×6.5)	—
NF32-SW, NF63-CW/SW/HW	2P		TCL-05SW2W (∗1) (50×65.5×25)	TCS-05SW2W (∗1) (50×65.5×5)	TTC-05SW2 (∗1) (50×65.5×25)	BTC-05SW2W (50×65.5×5)	PTC-05SW2W (50×65.5×6.5)
NF32-SW, NF63-CW/SW/HW NV32-SW, NV63-CW/SW/HW, MB30-SW MB50-CW/SW	3P		TCL-05SW3W (∗2) (75×65.5×25)	TCS-05SW3W (∗2) (75×65.5×5)	TTC-05SW3 (∗2) (75×65.5×25)	BTC-05SW3W (75×65.5×5)	PTC-05SW3W (75×65.5×6.5)
NF125-CW/SW/HW	2P		TCL-1SW2W (∗1) (60×65.5×40)	TCS-1SW2W (∗1) (60×65.5×6.5)	TTC-1SW2 (∗1) (60×65.5×40)	BTC-1SW2W (60×65.5×6.5)	PTC-1SW2W (60×65.5×6.5)
NF125-CW/SW/HW, NV125-CW/SW/HW, NV125-RW, MB100-SW	3P		TCL-1SW3W (∗2) (90×65.5×40)	TCS-1SW3W (∗2) (90×65.5×6.5)	TTC-1SW3 (∗2) (90×65.5×40)	BTC-1SW3W (90×65.5×6.5)	PTC-1SW3W (90×65.5×6.5)
NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW, NV250-SEW/HEW, NV250-RW MB225-SW	2P 3P		TCL-2SW3W (∗2) (105×65.5×40)	TCS-2SW3W (∗2) (105×65.5×6.5)	TTC-2SW3 (∗2) (105×65.5×40)	BTC-2SW3W (105×65.5×6.5)	PTC-2SW3W (105×65.5×6.5)
NF125-SGW/HGW/RGW/UGW, NF160-SGW/HGW NF250-SGW/HGW/RGW/UGW	2P 3P	IP40	TCL-2GSW3W (105×84×40)	TCS-2GSW3W (105×84×6.5)	TTC-2GSW3W (105×84×40)	BTC-2GSW3W (105×84×6.5)	PTC-2GSW3W (105×84×6.5)

Note (∗1) Attach the letter "F" to the end of model designation for models with F-type operating handle. (Those are F-type operating-handle dedicated models, and screws are used for fixing.)
(∗2) An F-type operating handle can be installed.
Remark: 1. Parenthesized numbers denote the outside dimensions (A×B×C in mm).
2. The terminal cover for a four-pole model can be produced upon request.

Table 5-27

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

Remark: 1. ( ) Shows external dimensions in mm. (A×B×C)
Note (∗1) Line side/Load side
(∗2) These covers can be mounted on plug-in type.
(∗3) Except for NF400/630-HEW/REW and NV400/630-HEW/REW.

5. Electrical Operation Device

● 250A Frame and less

Table 5-28: Summary of Model Designations

Applicable models (*1)		NF125-CW(3P) NF125-SW(3P, 4P) NF125-HW	NF160-SW/HW NF250-CW/SW/HW MB225-SW	NF125-SGW/HGW NF160-SGW/HGW NF250-SGW/HGW	NV125-CW/SW/HW	NV250-CW/SW/HW	NV250-SEW/HEW
Rated operating voltage	24V DC	MDSD024-NF1SWE	MDSD024-NF2SWE	MDSD024-NF2GSWE	MDSD024-NV1SWE	MDSD024-NV2SWE	MDSD024-NVE2SWE
	48-60V DC	MDSD060-NF1SWE	MDSD060-NF2SWE	MDSD060-NF2GSWE	MDSD060-NV1SWE	MDSD060-NV2SWE	MDSD060-NVE2SWE
	Compatible to 100-240V AC/100-250V DC	MDSAD240-NF1SWE	MDSAD240-NF2SWE	MDSAD240-NF2GSWE	MDSAD240-NV1SWE	MDSAD240-NV2SWE	MDSAD240-NVE2SWE

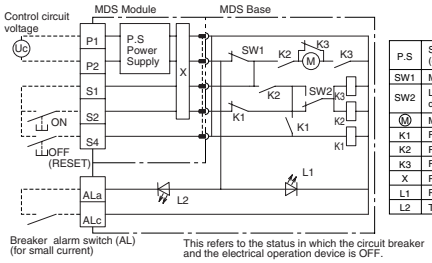
Note (*1) Place an order of other models in conjunction with the circuit breaker.

Table 5-29: Specifications

Rated operating voltage (Allowable voltage range 85~110%)		24V DC	48-60VDC	Compatible to 100-240V AC/100-250V DC
Operating time (s)	ON action	0.05–0.1		
	OFF action	0.6 or less		
	Charging action	1.2 or less		
Power requirement (VA)		150		

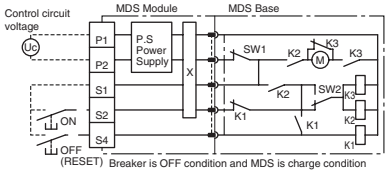
Remark: 1. The standard terminal cover can be used.
2. Please contact us for details of the outside dimensions.

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



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

others



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

● 400A Frame and more

Motor-drive type (2) (MD)

Spring-charged type (MDS)

Table 5-30

MCCB type	NF-C series	NF400-CW NF630-CW NF800-CEW	—	NF400-CW NF630-CW NF800-CEW		—	
	NF-S·H series	NF400-SW NF400-SEW/HEW/REW NF630-SW NF630-SEW/HEW/REW NF800-SEW/HEW/REW	NF1000-SEW NF1250-SEW NF1250-SDW NF1600-SEW NF1600-SDW	NF400-SW NF400-SEW/HEW/REW NF630-SW NF630-SEW/HEW/REW NF800-SEW/HEW/REW		NF1000-SEW NF1250-SEW NF1250-SDW NF1600-SEW NF1600-SDW	
	NF-U, MB series	NF400-UEW NF800-UEW	—	NF400-UEW NF800-UEW		—	
ELCB type	NV-C series	NV400-CW NV630-CW	—	NV400-CW NV630-CW		—	
	NV-S·H series	NV400-SW NV400-SEW/HEW/REW NV630-SEW/HEW NV800-SEW/HEW	—	NV400-SW NV400-SEW/HEW/REW NV630-SEW/HEW NV800-SEW/HEW		—	
	MN series	—	—	—		—	
Electrical operation system		Motor-drive type (2)	Motor-drive type (2)	Spring-charged type		Spring-charged type	
Rated operating voltage (V) (Allowable voltage range 85~110%) (*1)		100/110VDC, 100/110VAC, 200/220VAC (125VDC, 240VAC)					
				OFF	ON	OFF	ON
Operating current (A, rms) (*1)	DC 100/110V	3.0 (8.0)	4.0 (8.0)	1.0 (3.0)	8	1.0 (3.0)	9
	AC 100/110V	4.0 (8.0)	5.0 (10.0)	1.0 (3.0)	10	1.0 (3.0)	10
	AC 200/220V	2.0 (4.5)	3.5 (7.0)	0.5 (1.5)	8	0.5 (1.5)	8
Operating time (s)	On	Less than 0.3 (self-holding)	Less than 0.3 (self-holding)	0.05		0.07	
	Off			Less than 3 (self-holding)		Less than 3 (self-holding)	
Required transformer capacity (VA)		400	700	700		700	
Endurance voltage (V)		1500					

Note (*1) ( ) voltages are special options and might require an external resistor. For details, consult your dealer.
(*2) ( ) shows starting currents.

General precautions for motor-operated electrical MCCBs

- Motor-operated types have intermittent ratings, and therefore they should not be operated more than 10 times consecutively (one on/off counts as an operation).
- The operating voltage should be between 85~110% of the rated control voltage.
- When the breaker is tripped by trip button or breakdown (i.e., overload or short circuit), the breaker will not show that it has been tripped (except for motor-operated type 1 breakers).
- The dielectric strength of the electrical operating circuits is 1500V. When performing a dielectric strength test simultaneously with another device at a voltage over 1500V, the operating circuit terminal should be disconnected.
- Please insulate each electric operation device by the relay when two or more electric operation devices are limped together and operated.

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

Automatic Reset

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

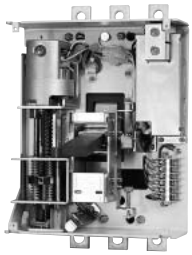
Electrically Operated MCCBs and ELCBs

Motor-operated type (2)

- Electrical operation
  Forward and reverse motor rotation is changed by ball screw to switch the breaker ON and OFF (reset).
- Manual operation
  The manual operation handle can be used to switch the breaker ON and OFF directly.
- Cautions during electrical operation

1. In case the UVT operates and a circuit breaker trips if the breaker has a UVT, the re-closing procedure may differ according to the state of the breaker before tripping.
   When the circuit breaker trips while turned ON..... Reset (OFF) -> Turn ON
   When the circuit breaker trips while turned OFF..... Turn ON (idle tripping) -> Reset (OFF) -> Turn ON
   (If it fails to turn ON (idle tripping), please operate Reset (OFF) and turn ON.)
2. Do not send ON and OFF signals consecutively. An interval of at least 0.5s is required between each ON and OFF.
3. For models with auto reset capability, resetting after an NFB trip should be performed after an interval of 0.5s.
4. The electrical operating device is equipped with a pumping prevention circuit. Although it is possible to set the device to OFF while it is set to ON, it is impossible to return it to ON immediately. To return to ON, first shut off the ON switch, then set it back to ON.
5. Special care is required during electrical operation because the manual operation handle moves at high speed. Also be sure to turn off the circuit power supply when using manual operation.
6. With manual operation, ensure that the handle is fully extended.

Manual operation

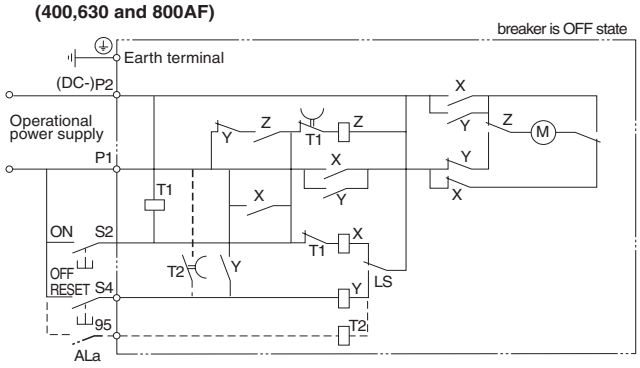


Internal structure

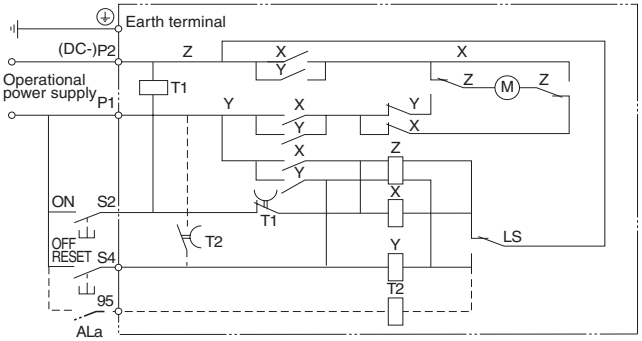
Control circuit

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

(1) Control circuit 1.
(400,630 and 800AF)



(2) Control circuit 2.
(NF1000-SEW to NF 1600-SEW)

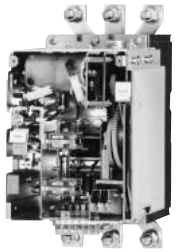


M :Motor
X :Relay for ON operation
Y :Relay for OFF operation
Z :Relay for changing Motor polarity
T1 :Timer for antipumping
T2 :Timer for automatic reset
LS :Limit Switch
ALa :Alarm switch for automatic reset (a contact)

5. Accessories
External Accessories

Spring-charged type

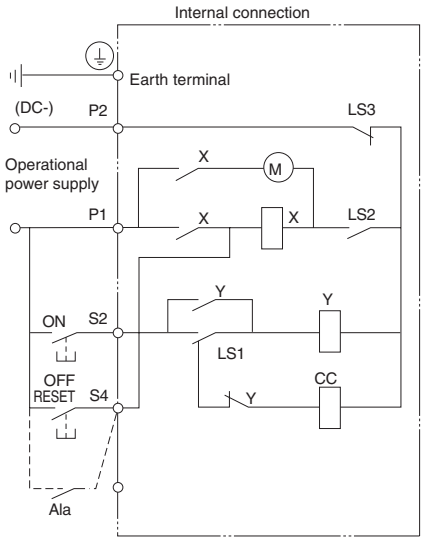
- Electrical operation
  When the ON switch is closed, the coil is excited to release the latch mechanism and the force of the closing spring turns the breaker ON instantly.
  When the OFF switch is closed, a relay starts the motor which turns the breaker OFF and charges the spring simultaneously.
- Manual operation
  Pressing the ON button will release the latch mechanism and the force of the closing spring turns the breaker ON instantly.
  Pressing the leaf spring, pulling out the manual handle and pumping it back and forth over 10 times will turn the breaker OFF and charge the spring at the same time.
- Cautions during electrical operation
  Whenever an electrical operation device is to be installed in or removed from the breaker, the breaker must be tripped and the device discharged.
  Pushing the TRIP button on an MCCB with an electrical-operation device installed will not trip the breaker in the OFF state. This does not mean the breaker is faulty.
  Switching OFF a breaker with an electrical-operation device installed will take 3s. If instant opening is required, install an SHT or UVT to the breaker.
- The breaker contains a built-in pumping-prevention relay.



Internal structure

Control circuit

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



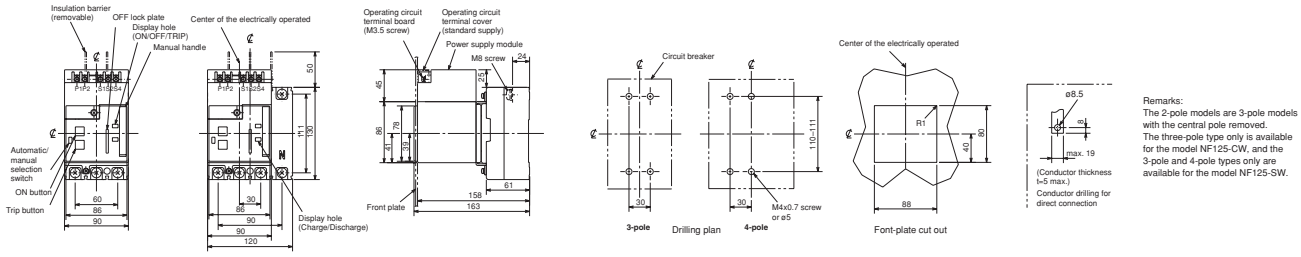
Alarm switch for automatic resetting (contact a)

CC.....Coil for making
Y.....Relay for pumping prevention
X.....Relay for self-sustaining on OFF side
LS1...Limit switch interlocking with cam
LS2...Limit switch interlocking with cam
LS3...Limit switch interlocking with OFF lock plate
M....Motor

Dimensions

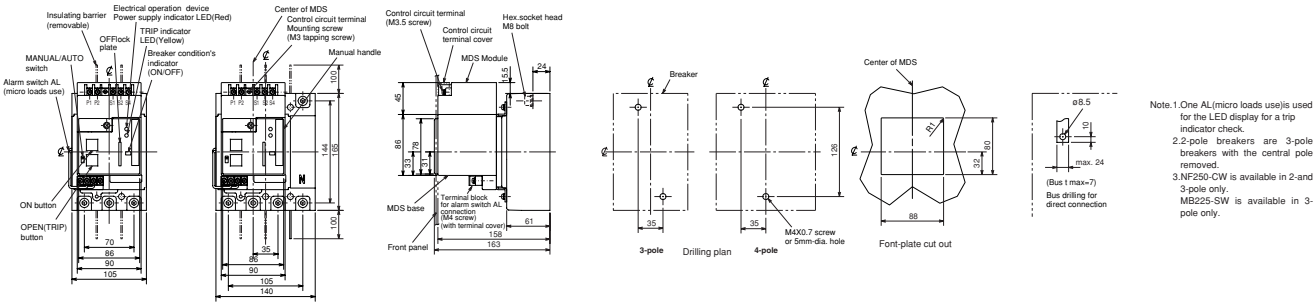
Front connection

● NF125-CW, NF125-SW, NF125-HW



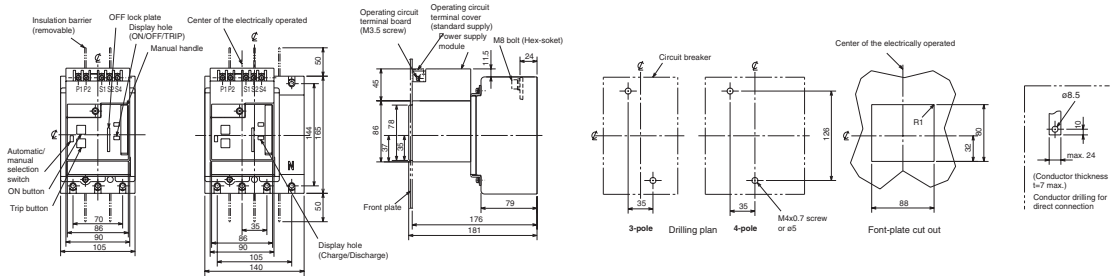
Remarks:
The 2-pole models are 3-pole models with the central pole removed.
The three-pole type only is available for the model NF125-CW, and the 3-pole and 4-pole types only are available for the model NF125-SW.

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

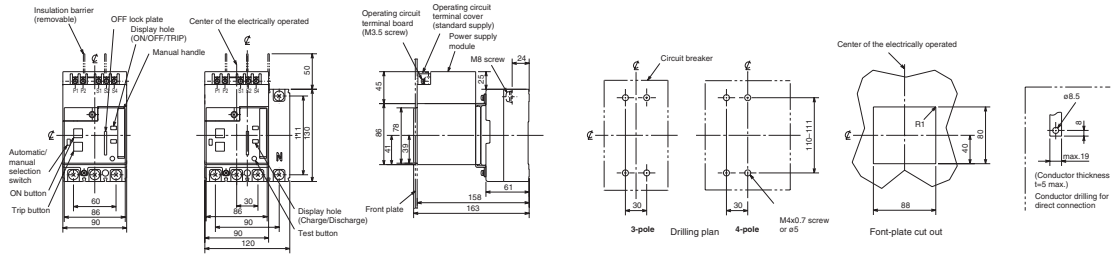


Note.1.One AL(micro loads use)is used for the LED display for a trip indicator check.
2.2-pole breakers are 3-pole breakers with the central pole removed.
3.NF250-CW is available in 2-and 3-pole only.
MB225-SW is available in 3-pole only.

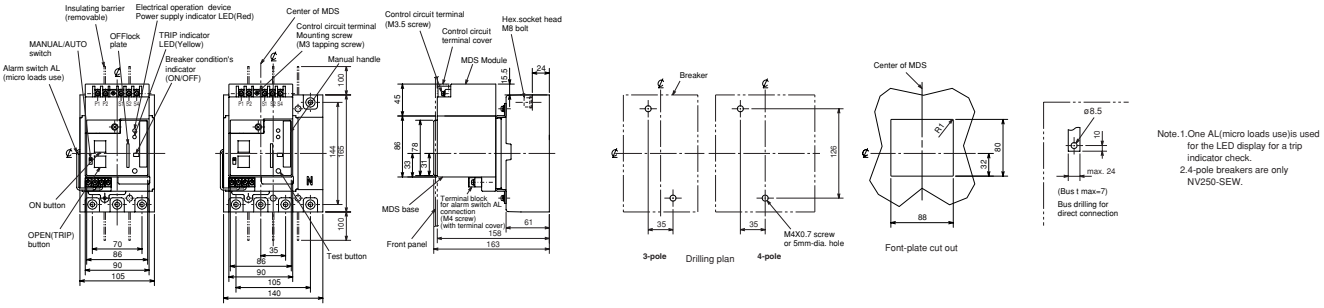
● NF125-SGW, NF125-HGW, NF160-SGW, NF160-HGW, NF250-SGW, NF250-HGW



● NV125-CW, NV125-SW, NV125-HW



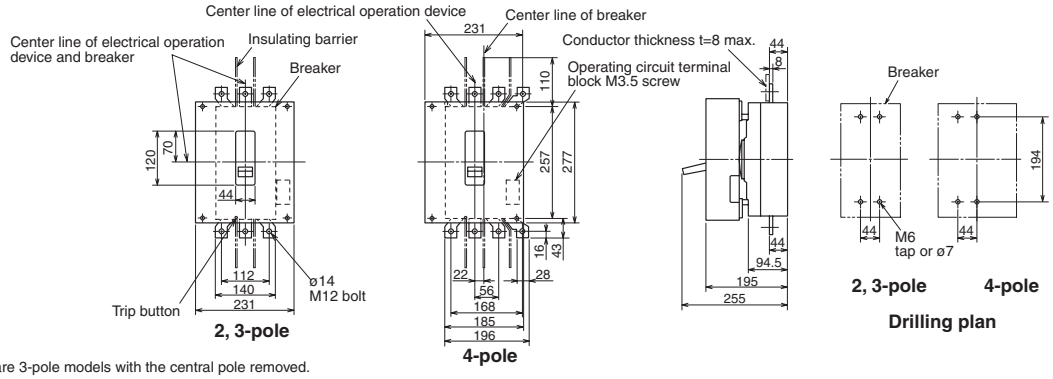
● NV250-SEW, NV250-HEW



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

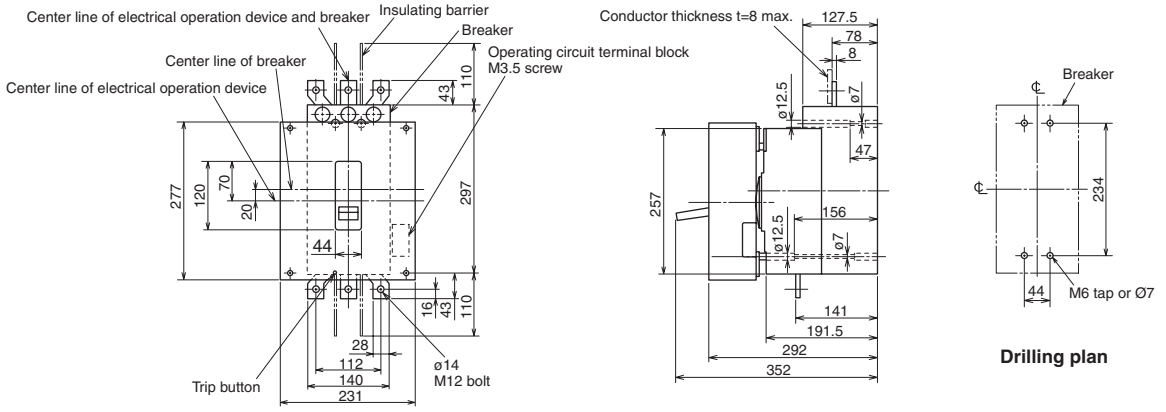
Front connection

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

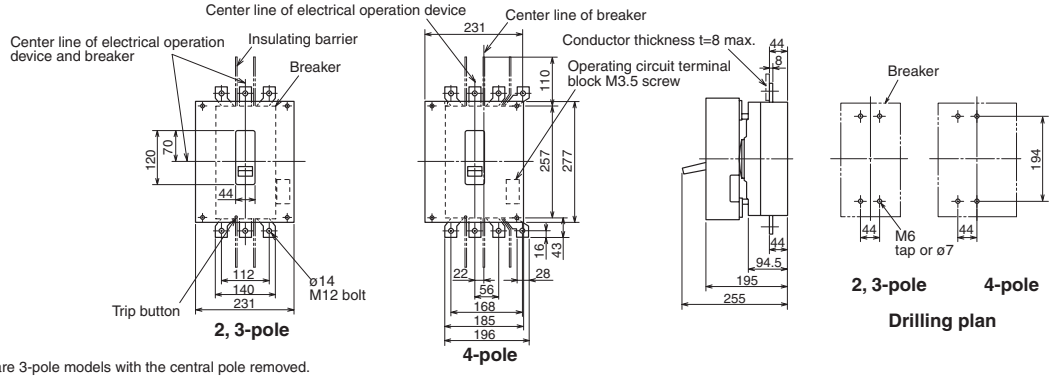


Remark: 2 pole models are 3-pole models with the central pole removed.

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

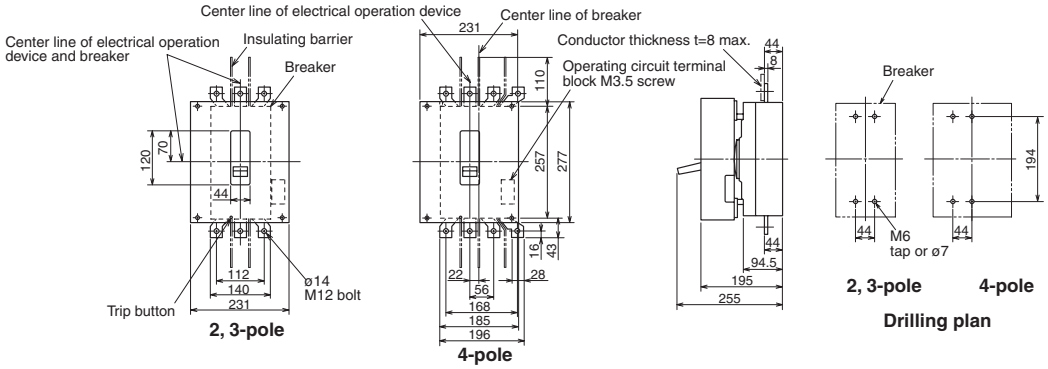


● NV400-CW, NV400-SW, NV400-SEW, NV400-HEW, NV400-REW Motor drive type (2)



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

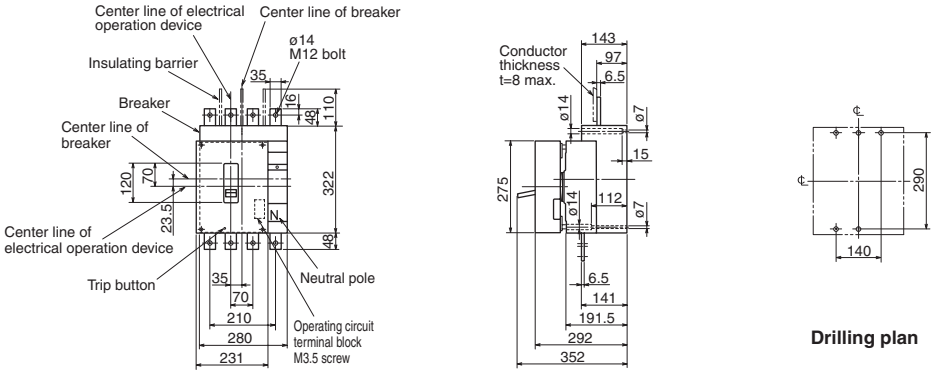
● NF630-CW, NF630-SW, NF630-SEW, NF630-HEW, NF630-REW Motor drive type (2)



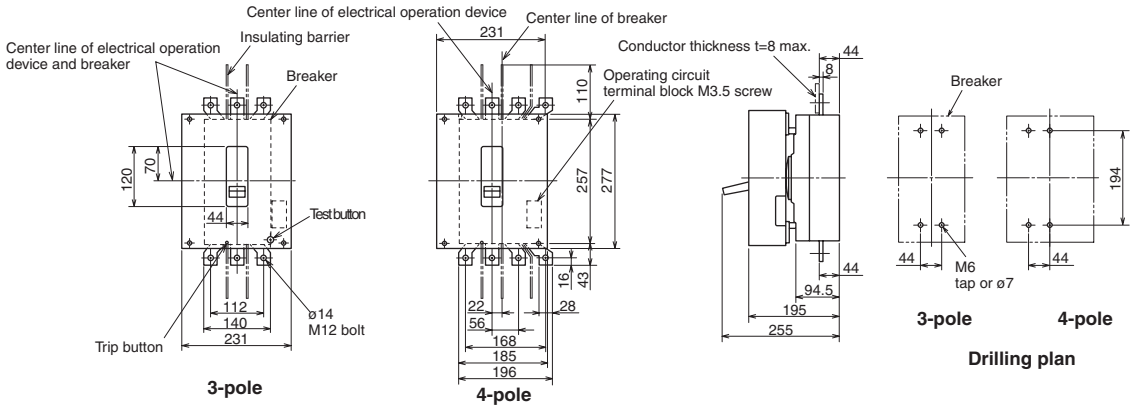
Remark: 2 pole models are 3-pole models with the central pole removed.

Front connection

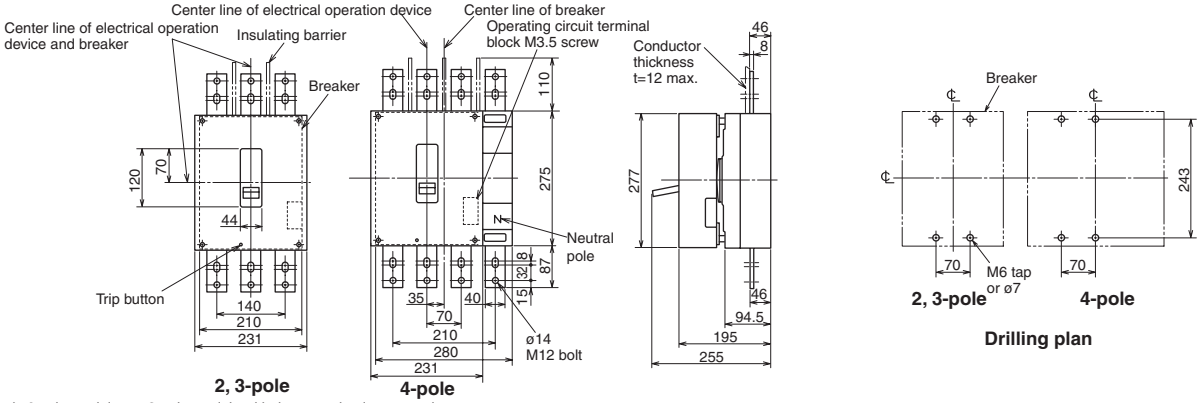
● NF400-UEW 4-pole Motor drive type (2)



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

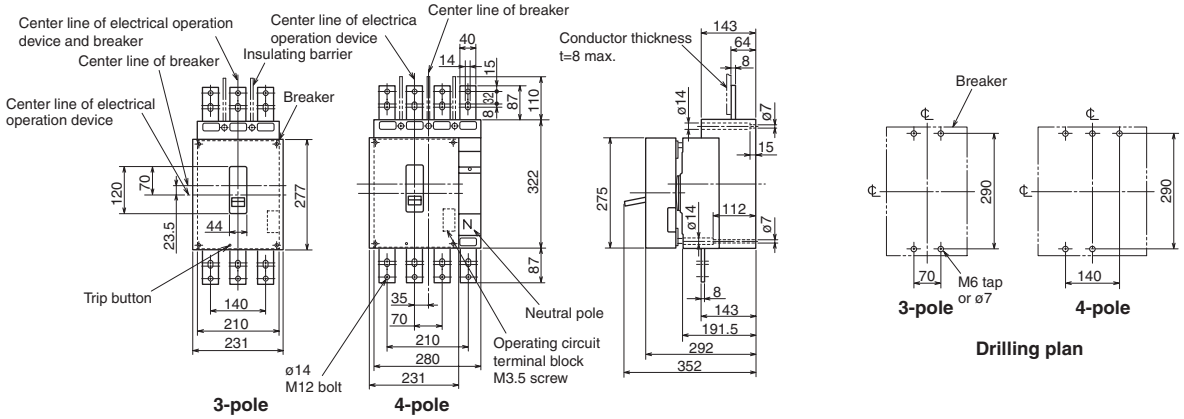


● NF800-CEW, NF800-SDW, NF800-SEW, NF800-HEW, NF800-REW Motor drive type (2)



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

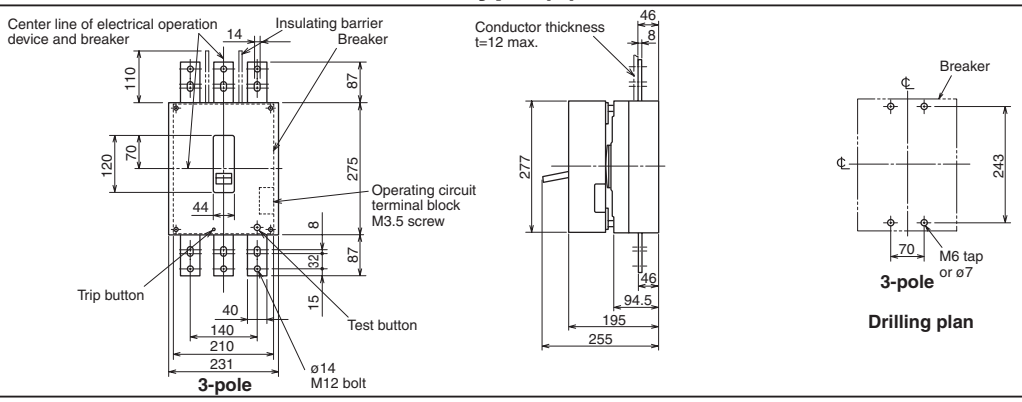
● NF800-UEW Motor drive type (2)



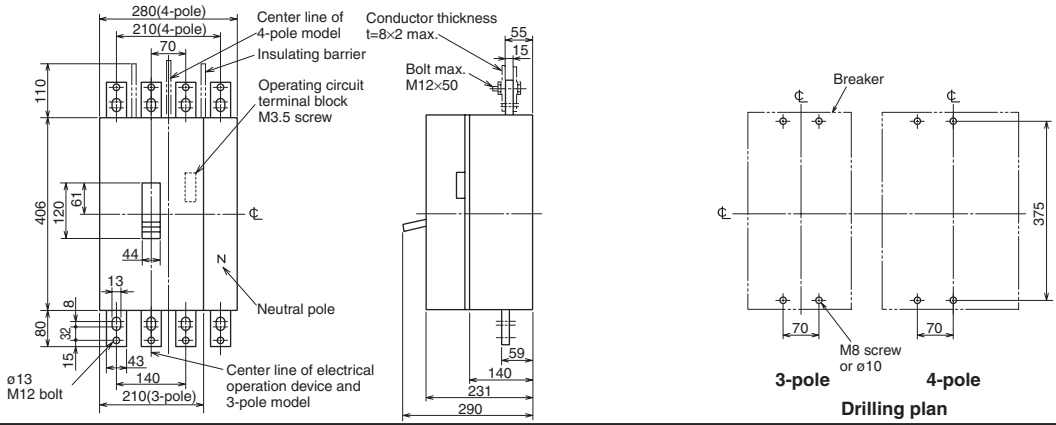
5

Front connection

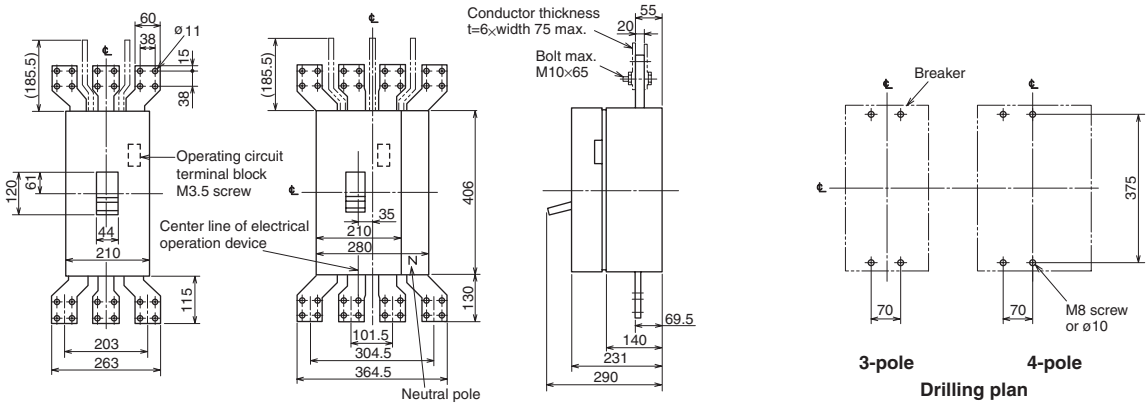
● NV800-SEW, NV800-HEW Motor drive type (2)



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

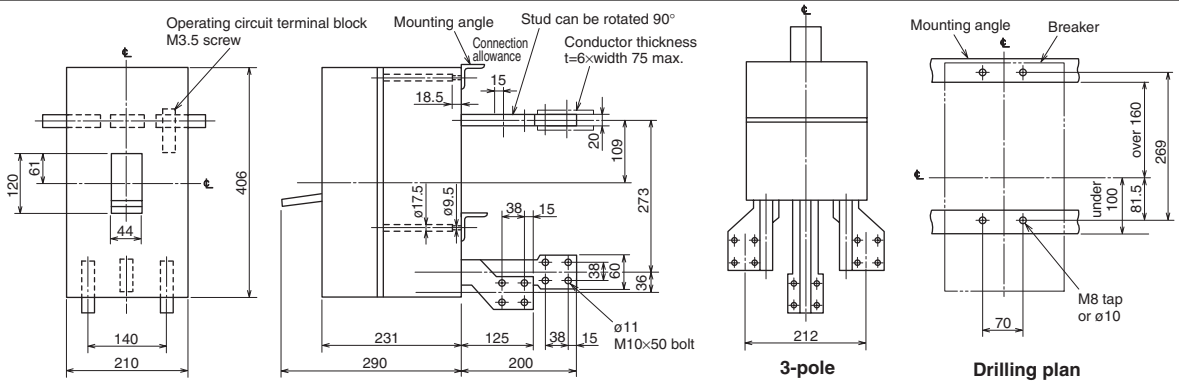


● NF1600-SEW, NF1600-SDW Motor drive type (2)

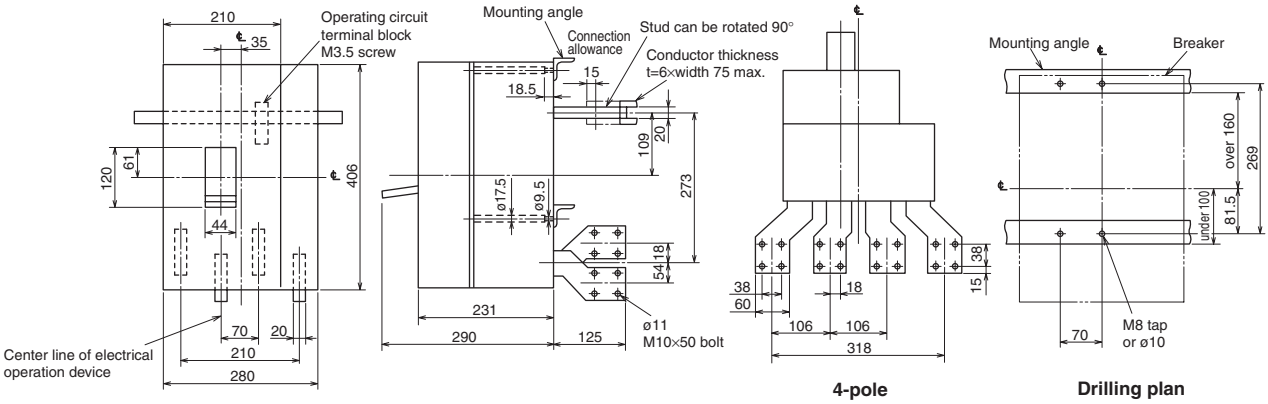


Rear connection

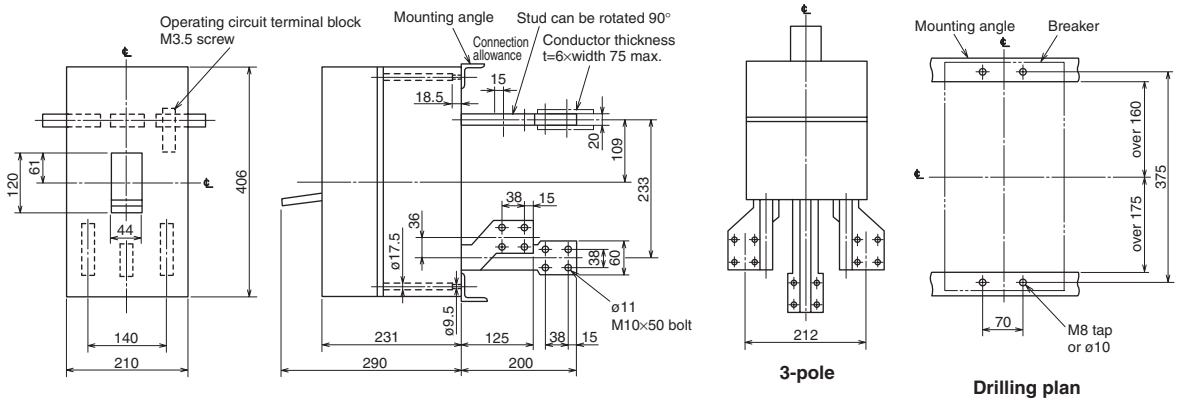
● NF1600-SEW (3-pole) Motor drive type (2)



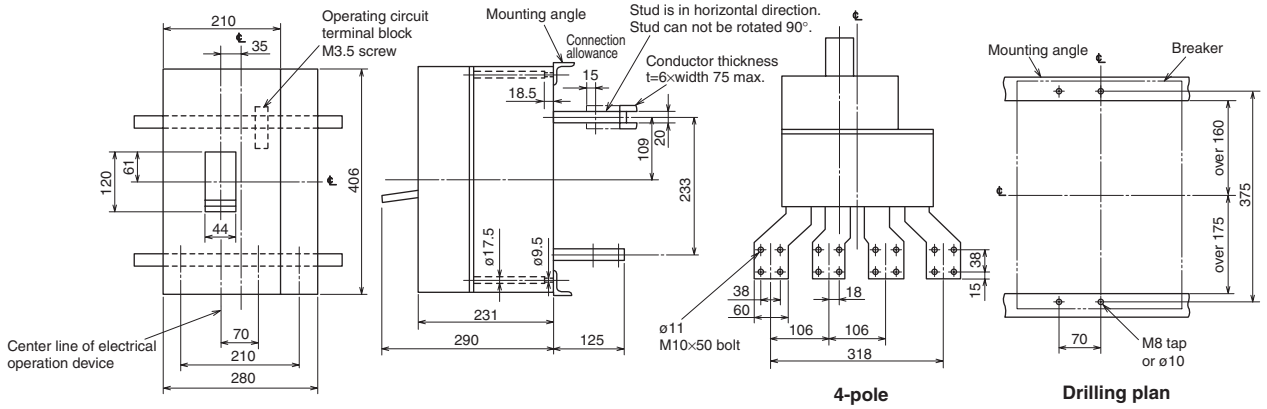
● NF1600-SEW (4-pole) Motor drive type (2)



● NF1600-SDW Motor drive type (2)



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



5

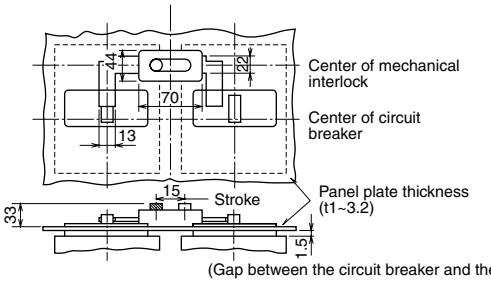
6. Mechanical Interlocks (MI)

Table 5-33

Applicable models	Number of poles	Panel mouting		Direct mount on circuit breaker
		Front connection, Rear connection, Plug-in	Dimension A mm	
NF32-SW, NF63-CW/SW/HW	2P	MI-05SW3	47.5	–
NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW, MB30-SW, MB50-CW/SW	3P		–	MI-05SWFB3
NF63-SW/HW	4P	MI-05SW4		–
NF125-CW/SW/HW	2P	MI-05SW3	45	–
NF125-CW/SW/HW, NV125-CW/SW/HW, MB100-SW, NV125-RW	3P			MI-1SWFB3
	4P	MI-1SW4		–
NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW, NV250-SEW/HEW, MB225-SW, NV250-RW	2P 3P	MI-05SW3	–	MI-2SWFB3
NF160-SW/HW, NF250-SW/HW, NV250-SW/HW/SEW/HEW	4P	MI-2SW4		–
NF125-SGW/HGW/RGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/RGW/UGW	3P	MI-05SW3		MI-2GSWFB3
NF125-SGW/HGW/UGW, NF160-SGW/HGW, NF250-SGW/HGW/UGW	4P	MI-2SW4		–

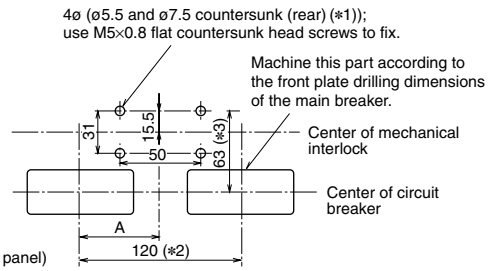
● **Outside Dimension Diagram**

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



● **Drilling Dimension Diagram**

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



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

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

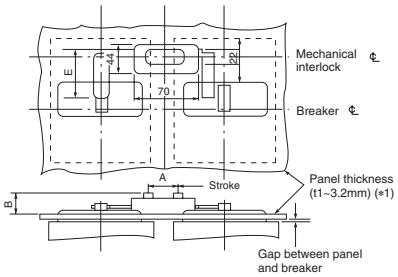
● Front, Rear, Plug-in

With two breakers, use a panel-mounted mechanical interlock for one-way only input.
A breaker-mounting mechanical to mount on the breaker main unit can be made to order. Consult your dealer for more details.

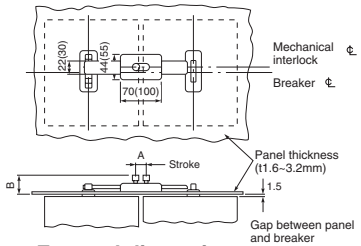
Breaker mounting (front)

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

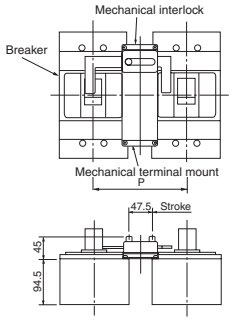
Front, Rear, Plug-in (panel mounting)



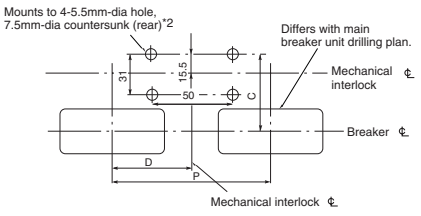
External dimensions



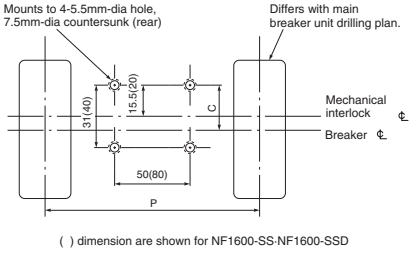
External dimensions



External dimensions

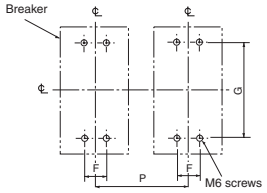


Drilling plan
Fig.1



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

Drilling plan
Fig.2



Drilling plan(breaker mount)
Fig.3

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

● Table of Altered Dimensions

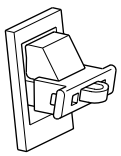
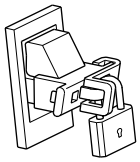
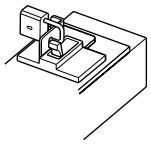
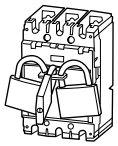
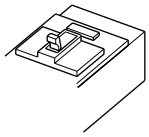
Table 5-34

Breaker type		Pitch (P) (∗1)						Dimensions (mm)						Breaker mount (∗4)	
MCCB	ELCB	Standard			Special Standard		Standard	t	A	B	C (∗3)	D	E	Fig.	Type	Fig.
		Type	2P	3P	3P		Type	4P							3P	
NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW	MI-4SW3	190		–	210	MI-4SW4	250	(∗2) –	47.5	33	83.5	–	74	Fig.1	MI-4SWFB3	Fig.3
NF400-UEW(3P)	–		–	190								63.5				–	
NF800-CEW/SDW/SEW/HEW/REW	NV800-SEW/HEW	MI-8SW3	220		240	–	MI-8SW4	290		47.5	33	83.5	–	74		MI-8SWFB3	
NF400-UEW(4P), NF800-UEW	–		–	220								60				–	
NF1000-SEW, NF1250-SEW/SDW	–	M-10SW3	220		–	–	MI-10SW4	290	2.3	47.5	47	37.5	–	–	Fig.2	–	–
NF1600-SEW/SDW	–	M-16SW3	315		–	–	MI-16SW4	426		65	54.5	39	–	–		–	–

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

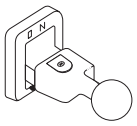
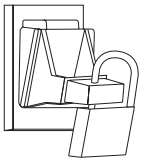
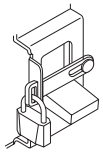
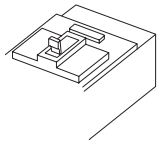
7. Handle Lock Devices and Card Holder

Table 5-35

Description		Lock cover (LC)	Handle lock (HL)	Handle lock (HL-S) (∗2)	OFF Lock with 3 Padlock	Card holder
Appearance						
NF30-CS, MB30-CS	2P	LC-03CS	HL-05FH	—	—	CH-P No.5
NF30-CS, NV30-CS, MB30-CS	3P					
NF32-SW, NF63-CW/SW/HW	2P	LC-05SW	HLF-05SW HLN-05SW (∗1)	HLS-05SW2P	—	
NF32-SW, NF63-CW/SW/HW, NV32-SW, NV63-CW/SW/HW MB30-SW, MB50-CW/SW	3P			HLS-05SW		
NF63-SW/HW	4P					
NF125-CW/SW	2P	LC-1SW	HLF-1SW HLN-1SW (∗1)	HLS-1SW2P		
NF125-HW	2P					
NF125-CW/SW/HW, NV125-CW/SW/HW MB100-SW, NV125-RW	3P			HLS-1SW		
NF125-SW/HW, NV125-SW/HW	4P					
NF160-SW/HW, NF250-CW/SW/HW, NV250-CW/SW/HW NV250-SEW/HEW, MB225-SW NV250-RW	2P 3P 4P	LC-2SW	HLF-2SW HLN-2SW (∗1)	HLS-2SW		
NF125-SGW/HGW, NF160-SGW/HGW, NF250-SGW/HGW NF125-RGW/UGW, NF250-RGW/UGW	3P, 4P	LC-2GSW	HLF-2GSW HLN-2GSW (∗1)	HLS-2GSW	HLF3-2GSW	

Note (∗1) HLF types are used for OFF-lock, and HLN types for ON-lock.
(∗2) HL-S types are used for OFF-lock.
Remark: 1. Users are requested to prepare padlocks for HL and HL-S types. (25mm padlock for HL, and 35mm padlock for HL-S.)

Table 5-36

Product	Handle (HT)	Handle lock (HL)	Handle lock (HL-S)	Card holder
Breaker type				
NF400-CW, NV400-CW	HT-4CW	HL-4CW (∗1)	HLS-4SW (∗2)	CH-P No.3
NF400-SW/SEW/HEW/REW/UEW NV400-SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW	HT-4SW	HL-4SW (∗1)		
NF400-UEW (3P)			HLS-4UW (∗2)	
NF400-UEW (4P) NF800-CEW/SDW/SEW/HEW/REW/UEW NV800-SEW/HEW			HLS-8SW (∗2) HLS-8UW (∗3)	
NF1000-SEW NF1250-SEW/SDW NF1600-SEW/SDW	HT-10SW	HL (∗2)	—	

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

8. IEC 35mm Rail Mounting Adapters

Table 5-37

Applicable models	Number of poles	Parts number	Outline
NF30-CS, NV30-CS, MB30-CS	2P, 3P	DIN-03CS	Fig.1
NF32-SW, NF63-CW/SW/HW NV32-SW, NV63-CW/SW/HW, MB30-SW MB50-CW/SW	2P 3P	DIN-05SW	Fig.2
NF125-CW/SW	2P	DIN-1SW2	Fig.3
	3P	DIN-1SW3	
NF125-HW, NV125-CW/SW/HW, MB100-SW	2P 3P		

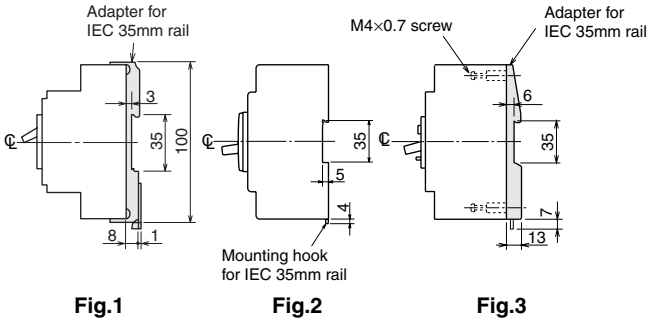


Fig.1 **Fig.2** **Fig.3**