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Special-purpose Breakers

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3 Special-purpose Breakers 1

Mag only, DC, DSN and 400Hz

1. Mag Only (Instantaneous Tripping Circuit Breakers)

Standard magnetic trip current

Fixed	NF32-SV	AC-DC	Rated current x 10 (AC) (DC)
	NF63-CV/SV/HV	AC-DC	
	NF125-CV/SV/HV	AC-DC	
	NF250-CV/SV/HV	AC-DC	
	NF400-CW/SW NF630-CW/SW	AC-DC	
Adjustable	NF800-SEW	AC	High: Rated current x 10 Low: Rated current x 2
	NF800-SDW	DC	High: 8000A Low: 3200A
	NF1000-SEW	AC	High: Rated current x 10 Low: Rated current x 2
	NF1250-SEW	AC	High: Rated current x 10 Low: Rated current x 2
	NF1600-SEW	AC	High: Rated current x 10 Low: Rated current x 2
	NF1250-SDW NF1600-SDW	DC	High: 8000A Low: 3200A

Remarks: 1. The size, weight, accessories, etc., are all identical to the same-designation C, S and H series breakers.

●Minimum and max magnetic trip current

Fixed

Model	Rated current(A)	Current	Instantaneous tripping current(A)		Model	Rated current(A)	Current	Instantaneous tripping current(A)	
			min-max	standard				min-max	standard
NF32-SV	3	AC-DC	9-300	30	NF250-CV NF250-SV	125	AC-DC	375-3150	1250
	5		15-300	50		150		450-3150	1500
	10		30-300	100		175		525-3150	1750
	15		45-300	150		200		600-3150	2000
	20		60-300	200		225		675-3150	2250
	30		90-300	300		250		750-3150	2500
	32		96-320	320	NF250-HV	125		375-3150	1250
NF63-CV NF63-SV NF63-HV	10		30-500	100		150		450-3150	1500
	15		45-500	150		175		525-3150	1750
	20		60-500	200		200		600-3150	2000
	30		90-500	300		225		675-3150	2250
	40		120-500	400		250		750-3150	2500
	50		150-500	500	NF400-CW	250		900-4000	2500
	60		180-600	600		300		900-4000	3000
NF125-CV	63		189-630	630		350		1050-4000	3500
	60		180-1600	600		400		1200-4000	4000
	75		225-1600	750	NF630-CW	250		900-5600	2500
	100		300-1600	1000		300		900-5600	3000
NF125-SV	125		600-1600	1250		350		1050-5600	3500
	15		60-1600	150		400		1200-5600	4000
	20		120-1600	200		500		2000-6300	5000
	30		120-1600	300		600		2400-6300	6000
	40		200-1600	400		630		2520-6300	6300
	50		200-1600	500	NF630-SW	500		2000-5000	5000
	60		400-1600	600		600		2400-6000	6000
	75		400-1600	750		630		2520-6300	6300
NF125-HV	100		400-1600	1000					
	125		600-1600	1250					
	15		60-1600	150					
	20		120-1600	200					
	30		120-1600	300					
	40		200-1600	400					
	50		200-1600	500					
	60		400-1600	600					
	75		400-1600	750					
	100		400-1600	1000					
	125		600-1600	1250					

Adjustable(tripping current)

Model	Current	Max	Rated current(A)	Instantaneous tripping current(A)			
				Lo	2	3	Hi
NF800-SDW	DC	800	(700)	2800	4200	5600	7000
			800	3200	4800	6400	8000
1000		1000	3200	4800	6400	8000	
1250		1250					
1600		1600					
NF1250-SDW							
NF1600-SDW							

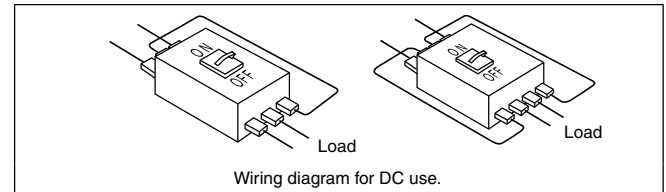
Adjustable(rated current)

Model	Current	Rated current(A)	Instantaneous tripping current(%)
NF800-SEW	AC	400 450 500 600 700 800	200 250 300 350 400 500 600 700 800 1000
NF1000-SEW		500 600 700 800 900 1000	
NF1250-SEW		600 700 800 1000 1200 1250	
NF1600-SEW		800 1000 1200 1400 1500 1600	

2. DC MCCBs and DSN Switches

Breaking is more difficult with direct currents because the current value never reaches zero. While ordinary DC breakers are suitable for low voltages, special-voltage DC breakers are recommended for voltages in excess of 250VDC. Breakers for 550V are all 4-pole models. The size, shape, drilling plan, accessories, etc., are all identical to the S Series breakers with the same designations.

Wiring diagram for DC usage.



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

Model	NF63-SV		NF125-SV		NF250-SV		NF400-SW		NF630-SW		NF800-SDW		NF1250-SDW		NF1600-SDW	
Number of poles	3	4	3	4	3	4	3	4	3	4	3	4	3		3	4
Rated voltage (VDC)	400	550	440	550	500	600	500	600	500	600	500	600	500	600	500	600
Rated breaking capacity (kA) IEC 60947-2 (Icu/Ics)	2/2		10/10		20/20		40/40		40/40		40/40		40/20	20/20	40/20	

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

2. NF1250-SDW 3P and NF1600-SDW 3P/4P are Mag Only (Instantaneous Tripping Circuit Breakers).

●DC side

These breakers are designed as thyristor-Leonard system DC side breakers. They protect the thyristor from short circuiting when there is a power or

communication failure (Mag Only breakers can also be used for this purpose). Use these breakers in combination with fast fuses for even greater protection.

Model	NF125-SV		NF250-SV		NF400-SW		NF630-SW		NF800-SDW		NF1250-SDW		NF1600-SDW	
Number of poles	2	3	2	3	2	3	2	3	2	3	2	3	2	3
Rated voltage (VDC)	250	440	300	500	250	480	250	480	250	480	250	480	250	480
Rated breaking capacity (kA) IEC 60947-2 (Icu/Ics)	40/40	10/10	20/20		20/20		20/20		20/20		20/20		20/20	
Instantaneous trip current min.)	3 times rated current		3 times rated current		900A		1000A		1400A		2500A		3200A	

●DSN switches

These are standard MCCBs without the automatic tripping element. The tripping capacity is about six times the rated current.

The appearance, size, drilling plan and available accessories are all identical to similar standard S and C Series MCCBs.

Model	DSN63-CV		DSN125-CV		DSN250-CV		DSN400-CW		DSN630-CW		DSN800-CW	
Rated current (A)	63		125		250		400		630		800	
Number of poles	2	3	2	3	2	3	2	3	3		3	
Rated voltage (AC/DC)	500/250		500/250		500/250		600/250		600/250		600/250	
Max. switching current (AC/DC)	378/155		750/310		1500/625		2400/1000		3780/1575		4800/2000	

Model	DSN32-SV	DSN63-SV	DSN125-SV	DSN125-SGV	DSN160-SGV	DSN250-SV	DSN250-SGV	DSN400-SW	DSN630-SW	DSN800-SW	DSN1000-SW	DSN1250-SW	DSN1600-SW
Rated current (A)	32	63	125	125	160	250	250	400	630	800	1000	1250	1600
Number of poles	2 3	2 3	2 3 4	2 3 4	2 3 4	2 3 4	2 3 4	2 3 4	3 4	3 4	3 4	3 4	3 4
Rated voltage (AC/DC)	500/250	500/250	690/250	690/300	690/300	690/250	690/300	690/250	690/250	690/250	690/250	690/250	690/250
Max. switching current (AC/DC)	192/80	378/155	750/310	750/315	960/400	1500/625	1500/625	2400/1000	3780/1575	4800/2000	6000/2500	7500/3125	9600/4000

3. 400Hz MCCBs

Standard MCCBs cannot be used in 400Hz circuits. When standard MCCBs are used in high-frequency circuits (eq. 400Hz), the instantaneous characteristics are shifted higher. The 400Hz MCCB is recommended for use in 400Hz circuits.

●Specifications

The appearance, size, rated interrupting capacity, drilling plan, accessories, etc., are all identical to the standard S and H Series breakers of the same designation.

Model	NF125-SV	NF125-HV	NF250-SV	NF250-HV	NF400-SW	NF400-SEW	NF630-SW (*)	NF630-SEW	NF800-SEW	NF1250-SEW	NF1600-SEW
Rated current (A)	16, 20, 32, 40, 50, 63, 80, 100	16, 20, 32, 40, 50, 63, 80, 100	125, 150, 175, 200	125, 150, 175, 200	225, 250, 300, 350	200-350 adjustable	400, 500	300-500 adjustable	400-600 adjustable	600-800 adjustable	800-1200 adjustable
Number of poles	2 3 4	2 3 4	2 3 4	2 3 4	2 3 4	3 4	3 4	3 4	3 4	3 4	3 4
Rated insulation voltage (V)	690										
Rated breaking capacity (kA)	8/8	10/8	8/8	10/8	10/10	10/10	10/10	10/10	10/10	25/13	25/13
IEC 60947-2 (Icu/Ics)	18/18	30/23	30/30	50/38	30/30	30/30	30/30	30/30	30/30	65/33	65/33
440VAC	25/25	50/38	36/36	65/65	42/42	42/42	42/42	42/42	42/42	85/43	85/43
400VAC	30/30	50/38	36/36	75/75	45/45	50/50	50/50	50/50	50/50	85/43	85/43
230VAC	50/50	100/75	85/85	100/100	85/85	85/85	85/85	85/85	85/85	125/63	125/63

Note: *1 Instantaneous trip current : Rated current x 14 (Fix)

4. MCCB and ELCB for special environment

Our MCCBs and ELCBs are manufactured based on the normal operating conditions. When using our MCCBs and ELCBs under different conditions, MCCBs and ELCBs for special environment are also available.

●Normal operating conditions

- Ambient temperature.....10°C~40°C
Average temperature does not exceed 35°C in 24°C hours
Current-temperature compensation ratio when exceeding 40°C
50°C 0.9 times
60°C 0.7 times
- Relative humidity.....Below 85% and no condensation
- Altitude.....Below 2,000m
- Atmosphere.....No excessive water vapor, oil vapor, smoke, dust, salt, corrosive substance, impact and vibration

Special environment		Special purpose	Specification	Model		
				MCCB	ELCB	Circuit protector
Low temp.	Cold storage warehouses	Low temp. breakers	Operation characteristics change under low temp. environment.	NF-C/S/H series (*1, *2)	NV32-SV NV63-CV/SV/HV NV125-CV/SV/HV NV250-CV/SV/HV	CP30-BA
High temp. High humid.	Chemical plants	Tropical treatment breakers	Under high humidity, withstand voltage and other electrical performance may be reduced. Moisture proof, mildew proof and corrosion resist breakers are available.	NF-C/S/H series (*3, *4, *5, *6, *7)	NF-C/S/H series (*3, *4, *5, *6, *7)	CP30-BA
Corrosive gas Salt	Petrochemical plants	Corrosion resist breaker	In case using breakers in environment filled with corrosive gas and salt, breaker with corrosion resisted boxes are recommended to use. If corrosion gas concentration is under standard value, corrosion resisted breaker can also be used. Gas concentration limit for standard breakers: H ₂ S(0.01ppm), SO ₂ (0.05ppm) HCl(0.05ppm), Cl ₂ (0.01ppm) NH ₃ (0.25ppm)	NF-C/S/H series (*3, *4, *5, *6, *7)	NF-C/S/H series (*3, *4, *5, *6, *7)	CP30-BA
Dust	Cement factory	Boxed breakers	In case dusty environment, boxed breakers are recommended to use. Refer to page 130. If breakers are to be installed in explosion proof case, use less ammonia molded breakers.			—

Notes: *1 SHT and UVT are not applicable.
*2 Electronic breakers are not applicable.
*3 250A frame electronic breakers are not applicable.
*4 AL, AX, SHT, UVT, TBL for 1000, 1200A frame ELCBs are not applicable.
*5 ELCBs for special voltage are not applicable.
*6 AL and AX for minute load are not applicable.
*7 UVT are not applicable.