MITSUBISHI ELECTRIC

INVERTER

Model

FR-E700

Changes for the Better

700 series

Remarkable usability | Top level driving performance!

Compact body All-rounder

Easy for anybody and high performance

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems)

MELSOFT

Lineup

FR-E720 □ -0.1K- □

Symbol	Voltage
1	100V class
2	200V class
4	400V class

Symbol	Number of Power Phases
None	Three-phase input
S	Single-phase input
W	Single-phase input (double voltage output)

Symbol	Inverter Capacity
0.1K to 15K	Represents the inverter capacity "kW".

Symbol	Protective Structure
None	Enclosed-type structure IP20
C	Totally enclosed structure IP40

Inverter Type \ Inverter Capacity		0.1K	0.2K	0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K	11K	15K
Three-phase 200V FR-E720-□□	Enclosed-type structure (IP20)	●	●	●	●	●	●	●	●	●	●	●
	Totally enclosed structure (IP40)	○	○	○	○	○	○	○	○	○	○	○
Three-phase 400V FR-E740-□□	Enclosed-type structure (IP20)	—	—	○	○	○	○	○	○	○	○	○
	Totally enclosed structure (IP40)	—	—	○	○	○	○	○	○	○	○	○
Single-phase 200V FR-E720S-□□*	Enclosed-type structure (IP20)	○	○	○	○	○	○	—	—	—	—	—
Single-phase 100V FR-E710W-□□*	Enclosed-type structure (IP20)	○	○	○	○	—	—	—	—	—	—	—

*:Output of the single-phase 200V and single-phase 100V input specifications is three-phase 200V.

●:Available models ○:Models to be released —:Not available

c UL us LISTED

CE

Complies with UL, cUL, EN (LVD) standards

Rating

● Three-phase 200V power supply

Type FR-E720-□K(-C) *7		0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15
Applicable motor capacity (kW) *1		0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15
Output	Rated capacity (kVA) *2	0.3	0.6	1.2	2.0	3.2	4.4	7.0	9.5	13.1	18.7	23.9
	Rated current (A) *6	0.8 (0.8)	1.5 (1.4)	3 (2.5)	5 (4.1)	8 (7)	11 (10)	17.5 (16.5)	24 (23)	33 (31)	47 (44)	60 (57)
	Overload current rating *3	150% 60s, 200% 3s (inverse time characteristics)										
	Voltage *4	Three-phase 200 to 240V										
Power supply	Rated input AC voltage/frequency	Three-phase 200 to 240V 50Hz/60Hz										
	Permissible AC voltage fluctuation	170 to 264V 50Hz/60Hz										
	Permissible frequency fluctuation	±5%										
	Power supply capacity (kVA) *5	0.4	0.8	1.5	2.5	4.5	5.5	9	12	17	20	28
Protective structure (JEM1030)		Enclosed type (IP20). IP40 for totally enclosed structure series.										
Cooling system		Self-cooling				Forced air cooling						
Approximate mass (kg)		0.5	0.5	0.7	1.0	1.4	1.4	1.7	4.3	4.3	9.0	9.0

*1 The applicable motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi 4-pole standard motor.

*2 The rated output capacity indicated assumes that the output voltage is 230V.

*3 The % value of the overload current rating indicated is the ratio of the overload current to the inverter's rated output current. For repeated duty, allow time for the inverter and motor to return to or below the temperatures under 100% load.

*4 The maximum output voltage does not exceed the power supply voltage. The maximum output voltage can be changed within the setting range. However, the pulse voltage value of the inverter output side voltage remains unchanged at about $\sqrt{2}$ that of the power supply.

*5 The power supply capacity varies with the value of the power supply side inverter impedance (including those of the input reactor and cables).

*6 Setting 2kHz or more in *Pr. 72 PWM frequency selection* to perform low acoustic noise operation in the ambient temperature exceeding 40°C (totally-enclosed structure is 30°C), the rated output current is the value in parenthesis.

*7 Totally enclosed structure series ends with -C.

Common specifications

Control specifications	Control method		Soft-PWM control/high carrier frequency PWM control (V/F control, advanced magnetic flux vector control, general-purpose magnetic flux vector control, optimum excitation control can be selected)
	Output frequency range		0.2 to 400Hz
	Frequency setting resolution	Analog input	0.06Hz/60Hz (terminal2, 4: 0 to 10V/10bit) 0.12Hz/60Hz (terminal2, 4: 0 to 5V/9bit) 0.06Hz/60Hz (terminal4: 4 to 20mA/10bit)
		Digital input	0.01Hz
	Frequency accuracy	Analog input	Within ±0.5% of the max. output frequency (25°C ±10°C)
		Digital input	Within 0.01% of the set output frequency
	Voltage/frequency characteristics		Base frequency can be set from 0 to 400Hz Constant torque/variable torque pattern can be selected
	Starting torque		200% or more (at 0.5Hz)...when advanced magnetic flux vector control is set (3.7K or less)
	Torque boost		Manual torque boost
	Acceleration/deceleration time setting		0.01 to 360s, 0.1 to 3600s (acceleration and deceleration can be set individually), linear or S-pattern acceleration/deceleration mode can be selected.
	DC injection brake		Operation frequency (0 to 120Hz), operation time (0 to 10s), operation voltage (0 to 30%) variable
	Stall prevention operation level		Operation current level can be set (0 to 200% adjustable), whether to use the function or not can be selected
Operation specifications	Frequency setting signal	Analog input	Two points Terminal 2: 0 to 10V, 0 to 5V can be selected Terminal 4: 0 to 10V, 0 to 5V, 4 to 20mA can be selected
		Digital input	Entered from operation panel and parameter unit
	Start signal		Forward and reverse rotation or start signal automatic self-holding input (3-wire input) can be selected.
	Input signal		Seven points You can select from among multi-speed selection, remote setting, stop-on contact selection, second function selection, terminal 4 input selection, JOG operation selection, PID control valid terminal, brake opening completion signal, external thermal input, PU-external operation switchover, V/F switchover, output stop, start self-holding selection, forward rotation, reverse rotation command, inverter reset, PU-NET operation switchover, external-NET operation switchover, command source switchover, inverter operation enable signal, and PU operation external interlock
	Operational functions		Maximum/minimum frequency setting, frequency jump operation, external thermal relay input selection, automatic restart after instantaneous power failure operation, forward/reverse rotation prevention, remote setting, brake sequence, second function, multi-speed operation, stop-on contact control, droop control, regeneration avoidance, slip compensation, operation mode selection, offline auto tuning function, PID control, computer link operation (RS-485)
	Output signal	Output signal points: Open collector output	Two points
		Output signal points: Relay output	One point
		Operating status	You can select from among inverter operation, up-to-frequency, overload alarm, output frequency detection, regenerative brake prealarm, electronic thermal relay function prealarm, inverter operation ready, output current detection, zero current detection, PID lower limit, PID upper limit, PID forward/reverse rotation output, brake opening request, fan alarm, heatsink overheat pre-alarm, deceleration at an instantaneous power failure, PID control activated, during retry, life alarm, current average value monitor, remote output, minor failure output, alarm output, alarm output 3, and maintenance timer alarm
		For meter Output points: Pulse output	MAX 2.4kHz: one point
		For meter	You can select from among output frequency, motor current (steady), output voltage, frequency setting, motor torque, converter output voltage, regenerative brake duty, electronic thermal relay function load factor, output current peak value, converter output voltage peak value, reference voltage output, motor load factor, PID set point, PID measured value, output power Pulse train output (1440 pulses/s/full scale)
Indication	Operation panel Parameter unit (FR-PU07)	Operating status	You can select from among output frequency, motor current (steady), output voltage, frequency setting, cumulative energization time, actual operation time, motor torque, converter output voltage, regenerative brake duty, electronic thermal relay function load factor, output current peak value, converter output voltage peak value, motor load factor, PID set point, PID measured value, PID deviation, inverter I/O terminal monitor, I/O terminal option monitor, output power, and cumulative power
		Alarm definition	Alarm definition is displayed when the protective function is activated and the past 8 alarm definitions (output voltage/current/frequency/cumulative energization time right before the protective function was activated) are stored
	Additional display by the parameter unit (FR-PU04/FR-PU07) only	Operating status	Not used
		Alarm definition	Output voltage/current/frequency/cumulative energization time immediately before protective function is activated
		Interactive guidance	Function (help) for operation guide
	Protective/warning function		<Protective functions> Overcurrent during acceleration, overcurrent during constant speed, overcurrent during deceleration, overvoltage during acceleration, overvoltage during constant speed, overvoltage during deceleration, inverter protection thermal operation, motor protection thermal operation, heatsink overheat, input phase failure, output side earth (ground) fault overcurrent, output phase failure, external thermal relay operation, option alarm, parameter error, PU disconnection, retry count excess, CPU alarm, brake transistor alarm, inrush resistance overheat, communication error, analog input error, USB communication error, brake sequence error 4 to 7 <Warning functions> Fan alarm*2, overcurrent stall prevention, overvoltage stall prevention, PU stop, parameter write error, regenerative brake prealarm, electronic thermal relay function prealarm, maintenance output, undervoltage
Environment	Ambient temperature		-10°C to +50°C (non-freezing) (-10°C to +40°C for totally-enclosed structure feature) *3
	Ambient humidity		90%RH maximum (non-condensing)
	Storage temperature*1		-20°C to +65°C
	Atmosphere		Indoors (without corrosive gas, flammable gas, oil mist, dust and dirt etc.)
	Altitude/vibration		Maximum 1000m above sea level, 5.9m/s ^{2} or less

*1 Temperatures applicable for a short time, e.g. in transit.

*2 As the FR-E720-0.75K or less is not provided with the cooling fan, this alarm does not function.

*3 When using the inverters at the ambient temperature of 40°C or less, the inverters can be installed closely attached (0cm clearance).

Changes for the Better

MITSUBISHI ELECTRIC

LOW VOLTAGE AIR CIRCUIT BREAKERS

World Super WS Series

World Super AE

630AF~6300AF

06A

Product Specification

• Specification

Type				AE630-SW	AE1000-SW	AE1250-SW	AE1600-SW
Frame size			(A)	630	1000	1250	1600
Rated insulation voltage (Ui)			(AC.V)	1000			
Rated operational voltage (Ue)			(AC.V)	690			
Rated impulse withstand voltage (Uimp)			(kV)	12			
Pollution degree				3			
Number of poles				3, 4			
Rated current In (CT rating)				630	1000	1250	1600
Current setting Ir (A) (40°C)	General use (Current rating adjustable 0.5 to 1.0 × In 0.05 step)			315-346.5-378-409.5-441-472.5-504-535.5-567-598.5-630 (Note 5)	500-550-600-650-700-750-800-850-900-950-1000	625-687.5-750-812.5-875-937.5-1000-1062.5-1125-1187.5-1250	800-880-960-1040-1120-1200-1280-1360-1440-1520-1600
	Generator protection use (Current rating fixed)			160 ≤ Ir ≤ 630	400 ≤ Ir ≤ 1000	800 ≤ Ir ≤ 1250	1000 ≤ Ir ≤ 1600
Rated current of neutral pole			(A)	630	1000	1250	1600
IEC60947-2 EN60947-2 BV VDE JIS C 8201-2-1	Ultimate breaking capacity Icu (kA rms)		690V AC	65			
			600V AC	65			
			240-500V AC	65			
		with MCR	690V AC	65			
			600V AC	65			
			240-500V AC	65			
		without Instantaneous	690V AC	25 (Note1)			
			500V AC	25 (Note1)			
	Rated service breaking capacity Ics (kA rms) %Icu			100%			
	Rated making capacity Icm (kA peak)		690V AC	143			
			600V AC	143			
			240-500V AC	143			
		with MCR	690V AC	143			
			600V AC	143			
			240-500V AC	143			
		without Instantaneous	690V AC	52.5			
			500V AC	52.5			
Rated short time withstand current Icw (kA rms)			1s	65			
			2s	60			
			3s	50			
Maximum total breaking time			(ms)	40 (Note 6)			
Maximum closing time			(ms)	80			
Number of operating cycles (Note 2)	With rated current	AC500V In		5000			
		AC690V In		5000			
	Without rated current			25000 (Note 4)			
Connecting terminal	Horizontal terminal			○			
	Vertical terminal			○			
	Front terminal			○			
Outline dimension (mm) H×W×D	Fixed type	3-pole		410×340×290			
		4-pole		410×425×290			
	Drawout type	3-pole		430×300×368			
		4-pole		430×385×368			
Weight (kg) (without Accessory)	Fixed type	3-pole		40	41	42	
		4-pole		50	51	52	
	Drawout type (including cradle)	3-pole		63	64	65	
		4-pole		77	78	79	
	Cradle only	3-pole		26			
		4-pole		30			

(Note 1) The columns for "without instantaneous" are the values when the bare main body and the external relay is combined.
(Note 2) The number of operating cycles without rated current also include the number of operating cycles with rated current.
(Note 3) AE2000-SWA and AE4000-SWA apply for only vertical terminal of connecting terminal.
(Note 4) This value means number of operating cycles of ACB's body not including accessories.
(Note 5) Products with low rating types is available.

AE 630-SW 3 kinds of products with low rating types is available.

- 250-275-300-325-350-375-400-425-450-475-500(CT 500A)
- 157.5-173.3-189-204.8-220.5-236.3-252-267.8-283.5-299.3-315(CT 315A)
- 125-137.5-150-162.5-175-187.5-200-212.5-225-237.5-250(CT 250A)

AE 2000-SW 2 kinds of products with low rating types is available.

- 800-880-960-1040-1120-1200-1280-1360-1440-1520-1600(CT 1600A)
- 625-687.5-750-812.5-875-937.5-1000-1062.5-1125-1187.5-1250(CT 1250A)

(Note 6) This value means the instantaneous breaking time at shortcircuit interruption. As for accessories (SHT, UVT), refer to page 13 and 14.

	AE2000-SWA	AE2000-SW	AE2500-SW	AE3200-SW	AE4000-SWA	AE4000-SW	AE5000-SW	AE6300-SW
	2000	2000	2500	3200	4000	4000	5000	6300
		1000				1000		
		690				690		
		12				12		
		3				3		
		3, 4				3, 4 (HN, FN) (Note7)		
	2000	2000	2500	3200	4000	4000	5000	6300
	1000-1100-1200-1300-1400-1500-1600-1700-1800-1900-2000	1000-1100-1200-1300-1400-1500-1600-1700-1800-1900-2000 (Note 5)	1250-1375-1500-1625-1750-1875-2000-2125-2250-2375-2500	1600-1760-1920-2080-2240-2400-2560-2720-2880-3040-3200	2000-2200-2400-2600-2800-3000-3200-3400-3600-3800-4000	2000-2200-2400-2600-2800-3000-3200-3400-3600-3800-4000	2500-2750-3000-3250-3500-3750-4000-4250-4500-4750-5000	3150-3465-3780-4095-4410-4725-5040-5355-5670-5985-6300
	1250 ≤ Ir ≤ 2000	800 ≤ Ir ≤ 2000	1600 ≤ Ir ≤ 2500	2000 ≤ Ir ≤ 3200	2500 ≤ Ir ≤ 4000	2500 ≤ Ir ≤ 4000	3150 ≤ Ir ≤ 5000	4000 ≤ Ir ≤ 6300
	2000	2000	2500	3200	4000	2000 (4000) (Note8)	2500 (5000) (Note8)	3150 (6300) (Note8)
		75				85		
		75				85		
		85				130		
		75				85		
		75				85		
		75				100		
		45 (Note1)				65 (Note1)		
		45 (Note1)				65 (Note1)		
		100%				100%		
		165				187		
		165				187		
		187				286		
		165				187		
		165				187		
		165				220		
		94.5				143		
		94.5				143		
		75				100		
		75				85		
		65				85		
		40 (Note 6)				50 (Note 6)		
		80				80		
	1500	1500		1000	500	1000		
	1500	1500		1000	500	1000		
		20000 (Note 4)				10000 (3P) / 5000 (4P)		
	-	○			-	-		
	○ (Note 3)	○			○ (Note 3)	○ (Note 3)		
	-	○			-	-		
		410×475×290				414×873×290		
		410×605×290				414×1003(1133)×290 (Note 8)		
		430×435×368			430×439×368	480×875×368		
		430×565×368			430×569×368	480×1005(1135)×368 (Note 8)		
	47	60	61	63	81	160	160	160
	57	72	73	75	99	180 (200) (Note8)	180 (200) (Note8)	180 (200) (Note8)
	70	92	93	95	108	233	233	240
	84	113	114	116	136	256 (279) (Note8)	256 (279) (Note8)	263 (286) (Note8)
	31	35		36	49	118	118	125
	35	43		44	61	133 (148) (Note8)	133 (148) (Note8)	140 (155) (Note8)

(Note 7) 4(HN) means the neutral poles current capacity is 50% of the rated current, for 4 poles.
4(FN) means the neutral poles current capacity is 100% of the rated current, for 4 poles.
(Note 8) ( ) shows the value for 4P FN type.

(Remark) All models conform the isolating function according to IEC 60947-2.
Reverse connection is possible.

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MITSUBISHI ELECTRIC

Changes for the Better

MAGNETIC MOTOR STARTERS
AND MAGNETIC CONTACTORS

MS-N series

MS-N, S-N, EYD-N

Performance with a refined new design and functional beauty

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001(standards for quality assurance management systems)

CE

(Note)
Mark indicating EC Command compliance. Products with CE Mark can be used in Europe.

TÜV Rheinland

(Note)
Mark indicating TUV Rheinland Group certification.

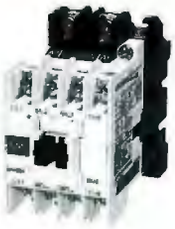
c UL us

(Note)
Mark indicating product UL/CSA certification by Underwriter's Laboratory.

ISO 14001 JACO — UKAS ENVIRONMENTAL MANAGEMENT 051 — 113 EC97J1113

Certified ISO 9001 by BVQI — UKAS QUALITY MANAGEMENT 008

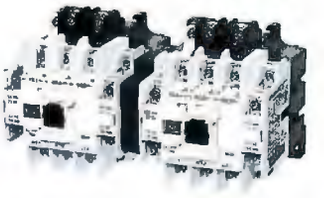
1.2 Selection Guide



S-N11

S-2xN11

S-N21



S-2xN21

Three-phase motor ratings IEC category AC3 kW(hp)	220-240V	2.5(3-1/4)	3.5(4-1/2)	3.5(4-1/2)	4.5(6)	5.5(7-1/2)	5.5(7-1/2)	7.5(10)	11(15)
	380-440V	4(5-1/2)	5.5(7-1/2)	5.5(7-1/2)	7.5(10)	11(15)	11(15)	15(20)	18.5(25)
	500V	4(5-1/2)	5.5(7-1/2)	5.5(7-1/2)	7.5(10)	11(15)	11(15)	15(20)	18.5(25)
	690V	4(5-1/2)	5.5(7-1/2)	5.5(7-1/2)	7.5(10)	7.5(10)	7.5(10)	11(15)	15(20)
Rated continuous current Ith A		20	20	20	25	32	32	50	60
Auxiliary contacts[1] (standard)		1NO	1NO	1NO+1NC	–[2]	1NO+1NC	2NO+2NC	2NO+2NC	2NO+2NC
(special)		1NC	1NC	2NO	—	2NO	—	—	—
Number of additional auxiliary contact block for[3]	1NO + 1NC (front)	1	1	1	1	1	1	1	1
	1NO + 1NC (side)	2	2	—	—	2	2	2	2
	2NO + 2NC (front)	1	1	1	1	1	1	1	1
	Low level signal (front) [1NO+1NC (+Standard 1NO + 1NC)]	1	1	1	1	1	1	1	1

Notes 1: Number of auxiliary contact shows that for non-reversing type. Twice of the auxiliary contacts are provided on reversing type.
2: (2NO + 2NC) × 2 auxiliary contacts are provided on reversing type and no additional contact can be mounted.
3: Front clip-on and side clip-on block should not be mounted both.

Contactors

AC operated models	Non-reversing	S-N10(CX)	S-N11(CX)	S-N12(CX)	S-N18(CX)	S-N20(CX)	S-N21(CX)	S-N25(CX)	S-N35(CX)
	Reversing	S-2xN10(CX)	S-2xN11(CX)	—	S-2xN18(CX)	S-2xN20(CX)	S-2xN21(CX)	S-2xN25(CX)	S-2XxN35(CX)
DC operated models		—	SD-N11(CX)	SD-N12(CX)	—	—	SD-N21(CX)	—	SD-N35(CX)

Staters (AC operated)

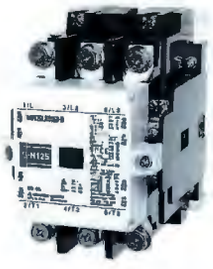
Enclosed type (IP20)		—	MS-N11 KPPMCG	—	—	MS-N20 KPPMCG	—	MS-N25 KPPMCG	MS-N35 KPPMCG

Thermal Overload Relays[1]

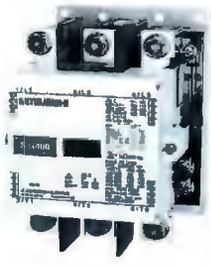
Three heater type with phase failure protection	TH-N12(CX)KP CG		TH-N18(CX)KP CG	TH-N20(CX)KP CG		TH-N20TA(CX)KP CG
						
Heater setting range A (Ordering designation)	0.1~0.16**(0.12A)**	1.7~2.5**(2.1A)**	1~1.6**(1.3A)**	0.2~0.32**(0.24A)**	2~3**(2.5A)**	18~26**(22A)**
	0.14~0.22**(0.17A)**	2~3**(2.5A)**	1.4~2**(1.7A)**	0.28~0.42**(0.35A)**	2.8~4.4**(3.6A)**	24~34**(29A)**
	0.2~0.32**(0.24A)**	2.8~4.4**(3.6A)**	1.7~2.5**(2.1A)**	0.4~0.6**(0.5A)**	4~6**(5A)**	30~40**(35A)**[4]
	0.28~0.42**(0.35A)**	4~6**(5A)**	2~3**(2.5A)**	0.55~0.85**(0.7A)**	5.2~8**(6.6A)**	
	0.4~0.6**(0.5A)**	5.2~8**(6.6A)**	2.8~4.4**(3.6A)**	0.7~1.1**(0.9A)**	7~11**(9A)**	
	0.55~0.85**(0.7A)**	7~11**(9A)**	4~6**(5A)**	1~1.6**(1.3A)**	9~13**(11A)**	
	0.7~1.1**(0.9A)**	9~13**(11A)**[2]	5.2~8**(6.6A)**	1.4~2**(1.7A)**	12~18**(15A)**	
	1~1.6**(1.3A)**		7~11**(9A)**	1.7~2.5**(2.1A)**	16~22**(19A)**[3]	
	1.4~2**(1.7A)**		9~13**(11A)**			
			12~18**(15A)**			

Notes 1: The suffix "CG" is the order model name.
*Saturable reactors for thermal overload relays are available as a kit or equipped with the relay. The suffix "SR" following the model name of the relay indicates "with saturable reactor". (ex. TH-N20KPCGSR*5A) (Except for type TH-N12KPCG and TH-N18KPCG)*
2: Except for size N10. 3. For size N20 & N21 only. 4. For size N35 only.

S-N65



S-N125



S-N400

S-N800

Table 1.2.1

15(20)	18.5(25)	22(30)	30(40)	37(50)	45(60)	55(75)	75(100)	90(125)	125(170)	190(250)	220(300)
22(30)	30(40)	45(60)	55(75)	60(80)	75(100)	90(125)	132(180)	160(210)	220(300)	330(450)	440(600)
25(34)	37(50)	45(60)	55(75)	60(80)	90(125)	110(150)	132(180)	160(210)	225(330)	330(450)	500(670)
22(30)	30(40)	45(60)	55(75)	60(80)	90(125)	110(150)	132(180)	200(270)	250(330)	330(450)	500(670)
80	100	135	150	150	200	260	260	350	450	800	1000
2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	2	2	2	2	2	2	2	2	—	—
1	1	—	—	—	—	—	—	—	—	1	1
—	—	—	—	—	—	—	—	—	—	—	—

S-N50	**S-N65**	**S-N80**	**S-N95**	**S-N125**	**S-N150**	**S-N180**	**S-N220**	**S-N300**	**S-N400**	**S-N600**	**S-N800**
S-2×N50	**S-2×N65**	**S-2×N80**	**S-2×N95**	**S-2×N125**	**S-2×N150**	**S-2×N180**	**S-2×N220**	**S-2×N300**	**S-2×N400**	**S-2×N600**	**S-2×N800**
SD-N50	**SD-N65**	**SD-N80**	**SD-N95**	**SD-N125**	**SD-N150**	—	**SD-N220**	**SD-N300**	**SD-N400**	**SD-N600**	**SD-N800**

MS-N50 KPPMCG	**MS-N65 KPPMCG**	**MS-N80 KPPMCG**	**MS-N95 KPPMCG**	**MS-N125 KPPMCG**	**MS-N150 KPPMCG**	**MS-N180 KPPMCG**	**MS-N220 KPPMCG**	—	—	—	—

TH-N60KPCG	TH-N60TAKPCG	TH-N120KPCG	TH-N120TAKPCG	TH-N220RHKPCG	TH-N400RHKPCG	TH-N600KPCG[9]
						
12~18**(15A)** 18~26**(22A)** 24~34**(29A)** 30~40**(35A)** 34~50**(42A)** 43~65**(54A)**	54~80 **(67A)** 65~100**(82A)** 85~105**(95A)**[5]	34~50 **(42A)** 43~65 **(54A)** 54~80 **(67A)** 65~100**(82A)**	85~125 **(105A)** 100~150**(125A)**[6]	65~100 **(82A)** 85~125 **(105A)** 100~150**(125A)** 120~180**(150A)** 140~220**(180A)**[7] 170~250**(210A)**[7]	85~125 **(105A)** 100~150**(125A)** 120~180**(150A)** 140~220**(180A)** 200~300**(250A)** 260~400**(330A)**[8]	200~300**(250A)** 260~400**(330A)** 400~600**(500A)** 520~800**(660A)**[10]

5. For size N95 only. *6. For size N150 only.* *7. For size N220 only.* *8. For size N400 only.*
9. TH-N600KPCG must be used with the current transformers (to be supplied by the customer.)
10. For size N800 only.

1.3 Technical Data of Series S-N Contactors

1.3.1 Ratings and Characteristics

Contactor		Type	S-N10	S/SD-N11, N12	S-N18	S-N20	S/SD-N21	S-N25	S/SD-N35	S/SD-N50	S/SD-N65
Rated insulation voltage		V	690	690	690	690	690	690	690	690	690
Conventional free air thermal current	Ith	A	20	20	25	32	32	50	60	80	100
Rated capacity for resistive loads											
3-ph, Category AC-1	220-240V	kW(A)	7.5(20)	7.5(20)	9.5(25)	12(32)	12(32)	18(50)	20(60)	30(80)	35(100)
	380-440V	kW(A)	7(11)	8.5(13)	13(20)	20(32)	20(32)	30(50)	35(60)	50(80)	65(100)
	500V	kW(A)	7(8)	9.5(11)	13(16)	25(32)	25(32)	40(50)	50(60)	65(80)	85(100)
	690V	kW(A)	7(6)	8(8)	11(10)	30(32)	30(32)	50(50)	60(60)	80(80)	100(100)
Rated operational current											
3-ph, Category AC-3	220-240V	A	11	13	18	22	22	30	40	55	65
	380-440V	A	9	12	16	22	22	30	40	50	65
	500V	A	7	9	13	17	17	24	32	38	60
	690V	A	5	7	9	9	9	12	17	26	38
Rated capacity for jogging of AC motors											
3-ph, category AC-4	220-240V	kW	0.75	1.1	1.5	2.2	2.2	3	3.7	5.5	7.5
Electrical life is ca.	380-440V	kW	1.1	1.5	2.2	3.7	3.7	5.5	5.5	7.5	11
200,000 operations	500V	kW	1.1	1.5	2.2	3.7	3.7	5.5	5.5	7.5	11
	690V	kW	1.1	1.5	2.2	3.7	3.7	5.5	5.5	7.5	11
Max. current for AC-4 duty at 440V		A	6	9	9	13	13	17	24	32	47
Rated current for DC non-inductive loads											
Category DC-1	48V	A	10	12	12	20	20	25	35	50	65
100 operations/hour max.	110V	A	8	12	12	20	20	25	35	50	65
500,000 operations	220V	A	8	12	12	20	20	22	30	40	50
											
Rated Current for DC motors											
Category DC-3 & DC-5	48V	A	6	10	10	20	20	25	30	35	40
100 operations/hour max.	110V	A	4	8	8	15	15	20	20	30	35
500,000operations	220V	A	2	4	4	8	8	10	10	12	15
											
Rated capacity for 3-ph, capacitors[4]											
120 operations/hour max.	220-240V	kvar	2.2	3	4	5.5	5.5	8.5	12	20	20
Electrical durability at maximum load:	380-440V	kvar	3.3	4	6	10	10	14	20	40	40
100,000 operations	550V	kvar	4	5	6	10	10	14	20	30	35
(ambient temperature 40°C)	690V	kvar	3.3	4.5	5.5	10	10	14	20	30	40
Making & breaking											
3-ph, cosΘ=0.35	Making current	A	110/110	130/120	180/180	220/220	220/220	300/300	400/400	550/460	650/620
240V/440V	Breaking current	A	100/72	120/100	180/130	220/220	220/220	300/240	400/320	550/460	650/620
Switching frequency	Category AC-1	operations/hour	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,200	1,200
	Category AC-3	operations/hour	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,200	1,200
	Category AC-4	operations/hour	600	600	600	600	600	600	600	600	600
Operating time (at rated coil voltage)											
AC operated	Closing	ms	15	15	15	15	15	15	15	25	25
	Opening	ms	10	10	10	10	10	10	10	53	53
DC operated	Closing	ms	—	45	—	—	33	—	50	57	57
	Opening	ms	—	10	—	—	12	—	13	15	15
Coil consumption (at rated coil voltage)											
AC operated	Inrush	VA	45	45	60	90	90	110	110	115	115
	Sealed	VA	7	7	10	15	15	13	13	20	20
	Watts	W	2.4	2.4	3	4	4	4.3	4.3	2.2	2.2
DC operated	Inrush	VA	—	7	—	—	9	—	9	18	18
	Sealed	VA	—	7	—	—	9	—	9	18	18
Coil voltage tolerance			0.85 to 1.1 times rated coil voltage								
Mechanical endurance (make/break operations)		million	10	10	10	10	10	10	10	5	5
Permissible ambient temperature		°C	−25 to +55								
Vibration (10-55 Hertz)		m/s²	19.6								
Shock (10 ms half sine wave)		m/s²	49								
Conductor size	Main terminal (contactor)	mm²	1-2.5	1-2.5	1-6	1-6	1-6	2-16	2-16	2-25	2-25
	Main terminal (overload relay)	mm²	1-2.5	1-2.5	1-6	1-6	1-6	2-16	2-16	2-25	2-25
Control terminal		mm²	1-2.5	1-2.5	1-2.5	1-2.5	1-2.5	1-2.5	1-2.5	1-2.5	1-2.5
Busbar width		mm	—	—	—	—	—	—	—	—	—

Notes: 1. 660A at ambient temperature 40-55°C. 2. 800A at ambient temperature 40-55°C.

3. Conductor size in parentheses indicate compression terminal style not for bare clamping.

4. The peak value of inrush current should be less than 2000% of the effective value for rated current of capacitors. The selection is invalid for the circuit of parallel capacitors which are controlled individually.

S/SD-N80	S/SD-N95	S/SD-N125	S/SD-N150	S-N180	S/SD-N220	S/SD-N300	S/SD-N400	S/SD-N600	S/SD-N800
690	690	690	690	1000	1000	1000	1000	1000	1000
135	150	150	200	260	260	350	450	800[1]	1000[2]
50(135)	55(150)	55(150)	75(200)	95(260)	95(260)	130(350)	170(450)	250(660)	300(800)
85(135)	90(150)	90(150)	130(200)	170(260)	170(260)	230(350)	290(450)	430(660)	530(800)
110(135)	120(150)	120(150)	170(200)	220(260)	220(260)	300(350)	380(450)	570(660)	700(800)
135(135)	150(150)	150(150)	200(200)	260(260)	260(260)	350(350)	450(450)	660(660)	900(800)
85	105	125	150	180	250	300	400	630	800
85	105	120	150	180	250	300	400	630	800
75	85	90	140	180	200	250	350	500	720
52	65	70	100	120	150	220	300	420	630
7.5	11	15	18.5	22	22	37	45	65	75
15	18.5	22	30	37	45	60	75	110	130
15	18.5	22	37	45	55	60	90	130	150
15	18.5	22	30	50	55	75	90	130	150
62	75	90	110	150	180	220	300	400	630
80	93	120	150	180	220	300	400	630	800
80	93	100	150	180	220	300	400	630	800
60	70	80	150	180	220	300	300	630	800
60	90	90	130	180	220	280	280	630	630
50	80	80	120	150	150	200	200	630	630
20	50	50	80	100	100	150	150	630	630
35	35	38	50	60	60	95	115	190	190
60	60	65	80	120	120	150	200	350	350
48	60	65	80	150	150	200	250	350	350
50	60	65	80	150	150	200	200	400	400
850/850	1050/1050	1250/1250	1500/1500	1800/1800	2500/2500	3000/3000	4000/4000	6500/6500	8000/8000
800/750	930/930	1000/1000	1200/1200	1450/1450	2000/2000	2400/2400	3200/3200	5040/5040	6400/6400
1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
600	300	300	300	300	300	300	300	300	300
27	27	25	27	30	30	35	35	65	65
75	75	85	85	100	100	120	120	75	75
75	75	125	135	—	145	175	175	105	105
18	18	22	37	—	40	55	55	80	80
210	210	270	270	440	440	440	440	790	790
23	23	24	24	40	40	50	50	90	90
2.8	2.8	2.9	2.9	4.2	4.2	6.1	6.1	17	17
24	24	31	31	—	41	55	55	600	600
24	24	31	31	—	41	55	55	72	72
0.85 to 1.1 times rated coil voltage									
5	5	5	5	5	5	5	5	5	5
–25 to +55									
19.6									
49									
2-60	(2-60)[3]	(6-70)[3]	(6-95)[3]	(10-120)[3]	(10-150)[3]	(25-240)[3]	(25-240)[3]	(70-325)[3]	(70-325)[3]
2-50	2-50	(6-70)[3]	(6-95)[3]	(10-120)[3]	(10-150)[3]	(25-240)[3]	(25-240)[3]	—	—
1-2.5	1-2.5	1-2.5	1-2.5	1-2.5	1-2.5	1-2.5	1-2.5	1-4	1-4
15	15	15	20	25	25	30	30	35	35

Rated Operating Current of Auxiliary Contacts

Conventional free air thermal current		A	16
Rated operating current			
Category	120VAC	A	6
AC-15	240VAC	A	5
	500VAC	A	3
	660VAC	A	1.5
Category	24VDC	A	5
	48VDC	A	3
DC-13	110VDC	A	0.6
		A	0.8[1]
	220VDC	A	0.2

Note: 1 UN-AX2(CX), UN-AX4(CX), UN-AX11(CX).

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MINIATURE CIRCUIT BREAKERS, RESIDUAL CURRENT CIRCUIT BREAKERS & ISOLATING SWITCH

New line up for the 21 st Century

"MITSUBISHI DIN Series"

ISO9002 ISO14001

02 A

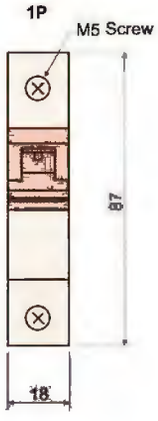
MITSUBISHI ELECTRIC
Changes for the Better

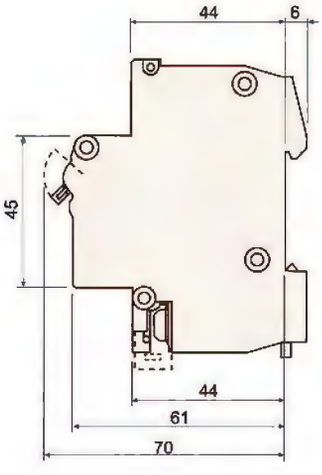
Miniature Circuit Breaker(MCB)BH-D6 Series

Technical Data

Design according to	IEC60898
Rated voltage	230/400VAC,50/60HZ
Rated current In(at 30°C)	6,10,13,16,20,25,32,40,50,63A
Ambient temperature range	-10 ~ 40°C
Instantaneous tripping current	B,C,D
Rated Short-circuit Capacity Icn	6KA
Service Short-circuit Capacity Ics	6KA
Mechanical endurance	8000
Electrical endurance	8000
Mounting	IEC35mm rail
Terminal(ON side)	lift terminal
Terminal(OFF side)	lift terminal /open mouthed terminal
Busbar thickness for open mouthed terminal	0.7-1.5mm
Applicable wire	1-25mm^2
Type of overcurrent release	Thermal-Magnetic
Accessories	insulating barrier

1P





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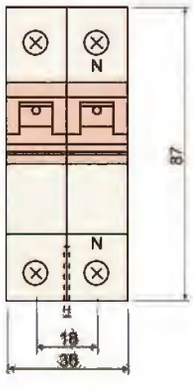

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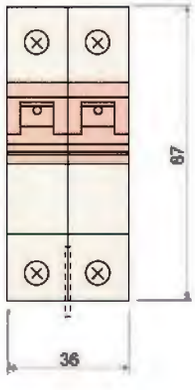

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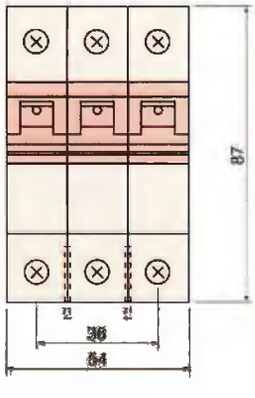

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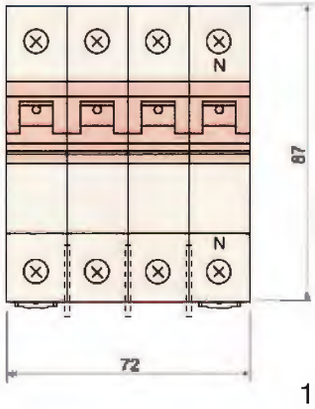
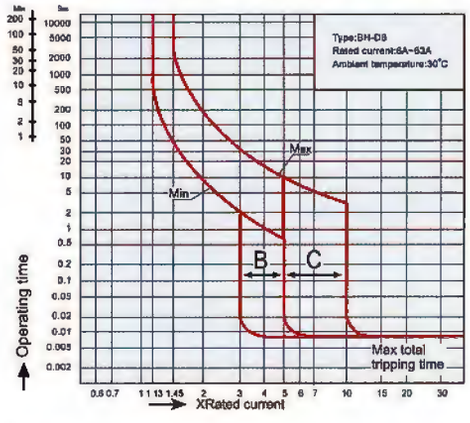
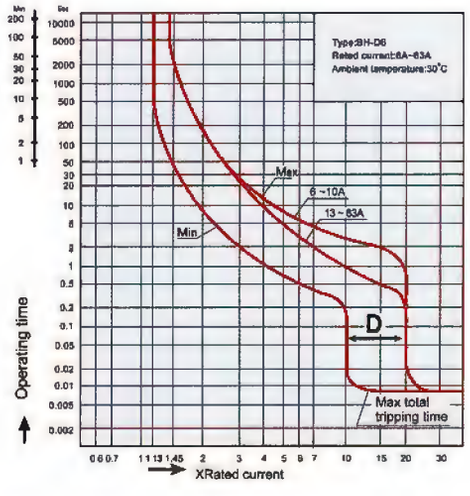
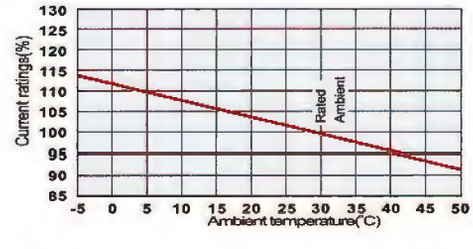


OPERATING CHARACTERISTIC





AMBIENT COMPENSATION



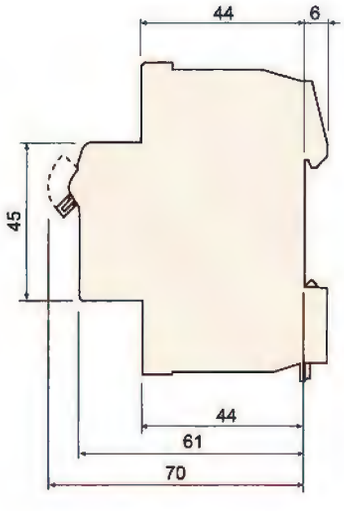
MITSUBISHI ELECTRIC
Changes for the Better

Miniature Circuit Breaker (MCB) BH-DN Series

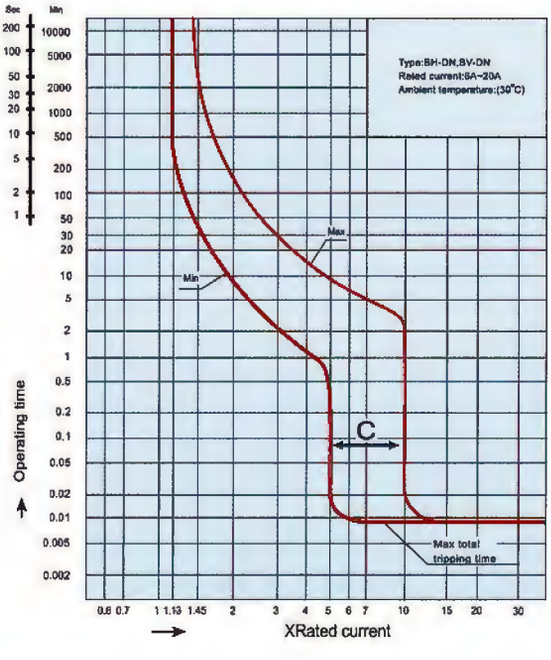
NEW!

Technical Data

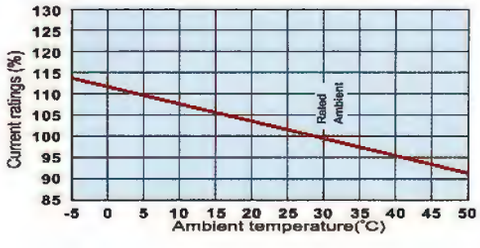
Design according to	IEC60898
Rated voltage	230VAC,50/60HZ
Rated current In(at 30°C)	6,10,16,20A
Ambient temperature range	-10~40°C
Instantaneous tripping current	C
Rated Short-circuit Capacity Icn	4.5KA
Service Short-circuit Capacity Ics	4.5KA
Mechanical endurance	20000
Electrical endurance	20000
Mounting	IEC35mm rail
Terminal(ON side)	lift terminal
Terminal(OFF side)	lift terminal
Applicable wire	1-10mm²
type of overcurrent release	Thermal-Magnetic
Accessories	nothing



Operating Characteristic



Ambient Compensation

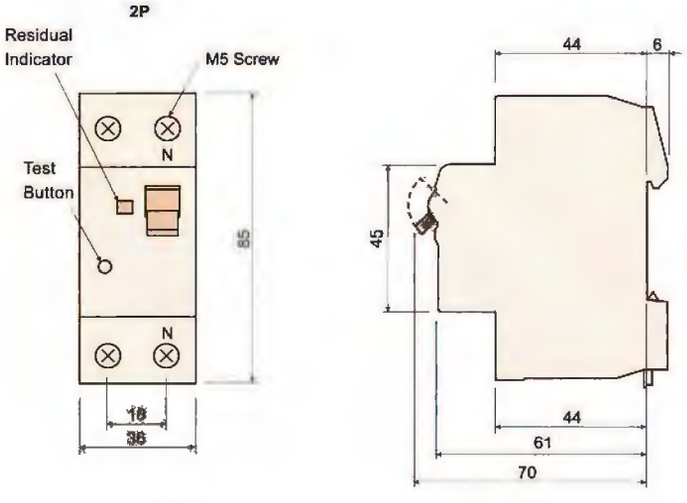


Residual Current Devices (RCCB) BV-D Series

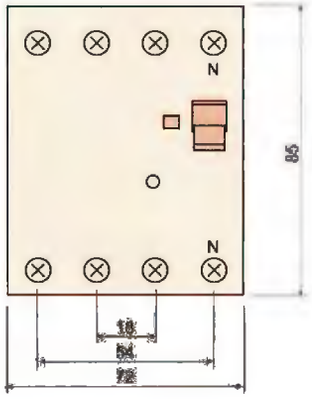
Technical Data

Design according to	IEC61008
Rated voltage	230/400VAC,50/60HZ
Rated current In(at 30°C)	25,40,63A
Ambient temperature range	-10~40°C
Residual operating current IΔn	30,300mA
Max operating time at IΔn	0.1sec
Max operating time at 5IΔn	0.04sec
Residual release method	Electronics Dependent on the voltage
Pulsating current sensitivity	type AC
Rated condition short-circuit current	6KA
Mechanical endurance	8000
Electrical endurance	8000
Mounting	IEC35mm rail
Terminal(ON side)	lift terminal
Terminal(OFF side)	lift terminal/open mouthed terminal
Busbar thickness for open mouthed terminal	0.7-1.5mm
Applicable wire	1-25mm²
Residual indicator	Mechanical
Accessories	nothing

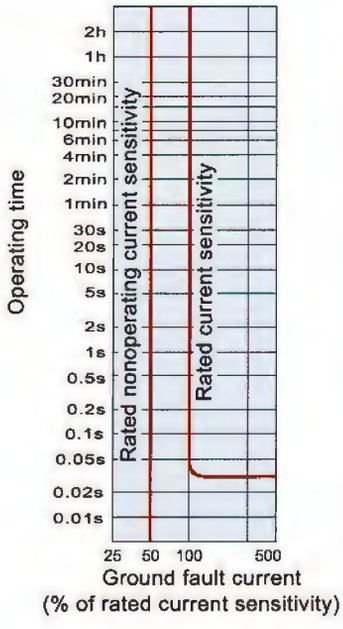
2P



4P



Operating Characteristic



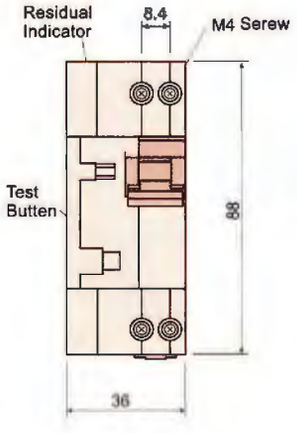
Combined RCD/MCB devices (RCBO) BV-DN Series

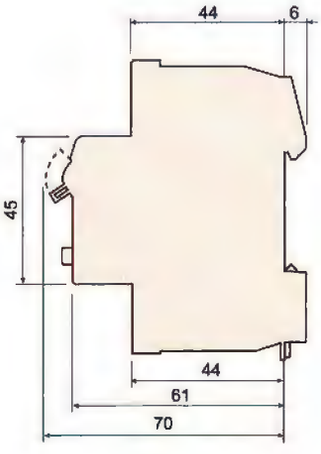
NEW!

Technical Data

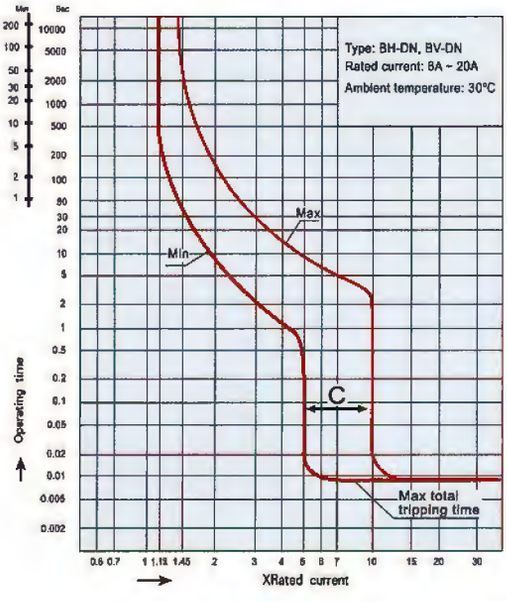
Design according to	IEC61009
Rated voltage	230VAC,50/60HZ
Rated current In(at 30°C)	6,10,16,20A
Ambient temperature range	-10 ~ 40°C
Instantaneous tripping current	C
Rated Short-circuit Capacity Icn	4.5kA
Service Short-circuit Capacity Ics	4.5kA
Residual operating current IΔn	30,100,300mA
Max operating time at IΔn	0.1sec
Max operating time at 5IΔn	0.04sec
Residual release method	Electronics Dependent on line voltage
Pulsating current sensitivity	typeAC
Mechanical endurance	20000
Electrical endurance	20000
Mounting	IEC 35mm rail
Terminal(ON side)	lift terminal
Terminal(OFF side)	lift terminal
Applicable wire	1-10mm²
Type of overcurrent release	Thermal-Magnetic
Residual indicator	Mechanical
Accessories	over voltage release(Note.1)

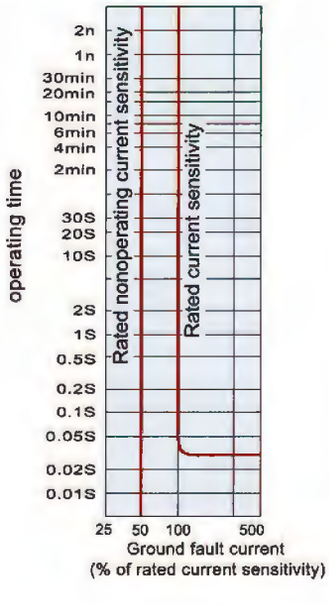
Note 1:Over voltage release range is 280V±5%





Operating Characteristic





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for Middle East

ISO 14001 JACO UKAS ENVIRONMENTAL MANAGEMENT 051

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Mitsubishi Electric Corporation's Fukuyama Works, which produces these products, is certified as meeting the ISO 14001 environmental management system standard

03 A

SPECIFICATIONS

MOLDED-CASE CIRCUIT BREAKERS

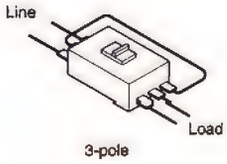
MCCBs NF-C Series (economy type breakers)

Frame Size				63	125		160	250	
Photo									
Type name				NF63-CW	NF125-CWC	NF125-CGW RTC	NF160-CGW RTC	NF250-CWC	NF250-CGW RTC
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *1				3 4 6 10 16 20 25 32 40 50 63	16 20 32 40 50 63 80 100	16–20 20–25 25–32 32–40 40–63 63–100	–	125 150 160 175 200 225	125–160 160–200
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C *1				–	125	80–125	125–160	250	160–250
Number of poles				2 | 3	2 | 3	2 | 3	2 | 3	2 | 3	2 | 3
Rated insulation voltage Ui (V)				600	600	690	690	600	690
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *9	690V	–	–	–	–	–	–
			500V	2.5/1	7.5/4	10/5	10/5	10/5	10/5
			440V	2.5/1	10/5	15/8	15/8	15/8	15/8
			415V	2.5/1	18/9	22/11	22/11	22/11	22/11
			400V	5/2	(18/9)	(22/11)	(22/11)	(22/11)	(22/11)
			380V	5/2	18/9	22/11	22/11	22/11	22/11
			240V	(7.5/4)	(30/15)	(35/18)	(35/18)	(35/18)	(35/18)
			230V	7.5/4	30/15	35/18	35/18	35/18	35/18
		DC	250V	2.5/1 *2 | –	7.5/4 *3	–	–	10/5 *3	–
			300V	–	–	–	–	–	–
Suitability for isolation				●	●	●	●	●	●
Utilization category				A	A	A	A	A	A
Reverse connection (terminals unmarked)				●	●	●	●	●	●
Rated impulse withstand voltage Uimp (kV)				6	8	8	8	6	8
Pollution degree				2	3	3	3	2	3
Number of operating cycles		without current		10,000	10,000	10,000	8,000	8,000	8,000
		with current	440V-In/2	6,000	6,000	6,000	4,000	4,000	4,000
			440V-In	6,000	6,000	6,000	4,000	4,000	4,000
			690V-In/2	–	–	–	–	–	–
			690V-In	–	–	–	–	–	–
Overall dimensions (mm)			a	50 | 75	60 | 90	105	105	105	105
			b	130	130	165	165	165	165
			c	68	68	86	86	68	86
			ca	90	90	110	110	92	110
Weight of front-Connection type (kg)				0.45 | 0.6	0.65 | 0.9	2.0	2.0	1.3 | 1.5	2.0
Installation and connections	Fixed	Front	Screw terminal	● *5	● *6	● *7	● *7	● *7	● *7
			Solderless (box) terminal (SL)	–	●	●	●	●	●
			Busbar terminal	–	–	–	–	–	–
		Rear	(B)	●	●	●	●	●	●
	Plug-in	Rear	(PM)	●	●	–	–	●	–
		Rear/front IP20	(PM-IP)	–	–	●	●	–	●
	IEC 35mm rail	Mounting hook (option)		●	–	–	–	–	–
		Adapter (option)		–	●	–	–	–	–
Cassette-type accessories (option)	Alarm switch		(AL)	●	●	●	●	●	●
	Auxiliary switch		(AX)	●	●	●	●	●	●
	Shunt trip		(SHT)	●	●	●	●	●	●
	Undervoltage trip (UVT) *8	Non-Synchronous Closing	(UVT-N)	●	●	–	–	●	–
		Synchronous Closing	(UVT-S)	–	●	●	●	–	●
Accessorie's connection (option)	with Lead-wire terminal block		(SLT)	●	●	●	●	●	●
	with Internal terminal type		(INT)	–	–	●	●	–	●
	with Flying leads			●	●	●	●	●	●
Built-in accessories (option)	Pre-alarm (contact output) *4		(PAL)	–	–	–	–	–	–
	Overcurrent trip alarm *4		(OAL)	–	–	–	–	–	–
External accessories (option)	Enclosure	Dustproof	(S)	●	●	–	–	●	–
			(I)	●	●	●	●	●	●
		Waterproof	(W)	– | ●	– | ●	●	●	●	●
	Electrical operation device		(MD)	–	– | ●	●	●	●	●
	Mechanical interlock		(MI)	●	●	●	●	●	●
	Handle lock device	Handle lock	(HL)	●	●	●	●	●	●
			(HL-S)	●	●	●	●	●	●
	Lock cover		(LC)	●	●	●	●	●	●
	External operating handle	Door mounting	(V)	– | ●	– | ●	●	●	●	●
			(S)	●	●	●	●	●	●
		Mounted on breaker	(R)	–	●	●	●	●	●
			(F)	●	●	●	●	●	●
	Insulating barrier	Between phase	(BA-F)	●	●	●	●	●	●
		To ground	(BA-G)	●	●	–	–	●	–
	Terminal cover	Large	(TC-L)	●	●	●	●	●	●
		Small	(TC-S)	●	●	●	●	●	●
		Transparent	(TTC)	●	●	●	●	●	●
		for rear connection	(BTC)	●	●	●	●	●	●
		for plug-in	(PTC)	●	●	●	●	●	●
Marine approval			L/R	●	–	–	–	–	–
			G/L	●	–	–	–	–	–
			BV	●	–	–	–	–	–
			DNV	●	–	–	–	–	–
			ABS	●	–	–	–	–	–
Automatic tripping device				Hydraulic-magnetic	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic	Thermal-magnetic
Trip button				Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

Notes: *1 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at ambient temperature 40°C, 45°C, 50°C or 55°C. (as they will be ordered)

*2 Specify if for DC use.

*3 Use two poles in the case of three-pole. In addition, wiring as shown to the right allows the three poles to be used for up to 400V DC.



*4 PAL and OAL cannot be fitted at the same time, please specify only one either PAL or OAL.

*5 Clamp Terminal.

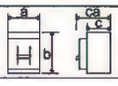
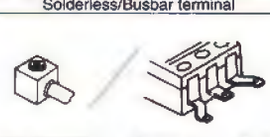
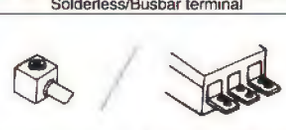
*6 Screw Terminal.

*7 Bolt Terminal.

*8 Limit of ambient temperature is 50°C.

*9 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.

MCCBs NF-C Series (economy type breakers)

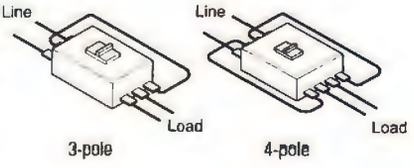
Frame Size					400			630			800	
Photo												
Type name					NF400-CP	NF400-CEP	NF400-CEPC	NF630-CP	NF630-CEP	NF630-CEPC	NF800-CEP	NF800-CEPC
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *1					250 300 350 400	200~400 adjustable	200~400 adjustable	500 600 630	300~630 adjustable	300~630 adjustable	400~800 adjustable	400~800 adjustable
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C *1					–	–	–	–	–	–	–	–
Number of poles					2 3	3	3	2 3	3	3	3	3
Rated insulation voltage Ui (V)					600	600	600	600	600	600	600	600
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *3		690V	–	–	–	–	–	–	–	–
				500V	15/8	15/8	15/8	18/9	18/9	18/9	18/9	18/9
				440V	25/13	25/13	25/13	36/18	36/18	36/18	36/18	36/18
				415V	(36/18)	(36/18)	36/18	(36/18)	(36/18)	36/18	(36/18)	36/18
				400V	36/18	36/18	36/18	36/18	36/18	36/18	36/18	36/18
				380V	(40/20)	(40/20)	40/20	(40/20)	(40/20)	40/20	(40/20)	40/20
				240V	(50/25)	(50/25)	50/25	(50/25)	(50/25)	50/25	(50/25)	50/25
				230V	50/25	50/25	50/25	50/25	50/25	50/25	50/25	50/25
		DC		250V	20/10 *2 –	–	–	20/10 *2 –	–	–	–	–
Suitability for isolation					●	●	●	●	●	●	●	●
Utilization category					A	B	B	A	B	B	B	B
Rated short-time withstand current Icw (kA)					–	5	5	–	7.6	7.6	9.6	9.6
Reverse connection (terminals unmarked)					●	●	●	●	●	●	●	●
Rated impulse withstand voltage Uimp (kV)					8	8	8	8	8	8	8	8
Pollution degree					3	3	3	3	3	3	3	3
Overall dimensions (mm)				a	140	140	140	210	210	210	210	210
				b	257	257	257	275	275	275	275	275
				c	103	103	103	103	103	103	103	103
				ca	134	155	155	155	155	155	155	155
Weight of front-Connection type (kg)					4.7 5.5	6	6	8.0 9.4	10.5	10.5	10.9	10.9
Connection					Solderless/Busbar terminal 			Solderless/Busbar terminal 				
Cassette-type accessories (option)	Alarm switch			(AL)	●	●	●	●	●	●	●	●
	Auxiliary switch			(AX)	●	●	●	●	●	●	●	●
	Shunt trip			(SHT)	●	●	●	●	●	●	●	●
	Undervoltage trip (UVT)		Non-Synchronous Closing	(UVT-N)	●	●	●	●	●	●	●	●
			Synchronous Closing	(UVT-S)	●	●	●	●	●	●	●	●
Accessorie's connection (option)	with Lead-wire terminal block			(SLT)	●	●	●	●	●	●	●	●
	with Internal terminal type			(INT)	–	–	–	–	–	–	–	–
	with Flying leads				●	●	●	●	●	●	●	●
Built-in accessories (option)	Pre-alarm (contact output) *4			(PAL)	–	● *5	● *5	–	● *5	● *5	● *5	● *5
	Overcurrent trip alarm *4			(OAL)	–	–	–	–	–	–	–	–
	Trip indicator			(TI)	–	●	●	–	●	●	●	●
External accessories (option)	Enclosure		Dustproof	(S)	●	●	●	●	●	●	●	●
				(I)	●	–	–	●	–	–	●	●
			Waterproof	(W)	●	–	–	●	–	–	●	●
	Electrical operation device	Motor-operated type		(MD)	●	●	●	●	●	●	●	●
		Spring-charge type		(MDS)	●	●	●	●	●	●	●	●
	Mechanical interlock			(MI)	●	●	●	●	●	●	●	●
	Handle lock device		Handle lock	(HL)	●	●	●	●	●	●	●	●
				(HL-S)	●	●	●	●	●	●	●	●
	Lock cover			(LC)	–	–	–	–	–	–	–	–
	External operating handle	Door mounting		(V)	●	●	●	●	●	●	●	●
				(S)	●	●	●	●	●	●	●	●
		Mounted on breaker		(R)	●	●	●	●	●	●	●	●
				(F)	●	●	●	●	●	●	●	●
	Insulating barrier	Between phase		(BA-F)	●	●	●	●	●	●	●	●
		To ground		(BA-G)	●	●	●	●	●	●	●	●
	Terminal cover	Large		(TC-L)	●	●	●	●	●	●	●	●
		Small		(TC-S)	–	–	–	–	–	–	–	–
		Transparent		(TTC)	●	●	●	●	●	●	●	●
Marine approval				L/R	●	●	–	●	●	–	●	–
				G/L	●	●	–	●	●	–	●	–
				BV	●	●	–	●	●	–	●	–
				DNV	–	●	–	–	●	–	●	–
				ABS	●	●	–	●	●	–	●	–
Automatic tripping device					Thermal-magnetic	Electronic	Electronic	Thermal-magnetic	Electronic	Electronic	Electronic	Electronic
Trip button					Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

Notes: *1 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at ambient temperature 40°C, 45°C, 50°C or 55°C. (as they will be ordered)
*2 Specify if for DC use.
*3 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.
*4 Both PAL and OAL is not available. Only one specified.
*5 Solid state relay terminals standard type is SLT.
Please specify if other type of terminals is required

MCCBs NF-S, H Series (general purpose breakers)

Frame Size					32	63	125		
Photo									
Type name					NF32-SW	NF63-HW	NF125-SW	NF125-SGW RTC	NF125-SGW REC
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *1					3 4 6 10 16 20 25 32	10 16 20 25 32 40 50 63	16 20 32 40 50 63 80 100	16–20 20–25 25–32 32–40 40–63 63–100	16–32 32–63 63–100 75–125 *2
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C *1					–	–	125	80–125	
Number of poles					2 | 3	2 | 3 | 4	2 | 3 | 4	2 | 3 | 4	3 | 4
Rated insulation voltage Ui (V)					600	690	690	690	690
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *6		690V	–	2.5/1	8/4	8/8	8/8
				500V	2.5/1	7.5/4	18/9	30/30	30/30
				440V	2.5/1	10/5	25/13	36/36	36/36
				415V	2.5/1	10/5	30/15	36/36	36/36
				400V	5/2	(10/5)	(30/15)	(36/36)	(36/36)
				380V	5/2	10/5	30/15	36/36	36/36
				240V	(7.5/4)	(25/13)	(50/25)	(85/85)	(85/85)
				230V	7.5/4	25/13	50/25	85/85	85/85
		DC		250V	2.5/1 *3 | –	7.5/4 *3 | –	15/8 *4	–	–
				300V	–	–	–	20/20 *5	–
Suitability for isolation					●	●	●	●	●
Utilization category					A	A	A	A	A
Reverse connection (terminals unmarked)					●	●	●	●	●
Rated impulse withstand voltage Uimp (kV)					6	6	8	8	8
Pollution degree					2	2	3	3	3
Number of operating cycles		without current			10,000	15,000	25,000	50,000	50,000
		with current		440V-In/2	6,000	15,000	20,000	40,000	40,000
				440V-In	6,000	8,000	10,000	30,000	30,000
				690V-In/2	–	–	1,000	1,000	1,000
				690V-In	–	–	1,000	1,000	1,000
Overall dimensions (mm)				a	50 | 75	50 | 75 | 100	60 | 90 | 120	105 | 140	105 | 140
				b	130	130	130	165	165
				c	68	68	68	86	86
				ca	90	90	90	110	110
Weight of front-Connection type (kg)					0.4 | 0.55	0.45 | 0.6 | 0.7	0.7 | 0.95 | 1.3	2.0 | 2.6	2.0 | 2.6
Installation and connections	Fixed	Front	Screw terminal		● *8	● *8	● *9	● *10	● *10
			Solderless (box) terminal (SL)		–	–	●	●	●
			Busbar terminal		–	–	–	–	–
		Rear		(B)	●	●	●	●	●
	Plug-in	Rear		(PM)	●	●	●	–	–
		Rear/front IP20		(PM-IP)	–	–	–	●	●
	IEC 35mm rail	Mounting hook (option)			●	●	– | –	–	–
		Adapter (option)			–	–	● | –	–	–
Cassette-type accessories (option)	Alarm switch			(AL)	●	●	●	●	●
	Auxiliary switch			(AX)	●	●	●	●	●
	Shunt trip			(SHT)	●	●	●	●	●
	Undervoltage trip (UVT) *11	Non-Synchronous Closing		(UVT-N)	●	●	●	–	–
		Synchronous Closing		(UVT-S)	–	–	●	●	●
Accessorie's connection (option)	with Lead-wire terminal block			(SLT)	●	●	●	●	●
	with Internal terminal type			(INT)	–	–	–	●	●
	with Flying leads				●	●	●	●	●
Built-in accessories (option)	Pre-alarm (contact output) *7			(PAL)	–	–	–	–	●
	Overcurrent trip alarm *7			(OAL)	–	–	–	–	●
External accessories (option)	Enclosure	Dustproof		(S)	●	● –	● –	–	–
				(I)	●	● –	● –	● –	● –
		Waterproof		(W)	– | ●	– ● –	● –	● –	● –
	Electrical operation device			(MD)	–	–	– | ●	●	●
	Mechanical interlock			(MI)	●	●	●	●	●
	Handle lock device	Handle lock		(HL)	●	●	●	●	●
				(HL-S)	●	●	●	●	●
	Lock cover			(LC)	●	●	●	●	●
	External operating handle	Door mounting		(V)	– | ●	– ●	– | ●	●	●
				(S)	●	●	●	●	●
		Mounted on breaker		(R)	–	–	●	●	●
				(F)	●	●	●	●	●
	Insulating barrier	Between phase		(BA-F)	●	●	●	●	●
		To ground		(BA-G)	●	●	●	–	–
	Terminal cover	Large		(TC-L)	●	●	●	●	●
		Small		(TC-S)	●	●	●	●	●
		Transparent		(TTC)	●	●	●	●	●
		for rear connection		(BTC)	●	●	●	●	●
		for plug-in		(PTC)	●	●	●	●	●
Marine approval				L/R	●	●	●	●	●
				G/L	●	●	●	●	●
				BV	●	●	●	●	●
				DNV	●	●	●	●	●
				ABS	●	●	●	●	●
Automatic tripping device					Hydraulic-magnetic	Hydraulic-magnetic	Thermal-magnetic	Thermal-magnetic	Electronic
Trip button					Equipped	Equipped	Equipped	Equipped	Equipped

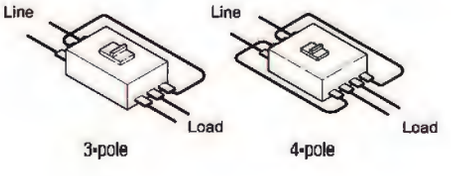
Notes: *1 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at ambient temperature 40°C, 45°C, 50°C or 55°C.
(as they will be ordered)
*2 Temperature 40°C only.
*3 Specify if for DC use.
*4 Use two poles in the case of three-pole or four-pole products.
In addition, wiring as shown to the right allows the three poles to be used for up to 400V DC and the four poles to be used for up to 500V DC.
*5 Use two poles in the case of three-pole or four-pole products.
In addition, wiring as shown to the right allows the three poles to be used for up to 500V DC and the four poles to be used for up to 600V DC.
*6 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.
*7 PAL and OAL cannot be fitted at the same time, please specify only one either PAL or OAL
*8 Clamp Terminal.
*9 Screw Terminal.
*10 Bolt Terminal.
*11 Limit of ambient temperature is 50°C.



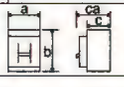
MCCBs NF-S, H Series (general purpose breakers)

Frame Size					125								
Photo													
Type name					NF125-HW			NF125-HGW RTC			NF125-HGW REC		
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *1					16 20 32 40 50 63 80 100			16–20 20–25 25–32 32–40 40–63 63–100 80–125			16–32 32–63 63–100 75–125		
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C *1					–			–			*2		
Number of poles					2	3	4	2	3	4	3	4	
Rated insulation voltage Ui (V)					690			690			690		
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *5		690V	10/5			20/20			20/20		
				500V	30/15			50/50			50/50		
				440V	50/25			65/65			65/65		
				415V	50/25			70/70			70/70		
				400V	(50/25)			75/75			75/75		
				380V	50/25			75/75			75/75		
				240V	(100/50)			(100/100)			(100/100)		
				230V	100/50			100/100			100/100		
		DC		250V	40/20 *3			–			–		
				300V	–			40/40 *4			–		
Suitability for isolation					●			●			●		
Utilization category					A			A			A		
Reverse connection (terminals unmarked)					●			●			●		
Rated impulse withstand voltage Uimp (kV)					8			8			8		
Pollution degree					3			3			3		
Number of operating cycles			without current		25,000			50,000			50,000		
			with current	440V-In/2	20,000			40,000			40,000		
				440V-In	10,000			30,000			30,000		
				690V-In/2	1,000			1,000			1,000		
				690V-In	1,000			1,000			1,000		
Overall dimensions (mm)				a	90		120	105		140	105		140
				b	130			165			165		
				c	68			86			86		
				ca	90			110			110		
Weight of front-Connection type (kg)					0.8	0.95	1.3	2.0		2.6	2.0		2.6
Installation and connections	Fixed	Front	Screw terminal		● *7			● *8			● *8		
			Solderless (box) terminal (SL)		●			●			●		
			Busbar terminal		–			–			–		
		Rear		(B)	●			●			●		
	Plug-in	Rear		(PM)	●			–			–		
		Rear/front IP20		(PM-IP)	–			●			●		
	IEC 35mm rail	Mounting hook (option)			–		–	–			–		
		Adapter (option)			●		–	–			–		
Cassette-type accessories (option)	Alarm switch			(AL)	●			●			●		
	Auxiliary switch			(AX)	●			●			●		
	Shunt trip			(SHT)	●			●			●		
	Undervoltage trip (UVT) *9		Non-Synchronous Closing	(UVT-N)	●			–			–		
			Synchronous Closing	(UVT-S)	●			●			●		
Accessorie's connection (option)	with Lead-wire terminal block			(SLT)	●			●			●		
	with Internal terminal type			(INT)	–			●			●		
	with Flying leads				●			●			●		
Built-in accessories (option)	Pre-alarm (contact output) *6			(PAL)	–			–			●		
	Overcurrent trip alarm *6			(OAL)	–			–			●		
External accessories (option)	Enclosure	Dustproof		(S)	●		–	–			–		
				(I)	●		–	●		–	●		–
		Waterproof		(W)	●		–	●		–	●		–
	Electrical operation device			(MD)	–		●	●			●		
	Mechanical interlock			(MI)		●		●			●		
	Handle lock device	Handle lock		(HL)		●		●			●		
				(HL-S)		●		●			●		
	Lock cover			(LC)		●		●			●		
	External operating handle	Door mounting		(V)	–		●	●			●		
				(S)		●		●			●		
		Mounted on breaker		(R)		●		●			●		
				(F)		●		●			●		
	Insulating barrier	Between phase		(BA-F)		●		●			●		
		To ground		(BA-G)		●		–			–		
	Terminal cover	Large		(TC-L)		●		●			●		
		Small		(TC-S)		●		●			●		
		Transparent		(TTC)		●		●			●		
		for rear connection		(BTC)		●		●			●		
		for plug-in		(PTC)		●		●			●		
Marine approval				L/R		●		●			●		
				G/L		●		●			●		
				BV		●		●			●		
				DNV		●		●			●		
				ABS		●		●			●		
Automatic tripping device					Thermal-magnetic			Thermal-magnetic			Electronic		
Trip button					Equipped			Equipped			Equipped		

Notes: *1 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at ambient temperature 40°C, 45°C, 50°C or 55°C. (as they will be ordered)
*2 Temperature 40°C only.
*3 Use two poles in the case of three-pole or four-pole products. In addition, wiring as shown to the right allows the three poles to be used for up to 400V DC and the four poles to be used for up to 500V DC.
*4 Use two poles in the case of three-pole or four-pole products. In addition, wiring as shown to the right allows the three poles to be used for up to 500V DC and the four poles to be used for up to 600V DC.
*5 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.
*6 PAL and OAL cannot be fitted at the same time, please specify only one either PAL or OAL
*7 Screw Terminal.
*8 Bolt Terminal.
*9 Limit of ambient temperature is 50°C.



MCCBs NF-S, H Series (general purpose breakers)

Frame Size					160				160			
Photo												
Type name					NF160-SWC	NF160-SGW RTC	NF160-SGW REC		NF160-HW	NF160-HGW RTC	NF160-HGW REC	
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *1					50 60 75 100 125 150 160	–	63–100 75–125 80–160 *2		50 60 75 100 125 150 160	125–160	63–100 75–125 80–160 *2	
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C *1					–	125–160			–	–		
Number of poles					2 3 4	2 3 4	3 4		2 3 4	2 3 4	3 4	
Rated insulation voltage Ui (V)					690	690	690		690	690	690	
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *5	690V		–	8/8	8/8		5/3	20/20	20/20	
			500V		15/8	30/30	30/30		30/8	50/50	50/50	
			440V		35/18	36/36	36/36		50/13	65/65	65/65	
			415V		35/18	36/36	36/36		50/13	70/70	70/70	
			400V		(35/18)	(36/36)	(36/36)		(50/13)	75/75	75/75	
			380V		35/18	36/36	36/36		50/13	75/75	75/75	
			240V		(50/25)	(85/85)	(85/85)		(100/25)	(100/100)	(100/100)	
			230V		50/25	85/85	85/85		100/25	100/100	100/100	
		DC	250V		15/8 *3	–	–		40/20 *3	–	–	
			300V		–	20/20 *4	–		–	40/40 *4	–	
Suitability for isolation					●	●	●		●	●	●	
Utilization category					A	A	A		A	A	A	
Reverse connection (terminals unmarked)					●	●	●		●	●	●	
Rated impulse withstand voltage Uimp (kV)					6	8	8		6	8	8	
Pollution degree					2	3	3		2	3	3	
Number of operating cycles		without current			12,000	40,000	40,000		12,000	40,000	40,000	
		with current	440V-In/2		4,000	30,000	30,000		4,000	30,000	30,000	
			440V-In		4,000	20,000	20,000		4,000	20,000	20,000	
			690V-In/2		–	1,000	1,000		1,000	1,000	1,000	
			690V-In		–	1,000	1,000		1,000	1,000	1,000	
Overall dimensions (mm)			a		105 140	105 140	105 140		105 140	105 140	105 140	
			b		165	165	165		165	165	165	
			c		68	86	86		68	86	86	
			ca		92	110	110		92	110	110	
Weight of front-Connection type (kg)					1.3 1.5 1.9	2.0 2.6	2.0 2.6		1.3 1.5 1.9	2.0 2.6	2.0 2.6	
Installation and connections	Fixed	Front	Screw terminal		● *7	● *7	● *7		● *7	● *7	● *7	
			Solderless (box) terminal (SL)		●	●	●		●	●	●	
			Busbar terminal		–	–	–		–	–	–	
		Rear		(B)	●	●	●		●	●	●	
	Plug-in	Rear		(PM)	●	–	–		●	–	–	
		Rear/front IP20		(PM-IP)	–	●	●		–	●	●	
	IEC 35mm rail	Mounting hook (option)			–	–	–		–	–	–	
		Adapter (option)			–	–	–		–	–	–	
Cassette-type accessories (option)	Alarm switch			(AL)	●	●	●		●	●	●	
	Auxiliary switch			(AX)	●	●	●		●	●	●	
	Shunt trip			(SHT)	●	●	●		●	●	●	
	Undervoltage trip (UVT) *8	Non-Synchronous Closing		(UVT-N)	●	–	–		●	–	–	
		Synchronous Closing		(UVT-S)	–	●	●		–	●	●	
Accessorie's connection (option)	with Lead-wire terminal block			(SLT)	●	●	●		●	●	●	
	with Internal terminal type			(INT)	–	●	●		–	●	●	
	with Flying leads				●	●	●		●	●	●	
Built-in accessories (option)	Pre-alarm (contact output) *6			(PAL)	–	–	●		–	–	●	
	Overcurrent trip alarm *6			(OAL)	–	–	●		–	–	●	
External accessories (option)	Enclosure	Dustproof		(S)	● –	–	–		–	–	–	
				(T)	● –	● –	● –		● –	● –	● –	
		Waterproof		(W)	● –	● –	● –		● –	● –	● –	
	Electrical operation device			(MD)	●	●	●		●	●	●	
	Mechanical interlock			(MI)	●	●	●		●	●	●	
	Handle lock device	Handle lock		(HL)	●	●	●		●	●	●	
				(HL-S)	●	●	●		●	●	●	
	Lock cover			(LC)	●	●	●		●	●	●	
	External operating handle	Door mounting		(V)	●	●	●		●	●	●	
				(S)	●	●	●		●	●	●	
		Mounted on breaker		(R)	●	●	●		●	●	●	
				(F)	●	●	●		●	●	●	
	Insulating barrier	Between phase		(BA-F)	●	●	●		●	●	●	
		To ground		(BA-G)	●	–	–		●	–	–	
	Terminal cover	Large		(TC-L)	●	●	●		●	●	●	
		Small		(TC-S)	●	●	●		●	●	●	
		Transparent		(TTC)	●	●	●		●	●	●	
		for rear connection		(BTC)	●	●	●		●	●	●	
		for plug-in		(PTC)	●	●	●		●	●	●	
Marine approval				L/R	–	–	–		–	–	–	
				G/L	–	–	–		–	–	–	
				BV	–	–	–		–	–	–	
				DNV	–	–	–		–	–	–	
				ABS	–	–	–		–	–	–	
Automatic tripping device					Thermal-magnetic	Thermal-magnetic	Electronic		Thermal-magnetic	Thermal-magnetic	Electronic	
Trip button					Equipped	Equipped	Equipped		Equipped	Equipped	Equipped	

Notes: *1 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at ambient temperature 40°C, 45°C, 50°C or 55°C. (as they will be ordered)

*2 Temperature 40°C only.

*3 Use two poles in the case of three-pole or four-pole products. In addition, wiring as shown to the right allows the three poles to be used for up to 400V DC and the four poles to be used for up to 500V DC.

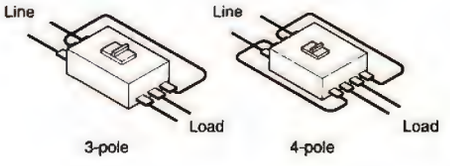
*4 Use two poles in the case of three-pole or four-pole products. In addition, wiring as shown to the right allows the three poles to be used for up to 500V DC and the four poles to be used for up to 600V DC.

*5 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.

*6 PAL and OAL cannot be fitted at the same time, please specify only one either PAL or OAL

*7 Bolt Terminal.

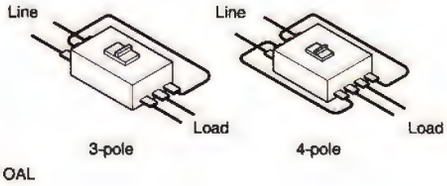
*8 Limit of ambient temperature is 50°C.



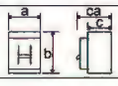
MCCBs NF-S, H Series (general purpose breakers)

Frame Size					250					
Photo										
Type name					NF250-SWC	NF250-SGW RTC	NF250-SGW REC	NF250-HW	NF250-HGW RTC	NF250-HGW REC
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *1					125 150 160 175 200 225	125–160 160–200	63–100 75–125 80–160 125–250 *2	125 150 160 175 200 225	125–160 160–200	63–100 75–125 80–160 125–250 *2
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C *1					250	160–250		250	160–250	
Number of poles					2 3 4	2 3 4	3 4	2 3 4	2 3 4	3 4
Rated insulation voltage Ui (V)					690	690	690	690	690	690
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *5		690V	–	8/8	8/8	5/3	20/20	20/20
				500V	15/8	30/30	30/30	30/8	50/50	50/50
				440V	35/18	36/36	36/36	50/13	65/65	65/65
				415V	35/18	36/36	36/36	50/13	70/70	70/70
				400V	(35/18)	(36/36)	(36/36)	(50/13)	75/75	75/75
				380V	35/18	36/36	36/36	50/13	75/75	75/75
				240V	(50/25)	(85/85)	(85/85)	(100/25)	(100/100)	(100/100)
				230V	50/25	85/85	85/85	100/25	100/100	100/100
		DC		250V	15/8 *3	–	–	40/20 *3	–	–
				300V	–	20/20 *4	–	–	40/40 *4	–
Suitability for isolation					●	●	●	●	●	●
Utilization category					A	A	A	A	A	A
Reverse connection (terminals unmarked)					●	●	●	●	●	●
Rated impulse withstand voltage Uimp (kV)					6	8	8	6	8	8
Pollution degree					2	3	3	2	3	3
Number of operating cycles		without current			12,000	25,000	25,000	12,000	25,000	25,000
		with current		440V-In/2	4,000	15,000	15,000	4,000	15,000	15,000
				440V-In	4,000	10,000	10,000	4,000	10,000	10,000
				690V-In/2	–	1,000	1,000	1,000	1,000	1,000
				690V-In	–	1,000	1,000	1,000	1,000	1,000
Overall dimensions (mm)				a	105 140	105 140	105 140	105 140	105 140	105 140
				b	165	165	165	165	165	165
				c	68	86	86	68	86	86
				ca	92	110	110	92	110	110
Weight of front-Connection type (kg)					1.3 1.5 1.9	2.0 2.6	2.0 2.6	1.3 1.5 1.9	2.0 2.6	2.0 2.6
Installation and connections	Fixed	Front	Screw terminal		● *7	● *7	● *7	● *7	● *7	● *7
			Solderless (box) terminal (SL)		●	●	●	●	●	●
			Busbar terminal		–	–	–	–	–	–
		Rear		(B)	●	●	●	●	●	●
	Plug-in	Rear		(PM)	●	–	–	●	–	–
		Rear/front IP20		(PM-IP)	–	●	●	–	●	●
	IEC 35mm rail	Mounting hook (option)			–	–	–	–	–	–
		Adapter (option)			–	–	–	–	–	–
Cassette-type accessories (option)	Alarm switch			(AL)	●	●	●	●	●	●
	Auxiliary switch			(AX)	●	●	●	●	●	●
	Shunt trip			(SHT)	●	●	●	●	●	●
	Undervoltage trip (UVT) *8		Non-Synchronous Closing	(UVT-N)	●	–	–	●	–	–
			Synchronous Closing	(UVT-S)	–	●	●	–	●	●
Accessorie's connection (option)	with Lead-wire terminal block			(SLT)	●	●	●	●	●	●
	with Internal terminal type			(INT)	–	●	●	–	●	●
	with Flying leads				●	●	●	●	●	●
Built-in accessories (option)	Pre-alarm (contact output) *6			(PAL)	–	–	●	–	–	●
	Overcurrent trip alarm *6			(OAL)	–	–	●	–	–	●
External accessories (option)	Enclosure	Dustproof		(S)	● –	–	–	–	–	–
				(T)	● –	● –	● –	● –	● –	● –
		Waterproof		(W)	● –	● –	● –	● –	● –	● –
	Electrical operation device			(MD)	●	●	●	●	●	●
	Mechanical interlock			(MI)	●	●	●	●	●	●
	Handle lock device	Handle lock		(HL)	●	●	●	●	●	●
				(HL-S)	●	●	●	●	●	●
	Lock cover			(LC)	●	●	●	●	●	●
	External operating handle	Door mounting		(V)	●	●	●	●	●	●
				(S)	●	●	●	●	–	–
		Mounted on breaker		(R)	●	●	●	●	●	●
				(F)	●	●	●	●	●	●
	Insulating barrier	Between phase		(BA-F)	●	●	●	●	●	●
		To ground		(BA-G)	●	–	–	●	–	–
	Terminal cover	Large		(TC-L)	●	●	●	●	●	●
		Small		(TC-S)	●	●	●	●	●	●
		Transparent		(TTC)	●	●	●	●	●	●
		for rear connection		(BTC)	●	●	●	●	●	●
		for plug-in		(PTC)	●	●	●	●	●	●
Marine approval				L/R	–	●	●	–	●	●
				G/L	–	●	●	–	●	●
				BV	–	●	●	–	●	●
				DNV	–	●	●	–	●	●
				ABS	–	●	●	–	●	●
Automatic tripping device					Thermal-magnetic	Thermal-magnetic	Electronic	Thermal-magnetic	Thermal-magnetic	Electronic
Trip button					Equipped	Equipped	Equipped	Equipped	Equipped	Equipped

Notes: *1 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at ambient temperature 40°C, 45°C, 50°C or 55°C. (as they will be ordered)
*2 Temperature 40°C only.
*3 Use two poles in the case of three-pole or four-pole products. In addition, wiring as shown to the right allows the three poles to be used for up to 400V DC and the four poles to be used for up to 500V DC.
*4 Use two poles in the case of three-pole or four-pole products. In addition, wiring as shown to the right allows the three poles to be used for up to 500V DC and the four poles to be used for up to 600V DC.
*5 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.
*6 PAL and OAL cannot be fitted at the same time, please specify only one either PAL or OAL
*7 Bolt Terminal.
*8 Limit of ambient temperature is 50°C.



MCCBs NF-S, H Series (general purpose breakers)

Frame Size				400				
Photo								
Type name				NF400-SP	NF400-SPC	NF400-SEP	NF400-SEPC	NF400-HEP
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *2				250 300 350 400	250 300 350 400	200~400 adjustable	200~400 adjustable	200~400 adjustable
Number of poles				2 3 4	2 3 4	3 4	3 4	3 4
Rated insulation voltage Ui (V)				690	690	690	690	690
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *3	690V	10/10<5/5> *1	10/10<5/5> *1	10/10<5/5> *1	10/10<5/5> *1	10/10
			500V	30/30<25/25> *1	30/30<25/25> *1	30/30<25/25> *1	30/30<25/25> *1	50/50
			440V	42/42<36/36> *1	42/42/<36/36> *1	42/42<36/36> *1	42/42<36/36> *1	65/65
			415V	(45/45)<(36/36)> *1	50/25<36/36> *1	(45/45)<(36/36)> *1	50/25<36/36> *1	(70/70)
			400V	45/45<36/36> *1	50/25<36/36> *1	45/45<36/36> *1	50/25<36/36> *1	70/70
			380V	(50/50)<(42/42)> *1	50/50<42/42> *1	(50/50)<(42/42)> *1	50/50<42/42> *1	(70/70)
			240V	(85/85)<(65/65)> *1	85/85<65/65> *1	(85/85)<(65/65)> *1	85/85<65/65> *1	(100/100)
			230V	85/85<65/65> *1	85/85<65/65> *1	85/85<65/65> *1	85/85<65/65> *1	100/100
		DC	250V	40/40 *6 –	–	–	–	–
Suitability for isolation				●	●	●	●	●
Utilization category				A	A	B	B	B
Rated short-time withstand current Icw (kA)				–	–	5	5	5
Reverse connection (terminals unmarked)				●	●	●	●	●
Rated impulse withstand voltage Uimp (kV)				8	8	8	8	8
Pollution degree				3	3	3	3	3
Overall dimensions (mm)			a	140 185	140 185	140 185	140 185	140 185
			b	257	257	257	257	257
			c	103	103	103	103	103
			ca	155	155	155	155	155
Weight of front-Connection type (kg)				4.9 5.7 7.5	4.9 6 7.8	6 7.8	6 7.8	6 7.8
Connection				Solderless/Busbar terminal 				
Cassette-type accessories (option)	Alarm switch		(AL)	●	●	●	●	●
	Auxiliary switch		(AX)	●	●	●	●	●
	Shunt trip		(SHT)	●	●	●	●	●
	Undervoltage trip (UVT)	Non-Synchronous Closing	(UVT-N)	●	●	●	●	●
		Synchronous Closing	(UVT-S)	●	●	●	●	●
Accessorie's connection (option)	with Lead-wire terminal block		(SLT)	●	●	●	●	●
	with Internal terminal type		(INT)	–	–	–	–	–
	with Flying leads			●	●	●	●	●
Built-in accessories (option)	Pre-alarm (contact output) *4		(PAL)	–	–	● *5	● *5	● *5
	Overcurrent trip alarm *4		(OAL)	–	–	–	–	–
	Trip indicator		(TI)	–	–	●	●	●
External accessories (option)	Enclosure	Dustproof	(S)	● –	● –	● –	● –	–
			(T)	● –	● –	● –	–	–
		Waterproof	(W)	● –	● –	● –	–	–
	Electrical operation device	Motor-operated type	(MD)	●	●	●	●	●
		Spring-charge type	(MDS)	●	●	●	●	●
	Mechanical interlock		(MI)	●	●	●	●	●
	Handle lock device	Handle lock	(HL)	●	●	●	●	●
			(HL-S)	●	●	●	●	●
	Lock cover		(LC)	–	–	–	–	–
	External operating handle	Door mounting	(V)	●	●	●	●	●
			(S)	●	●	●	●	●
		Mounted on breaker	(R)	●	●	●	●	●
			(F)	●	●	●	●	●
	Insulating barrier	Between phase	(BA-F)	●	●	●	●	●
		To ground	(BA-G)	●	●	●	●	●
	Terminal cover	Large	(TC-L)	●	●	●	–	–
		Small	(TC-S)	–	–	–	–	–
		Transparent	(TTC)	●	●	●	●	●
Marine approval			L/R	● –	–	● –	–	● –
			G/L	● –	–	● –	–	● –
			BV	● –	–	● –	–	● –
			DNV	– –	–	● –	–	– –
			ABS	● –	–	● –	–	● –
Automatic tripping device				Thermal-magnetic	Thermal-magnetic	Electronic	Electronic	Electronic
Trip button				Equipped	Equipped	Equipped	Equipped	Equipped

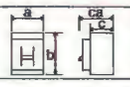
Notes: *1 Breaking capacity inside < / > is for Breaker with ON-side Solderless Terminals.
*2 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at ambient temperature 40°C, 45°C, 50°C or 55°C. (as they will be ordered)
*3 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.
*4 PAL and OAL cannot be fitted at the same time, please specify only one either PAL or OAL
*5 Solid state relay terminals standard type is SLT. Please specify if other type of terminals is required
*6 Specify if for DC use.

MCCBs NF-S, H Series (general purpose breakers)

Frame Size				630				
Photo								
Type name				NF630-SP	NF630-SPC	NF630-SEP	NF630-SEPC	NF630-HEP
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *1				500 600 630	500 600 630	300~630 adjustable	300~630 adjustable	300~630 adjustable
Number of poles				2 3 4	2 3 4	3 4	3 4	3 4
Rated insulation voltage Ui (V)				690	690	690	690	690
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *2	690V	10/10	10/10	10/10	10/10	15/15
			500V	30/30	30/30	30/30	30/30	50/50
			440V	42/42	42/42	42/42	42/42	65/65
			415V	(45/45)	50/25	(45/45)	50/25	(70/70)
			400V	45/45	50/25	45/45	50/25	70/70
			380V	(50/50)	50/50	(50/50)	50/50	(70/70)
			240V	(85/85)	85/85	(85/85)	85/85	(100/100)
			230V	85/85	85/85	85/85	85/85	100/100
		DC	250V	40/40 *5 –	–	–	–	–
Suitability for isolation				●	●	●	●	●
Utilization category				A	A	B	B	B
Rated short-time withstand current Icw (kA)				–	–	7.6	7.6	7.6
Reverse connection (terminals unmarked)				●	●	●	●	●
Rated impulse withstand voltage Uimp (kV)				8	8	8	8	8
Pollution degree				3	3	3	3	3
Overall dimensions (mm)			a	210 280	210 280	210 280	210 280	210 280
			b	275	275	275	275	275
			c	103	103	103	103	103
			ca	155	155	155	155	155
Weight of front-Connection type (kg)				8.5 9.6 12.5	10.5 13.6	10.5 13.6	10.5 13.6	10.5 13.6
Connection				Solderless/Busbar terminal 				
Cassette-type accessories (option)	Alarm switch		(AL)	●	●	●	●	●
	Auxiliary switch		(AX)	●	●	●	●	●
	Shunt trip		(SHT)	●	●	●	●	●
	Undervoltage trip (UVT)	Non-Synchronous Closing	(UVT-N)	●	●	●	●	●
		Synchronous Closing	(UVT-S)	●	●	●	●	●
Accessorie's connection (option)	with Lead-wire terminal block		(SLT)	●	●	●	●	●
	with Internal terminal type		(INT)	–	–	–	–	–
	with Flying leads			●	●	●	●	●
Built-in accessories (option)	Pre-alarm (contact output) *3		(PAL)	–	–	● *4	● *4	● *4
	Overcurrent trip alarm *3		(OAL)	–	–	–	–	–
	Trip indicator		(TI)	–	–	●	●	●
External accessories (option)	Enclosure	Dustproof	(S)	● –	● –	● –	● –	–
			(I)	● –	● –	● –	–	–
		Waterproof	(W)	● –	● –	● –	–	–
	Electrical operation device	Motor-operated type	(MD)	●	●	○	●	●
		Spring-charge type	(MDS)	●	●	●	●	●
	Mechanical interlock		(MI)	●	●	●	●	●
	Handle lock device	Handle lock	(HL)	●	●	●	●	●
			(HL-S)	●	●	●	●	●
	Lock cover		(LC)	–	–	–	–	–
	External operating handle	Door mounting	(V)	●	●	●	●	●
			(S)	●	●	●	●	●
		Mounted on breaker	(R)	●	●	●	●	●
			(F)	●	●	●	●	●
	Insulating barrier	Between phase	(BA-F)	●	●	●	●	●
		To ground	(BA-G)	●	●	●	●	●
	Terminal cover	Large	(TC-L)	●	●	●	●	●
		Small	(TC-S)	–	–	–	–	–
		Transparent	(TTC)	●	●	●	●	●
Marine approval			L/R	● –	–	● –	–	● –
			G/L	● –	–	● –	–	● –
			BV	● –	–	● –	–	● –
			DNV	– –	–	– –	–	– –
			ABS	● –	–	● –	–	● –
Automatic tripping device				Thermal-magnetic	Thermal-magnetic	Electronic	Electronic	Electronic
Trip button				Equipped	Equipped	Equipped	Equipped	Equipped

Notes: *1 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at I ambient temperature 40°C, 45°C, 50°C or 55°C. (as they will be ordered)
*2 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.
*3 PAL and OAL cannot be fitted at the same time, please specify only one either PAL or OAL
*4 Solid state relay terminals standard type is SLT. Please specify if other type of terminals is required
*5 Specify if for DC use.

MCCBs NF-S, H Series (general purpose breakers)

Frame Size					800						1000		1250		1600	
Photo																
Type name					NF800-SEP		NF800-SEPC		NF800-HEP		NF1000-SS		NF1250-SS		NF1600-SS	
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C or 55°C *1					400–800 adjustable		400–800 adjustable		400–800 adjustable		—		—		—	
Rated Current (A) at Ambient Air Temperature 40°C or 45°C or 50°C *1					–		–		–		500–600–700–800–900–1000 adjustable		600–700–800–1000–1200–1250 adjustable		800–1000–1200–1400–1500–1600 adjustable	
Number of poles					3	4	3	4	3	4	3	4	3	4	3	4
Rated insulation voltage Ui (V)					690		690		690		690		690		690	
Rated short-circuit breaking capacities (kA)	IEC60947-2 (Icu/Ics)	AC (50/60Hz) *2		690V	10/10		10/10		15/15		25/13		25/13		25/13	
				500V	30/30		30/30		50/50		65/33		65/33		65/33	
				440V	42/42		42/42		65/65		85/43		85/43		85/43	
				415V	(45/45)		50/25		(70/70)		(85/43)		(85/43)		(85/43)	
				400V	45/45		50/25		70/70		85/43		85/43		85/43	
				380V	(50/50)		50/50		(70/70)		(85/43)		(85/43)		(85/43)	
				240V	(85/85)		85/85		(100/100)		(125/63)		(125/63)		(125/63)	
				230V	85/85		85/85		100/100		125/63		125/63		125/63	
		DC		250V	–		–		–		–		–		–	
Suitability for isolation					●		●		●		–		–		–	
Utilization category					B		B		B		B		B		B	
Rated short-time withstand current Icw (kA)					9.6		9.6		9.6		20		20		20	
Reverse connection (terminals unmarked)					●		●		●		●		●		●	
Rated impulse withstand voltage Uimp (kV)					8		8		8		8		8		8	
Pollution degree					3		3		3		3		3		3	
Overall dimensions (mm)				a	210	280	210	280	210	280	210	280	210	280	210	280
				b	275		275		275		406		406		406	
				c	103		103		103		140		140		140	
				ca	155		155		155		190		190		190	
Weight of front-Connection type (kg)					10.9	14.2	10.9	14.2	10.9	14.2	23.5	30.7	23.5	30.7	34.5	41.2
Connection					Solderless/Busbar terminal										Busbar/Rear-connected bar stud	
																
Cassette-type accessories (option)	Alarm switch			(AL)	●		●		●		●		●		●	
	Auxiliary switch			(AX)	●		●		●		●		●		●	
	Shunt trip			(SHT)	●		●		●		●		●		●	
	Undervoltage trip (UVT)		Non-Synchronous Closing	(UVT-N)	●		●		●		●		●		●	
			Synchronous Closing	(UVT-S)	●		●		●		●		●		●	
Accessorie's connection (option)	with Lead-wire terminal block			(SLT)	●		●		●		●		●		●	
	with Internal terminal type			(INT)	–		–		–		–		–		–	
	with Flying leads				●		●		●		●		●		●	
Built-in accessories (option)	Pre-alarm (contact output) *3			(PAL)	● *4		● *4		● *4		–		–		–	
	Overcurrent trip alarm *3			(OAL)	–		–		–		–		–		–	
	Trip indicator			(TI)	●		●		●		–		–		–	
External accessories (option)	Enclosure		Dustproof	(S)	●	–	●	–	–		●	–	●	–	–	
				(I)	●	–	●	–	–		●	–	●	–	–	
			Waterproof	(W)	●	–	●	–	–		●	–	●	–	–	
	Electrical operation device	Motor-operated type		(MD)	●		●		●		●		●		●	
		Spring-charge type		(MDS)	●		●		●		●		●		●	
	Mechanical interlock			(MI)	●		●		●		●		●		●	
	Handle lock device		Handle lock	(HL)	●		●		●		●		●		●	
				(HL-S)	●		●		●		–		–		–	
	Lock cover			(LC)	–		–		–		–		–		–	
	External operating handle	Door mounting		(V)	●		●		●		–		–		–	
				(S)	●		●		●		●		●		●	
		Mounted on breaker		(R)	●		●		●		–		–		–	
				(F)	●		●		●		●		●		●	
	Insulating barrier	Between phase		(BA-F)	●		●		●		●		●		●	
		To ground		(BA-G)	●		●		●		●		●		●	
	Terminal cover	Large		(TC-L)	●		●		●		●		●		–	
		Small		(TC-S)	–		–		–		–		–		–	
		Transparent		(TTC)	●		●		●		–		–		–	
Marine approval				L/R	●	–	–		●	–	●	–	●	–	–	
				G/L	●	–	–		●	–	●	–	●	–	–	
				BV	●	–	–		●	–	–	–	–	–	–	
				DNV	●	–	–		–	–	–	–	–	–	–	
				ABS	●	–	–		●	–	●	–	●	–	–	
Automatic tripping device					Electronic		Electronic		Electronic		Electronic		Electronic		Electronic	
Trip button					Equipped		Equipped		Equipped		Equipped		Equipped		Equipped	

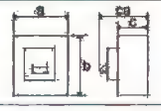
Notes: *1 The fundamental capacity and performance of the MCCBs are suited to IEC60947-2 standard at ambient temperature 40°C, 45°C, 50°C or 55°C. (as they will be ordered)

*2 Breaking capacity in brackets ( ) is not indicated on MCCBs name plate.

*3 PAL and OAL cannot be fitted at the same time, please specify only one either PAL or OAL

*4 Solid state relay terminals standard type is SLT. Please specify if other type of terminals is required

MCBs HBH* Series

Type				HBH			HBH-P		
Photo									
Number of poles				1	2	3	1	2	3
Frame size (A)				70	100	100	70	100	100
Rated Current (A) at Ambient Air Temperature of 50°C *1				6 / 10, 15, 20, 25, 30, 40, 50, 60, 70	10, 15, 20, 25, 30, 40 ,50, 60, 70, 100	10, 15, 20, 25, 30, 40, 50, 60, 70, 100	6 / 10, 15, 20, 25, 30, 40, 50, 60, 70	10, 15, 20, 25, 30, 40 ,50, 60, 70, 100	10, 15, 20, 25, 30, 40, 50, 60, 70, 100
Rated insulation voltage (V)			AC	450	450	450	450	450	450
			DC	125	125	125	125	125	125
Breaking capacity (kA) sym.	NEMA AB-1	VAC	120	5 / 10	–	–	5 / 10	–	–
			240	– / –	10	10	– / –	10	10
	IEC 60947-2 (Icu/Ics)	VAC	240	3/3	3/3	–	3/3	3/3	–
			415	–	–	3/3	–	–	3/3
		VDC	125	1	1	1	1	1	1
Dimensions (mm)			a	25	50	75	25	50	75
			b	95	95	95	74	74	74
			c	57.5	57.5	57.5	60.5	60.5	60.5
			ca	77.5	77.5	77.5	79	79	79
Weight (kg)				0.14	0.29	0.43	0.13	0.26	0.38
Connection				Clamp terminal			Plug-in (line), clamp (load)		

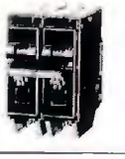
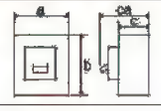
Standard Features

Automatic tripping device		HBH	HBH-P
		Thermal,magnetic	
Optional accessories	Terminal cover	●	–
	Mounting plate	●	–
	Mounting base	–	●
	Lock cover	●	●

Note: *1 Rating at 40°C is also available, specify when ordering.

*Products of MITSUBISHI ELECTRIC Dalian Ind. Prod. Co., Ltd/China

MCBs BH-PS* Series

Type				BH-PS M9		
Photo						
Number of poles				1	2	3
Frame size (A)				60	60	60
Rated Current (A) at Ambient Air Temperature of 50° C *1				6, 10, 16, 20, 25, 32, 40, 50, 60	10, 16, 20, 25, 32, 40, 50, 60	10, 16, 20, 25, 32, 40, 50, 60
Rated insulation voltage (V)			AC	450	450	450
			DC	–	–	–
Rated short-circuit capacity Icn (A)	IEC 60898	VAC	240/415	9000	–	–
			415	–	9000	9000
Tripping characteristic types			*2	B, C, D	B, C, D	B, C, D
Dimensions (mm)			a	25	50	75
			b	81.5	81.5	81.5
			c	60.5	60.5	60.5
			ca	79	79	79
Weight (kg)				0.15	0.32	0.50
Connection				Plug-in (line), clamp (load)		

Standard Features

Automatic tripping device		BH-PS
		Thermal,magnetic
Optional accessories	Terminal cover	–
	Mounting plate	–
	Mounting base	●
	Lock cover	●
Marine approval		LR

Notes: *1 Rating at 40°C is also available, specify when ordering.
*2 TypeB (3In <, ≦ 5In)
TypeC (5In <, ≦ 10In)
TypeD (10In <, ≦ 20In)

*Products of MITSUBISHI ELECTRIC Dalian Ind. Prod. Co., Ltd/China

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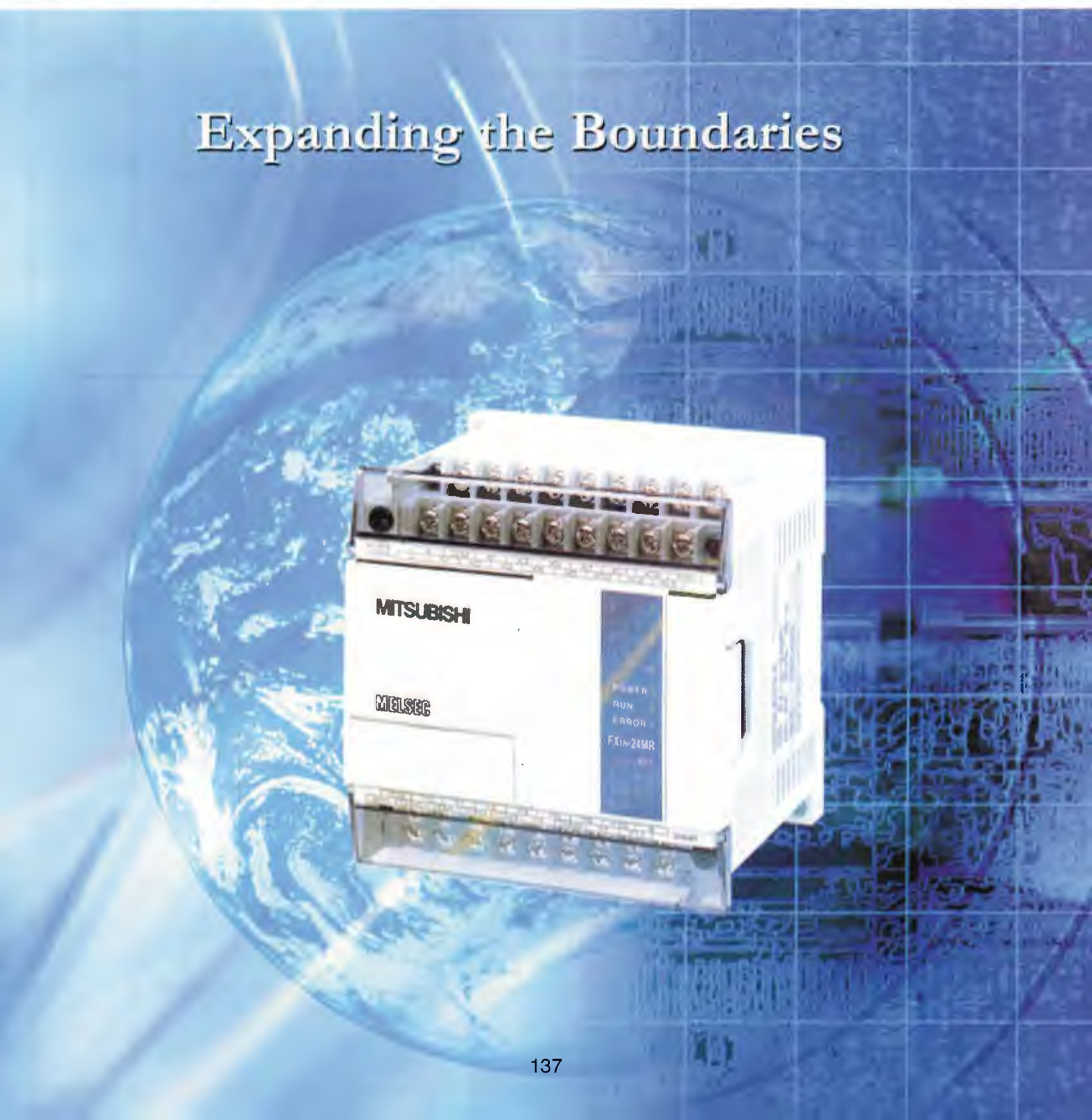
MITSUBISHI

PROGRAMMABLE LOGIC CONTROLLERS

ADVANCED AND EVER ADVANCING MITSUBISHI ELECTRIC

FX FAMILY

Expanding the Boundaries



Programmable Logic Controller Lineup

Mitsubishi Electric micro programmable logic controllers are expanding the boundaries of traditional micro programmable logic controller applications.

From the extremely compact FX1S and FX1N Series to the highly advanced FX2N Series, and to the ultimate highly advanced FX3U Series, Mitsubishi Electric has a perfectly sized control solution to satisfy a wide variety of needs. The diverse lineup of FX family PLCs can supply reliable performance in a package to fit your system requirements.

Performance

For High Speed Processing and Good Extendibility

For General Purpose Applications at a Reasonable Cost

For Limited Installation Space Applications at the Best Price

FX1S

The FX1S Series PLC is the card size PLC suitable for control in small environments. The excellent performance, serial communication functions, and compact size allow it to be used in places where conventional compact PLCs could not previously be installed.

FX3U

Ultra high speed, maximum performance and a simplified design concept make this the ultimate micro PLC (up to 384 I/O including remote I/O)

High End Processing with Connector Type I/O

FX2NC

The FX2NC Series PLC has achieved spectacular downsizing while retaining the FX2N Series powerful feature set. The connector type I/O reduces wiring costs and maintenance time.

FX2N

The FX2N Series PLC is a highly advanced model of the FX Series.
With high speed, advanced functions, analog options and positioning control, the FX2N is the choice for many applications from 16 to 256 I/O.

FX1N

The FX1N Series PLC is a popular choice for control of up to 128 points. Because the FX1N Series PLC has extendibility for I/O, analog control, and communication/link functions, it can be used in a wide range of general sequence control solutions.

Control Scale

Analog Lineup

The Mitsubishi A/D units convert analog values from diversified sensors or external equipment into digital values for use by the FX Series Controllers.

The Mitsubishi D/A units convert digital values into analog values for output to external equipment. Blocks for inputs of temperature sensors such as thermocouple and Pt100 are also available.

Analog Input

FX1N-2AD-BD

A/D

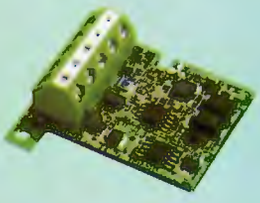
Programmable Logic Controllers

FX1S/FX1N Series

D/A

Analog Output

FX1N-1DA-BD



Analog Input

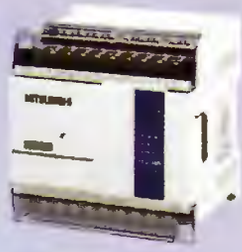
FX2N-2AD

FX2N-4AD

A/D

Programmable Logic Controllers

FX0N-3A



FX1N Series

Analog Output

FX2N-2DA

Temperature Input

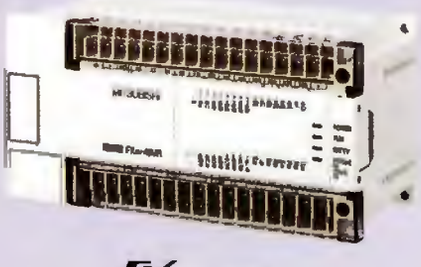
FX2N-8AD

FX2N-4AD-PT

FX2N-4AD-TC

FX2N-2LC

A/D



FX2N Series

FX2NC Series

D/A

FX2N-4DA

Signal Converter

IN

LF2-SA

LF2-FV

OUT

LF2-SL

Positioning Lineup

FX Series PLCs offer built-in positioning control for up to two axes. For more advanced positioning, a wide range of extension blocks or stand alone positioning controllers are available at reasonable prices.

The Positioning Controller lineup can execute complicated control, multi-axis control, and both linear and circular interpolation.

Programmable Logic Controller

Positioning Control Instructions

FX1S/FX1N Series
Two Axes Max. 100kHz

FX2N/FX2NC Series
Two Axes Max. 20kHz

FX3U Series
Four Axes at 200kHz

Programmable Logic Controller

Optional Module Connection

FX2N Series

Pulse Output Module

FX2N-1PG-E
Max. 100kHz

FX2N-10PG
Max. 1MHz

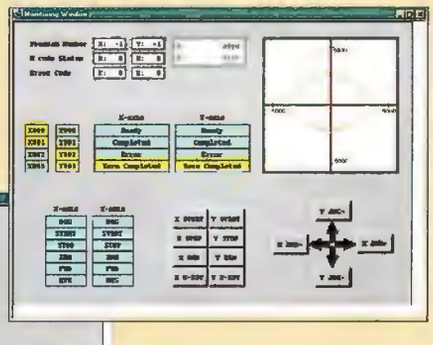
FX2NC Series

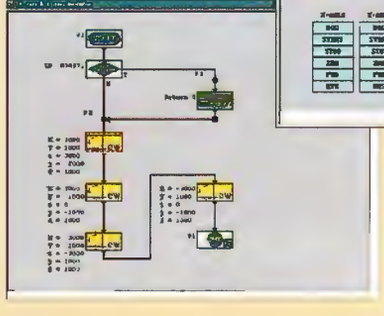
Positioning Controller

FX2N-10GM
Max. 200kHz

FX2N-20GM
Two Axes Max. 200kHz
(Interpolation: Max. 100kHz)

VPS Software



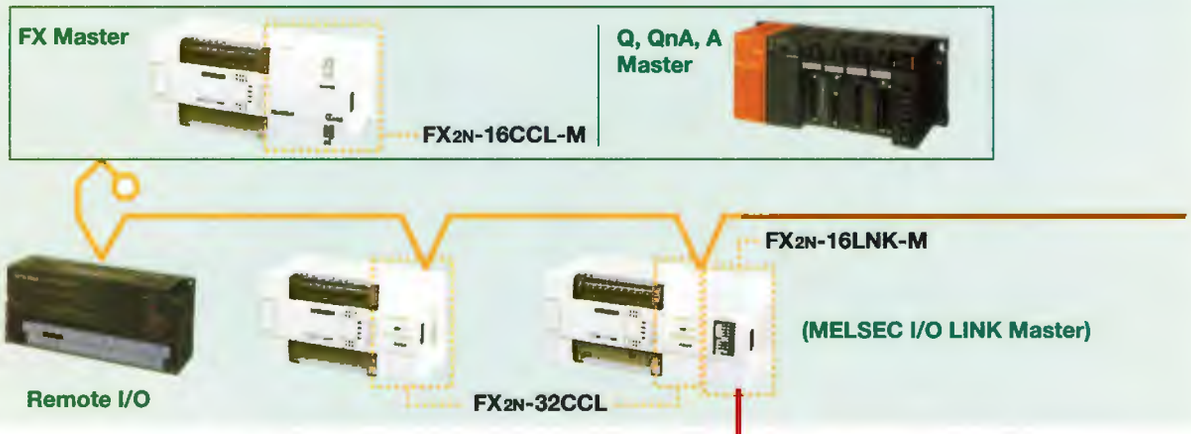


Communication Lineup

**The FX Series connects to open networks for use in the most demanding applications.
In addition, the FX Series provides an easy data link with RS-232C and RS-485 serial communication.**

Open Network

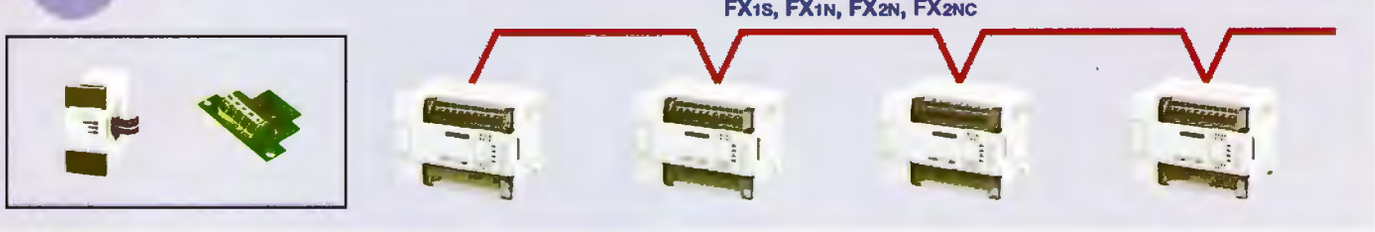
CC-Link



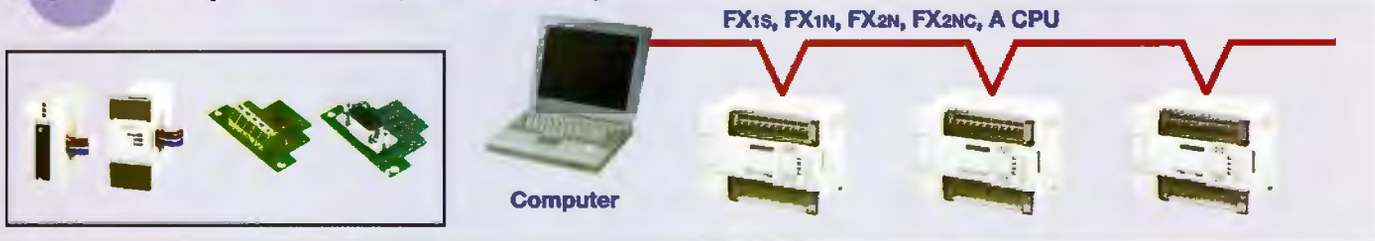
Proprietary Network

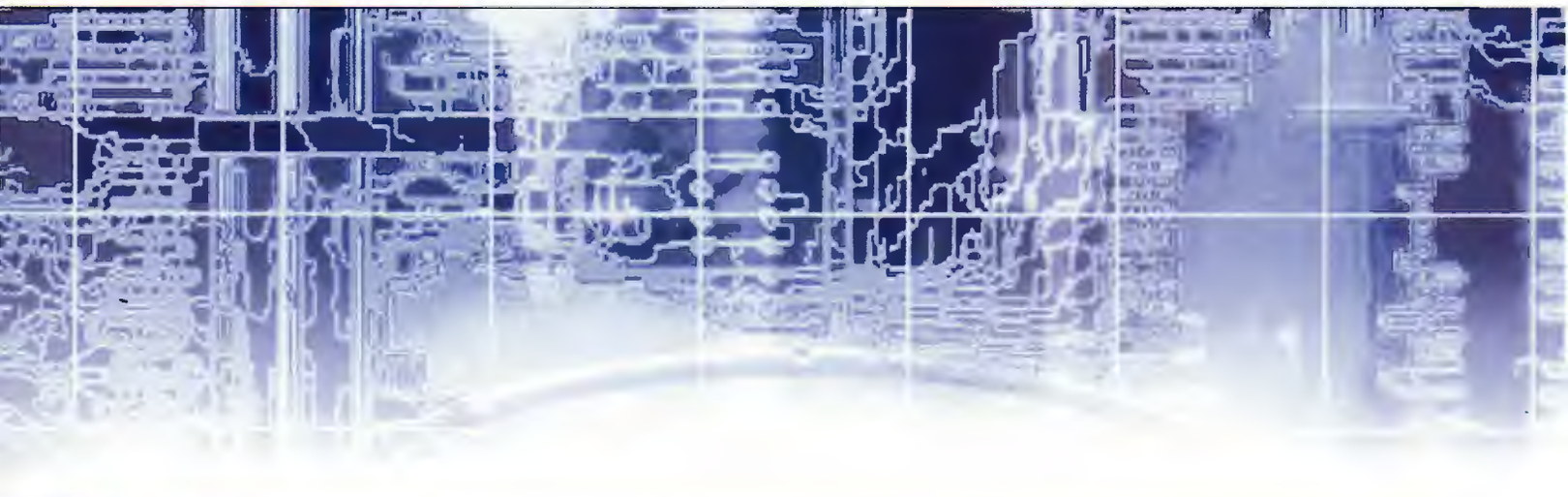
MELSEC I/O LINK

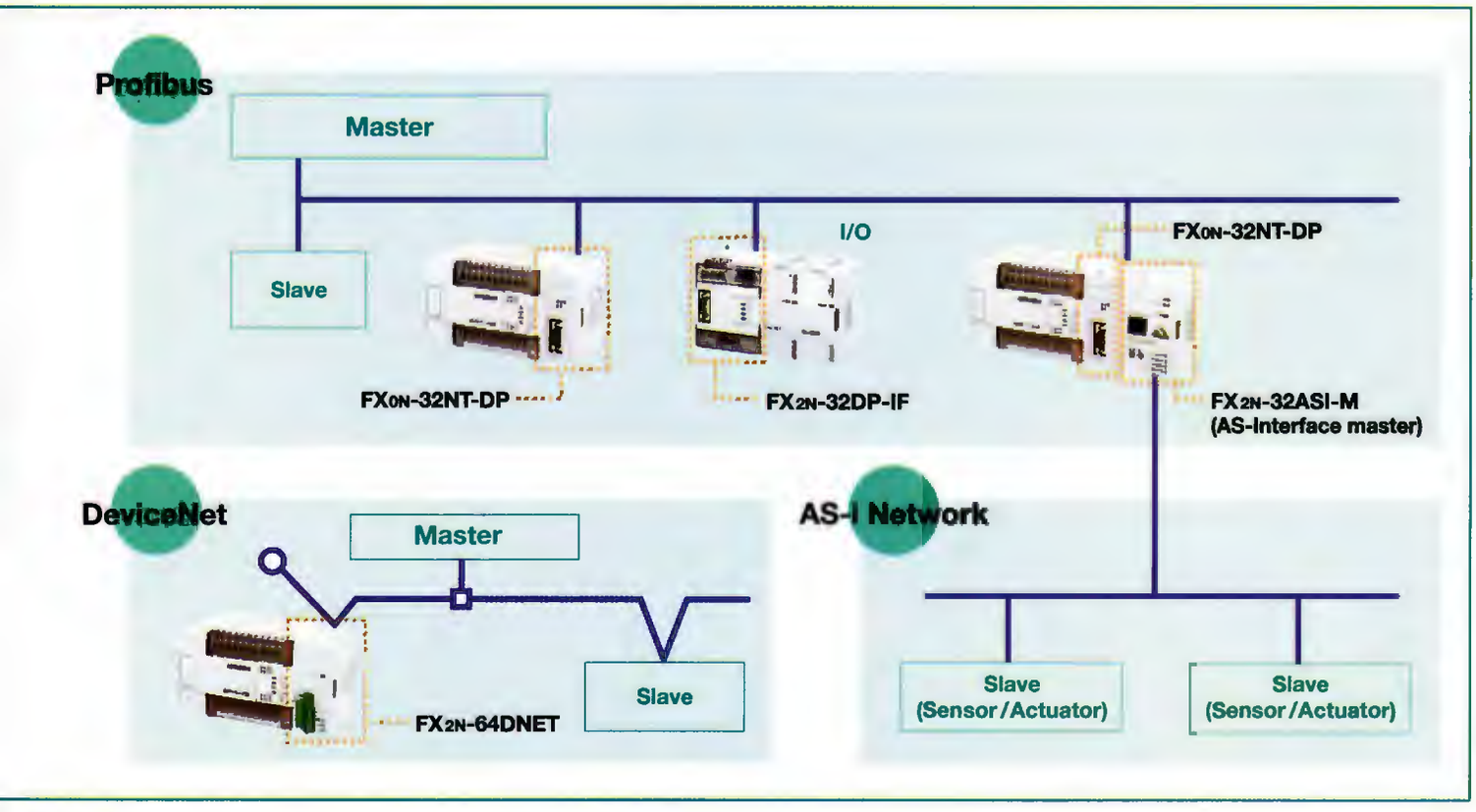
N:N Network (RS-485) MAX. 8 units

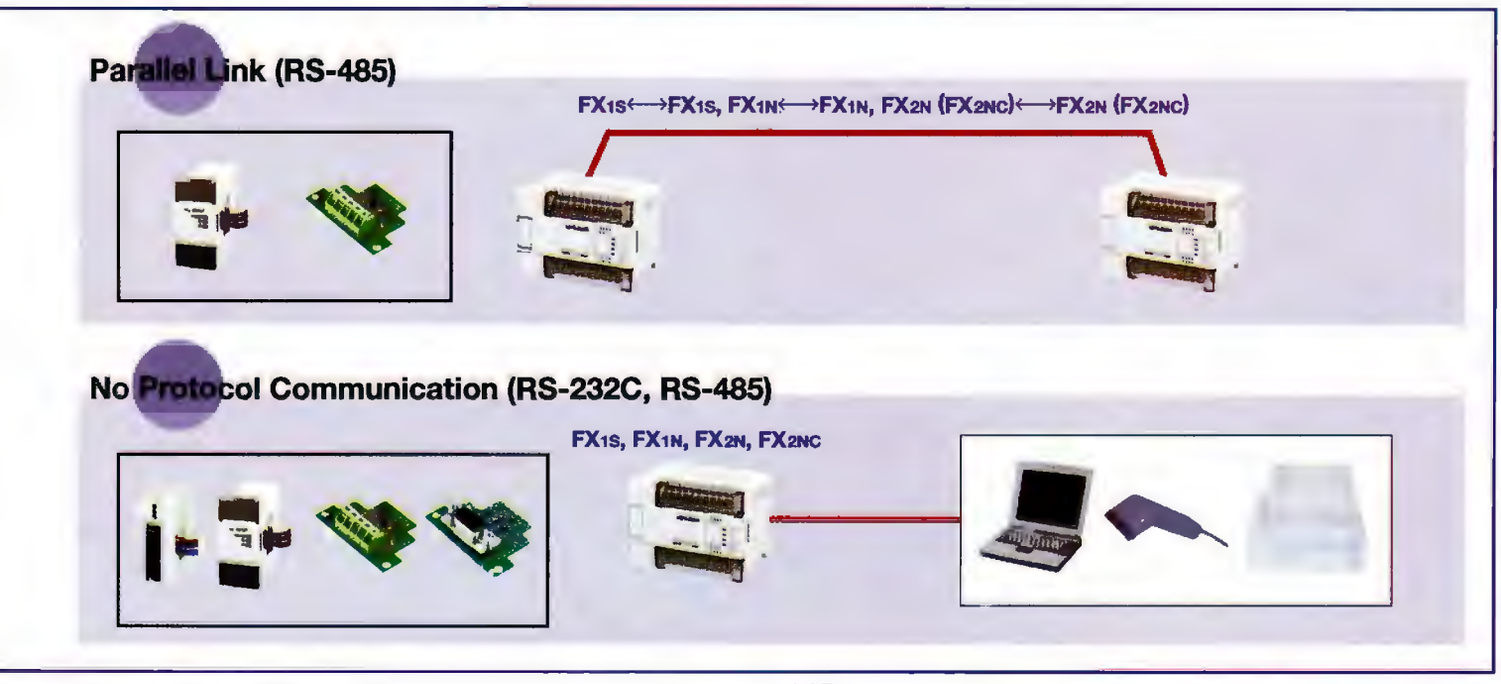


Computer Link (RS-232C/1:1, RS-485/1:16)





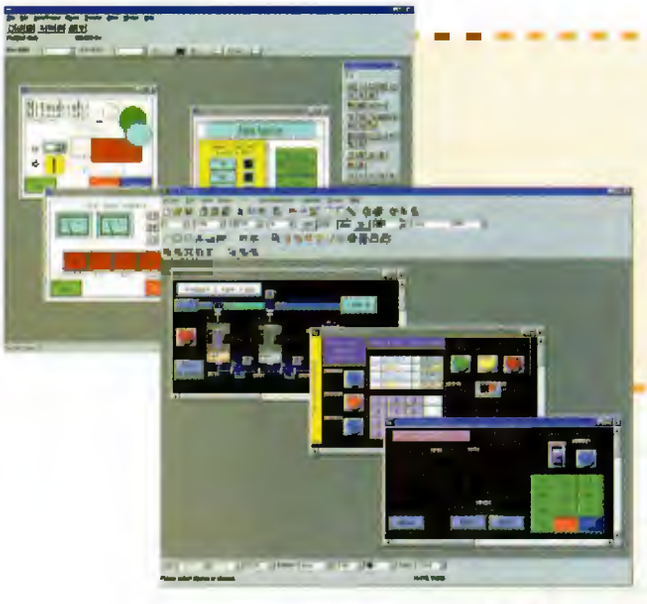

Profibus
Master
Slave
I/O
FX0N-32NT-DP
FX0N-32NT-DP
FX2N-32DP-IF
FX2N-32ASI-M
(AS-Interface master)
DeviceNet
Master
Slave
FX2N-64DNET
AS-I Network
Slave
(Sensor/Actuator)
Slave
(Sensor/Actuator)


Parallel Link (RS-485)
FX1S⟷FX1S, FX1N⟷FX1N, FX2N (FX2NC)⟷FX2N (FX2NC)
No Protocol Communication (RS-232C, RS-485)
FX1S, FX1N, FX2N, FX2NC

Graphic Operation Terminal Lineup

Display Units have become an integral link between operators and the machines they are controlling. The GOT Series is constantly improving performance and adding new functions to better relations between humans and machines.

FX-PCS-DU/WIN-E



Advanced Screen Creation Software

SW□D5C-GOTR-PACKE

F930GOT (4.4" Display)

The F930GOT has good message display capabilities with excellent numerical value setting and monitoring functions.

F940GOT (5.7" Display)

The most popular of the standard sizes, the F940GOT is a versatile performer featuring advanced display functions, alarm handling capability, and PLC sequence program editing.

F940WGOT Wide (7" Display)

The wide and clear display offers the opportunity to display additional information onscreen or to enlarge buttons for easy data entry.

F940GOT Handy (5.7" Display)

The Handy GOT boasts all the functionality of the F940GOT in a self contained portable unit. The Handy GOT can be held by hand, installed on a flat surface or hung on a wall.

These units are especially useful to monitor and edit timer, counter, and data register values.

FX-10DU-E

FX-10DM-E

CEBACO Center - Block A - Ground Floor
Dora Highway - Beirut / Lebanon

Phone: +961-1-240445 /6/7 - Fax: +961-1-240193
E-mail: cegliban@cegliban.com - P.O.Box: 11-2597

Changes for the Better

MITSUBISHI ELECTRIC

SIMPLE APPLICATION CONTROLLERS

α2 SERIES

Advanced Tiny Giants

Innovation of equipment controllers serves an expanded field of applications.

Main features

■Enhanced program capacity

A maximum of 200 Function Blocks (5000bytes) creates improved program complexity for varied application control. New arithmetic, telecommunications and many more Function Blocks have been added for user suitability.

■Improved visual function

The combination of the increased LCD screen size (12 Character by 4 lines) and embedded backlight allows the user to represent graphical data in real time. A series of message screens configured by the Control Display Manager, using a combination of Display Function Blocks, provides the user with an operation guide for the controller.

■Remote communication

SMS (Short Message Service) packets can be sent to either a mobile handy phone or an email account via a GSM interface with a standard telecommunications service provider.

■Enhanced analog control and high speed counter

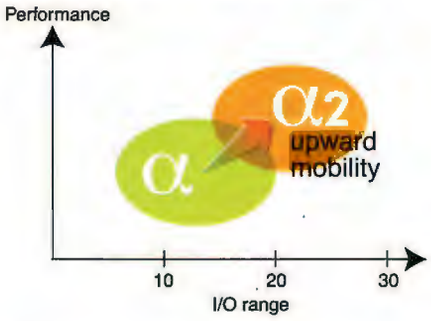
The embedded 8-channel analog inputs with 0 to 10V of 20mV resolution and the PWM command provide high performance analog controls.
A standard terminal input allows a pulse train of 20Hz and with an extension module a maximum of 1KHz can be counted.

■Wide operation temperature range

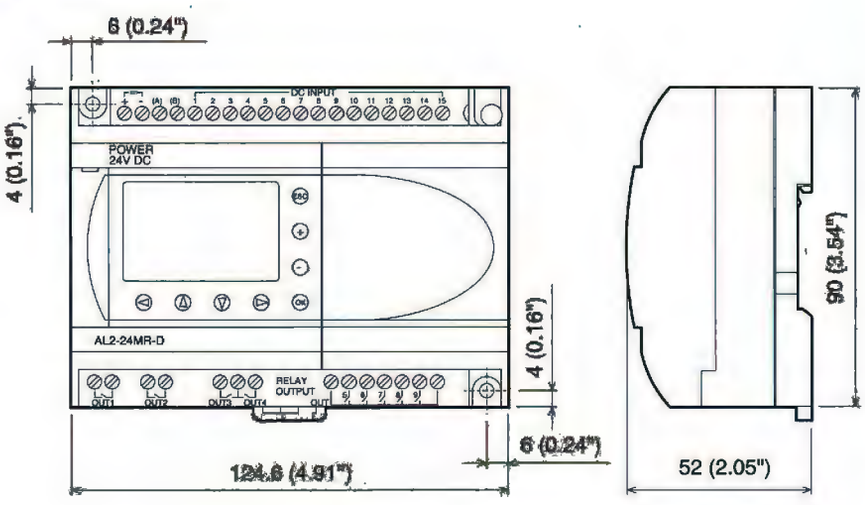
A wide operation temperature range (-25 to 55 degrees) is supported as the standard specification.

ISO 9001

Position of α and α2



Dimensions



Expanded field of applications

-Remote maintenance
-Time scale control
-Temperature measurement
-Liquid flow measurement
-Lighting control

General specifications

Main unit

Model	I/O	Power	Input	Output	Analog input	Dimensions
AL2-14MR-A	14(8/6)	100 to 240VAC	100 to 240VAC	Relay (Maximum 8A)		124.6 x 90 x 52(mm) 4.91 x 3.54 x 2.05(inch)
AL2-14MR-D		24VDC	24VDC(Sink/source)		✓	
AL2-24MR-A	24(15/9)	100 to 240VAC	100 to 240VAC			
AL2-24MR-D		24VDC	24VDC(Sink/source)		✓	

Extension module

Model	Description	Remarks
AL2-4EX	4 digital inputs with 24VDC	
AL2-4EX-A2	4 digital inputs with 220 to 240VAC	
AL2-4EYR	4 digital outputs with relay	
AL2-4EYT	4 digital outputs with transistor	
AL2-2DA	2 analog outputs	

Accessories

Model	Description	Remarks
AL-PCS/WIN-E	Programming software of FBD with personal computer	Version V2.00 for α2
AL2-GSM-CAB	GSM communication interface cable	α2 only
AL-232CAB	RS-232C communication cable with personal computer	Common with α and α2
AL2-ASI-BD	AS-interface slave module	α2 only
AL2-EEPROM-2	Program memory cassette of α2	α2 only