

FUJIELECTRONICS ED & C TIMES

New Products

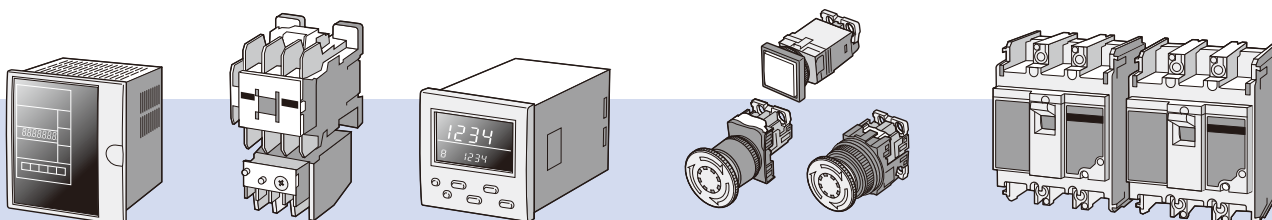
Magnetic Contactors & Magnetic Starters Expanded Lineup of SC (SW)-N4/G, -N5/G and -N5A Models ...	2
Instantaneous stop restart relay MB4 Series	4
Terminal block: Screwless terminal block provided with an indication function LT2V	7
MCCB and ELCB G-TWIN Series 125-800AF Motor operated breakers	9
Power monitoring unit F-MPC04 (UM04 Series)	11
Measuring instruments Analog meters fully redesigned	16
Power line multi-meters WE1MA, WE1MB, WE1GL, WE1B/1C (with a white backlight)	18
Surge Protective Devices CN227 and CN228 series	20
Surge Protective Devices CN5 series for low voltage circuit	22
Noise suppression filters RNFMC series input circuit power filters	24
Control power transformers CU7 series	26

Modified Products

Time delay relays MS4S and ST7 series	
Release the Products Authenticated by China Compulsory Certification (CCC)	28

Discontinued Products

Discontinued products	32
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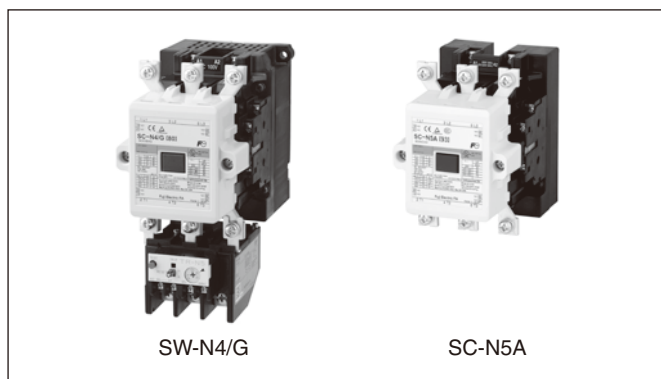
Magnetic Contactors & Magnetic Starters

Expanded Lineup of SC (SW)-N4/G, -N5/G and -N5A Models

A new DC-operated type was released in a product lineup of SC(SW) -N4/G, -N5/G and -N5A magnetic contactors and starters. This addition expands the lineup of models.

Features

- World's smallest size
- Wider variety of DC-operated models covering 93A to meet needs of the market for DC operation and lower voltage of control power
- Conformity to SEMI F47-0200 specifications



Products

Available products				Existing SC-N5 Both AC and DC operations	New models	
					AC-operated model	DC-operated model
Magnetic contactors	Open type	AC operated type	SC-□□	(○)	○	—
		DC operated type	SC-□/G	(○)	—	○
		AC & DC operated type	SC-□	○	—	—
		Reversing type	SC-□RM	○	○	○
		Mechanical latch type	SC-□/VS	○	—	—
		OFF-delay release type	(Note 1)	○	—	—
		For single-phase resistance load	(Note 2)	○	○	○
		With high capacity auxiliary contact	SC-□H	○	○	○
		Extra pick-up operating coil type	SC-□/U	(○)	—	—
	Enclosed	Standard type	SC-□C	○	○	—
		Dust-tight/light-corrosion resistant	SC-□LG	○	○	—
		Reversing type	SC-□RMC	○	○	—
Magnetic starters	Open type	2-element thermal	SW-□	○	○	○
		Reversing type	SW-□RM	○	○	○
		3-element thermal	SW-□/3H	○	○	○
		Heavy starting duty	SW-□/2L	○	○	○
		Quick operating thermal	SW-□/3Q	○	○	○
		2E thermal	SW-□/2E	○	○	○
		3E thermal	(Note 3)	○	○	○
	Enclosed	2-element thermal	SW-□C	○	○	—
		Reversing type	SW-□RMC	○	○	—
		Dust-tight/light-corrosion resistant	SW-□LG	○	○	—
		3-element thermal	SW-□C/3H	○	○	—
		2E thermal	SW-□C/2E	○	○	—

Notes : • OFF-delay release type magnetic contactors are defined as a combination of an AC and DC operated magnetic contactor and an OFF-delay release unit (SZ-N5/DE).
 • Magnetic contactors for single-phase resistance loads are defined as a combination of a magnetic contactor and a three-phase parallel terminal plate (SZ-SP5).
 • Magnetic starters with a 3E thermal relay are defined as a combination of a phase sequence protective relay (QE-20N) and a magnetic starter with a 2E thermal relay.

Specifications

			New models			Existing
Type	Magnetic contactor		SC-N5A	SC-N5/G	SC-N4/G	SC-N5
	Magnetic starter		SW-N5A	SW-N5/G	SW-N4/G	SW-N5
	Accessory thermal relay for magnetic starter		TR-N5 (including 2E thermal relays, quick operating type relays and long-time operating type relays)			
Service conditions	Ambient temperature		−5 to +55°C			
	Relative humidity		45 to 85%RH			
	Altitude		Max. 2,000 m			
	Mounting angle		+/− 30 deg. (longitudinal and horizontal)			
Rating	Three-phase squirrel-cage motor capacity (AC-3)	200 to 240V	22kW 93A	22kW 93A	18.5kW 80A	22kW 93A
		380 to 440V	45kW 90A	45kW 90A	37kW 80A	45kW 90A
	Resistive load capacity (AC-1)	200 to 240V	150A	150A	135A	150A
		380 to 440V	150A	150A	135A	150A
	Conventional free air thermal current (rated thermal current)		150A	150A	135A	150A
Performance	Making capacity	220V	1116A	1260A	960A	1116A
		440V	1080A	1260A	960A	1080A
	Breaking capacity	220V	930A	1050A	800A	930A
		440V	900A	1050A	800A	900A
	Operating cycles per hour		1,200 cycles/hour			
	Mechanical durability		5,000,000 operations			
	Electrical durability (AC-3)		1,000,000 operations			
	Electrical durability (AC-1)		500,000 operations			
	Performance		JIS AC-3 • 1 • 1-0			
Operating coils	Control power		AC operating	DC operating		AC & DC operating
	Typical coil ratings	Nominal 24V	24V 50Hz 24 to 26V 60Hz	24V DC	24V DC	24 to 25V 50/60Hz 24V DC
		Nominal 48V	48V 50Hz 48 to 52V 60Hz	48V DC	48V DC	48 to 50V 50/60Hz 48V DC
		Nominal 100V	100V 50Hz 100 to 110V 60Hz	100V DC	100V DC	100 to 127V 50/60Hz 100 to 120V DC
		Nominal 110V	100 to 110V 50Hz 110 to 120V 60Hz	110V DC	110V DC	—
		Nominal 200V	200V 50Hz 200 to 250V 50/60Hz	200V DC	200V DC	200 to 220V 60Hz 200 to 240V DC
		Nominal 220V	200 to 220V 50Hz 220 to 240V 60Hz	220V DC	220V DC	—
		Nominal 400V	380 to 400V 50Hz 400 to 440V 60Hz	—	—	380 to 450V 50/60Hz
	Permissible voltage change		85 to 110%			80 to 110%
	Coil (magnet) power consumption • Example of SC-N5A, 200V (200 V/50 Hz, 220 V/60 Hz) • Example of SC-N5/G, 24 VDC • Example of SC-N5, 200 V (200 V/50 Hz, 220 V/60 Hz) and 24 VDC	Upon inrush	250/260 [VA]	20 [W]	20 [W]	80/95 [VA] 100 [W]
		When sealed	18.4/18/1 [VA]	20 [W]	20 [W]	4.0/4.6 [VA] 2.8 [W]
		Watt loss	6.2/6/7 [VA]	—	—	3.2/3.6 [W]
Insulation and withstand voltage	Rated insulation voltage	Main circuit	1000V			
		Auxiliary and control circuits	690V			
	Rated impulse withstand voltage	Main circuit	8kVA			
		Auxiliary and control circuits	6kVA			
Dimensions	Magnetic contactor (length × height × width)		88 × 127 × 132	93 × 127 × 159	93 × 127 × 159	88 × 127 × 132
	Magnetic starter (length × height × width)		88 × 189 × 132	93 × 189 × 159	93 × 189 × 159	88 × 189 × 132
Major options	Auxiliary contact block		SZ-AS2, SZ-AS2H			
	Coil drive unit		SZ-CD5, SZ-CD6A	—	—	SZ-CD5, SZ-CD6A
	Coil-surge suppression unit		SZ-Z41, Z42, Z43 SZ-Z44, Z45	SZ-Z41, Z42 SZ-Z46 (new)		Not required (built-in)
	Terminal cover		SZ-N4T, SZ-WN4T			
	Live-section cover		SZ-N4J, SZ-WN4J			
	Insulation barrier		SZ-B1			
	Three-phase parallel terminal plate		SZ-SP5			

Instantaneous stop restart relay MB4 Series

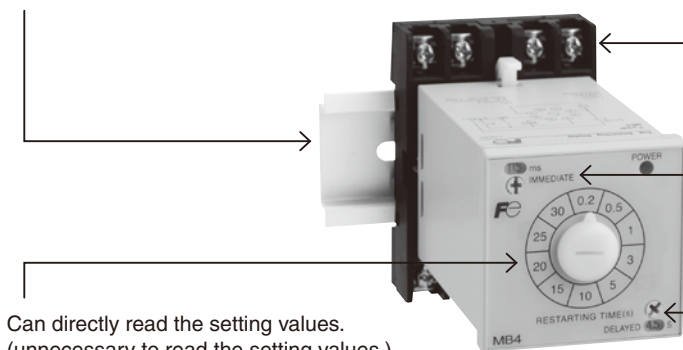
Ideal for restarting the motors after an instantaneous stop in a large-scale facility such as a plant.

■ Features

- The restart command can be issued only if the voltage reaches about 90%V after the recovery.
Prevents equipment operation problems due to undervoltage.
- Can start up the motors sequentially by delaying the restart timing for each motor.
Can prevent a voltage drop due to abrupt load increase (limited restart).
- Operability improved.
- There are three types of operations below according to the power-off durations:
 - **Instantaneous restart:** restarts instantaneously after recovery.
 - **Limited restart:** restarts when a certain restart time goes by after recovery. Limited restart time: can set a value between 0.2 and 30s (10 stages) for the restart time.
 - **Restart prohibited:** does not restart after recovery.



Can mount it on a DIN 35mm width rail.



Shares the socket with the Super Timer MS4S series (socket type: TP48X)

Can directly read the setting values. (unnecessary to read the setting values.)

As it is possible to switch instantaneous and limited restart prohibited times, detailed support for the operating environment is provided.

■ Type

Type	Mounting method	Contact configuration	Limited restart time	Limited restart prohibited function (dial 0)	Rated control power voltage
MB4	Surface mounting	1NO+1NC	0.2–30s variable	None	100V AC [A1] 110V AC [AH] 120V AC [AK]
MB4-A			0.5–30s variable	Yes	AC200V [A2] AC220V [AM] AC240V [AP]

Ratings and performance

Item	Performance	
Power-off detection voltage	65%±5%U _e (25°C) Temperature error ±2%U _e (25°C reference)	
Recovery detection voltage	89%±2%U _e at 50Hz 91%±2%U _e at 60Hz Temperature error ±2%U _e (25°C reference)	
Instantaneous restart prohibited time ^{*1}	0.02±0.02s/0.175±0.025s (including the temperature error)	
Limited restart prohibited time ^{*2}	0.5±0.1sec/1±0.1s/2±0.2s/4.5±0.5sec (including the temperature error)	
Output pulse width (contacts 1NO, 1NC)	0.1±0.025s (including the temperature error)	
Returning time ^{*3}	Maximum 5s	
Maximum allowable supply voltage	110%U _e	
Allowable ambient temperature	-10 to +50°C (However, no icing and condensation)	
Allowable relative humidity	35 to 85% (However, no icing and condensation)	
Control output	240V AC 2A (resistance load)	
Power consumption	100V AC...Approx. 0.3VA 110V AC...Approx. 0.4VA 120V AC...Approx. 0.4VA 200V AC...Approx. 0.7VA 220V AC...Approx. 0.8VA 240V AC...Approx. 0.9VA	
Surge resistant characteristic	2000V (JIS C 61000-4-5)	
Noise resistant characteristic (malfunction)	Noise simulator, pulse superimposed 1000V, no malfunction Waveform: noise width 1μs, leading edge up to 1ns, positive and negative Phase 0 to 360°, power synchronization repetition applied Applied time, 1min Between the power source terminals	
Withstand voltage	Between the live part and non-live metal part, 2000V AC for 1min Between contact gaps, 1000V AC for 1min	
Insulation resistance	100MΩ or more (500V DC megger)	
Earthquake resistance	Malfunction	10 to 55Hz Double amplitude 0.5mm (3 axial directions, 10 times each)
	Durability	10 to 55Hz Double amplitude 0.75min (3 axial directions, 1 hour each)
Impact resistance	Malfunction	100m/s ² (3 axial direction, 4 times each)
	Durability	500m/s ² (3 axial direction, 5 times each)
Mechanical durability (output contact)	20 million operations	
Mass	Approx. 100g	

Notes : ^{*1} Instantaneous restart prohibited time: represents the minimum power-off time for the limited restart (represents the maximum power-off time for the instantaneous restart).

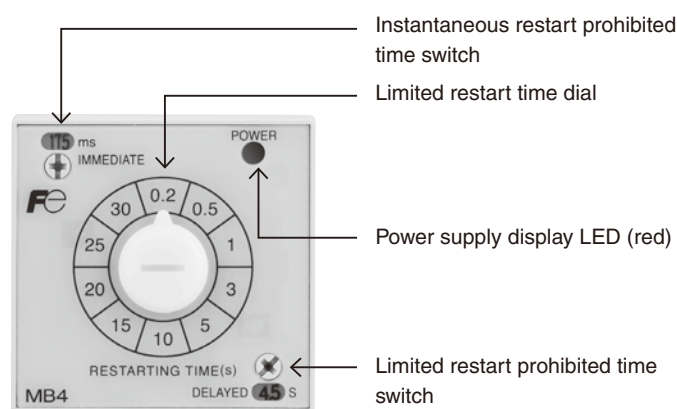
^{*2} Limited restart prohibited time: represents the minimum power-off time for prohibiting the limited restart (represents the maximum power-off time for the limited restart).

^{*3} Returning time: period from the starting of a load to the operable relay.

Limited restart time (in time (s))

Type	MB4	MB4-A
Dial		
0.2 ("0" for MB4-A type)	0.2±0.1	(limited restart prohibited)
0.5	0.5±0.1	
1	1±0.1	
3	3±5%	
5	5±5%	
10	10±5%	
15	15±5%	
20	20±5%	
25	25±5%	
30	30±5%	

Note : temperature error ±5% ±20ms (25°C reference)



Electrical durability

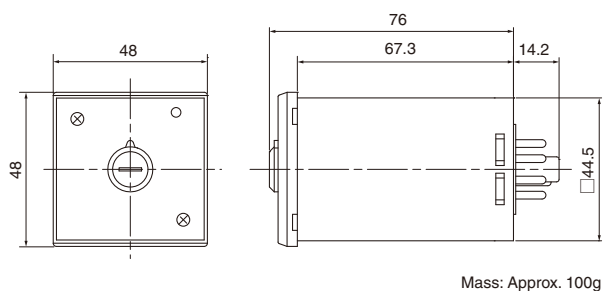
Voltage	Contact closed		Contact open		Durability count (ten thousand times)
	Current	Power factor or time constant	Current	Power factor or time constant	
220VAC L load	10A	COSØ=0.7	1A	COSØ=0.3 to 0.4	8
	5A		0.5A		20
110VAC L load	10A	COSØ=0.7	1A	COSØ=0.3 to 0.4	13
	5A		0.5A		28

Durability when the magnetic contactor is loaded

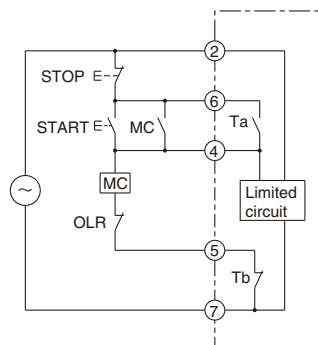
Magnetic contactor	Durability count (ten thousand times)	
	Coil voltage	
SC-03,0.05,4-0,4-1,5-1	100V AC	150
SC-N1,N2	200V AC	250
SC-N2S,N3		90
SC-N4		50
SC-N5A		40
SC-N6,N7		40
SC-N8,N10		40
SC-N11,N12		40

Dimensions, mm

MB4, MB4-A types



Wiring diagram



Note: Be careful not to connect terminals 4 and 6 reversely.

Terminal block: Screwless terminal block provided with an indication function LT2V

Both efficient wiring work and safety are achieved.

■ Features

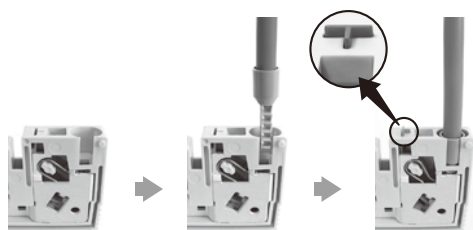
- The terminal blocks have an orange wiring indication function that enables you to check wires from any angle. Consequently, it is no longer necessary to pull wires and check if they are properly connected during wiring work, and cost reduction can also be expected.



Wires can be checked from any angle.

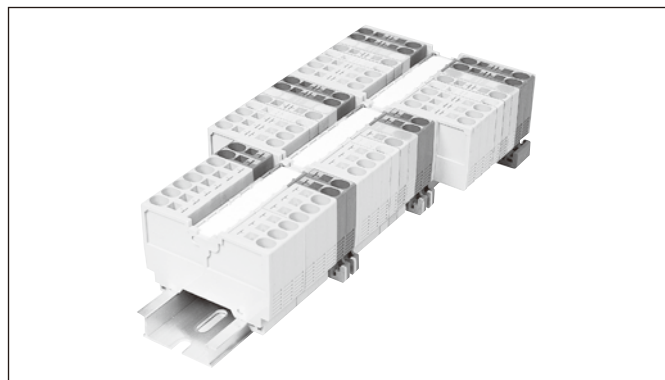


With the wiring indication function, you can insert wires with peace of mind.

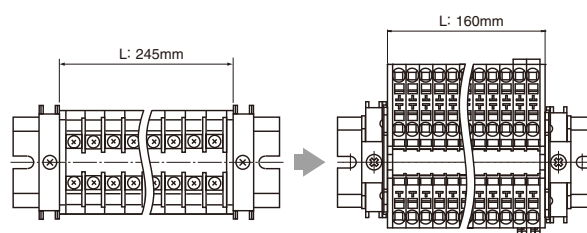


When the wire is completely inserted, you can see the orange indicator protruding (when stick terminals are used).

- Stick terminals can be inserted into the terminal block with a single motion.
- After wiring, the wires are resistant to vibrations and do not become loose. There is no need to perform periodical maintenance.
- You can rely on this terminal block for a secure connection without an engineer's skills.
- You can set a required number of terminals of four types, from 20A to 45A, on a single IEC 35mm rail.
- We also offer a lineup of earth terminal blocks suitable for standard types of respective sizes.
- The terminal blocks are granted overseas standard certification of UL/cUL and TÜV.
- The terminal blocks require less space for mounting. Compared with screw terminal blocks, the LT2V series terminal blocks are smaller in terminal width and take up less space.



35% downsizing achieved



(Comparison between our screw terminal block type LT2E-020 and screwless terminal block 30-terminal type LT2V-022N)

Performance

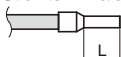
Rated insulation voltage	600V
Standard working state	Ambient temperature: -25°C to +60°C(Freezing or dew condensation shall not be permitted.) Relative humidity: 45% to 85%
Temperature rise	Temperature rise of conductive metal fitting: 35K or below
Insulation resistance	200MΩ or over between charged portions and between each charged portion and metallic mounting plate (when measured using a 500V DC megger)
Dielectric strength	2500V AC for 1 minute
Applicable standard	JIS C2811
Fire retardancy	UL94V-0

Types and ratings

Type	Product name	Rated thermal current (A)	Compatible wire (mm ²)	Compatible crimping terminal L (mm) ^{*1 *2}	Dimensions (mm)					Sales unit
					A	B	C	D	E	
LT2V-022N	Screwless terminal block provided with an indication function (gray)	20	0.08–2.5	8, 10	51	33	28	5.2		100
LT2V-023N					63.5	33	28	5.2		100
LT2V-024N					76	33	28	5.2		50
LT2V-032N		30	0.2–4	10, 12	54	37	32	6.2		100
LT2V-033N					68	37	32	6.2		100
LT2V-034N					82	37	32	6.2		50
LT2V-042N					58	39.5	34.5	8.2		50
LT2V-052N		45	1.5–10	12, 18	66	43.5	38.5	10		50
LT2V-022E	Screwless earth terminal block provided with an indication function (green)	–	0.08–2.5	8, 10	51	33	28	5.2	58	20
LT2V-023E					63.5	33	28	5.2	69	20
LT2V-024E					76	33	28	5.2	80	20
LT2V-032E		–	0.2–4	10, 12	54	37	32	6.2	58	20
LT2V-033E					68	37	32	6.2	72	20
LT2V-034E					82	37	32	6.2	86	20
LT2V-042E		–	0.5–6	12	58	39.5	34.5	8.2	62	20
LT2V-052E		–	1.5–10	12, 18	66	43.5	38.5	10	70	20
LT9V-E022	End plate	For LT2V-022			51	33	28	Thickness: 2		100
LT9V-E023		For LT2V-023 (LT9V-023-1) (LT9V-023-2)			63.5	33	28	Thickness: 2		50 sets * ³
LT9V-E024		For LT2V-024			76	33	28	Thickness: 2		50
LT9V-E032		For LT2V-032			54	37	32	Thickness: 2		100
LT9V-E033		For LT2V-033 (LT9V-033-1) (LT9V-033-2)			68	37	32	Thickness: 2		50 sets * ³
LT9V-E034		For LT2V-034			82	37	32	Thickness: 2		50
LT9V-E042		For LT2V-042			58	39.5	34.5	Thickness: 2		50
LT9V-E052		For LT2V-052			66	43.5	38.5	Thickness: 2		50
LT9E-T2	Holding bracket	For LT2V			45	28.7	10			50
LT9E-M1	Mark plate	Dimensions for LT2V (0.5t×10W×1200L)								50
LT9E-R1	Rail	Overall length: 1,000 mm, aluminum A6063			4.5	10	10			100
LT9E-R2		Overall length: 2,000 mm, aluminum A6063			4.5	10	10			50
LT9V-B022	Short bar (50 pieces contained)	LT2V-02 for two terminals			5.2	2.6	1	19	9.2	1
LT9V-B024		LT2V-02 for four terminals			5.2	2.6	1	19	19.6	1
LT9V-B028		LT2V-02 for eight terminals			5.2	2.6	1	19	40.4	1
LT9V-B032		LT2V-03 for two terminals			6.2	3	1	23	10.6	1
LT9V-B034		LT2V-03 for four terminals			6.2	3	1	23	23	1
LT9V-B038		LT2V-03 for eight terminals			6.2	3	1	23	47.8	1
LT9V-B042		LT2V-04 for two terminals			8.2	3.8	1	25.8	13.4	1
LT9V-B044		LT2V-04 for four terminals			8.2	3.8	1	25.8	29.8	1
LT9V-B048		LT2V-04 for eight terminals			8.2	3.8	1	25.8	62.6	1
LT9V-B052		LT2V-05 for two terminals			10	5.6	1	28.7	17.2	1
LT9V-B054		LT2V-05 for four terminals			10	5.6	1	28.7	37.2	1

Notes : ^{*1} Each value in Compatible crimping terminal is the length when Nichifu's stick terminal is used.

^{*2} Stick terminals comply with DIN46228-4.



^{*3} Two end plates for both sides make a set.

MCCB and ELCB

G-TWIN Series 125-800AF Motor operated breakers

A new line up of the motor operated breakers is added to the G-TWIN series 125AF to 800AF.

■ Features

- The same operation procedures as proven α -TWIN series.
- Can be combined with various MCCB and ELCB (except for some models).



■ Types

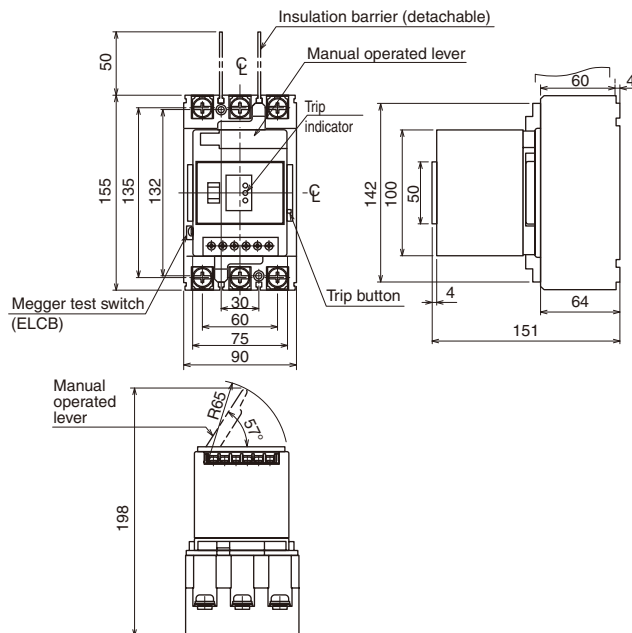
Applicable type	Operating voltage	Code
BW50HAG, EW50HAG BW125, EW125 BW250, EW250	24V DC	MR
	48V DC	MS
	100V DC	ML
	100V AC	MA
	110V AC	MT
	200V AC	MK
	220V AC	M7
BW400, EW400	100-110V DC	ML
	200-220V DC	MQ
	100-110V AC	MA
	200-220V AC	MK
BW630, EW630 BW800, EW800	100-110V DC	ML
	200-220V DC	MQ
	100-110V AC	MA
	200-220V AC	MK

Note : BW/EW32-100 type were released in January 2009.

■ Dimensions, mm

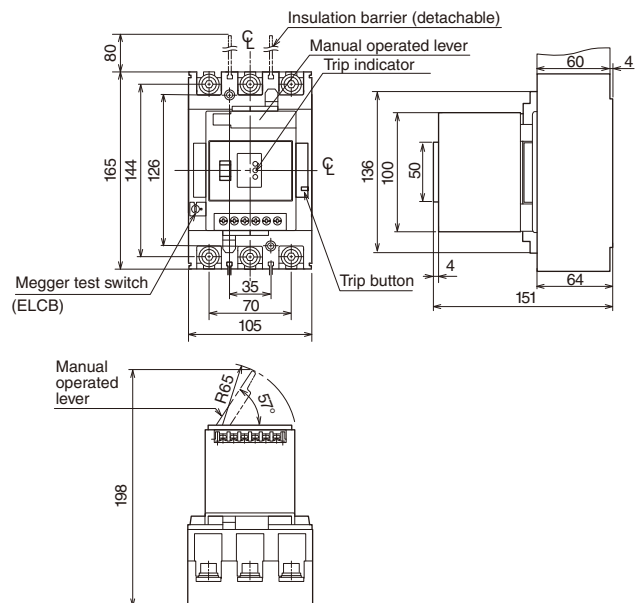
BW125

- Front mounting



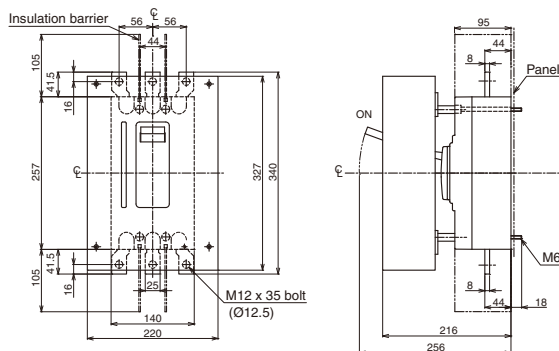
BW250

- Front mounting



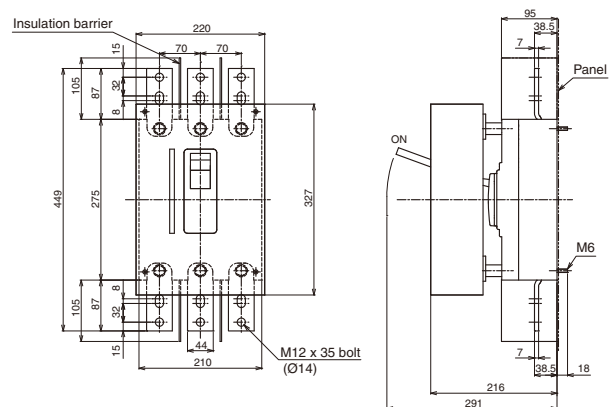
BW400, EW400

- Front mounting



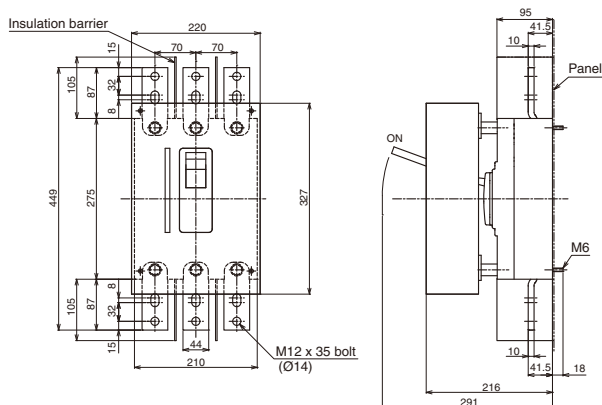
BW630, EW630

- Front mounting



BW800, EW800

- Front mounting

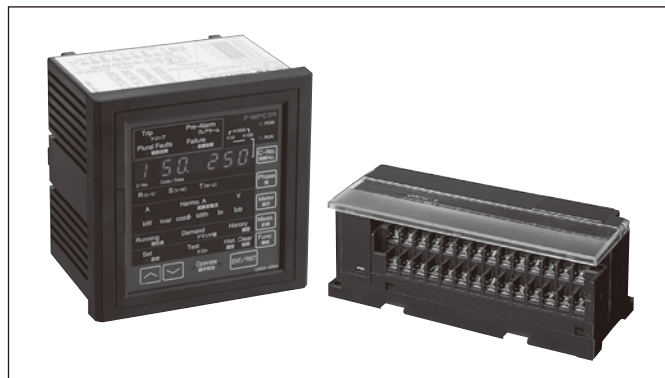


Power monitoring unit F-MPC04 (UM04 Series)

The functions necessary for the distribution system, circuit information management, and electric energy monitoring are integrated into a single unit (up to 10 circuits of distribution system)

■ Features

- Supports multiple power distribution lines
UM04 allows economical management of each facility and installation by means of communications interface.
- Easy mounting to existing switchboards
Split-through type CTs enables UM04's easy mounting to existing boards.
- Flexible energy management
UM04 manages power line data such as measurement, preventive maintenance, maintenance and electricity quality, and transmit those data to upper level controller, thus promises energy and labor-saving.
- Harmonics current measurement
The third, fifth, seventh, and total harmonic current can be measured.
- Monitor insulation deterioration and implement preventive maintenance by measuring leakage current.
Provides deterioration trend analysis with trend data and preventive maintenance with 2-stage output (leakage current pre-alarm and leakage current relays).
- Compatible with MODBUS RTU protocol.
Select between the MODBUS/RTU protocol or the F-MPC-Net protocol for the F-MPC series.



- Handles digital input.
Four inputs (ON/OFF status and pulse count digital signals) from the relay connector terminal block. also explained (UM04 use only).

■ Types

Description	Specification	Type
Integrated power monitoring unit (main unit)	RS-485, 2VT supported	UM04-ARA4
CT-BOX (CT box)	For CT secondary current, 5A	UM04X-5
	For CT secondary current, 1A	UM04X-1

Note : For information on the terminal relay, cable with connector, and relay connector terminal block, refer to the table below.

Product name	Specification	Type
Terminal relay	15 output	RS16-DE04H
Connector cable	Length: 1m/2m/3m	AUX014-20□
Connector terminal block	kWh pulse output For digital input	AU-CW21B-04

Note : For information on a combination of the current sensor, CT-BOX, and unit, refer to the table below.

(Combination table of F-MPC04 types)

CT	CT secondary current	Applicable CT BOX model	Applicable integrated power monitoring unit
Split CT Type: CC2D74- □□□ 1 Type: CC2C76- □□□ 1	1A	UM04X-1	UM04-ARA4
General purpose CT XX/1A			
General purpose CT XX/5A	5A	UM04X-5	

Note : The existing CT-BOX (model: UM01-□) is available only for the current input. However, the existing CT-BOX is not compatible with leakage current input. UM04X-□ is necessary for measuring leakage current.

Note : The countable number of feeders can differ according to the quantity of CT-BOX.

Applied circuit	CT-BOX	
	1	2
3-phase 3-wire	5 feeders max.	10 feeders max.
Single phase 2-wire		
Single phase 3-wire		
3-phase 4-wire	3 feeders max.	6 feeders max.

Specifications

• General specifications

Item		Specifications
Rating	Frequency	50 or 60Hz (selected by setting)
	Voltage	110/220VAC shared; 110VAC (VT secondary) for VT
	Current	According to the CT-BOX specifications (5A, 1A: CT secondary, rated consumption VA: up to 0.1 VA, exclusive of external wiring resistance)
	Zero phase current transformer	EW type or MCCB with a built-in ZCT (FUJI model)
Control voltage		85 to 264VAC (over dedicated control power terminal), or 100–220VDC
Inrush current		Up to 40A, up to 3ms (AC) Up to 85A, up to 3ms (DC)
Power consumption*		Max. 25VA (power distribution monitoring unit + 2x CT box + terminal relay (every Ry ON))
Rated input	Voltage input (VT ratio)	100V direct input, 200V direct input VT primary/secondary: AC220/110V, AC440/110V, AC440/220V, AC240/110V, AC400/110V, AC3.3k/110V, AC6.6k/110V
	Current input (CT ratio)	Primary rated setting: 10A, 15A, 20A, 25A, 30A, 40A, 50A, 60A, 75A, 80A, 100A, 120A, 150A, 160A, 200A, 250A, 300A, 320A, 400A, 500A, 600A, 630A, 750A, 800A, 1000A, 1200A, 1250A, 1500A, 1600A, 2000A, 2500A, 3000A, 3150A, 3200A, 4000A, 5000A, 6000A, 7500A
Ambient temperature		–10 to 55°C (no icing or no condensation)
Storage temperature		–20 to 70°C (no icing or no condensation)
Relative humidity		20 to 90% RH (no condensation)
Atmosphere		No corrosive gas, no excessive dust
Alarm and breaking output		Allowable continuous thermal current, 1A
		Maximum switching capacity: 250VAC 5A, 30VDC 5A
		Terminal relay: RS16DE-04H output
Insulation resistance		Between electric circuits and ground: 10MΩ or more Between electric circuits, between contact circuit terminals: 5MΩ or more
Commercial frequency withstand voltage		Between electric circuits and ground (except for communication signal line, kWh pulse output, and digital input): 2000VAC, 1 minute
Lightning impulse withstand voltage		Between electric circuits and ground (except for communication signal line, kWh pulse output, and digital input): 4.5kV (1.2 × 50μs)
Instantaneous overload capacity		Current circuit: 20 times the rated current, 0.5s 9 times, 2s once
Shock resistance		JIS C 60068-2-27, half sign wave 300m/s ² , 11ms, three times for X, Y, and Z each
Noise immunity		Damping oscillation waveform (2s) of 1 to 1.5MHz, peak voltage 2.5 to 3 kV 1ns × 1μs, 1.5kV quadrate noise, continuously applied for 10 minutes
Vibration resistance performance		JIS C 60068-2-6, 10–58Hz: half amplitude 0.075mm, 58–150Hz: constant acceleration, 10m/s ² 8 minutes × 10 cycles for each of X, Y, and Z directions
Electrostatic noise immunity		Mounting steel plate (touching a metal part) ±8kV, panel surface (not touching a nonmetal part) ±15kV
Allowable instantaneous power failure time		20ms (continuous behavior), however, except for a display
Mass	Power monitoring unit	1,000g
	CT box	300g
	Terminal relay	200g

Note : * The values above are for when the centralized power distribution monitoring unit, CT-BOX, and terminal relay are combined among them.

• Measurement and display specifications

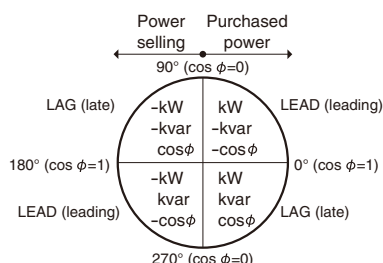
Type	Effective measurement range	Main unit display	Communication data	Accuracy (%) ^{*1}	Remarks
Load current	0, 0.5 to 150% of CT second rating	4 digits		±2.5% FS	Values not more than about 0.5% are represented as “0.00”.
Voltage	20 to 264 VAC for VT secondary ^{*3} 3-phase, 3-wire: Max. 264V 3-phase, 4-wire (phase-to-phase voltage):Max. 264V 3-phase, 4-wire (line voltage): $\sqrt{3} \times 264V$			±2.5% FS	In addition to the control power terminals, there are the voltage input terminals for measurement.
Earth leakage current	0, 50 to 3,000mA			±20% FS	Values not more than 50mA are represented as “0”.
Active power	Second conversion by transformer: 0 to ±3.5kW ^{*4, 5}	Signed 4 digits		±2.5% FS	Measured with not less than 0.4% of rated current.
Reactive power	Second conversion by transformer: 0 to ±3.5kvar ^{*4, 5}			±2.5% FS	
Power factor	Leading 0% to 100% to late 0% ^{*4}	Signed 3 digits □ . □□	Signed 4 digits □ . □□□	±5.0% (converted with 90° phase angle)	
Active electric energy	+ Active electric energy: 0 to 99,999	5 digits	^{*6}	Equivalent to JIS normal class ±2.0% (power factor 1 in the range between 5% and 120% of the CT primary rated current) ±2.5% (power factor 0.5 in the range between 10% and 120% of the CT primary rated current)	
	– Active electric energy: 0 to 99,999 (reverse power flow: power selling)				
Reactive electric energy	+ Reactive electric energy: 0 to 9,999 (cumulative value of + reactive power in ^{*4})	None	^{*6}	±5.0% Note: It is not displayed in the main unit.	
	– Reactive electric energy: 0 to 9,999 (cumulative value of - reactive power in ^{*4})				
Minimum voltage value	85 to 264VAC for the VT secondary of each phase	4 digits		±2.5% FS	
Maximum voltage value	85 to 264VAC for the VT secondary of maximum phase			±2.5% FS	
Higher harmonic current and fundamental wave current	Third, fifth: 0, 0.5 to 150% of the CT second rating Seventh: 0, 0.5 to 150% of the CT second rating Integrated: sum of third, fifth, and seventh			±2.5% FS (seventh is ±5.0% FS)	

Notes : ^{*1} The measurement accuracy contains the error of CT box and ZCT. It does not contain the error of the combination with VT and CT.

^{*2} The performance characteristics of the current, voltage, and power are compliant with JIS C 1102 (electric indicating instrument). Note that the measurement display value is the average display for about 1s.

^{*3} The numeric values in the table represent the line voltage of 3-phase, 3-wire and phase-to-phase voltage of 3-phase, 4-wire. When 3-phase, 4-wire is applied, the voltage display selects either phase-to-phase or line voltage according to this table setting.

^{*4} The single sign "±" can represent both the display of power selling/purchased power in the power measurement and LEAD/LAG display in the power factor measurement (blank is displayed for the plus voltage). The sign "±" means the following according to each measurement item:



- (1) Active power (kW)
+: purchased power (power consumption)
–: power selling (reverse flow power)
- (2) Reactive power (kvar)
+: late current based on the reactive power meter method
–: leading current based on the reactive power meter method
Note: LEAD/LAG are reversed for the power selling/purchased power.
- (3) Power factor (cos φ)
+: late power factor
–: leading power factor

^{*5} The maximum range of active and reactive powers is ±3.5kW for three cables 3-phase secondary current 5A, ±0.69kW for three cables 3-phase secondary current 1A, ±6.0kW for 3-phase, 4-wire secondary current 5A, and ±1.2kW for 3-phase, 4-wire secondary current 1A.

^{*6} The F-MPC-Net protocol transfers last 4 digits in the main unit display. The MODBUS RTU protocol transfers 0 to 999999.999kWh, and the count-up step value of cumulative value changes for VT and CT ratios.

• Demand measurement

Item	Specification
Current	Time limit: Selected out of
Higher harmonic current	0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/30 minutes(common to all circuits)
Active power	(0 minute setting shows the average value for 1s)
Voltage	Display items: 1) Demand value
Earth leakage current I _o , I _{ob}	2) The maximum demand history value(the maximum value in the past until reset operation is made)
	The maximum/minimum values(moving average value for 1 second) are also indicated for voltage.
	Measurement and display range: Same as "Measurement and display specifications"

• Earth leakage relay trip(OCG) characteristic specifications

Item	Specification		
Operation value: I _o or I _{ob} (It depends on setting selection)	Sensitivity current(Setting value: 200/500/1,000/2,000/3,000mA, and Lock) operation value is 50 to 100% of the sensitivity current that is mentioned above.		
Operation time: Inertial non-operation time	Setting value	Inertial non-operation time	Operation time
	0.1s	—	0.1s or shorter
	0.3s	0.15s or longer	0.3s or shorter
	0.5s	0.25s or longer	0.5s or shorter
	1.0s	0.5s or longer	1.0s or shorter
	3.0s	1.5s or longer	3.0s or shorter

Notes : • Any sensitivity current and operating time can be combined.

- The numeric values in the table represent the behavior specifications of the trip relay. The prealarm relay starts to work with half the operating value in the table, and its operating time is fixed at 10sec. The prealarm relay can be used as an alarm at the occurrence of a leakage current increase due to events such as distorted cable insulation or flood.

• Communication specifications

Item	Specification
	F-MPC-Net MODBUS/RTU
Standard	EIA-485
Transmission system	Half duplex, 2-wire system
Data exchange system	1: N (This device), polling/selecting
Transmission distance	1,000m (Total length)
The number of units that can be connected	Max 31 devices + master unit
Transmission speed	4800/9600/19,200bps (selective)
Address (exchange number) setting	Lock, 1 to 99 * ¹
RS-485 terminal name	DXA, DXB Interpret DXA as D1(+), DXB as D0(-) and connect them.
Transmission character	ASCII code Binary
Data form	Start bit 1bit (fixed) 1bit (fixed)
	Length of data 7bit/8bit (selective) 8bit (fixed)
	Parity bit none/even/odd (selective) none/even/odd (selective)
	Stop bit 1bit (fixed) Without parity: 2bit (fixed) Others: 1bit (fixed)
	BCC Even horizontal parity CRC-16

Notes : • RS-485 communication is installed. Select either of F-MPC-Net protocol or MODBUS/RTU protocol by setting. As for the detailed specification of each protocol, refer to the separate volume manual(RS-485 communication F-MPC-Net protocol manual FH908(Japanese), or RS-485 communication MODBUS protocol manual FEH909).

- *¹Use the address of this product within the range from 1 to 99 when you use the communication function. Use the address of this product in the status of "Lock" when you are not communicating.

• Accident value display

Load current prealarm value, prealarm current value of leakage relay (spring return), operating current value display (the display returns with reset) during the leakage relay

• kWh pulse output specifications

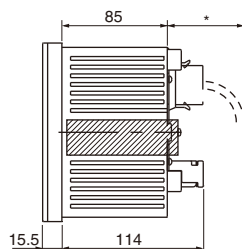
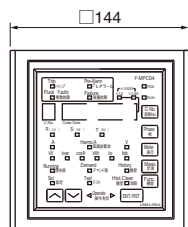
- Transistor open collector output: Max. 35VDC, 50mA (when turned ON, residual charge is not more than 2.5V)
- Pulse width: 200±20ms, output cycle: not less than 1,000ms
- Output pulse unit: 10ⁿkWh/pulse, where n is -2 to 3 (selected by CT and VT ratios, and setting)
- Leakage relay combination ZCT
 - Used in combination with the breaker for ZCT wiring and zero phase current transformer

• Digital input specifications

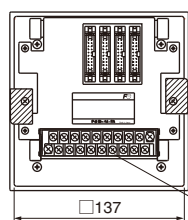
Item	Specification
Input point	4points Input of alarm signal etc. on the spot (with transmission) and kWh pulse input
External input signal	No-voltage contact input or transistor-open collector input
Input specification	24VDC about 5mA outflow ON level: 5mA or less OFF level: 1mA or higher
The minimum duration of input signal	50ms

■ Dimensions, mm

Integrated power monitoring unit, UM04

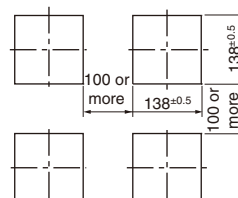


* Allow approx. 100mm of space for the connector cable.

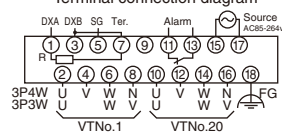


Terminal screw M3

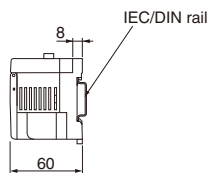
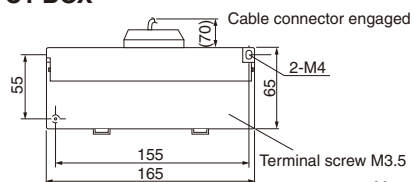
Panel cutout



Terminal connection diagram



CT-BOX



Mounting method: Screws mounting (2-M4) or IEC/DIN rail mounting (35mm width)

Measuring instruments

Analog meters fully redesigned

New models of panel instruments, wide angle instruments, meter relays, and shunts have just been released.

Panel instruments, wide angle instruments

■ Features

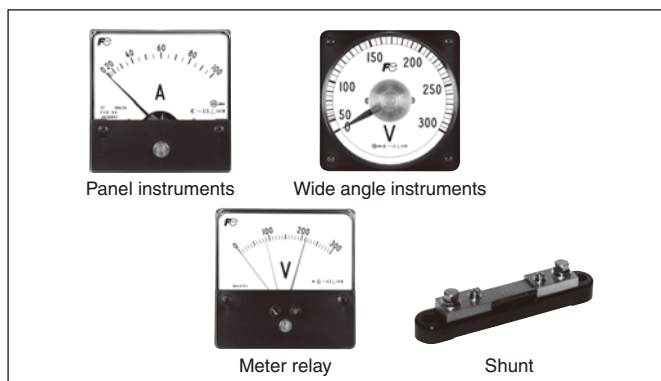
Panel instruments, F□N series

- The panel instruments feature an elegant design and a bright, easy-to-read scale plate.
- The panel instruments come with a novel design adopting a laciform indicator.
- Besides ammeters and voltmeters, wattmeters and power-factor meters are also included in this series.
- The classes of the panel instruments are based on class 2.5 specified in JIS C 1102.
- All models, except for the F□N-120, are also available with an LED lamp.

Wide angle instruments, WM8N series

- The wide angle instruments are resistant to vibrations and impacts and provided with a scale plate that shows a wide range of angles and is easy to monitor.
- The scale plate is marked with a wide range of angles, easy to view, and equally divided.
- The classes of the wide angle instruments are based on

class 1.5 specified in JIS C 1102.



■ Types

Product model		Panel instruments				Wide angle instruments	
Type		F□N-60	F□N-80	F□N-100	F□N-120	WM8N□□6-□	WM8N□□3-□
Dimensions of surface frame (width × length) [mm]		60×60	80×80	100×100	123×123	80×80	110×110
Class		Class 2.5	Class 2.5	Class 2.5	Class 1.5	Class 1.5	Class 1.5
Scale	Regular scale	○	○	○	○	○	○
	Extended scale	○ (triple)	○ (triple)	○ (triple)	○ (triple)	○ (triple, five-fold)	○ (triple, five-fold)
Color of cover		Black	Black	Black	Black	Black	Black
Special item (designated)	With a red indicator	○	○	○	○	○	○
		—	—	—	—	—	—

Note : The existing type F□-45 measuring 45 × 45 mm is still included in the lineup of panel instruments.

Meter relay, WM4N series

■ Features

- The meter relays are capable of issuing a warning signal when the reading reaches the set value.
- When the reading reaches the set value, the meter relays photoelectrically detect it and issue a warning signal through a contact output.
- The meter relays come in a single-stage setting type (upper or lower limit) and a double-stage setting type (both upper and lower limits).
- The meter relays come with an auxiliary power supply of 110 V or 220 V AC or 24 V, 48 V, or 100 V DC.

■ Product type

Product model		Meter relay			
Dimensions of surface frame (width × length)		60×60mm	80×80mm	100×100mm	123×123mm
Type		WM4N□□2	WM4N□□6	WM4N□□4	WM4N□□5
Class		Class 2.5	Class 2.5	Class 2.5	Class 1.5
Scale	Regular scale	○	○	○	○
	Extended scale	○ (triple)	○ (triple)	○ (triple)	○ (triple)
Scale length		38mm	52mm	70.5mm	82.5mm
Pass range of movable indicator		Overall scale range			
Pass range of setting indicator		Overall scale range			
Operation function		Upper limit operation (H), lower limit operation (L) Upper/Lower limit operation (HL), upper limit double stage operation (HH) Lower limit double stage operation (LL)			
Indicator lamp		Not provided			
Auxiliary power supply		AC110V, AC220V (2VA): 10%, -15% (50/60Hz) DC24V (2.5W), DC48V (5W), DC110V (12W), ±15% Note: A 48 V DC or 110 V DC auxiliary power supply is supplied with a series resistor.			
Color of cover		Black			

Shunt, WM9N-1, 2

■ Features

- These shunts are intended for direct current ammeters. Class 0.5 and class 1.0 are available. Select the class according to the level of accuracy you require.
The shunts are heat sources. Select one with a sufficient current rating.
(In principle, select a shunt having a current rating at least 1.5 times the continuously working current.)
- Although the standard terminal voltage of the shunt is 60 mV, a 100 mV shunt type is also available.

■ Types

Product model	Applicable meter	JIS class 0.5 (JIS C-1721)				JIS class 1.0 (JIS C-1721)			
		Shunt rating		Shunt base	Type	Shunt rating		Shunt base	Type
Shunt	DC shunt Shunt connection items	60mV	1A	With base	WM9N-1	60mV	1A	With base	WM9N-2
			2A				2A		
			3A				3A		
			4A				4A		
			5A				5A		
			7.5A				7.5A		
			10A				10A		
			15A				15A		
			20A				20A		
			30A				30A		
			40A				40A		
			50A				50A		
			60A				60A		
			75A				75A		
			100A				100A		
			150A				150A		
			200A				200A		
		250A	No base	250A		No base			
		300A		300A					
		400A		400A					
		500A		500A					
		600A		600A					

Note : Only one meter can be connected to a each shunt.

Power line multi-meters

WE1MA, WE1MB, WE1GL, WE1B/1C (with a white backlight)

A series of multi-meters provided with a white backlight have just been released.

Power line multi-meters WE1MA

■ Features

Perform measurement and monitoring for 213 points in 52 categories for Single-phase/2-wire, Single-phase/3-wire, 3-phase/3-wire, and 3-phase/4-wire

- With one unit, you can measure or monitor the voltage, current, demand current, power, demand power, reactive power, apparent power, power factor, frequency, leakage current, harmonic effective value (A,V), distortion, harmonic content rate, power level, and reactive power level.
- The measurements are displayed using a four-element display: one display on the main monitor and three displays on the sub-monitors along with a bar graph.
- Communications output supports F-MPC Net, CC-Link, AnyWire, Modbus RTU, and RS-485 (according to user specification).



■ Types and ratings

Measurement	Input specifications		Type
	Input circuits	Input range	
Current (max. demand, demand, instantaneous), power (max. demand, demand, instantaneous), voltage, power factor, frequency, reactive power, power level, reactive power level, harmonic effective value, distortion, and harmonic content rate	Single-phase/2-wire, Single-phase/3-wire, 3-phase/3-wire or all common	150V/300V, 5A	WE1MA-A □ F □ □ -000
		150V, 5A	WE1MA-A □ 1 □ □ -000
		300V, 5A	WE1MA-A □ 3 □ □ -000
		5A	WE1MA-A □ 5 □ □ -000
		150V	WE1MA-A □ 9 □ □ -000
		300V	WE1MA-A □ A □ □ -000
		150V/300V, 1A	WE1MA-A □ G □ □ -000
		150V, 1A	WE1MA-A □ 2 □ □ -000
		300V, 1A	WE1MA-A □ 4 □ □ -000
		1A	WE1MA-A □ 6 □ □ -000
		150/300V, 5A	WE1MA-A □ F □ □ -000
		150V, 5A	WE1MA-A □ 1 □ □ -000
		300V, 5A	WE1MA-A □ 3 □ □ -000
		5A	WE1MA-A □ 5 □ □ -000
Current (max. demand, demand, instantaneous), power (max. demand, demand, instantaneous), voltage, power factor, frequency, reactive power, power level, reactive power level, harmonic effective value, distortion, harmonic content rate, and leakage current	Single-phase/2-wire + leakage current, Single-phase/3-wire + leakage current 3-phase/3-wire+leakege current or all common	150V	WE1MA-A □ 9 □ □ -000
		300V	WE1MA-A □ A □ □ -000
		150/300V, 1A	WE1MA-A □ G □ □ -000
		150V, 1A	WE1MA-A □ 2 □ □ -000
		300V, 1A	WE1MA-A □ 4 □ □ -000
		1A	WE1MA-A □ 6 □ □ -000
		Type given above and ZCT50A	
		Type given above and ZCT100A	
		Type given above and ZCT200A	
		Type given above and ZCT400A	
		Type given above and ZCT600A	
		Type given above and ZCT100A (outdoor)	

Measurement	Input specifications		Type
	Input circuits	Input range	
Current (max. demand, demand, instantaneous), power (max. demand, demand, instantaneous), voltage, power factor, frequency, reactive power, apparent power, power level, reactive power level, harmonic effective value, distortion, and harmonic content rate	3-phase, 4-wire	150/√3V or 300/√3V common, 5A	WE1MA-A4F □□ -000
		150/√3V, 5A	WE1MA-A41 □□ -000
		300/√3V, 5A	WE1MA-A43 □□ -000
		5A	WE1MA-A45 □□ -000
		150/√3V, 5A	WE1MA-A49 □□ -000
		300/√3V, 5A	WE1MA-A4A □□ -000
		150/√3V or 300/√3V common, 1A	WE1MA-A4G □□ -000
		150/√3V, 1A	WE1MA-A42 □□ -000
		300/√3V, 1A	WE1MA-A44 □□ -000
		1A	WE1MA-A46 □□ -000
		440/√3V, 5A	WE1MA-A4B □□ -000
		440/√3V, 1A	WE1MA-A4C □□ -000

Power line multi-meters WE1MB

■ Features

Multi-meter integrating the functions of the WE1MA (input circuits: 1 φ 2W, 1 φ 3W, and 3 φ 3W, input range: 150 V/300 V for 5 A)

- With this single multimeter, you can measure voltage, current demand, power, power demand, reactive power, power factor, frequency, power level, and reactive power level.
- Maximum current demand and maximum power demand can be constantly monitored.
- Various types of outputs are available. (3 analog circuits, pulse, warning, communication: option)
- The communication outputs are compatible with Modbus RTU and RS-485.

■ Types and ratings

Measurement	Input specifications		Type
	Input circuits	Input range	
Current (max. demand, demand, instantaneous), power (max. demand, demand, instantaneous), voltage, power factor, frequency, reactive power, power level, reactive power level	Single-phase/2-wire, Single-phase/3-wire, 3-phase/3-wire or all common	150V/300V, 5A	WE1MB-□FF1□-000

Power line maximum/minimum multimeter WE1GL

■ Features

This multi-meter is capable of measuring voltage elements, including zero phase, and identifying a ground phase on the ground-phase-detection display screen.

- With this single multimeter, you can measure and monitor the maximum zero-phase voltage, the zero-phase voltage, the three-phase voltage (RS, ST, TR, RN, SN, and TN), and the frequency.
- This multimeter is provided with the function of automatically switching the screen to ground phase detection at the set upper limit of the zero-phase voltage. This multimeter is also capable of identifying a ground phase from the voltage of each phase.

■ Further information: Contact FUJI.

Power line DC reception/input meter WE1B and WE1C

■ Features

An analog scale is marked on the digital scaling meter.

- This single meter is capable of measuring and displaying three inputs at the same time.
- This meter has a scaling function that enables you to set a full scale to any given measured value.
- Maximum and minimum values can be retained.
- Three analog output circuits can be retrieved (option).

Surge Protective Devices CN227 and CN228 series

CN227 series : Protect network circuits and signal circuits from lightning surges.

CN228 series : Protect office appliances, including PC and fax machines, from lightning surges.

CN227 series SPD for network circuits

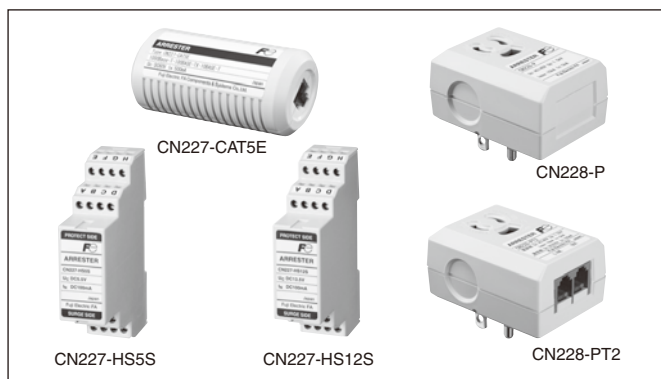
■ Features

CN227-CAT5E

- This SPD protects communication appliances from lightning surges coming in through high-speed communication (1000Base-T 1000 Mbps) LAN cables.
- The protective characteristic of this SPD fulfills categories C2 and D1 designated in JIS C 5381-21.
- This SPD has a high level of impulse durability.
- This SPD is compatible with all PoE systems.

CN227-HS5S and HS12S

- These SPDs protect appliances from lightning surges coming into signal circuits of RS485 and 5/12V DC or below.
- The protective characteristic of these SPDs fulfills categories C2 and D1 designated in JIS C 5381-21.



- These SPDs prevent the ingress of noise from SPD circuits.
- The connection terminals are of a terminal block type requiring no crimping terminals.
- DIN rail mounting type

■ Types and ratings

Type	CN227-CAT5E	CN227-HS5S	CN227-HS12S
Application	Ethernet 1000Base-T, 100Base-TX, 10Base-T, PoE	Low voltage signal (5V DC or below) circuit Small electric capacitance type, four-wire type	Low voltage signal (12V DC or below) circuit Small electric capacitance type, four-wire type
Max. continuous operating voltage [Uc]	60V DC	5.5V DC	13.5V DC
Rated current [I _n]	500mA	100mA	100mA
Transmission frequency bandwidth	DC 0 to 100MHz	DC 0 to 5MHz	DC 0 to 500kHz
Insertion loss (110Ω)	Insertion loss: 1 dB max. at DC 0 to 100 MHz * ¹ Near-end crosstalk (NEXT) 32.3dB or more at DC to 100 MHz * ¹ Return loss: 12.1dB or more	1dB max.	1dB max.
Transmission speed/DC resistance	1000Mbps	DC resistance: 5Ω±10% (1 line)	DC resistance: 5Ω±10% (1 line)
DC operating voltage (V/1mA)/DC discharge start voltage (100V/s)	Voltage to ground 90V±20%	Between 1, 2, 3&4 and 5&8: 7 to 10V DC Between 5&8 and 6&7: 90 V DC±20%	Between 1, 2, 3&4 and 5&8: 18V DC±10% Between 5&8 and 6&7: 90V DC±20%
Voltage protection level (voltage under pulse condition) [Up]	Voltage to ground 500V max.	Between A, B, C&D and E&H: 30V max. Between E&H and F&G: 600V max.	Between A, B, C&D and E&H: 50V max. Between E&H and F&G: 600V max.
Impulse withstand * ² (test class: JIS C 5381-21)	Category C2 (8/20μs) 5kA Category D1 (10/350μs) 1kA	10kA 2.5kA	10kA 2.5kA
Environmental	Temperature: -20 to 60°C, Humidity: 95%RH max., no icing or condensation		
Interface and applicable connectable wire	Modular (RJ-45)	Screw terminal connection method Solid wire: 0.4 to 1.6 φ, stranded wire: 0.14 to 2.5mm ²	
Mechanical durability	Vibration resistance (durability)	Frequency: 10 to 55Hz, double amplitude: 0.75mm (max. 4.5G), 2 hours in each direction for a total of 6 hours	
Dimensions (L × W × H)	(Thickness: oral) 35×40× (length) 81mm	90×22.5×70mm	90×22.5×70mm

Notes : *¹ CAT5e standard

*² The value is the total of the currents of respective wires to the ground. The values shown in Category C2 are the currents that can energize each of the positive and negative poles five times at current waveforms of 8/20μs. The values shown in Category D1 are the values that can energize each of the positive and negative poles once at current waveforms of 10/350μs.

CN228 series receptacle Surge Protective Devices for general private use

■ Features

CN228-P

- This SPD protects domestic and office electronic appliances, such as copying machines and audio systems, from lighting surges coming in from power wires.
- The protective characteristic of this SPD fulfills Class II designated in JIS C 5381-1.
- This SPD has a high level of impulse durability.
- An indicator lamp is provided to enable you to check if the SPD is in good condition at a glance.
- This SPD conforms to the Electrical Appliance and Material Safety Act.

CN228-PT2

- This SPD protects domestic and office electronic appliances, such as personal computers and multifunctional telephones, from lighting surges coming in from power wires and communication wires.
- The protective characteristic of this SPD fulfills Class II designated in JIS C 5381-1.
- This SPD has a high level of impulse durability.
- An indicator lamp is provided to enable you to check if the SPD is in good condition at a glance.
- This SPD conforms to the Electrical Appliance and Material Safety Act.
- This SPD is certified to be conforming to the technology standard based on the provisions of Section 2 of Article 56 of the Telecommunications Business Law.

■ Types and ratings

Type		CN228-P	CN228-PT2
Application		Domestic electronic appliance (type exclusively for power supplies)	Personal computer, fax machine, multifunctional telephone, etc. (for power supplies, communication)
Power supply side	Rated voltage/Rated frequency	125V AC/50Hz,60Hz	125V AC/50Hz,60Hz
	Rated load current [IL]	15A AC	15A AC
	Maximum continuous working voltage [Uc]	140V AC	140V AC
	DC operating voltage (V1mA)	Voltage to ground	540V DC ±20%
		Between wires	540V DC ±20%
	Test class	Class II	Class II, class III
	Nominal discharge current [In] (8/20μs)	Voltage to ground *1	5kA
		Between wires	2.5kA
	Maximum discharge current [Imax]	Voltage to ground *1	10kA
		Between wires	5kA
	Voltage protection level [Up]	1,500V max.	1,500V max.
Communication side	Maximum continuous operating voltage [Uc]	—	DC200V
	Rated current [IN]	—	100mA
	Insertion loss (DC to 5MHz)	—	1.5dB max.
	DC discharge start voltage (100V/s)	—	DC250V±10%
	Voltage protection level [Up]	—	500V max.
	Category C2 (8/20μs) *2	—	600A
Environmental		Temperature: -10 to 40°C, Humidity: 90%RH max., no icing or condensation	
Receptacle specification		Locked receptacle provided with an E terminal	Locked receptacle provided with an E terminal
Modular jack		—	RJ11
Dimensions (L × W × H)		66×47×54.5mm	66×47×54.5mm

Notes : *1 Each value is the total of the currents on the power supply side.

*2 The value shown in Category C2 is the total of the currents in the two conductors that can energize each of the positive and negative poles five times at current waveforms of 8/20 μs.

Surge Protective Devices CN5 series for low voltage circuit

These SPDs are the best solution to lightning surges from power supply.
SPDs with a built-in alarm contact and SPDs with a built-in SPD separator are released.

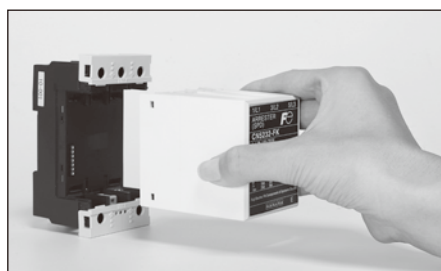
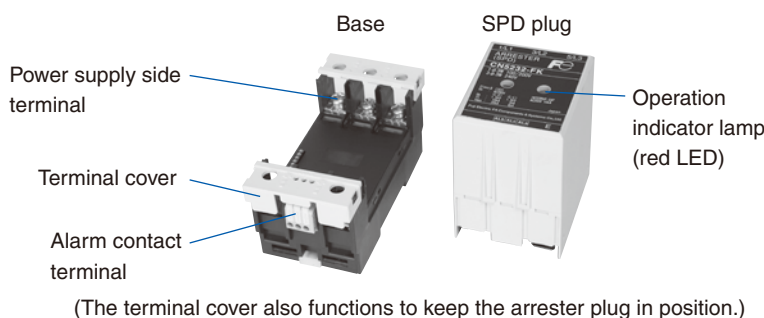
Features

- A series of SPDs with a built-in alarm contact is added to the lineup of SPDs.
These SPDs have an alarm contact for 100/200V circuits or 400V circuits.
In case of a SPD failure, a warning signal will be issued by the Ry contact.
Even if the SPD separator is turned off, the warning circuits operate, so that you can check the working state of the SPD.
- All models are provided with an operation indicator lamp.
All models, including the models for 400V, are provided with a red operation indicator LED.
All models use a built-in temperature fuse to prevent problems resulting from element deterioration, and are provided with an indicator lamp that enables you to check if the SPD is in good condition at a glance.
- Integral structure compatible with both surges to the ground and surges to the wire
- All models, including the models for 400V, are of an integral structure that protects appliances from both surges to the ground and surges to the wire.
All models alone absorb both surges to the ground and surges to the wire.
- A series of SPDs with a built-in SPD separator is added to the lineup of SPDs.
A series of SPDs with a built-in SPD separator for 100/200V circuits and SPDs with a maximum discharge current of 20kA is released.



These SPDs no longer require a separate SPD separator (plug type fuse or MCCB), which was used together with them, achieving a reduction in staff-hours and space saving.
SPDs with a built-in SPD element are of a plug-in structure and easier to maintain. The rated breaking capacity of the built-in fuse is 250V AC, 10kA.

- Integral three-terminal structure
This structure requires less space and wiring and is easy to handle.
- These SPDs comply with the Standard Specification for Public Building Construction Work.



Surge Protective Device model selection chart

Maximum discharge current (8/20μs)			10kA		20kA		Built-in separator 20kA		
Alarm contact			Without alarm contact	With alarm contact	Without alarm contact	With alarm contact	With alarm contact		
100/200V AC	For single-phase	2-wire	CN5112	CN5112-K	or	CN5212	CN5212-K	or	CN5212-FK
		3-wire	CN5132	CN5132-K	or	CN5232	CN5232-K	or	CN5232-FK
	For 3-phase	3-wire							
400V AC	For 3-phase	3-wire	CN5134	CN5134-K	or	CN5234	CN5234-K		
		4-wire							

Types and ratings

• Integral type

Type		CN5112	CN5112-K	CN5132	CN5132-K	CN5134	CN5134-K	CN5212	CN5212-K	CN5232	CN5232-K	CN5234	CN5234-K
		Without alarm contact	With alarm contact	Without alarm contact	With alarm contact	Without alarm contact	With alarm contact	Without alarm contact	With alarm contact	Without alarm contact	With alarm contact	Without alarm contact	With alarm contact
Applicable circuit, rated voltage (50/60Hz)		1 ϕ 2W, 120V 1 ϕ 2W, 240V 110V DC (only without alarm contact)		1 ϕ 3W, 100/200V 3 ϕ 3W, 240V		3 ϕ 3W, 440V 3 ϕ 4W, 440V		1 ϕ 2W, 120V 1 ϕ 2W, 240V 110V DC (only without alarm contact)		1 ϕ 3W, 100/200V 3 ϕ 3W, 240V		3 ϕ 3W, 440V 3 ϕ 4W, 440V	
Max. continuous operating voltage Uc (50/60Hz)		280V AC/140V DC		280V AC		490V AC		280V AC/140V DC		280V AC		490V AC	
Test class		Class II of JIS C 5381-1/Class II of IEC 61643-1											
Nominal discharge current In (8/20μs)	To ground	5kA		5kA		5kA		10kA		10kA		10kA	
	Between wires	3kA		3kA		3kA		3kA		3kA		3kA	
Max. discharge current Imax (8/20μs)	To ground	10kA		10kA		10kA		20kA		20kA		20kA	
	Between wires	6kA		6kA		6kA		6kA		6kA		6kA	
Total discharge current I total (8/20μs)		20kA		30kA		30kA		40kA		60kA		60kA	
350μs current impulse *1	To ground	1kA		1kA		1kA		2kA		2kA		1.5kA	
	Between wires	470V±10%		470V±10%		800V±10%		470V±10%		470V±10%		800V±10%	
DC operating voltage *2	To ground	470V±10%		470V±10%		820V±10%		470V±10%		470V±10%		820V±10%	
	Between wires	470V±10%		470V±10%		820V±10%		470V±10%		470V±10%		820V±10%	
Voltage protection level Up	To ground	1,500V max.		1,500V max.		2,500V max.		1,500V max.		1,500V max.		2,500V max.	
	Between wires	1,500V max.		1,500V max.		2,500V max.		1,500V max.		1,500V max.		2,500V max.	
	Between N and ground	—		—		1,500V max.		—		—		1,500V max.	
Operation indicator (failure indicator)		LED indicator (The red LED comes on in normal state.)											
Safety		Built-in separation function by temperature fuse											
Operating environmental		Temperature: −40 to 70°C, Humidity: 95%RH max., no icing or condensation											
Vibration resistance		Frequency: 10 to 55 Hz, double amplitude: 0.75mm (max. 4.5G), 2 hours in each direction for a total of 6 hours											
Impact resistance		200m/s ² (20G), twice in each direction (six times in total)											
Connection terminals/ Connection wire		Screw terminal connection method: M5 (provided with a protective cover for charged parts)											
		Connectable wire: 3.5 to 14mm ² , maximum width of round type crimping terminal: 12.4 (nominal size: R14-5 specified in JIS C 2805), tightening torque: 2.0 to 2.5N·m											
Dimensions (L × W × H)		95×50×60mm						95×50×60mm				95×50×93mm	

Notes : ^{*1} The values are the performance that can energize each of the positive and negative poles once.

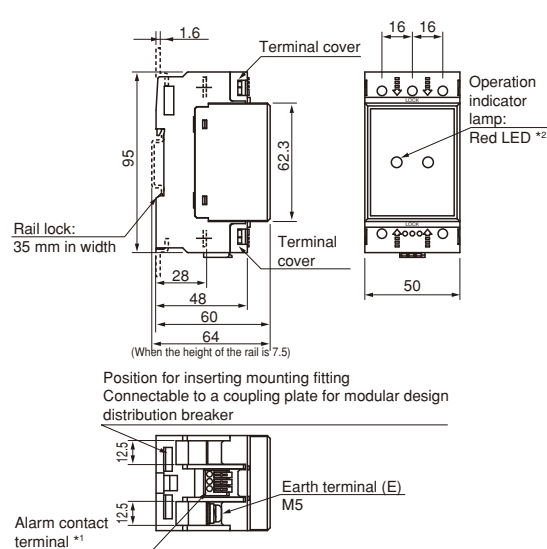
^{*2} The values of the CN51□ models are at V1mA, and those of the CN52□ models are at V3mA.

Dimensions, mm

CN5112, CN5112-K
CN5132, CN5132-K
CN5134, CN5134-K

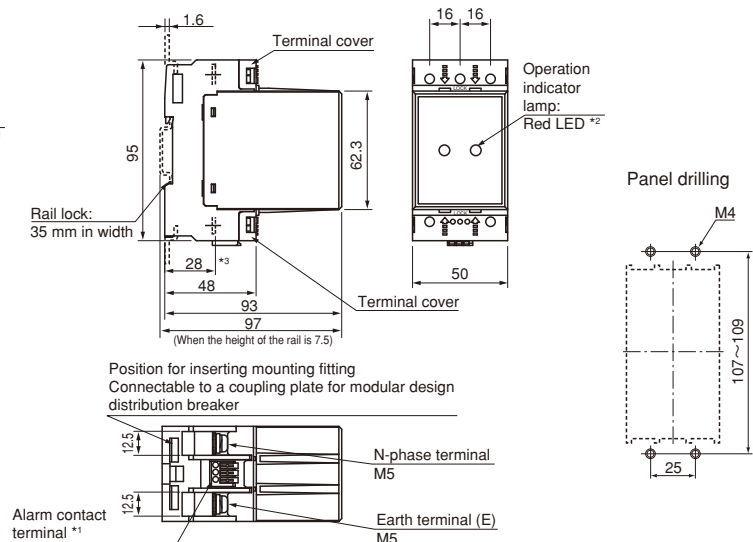
CN5212, CN5212-K
CN5232, CN5232-K

CN5212-FK
CN5232-FK
CN5234, CN5234-K



*1: Provided only with the CN51□-K series

*2: Two-terminal type arrestors have an operation indicator lamp only on the left side.



*3: The dimension of the CN5□-FK series is 27.2mm.

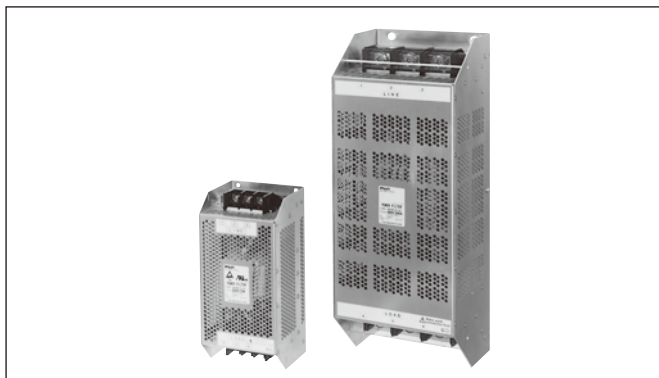
Noise suppression filters

RNFMC series input circuit power filters

Three-phase AC480/900A and AC480/1260A are additionally released.



■ Features

- The power filters with rated currents of 75 A and 100 A are granted certification by overseas safety standards (UL1283, CSA C22.2 No. 8, and EN133200).
- The power filters with rated currents of 60 A and 150 A or over are designed compatible with overseas safety standards.
- External terminals are not certified as field-wiring terminals.
- The RNFMC series power filters feature compactness and light weight achieved by our unique technology.
- The possibility that earth leakage breakers will malfunction is extremely small because of little leakage current.
- If combined with an RNFTS or RNFMS series power filter for output circuits, this power filter gains improved damping performance.



■ Types and ratings

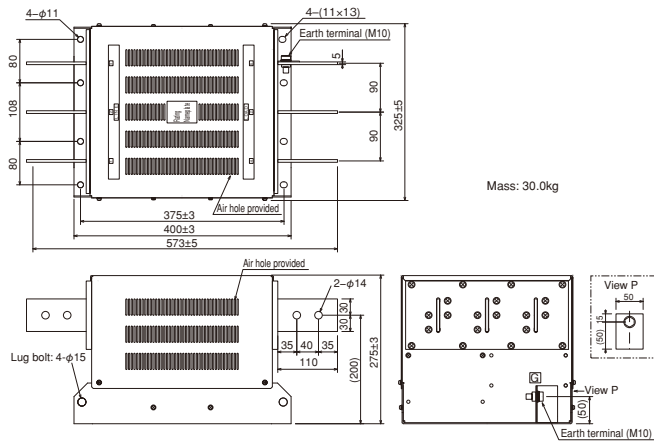
 : The models in square brackets are the ones newly released.

Type	Number of phases	Rated voltage [V]	Rated current [A]	Withstand voltage [V] (between lines and ground)	Leakage current [mA]	Voltage drop [V]	Operating ambient temperature *1 [°C]	Acquired standard certification			
RNFMC60-20 *	3-phase	250	60	2,000V AC, 1 minute	When a single phase is grounded 1.5 max.	1.0 max.	-10 to 50				
RNFMC75-20			75		When a single phase is grounded 3.0 max.						
RNFMC1H-20			100								
RNFMC1H-20			150								
RNFMC2H-20			200								
RNFMC3H-20			300								
RNFMC4H-20			400								
RNFMC5H-20			500								
RNFMC6H-20			600		When a single phase is grounded 9.5 max.						
RNFMC75-40	3-phase	480	75	2,500V AC, 1 minute	When a neutral point is grounded 1.0 max.	1.0 max.	-10 to 50				
RNFMC1H-40			100		When a single phase is grounded 9.0 max.						
RNFMC1H-40			150		When a neutral point is grounded 2.1 max.						
RNFMC2H-40			200		When a single phase is grounded 19.0 max.						
RNFMC3H-40			300		When a neutral point is grounded 9.9 max.						
RNFMC4H-40			400								
RNFMC5H-40			500								
RNFMC6H-40			600								
RNFMC9H-40					900						
RNFMC12H-40					1260						

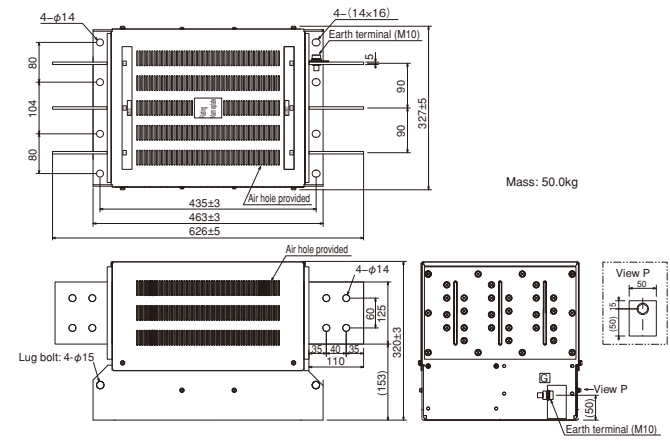
Notes : *1 All models passed the cold test specified by CSA at a temperature of -25°C.
 • The RNFMC60-20 is not granted any overseas safety standard certification.

■ Dimensions, mm

RNFC9H-40



RNFC12H-40



■ Application to inverters/standard type

Circuit voltage	Applicable inverter capacity [kW]	Input circuit power filter		Output circuit power filter
		With DC reactor	Without DC reactor	Regardless of whether a DC reactor is provided
3-phase 200V 50/60Hz	0.2	RNFTC06-20	RNFTC06-20	RNFTS05-20
	0.4			
	0.75		RNFTC10-20	
	1.5		RNFTC20-20	RNFTS10-20
	2.2	RNFTC10-20		RNFTS20-20
	3.7	RNFTC20-20		
	5.5		RNFTC30-20	
	7.5	RNFTC30-20	RNFTC50-20	RNFTS30-20
	11	RNFTC50-20	RNFTC60-20, RNFTC75-20	RNFTS50-20
	15	RNFTC60-20		
	18.5	RNFTC75-20	RNFTC1H-20	RNFTS60-20
	22	RNFTC1H-20		RNFTS75-20
	30	RNFTC1H-20	RNFTC2H-20	RNFTS90-20
	37		RNFTC3H-20	
	45	RNFTC2H-20		
	55			
	75	RNFTC3H-20		
	90	RNFTC4H-20		
	110			
3-phase 400V 50/60Hz	0.4	RNFTC06-40	RNFTC06-40	RNFTS10-40
	0.75			
	1.5		RNFTC10-40	
	2.2			
	3.7	RNFTC10-40	RNFTC20-40	
	5.5		RNFTC25-40	RNFTS20-40
	7.5	RNFTC20-40	RNFTC30-40	
	11	RNFTC25-40	RNFTC50-40	RNFTS25-40
	15	RNFTC30-40	RNFTC75-40	RNFTS30-40
	18.5	RNFTC50-40		RNFTS40-40
	22			RNFTS45-40
	30	RNFTC75-40	RNFTC1H-40	RNFTS75-40
	37		RNFTC1H-40	
	45	RNFTC1H-40		RNFTS1H-40
	55			
	75	RNFTC1H-40		
	90	RNFTC2H-40		
	110			
	132	RNFTC3H-40		
	160			
	200	RNFTC4H-40		
	220			
	280	RNFTC5H-40		
	315	RNFTC6H-40		
	355	RNFTC9H-40		
	400			
	450			
	500			
	630	RNFTC12H-40		
	710			

Note : The values shown in the table are data under the basic power supply conditions of 50Hz and 200V (400V).

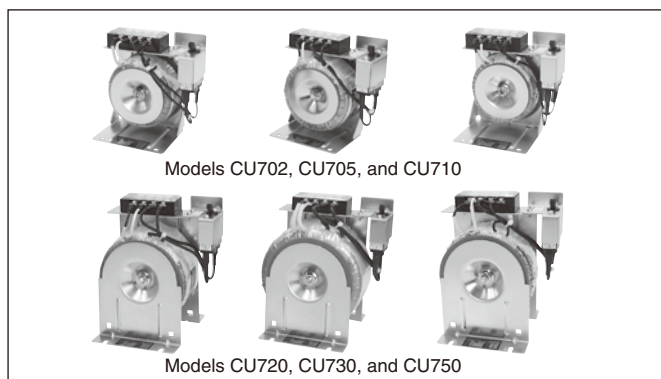
Control power transformers CU7 series

Compared with general (EI type) transformers, these transformers ensure significant energy saving. Lineup of this series with new models provided with a receptacle.

■ Features

- Compact, lightweight, low heat generation, and low loss (high energy saving)
Compared with conventional EI type transformers, the model CU7 series transformers require less installation space, are lighter, and cause less heat generation and loss (save more energy).
- Provided with a burnout prevention function
Problems attributable to an unusual temperature rise and other factors can be prevented by incorporating a temperature fuse into the primary winding and providing the secondary circuit with a circuit protector.
- Person-hours required for installation and wiring can be reduced.

Since a circuit protector is provided, there is no need to install one or connect wiring to it when installing a transformer into an operation console. The transformer itself can be mounted only with two set screws (23 to 100 VA), resulting in a significant reduction in installation person-hours (50%).



- Wide variety of types

The model CU7 series transformers come in a wide range of capacities: single-phase 23 VA, 50 VA, 100 VA, 200 VA, 300 VA, 500 VA, 750 VA, and 1 kVA. The 100 VA, 200 VA, 300 VA, and 500 VA transformers also come with a receptacle.

■ Types and ratings

Rated capacity (VA)	Transformation ratio: Primary/Secondary	Dimensions (mm)								Mass (kg)	Figure No.	Product model (i.e. product code)
		A	B	C	D	E	F	G	H			
23	100/24V	73	116	115.5	66	70	88	95	2.5	0.8	Figure 1	CU702-A1002
	200/24V											CU702-A2002
50	100/24V	73	116	115.5	66	70	88	95	2.5	1.15	Figure 3	CU705-A1002
	200/24V											CU705-A2002
	200/100V										Figure 2	CU705-A2010
100	100/24V	73	116	127.5	66	70	92	107	2.5	1.7		CU710-A1002
	200/24V										Figure 3	CU710-A2002
	200/100V		165					109		1.8		CU710-A2010
200	100/24V	106	138	166.5	94	70	104	146	–	2.8	Figure 2	CU720-E1002
	200/24V											CU720-E2002
	200/100V										Figure 2	CU720-E2010
300	100/24V	122	138	166.5	110	70	104	146	–	3.6		CU730-E1002
	200/24V										Figure 2	CU730-E2002
	200/100V											CU730-E2010
500	100/24V	130	146.5	166.5	118	70	104	146	–	5.0	Figure 2	CU750-E1002
	200/24V											CU750-E2002
	200/100V										Figure 2	CU750-E2010
750	200/100V	151	170	185	135.5	80	130	160	–	7.5		CU775-B2010
1k		149.5			134					8.0		CU7A1-B2010

■ Dimensions, mm

Figure 1: CU702, CU705, CU710

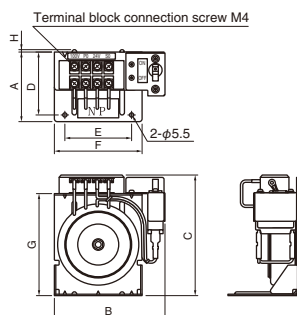


Figure 2: CU720, CU730, CU750, CU775, CU7A1

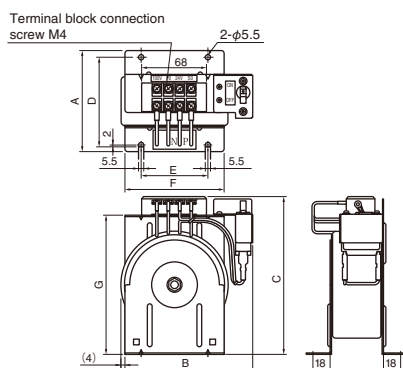
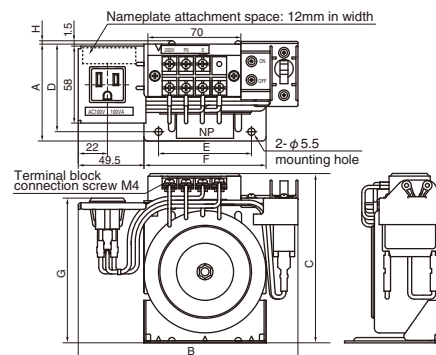


Figure 3: CU710-A2010C



■ Specifications

• Standard type

Rated capacity (VA)	23		50			100			200			300			500			750	1k
Number of phases	Single-phase																		
Frequency (Hz)	50/60Hz																		
primary voltage (V)	100	200	100	200	200	100	200	200	100	200	200	100	200	200	100	200	200	200	200
Secondary voltage (V)	24	24	24	24	100	24	24	100	24	24	100	24	24	100	24	24	100	100	100
Insulation class	A									E									B
Operating temperature of temperature fuse	115°C											133°C					144°C		
Insulation resistance (500V megger)	Between the primary and secondary windings, between the primary winding and the iron core, between the secondary winding and the iron core: 100MΩ or more																		
Dielectric strength (for 1minute)	Between the primary and secondary windings, between the primary winding and the iron core, between the secondary winding and the iron core: 2kV AC																		
Rated current of circuit protector (low-speed type) (A)	1	1	2	2	0.5	5	5	1	10	10	2	15	15	3	20	20	5	7.5	10
Mass (kg)	0.95		1.3			1.7			2.8			3.6			5.0			7.5	8.0

• Provided with a receptacle

Type and number of receptacles	Standard type with an N-phase, 1				Locked type with an N-phase, 1			
Rated capacity (VA)	100	200	300	500	100	200	300	500
Number of phases	Single-phase							
Frequency (Hz)	50/60							
Primary voltage (V)	200							
Secondary voltage (V)	100							
Insulation class	A	E			A	E		
Operating temperature of temperature fuse	115°C		133°C		115°C		133°C	
Insulation resistance (500V megger)	Between the primary and secondary windings, between the primary winding and the iron core, between the secondary winding and the iron core: 100MΩ or more							
Dielectric strength (for 1 minute)	Between the primary and secondary windings, between the primary winding and the iron core, between the secondary winding and the iron core: 2kV AC							
Rated current of circuit protector (low-speed type) (A)	1	2	3	5	1	2	3	5
Mass (kg)	1.8	2.9	3.7	5.1	1.8	2.9	3.7	5.1

Time delay relays MS4S and ST7 series

Release the Products Authenticated by China Compulsory Certification (CCC)

We have released the products authenticated by China Compulsory Certification (CCC).



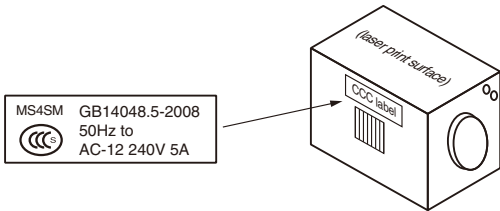
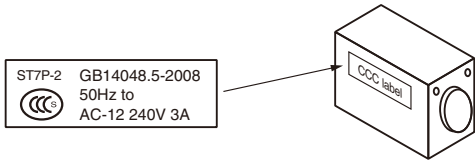
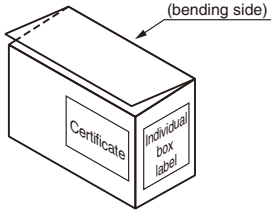
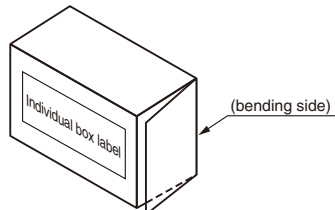
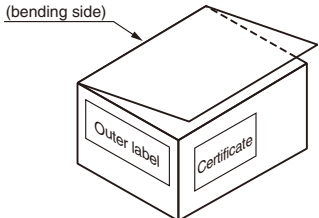
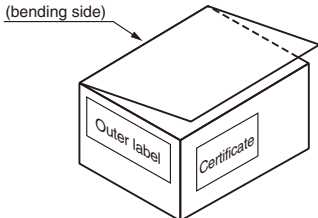
ST7P-2



MS4SA

Certification mark (CCC) display

- Product body: CCC label affixed.
- Package: not displayed.

Series	Super timer series	Small super timer series
Type	MS4S □	ST7P-2 ST7P-4
Product body	CCC label 	CCC label 
Individual box (1)	Shipped with Chinese operation manual Certificate affixed 	
Outer box	Certificate affixed 	Shipped with Chinese operation manual Certificate affixed 

Time of modification : April 2010

■ Types

• MS4S series

Model	Operation	Number of terminals	Contact configuration	Timing range	Rated voltage	Type (Ordering code)	
MS4SM	ON-delay Flicker One-shot Signal OFF-delay	11 pin	Timed 2PDT	0.05s to 60h	100 to 240V AC	MS4SM-AP(CCC)	
					24V AC/DC	MS4SM-CE(CCC)	
					48 to 127V DC	MS4SM-DL(CCC)	
MS4SA	ON-delay	8 pin	Timed 2PDT	0.05s to 60h	100 to 240V AC	MS4SA-AP(CCC)	
					24V AC/DC	MS4SA-CE(CCC)	
					48 to 127V DC	MS4SA-DL(CCC)	
MS4SC	ON-delay	8 pin	Timed SPDT + Instantaneous SPDT	0.05s to 60h	100 to 240V AC	MS4SC-AP(CCC)	
					24V AC/DC	MS4SC-CE(CCC)	
					48 to 127V DC	MS4SC-DL(CCC)	
MS4SF	OFF-delay	8 pin	Timed 2PDT	0.05 to 12s [1T] 0.05 to 12min [1N]	100 to 240V AC	MS4SF-AP□(CCC)	
					24V AC/DC	MS4SF-CE□(CCC)	
					48 to 127V DC	MS4SF-DL□(CCC)	
			Timed SPDT + With instantaneous reset		100 to 240V AC	MS4SF-AP□R(CCC)	
					24V AC/DC	MS4SF-CE□R(CCC)	
					48 to 127V DC	MS4SF-DL□R(CCC)	
MS4SY	Star-delta	8 pin	Timed 1NO(Star output), Timed 1NO(Delta output) + Instantaneous SPDT	0.5s to 120s (Star starting time) 0.05/0.1/0.25/0.5s (Star-delta changeover time)	100 to 240V AC	MS4SY-AP(CCC)	
MS4SR	Repeat (OFF-start)	8 pin	Timed 2PDT	0.05s to 60h	100 to 240V AC	MS4SR-AP(CCC)	
	Repeat (ON-start)				24V AC/DC	MS4SR-CE(CCC)	
					100 to 240V AC	MS4SR-APN(CCC)	
					24V AC/DC	MS4SR-CEN(CCC)	

• ST7 series

Model	Operation	Number of terminals	Contact configuration	Timing range	Rated voltage	Type (Ordering code)
ST7P-2	ON-delay	8 pin	Timed 2PDT	0.06 to 0.5s [P5], 0.25 to 3min [3M] 0.1 to 1s [1S], 1 to 10min [1N] 0.3 to 3s [3S], 2 to 30min [3N]	100 to 120V AC	MS7P2-A1□(CCC)
					200 to 230V AC	MS7P2-A2□(CCC)
					24V DC	MS7P2-DE□(CCC)
ST7P-4	ON-delay	14 pin	Timed 2PDT	0.4 to 5s [5S], 4 to 60min [6N] 1 to 10s [1T], 0.17 to 2h [2H] 2 to 30s [3T], 0.5 to 6h [6H] 4 to 60s [6T], 1 to 12h [1J]	100 to 120V AC	MS7P4-A1□(CCC)
					200 to 230V AC	MS7P4-A2□(CCC)
					24V DC	MS7P4-DE□(CCC)

Overview of other changes

For details, please contact FUJI.

Model	Series & Type	Changes	Description	Changed in
Magnetic contactor & magnetic starter	New SC	Enclosure	Changed the attaching location for SW-□C and SW-□P models	Aug. 2008
	New SC	Terminal screw	Changed the screws for some models of NEO SC series [rechange]	Jan. 2009
	New SC	Nameplate & Package	Changed the indication of origin after the transfer to Changshu	Feb. 2009
	New SC, SRC	Fixed contact block	Non-plated fixed contact block for new SC and SRC	Nov. 2009
	FC	Main terminal screw	Changed the main terminal screws for some models of FC series	Feb. 2010
	New SC, NEO SC	Thermal relay	Changed the TOR, ALOCK, and ASET specifications for new SC and NEO SC series	Feb. 2010
	New SC, NEO SC	Thermal relay nameplate	Changed the MAG and TOR nameplate notation for new SC and NEO SC series	Apr. 2010
	New SC, NEO SC	Long-time thermal relay	Changed the long-time thermal relay shape	May 2010
	NEO SC	Movable & fixed contact	Changed the shape of the contacts SC-N11 and N12	Jul. 2010
	NEO SC	Operation manual	Latch magnetic contactor for NEO SC and new SC series	Sept. 2010
	FC	Package	Changed the packing for some models of FC series	Oct. 2010
	New SC, NEO SC	CCC certificate label	Changed the content of new SC and NEO SC CCC certificate label	Nov. 2010
	New SC, FC	Energy efficiency label	Changed the CCC certified energy efficiency label for new SC & FC series	Nov. 2010
	New SC	Package	Changed the package legend for new SC series	Dec. 2010
MCCB & ELCB	MCCB/ELCB	Terminal plate	Changed the material (from copper to aluminum) of the G-TWIN (standard) terminal plate	Jul. 2008
	MCCB	Terminal plate	Changed the material (from copper to aluminum) of the 600-800AF (C, RC) CE terminal plate	Jul. 2008
	MCCB/ELCB (TIPS)	Terminal plate	Changed the material of 600-800AF terminal to aluminum	Aug. 2008
	G-TWIN	External operating handle	Changed the external operating handle shape for G-TWIN	Apr. 2009
	G-TWIN	Auxiliary handle	Changed the auxiliary handle shape for G-TWIN series 630, 800AF	Feb. 2010
	G-TWIN	External operating handle	Changed the V type outer handle for MCCB/ELCB G-TWIN125-250AF	Feb. 2010
	G-TWIN	External operating handle	Changed the N type outer handle shape for MCCB/ELCB G-TWIN125-250AF	Feb. 2010
	G-TWIN	Steel enclosure	Steel enclosure for MCCB/ELCB G-TWIN630, 800AF	Apr. 2010
	G-TWIN	Main unit nameplate, unit & outer packaging labels, and operation manual	Obtain CCC for G-TWIN 32 to 100AF	Apr. 2010
	G-TWIN	Nameplate, package label, and operation manual	Obtain CCC for the handle for G-TWIN 32 to 100AF	Apr. 2010
	α-TWIN	Terminal plate	Changed the flat terminal plate shape for α-TWIN series 400AF	May 2010
	G-TWIN	Steel enclosure	Changed the steel enclosure structure	May 2010
	G-TWIN	Production & package nameplates	Changed the production bases (2 bases) for G-TWIN series 125, 250, 400AF	Jun. 2010
	G-TWIN, α-TWIN	V type external operating handle	Changed the parts shape of the V type external operating handle	Jun. 2010
	Earth leakage relay EL type	Sense switch	Changed the slide switch for switching the Fuji EL type earth leakage relay sensed current	Jul. 2010
	α-TWIN	V type external operating handle	Changed the V type outer handle cover paintwork	Oct. 2010
	G-TWIN, α-TWIN	Terminal block (cable holder)	Changed the terminal block shape for separately sold interior accessory	Nov. 2010
	G-TWIN	Cover, enclosure, arc-extinguishing chamber, power source & load terminals, and back lid	Changed the G-TWIN 250AF economical type appearance	Dec. 2010
	G-TWIN	Handle lever	Changed the paintwork of the flange type external operating handle	Mar. 2011
D-type fuse	Pa100H, Pa200H, Pa400H	Bolt mounting method, surface-treating	Changed the cap clamp for D-type fuse	Apr. 2010

Model	Series & Type	Changes	Description	Changed in
Command switch	AR22VG	LED lamp	Changed APX510 Gen to PIKARI	Nov. 2008
	AR, AM, AG, AH	Key	Changed the AR22 key material	Nov. 2008
	AH16	Key	Changed the AH16 key material	Nov. 2008
	AR, AM, AG, AH	LED lamp	Changed AHX695 LED chip	Dec. 2008
	DR30	LED unit	Changed the DR30 square lamp LED light	Dec. 2008
	AH, AG	Package	Changed the package display for packing ϕ 16 selector SW	Jan. 2009
	AH165	Button	Changed the button color (red) AH165-2V and others	Feb. 2009
	AR30	Cover	Changed the AR30FVR (for emergency) controller cover	Mar. 2009
	AR22, AR30	Terminal	Changed the surface color of the joy stick switch terminal plate	Mar. 2009
	AR, AM, AG, AH	LED lamp	Changed the LED bulb of APX510.508 and others	Apr. 2009
	AH164, AH165	Package	Changed the package display of the ϕ 16 package (CSA standard)	May 2009
	AR16V	CCC printout	Additionally printed out the CCC certified mark of the emergency stop button AR16V	Aug. 2009
	AR30	Back of the button	Changed the back shape of the AR30V1R button	Sept. 2009
	AR, AM, AG	Transformer unit nameplate	Changed the transformer unit nameplate	Sept. 2009
	AH16P, AH22P	Lamp terminal	Changed the surface-treating of the print board command SW lamp terminal	Oct. 2009
	AH165	LED	Changed the AH165-ZM LED consumption current/light	Oct. 2009
	AR, AM, AG	Contact unit	Changed the stamp color of the contact area for AR9B290 and 291	Nov. 2009
	DP	LED unit	Changed the LED unit of the square lamp DP36, DP40, DP48 series 200 VAC specifications	Nov. 2009
	AH164	Speaker	Changed the command SW (buzzer) AH164-TX speaker	Feb. 2010
	AH164, AH165	Nameplate	Changed the way to display the AH16□ series CCC certified mark	Mar. 2010
	DR30	Legend plate	Changed the legend plate of the DR30 series lamp	Mar. 2010
	AH25	Nameplate	Changed the AH25 series nameplate (TUV certified mark deleted)	Apr. 2010
	AR30	Erroneous operation preventive cover	Changed the erroneous operation preventive cover package of the command SW	Apr. 2010
	AM22V	LED lamp	Changed the AR9L001 light	May 2010
	AH105, AH25, AG22, 23	Package	Changed the legend of the command SW package	May 2010
	AS15HR, AS22	Package	Changed the legend of the distribution panel SW package	May 2010
	AR, AM, AG	Company logo	Changed the company logo in external transformer base	Jul. 2010
	AG225	Frame	Changed the AG225 series frame shape	Aug. 2010
	AH164, AH165	Package	Changed the AH164, 165 series package	Aug. 2010
	AB12	Company logo	Changed the base logo for the flat command AB12 series	Nov. 2010
	AR30	Company logo	Deleted the old logo of AR30/DR30 series panel plug (AHX004)	Dec. 2010
Rotary switch	AC09, AC16, AC32	Nameplate & package	Changed the print of the AC series nameplate & package	Sept. 2010
	AC09, AC16, AC32	Enclosure	Changed the color of the rotary SW AC series enclosure	Nov. 2010
Control relay	HH	Insulating coil tape	Changed the insulating tape color of the coil of 24 VDC rated voltage	Feb. 2011
Low-end controller	RQ	Package label	Changed the package legend of unit package	Nov. 2010
Photoelectric switch	PH1C	Package	Changed the PH1C product nameplate and indication of origin on the package	Jul. 2010
	PH1C	Operation manual	Resized the PH1C operation manual	Dec. 2010
	PH4C	Nameplate & Package	Photoelectric SW, change notice of nameplate & package	Jun. 2009
Proximity switch	PE	Operation lamp	Changed the operation LED for the slot type inductive proximity switch PE-U25NT, NTF	Mar. 2010
	PE	Operation lamp	Changed the PE type operation LED	Oct. 2010
Energy monitoring equipment	F-MPC60B series, power receiving, feeder, bus unit	Upgraded the feature (software) and added the loader cable connector (hardware)	Upgraded from V7 to V8	Jul. 2010
High-pressure instrument	PT fuse	Cap shape	Changed the PTFA fuse cap shape	May 2010
	All models of HD bogie	Zincing steel component	Changed the surface-treating of the high-pressure HD type bogie	Oct. 2010
Split CT	CC2E series	Changed the appearance	Changed the way to display the enclosure terminal mark	Jun. 2009
Space heater	CH5 series	Chassis, etc.	Chassis's surface-treating and a part of shape, display (from stamp to nameplate seal), terminal location, etc.	Oct. 2010
Cam switch	AK22-J	Key	Shape & material	Oct. 2010
	RC310-□J2	Package specifications	From a built-in key to a key come with	Oct. 2010

Discontinued products

The production of the following products has or will soon be discontinued.
Please use substituting models.

Series	Discontinued	Substitute	Time of discontinuation
Magnetic contactor, magnetic starter, and industrial relay	FW-□PB type magnetic starter	FW-0P, FW-0SP, FW-1P	Feb. 2009
	SRC3631-02, SRCa3931-02 CN, SRC3938-06M, SRCa3938-06RM CN, SRC50-2F, WRC50-2F, SRC50-2U, and WRC50-2U	SRC3631-02/X, SRCa3931-02/X CN, SRC3938-06M/X, SRCa3938-06RM/X CN, SRC50-2F/X, WRC50-2F/X, SRC50-2U/X, and WRC50-2U/X	Dec. 2009
DC magnetic contactor	SB-5N□, 6N□, 10N□, 11N□ type products (including NB□) of coil voltage 300V, 400V, 500V	—	Dec. 2009
Low voltage air circuit breaker (ACB)	DA50, DA60	DH50, DH60	Sept. 2009
Switch box for low voltage fuse (outdoor FRP box)	FRPBOX-0, FRPBOX-1	—	Jul. 2009
Command switch	Stopped to produce the command SW and LED Gen	—	May 2009
	Z264 specifications of AR22 and DR30 series	Standard product of AR22 and DR30 series	Mar. 2010
Command SW (buzzer)	DR22B3	DR30B0	Dec. 2009
Instantaneous stop restart relay	MB2	MB4	Apr. 2010
Timer	MS4SR-DL, MS4SR-DLN	—	Sept. 2010
Limit SW	AL series	—	Mar. 2011
Proximity switch	PE-LA□	—	Jun. 2011
Photoelectric switch	PH4CT-5MRT, PH4CT-5MRBR, PH4CT-5MRAR	PH4CT-5MRB, PH4CT-5MRA	Aug. 2010
Energy monitoring unit (centralized power distribution monitoring unit)	UM01-ARA4	UM04-ARA4	Dec. 2010
	UM01-ARA4E	UM04-ARA4	
	UM01-ATA4	—	
	UM01-ATA4E	—	
	UM01X-5	UM04X-5	
	UM01X-1	UM04X-1	
	UM01X-0	UM04X-0	
Electric indicating instrument	F□, WM4, WM8	F□N, WM4N, WM8N	Jul. 2009
High-voltage power receiving/distributing digital, full-featured relay	UM44FG-□	—	Sept. 2009
	UM43FG-E5R	UM43FG-E5A	Mar. 2010
	UM44CD-□	—	
	UM44B-□	—	
	UM43FD-E5R	UM43FD-E5A	
	UM42F-E5R	UM42F-E5A	
	UM42C-E5R	UM42C-E5A	
	UM4B-ER	UM4B-EA	
AS-i	AS-i cable (FX3CA□□), discontinuation notice	—	Mar. 2009
	Fuji AS-Interface repeater (FX9R031) & extender (FX9R032), discontinuation notice	—	Mar. 2009
Cam switch	K138-2	—	Mar. 2010
	SK138-2	—	Mar. 2010
	K138-6	—	Mar. 2010
	A part of RC310	—	Mar. 2010
	AK1	RC310	Mar. 2011
AC power conditioner, MX2 series	RPX■□□□□-2■▲	RPN■□□□□-■▲	Mar. 2010
Low-voltage power arrester	CN23 series	CN5 series	Apr. 2011

■ MCCB · ELCB

Series	Frame size	MCCB		ELCB		Time of discontinuation
		Discontinued	Substitute	Discontinued	Substitute	
Line protection use	30	2P	EA32AC	BW32AAG-2P	EG32AC	Dec. 2010
		3P	EA33AC	BW32AAG-3P	EG33AC	
		3P	—	—	EG33C	
		2P	SA32C	BW32SAG-2P	—	
		3P	SA33C	BW32SAG-3P	SG33C	
	50	2P	EA52AC	BW50AAG-2P	EG52AC	Dec. 2010
		3P	EA53AC	BW50AAG-3P	EG53AC	
		2P	EA52C	BW50EAG-2P	—	
		3P	EA53C	BW50EAG-3P	EG53C	
		2P	SA52C	BW50SAG-2P	—	
		3P	SA53C	BW50SAG-3P	SG53C	
		2P	SA52RC	BW50RAG-2P	—	
		3P	SA53RC	BW50RAG-3P	SG53RC	
		3P	—	—	HG53B	
		—	—	—	EW50HAG-3P	
	60	2P	EA62C	BW63EAG-2P	—	Dec. 2010
		3P	EA63C	BW63EAG-3P	EG63C	
		2P	SA62C	BW63SAG-2P	—	
		3P	SA63C	BW63SAG-3P	SG63C	
		2P	SA62RC	BW63RAG-2P	—	
		3P	SA63RC	BW63RAG-3P	SG63RC	
	100	3P	EA103AC	BW100AAG-3P	EG103AC	Dec. 2010
		2P	EA102C	BW100EAG-2P	EG102C	
		3P	EA103C	BW100EAG-3P	EG103C	
		2P	SA102C	BW125JAG-2P	—	
		3P	SA103C	BW125JAG-3P	SG103C	
		4P	SA54B、EA104B	BW125JAG-4P	SGa104A	
		2P	SA102RC	BW125RAG-2P	—	
		3P	SA103RC	BW125RAG-3P	SG103RC	
		4P	SA104R	BW125RAG-4P	SG104H	
		3P	—	—	HG103B	
	225	2P	EA202C	BW250EAG-2P	—	Dec. 2010
		3P	EA203C	BW250EAG-3P	EG203C	
		2P	SA202C	BW250JAG-2P	—	
		3P	SA203C	BW250JAG-3P	SG203C	
		4P	—	BW250JAG-4P	SGa204A	
		2P	SA202RC	BW250RAG-2P	—	
		3P	SA203RC	BW250RAG-3P	SG203RC	
		4P	SA204R	BW250RAG-4P	SG204H	
	400	3P	—	—	HG203B	Dec. 2010
		2P	EA402C	BW400EAG-2P	—	
		3P	EA403C	BW400EAG-3P	EG403C	
		2P	SA402C	BW400SAG-2P	—	
		3P	SA403C	BW400SAG-3P	SG403C	
		2P	SA402RC	BW400RAG-2P	—	
		3P	SA403RC	BW400RAG-3P	SG403RC	
		4P	SA404HA	BW400RAG-4P	SGa404A	
	600	3P	EA603C	BW630EAG-3P	EG603C	Dec. 2010
		3P	SA603RC	BW630RAG-3P	SG603RC	
		4P	SA604H	BW630RAG-4P	—	
	800	3P	EA803C	BW800EAG-3P	EG803C	Dec. 2010
		3P	SA803RC	BW800RAG-3P	SG803RC	
		4P	SA804H	BW800RAG-4P	—	

Series	Frame size		MCCB		ELCB		Time of discontinuation
			Discontinued	Substitute	Discontinued	Substitute	
Motor protection	30	3P	EA33ACM	BW32AAM-3P	EG33CM	EW32EAM-3P	Dec. 2010
		2P	SA32CM	BW32SAM-2P	–	–	
		3P	SA33CM	BW32SAM-3P	SG33CM	EW32SAM-3P	
	50	3P	EA53CM	BW50EAM-3P	EG53CM	EW50EAM-3P	May 2011
		3P	SA53CM	BW50SAM-3P	SG53CM	EW50SAM-3P	
		3P	SA53RCM	BW50RAM-3P	–	–	
		3P	H53CM	–	–	–	
	60	3P	EA63CM	BW63EAM-3P	EG63CM	EW63EAM-3P	Dec. 2010
		3P	SA63CM	BW63SAM-3P	SG63CM	EW63SAM-3P	
	100	3P	EA103CM	BW100EAM-3P	EG103CM	EW100EAM-3P	Dec. 2010
		3P	SA103CM	BW125JAM-3P	SG103CM	EW125JAM-3P	
		3P	SA103RCM	BW125RAM-3P	SG103RCM	EW125RAM-3P	
	225	3P	EA203CM	BW250EAM-3P	EG203CM	EW250EAM-3P	Dec. 2010
		3P	SA203CM	BW250JAM-3P	SG203CM	EW250JAM-3P	
		3P	SA203RCM	BW250RAM-3P	SG203RCM	EW250RAM-3P	
UL489 listed	50	2P	SA52RCUL	BW50RAGU-2P	–	–	Dec. 2010
		3P	SA53RCUL	BW50RAGU-3P	SG53RCUL	EW50RAGU-3P	
	100	2P	EA102CUL	BW100EAGU-2P	EG102CUL	EW100EAGU-2P	Dec. 2010
		3P	EA103CUL	BW100EAGU-3P	EG103CUL	EW100EAGU-3P	
		2P	SA102CUL	BW125JAGU-2P	–	–	
		3P	SA103CUL	BW125JAGU-3P	SG103CUL	EW125JAGU-3P	
		2P	SA102RCUL	BW125RAGU-2P	–	–	
		3P	SA103RCUL	BW125RAGU-3P	–	EW125RAGU-3P	
	225	2P	–	BW250EAGU-2P	–	–	Dec. 2010
		3P	–	BW250EAGU-3P	–	–	
		2P	SA202CUL	BW250JAGU-2P	–	–	
		3P	SA203CUL	BW250JAGU-3P	SG203CUL	EW250JAGU-3P	
		2P	SA202RCUL	BW250RAGU-2P	–	–	
		3P	SA203RCUL	BW250RAGU-3P	–	EW250RAGU-3P	
		2P	–	BW400EAGU-2P	–	–	
	3P	–	BW400EAGU-3P	–	–		
	2P	SA402CUL	BW400SAGU-2P	–	–		
	3P	SA403CUL	BW400SAGU-3P	SG403CUL	EW400SAGU-3P		
	2P	SA402RCUL	BW400RAGU-2P	–	–		
	3P	SA403RCUL	BW400RAGU-3P	–	EW400RAGU-3P		
	2P	–	BW400HAGU-2P	–	–		
	3P	–	BW400HAGU-3P	–	EW400HAGU-3P		
	600	3P	SA603RCUL	BW630RAGU-3P	–	EW630RAGU-3P	Dec. 2010
		3P	–	BW630HAGU-3P	–	–	
	800	3P	SA803RCUL	BW800RAGU-3P	–	–	Dec. 2010
		3P	–	BW800HAGU-3P	–	–	

Safety Considerations

- For safe operation, before using the product read the instruction manual or user manual that comes with the product carefully or consult the Fuji sales representative from which you purchased the product.
- Products introduced in this catalog have not been designed or manufactured for such applications in a system or equipment that will affect human bodies or lives.
- Customers, who want to use the products introduced in this catalog for special systems or devices such as for atomic-energy control, aerospace use, medical use, passenger vehicle, and traffic control, are requested to consult the Fuji sales division.
- Customers are requested to prepare safety measures when they apply the products introduced in this catalog to such systems or facilities that will affect human lives or cause severe damage to property if the products become faulty.
- For safe operation, wiring should be conducted only by qualified engineers who have sufficient technical knowledge about electrical work or wiring.

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