

FUJI ED & C TIMES

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Modified Products

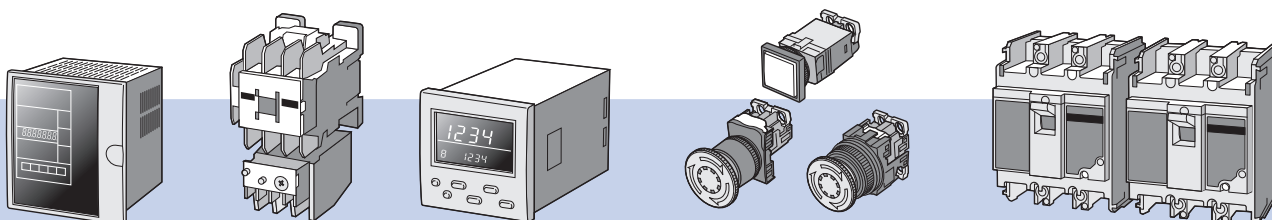
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Rack-mount type transducers WH2 and WH6 series	26
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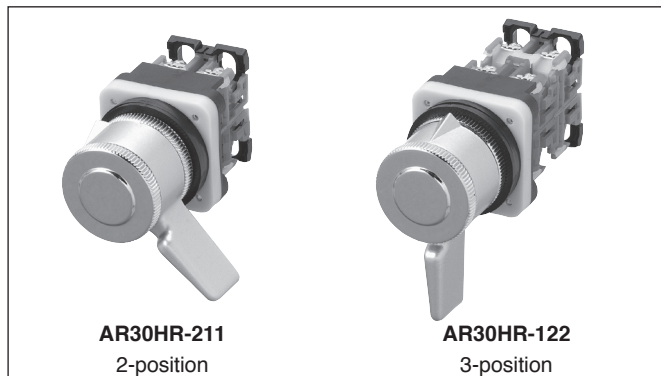
AR30 series 30mm-dia. command switches

AR30HR lever-type selector switch

A selector switch with a lever-type operator


■ Features

- A selector switch operated by turning a metal lever right and left.
- Number of notches: Two or three
- Resetting: Manual (two or three notches); Auto (three notches)
- Ideal for ON/OFF or reverse/stop/forward control and manual/auto or manual/stop/auto switching applications.
- Conformed to UL/CSA and TÜV EN standards, and bearing CE markings. (Approval pending)



■ Types and specifications

2-position

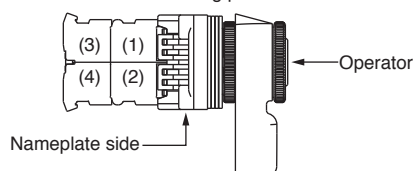
Operator	Contact *1	Type <div style="text-align: center;">1 2 \ / Maintained 90°</div>	Contact operation			
			Contact block *2		Operator position *3	
			No.	Type	1	2
	1NO	AR30HR-210	(1)	NO	-	●
	1NC	AR30HR-201	(1)	NC	●	-
	1NO+1NC	AR30HR-211	(1)	NO	-	●
	2NO	AR30HR-220	(2)	NC	●	-
	2NO	AR30HR-220	(1)	NO	-	●
	2NO	AR30HR-220	(2)	NO	-	●
	2NC	AR30HR-202	(1)	NC	●	-
	2NC	AR30HR-202	(2)	NC	●	-
	2NO+2NC	AR30HR-222	(1)	NO	-	●
	2NO+2NC	AR30HR-222	(2)	NC	●	-
	2NO+2NC	AR30HR-222	(3)	NO	-	●
	2NO+2NC	AR30HR-222	(4)	NC	●	-

*1 • Only products with the contact arrangements shown in the table can be manufactured.

• The first notch of three-notch types uses a special NO contact. Do not interchange the contacts.


Note: A silver-colored lever is used.

*2 Contact block mounting position



(3) ●, ■ shows a closed-circuit (ON) state.

3-position

Operator	Contact *1	Type		Contact operation		Operator position *3		
		1 2 3 Maintained 45°	1 2 3 Spring return 60°	Contact block *2				
				No.	Type	1	2	3
	1NO+1NC	AR30HR-311	-	(1)	NO	●		
				(2)	NC			●
	2NO+2NC	AR30HR-322	-	(1)	NO	●		
				(2)	NC			●
				(3)	NO	●		
				(4)	NC			●
	2NO+2NC	-	AR30HR-122	(1)	NC		■	
				(2)	NC		■	
				(3)	NO			●
				(4)	NO	●		

*1, *2, *3: Refer to the information below the table on the previous page.

■ Specifications (Indoor use)

Item	Lever operated type selector switch	
Rated insulation voltage U_i	600V AC/DC	
Durability (Number of operations)	Mechanical	Maintained (4 or less contacts) : 1 million or more Spring return (4 or less contacts) : 200000 or more
	Electrical	220V AC 6A: 500000 or more
		220V AC 3A: 1 million or more
Operating frequency	1200 operation/hour (on-load factor: 40%)	
Withstand voltage	2500V for 1min between live part and ground, between opposite polarity live parts	
Insulation resistance	100MΩ or more between live part and ground, between opposite polarity live parts (using 500V DC megger)	
Rated impulse dielectric strength V_{imp}	6kV	
Conditional short-circuit current	1000A	
Short-circuit protective device	Fuse 15A (equivalent to Fuji's type BLA015)	
Pollution degree	3	
Vibration	Resonance test: Double amplitude 0.1mm, frequency 10 to 55Hz, Constant vibration test: Double amplitude 3.0mm, frequency 16.7Hz	
Shock	Malfunction durability: 100m/s ² Mechanical durability: 500m/s ²	
Ambient temperature (No condensation or no icing)	-20 to +70°C (no icing, no condensation)	
Storage temperature	-40 to +80°C	
Humidity	45 to 85%RH (within -5 to +40°C) (no icing, no condensation)	
Degree of protection (operator section)	IP65	
Terminal screw	Cross-recessed screw M3.5 with self-up square washer	

■ Contact reliability

Operation has been confirmed under circuit conditions of 5mA at 5V AC or DC (failure rate $\lambda_{60} = 1.15 \times 10^{-8}$).

The applicable operating range depends on the ambient conditions and type of load.

■ Standards

Name	Applicable standard	Certification number
UL	UL508	UL File No.E44592
CSA	CSA C22.2 No.14	CSA File No.LR20479
TÜV	EN 60947-5-1	R9551060

■ Mass, gram

Type	1 contact	2 contacts	4 contacts
AR30HR-2	125	135	153
AR30HR-3	—	135	153
AR30HR-1	—	—	166

■ Time of release

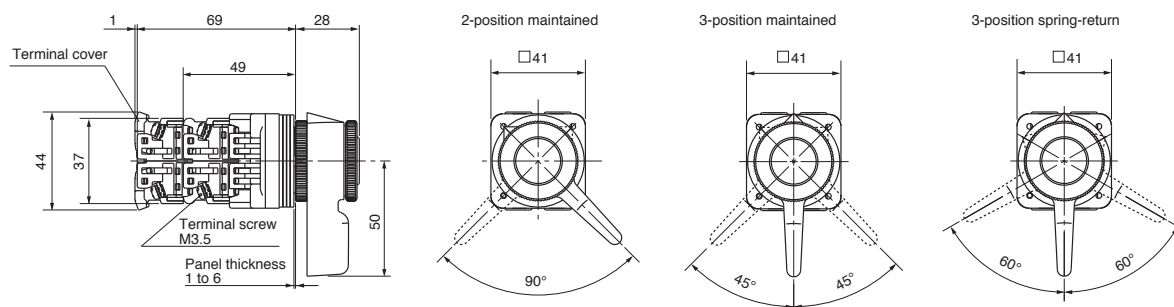
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For details, please contact your FUJI sales representative.

■ Operating characteristic (in the case of 1NO+1NC model)

	2-position maintained AR30HR-2	3-position maintained AR30HR-3	3-position spring-return AR30HR-1
Average required operating force	0.2N·m	0.55N·m	0.35N·m
Operating angle	Approx. 90°	Approx. 45°	Approx. 60°
Required return force	0.15N·m	0.2N·m	-

■ Dimensions, mm



AS-Interface device

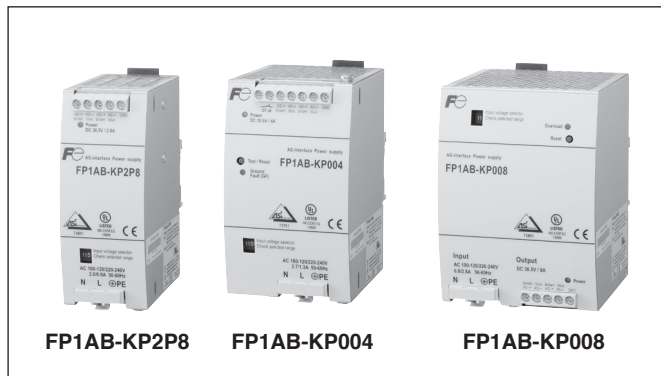
New AS-i power supply

Capacity expansion of AS-i power supply from 2.4A to 2.8A

New lineup of 4A and 8A models

■ Features

- AS-Interface standard (IEC 62026-1) compliant power supply
- UL and CSA standard certified
- CE Marking conformed
- RoHS compliant
- Output short-circuit protective function incorporated
- Overvoltage protective function incorporated
- Secondary circuit insulation conforms to SELV (EN 60950), PELV (IEC 60364-4-41)
- 2.8A and 4A models conform to harmonics regulation (EN 61000-3-2 Class A)
- 4A model incorporates ground-fault detection function
- DIN rail mounting



■ Type numbers

Category	Application	Specification		Type
		Rated input voltage	Rated output current	
AS-i power supply	Power supply for communications	100-120V AC/220-240V AC changeover	2.8A	FP1AB-KP2P8
			4A	FP1AB-KP004
			8A	FP1AB-KP008

■ Specifications

Type		FP1AB-KP2P8	FP1AB-KP004	FP1AB-KP008
Input	Rated input voltage (Changeover switch position)	100-120V AC/220-240V AC (at 115V/230V)		
	AC input voltage range	85-132V AC/184-264V AC		
	Input current (110V AC/230V AC)	2.0A/0.9A	2.7A/1.3A	6.0A/2.8A
	Input frequency range	47-63Hz		
	Efficiency (230V AC, full load)	typ. 90.5%	typ. 90%	typ. 92%
	Inrush current I_{pk}/I^2t (Cold start at 50°C)	<20A/1.5A ² s (132V AC) <38A/1.8A ² s (264V AC)	<49.3A/4.6A ² s (132V AC) <57.5A/3.3A ² s (264V AC)	<14A/1.5A ² s (120V AC) <27A/1.6A ² s (240V AC)
Output	Rated output voltage	30.55V±3% DC	30.5V±3% DC	30.55V±3% DC
	Load variation/Input variation	<200mV/<10mV	<250mV/<10mV	<200mV/<30mV
	Output ripple/Noise *1	<50mVpp/<100mVpp	<50mVpp/<150mVpp	<50mVpp/<100mVpp
	Rated output current (Current range)	2.8A (0-2.8A)	4A (0-4A)	8A (0-8A)
	Derating (60 to 70°C)	Approx. 2W/K derating (70°C, 75% load)	Approx. 3W/K derating (70°C, 75% load)	Approx. 6W/K derating (70°C, 75% load)
	Overcurrent protection	>3.2A (Auto reset)	>4.2A (Auto reset)	>8.4A (Output is off after 2-5s. Manual reset with reset button)
	Overvoltage protection	<55V		
	Power outage bridging time (100V AC/196V AC)	>26ms	>30ms	>10ms

Type		FP1AB-KP2P8	FP1AB-KP004	FP1AB-KP008
Ground fault detection	Asymmetrical ground-fault level (GND terminal grounded or connected to machine mount)	—	<3V (Between 'AS-i +' or 'AS-I' terminal and GND terminal)	—
	Relay output (GF ok) Max. making/breaking capacity	—	NO contact (opens when detected) 25V AC or 60V DC, ≤0.5A	—
Terminal block	Connectable wire (Input, output)	Twisted wire *2: 0.5-4mm ² (AWG = 20-12) Solid wire: 0.5-6mm ² (AWG = 20-10)		
	Tightening torque	0.8N·m		
Min. gap for cooling	Left side/Right side	15mm/15mm		
	Upper side/Lower side	25mm/25mm		
Environment condition	Operating temperature	-10 to +70°C (no icing) (Derating at +60 to +70°C)		
	Humidity	<90%RH (No condensation)		
	Storage temperature	-25°C to +85°C (no condensation)		
	Vibration resistance (IEC68-2-6)	2-17.8Hz ±1.6mm 17.8Hz-500Hz 19.6m/s ²		
	Shock resistance (IEC 68-2-27)	147m/s ² (6ms), 98m/s ² (11ms)		
	Protection against electric shock (IEC 60950)	Class 1		
Approved standard	Degree of protection (IEC 60529)	IP20		
		UL508, UL60950, CSA-C22.2 No.60950, CE-Marking (EN60950), AS-i Association certified		
Mass		Approx. 0.5kg	Approx. 0.65kg	Approx. 0.89kg

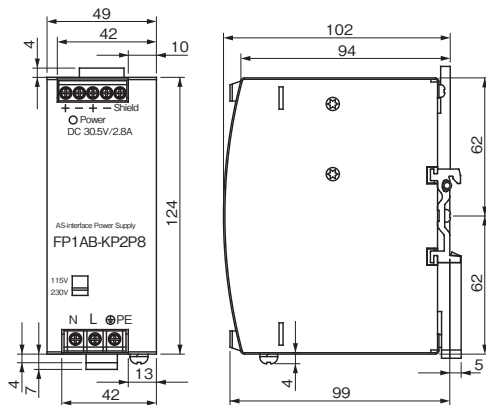
*1 Measurement condition: 500KHz bandpass, 50 Ω termination, resistive load (ripple)

Measurement condition: 20MHz bandpass, 50 Ω termination, resistive load (noise)

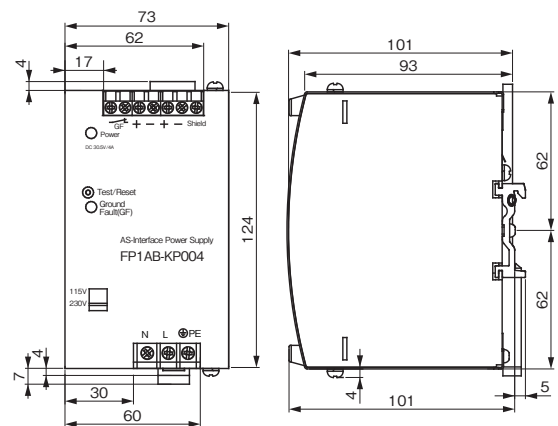
*2 Stick terminal (Ferrule) that matches wire size can be used.

Dimensions, mm

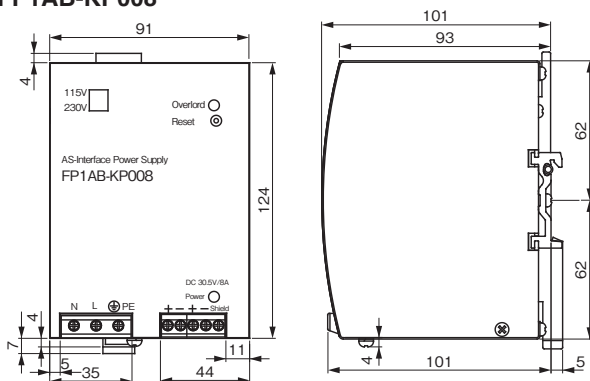
●FP1AB-KP2P8



●FP1AB-KP004



●FP1AB-KP008



Time of release

December 2006

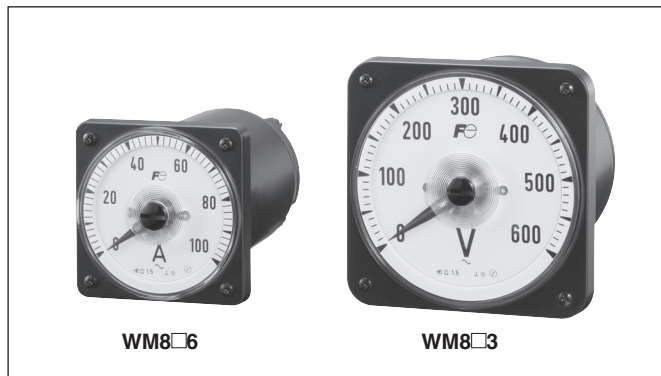
For details, please contact your FUJI sales representative.

Wide-angle indicating switchboard instrument WM8 series

All models are RoHS compliant.

Features

- All models are RoHS compliant (lead free).
- The span-band suspension system ensures high reliability with excellent vibration and shock resistance.
- The simple, easy-to-read scale indicates through a 250° angle.
- Flame retardant terminals employed.
- A snap-on cover protects charged parts to ensure safe operation.
- The industry-standard four nuts are used to mount the meter, while the terminal screws of all models are unified to M4 size.



Types and specifications

Meter	Type (Class)		Full scale	Connection (Input)	Power consumption
	80x80mm	110x110mm			
AC ammeter (RMS value response type)	WM8AR6-□ (1.5)	WM8AR3-□ (1.5)	1,3,5,10,15,20,30,40,50,60,75,100, 150,200,300,400,500,600,750,800, 1000A (Standard and extended ranges: 3x- and 5x-range types can be manufactured.)	Direct connection: 1 - 30A CT connection: □/5A (Standard)(or □/1A)	0.4VA
AC voltmeter (RMS value response type)	WM8VR6-□ (1.5)	WM8VR3-□ (1.5)	50,100,150,300,600V 600V, 4.5, 9(kV)	Direct connection: Up to 600V VT connection: □/110V	0.1 to 1.2VA
DC ammeter	WM8AM6-□ (1.5)	WM8AM3-□ (1.5)	1,3,5,10,30,50,100,300,500 (mA) 1,3,5,10,30 (A) 50,75,100,200,300,500 (A)	Direct connection: 1-30A Shunt connection	(Sensitivity 50mV) (Sensitivity 60mV)
(Reception indicator)	(WM8AM6-AHE□) (1.5)	(WM8AM3-AHE□) (1.5)	Custom-made scales Ex.: %, rpm, ppm, °C etc.	4-20mA meter	Internal resistor: Approx. 6Ω
DC voltmeter	WM8VM6-□ (1.5)	WM8VM3-□ (1.5)	10,30,50,75,100,150,300,500,600 (V) 750, 1, 1.5, 2 (kV)	Direct connection Multiplier connection (Series resistor)	Approx. current consumption: 1mA
(Reception indicator)	(WM8VM6-VLR□) (WM8VM6-VMT□)	(WM8VM3-VLR□) (WM8VM3-VMT□)	Custom-made scales Ex.: %, rpm, ppm, °C etc.	1-5V meter (or 0-10V meter)	Internal resistance: Approx. 4kΩ (Internal resistance Approx. 10kΩ)
Single-phase wattmeter	WM8C06-□ (with separate converter) (1.5)	WM8C03-□ (with built-in converter) (1.5)	0 - Z (kW) Z = 0.5 x □/5A x □/110V (or Z = 0.1 x □/1A x □/110V)	CT: □/5A (or □/1A)	Per element (110mm sq.) •Voltage coil: 1.4VA •Current coil: 0.5VA
Single-phase 3-wire wattmeter	WM8C16-□ (with separate converter)(1.5)	WM8C13-□ (with built-in converter) (1.5)	(or Z = 1 x □/5A x □/220V) (or Z=0.2 x □/1A x □/220V)	VT: □/110V (or □/220V)	(80mm sq.) •Voltage coil: 3.0VA •Current coil: 0.5VA
3-phase 3-wire wattmeter	WM8C26-□ (with separate converter)(1.5)	WM8C23-□ (with built-in converter) (1.5)	0 - Z (kW) Z = 1.0 x □/5A x □/110V (or Z = 0.2 x □/1A x □/110V)		
3-phase 4-wire wattmeter *2	WM8C36-□ (with separate converter)(1.5)	WM8C33-□ (with built-in converter) (1.5)	(or Z = 2 x □/5A x □/220V) (or Z=0.4 x □/1A x □/220V)		

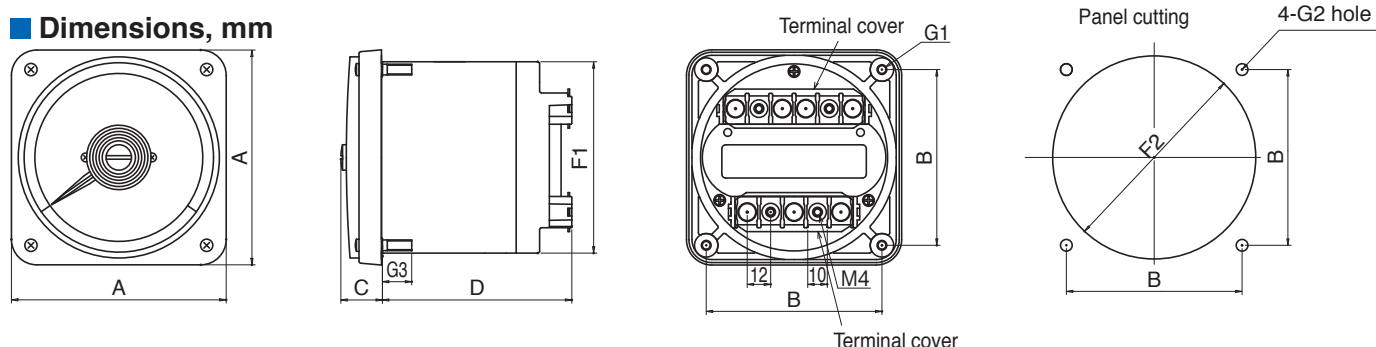
Meter	Type (Class)		Full scale	Connection (Input)	Power consumption
	80x80mm	110x110mm			
3-phase 3-wire reactive wattmeter	WM8V26-□ (with separate converter) (1.5)	WM8V23-□ (with built-in converter) (1.5)	0 - Z (kvar) $Z = 1.0 \times \square/5A \times \square/110V$ (or $Z = 0.2 \times \square/1A \times \square/110V$)	CT: □/5A (or □/1A)	Per element (110mm sq.) •Voltage coil: 1.4VA •Current coil: 0.5VA (80mm sq.)
3-phase 4-wire reactive wattmeter *2	WM8V36-□ (with separate converter) (1.5)	WM8V33-□ (with built-in converter) (1.5)	(or $Z = 2 \times \square/5A \times \square/220V$) (or $Z = 0.4 \times \square/1A \times \square/220V$) (For balanced circuit: Both 50/60Hz)	VT: □/110V (or □/220V)	•Voltage coil: 3.0VA •Current coil: 0.5VA
3-phase power factor meter (for balanced circuit)	WM8A16-□ (Rectifier type) (5.0)	WM8A13-□ (Rectifier type) (5.0)	LEAD 0.5 - 1 - 0.5 LAG $\cos\phi$ (For balanced circuit: Both 50/60Hz) (For unbalanced circuit: Specify 50 or 60Hz)	CT: □/5A (or □/1A)	Per element Balanced type: •Voltage coil: 1.3VA •Current coil: 1.1VA
3-phase power factor meter (for unbalanced circuit)	WM8A26-□ (with separate converter) (5.0)	WM8A23-□ (with built-in converter) (5.0)		VT: □/110V (or □/220V)	Unbalanced type: (110mm sq.) •Voltage coil: 1.3VA •Current coil: 1.1VA
3-phase 4-wire power factor meter (for unbalanced circuit) *1	WM8A46-□ (with separate converter) (5.0)	WM8A43-□ (with built-in converter) (5.0)			(80mm sq.) •Voltage coil: 3.0VA •Current coil: 0.4VA
Frequency meter	WM8P16-□	WM8P13-□	•45-55Hz (Class 0.5) •55-65Hz (Class 0.5) •45-65Hz (Class 1.0)	Direct connection	1.3VA (Input 110V) 1.4VA (Input 220V)
Reception indicator	WM8AM6-AHE□	WM8AM3-AHE□	Custom-made scales	4-20mA DC ammeter	Internal resistor: Approx. 6Ω
	WM8VM6-VLR□ (WM8VM6-VMT□)	WM8VM3-VLR□ (WM8VM3-VMT□)	Ex.: %, rpm, ppm, °C etc.	1-5V DC voltmeter (or 0 - 10V DC voltmeter)	Internal resistor: Approx. 4kΩ, (Internal resistor: Approx. 10kΩ)

*1: Rated voltage of 3-phase 4-wire models is line voltage.

Common specifications

Conformed standard	JIS C 1102
Operating temperature	0 to +50°C (Storage temperature: -20 to +60°C)
Humidity	25 to 80% RH
Withstand voltage	2000V AC, 1 min between electric circuit and case
Insulation resistance	5MΩ or more between electric circuit and case
Mounting direction	Standard: Vertical
Case and cover material (color)	Case: ABS resin, black Front cover: Methacrylic acid risen (transparent)
Scale plate	Black display on white background
Mounting screw (Tightening torque)	•110 x 110mm: M5 nut (2.0N·m) •80 x 80mm: M4 nut (1.2N·m)
Terminal screw (Tightening torque)	M4 screw (1.2 N·m)

Dimensions, mm



Meter size	Meter type	A	B	C	D	F1	F2	G1	G2	G3
110 x 110mm	AC ammeter/voltmeter	110	90	21	90	ø99	ø102±1	M5	ø6	15
	DC ammeter/voltmeter									
	3-phase 3-wire power factor meter (Balanced type)									
	Frequency meter									
	Wattmeter (Single-phase, 3-phase)									
	Reactive wattmeter									
	3-phase 3-wire power factor meter (for balanced circuit)				97					
80 x 80mm	3-phase 4-wire power factor meter (for unbalanced circuit)	80	64	18	106	ø70	ø72±1	M4	ø5	15
	All models *1									

* 1: A separate converter is included. No converters are included with ammeters, voltmeters, or frequency meters.

Time of release

Available immediately

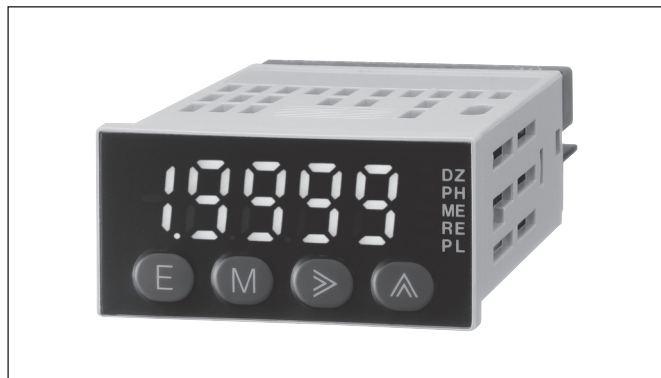
For details, please contact your FUJI sales representative.

Digital panel meters WA8000 series

A built-in scaling function and BCD output in a compact (48 x 24mm) size

■ Features

- Compact size with dimensions of 48 x 24 x 89.3mm (W x H x D).
- A universal type for DC voltage, DC current, AC voltage, AC current, process signals, and temperature measurements.
- Compact and multi-functional with built-in scaling, linearizer, forcibly zero, and equalization processing functions.
- Models with BCD output and an external control function (optional) are available.
- Incorporates 10mm-high, high-luminosity red LEDs for 4.5-digit display.
- Press-to fit terminals used for the power supply and measurement input blocks, and soldering terminals used for the BCD output block.
- All models are RoHS compliant (lead free).



■ Types and ratings

Input/measurement specifications (measurement range)	BCD output	Type	Power supply voltage	Operation switch
DC voltage (199.99mV-199.99V)	None	WA8□11-01	5-12V DC or 12-24V DC *1	Provided *2
	TTL	WA8□11-02		
	Open collector	WA8□11-03		
DC current (1.9999mA-1.9999A)	None	WA8□12-01		
	TTL	WA8□12-02		
	Open collector	WA8□12-03		
AC voltage (199.99mV-199.99V)	None	WA8□14-01		
	TTL	WA8□14-02		
	Open collector	WA8□14-03		
AC current (19.999mA-1.9999A)	None	WA8□15-01		
	TTL	WA8□15-02		
	Open collector	WA8□15-03		
Process signal (1-5V, 4-20mA)	None	WA8□1B-01		
	TTL	WA8□1B-02		
	Open collector	WA8□1B-03		
Temperature measurement (Thermocouple) (-50 to +1800°C)	None	WA8□1C-01		
	TTL	WA8□1C-02		
	Open collector	WA8□1C-03		
Temperature measurement (Resistance bulb) (-100 to +500°C)	None	WA8□1D-01		
	TTL	WA8□1D-02		
	Open collector	WA8□1D-03		

Note: *1: Replace the mark □ in the type number with either of the following codes according to the power supply voltage.

"3": 5 to 12V DC specifications

"4": 12 to 24V DC specifications

*2: Operation switch: A product with no operation switch can be manufactured, in which case, the type number will be WA8*2*-0*. (The model legend in the above table applies to the asterisks.)

General specifications

Display	10mm-high, 7-segment red LEDs
Display range	-19999 to +19999 (4.5-digit display)
Power supply	• 5-12V DC (tolerance: 4.75-13.2V) (Type: WA831-) • 12-24V DC (tolerance: 10.8 to 26.4V) (Type: WA841-)
Power consumption	Approx. 1.5W
Sampling speed	25 times/s to 0.13 time/s (settings are possible)
Overrange warning	"O.L." or "-O.L." will be displayed for input signals beyond the display range.
Main functions	Scaling (except for temperature measurement), linearizer, equalization processing, zero display, tracking zero correction, power-on delay (startup compensation timer), display brightness change, digital limit function, monitor mode, key protection level setting, and peak hold functions
Operating temperature and humidity	0 to 50°C, 35 to 85%RH (no condensation)
Storage temperature	-10 to +70°C (no condensation or no icing)
Dimensions	48 x 24 x 89.3 mm (W x H x D) (BCD output)
Withstand voltage	1500V AC for 1 min between all terminals and case 500V DC for 1 min between power supply and input/BCD output/external control terminals and between input and BCD output/external control terminals
Insulation resistance	20MΩ or more (500V DC megger)
Noise immunity	• Power supply terminal in normal mode: ±500V • Power supply terminal in common mode: ±500V (Waveform: 1ns rising in 1μs square waveform)
Vibration resistance	Vibration frequency: 10-55Hz 0.3mm double amplitude in each ±X, Y, Z direction, total 10 minutes
Shock resistance	Approx. 100m/s ² in each ±X, Y, Z direction, 3 times
Memory protection	Nonvolatile memory (Number of writing operations: 100,000) (Digital zero backup function)
Mass	Approx. 55g
Accessories	Embedding adapter, instruction manual, and unit seal

Output specifications

●BCD output

• TTL output

Measurement data	Tristate parallel BCD
Polarity signal	Level 1 in the case of minus display.
Overrange signal	Level 1 in the case of overrange display.
Print command signal	Positive pulse output on completion of measurement.
Output logic	Selectable (PC logic selection is not possible.)
Output signal	TTL level fan out = 2 CMOS compatible

• Open collector output (NPN type)

Measurement data	Negative logic: Transistor is ON when logic is 1.
Polarity signal	Transistor is ON in the case of minus display.
Overrange signal	Transistor is ON in the case of over display.
Print command signal	Transistor is ON after completion of measurement.
Output logic	Selectable (PC logic selection is not possible.)
Amount of transistor output	Voltage 30V DC max., current 10mA max., output saturation voltage: 1.2V or less at 10mA

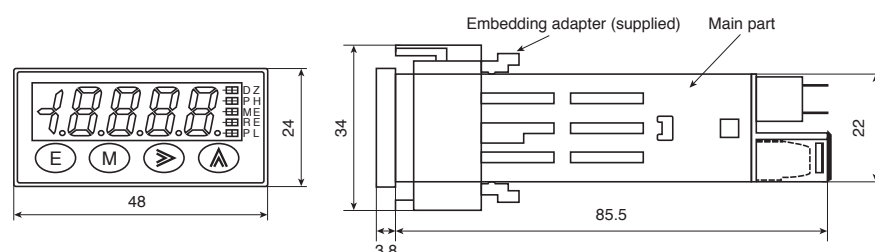
• Enable

ENABLE input	By short-circuiting the ENA and D.COM terminals or setting them to level 0, the BCD output will be set to high impedance (TTL) or the transistor will be OFF.
Control signal level 0	0-1.5V to D.COM
Control signal level 1	3.5-5V to D.COM

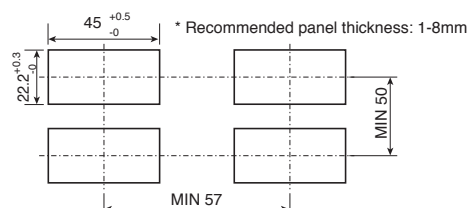
●External control

Hold	By short-circuiting the HOLD and D.COM terminals or setting them to level 0, the hold function will be ON.
Digital zero	By short-circuiting the DZ and D.COM terminals or setting them to level 0, the digital zero function will be ON.
Peak hold	By short-circuiting the PH and D.COM terminals or setting them to level 0, the peak hold function will be ON.
Control signal level 0	0-1.5V to D.COM.
Control signal level 1	3.5-5V to D.COM.

Dimensions, mm



●Panel cutting



Time of release

Available immediately

For details, please contact your FUJI sales representative.

Transducers for cycle control WS1

Enables APR cycle control, SSC secondary-side current, voltage, and power measurement.

■ Features

- Outputs stable signals according to cycle control input.
- Standard FM-series panel meters and WM8-series wide-angle meters can be used as receivers.
- Incorporates a function to protect the internal circuit from $\pm 8/20\mu\text{s}$ 2,000A surge between output lines, making it possible to transmit output directly to distant places.
- An electrostatic shield between the primary and secondary sides protects devices on the output side from lightning surges on the input side.
- Full insulation with withstand voltage of 2,000V AC (at 50/60Hz) between input, output, auxiliary power supply, and ground terminals for one minute.
- All models are RoHS compliant (lead free).



■ Applications

- When an electric furnace is controlled by SCR (cycle control), the current, voltage, and electric power values change periodically and cannot be read with standard meters or transducers.
- The WS1 type makes precise voltage, current, and power measurements under cyclic control with a data logger used, for application to a wide range of cyclic control measurements.

■ Types and auxiliary power

Type of transducer	Type	Auxiliary power
AC current and voltage	WS1A50-WS1V□□	110V AC, 220V AC, 50/60Hz 110V DC
Single-phase AC power	WS1W1□	110V AC, 220V AC, 50/60Hz 110V DC
3-phase AC power	WS1W3□	110V AC, 220V AC, 50/60Hz 110V DC

• Terminal cover (supplied)

■ Common specifications

Item	Specifications
Characteristics	Conforming to JIS C 1111
Operating temperature and humidity	-10°C to +55°C 40-80%RH
Storage temperature range	-40°C to +70°C
Withstand voltage	2000V AC for 1 minute between electric circuit and case.
Insulation resistance	50MΩ or more between electric circuit and case (500V DC megger).

■ Specifications

Item		Operating mode	Operating conditions				Type	Input		DC output (load resistance)	Tolerance	Ripple (p-p)	Response time (s) *3	Approx. power consumption (VA)			Mass (kg)
			Cycle waveform	Voltage side	Current side	Fre- quency								Voltage side	Current side	Aux. power supply	
AC current		RMS value	Interval of 1s	—	—	50/60 Hz	WS1A50	5A	0-5V(≥1kΩ) 0-10V(≥2kΩ) 4-20mA (≤500Ω)	±1.0% *1	1% or less	Rising edge 5s	—	0.5	2.0	0.7	
												Falling edge 10s					
AC voltage		RMS value	Interval of 1s	—	—	50/60 Hz	WS1V10	150V	0-5V(≥1kΩ) 0-10V(≥2kΩ) 4-20mA (≤500Ω)	±1.0% *1	1% or less	Rising edge 5s	1.0	—	2.0	0.7	
							WS1V20	300V				Falling edge 10s					
AC electric power	Single-phase	Hall multi- plication method	Interval of 1s	—	—	50/60 Hz	WS1W11	110V,5A	500W	0-5V(≥1kΩ) 0-10V(≥2kΩ)	±1.0% *2	1% or less	Rising edge 10s	0.5 /phase	1/phase	1.5	1.0
							WS1W12	220V,5A	1kW				4-20mA (≤500Ω)				
	3-phase		Interval of 1s	Unbalance	Unbalance	50/60 Hz	WS1W31	110V,5A	1kW	4-20mA (≤500Ω)	Falling edge 10s	1.2					
							WS1W32	220V,5A	2kW								

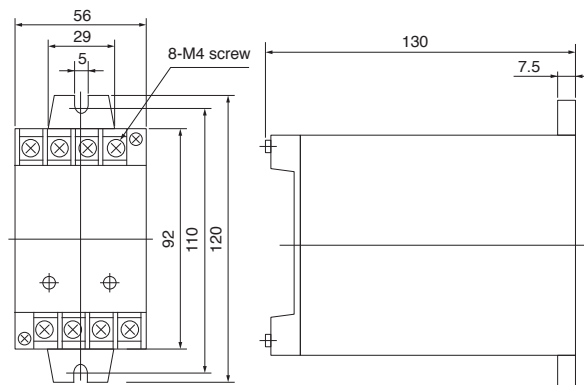
*1 Characteristics for 50% or more of the rated output. If the output is less than 50% of the rated output, the tolerance shall be doubled.

*2 Characteristics for 25% or more of the rated output. If the output is less than 25% of the rated output, the tolerance shall be doubled.

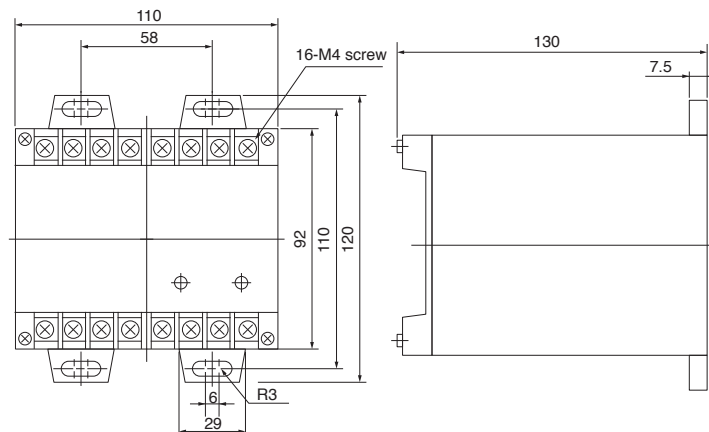
*3 Response time refers to the required period of output to reach 90% or 10% of the final regulated value.

■ Dimensions, mm

● WS1A50, V10, V20

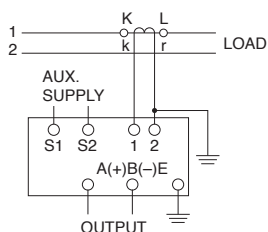


● WS1W11, W12, W31, W32

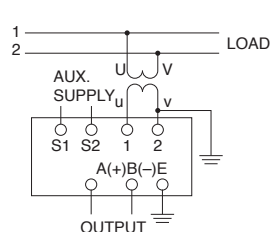


■ Wiring diagram, typical

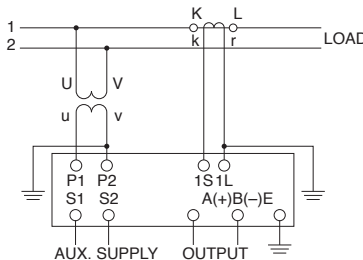
WS1A50-05



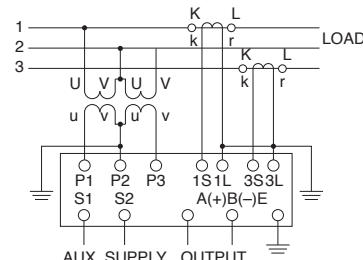
WS1V10-15



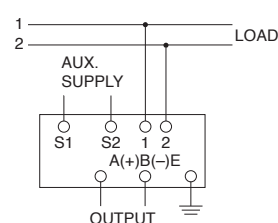
WS1W11-16



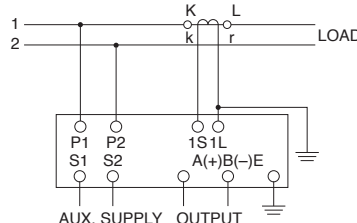
WS1W31-16



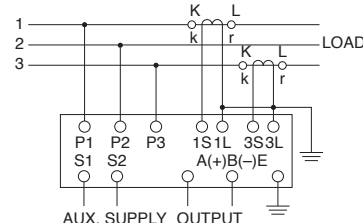
WS1V20-30



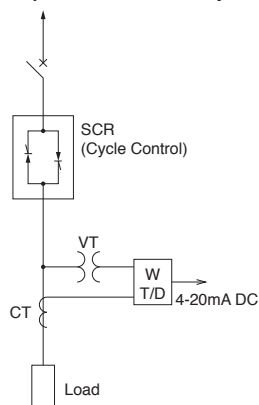
WS1W12-25



WS1W32-25



■ Wiring diagram (for reference)



■ Time of release

Available immediately

For details, please contact your FUJI sales representative.

F-MPC series power monitoring unit

F-MPC Web unit

An economical unit for connecting the F-MPC series unit to the Ethernet

■ Features

The F-MPC Web unit is a device that connects the FUJI F-MPC series energy monitoring unit to Ethernet. The F-MPC Web unit makes it possible to construct an energy monitoring system over an Ethernet LAN for OA equipment and PCs.

- Enables Ethernet communications.
 - Auto negotiation for 10BASE-T/100BASE-T
 - Transmits electric power monitoring data over Ethernet.
- Communicates with FUJI electric power monitoring equipment.
 - Communicates with FUJI energy monitoring unit via RS-485.
- Web server function
 - Allows settings to be made using a standard browser window.
- Data accumulation function
 - Accumulates 40 days' worth of daily reports and 13 months' worth of monthly reports.
 - Transmits accumulated data in CSV file format to host devices.



- Compact size with a depth of 60 mm
 - 100 x 80 x 56 mm (W x H x D)
 - DIN rail or M4 screw mounting
- Wide power supply range
 - Control power supply voltage of 100 to 240V AC

■ Type number

F-MPC Web unit, type **UM11-10**

■ Specifications

● Functional specifications

Item	Specifications	Remarks
Communica- tions	Ethernet	Web server
	10/100base-T	FTP server
		Gateway (TCP)
		Simple Network Time Protocol (SNTP)
	RS-485	F-MPC Net
Data accumulation	RS-232C	PPP
	Number of data points	Up to 256
	Daily reports	Hourly electric power amount for 40 days
	Monthly reports	Daily electric power amount for 13 months
	Storage medium	Built-in nonvolatile memory
	Clock	Clock function for regular data accumulation

●Power supply specifications

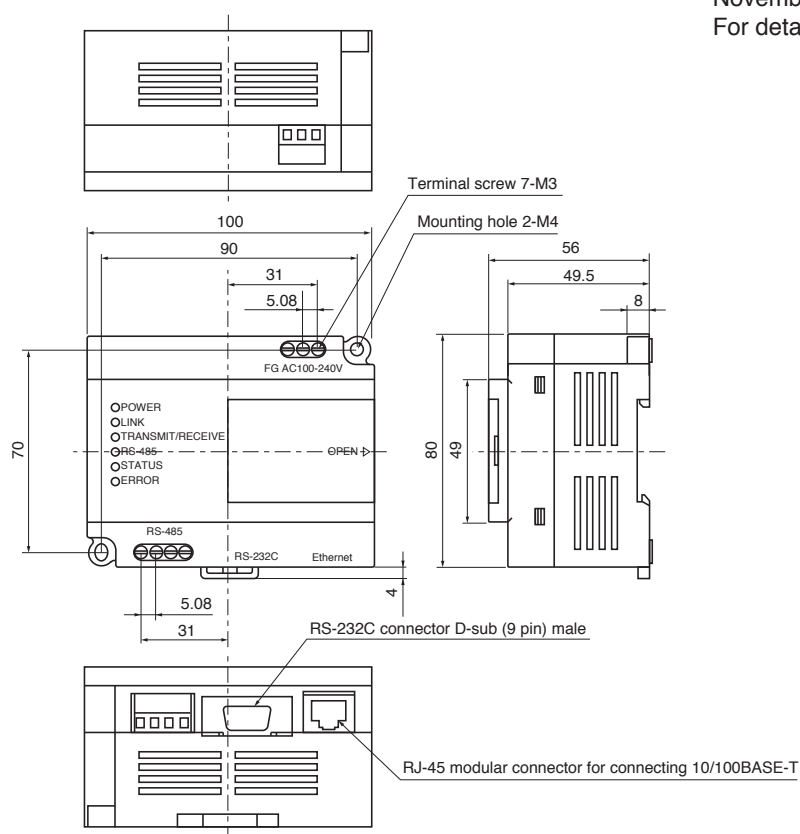
Item	Specifications
Rated operational voltage	100-240V AC
Allowable voltage fluctuation	85-264V AC
Rated frequency (allowable fluctuation)	50/60 (47-63)Hz
Power consumption	5W or less (in steady-state)
Leakage current	0.75mA or less
Inrush current	40A or less
Power failure compensation	Lithium primary battery *

* Battery service life: 5 years (at average ambient temperature 25°C)

●General specifications

Item	Specifications
Operating temperature	-10 to +55°C, average $\leq 35^{\circ}\text{C}$ (no condensation)
Storage temperature	-20 to +70°C (no condensation)
Humidity	85% or less (40°C)
Altitude	2000m or less
Type of device	Class II
Pollution degree	2
Degree of protection	IP20
Withstand voltage	2500Vrms AC, 1min between control power terminals and other circuit terminals/ground
Insulation resistance	10M Ω min. (500V DC megger)
Vibration	0.15mm (one-way amplitude), 19.6m/s ² , 10-150Hz
Shock	294m/s ² for 3 times each in X, Y, Z direction
Mounting method	DIN rail or M4 screw
Mass	Approx. 250g

■ Dimensions, mm



■ Time of release

November 2006

For details, please contact your FUJI sales representative.

F-MPC series power monitoring units

F-MPC60 transformer protective unit

A digital, multifunctional relay that fully isolates the dual features of main relays and failsafe relays.

■ Features

- All functions required for transformer protection are built in.
- A duplicated analog circuit and AND-output circuit prevent erroneous breaking.
- A self-monitoring function enables quick response in the event of a failure.
- Supports Modbus (RTU) communications for networking.



■ Types and functions

Unnecessary protective element can be locked.

Type	Protection		Measurement
	87RDf Ratio differential	87 (HOC) Differential circuit overcurrent	Idr, Ids, Idt
UM45T-H5R	Provided	Provided	Provided

Conformed standards:

JEC 2500 (1987) Protective relays for electric power systems, JEC 2510 (1989) Overcurrent relays

JIS C 1102-1, -2 (1997) Direct acting indicating analogue electrical measuring instruments and their accessories Part 1, Part 2

■ Specifications

● General specifications

Item	Specifications
Applicable transformer	Two-winding transformer, Three-winding transformer
Control power supply (Standard)	100/200V DC (80-286V DC), 100V AC (85-132V AC), common
Power consumption (main unit)	15W or less (100/200V DC) 25VA or less (100V AC)
Rated frequency	50/60Hz (Changeover)
Rated current (CT secondary side)	5A AC
Rated burden (CT secondary side)	1.0VA or less
Insulation resistance	10MΩ or more between electric circuits and ground 5MΩ or more between electric circuits, between circuit terminals
Withstand voltage	2kV AC between electric circuits and ground, excluding between primary-secondary-tertiary in CT circuit same-phase, and RS-485 signal line 1kV AC between circuit terminals
Vibration resistance	• 10Hz, double amplitude 5mm (front, back, left and right), 2.5mm (up and down) • 1.96m/s ² 16.7Hz double amplitude 0.4mm, 10 minutes in each of 3 directions.
Shock resistance	300m/s ² , 3 times in each of 3 directions
Noise immunity	Oscillating frequency 1MHz, primary peak value 2.8kV, 1/2 attenuation time 3-6 cycles Repetitive frequency 6-10 times/1 cycle of commercial power frequency (asynchronous) JEC 2500 waveform 2 (equivalent to ANSI) Peak voltage: Square wave 1.5kV impulse (1ns/100ns, 10 minutes) Radio noise: Frequency 150MHz-, 400MHz-, 900MHz-band, Rated output 10V/m Mobile phone (800MHz/1.5MHz 0.8W), PHS (1.90GHz 10mW) closely contact
Electrostatic noise immunity	In contact with metal part: ±8kV, Panel surface (no contact with nonmetal part): ±15kV
Overload capacity	CT circuit: 40 times the rating, 1 second, twice
Ambient temperature	0°C to 40°C: Characteristics guaranteed (No icing or no condensation)
Storage temperature	-20°C to 70°C
Relative humidity	20% to 90%RH (no condensation)
Atmosphere	No corrosive gas or excessive dust
Grounding	Class D grounding (100Ω or less)
Mass	1.4kg
Instantaneous power failure time	20ms (operation continues) though the indication disappears
Lightning impulse withstand voltage	4.5kV between electric circuits and ground

● External I/O specifications

Item	Specifications	
Input circuit	ON voltage: 70V or less AC/DC, OFF voltage: 40V or more AC/DC	
	Maximum tolerance	286V DC or less, 132V AC or less
Output circuit	CB trip	Making current: 15A (110V DC), 10A (220V DC), resistive load Allowable continuous current: 4A
	Other than above	Making/breaking current: 0.2A (110V DC, inductive load L/R=15ms) Allowable continuous current: 1A Making/breaking current: 0.1A (220V DC, inductive load L/R=15ms) Allowable continuous current: 1A

● Measurement and display specifications

Item	Effective display range	Accuracy *3	Measuring range *1	No. of display digits
Differential circuit current Idr, Ids, Idt	Reference current converted effective value 3 to 100% *2	±5%	0, 3 to 100%	3 digits
Differential circuit fault current (87RDf, 87HOC)	Reference current converted effective value 3 to 100% *2	±5%	0, 3 to 1000%	4 digits
	100 to 1000%	Error ratio ±10%		

*1: "0, a to n" means that "0" is indicated when the value is between "0 to a".

*2: Differential circuit current Id is expressed in the following equation.

$$Id (\%) = \{ (\text{Primary input current/Primary reference current}) - (\text{Secondary input current/Secondary reference current}) - (\text{Tertiary input current/Tertiary reference current}) \} \times 100$$

*3: Range of 3 to 100%: For example at 50%, 45 to 55% Range of 100 to 1000%: For example at 200%, 180 to 220%

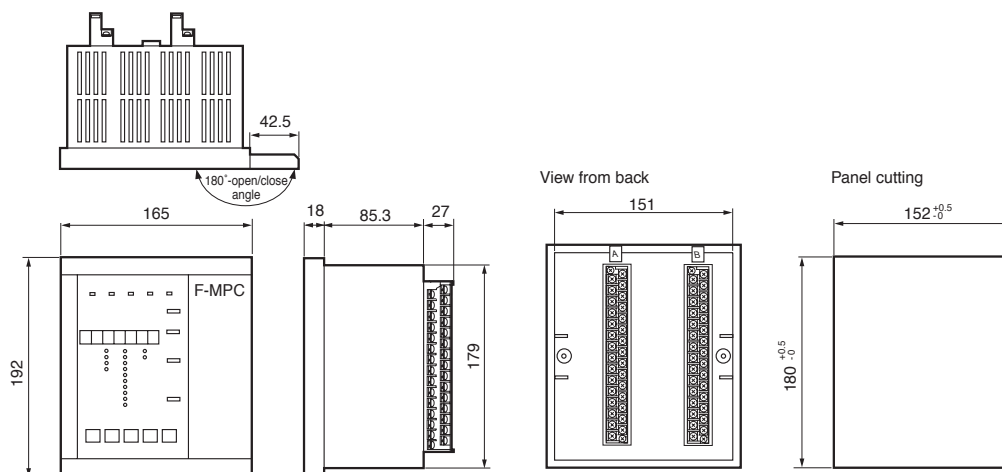
● History data specifications

Item	Display range	Code
Operation hours	0-9,999x100 (hr)	Hc
Operation count	0-9,999x10 (times)	Hd

Item	Display range	Code
Operation count 87RDf	0-9,999 (times)	HF
87HOC	0-9,999 (times)	HH

"Code" in the above table is indicated with the upper two digits of the 7-segment LED of this unit.

■ Dimensions, mm



■ Time of release

Available immediately

For details, please contact your FUJI sales representative.

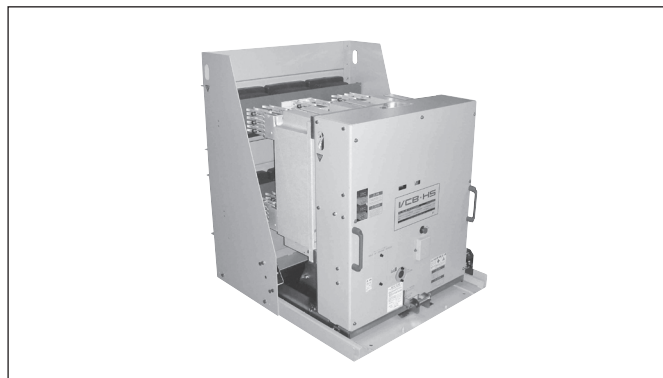
Vacuum circuit breaker

Model change in some models of HS series

New compact VCB born from conventional HS-N model

Features

- The characteristic of vacuum interrupter has realized a new compact, light VCB.
- The VCB has been separated into two sections to increase safety; the front side to low voltage area and the back side to the high voltage area.
- The time required for closing operation has been shortened, and the operating current reduced as well.
- The auxiliary switch employs highly reliable sliding contacts.



Type number

Rating	Breaking current	Current	Installation method	Type
Voltage				
3.6/7.2kV	31.5kA	3000A	Fixed type	HS3106P-30Mf-E
	40kA		Draw-out type	HS3106Y-30Mf-E
			Fixed type	HS4006P-30Mf-E
			Draw-out type	HS4006Y-30Mf-E

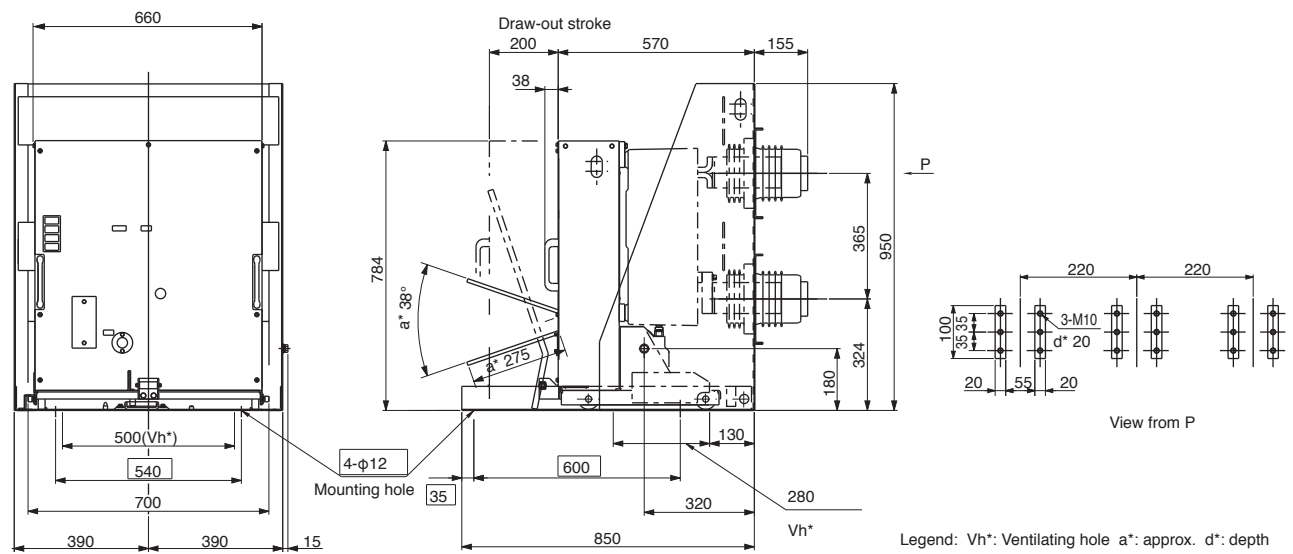
Specifications

Type		HS3106□□Mf-E	HS4006□□Mf-E
Ratings	Voltage (kV)	3.6	7.2
	Normal current JEC (A)	3000	
	IEC	3000	
	Short-circuit breaking current (kA)	31.5	40
	Short-circuit breaking capacity (for reference) (MVA)	200	390
	Short-circuit making current (peak value) (kA)	80	100
	Short-time withstand current JEC, 2s (kA)	31.5	40
	IEC, 1s *1	31.5	40
	Breaking time (cycle)	3	5
Rated withstand voltage	1min power frequency JEC (kV)	22	
	IEC	20	
	Lightning impulse (1.2x50μs) (kV)	60	
No-load closing time (s)		0.05	
Rated operating sequence	JEC	0-1min-CO-3min-CO, CO-15s-CO or 0-0.35s-CO-1min-CO	
	IEC	0.3min-CO-3min-CO, CO-15s-CO or 0-0.3s-CO-3min-CO	
Opening time JEC (s)		0.03	0.03
	IEC	0.03	0.04
Closing operating section	Closing operating system	Motor-spring stored-energy (rapid auto-reclosing) (M)	
	Operating voltage and current for closing	100V 2.5A AC, DC 200V 1.7A AC, DC	
	Spring charge time (s)	4	
	Control voltage and current for closing	100V 5A AC, DC 200V 2.5A AC, DC	
Tripping device	Tripping system *2	Shunt trip (f)	
	Operating voltage and current for tripping	100V DC 4A 200V DC 2A	100V DC JEC 4A, IEC, 3A 200V DC JEC 2A, IEC 1.5A
No. of auxiliary switches (for external circuit)		4NO+4NC, switching capacity: 100/200V AC: 20/10A, 100/200V DC: 5/3A	
Service life	Mechanical (times)	10000	
	Rated normal current switching (times)	10000	
Installation		Fixed type, PW, MW-class draw-out type	
Mass (for draw-out type main unit only) (kg)		220 (PW, MW-class draw-out type, 3000A)	

Notes: *1 Contact FUJI for the information concerning the 3s time rating of IEC.

*2 If capacitor tripping system is required, connect a capacitor trip unit VCB-T1A or VCB-T2A (sold separately) to AC power supply.

■ Dimensions, mm



Manual Motor Starter (MMS) N-type external operating handle

External operating handle applicable to motor control center panel in combination with manual motor starter

■ Features

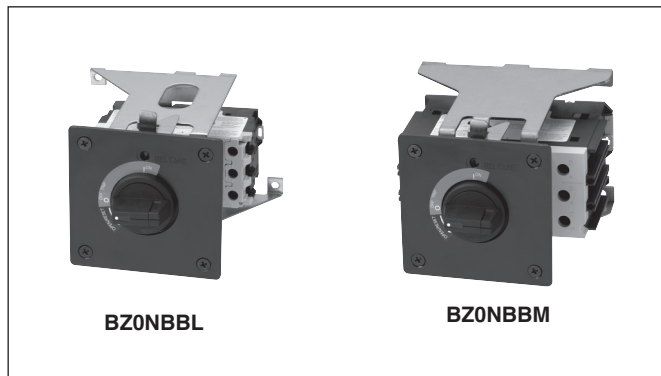
- The external operating handle mounted to the manual motor starter makes it possible to lower the height to the door of the control panel.
- IP50 requirements are satisfied by dust-proof packing.

■ Time of release

Available immediately
For details, please contact your FUJI sales representative.

■ Types and specifications

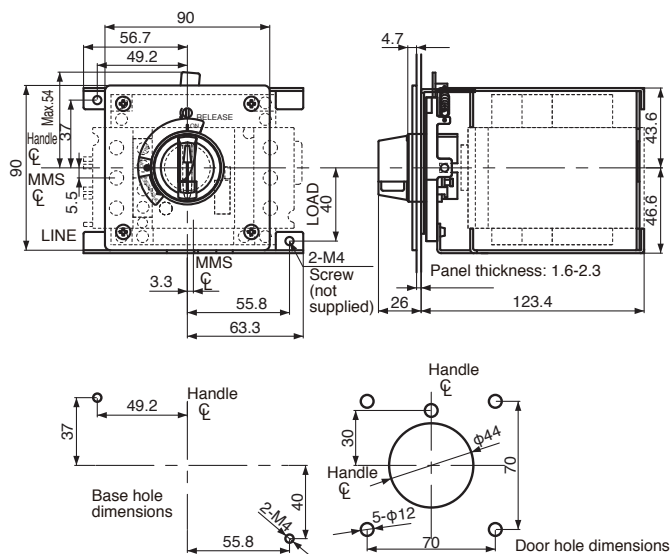
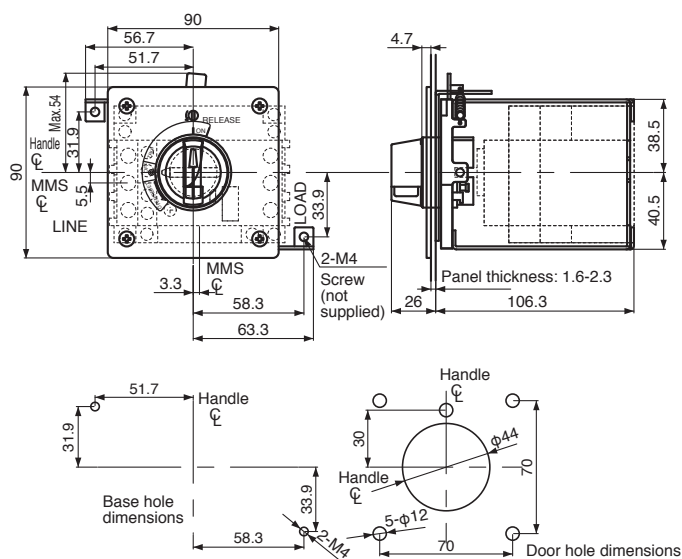
Specifications	Applicable MMS	Type	Mass
<ul style="list-style-type: none"> •Door interlock function •Handle lock function •Can be locked OFF with a single padlock key. •The door can be opened with a release screw while the handle is in ON position •The IP50 degree of protection is ensured by dust-proof packing. •Operating durability (number of operations): 10,000 •Handle: Black •Operation display panel: Black 	BM3RH	BZ0NBBL	270g
	BM3V	BZ0NBBM	500g



■ Dimensions, mm

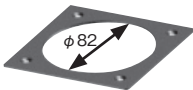



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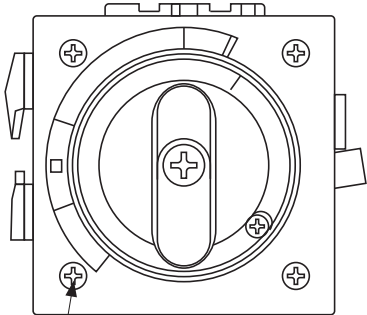
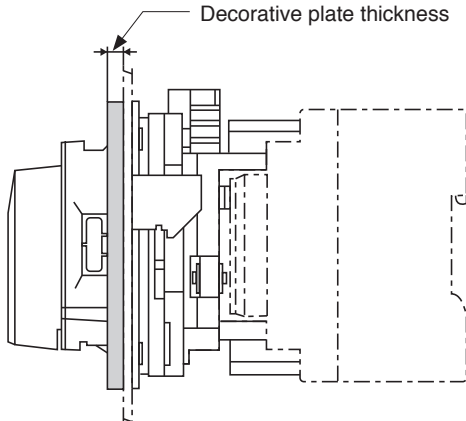
BZ0NBBM



MCCBs and ELCBs

Change in N type external operating handle's decorative plate, retaining plate, and fixing screw

Product	Type	Contents of change		
Molded case circuit breaker's N-type operating handle, Earth Leakage circuit breaker's N-type operating handle	BZ6N10C, BZ-N20C, BZ-N30C, BZ-N40C, BZ-N50C, and (CCC certified) BZ6N10CP, BZ6N30CP, BZ6N40CP, BZ6N10CT, BZ-N20CT, BZ-N30CT, BZ-N40CT, BZ-N20CT, BZ-N50CT. * Including those applied models.	Details of change	Before	After
		1. Decorative plate	<ul style="list-style-type: none"> •Black-plated steel-plate •2.3 mm thick 	<ul style="list-style-type: none"> •Black plastic •5.5 mm thick 
		2. Retaining plate	•Inner diameter 82 mm	•Inner diameter 84 mm
		3. Decorative plate fixing screw	Cross-recessed flat-head screw M4 	Cross-recessed pan-head screw M4 

Decorative plate

Decorative plate fixing screw

Decorative plate thickness

Time of modification

January 2007

Reason of change

Improving decorative plate appearance

Notice of discontinued production due to product unification and reorganization

We thank you for your continued patronage of Fuji Electric products.

This is to inform you that some products have difficulty in facility maintenance due to notable decrease in the number of production so that we decided to unify and reorganize those products.

We would ask you to replace them with substitute models. The production discontinuation schedule may vary depending on circumstances. For details, please contact your FUJI sales representative.

High repetitive operation, high sensitivity contactor SJ series

	Rated capacity (JIS AC-3)		Rated thermal current	Contactor auxiliary contact		Discontinued product	Substitute	Time of discontinuation
	200-240V	380-440V		No. of contact	Min. applicable load			
Contactor	2.2 kW (12A)	2.2 kW (6AA)	15A	1NO, 1NC 3NO, 2NO+1NC, 1NO+2NC	5V, 3mA	SJ-0SG SJ-06SG SJ-06SG/L	SJ-0G SJ-06G SJ-06G/L	March, 2007
Starter	*1	*1	*1	*1	*1	SJ-0SWG SJ-0SWG/N SJ-06SWG SJ-06SWG/N SJ-06SWG/L SJ-06SWG/NL	SJ-0WG SJ-0WG/N SJ-06WG SJ-06WG/N SJ-06WG/L SJ-06WG/NL	

*1 For starter rating, refer to contactor rating column.

PC board mounting use magnetic contactor

Rated capacity (JIS AC-3)		Rated thermal current	Discontinued product	Substitute	Time of discontinuation
200-240V	380-440V				
2.2 kW (12A)	2.2 kW (6A)	20A	FC-05A	—	March, 2007

PC board mounting use magnetic contactor

Rated capacity (JIS AC-3)		Rated thermal current	Discontinued product	Substitute	Time of discontinuation
100V [kW (A)]	200-240V [kW (A)]				
1.2 (26)	5.5 (26)	30	FE-33	—	March, 2007
1.2 (26)	5.5 (26)	40	FE-43		
1.7 (35)	7.5 (35)	50	FE-53		
1.7 (35)	7.5 (35)	60	FE-63		

PC board mounting use, DC operated industrial relay

Discontinued product	Substitute	Time of discontinuation
FC-04A/G	—	March, 2007

PC board mounting use thermal overload relay

	Discontinued product	Substitute	Time of discontinuation
2 heater element	TP13NB	—	March, 2007
3 heater element	TP13DB	—	

Heater load use, single-pole solid-state contactor

	Control power voltage	Input impedance	Rated thermal current	Discontinued product	Substitute	Time of discontinuation
DC control	5-24V DC	4.8kΩ	10A	SS101C-3ZD3	—	March, 2007
			20A	SS201C-3ZD3	—	
			30A	SS301C-3ZD3	—	
AC control	100-240V AC	70kΩ	10A	SS101C-3ZA2	—	
			20A	SS201C-3ZA2	—	
			30A	SS301C-3ZA2	—	

φ16 Command Switch AH164, 165 — 2 color luminous model

1) Illuminated pushbutton switch

Operator type	Action	Lamp voltage	Discontinued product		Substitute	Time of discontinuation
			AH164 type	AH165 (oil-tight) type		
Extended round head	Momentary	24V DC	AH164-LRG□E3	AH165-LRG□E3	—	March 2007
	Alternate		AH164-L5RG□E3	AH165-L5RG□E3	—	
Flush square head	Momentary	24V DC	AH164-SLRG□E3	AH165-SLRG□E3	—	
	Alternate		AH164-SL5RG□E3	AH165-SL5RG□E3	—	
Flush rectangular head	Momentary	24V DC	AH164-TLRG□E3	AH165-TLRG□E3	—	
	Alternate		AH164-TL5RG□E3	AH165-TL5RG□E3	—	
Flush square head with guard	Momentary	24V DC	AH164-SGLRG□E3	AH165-SGLRG□E3	—	
	Alternate		AH164-SGL5RG□E3	AH165-SGL5RG□E3	—	
Flush rectangular head with guard	Momentary	24V DC	AH164-TGLRG□E3	AH165-TGLRG□E3	—	
	Alternate		AH164-TGL5RG□E3	AH165-TGL5RG□E3	—	

Note: □: Contact arrangement 11 for 1NO+1NC, 22 for 2NO+2NC, 33 for 3NO+3NC

2) Pilot light

Lens type	Lamp voltage	Discontinued product		Substitute	Time of discontinuation
		AH164 type	AH165 (oil-tight) type		
Extended round	24V DC	AH164-ZRGE3	AH165-ZRGE3	—	March 2007
Flush square	24V DC	AH164-ZTRGE3	AH165-ZTRGE3	—	
Flush rectangular	24V DC	AH164-ZSRGE3	AH165-ZSRGE3	—	

LED small pilot light - AP06, AP08, AP10 series

Mounting dia.	Bracket	Specifications	Lamp voltage	Discontinued product	Substitute	Time of discontinuation
φ6	Conical hood	LED forward voltage	2V DC	AP06-1□	—	March 2007
	Straight	2V DC (Standard)	2V DC	AP06-2□	—	
	Extended		2V DC	AP06-3□	—	
φ8	Conical hood	Without resistor	2V DC	AP08-1□	—	
		Resistor built-in	6V DC	AP08-1□A2	—	
			12V DC	AP08-1□B2	—	
			24V DC	AP08-1□E2	—	
	Straight	Without resistor	2V DC	AP08-2□	—	
		Resistor built-in	6V DC	AP08-2□A2	—	
			12V DC	AP08-2□B2	—	
			24V DC	AP08-2□E2	—	
	Flat	High luminance	6V DC	AP08-4□A3	—	
			12V DC	AP08-4□B3	—	
			24V DC	AP08-4□E3	—	
		2-color luminous	12V DC	AP08-4RGB3■	—	
φ10	Conical hood	Without resistor	2V DC	AP10-1□	—	
		Resistor built-in	6V DC	AP10-1□A2	—	
			12V DC	AP10-1□B2	—	
			24V DC	AP10-1□E2	—	
	Straight	Without resistor	2V DC	AP10-2□	—	
		Resistor built-in	6V DC	AP10-2□A2	—	
			12V DC	AP10-2□B2	—	
			24V DC	AP10-2□E2	—	
	Flat	High luminance (Resistor built in)	6V DC	AP10-4□A3	—	
			12V DC	AP10-4□B3	—	
			24V DC	AP10-4□E3	—	
		2-color luminous (Resistor built in)	12V DC	AP10-4RGB3■	—	
			24V DC	AP10-4RGE3■	—	

Note: □: Illuminated color G: Green, R: Red, W: White, Y: Yellow, O: Orange

■: Circuit configuration, A: Anode common, C: Cathode common

φ8 PC board use pilot light DP08 series

	Specifications	Lamp voltage	Discontinued product	Substitute	Time of discontinuation
Display unit	—	—	DP08B5L-□	—	March 2007
LED unit	Resistor built-in	24V DC	DP08L0-E2■	—	
	Without resistor	2V DC	DP08L0-N2■	—	

Note: *1 □: Illuminated color — G: Green, R: Red, W: White, Y: Yellow, A: Orange

*2 ■: LED luminous color — G: Green, R: Red, W: Orange, Y: Yellow, A: Amber

Signal light SL102, SL301 series

Mounting hole	Light source	Discontinued product	Substitute	Time of discontinuation
φ22.5	Incandescent lamp	SL102□/■	—	March 2007
	LED	SL102□/■L	—	
φ68	Incandescent lamp	SL301□/110	—	
	LED	SL301□/220Z	—	

Notes: □: Globe color — G: Green, R: Red, W: White, B: Blue, Y: Yellow, C: Clear, O: Orange

■: Lamp voltage (AC/DC) — 18: 15V, 24: 24V, 48: 48V, 60: 60V, 110: 110V, 125: 125V, 220: 220V

Partial models of panel switch NS387 series

Structure	Residual contact	No. of notches	Type of operation	No. of contact blocks ①+②+③+④	Discontinued product	Substitute	Time of discontinuation
Open type	Not provided	2 notches	Maintained	7 to 10	NS387/C①+③+④■◇	—	March 2007
		3 notches	Maintained	7 to 10	NS387/A①+②+③+④■◇	—	
			Spring-return (Left→Center←Right)	7 to 10	NS387/①+②+③+④■◇	—	
		3 notches	Spring/manual return (Left→Center)	1 to 10	NS387/F①+②+③+④■◇	—	
			Spring/manual return (Center←Right)	1 to 10	NS387/E①+②+③+④■◇	—	
		4 notches	Maintained	1 to 10	NS387/D①+②+③+④■◇	—	
	Provided	3 notches	Spring-return	1 to 8	NS387S/□①+②+③+④■◇	—	
With transparent cover	Not provided	2 notches	Maintained	7 to 10	CNS387/C①+②+③+④■◇	—	
		3 notches	Maintained	7 to 10	CNS387/A①+②+③+④■◇	—	
			Spring/manual return (Left→Center←Right)	7 to 10	CNS387/①+②+③+④■◇	—	
		3 notches	Spring/manual return (Left→Center)	1 to 10	CNS387/F①+②+③+④■◇	—	
			Spring/manual return (Center←Right)	1 to 10	CNS387/E①+②+③+④■◇	—	
		4 notches	Maintained	1 to 10	CNS387/D①+②+③+④■◇	—	
	Provided	3 notches	Spring-return	1 to 8	CNS387S/□①+②+③+④■◇	—	

Notes: ① to ④ : Contact arrangement, ■ : Type of handle, ◇ : Handle color, □ : Type of operation

• Models other than the above will be produced as ever.

LED lamp — APX511, 512, 519, 520, 521, 522

Lamp base	Cap	Lamp voltage	Discontinued product	Substitute	Time of discontinuation
E10/14	Provided	6V DC	APX511-6□	—	March 2007
		12V AC/DC	APX511-12□	—	
		24V AC/DC	APX511-24□	—	
	Not provided	6V DC	APX512-6□	—	
		12V AC/DC	APX512-12□	—	
		24V AC/DC	APX512-24□	—	
B15D	Not provided	24V AC/DC	APX519-24□	—	
		100V AC/DC	APX519-H□	—	
T6.8	Not provided	6V DC	APX520-6□	—	
		12V DC	APX520-12□	—	
		24V DC	APX520-24□	—	
T6.5	Not provided	6V DC	APX521-6□	—	
		12V DC	APX521-12□	—	
		24V DC	APX521-24□	—	
T5.5	Not provided	6V DC	APX522-6□	—	
		12V DC	APX522-12□	—	
		24V DC	APX522-24□	—	

Note: □ : LED luminous color — G: Green, R: Red, O: Orange, Y: Yellow

Super Timer

Name	Discontinued product	Substitute	Time of discontinuation
Miniature OFF delay	ST7PF	—	August 2006
Setting part separated type	MS4SB	—	September 2006
ON delay power reset	MS4SE	—	March 2007

Digital timer

Name	Discontinued product	Substitute	Time of discontinuation
Digital timer	SD4	—	December 2006
	MD4E	—	March 2007

Electronic counter

Name	Discontinued product	Substitute	Time of discontinuation
Electronic counter	MC4E	—	September 2006
	MC4-D	—	December 2006

Combination terminal block

Name	Discontinued product	Substitute	Time of discontinuation
Terminal body	AYHN*-*	—	March 2007
Terminal body	TS*-*	—	
End barrier	AYHN*-* , TS*-* XE	—	
Cover	TR*-*XC	—	
Marking strip sheet	TD5-XM	—	
End clamp kit	T*-*XT	—	
Rail	OT2R, TR-XR2	—	

Terminal block with isolating switch

Name	Discontinued product	Substitute	Time of discontinuation	Remarks
Terminal block with isolating switch	FN220D	LT4D-020Y	March 2007	LT4D's external and mounting dimensions are not compatible with FN220D.

Testing terminal

Name	Discontinued product	Substitute	Time of discontinuation	Remarks
Testing terminal	TT1	LT5S	March 2007	LT5S/LT5D's external and mounting dimensions are not compatible with TT1/TT2, respectively.
	TT2	LT5D		

Stud type terminal block

Name	Discontinued product	Substitute	Time of discontinuation
Stud type terminal block	TV	—	March 2007

Push-set-block terminal block

Name	Discontinued product	Substitute	Time of discontinuation
Push-set-block terminal block	TC2	—	March 2007
	TC5		

Push-set-block terminal block

Name	Discontinued product	Substitute	Time of discontinuation
Push-set-block terminal block	TD	—	March 2007

Direct-mounting terminal block

Name	Discontinued product	Substitute	Time of discontinuation
Direct-mounting terminal block	AU-P	—	March 2007

Card edge terminal block

Name	Discontinued product	Substitute	Time of discontinuation
card edge terminal block	AU-K	—	March 2007

Capacitive type proximity switch

Name	Discontinued product	Substitute	Time of discontinuation
capacitive type proximity switch	PF-9□	—	March 2007

Optical fiber type photoelectric switch with built-in amplifier

Name	Discontinued product	Substitute	Time of discontinuation
Optical fiber type photoelectric switch with built-in amplifier	PH21A-□	—	March 2007
	PH2F-□		
	PX3-□		

Inductive square type proximity switch

Name	Discontinued product	Substitute	Time of discontinuation	Remark
Inductive square type proximity switch	PE-G3N□	PE-G4D□	March 2007	For details of substitute, please consult with us. The external and mounting dimensions are not compatible with discontinued one.
	PE-G3NB□	PE-G4DB□		
	PE1B2P-D□	PE-B4D□		
	PE1B2P-D3□	PE-B4D3□ or PE-X3D		

AS-Interface device

Name	Discontinued product	Substitute	Time of discontinuation	Remarks
OPCN-1/AS-i gateway	FC2L-JL	—	September 2006	—
AS-i power supply (Siemens-made)	3RX9307-1AA00	3RX9502-0BA00	September 2007	No compatibility on outline/mounting dimensions. For substitute's details, please consult with us.
	6EP1354-1AL01	3RX9503-0BA00		
AS-i analyzer	3RK1904-3AB00	3RK1904-3AB01	October 2006	For substitute's details, please consult with us.
AS-i power supply	FP1AA-JNW072	FP1AB-KP2P8	February 2007	No compatibility on outline/mounting dimensions. For substitute's details, please consult with us.
Terminal block type slave	FM1D-22TPP	FM4D-22TPP	March 2007	No compatibility on outline/mounting dimensions. For substitute's details, please consult with us.
	FM1D-22RQP	FM4D-40XXP + FM2D1-04RQX		
AS-i cable	3RX9010-0AA00	FX3CAEY	March 2007	The substitute is compatible on outline dimensions. For substitute's details, please consult with us.
	3RX9013-0AA00	FX3CATY		
	3RX9020-0AA00	FX3CAEB		
	3RX9023-0AA00	FX3CATB		

Vacuum circuit breaker

Name	Rating			Installation method	Discontinued product	Substitute	Time of discontinuation
	Voltage	Breaking capacity	Current				
HS type vacuum circuit breaker Rated voltage 15kV	15kV	16kA	600-2000A	P: Fixed	HS1615□-○MF-N	—	March 2007
		20kA	600-2000A	X: Draw-out	HS2015□-○MF-N	—	
		25kA	600-2000A	Y: Draw-out	HS2515□-○MF-N	—	
		31.5kA	1200-3000A		HS3115□-○MF-N	—	
		40kA	1200-3000A		HS4015□-○MF-N	—	
HS type vacuum circuit breaker N series 7.2kV 31.5kA/40kA 3000A	3.6/7.2kV	31.5kA	3000A	P: Fixed	HS3106□-30MF-N	HS3106□-30MF-E	
		40kA	3000A	Y: Draw-out	HS4006□-30MF-N	HS4006□-30MF-E	

□ : Installation method ○ : Rated current

Discontinued Products

The production of the following products has or will be discontinued.
We apologize for the inconvenience, but please replace these products with substitute ones.

Rack-mount type transducers WH2 and WH6 series

Product name	Production discontinued	Substitute	Remarks
Rack-mount type transducers	WH2 series	—	No substitute models are available. Consider using standalone models, such as WH7 series transducers.
	WH6 series	—	

■ **Time of discontinuation:** January 2006

Wide-angle indicating switchboard instruments SW series

Product name	Type of meter	Production Discontinued	Substitute	Remarks
Wide-angle indicating switchboard instruments	AC ammeter	SWR-□	WM8AR □	(1) There is no compatibility in mounting requirements, such as panel mounting dimensions and the number of mounting screws. (2) Consider replacing AC ammeters and voltmeters (RMS value response types) and industrial measuring instrument with transducer combinations.
	AC voltmeter		WM8VR □	
	DC ammeter	SWM-□	WM8AM □	
	DC voltmeter		WM8VM □	
	Single-phase wattmeter	SWC-□	WM8C0 □	
	Single-phase 3-wire wattmeter	SWC1-□	WM8C1 □	
	3-phase 3-wire wattmeter	SWC2-□	WM8C2 □	
	3-phase 3-wire varmeter		WM8V2 □	
	3-phase 4-wire wattmeter	SWC3-□	WM8C3 □	
	3-phase 4-wire varmeter		WM8V3 □	
	Power factor meter (3-phase 3-wire balanced type)	SWA1-□	WM8A1 □	
	Power factor meter (3-phase 3-wire unbalanced type)	SWA2-□	WM8A2 □	
	Power factor meter (3-phase 4-wire type)	SWA4-□	WM8A4 □	
	Frequency meter	SWAP1-□	WM8P1 □	
	AC ammeter/voltmeter (RMS value response types)	SWRA-□	—	
	Industrial measuring instrument	SWMA-□	—	
	Power flow meter	SWAT-□	WM8AT □	
		SWCT-□	WM8CT □	

■ **Time of discontinuation:** June 2006

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.
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- 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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