

FUJI ED & C TIMES

New Products

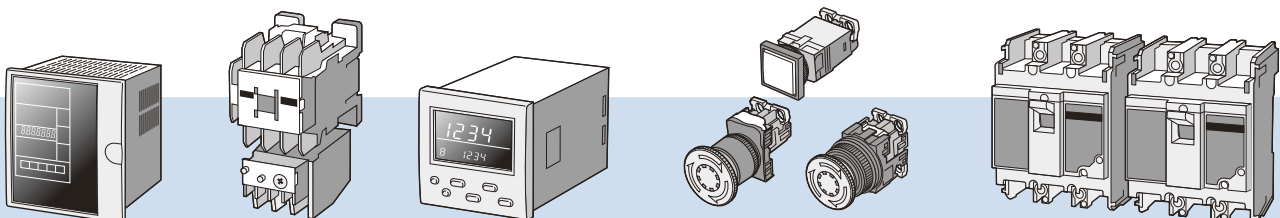
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Emergency stop pushbutton switch with mechanical indicator: AM22VME

The switch operation status is displayed in either green or red in the button indication window.

■ Features

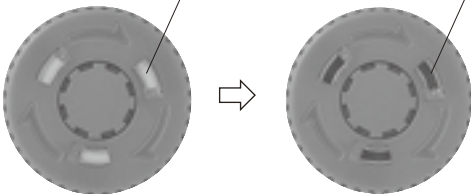
- The operation status of emergency stop pushbutton switch is displayed in either green or red in the button indication window.

In reset state (undepressed): Green

In locked state (depressed): Red

A green indication appears in the button indication window.

A red indication appears in the button indication window.

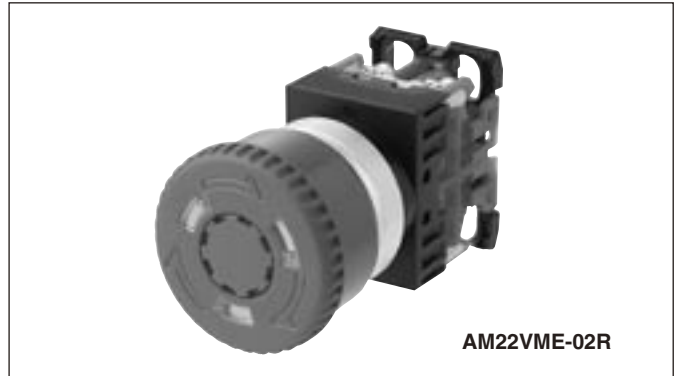


The groove in the tightening ring can be seen.



The groove in the tightening ring is hidden (= not seen).

- The button indication windows indicate the operation status mechanically so that it is best suited for machine control panels that is difficult to secure power supply for indication part.



- This switch is equipped with the safety trigger action feature that doesn't allow the contact to operate until the pushbutton is locked even if it is depressed mistakenly by a person or an object.
- The NC contact is equipped with direct opening action feature that securely breaks the circuit in case of abnormality like slight welding of contact. (⇒)
- The operator and mechanical indicator sections offer the degree of protection IP65.
- The standard model of AM22VME switches are certified by UL and CSA standards. The switch conforms to EN standard, certified by TÜV, compliant with CE marking.



■ Type

Operator	Reset type	Contact arrangement	Type (without white arrow)	Button color
Push-lock 40mm dia. with mechanical indicator	Turn-reset	1NC	AM22VME-01R	Red only
		1NO+1NC	AM22VME-11R	
		2NC	AM22VME-02R	
		1NO+3NC	AM22VME-13R	
		2NO+2NC	AM22VME-22R	

Contact arrangement

a. The contact arrangements other than the above are available as shown below.

Contact arrangement	1NC	1NO+1NC	2NC	1NO+2NC	3NC	1NO+3NC	2NO+2NC	4NO
Code	01	11	02	12	03	13	22	04

b. Up to four contacts are available.

c. The NO contact uses overlap contact (AR9B290-S).

Specifications (Indoor use)

Item	Emergency stop pushbutton switch with mechanical indicator	
Rated insulation voltage (Ui)	600V AC/DC	
Durability	Mechanical	300,000 operations or more
	Electrical	300,000 operations or more
Operating frequency	1200 operations/hour (on-load factor: 40%)	
Dielectric strength	2500V for 1 min 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 (Uimp)	6kV	
Conditional short-circuit current	1000A	
Short-circuit protective device	gG16A (IEC60269 Fuse)	
Pollution degree	3	
Vibration	Resonance test: Double amplitude 0.1mm, frequency 10 to 55Hz Constant vibration durability test: Double amplitude 3.0mm, frequency 16.7Hz Variable vibration durability test: Double amplitude 0.7mm (Max. 50m/s ²), frequency 10 to 500Hz ^{*1}	
Shock	Malfunction durability: 150m/s ² Mechanical durability: 500m/s ²	
Operational ambient temperature	-20 to +60°C (no icing, no condensation)	
Storage temperature	-40 to +80°C	
Relative humidity	45 to 85%RH (-5 to + 40°C) (no icing or no condensation)	
Degree of protection (operator section)	IP65 (dust-proof and water-jet proof type): IEC60529 <IP65f (dust-proof, water-jet proof, and oil-tight type): JEM1030>	
Terminal screw	M3.5 self-lifting screw with square washer for flat-blade/Phillips screwdriver dual use	

*1 According to the test condition of EN60947-5-5 (1998)

Note: For contact ratings, refer to page 04CD/2/10 in FUJI D&C Catalog 19th Edition Revised.

Contact reliability

The operation has been confirmed under circuit conditions of 5mA at 5V AC or DC (failure rate $\lambda_{60} = 1.15 \times 10^{-6}$). The applicable operating range, however, may vary depending on the ambient operational conditions and type of load.

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

Type	Emergency stop pushbutton switch with mechanical indicator
Operator action	Push-lock, turn-reset
Max. required operating force (average)	22N
Operating stroke	Approx. 9mm
Reset torsion angle	Approx. 60°
Required return torque (at turn-reset)	0.25N•m

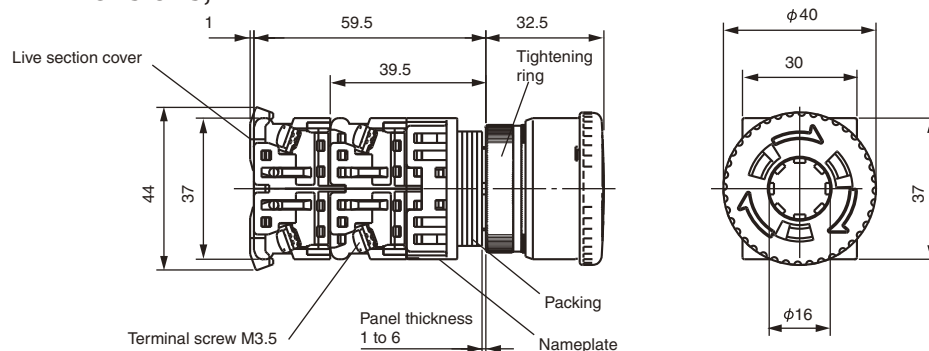
Standards approved

Name	Applicable standard	Certification number
UL	UL508	UL File No.E44592
CSA	CSA C22.2 No.14	CSA File No. LR20479
TÜV	EN30947-5-1, EN30947-5-5	R50028146

Mass, gram

Type	1 contact	2 contacts	4 contacts
AM22VME	53	63	82

Dimensions, mm



Time of release

August, 2007

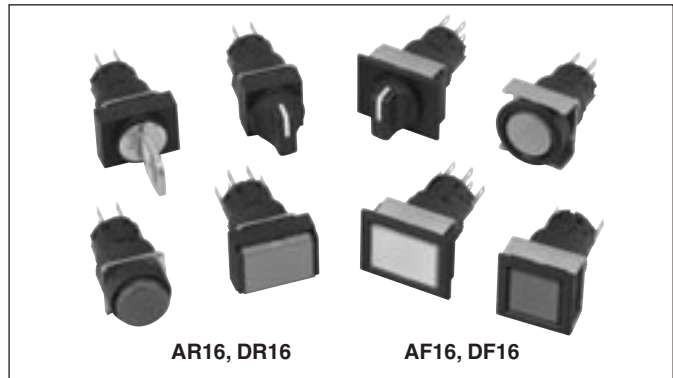
For details, please contact your FUJI sales representative.

φ16 Command Switches: AR16 and DR16, AF16 and DF16 series

Adopts integrated operator component and contact mechanism to reduce control panels' depth

■ Features

- An integrated operator component and contact mechanism that reduces control panels' depth. A unified depth of 28.4mm for the Standard type and 35.9mm for the Thin type.
- Thin type and Standard types available for your control panel design. Select an optimum one to match your control panel design.
- A wide variety of sockets helps reduce wiring.
- Incorporating a gold-flashed SPDT or 2PDT contact mechanism with a snap-action structure that makes and breaks 1mA at 5V.
- A key selector switch with a pin tumbler key and reversible-type mechanism provides improved key insertion and removal (extraction) performance.
- Complies with RoHS (EU Directive 2002/95/EC).



- The standard AR16 and DR16, AF16 and DF16 series of the φ16 Command Switches are approved by UL/CSA and TÜV (EN standard).
- Bearing CE markings.

■ Contact ratings

Types of switch	Conventional free air thermal current (Rated thermal current) I _{th}	Rated operational current I _e ^{*1}				
		Rated operational voltage U _e	AC 13 (Ind. load)	AC 12 (Res. load)	DC 13 (Ind. load)	DC 12 (Res. load)
Illuminated pushbutton switch, Pushbutton switch, Selector switch	5A	24V 110V 220V	— 1A 0.7A	— 1.5A 1A	0.7A ^{*2} 0.15A ^{*2} —	1A 0.2A —

*1 According to the test condition of NECA C 4521 (2002).

*2 T_{0.95}=21ms


■ Specifications (Indoor use)

Item	Illuminated pushbutton switch Pushbutton switch	Selector switch	Pilot light
Rated insulation voltage (U _i)	250V AC/DC		
Durability (operations)	Mechanical	Momentary action: 1 million Alternate action: 250,000	Maintained: 250,000 Spring/manual return: 250,000 Spring return: 250,000
	Electrical	100,000 (220V 0.7A AC)	
Operating frequency	1200 operations/hour (On-load factor: 40%)		—
Dielectric strength	2000V AC for 1min between live part and ground		—
	2000V AC for 1min 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 (U _{imp})	2.5kV		
Conditional short-circuit current	1000A		
Short-circuit protective device	gG2A (IEC60269 Fuse)		
Pollution degree	3		
Vibration	Resonance test: Double amplitude 0.1mm, frequency 10 to 55Hz Constant vibration durability test: Double amplitude 3mm, frequency 16.7Hz		
Shock	Malfunction durability: 100m/s ² Mechanical durability: 500m/s ²		
Operational ambient temperature	-10 to +55°C (no icing, no condensation)		
Storage temperature	-40 to +70°C		
Relative humidity	45 to 85%RH (-5 to +40°C) (no icing, no condensation)		
Degree of protection (operator section)	IP65 (dust-proof and water-jet proof type): IEC60529, IP65F (dust-proof, water-jet proof, and oil-tight type): JIC C 0920		

■ Type, typical

● Illuminated pushbutton switch (LED Lamp)

□: Color code

Appearance (Standard type)	Lamp operational voltage	Contact arrangement	Momentonly action	
			Type	Alternate action
Flush rectangular AR16F0N, F5N 	6V AC/DC	SPDT	AR16F0N-C1A3 □	AR16F5N-C1A3 □
			AR16F0N-C2A3 □	AR16F5N-C2A3 □
	12V AC/DC	SPDT	AR16F0N-C1B3 □	AR16F5N-C1B3 □
			AR16F0N-C2B3 □	AR16F5N-C2B3 □
	24V AC/DC	SPDT	AR16F0N-C1E3 □	AR16F5N-C1E3 □
			AR16F0N-C2E3 □	AR16F5N-C2E3 □

● Color of lens


Lens color	LED luminous color	Code
Green	Green	G
Red	Red	R
White *	Orange	W
Yellow	Yellow	Y
Orange	Amber	A
Blue	Blue	S

Note: * The lens is translucent.

* The combination of transparent lens and white legend plate comes to white.


● Pushbutton switch

□: Color code




Appearance (Standard type)	Contact arrangement	Momentally action	
		Type	Alternate action
Flush rectangular AR16F0T, F5T 	SPDT	AR16F0T-C1 □	AR16F5T-C1 □
		AR16F0T-C2 □	AR16F5T-C2 □

● Pilot light (LED)




□: Color code

Appearance (Standard type)	Lamp operational voltage	Type
Flush rectangular DR16F0N 	6V AC/DC	DR16F0N-A3 □
	12V AC/DC	DR16F0N-B3 □
	24V AC/DC	DR16F0N-E3 □

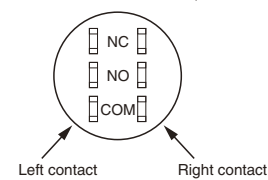
● Selector switch (Knob type)

Appearance (Standard type)	No. of position	Contact arrangement	Type		Contact operation		
			Maintained/90°	Spring return/90°	Contact block *1	Operator position *2	
Knob with rectangular bezel AR16PT 	2	SPDT	1 2	1 2	Left	COM	NC ●
						NO ●	
						AR16PT-2C1B	AR16PT-0C1B
Knob with square bezel AR16PS 	2	2PDT	1 2	1 2	Left	COM	NC ●
						NO ●	
						AR16PS-2C2B	AR16PS-0C2B
Knob AR16PR 	2	2PDT	1 2	1 2	Right	COM	NC ●
						NO ●	
						AR16PR-2C2B	AR16PR-0C2B

● Selector switch (Key type)

Appearance (Standard type)	No. of position	Contact arrangement	Type		Contact operation		
			Maintained/90°	Spring return/90°	Contact block *1	Operator position *2	
Key with rectangular bezel AR16JT 	2	SPDT	1 2	1 2	Left	COM	NC ●
						NO ●	
						AR16JT-2 C1A	AR16JT-0AC1A
Key with square bezel AR16JS 	2	2PDT	1 2	1 2	Left	COM	NC ●
						NO ●	
						AR16JS-2 C2A	AR16JS-0AC2A
Key AR16JR 	2	2PDT	1 2	1 2	Right	COM	NC ●
						NO ●	
						AR16JR-2 C2A	AR16JR-0AC2A

Note: *1 Terminal arrangement (Viewed from the terminal (the back side))



*2 ●: means the contact closed (ON).

■ Time of release

October 2007

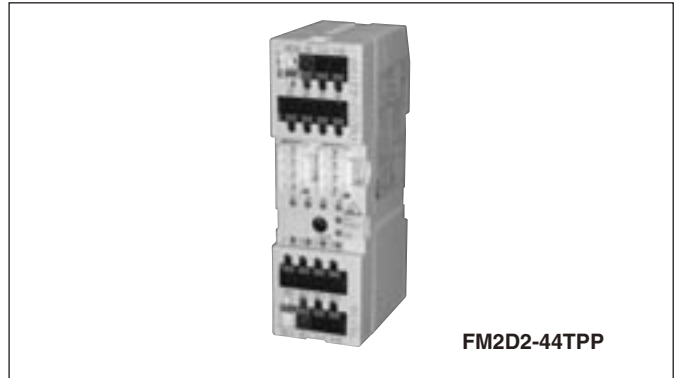
For details, please contact your FUJI sales representative.

AS-Interface : Terminal block type slave FM2D2-44TPP

Most Suitable for use inside control panels

■ Features

- No screw-tightening as per snap-in terminal adopted
- IEC rail mounting
- Easy wiring in small control panels due to all wiring works made in front of the panel.
- When performing close side-by-side mounting, the crossover wiring of communication and auxiliary cables can be wired by using the cable with connector.
- Power for sensor and output is supplied from the external supplementary power supply 24V DC.
- Status indication by LEDs
- AS-i specification V2.0 compliant (Peripheral fault (V2.1) conformed)



■ Type

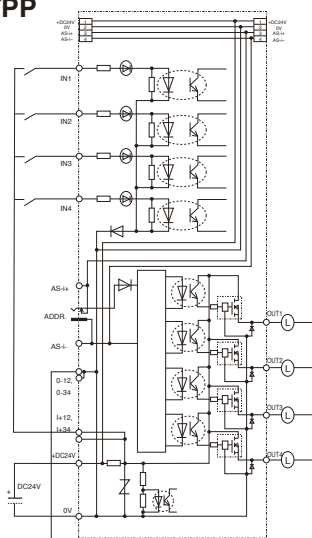
Name	Rating	Type
Terminal block type slave	Input: 4 points (PNP) (24V DC, 6mA) Output: 4 points (PNP) (24V DC, 0.5A)	FM2D2-44TPP

Ratings and specifications

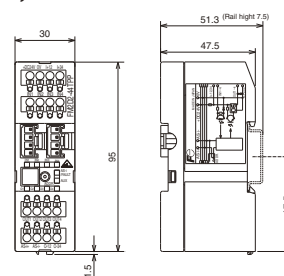
Type	PNP model	FM2D2-44TPP
Slave type		Standard slave
Number of inputs/outputs		4 inputs / 4 outputs
AS-Interface profile (I/O, ID, ID1, ID2)		7. 0. F. E
Operating voltage (in acc. with AS-Interface specification)		26.5 to 31.6V DC
Current consumption (excluding sensors)		60mA DC or less
LED indication	AS-i (G/R)	G on: Normal operation, R on: Communication error R and orange (G+R) blinking: Slave of address "0" R and G alternatively on: External aux. power voltage-drop (peripheral fault) LEDs off: AS-i communication power off
G: Green R: Red Y: Yellow	AUX	G on: Aux. power on, LED off: Aux. power off
	IN1 – IN4 (Y)	On/off: input on/off
	OUT1 – OUT4 (Y)	On/off: output on/off
Input	Rated voltage	24V DC (via external supplementary power supply)
	On voltage (PS(-) - IN)	17 – 30V DC
PS: Abbr. of power supply	Off voltage (PS(-) - IN)	0 – 7V DC
	On current	Approx. 6mA (at 24V DC)
	Off current	1.5mA or less
	Insulation method	Photocoupler
Output (per point)	Type of output	Electronics (PNP)
	Rated voltage	24V DC (via external supplementary power supply)
	Current carrying (Average) capacity per point	0.5A
	Residual voltage	0.8V or less
	Short-circuit protection	Built-in
	Inductive surge protection	Built-in (flywheel diode)
	Output status on communication error	Off
Degree of protection (IEC 60529)		IP20
Operating temperature		-10 to +55°C (no icing, no condensation)
Operating humidity		85%RH or less (no condensation)
Electrical protection for AS-i connection	Reverse polarity protection	Built-in
	Electrostatic discharge	Contact discharge method: ±4kV, Aerial discharge methld: ±8kV, IEC61000-4-2 (Class B)
	Electromagnetic field noise	80 to 1000MHz, Electric field strength: 10V/m, IEC61000-4-3 (Class A)
	Burst noise	2kv (Class B) / 1kV (Class A), IEC61000-4-4
Shock resistance	IEC rail mounting (IEC68-2-27)	150m/s ² (11ms)
Vibration resistance	IEC rail mounting (IEC68-2-6)	10 to 55Hz, 0.5mm one-way amplitude
Mass		Approx. 80g
Addressing	Method	Can be done with an addressing unit (FL1HA-E) via addressing cable (FX9Y002) connected to the addressing jack on the slave front.

External wiring diagram

Type: FM2D2-44TPP



Dimensions, mm



Accessories

Tightening wrench for stick terminal applied	UA-F0510, F0710, F1010, F1510 (Osada-made) Crimping tool: UA-520
	AI0.5-10WH, AI0.75-10GY, AI1.5-10BK (Phoenix contact-made) Crimping tool: CRIMPFOX UD 6-4
Applicable connector (4P) for power supply crossover wiring (Main unit side connector: B4P-VH)	Housing: VHR-4N * (J.S.T. Mfg Co.,Ltd.-made) Contact: SVH-21T-P1.1 (AWG22 to18) SVH-41T-P1.1 (AWG20 to16)

* The housing (VHR-4N) is attached to the slave to protect the slave side connector.
This housing and the contact (sold separately) can be combined with use for crossover wiring.
For accessories, Please contact each manufacturer.

Time of release

June 2007

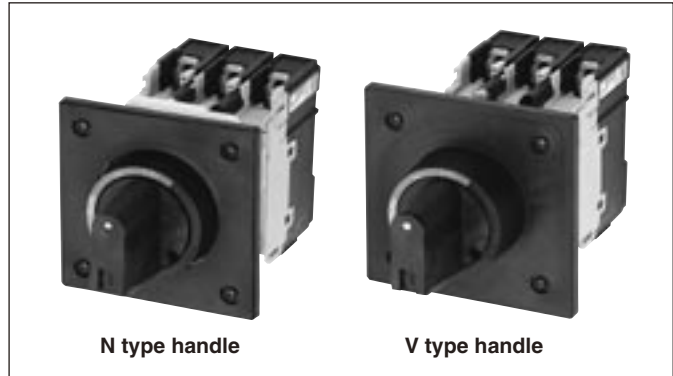
For details, please contact your FUJI sales representative.

α -TWIN series external operating handles (for 30AF – 100AF (E))

Improved operability and wiring workability by remodeling the conventional ones

■ Features

- Operating portion downsized, operability of trip and test button and workability of main circuit wiring improved
- Compatible with the conventional models
- Conforming to international standards
UL/CSA (cUL) Listed, CE Marking (TÜV), CCC (applied)
- One-touch lock system provided as standard. Locking with hasp (scissors lock) and padlock also applicable.
- Provided with the lock lever self-hold function when the panel door is open, as standard, to raise operability.
- Wiring workability of accessory terminal block highly improved



■ Type

Name	Type	Applicable α -TWIN breaker
N type operating handle	BZ6N10D	See the table below.
V type operating handle	BZ6V10D	
Extension shaft	BZ6VS1D	
Dust-proof packing for N type operating handle	BZ6NP1D	

Applicable α -TWIN breaker

		30AF	50AF	60AF	100AF	
MCCB	E	2P	EA32AC	EA52AC, EA52C	EA62C	EA102C
		3P	EA33AC	EA53AC, EA53C	EA63C	EA103C, EA103C
	S	2P	SA32C	SA52C, SA52RC	SA62C, SA62RC	–
		3P	SA33C	SA53C, SA53RC	SA63C, SA63RC	–
ELCB	E	2P	EG32AC	EG52AC	–	EG102C
		3P	EG33AC, EG33C	EG53AC, EG53C	EG63C	EG103AC, EG103C
	S	3P	SG33C	SG53C, SG53RC	SG63C, SG63RC	–

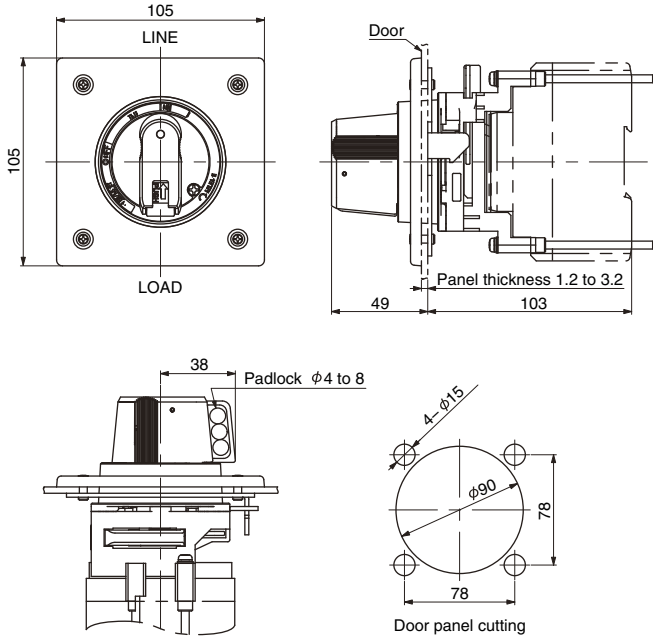
■ Time of release

September 2007

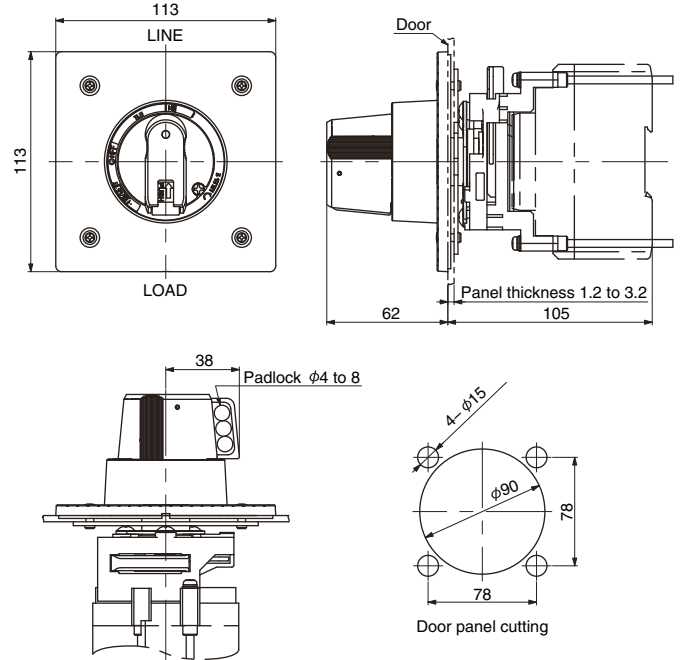
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■ Dimensions, mm

N type handle



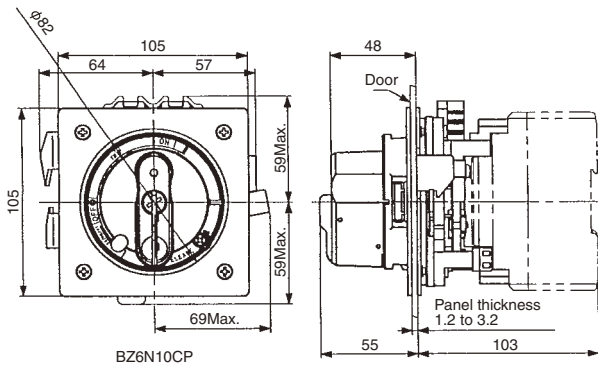
V type handle



■ Comparison of mounting dimension with the conventional model, mm

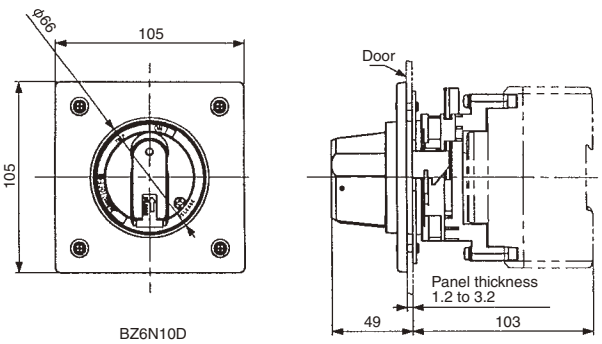
Conventional

N type handle

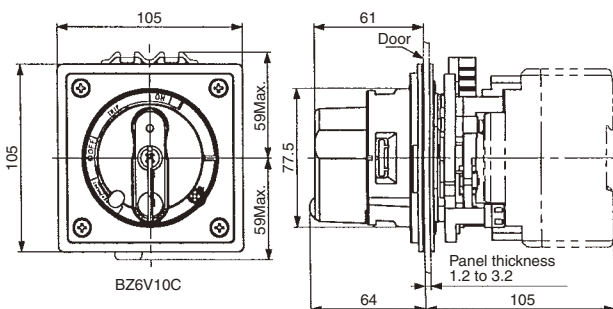


New

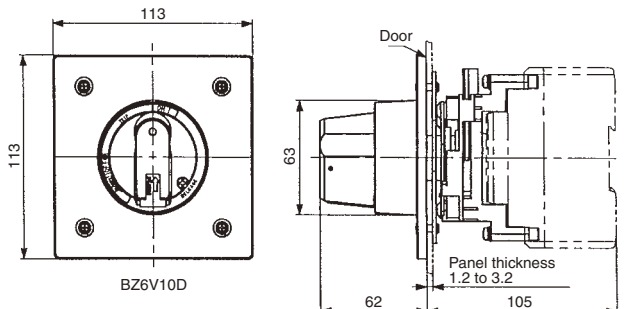
New N type handle



V type handle



New V type handle



Solid-state type multi-meter: WE1MA series

A multifunctional high-performance multi-meter capable of measuring/monitoring 52 types or 213 items

■ Features

- Only one unit can measure and monitor voltage, current, demand current, electric power, demand power, reactive power, VA, power factor, frequency, leakage current, harmonics RMS value (A, V), distortion factor, harmonics rate of content, electric energy, and reactive electric energy.
- Compliant to 3-phase 3-wire, 1-phase 3-wire, 1-phase 2-wire in common; Compliant to 3-phase 4-wire by switching between 2VT,3CT and 3VT,3CT
- Measurement indication contains a main monitor, 3 sub-monitors (total 4-element indication) with a bar graph
- The measurement and alarm output of leakage current are provided.
- Five types of output are available; 4 analog circuits, pulse output, alarm output, CPU error, communication output (as specified).

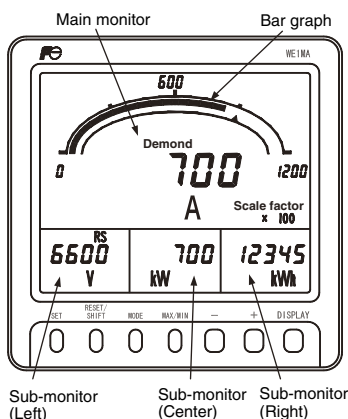


- Communication output is applicable to CC-Link, Modbus RTU, RS-485 (as specified)
- RoHS compliant --- Lead (Pb) - free

■ Specifications

Name		Solid-state type multi-meter	
Type		WE1MA	
Input circuit		3-phase 3-wire, 1-phase 3-wire, 1-phase 2-wire common (2VT,2CT), 3-phase 3-wire (2VT,3CT) 3-phase 4-wire (switching between 2VT,3CT and 3VT,3CT setting)	Please specify
Input rating	3-phase 3-wire, 1-phase 3-wire, 1-phase 2-wire	110/220V AC common use (1-phase 3-wire: 100-200V AC 5A or 1A 50/60Hz (Please specify))	
	3-phase 4-wire	110V AC/√3V, 220V/√3V common use, or 440/√3V 5A or 1A AC 50/60Hz (Please specify)	
Control power supply	Voltage range and consumed VA	(1) 85-264V AC 10VA (Rated voltage 100/110V, 200/220V AC) 80-143V DC 6W (Rated voltage 100/110V DC) AC/DC common-use	Please specify (1) or (2)
		(2) 20-56V DC 6W (Rated voltage 24/48V DC)	
	Inrush current (time constant)	Rated voltage 110V AC 2.2A or less (Approx. 3.6ms)	
		Rated voltage 220V AC 4.4A or less (Approx. 3.6ms)	
		Rated voltage 110V DC 1.6A or less (Approx. 3.6ms)	
	Rated voltage 24V DC 5.0A or less (Approx. 2.0ms)		
	Rated voltage 48V DC 9.9A or less (Approx. 2.0ms)		

■ LCD display example



■ Measurement item

Main monitor	V (RS-ST-TR), A (R-S-T), DA (R-S-T), W, DW, var, VA, cosφ, Hz, LA, Wh (receive/transmit), var-h (receive LAG/LEAD, transmit LAG/LED), Df (A, V)
Sub-monitor (Left)	V (RS-ST-TR), A (R-S-T), W, var, VA, cosφ, LA
Sub-monitor (Center)	V (RS-ST-TR), A (R-S-T), DA (R-S-T), W, DW, var, var-h (receive LAG/LEAD, transmit LAG/LED), Harmonic 5th converted rate of content (A, V), Harmonics n'th rate of content (A, V)
Sub-monitor (Right)	V (RS-ST-TR), A (R-S-T), DA (R-S-T), W, DW, cosφ, Hz, Wh (receive/transmit), Fundamental wave RMS (A, V), Harmonic 5th converted RMS (A, V), Harmonic n'th RMS (A, V)
Bar graph	V (RS-ST-TR), A (R-S-T), DA (R-S-T), W, DW, var, VA, cosφ, Hz, LA, Df (A, V), Harmonic 5th converted rate of content (A, V), Harmonics n'th rate of content (A, V), Fundamental wave RMS (A, V), Harmonic 5th converted RMS (A, V), Harmonic n'th RMS (A, V)

Legend:

V: Voltage A: Current DA: Demand current W: Power DW: Demand power var: Reactive power cosφ: Power-factor LA: Leakage current Wh: Electric energy var-h: Reactive electric energy Df: Distortion factor

■ Standard specifications, performance

Item	Specifications						
Measured item	Measured item	Specific indication accuracy	Specific output accuracy	Measured item		Specific indication accuracy	Specific output accuracy
				Voltage (34 ranges)	±1.0%		
Current (76 ranges)	±1.0%	±0.5%	Harmonic n'th rate of content	Voltage	±1.0%	±2.5%	
Electric power	±1.0%	±0.5%	Harmonic 5th converted RMS	Current	±2.5%	±2.5%	
Reactive power	±1.0%	±0.5%	Harmonic 5th converted rate of content	Voltage, Current	±1.5%	±1.5%	
VA ^{*1}	±1.0%	±0.5%	Electric energy	Voltage	±1.0%	±2.5%	
Power-factor	±2.0%	±2.0%	Reactive electric energy	Current	±2.5%	±2.5%	
Frequency	±0.5%	±0.5%	Power-factor = 1	Power-factor = 1	±2.0%	±2.0%	
Leakage current	±10%	±10%		Power-factor = 0.5	±2.5%	±2.5%	
Fundamental wave RMS	Voltage	±1.0%	±2.5%	Power-factor = 1	±2.5%	±2.5%	
	Current	±1.5%	±1.5%	Power-factor = 0.87	±2.5%	±2.5%	
Distortion factor	Voltage	±1.0%	±2.5%				
	Current	±2.5%	±2.5%				
Temperature effect	Within tolerance at 23 ±10°C						
Operational temperature and humidity	-10 to +55°C, 30 to 85% RH (No condensation)						
Storage temperature	-25 to +70°C						
Structure	Dimension (W x H x D): 110 x 110 x 104mm, body diameter: 99mm φ Case material (with terminal cover): ABS (V-0) Finished color: Black (Munsell N1.5) Mass: Approx.600g						

■ Option

*1 3-phase 4-wire only.

Item	Specifications	
Analog output	No. of output	4 channel
Pulse output ^{*2}	Output type: Optical MOS-FET	
Alarm output ^{*2}	Output contact: No voltage NO contact (OR of each phase detection)	
CPU error output ^{*2}	Detected item (Self-diagnosis item): OR output of detected items	Contact arrangement
	(1) Watchdog timer (internal, external)	OR output of detected items
	(2) RAM check error (3) A/D conversion error	1NC contact
External input	No. of inputs	2 channels, by switching 4 types of functions
	External reset	Alarm output or max./min. value can be reset by external voltage input signal. Switching the alarm output reset and the max./min. value reset by setting.
	Indication switching by input signal	Indication can be switched by external voltage signal input Between switching measuring elements and switching between phases: Enable by setting

Note: *While the multiplying factor is 0.01, the multiplying factor indication is 0.1 (4-digit integer indication, extended indication down to four places of decimals)

*2 Any two outputs are capable out of the pulse output, alarm output, and CPU error output. (Only single output is capable of CPU error output.)

■ Communications specifications

RS-485 communications output	RS-485 half-duplex 2-wire system asynchronous communication method			
	Transmission speed	1200/2400/4800/9600/19200bps	Stop bit	1 bit/ 2 bits
	Transmission code	NRZ	Max. transmission distance	1000m
	Start bit	1 bit	Address	1 to 254
	Data length	7 bits/8 bits	Transmission character	ASCII
	Parity	None/Even/Odd		
Modbus RTU communications output	Standard	EIA RS-485		
	Synchronous method	Asynchronous communication method		
	Transmission speed	4800/9600/19200/38400bps		
	Max. transmission distance	1000m		
	Address	1 to 247 (Max. No. of connectable units: 31)		
CC-Link communications output	Transmission speed	156k/625k/2.5M/5M/10Mbps		
	Max. transmission distance	1200m (156kbps) / 900m (625kbps) / 400m (2.5Mbps) / 160m (5Mbps) / 100m (10Mbps)		
	No. of connectable units	42 (where only the WE1MAs configure the network)		

■ Time of release

February 2007

For details, please contact your FUJI sales representative.

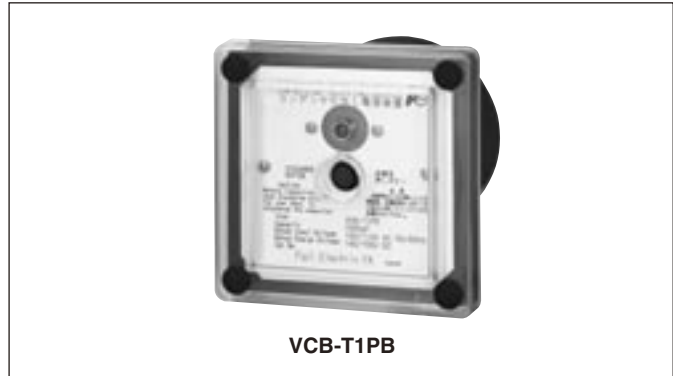
Capacitor tripping device: VCB-T1PB, T2PB (VCB use)

Downsized to the same dimensions as the 110mm sq. wide-angle meter

■ Features

- Downsized to the same dimensions as the 110mm sq. wide-angle meter (conventional one: 166mm sq.)
- Models of rated input voltage 100/110V AC and 200/220V AC available
- Discharge button can be operated from the front.
- The new products are the capacitor tripping device used in combination with Fuji vacuum circuit breakers (type HA, HS). However, the following types of VCBs are excluded.

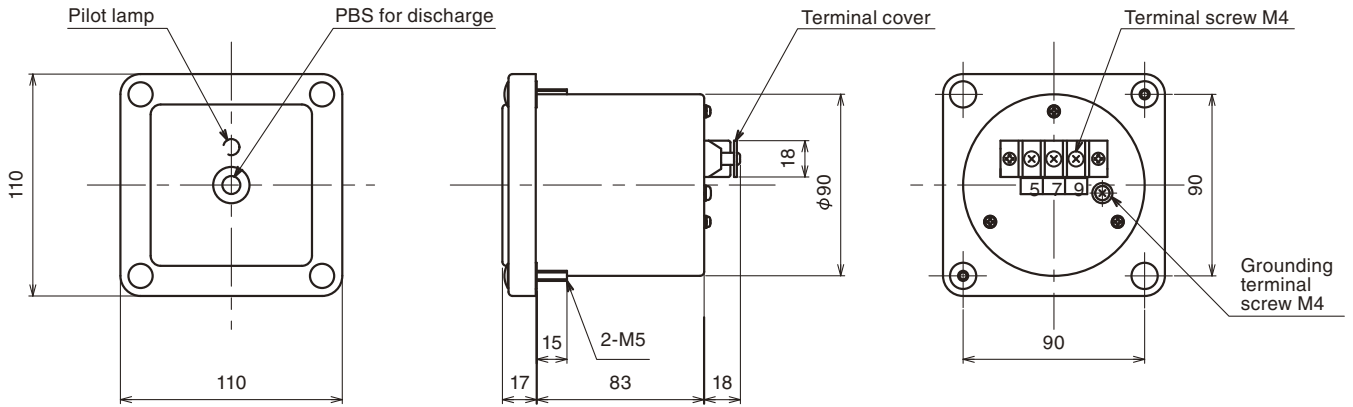
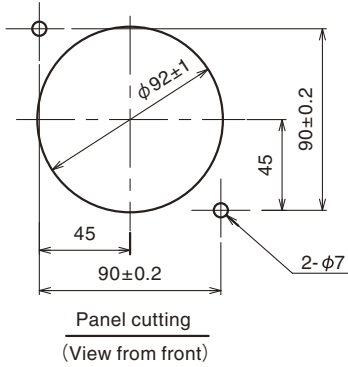
HS4006□-40Mf-N HS4010□-40Mf-N HS4020□-□Mf-N
 HS5006□-□Mf-NA HS5010□-□Mf-NA
 HS5006□-30Mf-N HS5010□-30Mf-N



■ Types and specifications

Name	Capacitor trip device power supply	
Type	VCB-T1PB	VCB-T2PB
Rated input voltage	100/110V AC	200/220V AC
Rated charge voltage	140/155 DC	280/310V DC
Charge time	2s	
Discharge time at no-load (by PBS operation)	2s	
Available trip time	Within 30s after power supply failure	
Input voltage tolerance	60 to 125%	
Power consumption	0.5VA or less	
Capacity	1500μF	560μF
Resistor (r1)	200Ω	
Resistor (r2)	330Ω	
Resistor (r3)	100kΩ	200kΩ
Ambient temperature	-5°C to +40°C, the average temp. in 24 hours does not exceed +35°C (value specified by Standard)	

■ Dimensions, mm



■ Time of release

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

High performance multifunctional inverter: FRENIC-MEGA series

A new inverter has attained the best control performance in the industry.

■ Features

●Enhanced control performance

- Applicable control methods: PG vector control, sensorless vector control, dynamic torque vector control, and V/f control
- Improved overload capability

	Overload capability	Major use
HD (High Duty) mode: Heavy duty load use	150%-1min, 200%-3s	General industrial machinery and installations
LD (Low Duty) mode: Low duty load use	120%-1min	Fans and pumps, centrifuges, etc. Variable torque load in particular

●Product lineup

	Capacity range
Basic type	Three-phase 400V series 0.4 to 630kW (90 to 630kW: available soon)

Note: Three-phase 200V series (0.4 to 90kW) is also available according to your region.

●Accommodating various applications

- PG card (Option) is provided, best suited for the application that requires highly accurate positioning.
- Provided with servo lock function, which is effective in adjusting the stop timing or the braking torque when the equipment such as conveyance machine is stopped by positioning of the motor.



●Full network support*

CAN-OPEN, T-Link, PROFIBUS-DP, DeviceNet, CC-Link, SX bus

* Optional interface card: available soon

■ Standard specifications (Basic type)

Three-phase 400V series

(0.4 to 55kW) HD (High Duty) mode for heavy load

Item	Specifications																		
Type (FRN_ _ G1S-4*)	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55				
Nominal applied motor (kW) (*1)	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55				
Output rating	Rated capacity (kVA) (*2)	1.1	1.9	2.8	4.1	6.8	10	14	18	24	29	34	45	57	69	85			
	Rated voltage (V) (*3)	Three-phase 380 to 480V (with AVR function)																	
	Rated current (A) (*4)	1.5	2.5	4	5.5	9	13.5	18.5	24.5	32	39	45	60	75	91	112			
	Overload capability	150%-1min, 200%-3.0s																	
	Rated frequency (Hz)	50, 60Hz																	
Input rating	Main circuit power Phases, voltage, frequency	Three-phase 380 to 480V, 50/60Hz																	
	Auxiliary control power input Phases, voltage, frequency	-		Single-phase 380 to 480V, 50/60Hz															
	Auxiliary power input for fan Phases, voltage, frequency (*5)	-																	
	Voltage, frequency variations	Voltage: +10 to -15% (Voltage unbalance: 2% or less (*6)) Frequency: +5 to -5%																	
	Rated current (A) (*7)	With DCR	0.85	1.6	3.0	4.5	7.5	10.6	14.4	21.1	28.8	35.5	42.2	57.0	68.5	83.2	102		
		Without DCR	1.7	3.1	5.9	8.2	13.0	17.3	23.2	33	43.8	52.3	60.6	77.9	94.3	114	140		
Required power supply capacity (*8)	With DCR	0.6	1.2	2.1	3.2	5.2	7.4	10	15	20	25	30	40	48	58	71			
	Without DCR	1.2	2.4	4.2	6.4	10.4	14.8	20	27	36	45	54	72	88	108	132			
Braking	Torque (%) (*9)	150%			100%				20%				10 to 15%						
	Braking transistor	Built-in																	
	Min. ohmic value (Ω)	200			160			96		64		48		32		24		16	
	Torque (%)	180%			180%			180%		180%		180%		180%		180%		-	
	Built-in braking resistor (Ω)	720Ω		470Ω		160Ω				80Ω				-					
		Braking time (s)		5s															
	%ED	5		3		5		3		2		3		2		-			
DC injection braking	Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100%																		
DC reactor (DCR) (*10)	Optional																		
Applicable safety standards	UL508C, C22.2No.14 (pending), EN61800-5-1:2003																		
Enclosure (IEC 60529)	IP20 (IEC60529) closed type, UL open type (UL50)												IP00, UL open type						
Cooling method	Natural cooling					Fan cooling													
Weight / Mass (kg)	1.8	2	2.8	3	3.2	6.5	7	7	9.5	9.5	10	25	26	31	33				

(75 to 630kW) HD (High Duty) mode for heavy load

Item	Specifications															
Type (FRN_ _ G1S-4*)	75	90	110	132	160	200	220	280	315	355	400	500	630			
Nominal applied motor (kW) (*1)	75	90	110	132	160	200	220	280	315	355	400	500	630			
Output rating	Rated capacity (kVA) (*2)	114	134	160	192	231	287	316	396	445	495	563	731	891		
	Rated voltage (V) (*3)	Three-phase 380 to 480V (with AVR function)														
	Rated current (A) (*4)	150	176	210	253	304	377	415	520	585	650	740	960	1170		
	Overload capability	150%-1min, 200%-3.0s														
	Rated frequency (Hz)	50, 60Hz														
Input rating	Main circuit power Phases, voltage, frequency	Three-phase 380 to 480V, 50Hz Three-phase 380 to 480V, 60Hz														
	Auxiliary control power input Phases, voltage, frequency	Single-phase 380 to 480V, 50/60Hz														
	Auxiliary power input for fan Phases, voltage, frequency (*5)	Single-phase 380 to 440V, 50Hz Single-phase 380 to 480V, 60Hz														
	Voltage, frequency variations	Voltage: +10 to -15% (Voltage unbalance: 2% or less (*6)) Frequency: +5 to -5%														
	Rated current (A) (*7)	With DCR	138	164	210	238	286	357	390	500	559	628	705	881	1115	
		Without DCR	-	-	-	-	-	-	-	-	-	-	-	-	-	
Required power supply capacity (*8)	With DCR	96	114	140	165	199	248	271	347	388	436	489	611	773		
	Without DCR	192	228	280	330	398	496	542	694	776	872	1078	1346	1746		
Braking	Torque (%) (*9)	10 to 15%														
	Braking transistor	-														
	Min. ohmic value (Ω)	-														
	Torque (%)	-														
DC injection braking	Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100%															
DC reactor (DCR) (*10)	Standard accessory															
Applicable safety standards	UL508C, C22.2No.14 (pending), EN61800-5-1:2003															
Enclosure (IEC 60529)	IP00, UL open type															
Cooling method	Fan cooling															
Weight / Mass (kg)	42															

(*1) Fuji's 4-pole standard motor.

(*2) Rated capacity is calculated by assuming the rated output voltage as 440V for 400V series.

(*3) Output voltage cannot exceed the power supply voltage.

(*4) To use the inverter with the carrier frequency of 3kHz or more at the ambient temperature of 40°C or higher, manage the load so that the current comes to be within the rated ones enclosed in parentheses () in continuous running.

(*5) Used as the AC fan power supply for the converter when the inverter is combined with a high power-factor, regenerative PWM converter. (Usually not used.)

(*6) Voltage unbalance (%) = (Max. voltage (V) - Min. voltage (V)) / Three-phase average voltage (V) x 67 (IEC 61800-3)

If this value is 2 to 3%, use the DC reactor (ACR: optional).

(*7) The value is calculated on assumption that the inverter is connected with a power supply capacity of 500kVA (or 10 times the inverter capacity if the inverter capacity exceeds 50kVA) and %X is 5%.

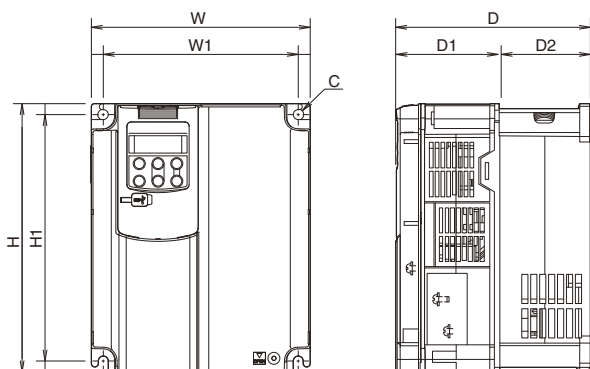
(*8) Obtained when a DC reactor (DCR) is used.

(*9) Average braking torque obtained by use of a motor alone. (Varies with the efficiency of the motor.)

(*10) The 55kW DC reactor (DCR) is optional in HD mode, and is provided as standard in LD mode.

■ Dimensions, mm

Input Power	Inverter type	W	W1	H	H1	D	D1	D2	C
Three-phase 400V	FRN0.4G1S-4*	110	96	260	246	130	113	17	2 x ϕ 6
	FRN0.75G1S-4*					145		32	
	FRN1.5G1S-4*					150		136	
	FRN2.2G1S-4*								
	FRN3.7G1S-4*								
	FRN5.5G1S-4*	220	196		400	378	255	115	
	FRN7.5G1S-4*								
	FRN11G1S-4*	250	226	550	530	270	115	140	
	FRN15G1S-4*								
	FRN18.5G1S-4*								
	FRN22G1S-4*	320	240	615	595	270	115	140	
	FRN30G1S-4*								
	FRN37G1S-4*								
	FRN45G1S-4*	355	275	740	720	270	115	155	
FRN55G1S-4*									



■ Time of release

Available soon

For details, please contact your FUJI sales representative.

A new series best suited for fast and accurate positioning

■ Features

● Lineup

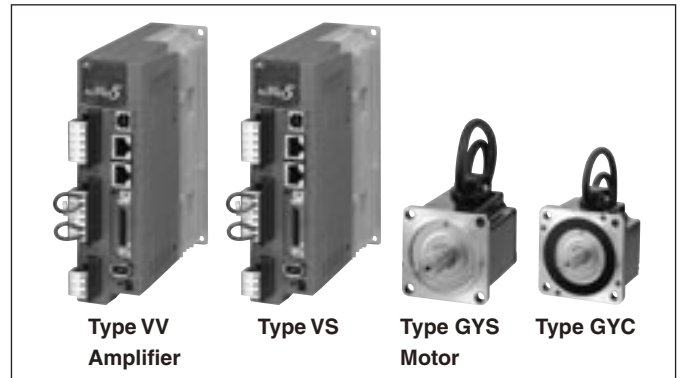
● Servo amplifiers

- Type VV General purpose interface (Pulse train, analog voltage)
- Type VS High-speed serial bus (SX bus compliant)
- Type LS High-speed serial bus (Linear positioning built-in, SX bus)

- Power supply: Single-phase or three-phase 200 to 240V AC (Single-phase: 0.75kW or less)
- Capacity: 0.05kW to 1.5kW
- Control mode: Position, speed, torque control

● Servo motors

- GYS motor Ultra low inertia
- GYC motor Low inertia
- GYG motor Medium inertia
- Rated speed: 3000 r/min
(Max. speed 6000 r/min - - 5000 r/min for 1kW or more)
2000 r/min (Max. 3000 r/min) *GYG type
1500 r/min (Max. 3000 r/min) *GYG type
- Rated output capacity: 0.05 to 1.5kW * GYC type
- Degree of protection: IP67
- Encoder: 18-bit ABS/INC, 20-bit INC



● Fast and accurate positioning is realized

- New high-speed servo control engine
Frequency response 1500Hz
- Increased motor rotation speed
Max. speed 6000 r/min - - 5000 r/min for 1kW or more
- Fine resolution encoder
18-bit ABS/INC: 262,144 pulses
20-bit INC: 1,048,576 pulses
- Shortens setup time
Enhances real time auto-tuning performance
- Improved usability
USB connector provided (for connecting to PC loader)
Life warning function (battery, main circuit capacity, cooling fan)

■ Ratings and Types

● Servo amplifiers

Type	Command interface			Power supply	Capacity	Type	Applicable motor series			
	Pulse	Analog	SX bus				GYS-D5	GYC-D5	GYG-C5	GYG-B5
Type VV General purpose interface (Pulse, analog voltage)	●	●	-	Single-phase or three-phase 200 to 240V AC	0.05 to 1.5kW	RYT***D5-VV2 RYT***C5-VV2 RYT***B5-VV2	●	●	●	●
Type VS High-speed serial bus (SX bus compliant)	-	-	●	Single-phase or three-phase 200 to 240V AC	0.05 to 1.5kW	RYT***D5-VS2 RYT***C5-VS2 RYT***B5-VS2	●	●	●	●
Type LS High-speed serial bus (Built-in, linear positioning, SX bus)	-	-	●	Single-phase or three-phase 200 to 240V AC	0.05 to 1.5kW	RYT***D5-LS2 RYT***C5-LS2 RYT***B5-LS2	●	●	●	●

●: Applicable -: Not applicable

● Servo motors

Type	Rated speed (Max. speed)	Rated output	Type of servo motor		Degree of protection	Encoder	Type
			Without brake	with brake			
GYS motor Ultra low inertia	3000 r/min (6000 r/min for 0.75KW or less, 5000 r/min for 1kW or over)	5 types 0.05, 0.1, 0.2, 0.4, 0.75kW	●	●	IP67 ^{*1}	18-bit ABS/INC	GYS***D5-HB2 (-B) ^{*2}
						20-bit INC	GYS***D5-RB2 (-B) ^{*2}
GYC motor Low inertia	3000 r/min (6000 r/min for 0.75KW or less, 5000 r/min for 1kW or over)	6 types 0.1, 0.2, 0.4, 0.75, 1.0, 1.5kW	●	●	IP67 ^{*1}	18-bit ABS/INC	GYC***D5-HB2 (-B) ^{*2}
						20-bit INC	GYC***D5-RB2 (-B) ^{*2}
GYG motor Medium inertia	2000 r/min (3000 r/min)	3 types 0.5, 0.75, 1.0kW	●	●	IP67 ^{*1}	18-bit ABS/INC	GYG***C5-HB2 (-B) ^{*2}
						20-bit INC	GYG***C5-RB2 (-B) ^{*2}
GYG motor Medium inertia	1500r/min (3000r/min)	2 types 0.5, 0.85kW	●	●	IP67 ^{*1}	18-bit ABS/INC	GYG***B5-HB2 (-B) ^{*2}
						20-bit INC	GYG***B5-RB2 (-B) ^{*2}

●: Applicable -: Not applicable

*1 The shaft grand and connector sections are excluded.

*2 For the motor with brake, add suffix (-B) to the type.

■ Common specifications

Protective construction/cooling		Open/self-cooling (open/forced air cooling for 0.75kW)	
Power supply	Main power supply	Phase	Single-phase, 3-phase
		Voltage frequency	200 to 240V AC 50/60Hz
		Allowable voltage fluctuation	3-phase: 170 to 262V AC, Single-phase: 190 to 262V AC
Control power supply	Control power supply	Phase	Single-phase
		Voltage frequency	200 to 240V AC 50/60Hz
		Allowable voltage fluctuation	170 to 262V AC
Control system		IGBT PWM sinusoidal PWM drive	
Braking method		Power regeneration to DC link bus circuit (regenerative resistor built-in for 400W model or higher), external regenerative resistor applicable. Dynamic brake built-in. ^{*1}	
Feedback		18-bit serial encoder (absolute/incremental), 20-bit serial encoder (incremental)	
Overload capability		300%/3 sec.	
Speed fluctuation ratio	Load fluctuation	Within ±1 r/min (load fluctuation 0 to 100%)	
	Power supply fluctuation	Within ±1 r/min (power supply fluctuation -10 to +10%)	
	Temperature fluctuation	Within ±0.2% (25±10°C at rated operation speed and analog input operation)	
Major function	Control mode	Position control, speed control, torque control, switching between position and speed control, switching between position and torque control, switching between speed and torque control	
	Position control function	Closed loop control with position adjuster, electronic gear, output pulse setting, feed forward, origin return, interrupt positioning, etc.	
	Speed control function	Closed loop control with speed adjuster, acceleration/deceleration time setting, manual feed rate/max. rotation speed, speed command zero clamp, etc.	
	Torque control function	Closed loop control with current adjuster (proportional open loop control of current and torque), torque limit, speed limit at torque control, etc.	
	Incidental function	Easy tuning, pattern operation, sequence test mode, auto tuning, auto notch filter, vibration suppressing online learning, etc.	
Protective function (Alarm indication)		Overcurrent (oc1, oc2), Overspeed (oS), Control power undervoltage (Lvc), Overvoltage (Hv), Encoder trouble (Et1, Et2), Circuit trouble (ct), Memory error (dE), Fuse blown (Fb), Motor combination error (cE), Regenerative braking transistor overheat (tH), Encoder communication error (Ec), Duplicated CONT (ctE), Overload (oL1, oL2), Main power undervoltage (Lvp), Regenerative braking resistor overheat (rH1, rH2, rH3), Deviation overflow (oF), Amplifier overheat (AH), Encoder overheat (EH), ABS data lost (dL1, dL2, dL3), Multi turn overflow (AF), Initial error (iE), Command pulse frequency error (HF)	
Amplifier operation and display (keypad)		6-digit alphanumeric display with 7-segment LED, 4 operation switches, analog monitor connector (CN6), status indication LEDs	
Operating environment	Installation location	Indoors (free from direct sunlight), Altitude 1000m or less. Free from corrosive and flammable gases, oil mist, and dusts. In the case of compliance with CE Marking, models compliant with EU Directive: Pollution Dearee 2, Over Voltage Category III	
	Temperature/humidity	-10 to 55°C / 10 to 90%RH (Without condensation)	
	Vibration/shock resistance	4.9m/s ² / 19.6m/s ²	
Applicable standards		UL/cUL (UL508c), CE Marking (Low Voltage Directive EN50178) (applied), RoHS Directive	

*1 We will accept custom orders for models without dynamic brake.

■ Time of release

Available immediately


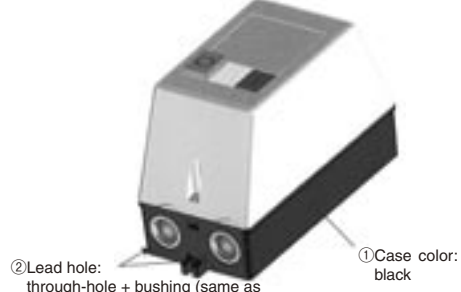
For details, please contact your FUJI sales representative.

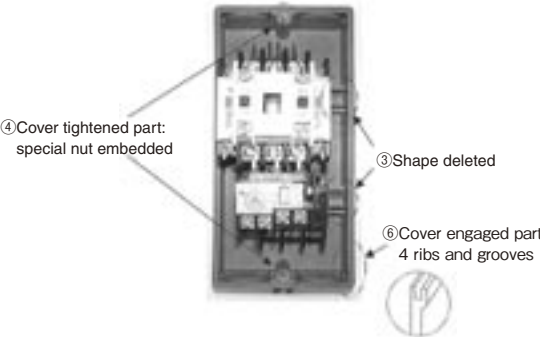
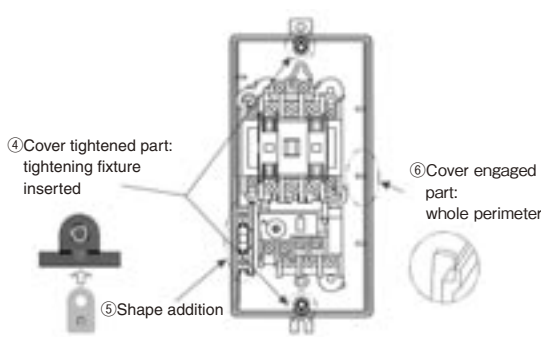
SW series motor starters with on-off pushbuttons

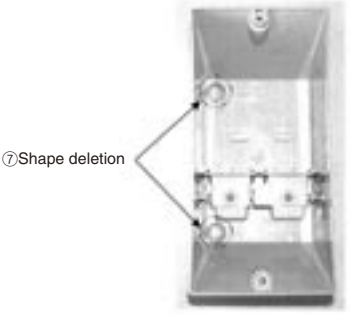
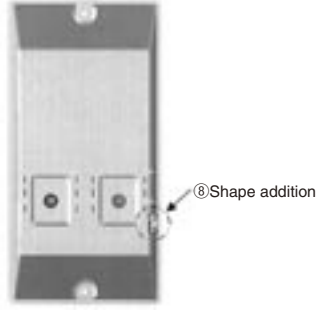
Change in shape of case and cover

Series	Type	Changed part	Type targeted			
			SW-03P to 5-1P	SW-03C to 05C	SW-4-0C to 5-1C	
SW series motor starters with on-off pushbuttons	SW series SW-03P to 5-1P SW-03C to 5-1C	Case	① Case color	○	○	○
			② Lead hole	○	-	○
			③ Shape deleted	○	○	○
			④ Cover tightened part	○	○	○
			⑤ Shape added	○	-	○
			⑥ Cover engaged part	○	-	○
		Case	⑦ Shape deleted	○	-	○
			⑧ Shape added	○	-	○

○: Applicable For detailed changes, refer to the followings.

Changed point	Conventional	New
Appearance	 <p>② Lead hole: cable gland, Pg16</p> <p>① Case color: gray</p>	 <p>② Lead hole: through-hole + bushing (same as SW-03C to 05C) (Pg16 is applicable too by using lock-nut)</p> <p>① Case color: black</p>

Changed point	Conventional	New
Inside the case	 <p>④ Cover tightened part: special nut embedded</p> <p>③ Shape deleted</p> <p>⑥ Cover engaged part: 4 ribs and grooves</p> <p>* Internal wiring is omitted for better viewing of the structure.</p>	 <p>④ Cover tightened part: tightening fixture inserted</p> <p>⑤ Shape addition</p> <p>⑥ Cover engaged part: whole perimeter</p>

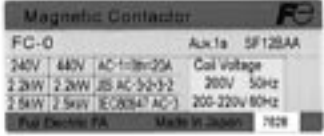
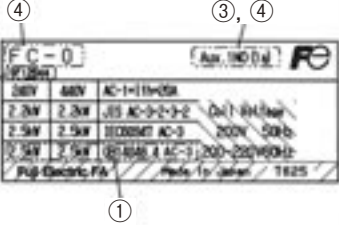

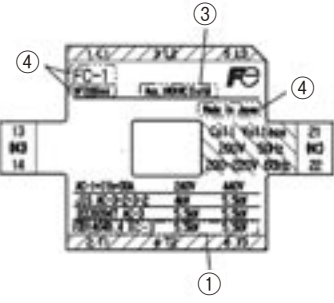
Changed point	Conventional	New
Inside the cover	 <p>⑦ Shape deletion</p>	 <p>⑧ Shape addition</p>

■ **Note on modification:** A **NEW** mark will be indicated on each package label after being changed.

■ **Time of modification:** December 2007

FC series magnetic contactors

Change in main nameplate




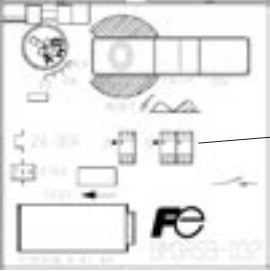

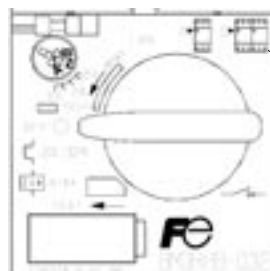

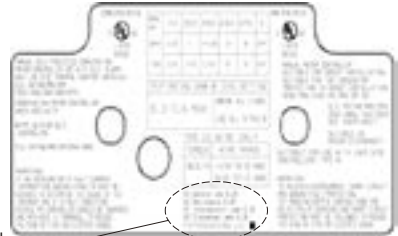
Type	Conventional	New	Contents of change
FC-0□ FC-0□/G FC-0□UL FC-0□/GUL			<ol style="list-style-type: none"> ① Addition of GB rating: GB14048.4 and the GB ratings added ② Deletion of name: Magnetic Contactor deleted ③ Expression change of contact arrangement: 1a ⇒ 1NO (1a), 1b ⇒ 1NC (1b) ④ Layout change: Type, ordering code, and contact arrangement ⑤ Deletion of blue line: Upper blue line deleted
FC-1 to 4 FC-1UL to 4UL			<ol style="list-style-type: none"> ① Addition of GB rating: GB14048.4 and the GB ratings added ② Deletion of name: Magnetic Contactor deleted ③ Expression change of contact arrangement: 1a ⇒ 1NO (1a), 1b ⇒ 1NC (1b) ④ Layout change: Type, ordering code, and Made in Japan

■ **Time of modification:** November, 2007

DUO series manual motor starters



Change in the current adjustment dial, front cover, etc.

Series	Type	Changed part	Contents of change	Reason of change
DUO series manual motor starter	BM3RSB, BM3RHB, BM3RSR, BM3RHR, BM3VSV, BM3VHB (The types on the left is applicable to ③ only)	① Current adjustment dial	White A , B , ▲ added on the dial	For easier current setting when mounted closely side-by-side (mark A for separate, B for side-by-side mounting)
		② Printing on the front cover	The figures explaining the use of A , B added	
		③ UL nameplate	"AC General Use, AC Resistance, AC Incandescent Lamp, AC Discharge Lamp" added	Because UL approval completed

Change point	Conventional	New
① Current adjustment dial		 White A , B , ▲ added
② Printing on the front cover	BM3RS 	 The figures explaining A , B added
	BM3RH 	 The figures explaining A , B added
③ UL nameplate		 The followings added AC General Use <input type="checkbox"/> A AC Resistance <input type="checkbox"/> A AC Incandescent Lamp <input type="checkbox"/> A AC discharge Lamp <input type="checkbox"/> A

Card relay : RB104, 105 and RB011

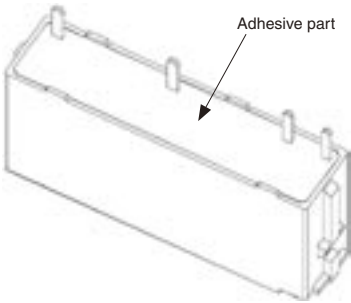
Change in corporate logo on RB type card relay for Relays-and-terminal module RS41, 42

Type	Changed part	Conventional	New
RB104 RB105 RB011 (for Relays-and-terminal module RS41, 42)	Change in logo on the top face (due to Fuji Group's shift to Holding Company system)		

■ Time of modification: October, 2007

Card relay: RB104, 105 and RB011

Change in appearance of adhesive part on RB type card relay for Relays-and-terminal module RS41, 42

Type	Changed part	Conventional	New
RB104 RB105 RB011 (for Relays-and-terminal module RS41, 42)	Change in appearance of adhesive part 	Film: with External color: gray	Film: without External color: black

■ Time of modification: January, 2007

Modified Products

Command Switches : AR22 and DR22, AM22 and DM22, AR30 and DR30, AG28 and DG28 series

Change in the screw tip shape of terminal screw

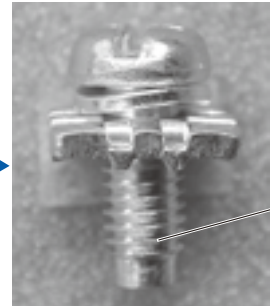
The shape of screw end has been changed to the dog point for improving workability in screw tightening.

Name	Type
Contact block	AR9B290, AR9B291 (including overlap and special type contact)
Lamp terminal	AR9B292
Transformer unit	AR9T511-H, L, M (for AR22/DR22, AR30/DR30, AG28/DG28) AM9T511-H, L, M (for AM22/DM22) AR9T557-H, L, M (for DR30, LED)
Base unit for transformer separate mounting	AR9T003 (for AR22/DR22, AR30/DR30, AG28/DG28)

Conventional



New



■ Time of modification: July 2007

Command Switches : AR22 and DR22, AM22 and DM22, AR30 and DR30, AG28 and DG28 series

Change of size and place of UL mark on the nameplate

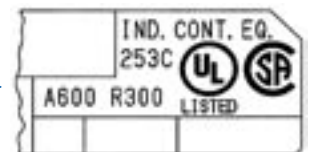
This will be due to UL mark design change.

Name	Type
Illuminated pushbutton switch	AR22, DR22 series
Pushbutton switch	AR30, DR30 series
Emergency stop pushbutton switch	AM22, DM22 series
Emergency stop illuminated pushbutton switch	AG28, DG28 series
Illuminated selector switch	
Selector switch	
Pilot light	

Conventional



New

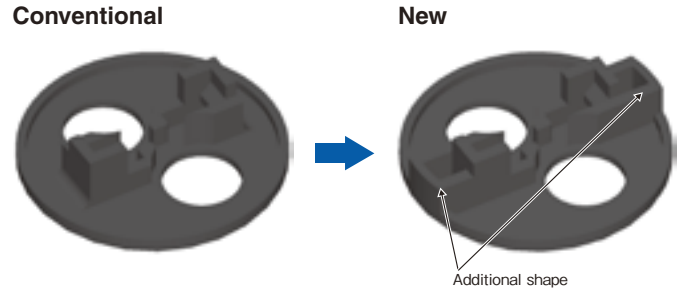


■ Time of modification: November 2007

Pilot lights: DR22, DR30 and DM22 series

A slight change in shape will be added to the terminal cover (for live part) due to change in molding die structure.

Name	Type
Pilot light	DR22 series
DR22 series	(without transformer)
DR30 series	DR30 series
DM22 series	(without transformer)
	DM22 series
	(without transformer)
	DR9Y320
	(Terminal cover for pilot light)

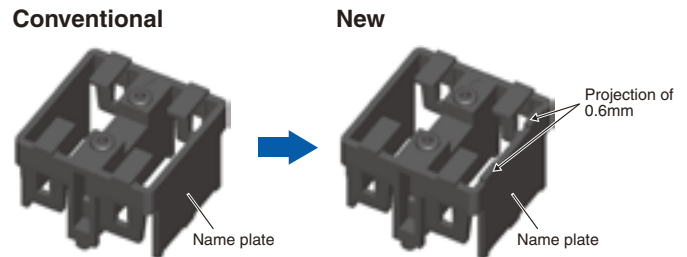


■ Time of modification: December 2007

Command Switches: AH16P, AH16P-2 and AH22P series

Addition of projection on contact holder (contact point)

Name	Type
Command switch for PC-board	AH16P-L11
AH16P series	AH16P-L22
AH16P-2 series	AH16P-11
AH22P series	AH16P-22
	AH16P-Z1



■ Time of modification: October 2007

LED lamps for Command Switches : APX510 and APX508

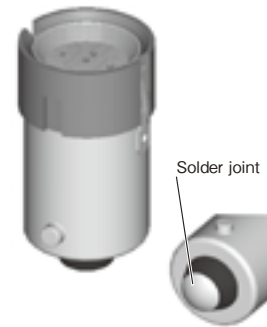
Change from solder joint to riveted up

Addition of Company Logo indication

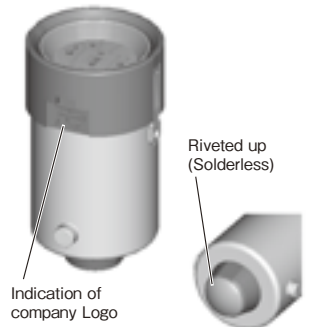
Name	Type
AR22, DR22 series	LED lamp
AR30, DR30 series	APX510-□■
AG28, DG28 series	(for all series on the left)
AM22, DM22 series	LED lamp with cap
AH25 series	APX508-□■
AH165-ZT1	(AH25 series only)
(Lock-compliant terminal type)	

□: Lamp voltage ■: Lamp luminous color

Conventional



New



■ Time of modification: July 2007

Pushbutton box: AS480 and AS482 series

Change in the initially required force upon depressing the ON button

Series	Type	Contents of change	Conventional	New
Pushbutton box, AS480, AS482	AS480, AS480-G, AS482-□, AS482-□G * □: Heater element current (A)	Change in the initially required force upon depressing the ON button	Operating force 2N	Operating force 4N

Reason for change

By setting the initially required force higher, it can reduce the variation of load from when the ON button is pressed until the contact is fully supplied, thus, realizing smooth operability.

■ Time of modification: January 2007

Fuji MCCBs and ELCB


Change in the nameplate conforming to New JIS standard

Contents of change

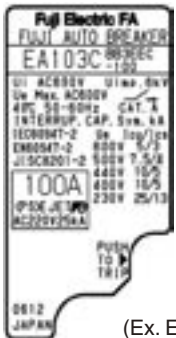

The changes of nameplate described below are largely divided into 10 items from ① to ⑩. The targeted types are divided into two groups according to time of modification: in January 2008 on page 28 and in April 2008 on page 29.

① Expression of New JIS standard

In New JIS conformed MCCB and ELCB, the expression of JIS standard will be changed as shown below.

Conventional				New			
	IEC	Conventional JIS			New JIS		
MCCB	60947-2	-	C8201-2	MCCB	JIS-C8201-2-1	Ann1	Where be complying with both Ann1 and Ann2; Ann1, Ann2
		C8370	-			Ann2	
ELCB	60947-2	-	C8201-2	ELCB	JIS-C8201-2-2	Ann1	
		C8371, 	-			Ann2	

In addition, contents and layout on nameplate are reviewed so that the nameplate can be partly changed.

Conventional		New	
	(Ex. EA103C)		(Ex. EA103C)

② CCC compliant products

Conventional	New
•Layout change of CCC mark	•To the side of breaker type number
•Breakers under 300V AC, 100A	•<PS>E indicated


<PS>E mark: Conforming to Product Safety, Electrical Appliance & Materials Law of Japan

③ For line protection, adj. inst. tripping type


Conventional	New
•IEC60947-2, Uimp, and breaking circuit symbol	•Deleted

④ Instantaneous trip (fixed) type

Review according to IEC60947-2 Ed.4 Annex O will be performed.


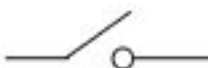

Conventional	New
	•Symbol  added
•T.C. indication change Ex. T.C.1200A	•li (T.C.) 1200A

⑤ Instantaneous trip (adj.) type

Conventional	New
	•Symbol  added
•IEC60947-2, Uimp, and breaking circuit symbol	•Deleted

⑥ Non-automatic switch

Review according to the New JIS will be performed.

Conventional	New
	•  symbol added
•Breaking circuit symbol 	• α -TWIN series 30 to 100AF (E series) 
	• α -TWIN series 100AF (S series) to 800AF: added
•Voltage indication: 550V AC	•500V AC

⑦ Reviewing three-phase power supply indication (ELCB only)

Conventional	New
•While indicating the above Ann1, non-three-phase power supply model	•IEC 60947-2 Ed2 indicated
•Three-phase power supply model (CE, UL model)	•“Ed.3” on the aux-nameplate deleted

⑧ Voltage indication where only Ann2 is indicated

Targeted model : Adj. trip type, instantaneous trip adj. type, neutral-phase loss protection type, MCCB with earth leakage alarm, MCCB with ZCT, high-performance (H series), models except for α -TWIN series, etc.

	Conventional	New	
MCCB	550V AC	500V AC	
	460V AC	440V AC, 415V AC (400V AC) (380V AC)*	
	220V AC	230V AC (220V AC)*	
	250V DC	250V DC	
ELCB	Standard type	415V AC	440V AC, 415V AC (400V AC)*
		200V AC	230V AC
		100V AC	100V AC
	Time-delay type	415V AC	440V AC
		200V AC	200V AC

* The voltage in () may not be indicated.

Targeted model: Compact Twin, small ELCB, distribution panel breaker, etc.

Conventional	New
110/220V AC	100/200V AC
100V AC	▶ 100V AC
200V AC	▶ 200V AC
220V AC	

- Rate breaking capacity will be replaced from Icn to Icu. No Ics will not be indicated.
- IEC60947-2, CE Marking, Uimp, breaking circuit symbol will not be indicated.
- Conventional JIS expression will be shown on the catalog.

⑨ Nameplate of ELCB 100AF(S series) to 800AF

Conventional	New
Monolingual	▶ Bilingual (Japanese - English)

⑩ <PS>E mark

Conventional	New
-	▶ <PS> E mark 100AF (S series) (CE model) added

⑪ Others

Specially designed models corresponds to change of the standard models.

Targeted models

Time of modification: January 2008

For ① to ⑪, see page 26 and 27.

	MCCB				ELCB			①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	
For line protection CE (including CCC)	EA32AC	EA33AC	SA32C	SA33C	EG32AC	EG33AC	SG33C	Ann1, Ann2	○ (Only CCC)	-	-	-	-	○ ELCB Ed3 deleted	-	-	-	○	
	EA52AC	EA53AC	SA52C	SA53C	EG52AC	EG53AC	SG53C												
	EA52C	EA53C	SA52RC	SA53RC	EG52AC	EG53AC	SG53RC												
	EA62C	EA63C	SA62C	SA63C	EG62C	EG63C	SG63C												
	EA102C	EA103C	SA62RC	SA63RC	EG102C	EG103C	SG63RC												
			SA102C	SA103C			SG103C	Ann1, Ann2	○ (Only CCC)	-	-	-	-	○	-	○ ELCB	○	○	
	EA202C	EA203C	SA202C	SA203C	EG203C	SG203C	SG203RC							○ ELCB however CE: ED3 deleted CCC: Ed2					
	EA402C	EA403C	SA202RC	SA203RC	EG403C	SG203RC	SG403C (SG403RC)	Ann1, Ann2	○ (Only CCC)	-	-	-	-		-	○ ELCB	-	○	
		EA603C	SA402RC	SA403RC			↑ Only CCC												
		EA803C	SA603RC	SA803RC															
For motor protection CE (including CCC)	EA33ACM	EA53CM	SA32CM	SA33CM	EG33CM	EG53CM	SG33CM	Ann1, Ann2	○ (Only CCC)	-	-	-	-	○ ELCB however CE: ED3 deleted CCC: Ed2	-	-	-	○	
	EA63CM	EA103CM	SA53CM	SA53RCM	EG63CM	EG103CM	SG53CM												SG63CM
			SA53RCM	SA63CM	EG103CM		SG53RCM												SG63RCM
			SA103CM	SA103RCM			SG103CM	Ann1, Ann2	○ (Only CCC)	-	-	-	-		-	○ ELCB	○	○	
	EA203CM		SA203CM	SA203RCM	EG203CM	SG203CM	SG203RCM	Ann1, Ann2	○ (Only CCC)	-	-	-	-		-	○ ELCB	-	○	
UL489	EA102CUL	EA103CUL	SA52RCUL	SA53RCUL	EG102CUL	EG103CUL	SG53RCUL	Ann1, Ann2	-	-	-	-	-	○ ELCB Ed3 deleted	-	-	-	○	
			SA102RCUL	SA103RCUL			SG103CUL												SG203CUL
For line protection (JIS)					EG603C	EG803C		Ann1, Ann2	-	-	-	-	-	○ ELB Ed2	-	○ ELCB	-	○	
			H52C	H53C				Ann2	-	-	-	-	-		○	○ ELCB	-	○	
			H102C	H103C			HG403C												
			H202C	H203C			HG603C												
			H402C	H403C			HG803C												
			H603C																
			H803C																

● Time of modification: April 2008

For ① to ⑪, see page 26 and 27.

	MCCB	ELCB	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
For line protection	LA53B H103R H203R H403R H603R H803R	HG53B HG103B HG203B	Ann2	-	-	-	-	-	-	○	○ ELCB	-	○
For motor protection	L53BM LA53BM		Ann2	-	-	-	-	-	-	○	-	-	○
4P	SA54B SA404HA EA104B SA604H SA104R SA804H SA204R	SGa104A SG104H SGa204A SG204H SGa404A	Ann2	-	-	-	-	-	-	○	-	-	○
Solid-state	SA203E SA204E SA403E SA404E H403E H404E SA603E SA604E H603E H604E SA803E SA804E H803E H804E SA1003E SA1004E SA1203E SA1204E SA1603E SA1604E SA2003E SA2004E SA2503E SA2504E		Ann1, Ann2	-	- Only Braking circuit symbol deleted	-	-	-	-	○	-	-	○
For DC circuit only	SD1003B		Ann2	-	○	-	-	-	-	○	-	-	○
	SD1203B SD2503B SD1603B SD3203B SD2003B SD4003B		Ann2	-	-	-	○	-	-	○	-	-	○
For large capacity	SA3203B SA4003B		Ann2	-	-	-	-	-	-	○	-	-	○
Solid-state CCC-conformed	SA1003E SA1203E SA1253E SA1603E		Ann1, Ann2	-	-	-	-	-	-	-	-	-	○

Discontinued Products

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

Highly frequent switching magnetic contactors (starters): SC (SW)-□NJ

Name	Discontinued	Substitute						Remarks
		To use for inching (AC4) load	Mounting hole compatibility	Outline dimension enlarged	To use for general (AC3) load	Mounting hole compatibility	Outline dimension enlarged	
Highly frequent switching magnetic contactors (starters), SC (SW)-□NJ	SC(SW)-1NJ	SC(SW)-N1	○		SC(SW)-N1	○		Where not compatible in mounting, adapter plate is not provided.
	SC(SW)-2NJ	SC(SW)-N2	○		SC(SW)-N2	○		
	SC(SW)-2SNJ	SC(SW)-N2S	○		SC(SW)-N2S	○		
	SC(SW)-3NJ	SC(SW)-N3	○		SC(SW)-N3	○		
	SC(SW)-4NJ	SC(SW)-N5	○		SC(SW)-N6	-	○	
	SC(SW)-5NJ	SC(SW)-N6	○		SC(SW)-N7	-	○	
	SC(SW)-6NJ	SC(SW)-N7	○	○	SC(SW)-N8	-	○	
	SC(SW)-7NJ	SC(SW)-N8	-	○	SC(SW)-N10	-	○	
	SC(SW)-8NJ	SC(SW)-N10	○		SC(SW)-N11	-	○	
	SC(SW)-10NJ	SC(SW)-N11	-	○	SC(SW)-N12	-	○	

○: Applicable -: Not applicable

■ **Time of discontinuation:** March 2008

Super timer : MS7S1

Name	Discontinued	Substitute	Remarks
ON-delay operation with instantaneous contact	MS7S1	ST7P-2 + Socket	<ul style="list-style-type: none"> For the lots manufactured in July 2007, UL/CSA mark have been deleted. The substitute is incompatible with outline and mounting dimensions. For details of substitute, please contact Fuji.

■ **Time of discontinuation:** February 2008

Socket for timer: TP28S, ATX2PS and ATX2PSB

Name	Discontinued	Substitute	Remarks
Terminal screw surface wiring, 8-pin	TP28S	TP28X	
Terminal screw surface wiring, 8-pin	ATX2PS	TP28X	
Terminal screw rear wiring, 8-pin	ATX2PSB	TP48SB	

■ **Time of discontinuation:** June 2007

Low-noise, high-performance compact-type : inverter FVR-E11S series

Product name		Discontinued	Substitute
Inverter FVR-E11S series	Three-phase 200V series	FVR□□□E11S-2**	FRENIC-Multi series
	Single-phase 200V series	FVR□□□E11S-7**	FRN□□□E1S-2*
	Three-phase 400V series	FVR□□□E11S-4**	FRN□□□E1S-7*
Dedicated option	Extension cable for remote control	CBR-5S	CB-5S
	Adapter for keypad remote control	CBAD-E11S	—
	Copy unit	CP-E11S	—
	PROFIBUS-DP card	OPC-E11S-PDP	OPC-E1-PDP
	DeviceNet card	OPC-E11S-DEV	OPC-E1-DEV
	Modbus Plus card	OPC-E11S-MBP	—
	CAN Open card	OPC-E11S-COP	—
	Interbus-S card	OPC-E11S-IBS	—

■ **Time of discontinuation:** November 2007

Safety Considerations

- For safe operation, read the instruction manual or user manual that comes with the product carefully or consult the Fuji sales representative from whom you purchased the product, before using 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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