MITSUBISHI ELECTRIC
Changes for the Better

Energy Saving Supporting Devices
SALES & SERVICES

NO. YAMA476

TYPEs : Energy Measuring Unit

Specification change for Energy Measuring Unit

We would like to inform that EcoMonitorLight will have specification change and be converted to following new models.

1. Type

Energy Measuring Unit		Old model	New model
EcoMonitorLight	Standard model	EMU4-BD1-MB	EMU4-BD1A-MB
	High performance model	EMU4-HD1-MB	EMU4-HD1A-MB
	General current transformer model	EMU4-FD1-MB	EMU4-FD1-MB, no change

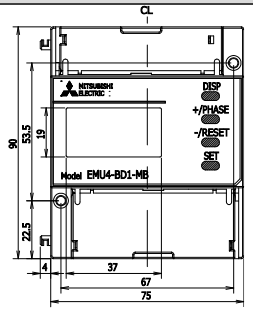
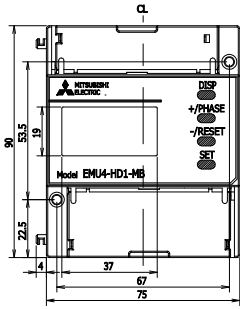
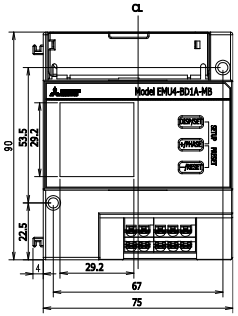
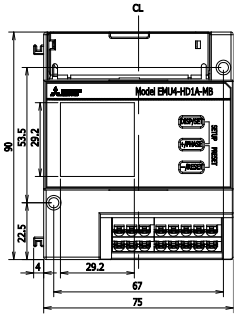
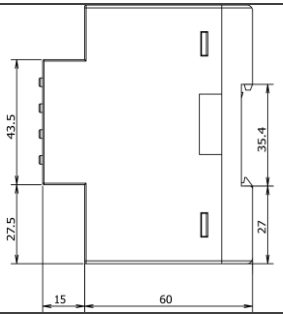
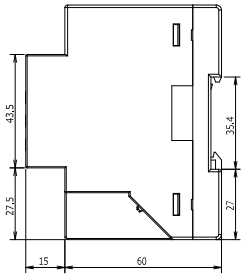
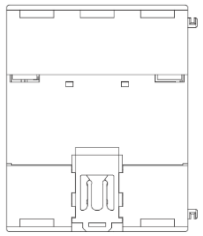
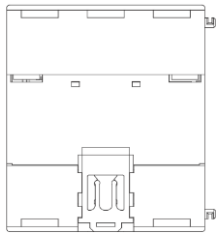
2. Time of change

- EMU4-BD1-MB and EMU4-HD1-MB
  Order stop: End of February 2024
  Discontinuation: End of March 2024
- EMU4-BD1A-MB and EMU4-HD1A-MB
  Order and production start: 1st April 2024
  Please bear in mind that exact start of production may change due to old model stock condition.

3. Content of change

Please refer to the appendix.

Appendix : Comparison table

		Old model		New model	
		Standard model EMU4-BD1-MB	High performance model EMU4-HD1-MB	Standard model EMU4-BD1A-MB	High performance model EMU4-HD1A-MB
External view and dimension	Front				
		※Upper terminal block shape: screw terminal block ※Bottom terminal block shape: screw terminal block		※Upper terminal block shape: screw terminal block ※Bottom terminal block shape: crimp-type terminal block (change in terminal block shape)	
	Side		Same as on the left		Same as on the left
	Rear		Same as on the left		Same as on the left

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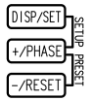
Appendix : Comparison table

			Old model		New model	
			Standard model EMU4-BD1-MB	High performance model EMU4-HD1-MB	Standard model EMU4-BD1A-MB	High performance model EMU4-HD1A-MB
Instrument rating	Phase wire system		single-phase 2-wire, single-phase 3-wire, three-phase 3-wire	single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, three-phase 4-wire	No change	No change
	Voltage circuit	Single-phase 2-wire, Three-phase 3-wire	AC 110V, 220V	AC 110V, 220V, 440V	No change	No change
		Single-phase 3-wire	AC 110V(V_{1-N}, V_{3-N}), AC 220V(V_{3-1})	Same as on the left	No change	AC 110V(V_{1-N}, V_{3-N}), AC220V(V_{3-1}) AC 220V(V_{1-N}, V_{3-N}), AC440V(V_{3-1})
		Three-phase 4-wire	-	Min : AC 63.5V/110V Max : AC 277V/480V	No change	No change
	Current circuit	Direct	AC 50A, 100A, 250A, 400A, 600A	Same as on the left	No change	No change
		Via CT	5A～6000A	Same as on the left	5A～30000A	Same as on the left
	Frequency		50Hz/60Hz	Same as on the left	No change	No change
Auxiliary power rating			AC 100V－240V(+10%, －15%)	Same as on the left	No change	No change
No. of measurement point	Single-phase 2-wire, Three-phase 3-wire		1	1	2※1	Same as on the left※1
	Single-phase 3-wire				1	Same as on the left
	Three-phase 4-wir					
	Single-phase 2-wire, Three-phase 3-wire		-		-	1
Consumption VA	Voltage circuit		AC 110V: each phase 0.1VA AC 220V: each phase 0.2VA	AC 110V: each phase 0.1VA AC 220V: each phase 0.2VA AC 440V: each phase 0.4VA	No change	No change
	Current circuit		each phase 0.1VA (primary side of current sensor)	Same as on the left	No change	No change
	Auxiliary power circuit		AC 110V: 9VA AC 220V: 10VA	Same as on the left	No change	No change
Button			 ・No. of buttons: 4 ・How to use －Screen forwarding: [DISP] －Transition to setting mode [-/RESET]+[SET] hold down	Same as on the left	 Integrating [DISP] and [SET] button ・No. of buttons: 3 ・How to use －Screen forwarding: [DISP/SET] －Transition to setting mode [DISP/SET]+[+/PHASE] hold down	Same as on the left

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※1 : It measures single-phase 2-wire of “1-N” and “3-N” brancehd from single-phase 3-wire but is not possilbe to measure the same phase of “1-N” and “1-N”, “3-N” and “3-N”.

Appendix : Comparison table

		Old model		New model	
		Standard model EMU4-BD1-MB	High performance model EMU4-HD1-MB	Standard model EMU4-BD1A-MB	High performance model EMU4-HD1A-MB
LCD screen	Dimension	19(H)×37(W) [mm]	Same as on the left	30(H)×30(W) [mm]	Same as on the left
	Back light	-	Same as on the left	with display	Same as on the left
Measured items (display on LCD, collecting via communication, data logging)		electric energy (consumption, regenerative) reactive electric energy current, current demand, voltage, power, power demand, reactive power, power factor, frequency	electric energy (consumption, regenerative) periodic electric energy, reactive electric energy current, current demand, voltage, power, power demand, reactive power, apparent power, power factor, frequency, harmonic current, harmonic voltage, pulse count	electric energy (consumption, regenerative) reactive electric energy current, current demand, voltage, power, power demand, reactive power, power factor, frequency current unbalance rate, voltage unbalance rate operating time※1	electric energy (consumption, regenerative) periodic electric energy reactive electric energy current, current demand, voltage, power, power demand, reactive power, apparent power, power factor, frequency, harmonic current, harmonic voltage,、 current unbalance rate, voltage unbalance rate pulse count operating time※1, electric energy conversion value※2, band monitoring lost rate, number of alarm exceedance
(display on LCD)		-	CO2 conversion value※2	-	-
(display on LCD and collecting via communication)		operating time※1	Same as on the left	-	-
(collecting via communication)		detail electric energy (consumption, regenerative), detail reactive electric energy	Same as on the left	-	-
(collecting via communication and data logging)		-	-	detail electric energy (consumption, regenerative), detail reactive electric energy	detail electric energy (consumption, regenerative), detail reactive electric energy, pulse count
Main unit tolerance		current, voltage, power, reactive power, frequency: ±1.0% (relative to rated input)	Same as on the left	No change	No change
			apparent power: ±1.0% (relative to rated input)		
		power factor: ±3.0%	Same as on the left		
		electric energy: ±2.0% (relative to 5~100%, power factor=1)			
		reactive electric energy: ±2.5% (relative to 10~100%, power factor=0)			
			harmonic current, harmonic voltage: ±2.5%		
Data update cycle		250ms	Same as on the left	No change	No change

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※1 : Measurement units can be selected. Old model: only hour. New model: sec, min, hour can be selected.
※2 : More conversion units available. Conversion to CO2 is possibe in the same way as before. Old model: only CO2 (kg, t). New model: CO2 (kg, t) and ¥, $, m3, etc.

Appendix : Comparison table

			Old model		New model	
			Standard model EMU4-BD1-MB	High performance model EMU4-HD1-MB	Standard model EMU4-BD1A-MB	High performance model EMU4-HD1A-MB
External input	Input signal format		-	No voltage a contact or open collector	No change	No change
	Function		-	pulse input contact monitoring measuring operating time (when contact is ON) measuring periodic electric energy (when contact is ON)	No change	pulse input contact monitoring measuring operating time (when contact is ON) measuring periodic electric energy (when contact is ON) band monitoring※1
	Rating		-	DC5V, 7mA	No change	No change
	Input condition	Pulse	-	pulse ON time: more than 30ms pulse OFF time: more than 30ms chattering time: less than 3ms	No change	No change
		Contact	-	pulse ON time: more than 30ms pulse OFF time: more than 30ms chattering time: less than 3ms	No change	No change
External output	Output item		-	electric energy (consumption)	No change	No change
	Function		-	pulse output alarm output	No change	pulse output alarm output open/close via communication
	Output signal format		-	no voltage a contact	No change	No change
	Rating		-	DC35V, 75mA AC24V, 75mA(power factor=1)	No change	No change
	Pulse condition	Pulse unit	-	0.001/0.01/0.1/1/10/100/1000/10000 [kWh/pulse]※2	No change	0.001/0.01/0.1/1/10/100/1000/10000/100000 [kWh/pulse]※2
		Pulse width	-	0.1～0.15sec	No change	No change
Power interruption backup			stored in nonvolatile memory (setting, integrated value)	Same as on the left	No change	No change

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※1 : The function that monitors the current waveform of equipment operaing repeatedly at regular intervals. In order to recognize the cycle, input the contacts from the equipment for each cycle.

※2 : The pulse unit that can be set varies depending on the full load power.

$$Full\ load\ [kW] = \frac{\alpha \times primary\ voltage \times primary\ current}{1000}$$

α : 1 (single-phase 2-wire)
2 (single-phase 3-wire)
$\sqrt{3}$ (three-phase 3-wire)
3 (three-phase 4-wire)

Full load	Setting range of pulse unit [kWh/pulse]			
～12kW	1	0.1	0.01	0.001
12kW～ 120kW	10	1	0.1	0.01
120kW～ 1200kW	100	10	1	0.1
1200kW～ 12000kW	1000	100	10	1
12000kW～ 120000kW	10000	1000	100	10
120000kW～	100000	10000	1000	100

Appendix : Comparison table						
			Old model		New model	
			Standard model EMU4-BD1-MB	High performance model EMU4-HD1-MB	Standard model EMU4-BD1A-MB	High performance model EMU4-HD1A-MB
Standard compliance		CE	EMC : EN-61326-1 LVD : EN-61010-1	Same as on the left	No change	No change
		UL	UL61010-1	Same as on the left	No change	No change
		KC	✓	Same as on the left	No change	No change
		Chinese RoHS	✓	Same as on the left	No change	No change
		UKCA	✓	Same as on the left	No change	No change
		WEEE directive	✓	Same as on the left	No change	No change
Operating environment	Temperature range		−5℃～+55℃ (daily average temperature of 35℃ or less)	Same as on the left	No change	No change
	Humidity range		30%～85%RH (no condensation)	Same as on the left	No change	No change
	Altitude		2000m or less	Same as on the left	No change	No change
	Storage temperature range		−10℃～+60℃	Same as on the left	No change	No change
Commercial frequency withstand voltage			AC2000V for 1 min. All terminals (excluding communication and FG), between external boxes All current/voltage inputs, between auxiliary power All current/voltage inputs and auxiliary power, between external input/output communication terminal	Same as on the left	No change	No change
Insulation resistance			Same locations described above: 10MΩ or more (DC 500V)	Same as on the left	No change	No change
Compatible wiring	Auxiliary power Voltage input	Single wire	AWG 24-16 (φ0.50-φ1.20[mm])	AWG 26-14 (φ0.50-φ1.60[mm])	AWG 26-14 (φ0.41～φ1.61[mm])	No change
		Stranded wire	AWG 24-16 (0.20-1.25[mm²])	AWG 26-14 (0.12-2.00[mm²])	AWG 26-14 (0.13～2.00[mm²])	No change
	Current input External input/output	Single wire	AWG 22-16 (φ0.50～φ1.20[mm])	Same as on the left	No change	No change
		Stranded wire	AWG 22-16 (0.30～1.25[mm²])	Same as on the left	No change	No change
Weight			0.2kg	0.3kg	No change	No change