



DISPLAY UNIT for (Energy Measuring Unit)
Model: EMU4-D65
Instruction manual (Simplified edition)

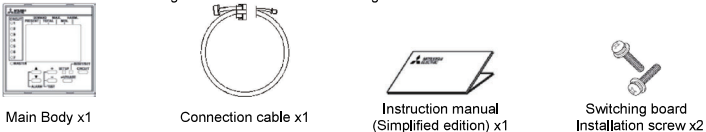
- Be sure to read this instruction manual and this equipment detail manual before use.
- After reading on, you keep it in a safe place where you can be seen at any time, please read when needed.
- Please send this instruction manual to the end user.

1. Feature

- The monitoring of measured data at Mitsubishi Energy Measuring Unit is possible.
- Easily viewable by backlight and dot matrix LCD display.
- Multiple circuit monitoring is possible using only one unit.
- It is possible to switch the display language (Japanese / English) in the setting.

2. Confirmation of contents of package

Each unit comes with the following accessories. Check for missing ones.



3. Precautions concerning working environment and conditions

3.1 Working environment and working conditions

This equipment, based on the assumption that it is used in the pollution degree 2 (Note 1) environment. If it is used in other degree of contamination, please do the protection on the device side to be incorporated. Measurement categories for measuring circuit for this equipment is CAT III (Note 1). The overvoltage category of the auxiliary power supply circuit (MA, MB) is CAT III (Note 1). Do not use the unit in any of the following places. Doing so may cause malfunction or reduction in service life.

- Place where the ambient temperature exceeds the working temperature range (-5°C to +55°C)
- Place where the humidity exceeds the humidity range (30% to 85%RH) or condensation occurs
- Place with much dust, corrosive gas, salt or oily smoke
- Place where the unit may be exposed to rain or drops of water
- Place where metallic particles or inductive substances are dispersed
- Place where the daily mean temperature exceeds +35°C
- Place with much vibration or impact
- Place exposed to direct sunlight
- Place with strong electromagnetic field or much foreign noise
- Place where the altitude is over 2000m

This equipment is the open type equipment. (Electric shock protection of the instrument was designed to perform housed in another apparatus equipment) Please use are housed in a control panel etc. Always, For notes on when to adapt the equipment that you have configured in this equipment to the EMC Directive, please refer to the "user's manual (Details)".

Note 1: For a definition of pollution degree and the measurement categories, please refer to the EN61010-1/2010.

3.2 Preparation before using

- An installation place should keep the working environment and working conditions.
- The protection sheet for the crack prevention is put on the display part. Before use this product, remove the protection sheet. It is not unusual, although a LCD display part may light up by generating of static electricity in case it removes. After a while, it disappears by natural electric discharge.
- Following setup is need before using EMU4-D65.
- The one always in one system is the Master set. Other display unit of, please to Slave configuration. (The wrong setting and it does not work)



3.3 Installation and connection

- Before installing and connecting the unit, read the instruction manual without fail. For safety, the unit shall be installed and connected by experts in electrical work.
- When threading and wiring, take utmost care that cuttings and wire pieces do not enter the unit.
- Connect the wires carefully checking the wiring diagram. Improper wiring can cause unit failure, fire and electric shock.
- Perform wiring work in a dead state. Do not wire the unit in a live state. Doing so can cause electric shock, ground fault, unit failure and fire.

3.4 Precautions for Use

- This unit cannot be used for deal and proof of electric energy measurement stipulated in Measurement Act.
- EMU4-PX4 and EMU4-AX4 is supported with later version 2.00. For information about how to determine the version, please refer to "user's manual (Details)".

Caution

- Use this unit within the ratings specified in this manual. If it is used outside the ratings, it may cause not only malfunction or failure but also fire burnout.
- Do not disassemble or modify this unit. It may cause failure, malfunction, injury or fire.
- Do not touch the live part such as connection terminal. It may cause electric shock, electric burn injury or burnout of the device. If any exposed conductor is found, stop the operation immediately, and take an appropriate action such as isolation protection.

3.5 Maintenance Precautions

- Use a soft dry cloth to clean off dirt of the unit surface. Do not let a chemical cloth remain on the surface for an extended period of time nor wipe the surface with thinner or benzene.
- Check for the following items to use this unit properly for long time.

- (1) Daily maintenance
 - (a) No damage on this unit
 - (b) No abnormality with LED
 - (c) No abnormal noise, smell or heat
- (2) Periodical maintenance (Once every 6 months to 1 year)
 - No looseness with installation and wire connection

Caution

- Do periodical maintenance under the electric outage condition. Failure to do so may cause electric shock, failure of the unit or a fire. Tighten the terminal regularly to prevent a fire. In case a display unit is attached to a sensor unit, get off the display unit during maintaining or tightening terminals.

3.6 Storage Precautions

- To store this unit, turn off the power and remove wires, and put it in a plastic bag.
- For long-time storage, avoid the following places.
- Failure to follow the instruction may cause a failure and reduced life of the unit.
- Places the Ambient temperature exceeds the range -10°C to +60°C.
 - Places the Relative humidity exceeds the range 30% to 85% or places with dewfall.
 - Dust, corrosive gas, saline and oil smoke exist.
 - Places the average daily temperature exceeds +35°C.
 - Vibration and impact exceed the specifications.
 - Places exposed to rain, water drop or direct sunlight.
 - Places metal fragments or conductive substance are flying.

3.7 Disposal Precautions

When disposing of this unit, treat it as industrial waste.

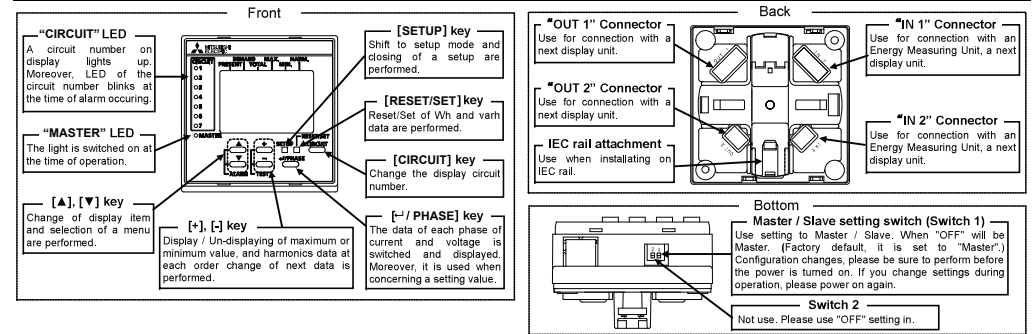
3.8 About packaging materials and this manual

For reduction of environment load, packaging materials are produced with cardboard.

If you are considering using this unit for special purpose such as nuclear power plants, aerospace, medical care or passenger vehicles please refer to our salesrepresentative.

This product is the optional dedicated product only for Mitsubishi Energy Measuring Unit (EcoMonitorPlus, EcoMonitorPro) and Mitsubishi Measuring Unit for MDU Breakers (MDU2). It can not be used for other purpose.

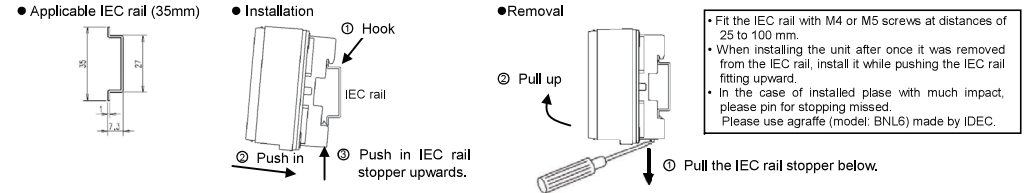
4. Part Names and Functions



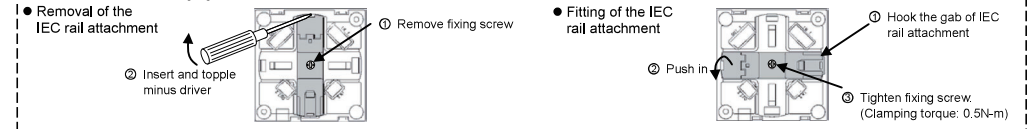
5. Installation

5.1 IEC rail installation

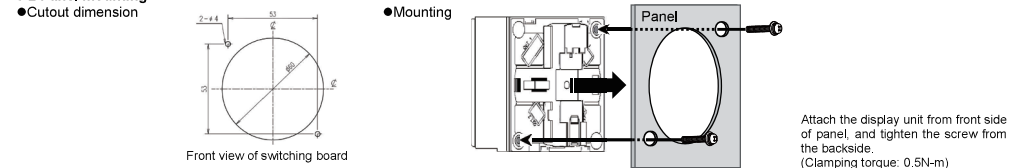
Fix the display unit to IEC rail using IEC rail attachment on the back. Changing the direction of IEC rail attachment, it can attach in both direction of vertical and horizontal.



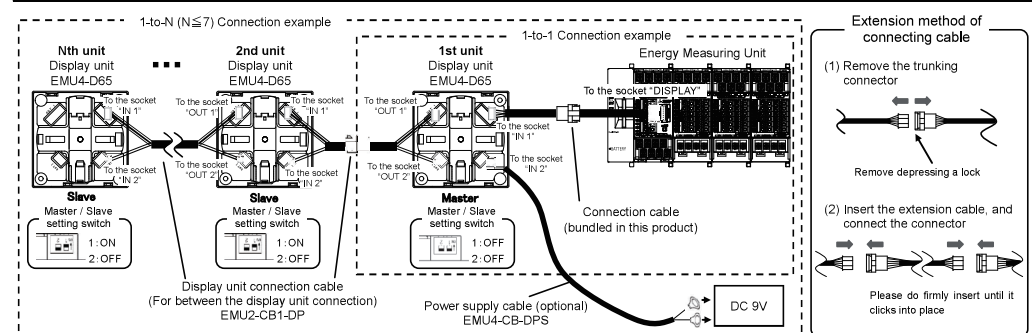
A method for changing the direction of IEC rail



5.2 Panel mounting



6. Connection method



* If the connection is two or more, you must have a power supply from commercial DC power supply (Model: PBA15F-9-N1, made in COSEL CO., LTD.). Also, the power supply cable (optional: EMU4-CB-DPS) on its connection is required.

* Extension cable (EMU2-CB-T * M), the sum of the length is less than 10m.

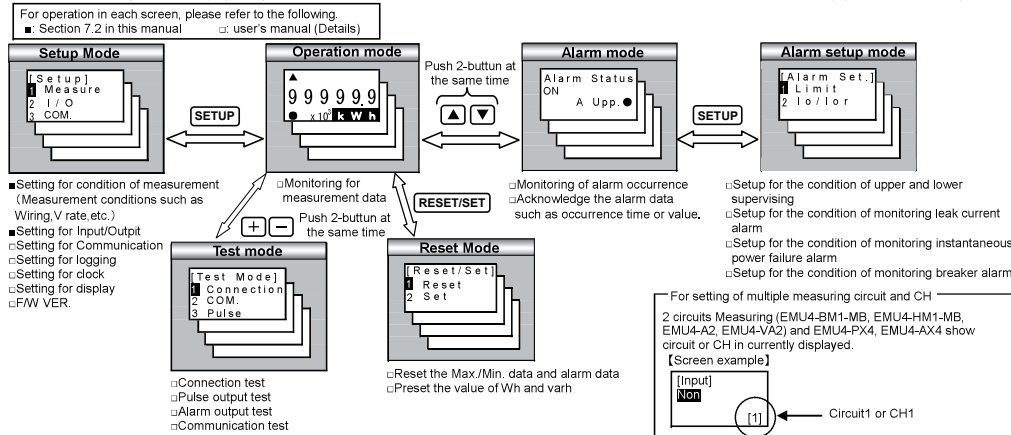
The one always in one system is the Master set. Other display unit of, please to Slave configuration. (The wrong setting and it does not work)

7. Operations of Instrument (in the case of the model to connect the EMU4-**)

7.1 Operation mode

There are following modes of operation. This device is used to switch the operation mode depending on the application. Such as the following. View of measurement value, Setting for rating, display, clock, Setup for the condition of monitoring, Reset the Max./Min, Data and alarm data, Preset the value of Wh and varh. Immediately after the power is turned on, it will be the display of the operation mode.

* When connecting to EMU4-CNT-MB and using it, the fixed value is displayed on the operation screen, and EMU4-HM1-MB setting menu is displayed on the setting screen. Therefore, it is not possible to display the operation status of the control unit or set the control unit. Check the detailed instruction manual for this equipment for details of operation.



7.2 Setup about rating and Input/Output. (Setup mode)

7.2.1 Measuring setup ... Setup the measuring condition of the energy measurement unit that is connected. EMU4-PX4 is not set.

*EMU4-CNT-MB cannot be set.

Screen	Operation	Note
1 Transition to the setup mode		
1-1 [Setup] 1 Measure 2 I/O 3 COM.	(1) Push the [SETUP] key in operation mode (2) 1-1 will be displayed. (1) Confirm that the cursor focuses the "1 Measure", and push the [←/PHASE] key. (2) 2-1 will be displayed	
2 Setup the phase wire system (All models except for EMU4-PX4 and EMU4-AX4)		
2-1 [Measure] 1 Wiring 2 V rate 3 A rate	(1) In 2-1, push the [▲] or [▼] key, and move the cursor to the "1 Wiring" (2) Push the [←/PHASE] key. (3) 2-2 will be displayed.	
2-2 [Wiring] 1P2W 3P3W	(1) Push the [+] or [-] key, and change the set value. (2) Push the [←/PHASE] key, and confirm the setting value. (3) 2-1 will be displayed.	[Wiring]: 1P2W⇒1P3W⇒3P3W⇒3P4W⇒ *If the basic unit is EMU4-BM1-MB, [Wiring] will be 1P2W, 1P3W, 3P3W only. *The setting value is set in same voltage system after confirmed setting value.
2-3 [2 circuits MEA.] Off	(1) Push the [+] or [-] key, and change the set value. (2) Push the [←/PHASE] key, and confirm the setting value. (3) 2-1 will be displayed.	[2 circuits Measuring existence]: No⇒Yes⇒ *The setting value is set in same voltage system after confirmed setting value.
3 Setup the primary voltage (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)		
3-1 [Measure] 1 Wiring 2 V rate 3 A rate	(1) In 3-1, push the [▲] or [▼] key, and move the cursor to the "2 V rate". (2) Push the [←/PHASE] key. (3) 3-2 will be displayed.	*The setting value is set in same voltage system after confirmed setting value. [VT] No⇒Yes⇒ *1P3W is "No" fixed. 1P2W, 3P3W ----- When [VT]: "No" setting [Direct V]: 110V⇒220V⇒440V⇒ *If the basic unit is EMU4-BM1-MB, [Direct V] will be 110V, 220V only. When [VT]: "Yes" setting [Primary V]: 440V⇒660V⇒1100V⇒1200V⇒2200V⇒3300V⇒6600V⇒11000V⇒ 13200V⇒13800V⇒15000V⇒16500V⇒22000V⇒24000V⇒ 33000V⇒66000V⇒77000V⇒110000V⇒SP⇒
3-2 [VT] No	(1) Push the [+] or [-] key, and select the VT use or non-use. (2) Push the [←/PHASE] key. (3) Transition to the following screen by the selection of VT use or non-use [No] setting → To 3-3 [Yes] setting → To 3-4 (If Wiring is 3P4W, transition to 3-5)	When [Primary V] setting and SP setting [SP.PRI.V]: 1 to 11000V (440V) (1 to 99V Can be set in the 1V step.) (100 to 110000V Can be set in the 100V step.) [SP.2nd.V]: 1 to 220V (110V) (Can be set in the 1V step.)
3-3 [Direct V] 220V	(1) Push the [▲] or [▼] key, and change the set value. (2) Push the [←/PHASE] key, and confirm the setting value. (3) 3-1 will be displayed.	1P3W ----- *No fixed [Direct V]: 110V⇒220V⇒ *If the basic unit is EMU4-BM1-MB, [Direct V] will be 110V 3P4W (1 to 99V Can be set in the 1V step.) When [VT]: "Yes" setting [Direct V]: 63.5V ⇒ 100V ⇒ 105V ⇒ 110V ⇒ 115V ⇒ 120V ⇒ 127V ⇒ 200V ⇒ 220V ⇒ 230V ⇒ 240V ⇒ 242V ⇒ 250V ⇒ 254V ⇒ 265V ⇒ 277V ⇒
3-4 [Primary V] 440V	(1) Push the [▲] or [▼] key, and change the set value. (2) Push the [←/PHASE] key, and confirm the setting value. (3) Transition to the following screen by the setting value of the primary voltage [SP] setting → To 3-5 Non-[SP] setting → To 3-1	When [VT]: "Yes" setting [SP.PRI.V]: 1 to 63500V (440V) (1 to 99V Can be set in the 1V step.) (100 to 63500V Can be set in the 100V step.) [SP.2nd.V]: 1 to 220V (64V) (Can be set in the 1V step.)
3-5 [SP.PRI.V] 00440V	(1) Push the [▲] or [▼] key, and change the set value. (2) Push the [←/PHASE] key, and confirm the setting value. (3) 3-6 will be displayed.	
3-6 [SP.2nd.V] 220V	(1) Push the [▲] or [▼] key, and change the set value. (2) Push the [←/PHASE] key, and confirm the setting value. (3) 3-1 will be displayed.	

Screen	Operation	Note
4 Setup the primary current (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)		
4-1 [Measure] 1 Wiring 2 V rate 3 A rate	(1) In 4-1, push the [▲] or [▼] key, and move the cursor to the "3 A rate". (2) Push the [←/PHASE] key. (3) 4-2 will be displayed.	[Sensor]: Direct⇒5A⇒ When "Direct" setting [PRI.A]: 50A⇒100A⇒250A⇒400A⇒600A⇒ When "5A" setting [PRI.A]: 5A⇒6A⇒7.5A⇒8A⇒10A⇒12A⇒15A⇒20A⇒25A⇒ 30A⇒40A⇒50A⇒60A⇒80A⇒100A⇒120A⇒ 150A⇒200A⇒250A⇒300A⇒400A⇒500A⇒600A⇒ 750A⇒800A⇒1000A⇒1200A⇒1250A⇒1500A⇒ 1600A⇒2000A⇒2500A⇒3000A⇒4000A⇒5000A⇒ 6000A⇒7500A⇒8000A⇒10000A⇒12000A⇒ 20000A⇒25000A⇒30000A⇒SP⇒
4-2 [Sensor] Direct [PRI.A] 100A	(1) Push the [▲] or [▼] key, and move the cursor to the "Sensor" side. (2) Push the [+] or [-] key, and select sensor type. (3) Push the [▲] or [▼] key, and move the cursor to the "PRI.A" side. (4) Push the [+] or [-] key, and change the primary current value. (5) Push the [←/PHASE] key, and confirm the setting value. (6) Transition to the following screen by the setting wiring type and primary current value. [SP] setting → To 4-3 Non-[SP] setting → To 4-1	
4-3 [SP.PRI.A] 01000A	(1) Push the [▲] or [▼] key, and change the set value. (2) Push the [←/PHASE] key, and confirm the setting value. (3) 4-1 will be displayed.	[SP.PRI.A] : .5 to 30000A (100A) 10A less than, the upper two digits. 10A or more is possible to set the upper three digits.
5 Setup the display mode (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)		
5-1 [Measure] 1 V rate 2 A rate 3 DISP.Mode	(1) In 5-1, push the [▲] or [▼] key, and move the cursor to the "4 DISP.Mode". (2) Push the [←/PHASE] key. (3) 5-2 will be displayed.	Set the measurement elements to be displayed in the display unit.
5-2 [DISP.Mode] Wh+A+4 Harmonics	(1) Push the [▲] or [▼] key, and select the display mode. (2) Push the [←/PHASE] key. (3) Transition to the following screen by the selection of measurement mode. [Wh+A+4] setting → To 5-3 [Harmonics] setting → To 5-4	[DISP.Mode]: Wh+A+4⇒Harmonics⇒ *In case of the model EMU4-BM1-MB, the "Harmonics" not be displayed. Wh+A+4... In addition to the active energy and current, up to 4 items can be displayed by selection. (The harmonics data is only about total.) Harmonics... It can display about harmonic data at each order.
5-3 [Element] OV DVAR var DVA DPPF Hz CONV.Wh PRD.Wh OP.PTime OPR.Wh OOP.Time REG.Wh varh CPL.S UNB.A UNB.V HA DHV	(1) Push the [▲] or [▼] key, and move the cursor to target element. (In the actual display, it will be scrolling display of each three elements in one screen.) (2) Push the [+] or [-] key, and choose the selected or deselected. (3) When selecting the other measurement item, repeat the operation from (1) to (2). (4) Push the [←/PHASE] key, and determine the setting. (5) Transition to the following screen by the selection of measurement mode. Not check "HA" and "HV" → To 5-1 Check "HA" or "HV" → To 5-4	[Element]: V, W, var, VA, PF, Hz, CONV.Wh, PRD.Wh, OP.Time, REG.Wh, varh, CONV.PLS, UNB.A, UNB.V, HA, HV □ (Deselected), ■ (Selected) *The selectable number of elements is up to 4. So, change the selection at the statethat already 4 items are selected, deselected the items before changing. * Elements can't select in follow table.
5-4 [HA HV] r.m.s.	(1) Push the [▲] or [▼] key, and change the "HA,HV" value. (2) Push the [←/PHASE] key. (3) 5-1 will be displayed.	[HA HV]: r.m.s.⇒% * In case of the model EMU4-BM1-MB, "HA,HV" can not be set, r.m.s., to display the RMS value of harmonic current or harmonic voltage. (The "% not be displayed.) %... to display the distortion rate and content rate of harmonic current or harmonic voltage. (The "r.m.s." not be displayed.)
6(1) Setup the measurement mode (EMU4-LG1-MB only)		
6(1)-1 [Measure] 3 A rate 4 DISP.Mode ME.A.Mode	(1) In 6(1)-1, push the [▲] or [▼] key, and move the cursor to the "5 ME.A.Mode". (2) Push the [←/PHASE] key. (3) 6(1)-2 will be displayed.	Setup the measurement mode of "lo" or "lor".
6(1)-2 [ME.A.Mode] High SENS. Low SENS.	(1) Push the [▲] or [▼] key, and select the measurement mode. (2) Push the [←/PHASE] key. (3) 6(1)-1 will be displayed.	[ME.A.Mode]: High SENS.⇒Low SENS.⇒ Low SENS... 0 to 1000mA 1mA step High SENS... 0.00 to 100mA 0.01mA step
6(2) Setup the measurement mode (EMU4-AX4 only)		
6(2)-1 [Measure] 3 A rate 4 DISP.Mode ME.A.Mode	(1) In 6(2)-1, push the [▲] or [▼] key, and move the cursor to the "5 ME.A.Mode". (2) Push the [←/PHASE] key. (3) 6(2)-2 will be displayed.	Setup the measurement mode of AD converted.
6(2)-2 [ME.A.Mode] 50ms SAMP. 1ms SAMP.	(1) Push the [▲] or [▼] key, and select the measurement mode. (2) Push the [←/PHASE] key. (3) 6(2)-1 will be displayed.	[ME.A.Mode]: 50ms SAMP.⇒1ms SAMP.⇒ 50ms SAMP... AD converted in a cycle of 50ms. 1ms SAMP... AD converted in a cycle of 1ms.

Screen	Operation	Note
7(1) Setup the demand time (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
7(1)-1. [Measure] 4 DISP Mode 5 MEA.Mode 6 Demand	(1) In 7-1, push the [▲] or [▼] key, and move the cursor to the "6 Demand". (2) Push the [↔/PHASE] key. (3) 7(1)-2 will be displayed.	[Demand]: 0sec → 10sec → 20sec → 30sec → 40sec → 50sec → 1min → 2min → 3min → 4min → 5min → 6min → 7min → 8min → 9min → 10min → 11min → 12min → 13min → 14min → 15min → 20min → 25min → 30min →
7(1)-2. [Demand] A : 2min W : 2min	(1) Push the [▲] or [▼] key, and move the cursor to the A(Current). (2) Push the [+] or [-] key, and change the demand time value. (3) Push the [▲] or [▼] key, and move the cursor to the W(Electric power). (4) Push the [+] or [-] key, and change the demand time value. (5) Push the [↔/PHASE] key, and confirm the setting value. (6) 7(1)-1 will be displayed.	
7(2) Setup the demand time (EMU4-LG1-MB)		
7(2)-1. [Measure] 4 DISP Mode 5 MEA.Mode 6 Demand	(1) In 7(2)-1, push the [▲] or [▼] key, and move the cursor to the "6 Demand". (2) Push the [↔/PHASE] key and (3) 7(2)-2 will be displayed.	[Demand]: 0sec → 5min → 6min → 7min → 8min → 9min → 10min → 11min → 12min → 13min → 14min → 15min → 20min → 25min → 30min →
7(2)-2. [Demand] Io/Ior: 8min	(1) Push the [+] or [-] key, and change the Io/Ior demand time value. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) 7(2)-1 will be displayed.	
8 Setup the electric energy equivalent rate (All models except for EMU4-LG1-MB)		
8-1. [Measure] 5 MEA.Mode 6 Demand 7 CONV.Wh	(1) In 8-1, push the [▲] or [▼] key, and move the cursor to the "7 CONV.Wh" (2) Push the [↔/PHASE] key. (3) 8-2 will be displayed.	[CONV.Rate]: 0.001 to 10000 (1.000) [Unit]: Non → Wh → kWh → MWh → J → m ³ → L → kL → sec → min → hour → piece → set → g → kg → t → % → \$ →
8-2. [CONV.Rate] 0.000 [Unit] Non [1]	(1) Push the [▲] [▼] [+] [-] key, and change the "CONV.Rate" value and unit. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) Transition to the following screen by the setting wiring type. 2 circuit measurement → To 8-3 non-2 circuit measurement → To 8-1	
8-3. [CONV.Rate] 0.000 [Unit] Non [2]	(1) In a similar way as 8-2, change the "CONV.Rate" value and unit of the second circuit. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) 8-1 will be displayed.	
9 Setup the current cut-off rate (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)		
9-1. [Measure] 6 Demand 7 CONV.Wh 8 A Cut-off	(1) In 9-1, push the [▲] or [▼] key, and move the cursor to the "8 A Cut-off". (2) Push the [↔/PHASE] key. (3) 9-2 will be displayed.	
9-2. [A Cut-off] 0.05% [1]	(1) Push the [+] or [-] key, and change the set value. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) Transition to the following screen by the setting wiring type. 2 circuit measurement → To 9-3 non-2 circuit measurement → To 9-1	[A Cut-off]: 0.1 to 50.0% (0.5) A cut-off rate... represent as the ratio of cut-off current to rated current.
9-3. [A Cut-off] 0.05% [2]	(1) In a similar way as 9-2, change the "A Cut-off" value of the second circuit. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) 9-1 will be displayed.	※Measured value is 0A if it is less than the cut-off current.
10 Setup the Simple measurement (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)		
10-1. [Measure] 7 CONV.Wh 8 A Cut-off 9 SimpleMEA	(1) In 10-1, push the [▲] or [▼] key, and move the cursor to the "9 SimpleMEA". (2) Push the [↔/PHASE] key. (3) 10-2 will be displayed.	
10-2. [SimpleMEA] Off	(1) Push the [+] or [-] key, and select SimpleMEA ([On]/[Off]). (2) Push the [↔/PHASE] key, and confirm the setting value. (3) Transition to the following screen by the setting SimpleMEA ([On]/[Off]) [On] setting → To 10-3 [Off] setting → To 10-1	[SimpleMEA]: Off → On →
10-3. [FP Set] 1.000 [1]	(1) Push the [▲] [▼] [+] [-] key, and change the power factor value in the SimpleMEA. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) Transition to the following screen by the setting wiring type. 2 circuit measurement → To 10-4 non-2 circuit measurement → To 10-1	[FP Set]: -0.001 to 1.000 to 0.000
10-4. [FP Set] 1.000 [2]	(1) In a similar way as 10-3, change the power factor value of the second circuit. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) 10-1 will be displayed.	
11 Setup the Ior difference conversion (EMU4-LG1-MB only)		
11-1. [Measure] 8 A Cut-off 9 SimpleMEA 10 DIF.CONV	(1) In 11-1, push the [▲] or [▼] key, and move the cursor to the "10 DIF.CONV". (2) Push the [↔/PHASE] key. (3) 11-2 will be displayed.	[DIF.CONV]: Off → On → DIF.CONV... To calculate the amount of change from the Ior difference converted value.
11-2. [DIF.CONV] Off	(1) Push the [+] or [-] key, and select the Ior difference converted value ([On]/[Off]). (2) Push the [↔/PHASE] key, and confirm the setting value. (3) Transition to the following screen by the setting DIF.CONV ([On]/[Off]). [On] setting → To 11-3 [Off] setting → To 11-1	

Screen	Operation	Note
11-3. [DIF.Ior] 0.00 mA	(1) Push the [▲] [▼] [+] [-] key, and change the Ior difference converted reference value. (2) Push the [↔/PHASE] key and confirm the setting value. (3) 11-1 will be displayed.	High SENS mode [DIF.Ior]: 0.00 to 100.00mA Low SENS mode [DIF.Ior]: 0 to 1000mA
12 Setup the AD Converted (EMU4-AX4 only)		
12-1. [Measure] 9 SimpleMEA 10DIF.CONV. 11AD.CONV.	(1) In 12-1, push the [▲] or [▼] key, and move the cursor to the "11 AD CONV." (2) Push the [↔/PHASE] key. (3) 12-2 will be displayed.	
12-2. [AD CONV.] On [N]	(1) Push the [+] or [-] key, and select the AD converted([On]/[Off]). (2) Push the [↔/PHASE] key, and confirm the setting value. (3) Transition to the following screen by the setting AD CONV. ([On]/[Off]) [On] setting → To 12-3 [Off] setting → To 12-2 (The [N] changes, and the screen changes to the next CH setting.) *In the case N=4 → To 12-1	AD CONV... The setting value is set in AD convert per CH. [AD CONV.]: Off → On → [Range]: Current → Voltage →
12-3. [Range] Current [N]	(1) Push the [+] or [-] key, and select the input range. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) 12-4 will be displayed.	[Moving average]: 001 to 100 (001) [Upp]: -32767 to 32767 (4095) [Low]: -32767 to 32767 (0)
12-4. [Moving average] 001 times [N]	(1) Push the [▲] [▼] [+] [-] key, and change the number of moving average. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) 12-5 will be displayed.	[Unit]: Non → A → mA → kA → V → kV → W → kW → MW → Hz → N → kN → Pa → kPa → MPa → C → deg → % →
12-5. [Scaling] Upp: 4095 Low: 00000 Unit: Non [N]	(1) Push the [▲] [▼] [+] [-] key, and change the upper limit, lower limit, and unit. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) 12-2 will be displayed. (The [N] changes, and screen turned to setting of next CH.) *In the case N=4 → 12-1 will be displayed.	[N] at the bottom right of the screen represents CH. (N=1 to 4)
13 Setup the Number Limit (EMU4-AX4 only)		
13-1. [Measure] 10DIF.CONV. 11AD.CONV. 12Num.Limit	(1) In 13-1, push the [▲] or [▼] key, and move the cursor to the "12 Num.Limit". (2) Push the [↔/PHASE] key. (3) 13-1-1 will be displayed.	Num.Limit... Set any limit. *If the scaling value over the limit, Number Limit countup.
13.1 Setup the Limit A, Limit B, Limit C, and Limit D (EMU4-AX4 only)		
13-1-1. [Num.Limit] 1 Limit A 2 Limit B 3 Limit C	(1) In 13.1-1, push the [▲] or [▼] key, and move the cursor to the "1 Limit A". (2) Push the [↔/PHASE] key. (3) 13.1-2 will be displayed. *Limit B, Limit C, and Limit D is done in the same way as the setting of Limit A.	Limit... Set any scaling value. You can configure the four different limits for limit A, limit B, limit C, and limit D.
13-1-2. [Limit A] 32767 [N]	(1) Push the [▲] [▼] [+] [-] key, and change the set value. (2) Push the [↔/PHASE] key. (3) The [N] changes, and screen turned to setting of next CH. In the case N=4 → 13.1-1 will be displayed.	[Limit A]: Scaling Low to Scaling Upp *If scaling setting value is set "Scaling Low > Scaling Upp", default setting is Scaling Upp. [N] at the bottom right of the screen represents CH. (N=1 to 4)
13.2 Setup the multiplying factor (EMU4-AX4 only)		
13-2-1. [Num.Limit] 3 Limit C 4 Limit D 5 Factor	(1) In 13.2-1, push the [▲] or [▼] key, and move the cursor to the "5 Factor". (2) Push the [↔/PHASE] key. (3) 13.2-2 will be displayed.	
13-2-2. [Factor] x1 [N]	(1) Push the [+] or [-] key, and select the multiplying factor displayed. (2) Push the [↔/PHASE] key. (3) The [N] changes, and screen turned to setting of next CH. In the case N=4 → 13.2-1 will be displayed.	[Factor]: x1 → x10 → x100 → x1000 → Factor... Set up the multiplying factor displayed of Number Limit. [N] at the bottom right of the screen represents CH. (N=1 to 4)
14 Save the settings		
14-1. Quit Setup 1 Save 2 Not Save 3 Cancel	(1) After setting all of the items, and push the [SETUP] key. (2) 14-1 will be displayed. (3) When save the settings, push the [▲] or [▼] key, move the cursor to the "1 Save", and push the [↔/PHASE] key. (4) After completing the settings saving, 14-2 will be displayed. Push the [↔/PHASE] key. (5) Return to the operation mode.	1 Save → Save settings and return to the operation mode. 2 Not Save → Discard the changes and return to the operation mode. 3 Cancel → Continue the setup.
14-2. Completed OK		

*Setting for condition of the measurement mode can only configure in the display unit is set to master.

(Setting for condition of the measurement mode can not configure in the display unit is set to slave.)

*If you change a settings, please push the **[↔/PHASE]** key and be sure to determine changes. If without determine, the changes will be discarded.

*The underline means the default of setting. After you have been set, even if a power failure occurs does not disappear setting.

*If you want to set the other circuit, push the **[CIRCUIT]** key on the "Setup" screen (1-1), select the circuit, make the setting.

*Same voltage system is same setting in wire system, primary voltage, 2 circuits Measuring existence, Simple measurement.

7.2.2 Input/Output setup—the settings for the external Input/Output. EMU4-LG1-MB is not set.

*EMU4-CNT-MB cannot be set.

Screen	Operation	Note
1 Transit to the Setup mode		
1-1. [Setup] 1 Measure 2 I/O 3 COM.	(1) Push the [SETUP] key in operation mode. (2) 1-1 will be displayed. (1) Push the [▲] or [▼] key, and move the cursor to the "2 I/O". Push the [↔/PHASE] key. (2) 2-1 will be displayed.	

Screen	Operation	Note
2 Setup input (EMU4-HM1-MB, EMU4-PX4)		
2-1. 	(1) In 2-1, Push the [▲] or [▼] key, and move the cursor to the "1 Input". (2) Push the [↔/PHASE] key. (3) 2-2 will be displayed.	
2-2. 	(1) Push the [+] or [-] key, and select the input method. (Norv/Contact/Pulse) (2) Push the [↔/PHASE] key. (3) Transition to the following screen by the model and setting input method. [Non] setting Model: EMU4-HM1-MB → To 2-1 Model: EMU4-PX4 → The [N] changes, and screen turned to setting of next CH. *In the case N=4 → To 2-1 [Pulse] setting → To 2-3 [Contact] setting → To 2-4	<EMU4-HM1-MB> [Input]: Non ⇔Contact⇔Pulse⇔ <EMU4-PX4> [Input]: Pulse ⇔Contact⇔Non⇔
2-3. 	(1) Push the [▲] , [▼] , [+] or [-] key, and change the "CONV.Rate" value and unit. (2) Push the [↔/PHASE] key, and confirm the setting value. (3) Transition to the following screen by the model. Model: EMU4-HM1-MB → To 2-1 Model: EMU4-PX4 → To 2-2 (The [N] changes, and screen turned to setting of next CH.) *In the case N=4 → To 2-1	[ResetMode]: Auto ⇔Hold⇔
2-4. 	(1) Push the [+] or [-] key, and select the reset mode. (2) Push the [↔/PHASE] key. (3) Transition to the following screen by the model. Model: EMU4-HM1-MB → To 2-1 Model: EMU4-PX4 → To 2-2 (The [N] changes, and screen turned to setting of next CH.) *In the case N=4 → To 2-1	Auto...Contact input state is reset automatically when contact input is less. Hold...Contact input state is held until contact input released even though contact input is less. (For information about how to release of the contact input, please refer to the "user's manual (Details)") [N] at the bottom right of the screen represents CH. (N=1 to 4)
3 Setup the operation time measurement (All models except for EMU4-LG1-MB)		
3-1. 	(1) In 3-1, Push the [▲] or [▼] key, and move the cursor to the "2 OP.Time". (2) Push the [↔/PHASE] key. (3) 3-2 will be displayed.	[OP.Time]: Off ⇔On⇔
3-2. 	(1) Push the [+] or [-] key, and select the operation time measurement. (On/Off) (2) Push the [↔/PHASE] key. (3) Transition to the following screen by the model, and setting wiring type and existence of the operation time measurement. Model: EMU4-PX4 → To 3-4 Model: Other than EMU4-PX4 2 circuit measurement and [Off] setting → To 3-4 non-2 circuit measurement and [Off] setting → To 3-1 [On] setting → To 3-3	EMU4-HM1-MB [OP.Time Mode]: △ ⇔×⇔ EMU4-BM1-MB, EMU4-A2, EMU4-VA2 [OP.Time Mode]: △ EMU4-PX4 Input setting value is set contact, this CH is not displayed.
3-3. 	(1) Push the [+] or [-] key, and select the operation time measurement mode. (2) Push the [↔/PHASE] key. (3) Transition to the following screen by the setting wiring type. 2 circuit measurement → To 3-4 non-2 circuit measurement → To 3-1	Operating time is integrated time while the current measured value is higher than the rated current, Current cut-off rate when select A. Operating time is integration time while Contact input is ON when Contact input.
3-4. 	(1) Push the [+] or [-] key, and select the operation time measurement. (2) Push the [↔/PHASE] key. (3) Transition to the following screen by the model, and setting existence of the operation time measurement. Model: EMU4-PX4 → To 3-6 Model: Other than EMU4-PX4 [Off] setting → To 3-1 [On] setting → To 3-5	
3-5. 	(1) Push the [+] or [-] key, and select the operation time measurement mode. (2) Push the [↔/PHASE] key. (3) 3-1 will be displayed.	
3-6. 	(1) Push the [+] or [-] key, and select the operation time measurement. (2) Push the [↔/PHASE] key. (3) 3-7 will be displayed.	
3-7. 	(1) Push the [+] or [-] key, and select the operation time measurement. (2) Push the [↔/PHASE] key. (3) 3-1 will be displayed.	
4 Setup Output (EMU4-HM1-MB, EMU4-A2, EMU4-VA2, EMU4-PX4, EMU4-AX4)		
4-1. 	(1) In 4-1, Push the [▲] or [▼] key, and move the cursor to the "3 Output". (2) Push the [↔/PHASE] key. (3) 4-2 will be displayed.	

4-2. 	(1) Push the [+] or [-] key, and select the output signal type. (2) Push the [↔/PHASE] key. (3) Transition to the following screen by the model, and setting wiring type and the output signal type. Model: EMU4-PX4 or EMU4-AX4 → To 4-1 Model: EMU4-HM1-MB, EMU4-A2 or EMU4-VA2 [Non] setting → To 4-1 2 circuit measurement and [Pulse] setting → To 4-3 non-2 circuit measurement and [Pulse] setting → To 4-4 2 circuit measurement and [Alarm] setting → To 4-3 non-2 circuit measurement and [Alarm] setting → To 4-1	EMU4-HM1-MB, EMU4-A2, EMU4-VA2 [Output]: Non ⇔Pulse⇔Alarm⇔ EMU4-PX4, EMU4-AX4 [Output]: Non ⇔Alarm⇔Contact⇔ The pulse output unit changes by the full load power. [Pulse]: <table border="1"> <thead> <tr> <th>Full load power (kW)</th> <th>Setting range</th> </tr> </thead> <tbody> <tr> <td>WfUI<12kW</td> <td>0.001⇔0.01⇔0.1⇔1⇔</td> </tr> <tr> <td>12kW ≤ WfUI < 120kW</td> <td>0.01⇔0.1⇔1⇔10⇔</td> </tr> <tr> <td>120kW ≤ WfUI < 1200kW</td> <td>0.1⇔1⇔10⇔100⇔</td> </tr> <tr> <td>1200kW ≤ WfUI < 12000kW</td> <td>1⇔10⇔100⇔1000⇔</td> </tr> <tr> <td>12000kW ≤ WfUI < 120000kW</td> <td>10⇔100⇔1000⇔10000⇔</td> </tr> <tr> <td>120000kW ≤ WfUI</td> <td>100⇔1000⇔10000⇔100000⇔</td> </tr> </tbody> </table>	Full load power (kW)	Setting range	WfUI<12kW	0.001 ⇔0.01⇔0.1⇔1⇔	12kW ≤ WfUI < 120kW	0.01 ⇔0.1⇔1⇔10⇔	120kW ≤ WfUI < 1200kW	0.1 ⇔1⇔10⇔100⇔	1200kW ≤ WfUI < 12000kW	1 ⇔10⇔100⇔1000⇔	12000kW ≤ WfUI < 120000kW	10 ⇔100⇔1000⇔10000⇔	120000kW ≤ WfUI	100 ⇔1000⇔10000⇔100000⇔
Full load power (kW)	Setting range															
WfUI<12kW	0.001 ⇔0.01⇔0.1⇔1⇔															
12kW ≤ WfUI < 120kW	0.01 ⇔0.1⇔1⇔10⇔															
120kW ≤ WfUI < 1200kW	0.1 ⇔1⇔10⇔100⇔															
1200kW ≤ WfUI < 12000kW	1 ⇔10⇔100⇔1000⇔															
12000kW ≤ WfUI < 120000kW	10 ⇔100⇔1000⇔10000⇔															
120000kW ≤ WfUI	100 ⇔1000⇔10000⇔100000⇔															
4-3. 	(1) Push the [+] or [-] key, and select the output target. (2) Push the [↔/PHASE] key. (3) Transition to the following screen by setting output signal type. [Pulse] setting → To 4-4 [Alarm] setting → To 4-1															
4-4. 	(1) Push the [▲] , [▼] , [+] or [-] key, and change the pulse output unit. (2) Push the [↔/PHASE] key. Confirm the setting value. (3) 4-1 will be displayed.															
5 Save the settings																
5-1. 	(1) After setting all of the items, push the [SETUP] key. (2) 5-1 will be displayed. (3) When save the settings, push the [▲] or [▼] key, move the cursor to the "1 Save", and push the [↔/PHASE] key. (4) After completing the settings saving, "Completed" message will be displayed. (5) Return to the operation mode.	1 Save → Save settings and return to the operation mode. 2 Not Save → Discard the changes and return to the operation mode. 3 Cancel → Continue the setup.														

*Full load is calculated by following formula. (Full load)=(Primary voltage) x (Primary current) x (Coefficient) / 1000[kW]

*1. In case 3P4W, apply the not phase voltage but line voltage as primary voltage.

*2. Coefficient is varies according to the phase wire system. 1P2W →1, 3P3W →1.73, 3P4W →3

*If you change a settings, please push the **[↔/PHASE]** key and be sure to determine changes. If without determine, the changes will be discarded.

*The underline means the default of setting. After you have been set, even if a power failure occurs does not disappear setting.

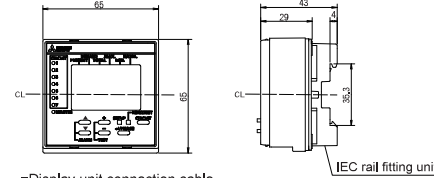
* If you want to set the other circuit, push the **[CIRCUIT]** key on the "Setup" screen (1-1), select the circuit, make the setting.

8. Operations of Instrument (in the case of the model to connect the EMU2-** and MDU2-**)

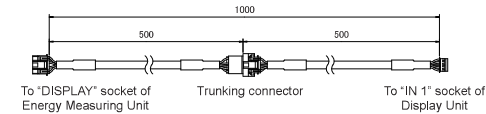
For setting operation in the case of connect the EMU2-** and MDU2-**, please refer to the "user's manual (Details)".

9. Outline drawing

■ Display Unit main body (EMU4-D65)



■ Display unit connection cable



11. Contained harmful substances

(1) 电器电子产品有害物质限制使用标志

根据《电器电子产品有害物质限制使用管理办法》，该标识适用于在中国销售的电器电子产品。其中的数字为产品的环保使用期限。只要遵守本产品安全和使用的注意事项，从生产日算起的环保使用期限内不会造成环境污染或对人体、财产产生不良影响。
注) 产品正常使用完毕后，应按照国家 and 地方的法律法规完成该电器电子产品回收和再利用。

(2) 产品中有害物质的名称及含量
本产品中所含有的 6 种有害物质的名称、含有信息及含有部件如下表所示。
产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
基板	×	○	○	○	○	○
箱子	○	○	○	○	○	○
螺钉	○	○	○	○	○	○
铭牌	○	○	○	○	○	○
LCD	○	○	○	○	○	○
接线	○	○	○	○	○	○
接线皮	○	○	○	○	○	○

本表格依据 SJ/T11364 的规定编制。
○: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。
×: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。
且虽然目前业界没有成熟的替代方案，但是符合欧盟 RoHS 指令要求。

10. Specifications

Item	Specifications
Product name	Display unit
Model name	EMU4-D65
Display part	Dot matrix Liquid Crystal Display (with backlight)
Rating	9V DC
Weight	0.1kg
Applicable model	Energy Measuring Unit (EcoMonitorPlus), Energy Measuring Unit (EcoMonitorPro), Mitsubishi Measuring Units for MDU Breakers (MDU2)
Connecting method	Connecting by dedicated cable (Bundled in this product. Length: 1m)
Number of connected	For a single Energy Measuring Unit until seven*
Maximum extension distance	10m (However, the sum of the length of the extension cable that was connected to a single unit.)

*If the connection is two or more, you must have a power supply from commercial DC power supply (Model:PBA15F-9-N1, made in COSEL CO., LTD.), the power supply cable (optional: EMU4-CB-DPS) and display unit connection cable (for between the display unit connection) Model: EMU2-CB1-DP.

12. Warranty

If you have any questions or the product is broken down, contact our sales representative near you.

• The charge-free warranty is effective until the earlier of 1 year after the date of your purchase or 18 months after manufacturing. Repair shall be charged for the case failures occur due to your intent or fault even during the charge-free warranty period.
• If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
• Our company shall not be liable to compensate for any loss arising from events not attributable to our company, opportunity loss and lost earning of the customer due to failure of the product, and loss, secondary loss, accident compensation, damage to other products besides our products and other operations caused by a special reason regardless of our company's predictability.

⚠Caution If an abnormal sound, bad-smelling smoke, fever break out from this unit, switch it off promptly and don't use it.

13. Customer Service

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, Japan
Please refer to "catalog" or "user's manual (Details)" for more details.