

Small Type Display Unit for Energy Measuring Unit **MODEL**



User's Manual (Details)

 Before operating the instrument, you should first read thoroughly this operation manual for safe operation and optimized performance of the product.
 Deliver this user's manual to the end user.

Thank you for purchasing the Energy Measuring Unit.

- This manual describes setup and usage for Energy Measuring Unit. Before using the product, please read this manual carefully to ensure correct use. Especially, in the case of where unit is to be installed, please read "1.Precasutions for Use" to ensure correct use.
- Make sure that the end users read this manual and then keep the manual in a safe place for future reference.
- Make sure to deliver this manual to the end-user. 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 sales representative.(For details, please see at the end of this manual.)

Notations in this manual

Use the following marks in this manual.

Mark	Meaning of the icons
Caution	Indicates that incorrect handling may result in injury or property damage, ignoring this marking.
✓ Supplement	Indicates that precautions to avoid a malfunction and to work the unit properly.
Î	Indicates that the pages described that related matters.

■Checking package contents

This following items for this device and included in package. Check that no items are missing.



Features

- 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.

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1. Precautions concerning working environment and conditions

Working environment and working conditions 1.1

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 CATII (Note 1). The overvoltage category of the auxiliary power supply circuit (MA, MB) is CATII (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 Place where the daily mean temperature exceeds 35°C to +55°C) · Place with much vibration or impact · Place exposed to direct sunlight
- 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
- < For prevention of electric shock >
- This unit is designed to be housed within another device for prevention of electric shock. House this unit within the device such as the grounded control panel before use.
- To prevent persons with little knowledge about electric equipment from electric shock, panel must be taken either following measure.
 - · Lock the panel so that only those who get an education about electric equipment and have sufficient knowledge can unlock, or shut off power supply automatically by opening the panel.
 - Cover the dangerous part of this unit. (Required protection code is higher than IP2X.)

Note 1 : For the definition of the pollution degree and the over voltage category, refer to EN61010-1/2010.

1.2 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.
- Please use after removina the protection sheet

- 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)

Installation and connection 1.3

Before installing and connecting the unit, read the instruction manual without fail

//Caution

- 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.

1.4 **Precautions for Use**

F/W version is displayed after the power turned on.

[In the case of the model to connect the EMU4-**]







- This unit cannot be used for deal and proof of electric energy measurement stipulated in Measurement Act.
- Model:EMU4-PX4 and Model:EMU4-AX4 is supported with later version 2.00. For information about how to determine the version. If you wish to upgrade, please contact us
- In the event of a power outage during the setting, the unit is not set correctly. Please set again after power recovery.
- When using by connecting to EMU4-CNT-MB, a fixed value is displayed on the operation screen and the setting menu of EMU4-HM1-MB is displayed on the setting screen, so the operation status of the control unit and the control unit can be displayed. It cannot be set. For details on the operation, refer to "6.2 Operation Mode".

A Caution

- Do not disassemble or modify this unit. It may cause failure, malfunction, injury or fire.
- 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 touch the live part. It may cause electric shock, electric burn injury or damage of the device. If any bare wire exists, stop the operation immediately, and take an appropriate action such as isolation protection.

Place with strong electromagnetic field or much foreign noise

Place where the altitude is over 2000m

1.5 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
 - 1 No damage on this unit
 - 2 No abnormality with LCD indicators
 - ③ 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.

1.6 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 +60°C.
- Places the Relative humidity exceeds the range 30-85% or places with dewfall.
- Dust, corrosive gas, saline and oil smoke exist.
- Places the average daily temperature exceeds 35°C.

1.7 Disposal Precautions

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

1.8 About packaging materials and this manual

For reduction of environment load, packaging materials are produced with cardboard, and this manual is printed on recycled paper.

2. Disclaimer

- It is prohibited to reprint or copy all contents of this document in any form without our permission.
- The contents of this document will be updated to follow revisions to software and hardware, however under unavoidable circumstances it may not be synchronized.

- Vibration and impact exceed the specifications.Places exposed to rain, water drop or direct
- sunlight. •Places metal fragments or conductive
- substance are flying.

3. Name and function of each part





Back 0 "IN 1" Connector : "OUT 1" Connector Use for connection with a next display unit Use for connection with an Energy Measuring Unit, a next display unit ┓╴ Π "OUT 2" Cannector : Use for connection with a next display unit "IN 2" Connector : Use for connection with an Energy Measuring Unit, a next display un Unit, a next IEC rail attachment : display unit. Use when installing on IEC rail. 0

Bottom



■Upper display in LCD



ACaution

· 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.

IEC rail installation 4.1

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.



• Fit the IEC rail with M4 or M5 screws at distances of 25 to 100 mm. · When installing the unit after once it was removed from the IEC rail, install it while pushing the IEC rail fitting upward.

•A method for changing the direction of IEC rail



Panel mounting 4.2

Cutout dimension



Mounitng



3 Tighten fixing screw. (Clamping torque: 0.5N-m)

Hook the gab of IEC

rail attachmment

1

Attach the display unit from front side of panel, and tighten the screw from the backside.

(Clamping torque: 0.5N-m)

5. Connection method

5.1 1-to-1 Connection example



•The one always in one system is the Master set, other display unit of, please to Slave configuration. (<u>The wrong setting and it</u> <u>does not work</u>)

5.2 1-to-N (N≦7) Connection example Connection cable Energy measuring unit (bundled in this product) 1st unit Nth unit 2nd unit Display unit Display unit Display unit EMU4-D65 EMU4-D65 EMU4-D65 To the socket "DISPLAY To the so "IN 1" socke エー図開始 ίΩI 18 0 Πα 國國 To the s To the sou OUT 2 國國國國 *** To the BATTER OUT 101 the socket "IN 2" Slave Master Slave Master / Slave Master / Slave Master / Slave setting switch 1 : OFF setting switch setting switch 1 : ON 1 : ON ↓**□** ■ ost 2 2 : OFF 2 : OFF 2 : OFF DC 9V power supply cable (optional) Display unit connection cable EMU4-CB-DPS (For between the display unit connection) EMU2-CB1-DP

- 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.
 Maximum connectable devices of display unit is 7.
- •Please display when connect other measuring units in condition that display unit power is turned off.
- •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)

5.3 How to extend the connected cable

(1) Remove the trunking connector

Connected cable in upper connected figure are extendable up to 10m.



(2) Insert the extension cable, and connect the connector

Please do firmly insert until it clicks into place

- •Please use EMU2-CB-T1M, EMU-CB-T5M, EMU2-CB-T10M as a current sensor extension cable.
- •Extension cable (EMU2-CB-T * M), the sum of the length is less than 10m.

6. How to use (In the case of the model to connect the EMU4-**)

In this section, the use when connected the EMU4-** models is described. **(T**). How to use (In the case of the model to connect the EMU2-** and MDU2-**)

6.1 Display of circuits and CH

6.1.1 Two circuits measurement mode in 1P2W setting

If you set 1P2W and measure 2 circuits, you can measure 2 circuits by 1 terminal base when connect to EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2 or EMU4-VA2.

Current can be measured when current sensor connected to 1K1L and 3K3L of measure unit as shown in Fig. 6.1 and 6.2. **If rated voltage isn't same value, you can't measure the current.** *Please reference to the operating instructions each measuring units.



Fig. 6.1 Connecting point



[1] is displayed when measuring 1 side of circuits and [2] is displayed when measuring 3 side of the circuit in LCD display of this products. (In fig.6.3 and Fig. 6.4)



Fig.6.3 Display example (Demand time setting display when 2 circuits measure setting)

Fig.6.4 Display example (Electric energy operating display in the setting 1P2W)

6.1.2 EMU4-PX4 or EMU4-AX4 connecting

[*] is displayed when represent the CH*. (* = $1 \sim 4$) (In fig.6.5 and Fig. 6.6)





Fig.6.6 Display example (Pulse conversion upper limit alarm value alarm state display in EMU4-PX4)

6.2 Operation mode

There are following modes of operation. This device is used to switch the operation mode depending on the application. Immediately after the power is turned on, it will be the display of the operation mode.



6.2.1 When used in combination with EMU4-CNT-MB

The behavior when connected to EMU4-CNT-MB is shown below.

	Beh	Behavior		
Mode	EMU4-CNT-MB	Expansion unit		
	(Circuit number =1)	(Circuit number=2~7)		
Setup mode	X You cannot set. The same screen is displayed when EMU4-HM1-MB is connected.	O You can settings and confirm settings of the expansion unit.		
Alarm setup mode	X You cannot alarm set. The same screen is displayed when EMU4-HM1-MB is connected.	O Alarm of expansion unit can be setup.		
Test mode	 You cannot use Test mode. Each test mode does the following: Connection test The fixed value is displayed. Communication test The fixed value is displayed when EMU4-HM1-MB connected. Pulse output test, Alarm output test The fixed value is displayed when EMU4-HM1-MB connected. There is no output from the control unit itself. 	O You can use various test mode functions of the expansion unit. * It is necessary to change the control status to STOP.		
Operation mode	★ You cannot monitor contact output and analog output of EMU4-CNT-MB. A fixed value :9999999kWh is displayed.	O Measured value of expansion unit can be displayed.		
Alarm mode	× You cannot monitor alarm status. A fixed value is displayed, Alarm status:OFF, Contact input : Non	O Alarm status of expansion unit can be displayed.		
Reset/Preset mode	X You cannot use reset/ preset funstion. The same screen is displayed when EMU4-HM1-MB is connected.	$\ensuremath{\textbf{O}}$ Integrated value of expansion unit can be reset / preset.		

O Function can be used

 \times Function can not be used

6.3.1 Flow of the setup

Setup $\lceil (1)$ Measure $\rfloor^{\lceil}(2)$ Input/Output $\rfloor^{\lceil}(3)$ Communication $\rfloor^{\lceil}(4)$ Logging $\rfloor^{\lceil}(5)$ Clock $\rfloor^{\lceil}(6)$ Display \rfloor when connected with EMU4-**, setup in setupmode.

You can confirm the F/W version of connected measure unit in $\lceil (7)F/W$ version].

(1) Measure

Setting the measurement conditions connected energy measuring unit. (••••6.3.2 Measure setting



(2) Input/Output setup

Set for the external Input/Output. Only EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2, EMU4-PX4, EMU4-AX4 is set.



Setting Input / Output(EMU4)

(3) Communication setup

Set for the MODBUS[®] communication. Only MU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB is set. ••••••6.3.4 Setup the communication

EMU4-BM1-MB	EMU4-HM1-MB	EMU4-LG1-MB		
-	Transition to the setup mod	le		
	Ļ			
	Address			
	Ļ			
Baurate				
Ļ				
	Patity			
Ļ				
Stop bit				
Ļ				
Save	the setting (End of setup r	node)		

(4) Logging setup

EMU4-BM1-MB	EMU4-HM1-MB	EMU4-LG1-MB		
Tra	ansition to the setup mod	le		
Ļ				
Logging unit ID				
1				
Data clear				
Save the setting (End of setup mode)				

(5) Clock setup

Set for the clock. (Set only EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB connected the EMU4-LM.) ••••••6.3.6 Setup the cleck

EMU4-BM1-MB	EMU4-HM1-MB	EMU4-LG1-MB	
Tra	ansition to the setup mo	ode	
	↓.		
Clock Setup			
•			
Save the setting (End of setup mode)			

(6) Display setup

Set for the display such as LCD contrast or backlight lighting pattern. •••••6.3.7 Setup the display

EMU4-BM1-MB	EMU4-HM1-MB	EMU4-A2 EMU4-VA2	EMU4-LG1-MB	EMU4-PX4 EMU4-AX4
	Transiti	ion to the setup mod	le	
	1			
Setup the LCD contrast				
	Ļ			
	Setup the backlight			
Save the setting(End of setup mode)				

(7) F/W version

The model name of measure unit connected and F/W version are displayed. 1.8 Display the F/W version

6.3.2 Measuring setup(1) Please set the display language when the Display unitstart-up for the first time

1 Transition to the setup mode		
Screen	Operation	Note
1-1. 日本語 English	 Push the or key, and move the cursor to the language. Push the /PHASE key. Version screen is displayed after a while, and transition to the operating mode. 	

(2) Setup the measuring condition of the energy measurement unit that is connected. EMU4-PX4 is not set.

1 Transition to the setup mode		
Screen	Operation	Note
1-1. [Setup]	 Push the SETUP key in operation mode. 1-1.will be displayed. 	
2 I/O 3 COM ▼	 (1) Confirm that the cursor focused the "1 Measure", push the <i>PHASE</i> key. (2) 2-1.will be displayed 	

2 Setup the phase wire system (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)			
Screen	Operation	Note	
2-1. [Measure] 1 Wiring 2 V rate 3 A rate ▼	 In 2-1, Push or key, and move the cursor to the "1 Wiring". Push the //PHASE key. 2-2 will be displayed. 		
2-2. [Wiring] 3P3W	 Push the	[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.]	 Push the ± or key, change the set value. Push the PHASE key, confirm the setting value. 2-1 will displayed. 	[2 circuits Measuring existence]∶ <u>No</u> ⇔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, ando EMU4-AX4)			
Screen	Operation	Note	
3-1. [Measure] 1 Wiring ☑ V rate 3 A rate	 In 3-1, Push the or vertice key, and move the cursor to the "2 V rate". Push the vertice key. 3-2 will be displayed. 	*The setting value is set in same voltage system after confirmed setting value. [VT] : <u>No</u> ⇔Yes⇔ *1P3W is "No" fixed. 1P2W, 3P3W	
3-2.	 Push the ± or ─ key, change the set value. Push the PHASE key, confirm the setting value. 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 [V I]: "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 ⇔ 690V ⇔ 1100V ⇔ 2200V ⇔ 3300V ⇔ 6600V ⇔ 11000V ⇔ 13200V ⇔ 	
3-3. [Direct V] 220V	 Push the + or - key, change the set value. Push the //PHASE key, confirm the setting value. 3 -1 will be displayed. 	13800V⇔15000V⇔16500V⇔ 22000V⇔24000V⇔33000V⇔ 66000V⇔77000V⇔110000V⇔SP⇔ When [Primary V] settingand SP setting [SP.PRI.V] : 1~110000V (440V) (1~99V:Can be set in the 1V step.) (10~210000V)CCan be set in the 1V step.)	
3-4. [Primary V] 440V	 Push the + or key, change the set value. Push the PPHASE key, confirm the setting value. Transition to the following screen by the setting value of the primary voltage. [SP] setting → To 3-5 Non-[SP] setting → To 3-1 	[SP2nd.V] : 1~220V (<u>110V</u>) (Can be set in the 1V step.) 1P3W	
3-5. [SP.PRI.V] 000440V	 Push the ▲, ▼, ± or → key, change the set value. Push the ✔/PHASE key, confirm the setting value. 3 3-6 will be displayed. 	110V 3P4W When [VT] : "Yes" setting [Direct V] : 63.5V⇔100V⇔105V⇔110V⇔ 115V⇔ 120V⇔127V⇔200V⇔220V⇔230V⇔ 240V⇔242V⇔250V⇔254V⇔265V⇔	
3-6. [SP.2nd.V] 220V	 Push the ▲, ▼, + or - key, change the set value. Push the P/PHASE key, confirm the setting value. 3-1 will be displayed. 	$ \begin{array}{l} \text{When [VT] : "Yes" setting} \\ [SP.PRI.V] : 1 ~ 63500V & (\underline{440V}) \\ (1 ~ 99V:Can be set in the 1V step.) \\ (100 ~ 110000V:Can be set in the 1V step.) \\ [SP.2nd.V] : 1 ~ 220V & (\underline{64V}) \\ (Can be set in the 1V step.) \end{array} $	

4 Setup the primary current (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)			
Screen	Operation	Note	
4-1. [Measure] 1 Wiring 2 V rate 6 A rate ♦	 In 4-1, Push the ▲ or ▼ key, and move the cursor to the "3A rate". Push the ✔/PHASE key. 4-2 will be displayed. 	[Sensor]: <u>Direct</u> ⇔5A⇔ Direct setting [A rate]: 50A⇔ <u>100A</u> ⇔250A⇔400A⇔600A⇔	
4-2. [Sensor] Direct [PRI: A] 100A	 Push the ▲ or ▼ key, and move the cursor to the "Sensor" Push the + or → key, and select sensor type. Push the ▲ or ▼ key, and move the cursor to the "A rate". Push the + or → key, and change the primary current value. Push the + or → key, and confirm the setting value. Push the + //PHASE key, and confirm the setting value. 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. 	5Asetting [A rate]:5A⇔6A⇔7.5A⇔8A⇔10A⇔12A⇔15A⇔ 20A⇔25A⇔30A⇔40A⇔50A⇔60A⇔75A⇔ 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⇔1000A⇔12000A⇔ 20000A⇔25000A⇔30000A⇔SP⇔	
4-3. [SP.PRI.A] 0 01000A	 Push the A, V, the or key, change the set value. Push the V/PHASE key, confirm the setting value. 4-1 will be displayed. 	$ \begin{array}{ll} [\text{SP.PRI.A}] & : 5.0 {\sim} 30000 \text{A} & (\underline{100 \text{A}}) \\ 10 \text{A less than, the upper two digits.} \\ 10 \text{A or more is possible to set the upper three digits.} \end{array} $	

5 Setup the display mode (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)			
Screen	Operation	Note	
5-1. [Measure] 2 V rate 3 A rate DISPMode ♦	 (1) In 5-1, Push the ▲ or ▼ key, and move the cursor to the "4 DISP.Mode". (2) Push the	Set the measure display unit.	ement elements to be displayed in the
5-2. [DISP.Mode] Wh+A+4 Harmonics	 Push the ▲ or ▼ key, and select the display mode. Push the ✔/PHASE key. 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]: <u>W</u> *In case of the r "Harmonics" is r Wh+A+4In ac up to (The HarmonicsIt c ea	Ih+A+4 ↔ Harmonics ↔ model EMU4-BM1-MB , the not displayed. ddition to the active energy and current, o 4 items can be displayed by selection. e harmonics data is only about total.) can display about harmonic data at ach order.
5-3. [Elements] UV UV Uvar UVA DPF Hz CONV.Wh DPRD.Wh DP.Time DREG.Wh Uvarh	 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.) Push the + or - key, and choose the selected or deselected. When selecting the other measurement item, repeat the operation from (1) to (2). Push the //PHASE key, and determine the setting. 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, OP.Ti UNB. □ (Deselected) *The selectable So, change the items are selec changing. *Elements can!	var, VA, PF, Hz, CONV.Wh, PRD.Wh, me, REG.Wh, varh, CONV.PLS, V, HA, HV , ☑ (Selected) number of elements is up to 4. e selection at the state that already 4 cted, deselect the items before
	*Elements is showed follow. V: Voltage W: Electric power var: reactive power VA: apparent power PF: Power factor Hz: frequency Wh converted value: Electric energy (converted) Periodic Wh: Electric energy (regeneration) Regenerated Wh: Periodic electric energy varh: Reactive energy (consumption lag) PULSE: Pulse count value and pulse converted value UNB.A: Current unbalance rate UNB.V: Voltage unbalance rate HA: Harmonics current HV: Harmonics voltage	Elements can t Element UNB.A UNB.V Periodic Wh Pulse converted value HA HV VA	Setect in follow table. In the case can not select Setting simplicity measuring mode In the case of EMU4-BM1-MB, EMU4-A2, EMU4-VA2. External input is not pulse input. In the case EMU4-BM1-MB, EMU4-A2, EMU4-VA2. Pulse input is not contact input. In the case EMU4-BM1-MB. In the case EMU4-BM1-MB.
5-4. [HA,HV] [III][S]	 (1) Push the or key, and change the "HA, HV" value. (2) Push the P/PHASE key. (3) 5-1 will be displayed. 	[HA,HV]: <u>r.m.s.</u> *In case of the r be set. r.m.sTo displa current %To display t harmonics (The "r.m.s"	⇔% model EMU4-BM1, "HA, HV" can not ay the RMS value of harmonics or harmonics voltage he distortion rate and content rate of current or harmonics voltage. " not be displayed)

6(1) Setup the measurement mode(EMU4-LG1-MB only)		
Screen	Operation	Note
6(1)-1. [Measure] 3 A rate 4 DISP.Mode ☑ MEA.Mode ♦	 In 6(1)-1, push the ▲ or ▼ key, and move the cursor to the "5 MEA.Mode" Push the	Setup the measurement mode of "lo"or "lor".
6(1)-2. [MEA.Mode] High SENS. Low SENS.	 Push the ▲ or ▼ key, and select the measurement mode. Push the ✔/PHASE key. 6(1)-1 will be displayed. 	[MEA.Mode]: <u>High SENS.</u> ⇔Low SENS.⇔ Low SENS0~1000mA 1mA step High SENS0.00~100mA 0.01mA step

6(2) Setup the measurement mode(EMU4-AX4 only)		
Screen	Operation	Note
6(2)-1. [Measure] 3 A rate 4 DISP.Mode I MEA.Mode ♦	 (1) In 6(2)-1, push the ▲ or ▼ key, and move the cursor to the "5 MEA.Mode" (2) Push the //PHASE key. (3) 6(2)-2 will be displayed. 	Setup the measurement mode of AD converted.
6(2)-2. [MEA.Mode] 50ms SAMP. 1ms SAMP.	 Push the or key, and select the measurement mode. Push the /PHASE key. 6(2)-1 will be displayed. 	[MEA.Mode]: <u>50ms SAMP.</u> ⇔1ms SAMP.⇔ 50ms SAMPAD converted in a cycle of 50ms. 1ms SAMPAD converted in a cycle of 1ms.

7(1) Setup the demand time (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operation	Note
7(1)-1. [Measure] 4 DISP.Mode 5 MEA.Mode ☑ Demand ♦	 (1) In 7(1)-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⇔
7(1)-2. [Demand] A : 2000 W : 2000	 Push the or key, and move the cursor to the A(Current). Push the or key, and charge the demand time value. Push the or key, and move the cursor to the W(Electric power). Push the or key, and change the demand time value. Push the or key, and confirm the setting value. Push the or or key, and confirm the setting value. 	30min⇔

7(2) Setup the demand time (EMU4-LG1-MB only)		
Screen	Operation	Note
7(2)-1. [Measure] 4 DISP.Mode 5 MEA.Mode 6 Demand ♦	 In 7(2)-1, push the ▲ or ▼ key, and move the cursor to the "6 Demand". Push the (/PHASE) key. 7(2)-2 will be displayed. 	[Demand time]:0sec⇔ <u>5min</u> ⇔6min⇔7min⇔ 8min⇔9min⇔10min⇔11min⇔ 12min⇔13min⇔14min⇔15min⇔ 20min⇔25min⇔30min⇔
7(2)-2. [Demand] İo/Ior: 5min	 Push the + or - key, and change the lo/lor demand time value. Push the //PHASE key, and confirm the setting value. 7(2)-1 will be displayed. 	

8 Setup the electric energy equivalent rate (EMU4-HM1-MB, EMU4-A2, EMU4-VA2)			
Screen	Operation	Note	
8-1. [Measure] 5 MEA.Mode 6 Demand ☑ CONV.Wh ♦	 In 8-1, push the or key, and move the cursor to the "7 CONV.Wh". Push the <i>P</i>/PHASE key. 8-2 will be displayed. 		
8-2. [CONV.Rate] 1.000 [Unit] Non [1] ↑ 2 circuits measuring only	 Push the	[CONV.Rate]:0.001~10000(<u>1.000</u>) [Unit]: <u>Non</u> ⇔Wh⇔kWh⇔MWh⇔J⇔m ² ⇔m ³ ⇔L⇔ kL⇔sec⇔min⇔hour⇔piece⇔set⇔g⇔ kg⇔t⇔¥⇔\$⇔	
8-3. [CONV.Rate] [J.000 [Unit] Non [2] ↑ 2 circuits measuring only	 In a similar way as 8-2, change the "CONV.Rate" value and unit of the second circuit. Push the <i>P</i>/PHASE key, and confirm the setting value. 8-1 will be displayed. 		

9 Setup the current cut-off rate (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)		
Screen	Operation	Note
9-1. [Measure] 6 Demand 7 CONV.Wh 월 A cut-off ♦	 In 9-1, push the red or key, and move the cursor to the "8 A cut-off". Push the red /PHASE key. 9-2 will be displayed. 	
9-2. [A cut-off] 0.5% [1] 2 circuits measuring only	 Push the ± or key, and change the set value. Push the PHASE key, and confirm the setting value. Transition to the following screen by the setting wiring type. 2 circuits measurement → To 9-3. Non-2 circuits measurement → To 9-1. 	 [A cut-off]:0.1~50.0% (<u>0.5</u>) A cut-off raterepresent as the ratio of cut-off current to rated current. *Measured value is 0A if it is less than the cut-off current.
9-3. [A cut-off] 0.5% [2] 1 2 circuits measuring only	 In a similar way as 9-2, change the "A cut-off" value of the second circuit. Push the <i>PHASE</i> key, and confirm the setting value. 9-1 will be displayed. 	

10 Setup the Simple measurement (All models except for EMU4-LG1-MB, EMU4-PX4 and EMU4-AX4)			
Screen	Operation	Note	
10-1. [Measure] 7 CONV.Wh 8 A Cut-off Simple MEA	 In 10-1, push the or key, and move the cursor to the "9 Simple MEA". Push the key. 10-2 will be displayed 		
10-2. [Simple MEA.]	 Push the	[SimpleMEA]: <u>Off</u> ⇔On⇔ SimpleMEAThe value set in the electric power and the power factor the fixed value. By measuring the current only, and calculating the values of the measurement elements. *After confirm the setting value, it is reflected to	
10-3. [FP Set] ■1.000 [1] 2 circuits measuring only	 Push the ▲ ▼ + - key, and change the power factor value in the SimpleMEA. Push the ✔/PHASE key, and confirm the setting value. Transition to the following screen by the setting wiring type. 2 circuit measurement → To 10-4. Non-2 circuits measurement → To 10-1. 	same voltage system. [FP Set]:-0.001~ <u>1.000</u> ~0.000	
10-4. [FP Set] 1.000 [2] 2 circuits measuring only	 In a similar way as 10-3, changet the power factor value of the second circuit. Push the <i>PHASE</i> key, and confirm the setting value. 10-1 will be displayed. 		

11 Setup the lor difference conversion (EMU4-LG1-MB only)		
Screen	Operation	Note
11-1. [Measure] 8 A cut-off 9 SimpleMEA 10 DIF.CONV ♦	 Push the ▲ or ▼ key, and move the cursor to the "10 DIF.CONV". Push	DIF.CONV]: <u>Off</u> ⇔On⇔ DIF.CONVTo calculate the amount of change from the lor difference converted value.
11-2. [DIF.CONV. of lor]	 Push the ⊕ or key, and select the lor difference converted value ([On]/[Off]). Push the PHASE key, and confirm the setting value. Transition to the following screen by the setting DIF.CNV([On]/[Off]). [On] setting → To 11-3. [Off] setting → To 11-1. 	
11-3. [DIF.lor Reference] 0.00 mA	 Push the	High SENS mode [DIF.lor]: <u>0.00</u> ~100.00mA Low SENS mode [DIF.lor]: <u>0</u> ~1000mA

12 Setup the AD C	onverted (EMU4-AX4 only) *Please refer to manual of EMU4-AX4 for more deta	ils.
Screen	Operation	Note
12 <u>-1.</u>	(1) In 12-1, push the () or () key, and move the cursor to the "11 AD.CONV.".	
[Measure]	(2) Push the $\mathbf{\Psi}$ /PHASE key	
9 SimpleMEA	(3) 12-2 will be displayed	
	(3) 12-2 will be displayed	
12-2.	(1) Push the \pm or \equiv key, and select the AD converted ([On]/[Off]).	[AD.CONV.]: Off⇔ <u>On</u> ⇔
[AD.CONV.]	(2) Push the (PHASE) key, and confirm the setting value.	AD CONV The setting value is set in AD convert
	(3) Transition to the following screen by the setting AD.CONV.([On]/[Off]).	per CH
[1]	[On] setting \rightarrow To 12-3	por orr
	[Off] setting \rightarrow To 12-6	
12-3.	(1) Push the (\pm) or $(-)$ key and select the input range	[Range]: Current⇔Voltage⇔
[Range]	(1) Further \mathcal{L} /PHASE have and confirm the patting value	[
Current	(2) Push the $(\underline{e}, \underline{r}, $	
	(3) 12-4 will be displayed.	
[1]		
12-4	(1) Push the $\mathbf{A} \mathbf{\nabla} + \mathbf{c}$ key and change the number of moving average	[Moving average]:001~100 (001)
[Moving		
averagel	(2) Push the (Prinks) key, and confirm the setting value.	
001 times	(3) 12-5 will be displayed.	
[1]		
12-5	(1) Push the $\mathbf{A} \mathbf{\nabla} \mathbf{+} = \mathbf{k} \mathbf{a} \mathbf{v}$ and change the upper limit lower limit and	[llop]:-32767~32767 (4095)
[Scaling]	unit of scaling	$[low]: 32767 \sim 32767 (0)$
Upp.: 04095		[Low] = 52707 + 52707 + (0)
Low.: 00000	(2) Push the (PTRASE) key, and confirm the setting value.	
Unit:Non [1]	(3) 12-6 will be displayed.	
10.0		
12-6.	(1) Push the (\pm) or $(=)$ key, and select the AD converted([On]/[Off]).	[AD.CONV.]:Off⇔ <u>On</u> ⇔
[AD.CONV.]	(2) Push the <i>I</i> /PHASE key, and confirm the setting value.	AD CONV The softing value is set in AD convert
	(3) Transition to the following screen by the setting AD.CONV.([On]/[Off]).	per CH
[2]	[On] setting \rightarrow To 12-7	porori
	Off setting \rightarrow To 12-10	
12-7.	(1) Push the $(+)$ or $(-)$ key and select the input range	[Range]: Current⇔Voltage⇔
[Range]	(1) Fuch the <i>II</i> /PHASE key, and confirm the setting value	[italige]:
Current	(2) Push the (<u>Prinksc</u>) key, and confirm the setting value.	
	(3) 12-8 will be displayed.	
[2]		
12 <u>-8.</u>	(1) Push the \blacksquare \bigtriangledown $+$ $-$ key, and change the number of moving average.	[Moving average]:001~100 (001)
[Moving	(2) Push the $(\mathbf{P}/PHASE)$ key and confirm the setting value	
average]	(3) 12-9 will be displayed	
001 times	(o) 12 5 will be displayed.	
121		
12-9.	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	$[Upp]:-32767 \sim 32767 (4095)$
[Scaling]	unit of scaling.	[Low]:-32767~32767 (<u>0</u>)
Low: 00000	(2) Push the <i>PHASE</i> key, and confirm the setting value.	[Unit]: Non ⇔A⇔mA⇔kA⇔V⇔kV⇔W⇔kW⇔MW⇔Hz⇔
Unit:Non [2]	(3) 12-10 will be displayed.	N⇔kN⇔Pa⇔kPa⇔MPa⇔C⇔deg⇔%⇔
12-10.	(1) Push the $+$ or $-$ key and select the AD converted([On]/[Off])	[AD CONV1: Off⇔On⇔
IAD CONV1	(1) Push the <i>H</i> /PHASE have and continue the continue ([Chip[Chip]).	[/.5.66]. <u>en</u>
On	(2) Push the $(-7, 10, 00)$ key, and continuing value.	AD.CONV The setting value is set in AD convert
	(3) Transition to the following screen by the setting AD.CONV.([Onj/[Off]).	per CH
[3]	[On] setting \rightarrow 10 12-11	
10.11	[Off] setting \rightarrow 10 12-14	
IZ-II.	(1) Push the \pm or \equiv key, and select the input range.	[Range]: <u>Current</u> \Leftrightarrow voltage \Leftrightarrow
	(2) Push the (PHASE) key, and confirm the setting value.	
Ouncill	(3) 12-12 will be displayed.	
[3]		
12-12.	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	[Moving average]:001~100 (001)
[Moving	(2) Puch the $\mathbf{\Psi}$ /PHASE key and confirm the setting value	
average]	(2) 12 12 will be displayed	
001 times	107 12-10 Will be displayed.	
3		
12-13.	(1) Push the ▲ ▼ + key, and change the upper limit, lower limit, and	[Upp]:-32767~32767 (<u>4095</u>)
[Scaling]	unit of scaling.	[Low]:-32767~32767 (<u>0</u>)
Upp.: 04095	(2) Push the <i>I</i> /PHASE key, and confirm the setting value.	[Unit]: Non ⇔A⇔mA⇔kA⇔V⇔kV⇔W⇔kW⇔MW⇔Hz⇔
Unit:Non [3]	(3) 12-14 will be displayed.	N⇔kN⇔Pa⇔kPa⇔MPa⇔C⇔deg⇔%⇔
12-14	(1) Puch the \pm or $=$ key and select the AD converted/[On]/[Off])	
		[//5.00(14.].0(1) <u>01</u>
On	(2) Push the (TINSE) key, and confirm the setting value.	AD.CONV The setting value is set in AD convert
	(3) I ransition to the following screen by the setting AD.CONV.([On]/[Off]).	per CH
[4]	[On] setting \rightarrow To 12-15	
	$[U\Pi]$ setting \rightarrow 10 12-1	
12-15.	(1) Push the 🖽 or 🖂 key, and select the input range.	[Range]∶ <u>Current</u> ⇔Voltage⇔
[Range]	(2) Push the (/PHASE) key, and confirm the setting value.	
Current	(3) 12-16 will be displayed.	
<u>[4</u> 1		
12-16	(1) Duch the $\mathbf{A} \mathbf{\nabla} \mathbf{+} \mathbf{-}$ key and shange the number of maximum events	[Moving average]:001~100 (001)
[Moving	key, and change the number of moving average.	[100 villy average].001~100 (001)
	(2) Push the (/PHASE) key, and confirm the setting value.	
001 times	(3) 12-17 will be displayed.	
[4]		
12-17.	(1) Push the \blacksquare \bigtriangledown \bigcirc \bigcirc (1) Rev. and change the upper limit, lower limit, and	[Upp]:-32767~32767 (4095)
[Scaling]	unit of scaling.	[Low]:-32767~32767 (0)
Upp.: 04095	(2) Push the /PHASE key and confirm the setting value	
Low.: 00000	(2) 12.1 will be displayed	
Unit:Non [4]	10/ 12-1 Will be displayed.	

13 Setup the Number Limit (EMU4-AX4 only)		
Screen	Operation	Note
13-1. [Measure] 10DIF.CONV 11AD.CONV. IRNum.Limit ♦	 (1) In 13-1, push the ▲ or ▼ key, and move the cursor to the "12 Num.Limit". (2) Push the <i>√</i>/PHASE key. (3) 13.1-1 will be displayed 	Num.LimitSet 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)		
Screen	Operation	Note
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 <i>P</i>/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.
13.1-2. [Limit A] 32767 [1]	 (1) Push the ▲ ▼ + - key, and change the set value. (2) Push the <i>√/PHASE</i> key. (3) 13.1-3 will be displayed. 	LimitSet any scaling value. You can configure the four different limits for limit A, limit B, limit C, and limit D. [Limit A]: Scaling Low~Scaling Upp
13.1-3. [Limit A] 32767 [2]	 (1) Push the ▲ ▼ + - key, and change the set value. (2) Push the <i>VPHASE</i> key. (3) 13.1-4 will be displayed. 	*If scaling setting value is set "Scaling Low > Scaling Upp", default setting is Scaling Upp.
13.1-4. [Limit A] 32767 [3]	 Push the	
13.1-5. [Limit A] 32767 [4]	 (1) Push the Transformation (1) Push the Transformation (2) Push the Presence (

13.2 Setup the multiplying factor (EMU4-AX4 only)			
Screen	Operation	Note	
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 <i>P</i>/PHASE key. (3) 13.2-2 will be displayed 	FactorSet up the multiplying factor displayed of Number Limit.	
13.2-2. [Factor]	 Push the or key, and select the multiplying factor displayed. Push the PHASE key. 13.2-3 will be displayed. 	[Factor]: <u>x1</u> ⇔x10⇔x100⇔x1000⇔	
13.2-3. [Factor]	 Push the ± or key, and select the multiplying factor displayed. Push the PHASE key. 13.2-4 will be displayed. 		
13.2-4. [Factor]	 Push the or key, and select the multiplying factor displayed. Push the PHASE key. 13.2-5 will be displayed. 		
13.2-5. [Factor]	 Push the ± or key, and select the multiplying factor displayed. Push the PHASE key. 13.2-1 will be displayed. 		

14 Save the settings			
Screen	Operation	Note	
14-1. Quit Setup Save 2 Not Save 3 Cansel 14-2. Completed	 After setting all of the items, push the SETUP key. After setting all of the items, push the SETUP key. When save the setting, push the or key, move the cursor to the "1 Save", and Push the //PHASE key. After completing the setting saving, "Completed" message will be displayed. Push the //PHASE key. Return to the operation mode. 	1 Save 2 Not Save 3 Cancel	 →Save setting and return to the operation mode. →Discard the changes and return to the operation mode. →Continue the setup.

*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 setting, please push the *PPHASE* 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 <u>CIRCUT</u> key on the "setup" screen (1-1), select the circuit, make the setting.
*In the case change or expand measuring unit, please reflect the setup value of wire phase system, rated voltage and simple measuring to reference unit in same voltage system before setting.
*Same voltage system is same setting in wire system, primary voltage, 2 circuits Measuring existence, Simple measurement.

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

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

2 Setup input (EMU4-HM1-MB, EMU4-PX4)		
Screen	Operation	Note
2-1. [I/O] 1 Input 2 OP.Time 3 Output ▼	 In 2-1, push the (a) or (v) key, and move the cursor to the "1 input". Push the (e) PHASE key. 2-2 will be displayed. 	
2-2. [Input] Non [1] EMU4-PX4 only	 Push the + or - key, and select the input method. (Non/Contact/Pulse) Push the <i>P</i>/PHASE key. Transition to the following screen by the model and setting input method. [Non] setting Model: EMU4-HM1-MB → To 2-1 Model: EMU4-PX4 → To 2-5 [Pulse] setting → To 2-3. [Contact] setting → To 2-4. 	<emu4-hm1-mb> [Input]: <u>Non</u>⇔Contact⇔Pulse⇔ <emu4-px4> [Input]: <u>Pulse</u>⇔Contact⇔Non⇔</emu4-px4></emu4-hm1-mb>
2-3. [CONV.Rate] [0.000 [Unit] Non [1] A EMU4-PX4 only	 (1) Push the ▲ ♥ + - key, and change the "CONV./Rate" value and unit. (2) Push the <i>PHASE</i> 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 2-5 	[CONV./Rate]:0.001~10000(<u>1.000</u>) [Unit]: <u>Non</u> ⇔Wh⇔kWh⇔MWh⇔J⇔m ² ⇔ m ³ ⇔L⇔kL⇔sec⇔min⇔hour⇔ piece⇔set⇔g⇔kg⇔t⇔¥⇔\$⇔
2-4. ResetMode] [1] [1] EMU4-PX4 only	 Push the ± or key, and select the reset mode. Push the PHASE key. Transition to the following screen by the model. Model: EMU4-HM1-MB → To 2-1 Model: EMU4-PX4 → To 2-5 	[ResetMode]: <u>Auto</u> ⇔Hold⇔ AutoContact input state is reset automatically when contact input is less. HoldContact input state is hold until contact input released even thought contact input is less. (For information about how to release of the contact input, ● 6.8.3)
2-5. [Input] Non [2]	 Push the + or key, and select the input method. (Non/Contact/Pulse) Push the PHASE key. Transition to the following screen by the setting input method. [Non] setting → To 2-8 [Pulse] setting → To 2-6. [Contact! setting → To 2-7. 	<emu4-px4> [Input]:Pulse⇔Contact⇔Non⇔</emu4-px4>
2-6. [CONV.Rate] 1.000 [Unit] Non [2]	 (1) Push the ▲ ♥ + - key, and change the "CONV./Rate" value and unit. (2) Push the //PHASE key, and confirm the setting value. (3) 2-8 will be displayed. 	[CONV./Rate]:0.001~10000(<u>1.000</u>) [Unit]: <u>Non</u> ⇔Wh⇔kWh⇔MWh⇔J⇔m ² ⇔ m ³ ⇔L⇔kL⇔sec⇔min⇔hour⇔ piece⇔set⇔g⇔kg⇔t⇔¥⇔\$⇔
2-7. ResetMode]	 Push the ± or key, and select the Reset mode. Push the <i>PHASE</i> key. 2-8 will be displayed. 	[ResetMode]: <u>Auto</u> ⇔Hold⇔ AutoContact input state is reset automatically when contact input is less. HoldContact input state is hold until contact input released even thought contact input is less. (For information about how to release of the contact input, ● 6.8.3)
2-8. [Input] Non [3]	 Push the	<emu4-px4> [Input]:Pulse⇔Contact⇔Non⇔</emu4-px4>
2-9. [CONV.Rate] [1.000 [Unit] Non [3]	 Push the Temperature (1) Push the Temperature (2) Push the Temperature (2) Push the Temperature (2) Push the Temperature (3) 2-11 will be displayed. 	[CONV./Rate]:0.001~10000(<u>1.000</u>) [Unit]: <u>Non</u> ⇔Wh⇔kWh⇔MWh⇔J⇔m ² ⇔ m ³ ⇔L⇔kL⇔sec⇔min⇔hour⇔ piece⇔set⇔g⇔kg⇔t⇔¥⇔\$⇔
2-10. ResetMode] Auto [3]	 Push the or key, and select the Reset mode. Push the PHASE key. 2-11 will be displayed. 	[ResetMode]: <u>Auto</u> ⇔Hold⇔ AutoContact input state is reset automatically when contact input is less. HoldContact input state is hold until contact input released even thought contact input is less. (For information about how to release of the contact input, ● 6.8.3)

So	creen	Operation	Note
2-	11. [Input] Non	 (1) Push the ± or — key, and select the input method. (Non/Contact/Pulse) (2) Push the <i>I</i>/PHASE key. (2) Transition to the following sense but the setting input method. 	<emu4-px4> [Input]: Pulse⇔Contact⇔Non⇔</emu4-px4>
	[4]	[Non] setting \rightarrow To 2-1 [Pulse] setting \rightarrow To 2-12. [Contact] setting \rightarrow To 2-13.	
2-	12. [CONV.Rate] 1.000 [Unit] Non [4]	 Push the (1) Push the (1) Push the (2) Push the (2) Push the (2) Push the (2) PHASE key, and confirm the setting value. (3) 2-1 will be displayed. 	[CONV./Rate]:0.001~10000(<u>1.000</u>) [Unit]: <u>Non</u> ⇔Wh⇔kWh⇔MWh⇔J⇔m ² ⇔ m ³ ⇔L⇔kL⇔sec⇔min⇔hour⇔ piece⇔set⇔g⇔kg⇔t⇔¥⇔\$⇔
2-	13. ResetMode]	 Push the ± or = key, and select the Reset mode. Push the PHASE key. 2-1 will be displayed. 	[ResetMode]: <u>Auto</u> ⇔Hold⇔ AutoContact input state is reset automatically when contact input is less. HoldContact input state is hold until contact input released even thought contact input is less. (For information about how to release of the contact input, ● 6.8.3)

3 Setup the operation time measurement (All models except for EMU4-LG1-MB and EMU4-AX4)			
Screen	Operation	Note	
3-1	(1) In 3-1, Push the 🔺 or 💌 key, and move the cursor to the "2 OP.Time".	[OP.Time]∶ <u>Off</u> ⇔On⇔	
[I/O]	(2) Push the VPHASE key.		
1 Input	(3) 3-2 will be displayed.	EMU4-HM1-MB	
3 Output -		[OP.Time]: <u>A</u> ⇔x⇔	
3-2.	(1) Push the \pm or $-$ key, and select the operation time measurement.	EMU4-BM1-MB, EMU4-A2, EMU4-VA2	
[OP.Time]	(On/Off)	[OP.Time]: A	
Off	(2) Push the //PHASE key.		
[1]	(3) Transition to the following screen by the model, setting wiring type and	LIVIU4-PA4	
↑	existence of the operation time measurement.	contact the CH is not displayed	
Model: FMI 14-PX4 or	Model: EMU4-PX4 \rightarrow To 3-4	contact, this of his hot displayed.	
2 circuits measuring	Model: Other than EMU4-PX4	Operating time is integrated time while the current	
only	2 circuit measurement and [Off] setting →To 3-4	measured value is higher than the rated	
	Non-2 circuit measurement and [Off] setting \rightarrow To 3-1.	current×Current cut-off rate when select Current.	
	[On] setting →To 3-3	Operating time is integration time while Contact	
3-3.	(1) Push the \pm or $-$ key, and select the operation time measurement mode.	input is ON when Contact input.	
[OP.Time	(2) Push the //PHASE key.		
Modej	(3) Transition to the following screen by the setting wiring type.		
[1]	2 circuit measurement \rightarrow To 3-4		
<u>· · ·</u>	Non-2 circuit measurement \rightarrow To 3-1		
2 circuit measuring			
only			
3-4	(1) Push the \pm or $=$ key and coloct the operation time measurement	4	
IOP Time1	(1) Push the $\mathcal{I}/PHASE$ have		
Off	(3) Transition to the following screen by the model, and setting existence of the		
[2]	operation time measurement.		
	Model: EMU4-PA4 \rightarrow 10 3-0		
	Model: Other than EM04-PX4		
	$[On] setting \rightarrow 10.3-1$		
3-5	(1) Push the \pm or $=$ key and select the operation time massurement mode	1	
[OP Time	(1) I don the C O C key, and select the operation time measurement mode.		
[OTTINIO Mode]			
A	(3) 3-1 will be displayed.		
[2]			
3-6	(1) Push the \pm or $-$ key, and select the operation time measurement.		
[OP.Time]	(2) Push the /PHASE key.		
Off	(3) 3-7 will be displayed.		
[3]			
3-7.	(1) Push the $(+)$ or $(-)$ key and select the operation time measurement		
[OP.Time]	(2) Push the $\mathbf{\Psi}$ /PHASE key		
	(3) 3-1 will be displayed		
	(3/ 3-1 will be displayed.		
4			

4 Setup Output (EMU4-HM1-MB, EMU4-A2, EMU4-VA2, EMU4-PX4, EMU4-AX4)			
Screen	Operation	Note	
4-1. [I/O] 1 Input 2 OP.Tilme € Output ♦ 4-2	 (1) In 4-1, push the ▲ or ▼ key, and move the cursor to the "3 Output". (2) Push the	EMU4-HM1-MB, EMU4-A [Output]: <u>Non</u> ⇔Pulse⇔A EMU4-PX4, EMU4-AX4 [Output]: <u>Non</u> ⇔Alarm⇔C	2, EMU4-VA2 larm⇔ ontact⇔
[Output] Non	 (2) Push the <i>P</i>/PHASE key. (3) Transition to the following screen by the model, setting wiring type and the output signal type. (3) Model: EMU4-PX4 or EMU4-AX4 → To 4-1 Model: EMU4-PM1-MB, EMU4-A2 or EMU4-VA2 [Non] setting → To 4-1 2 circuits measurement and [Pulse] setting → To 4-3 Non-2 circuit measurement and [Pulse] setting → To 4-3 Non-2 circuit measurement and [Alarm] setting → To 4-3 Non-2 circuit measurement and [Alarm] setting → To 4-1 	The pulse output unit cha [Pulse]: <u>Full load power (kW)</u> <u>Wfull<12kW</u> <u>12kW ≤ Wfull < 120kW</u> <u>120kW ≤ Wfull <</u> <u>1200kW ≤ Wfull <</u> <u>1200kW</u> <u>1200kW</u> <u>12000kW ≤ Wfull <</u>	Setting range 0.001⇔0.1⇔1⇔1.0+1⇔ 0.01⇔0.1⇔1⇔10⇔ 0.1⇔10+100⇔ 1⇔10⇔100⇔ 10⇔100⇔1000⇔ 10⇔100⇔1000⇔
4-3. [Output] [1] 4-4. [Pulse] [0.01] kWh/Pulse	 Push the + or - key, and select the output target. Push the P/PHASE key. Transition to the following screen by the setting output signal type. [Pulse] setting → To 4-4 [Alarm] setting → To 4-1 Push the T + c key, and change the pulse output unit. Push the P/PHASE key, and confirm the setting value. 4-1 will be displayed. 	120000kW 120000kW ≤ Wfull [Output] : <u>1</u> ⇔2⇔ *It is set which circuit it d it inputs 2 circuits per a If the target of external side circuit, Set "1". If the target of external side circuit. Set "2".	10000⇔ 1000⇔10000⇔ 100000⇔ oes external output, because terminal block for 1P2W. output is 1K, 1L connection output is 3K, 3L connection

5 Save the setting			
Screen	Operation	Note	
5-1. Quit Setup Save 2 Not Save 3 Cancel	 After setting all of the items, push the SETUP key. 5-1 will be displayed. When save the setting, push the ▲ or ▼ key, move the cursor to the "1 Save", and Push the (4) After completing the setting saving, "Completed" message will be displayed. Push the (5) Return to the operation mode, and it will be displayed electric energy screen. 	 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 but line voltage as primary voltage. *2: Coefficient is varies according to the phase wire system. 1P2W →1, 3P3W/3P4W →1.73 *If you change a setting, please push the <i>I</i> /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 <u>CIRCUIT</u> key on the "Setup" screen (1-1), select the circuit, make the setting.			

6.3.4 Communication setup-the settings for the MODBUS® communication (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB only)

1 Transition to the setup mode		
Screen	Operation	Note
1-1. [Setup] 1 Measure	 (1) Push the <u>SETUP</u> key in operation mode. (2) 1-1 will be displayed. 	-
2 I/O € COM ♦	 (1) Confirm that the cursor focuses the "3 COM.", push the (P/PHASE) key. (2) 2-1 will be displayed. 	

2 Setup MODBUS [®] address (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB)		
Screen	Operation	Note
2-1. [COM] 1 Address 2 Baut rate 3 Parity ↓	 In 2-1, push the or vertice key, and move the cursor to the "1 Address". Push the vertice key. 2-2 will be displayed. 	[Address]: 001~255
2-2. [Address] 0 01	 Push the (1) Push the (1) Push the (2) Push the (2) Push the (2) PHASE key, and confirm the setting value. (3) 2-1 will be displayed. 	

3 Setup the baut ra	3 Setup the baut rate (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB)		
Screen	Operation	Note	
3-1. [COM] 1 Address 2 Baut rate 3 Parity ♦	 In 3-1, push the ▲ or ▼ key, and move the cursor to the "2 Baut rate". Push the //PHASE key. 3-2 will be displayed. 	[Baut rate]:2400⇔4800⇔9600⇔ <u>19200</u> ⇔38400⇔	
3-2. [Baut rate] 19200 bps	 Push the ⊕ or e key, and select the baut rate. Push the e		

4 Setup the parity	4 Setup the parity (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB)		
Screen	Operation	Note	
4-1. [COM] 1 Address 2 Baut rate S Parity ♦	 In 4-1, push the or v key, and move the cursor to the "3 Parity". Push the v/PHASE key. 4-2 will be displayed. 	[Parity]:Non⇔ <u>Even</u> ⇔Odd⇔	
4-2. [Parity] Even	 Push the + or key, and select the parity. Push the /PHASE key. 4-1 will be displayed. 		

5 Setup the stop bit (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB)		
Screen	Operation	Note
5-1. [COM] 2 Baut rate 3 Parity ⊈ Stop bit ♦	 (1) In 5-1, push the ▲ or ▼ key, and move the cursor to the "4 Stop bit". (2) Push the	[Stop bit]: <u>1</u> ⇔2⇔
5-2. [Stop bit]	 Push the + or key, and select the stop bit. Push the /PHASE key. 5-1 will be displayed. 	

6 Save the settings			
Screen Operation	Note		
 6-1. (1) After setting all of the items, push the SETUP key. (2) 6-1 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. Push the (/PHASE) key. (5) Return to the operation mode, and it will be displayed electric energy screen. 	 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. 		

*If you change a setting, 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 <u>CIRCUIT</u> key on the "Setup" screen (1-1), select the circuit, make the setting.

6.3.5 Logging setup-the settings for the logging ID (Set only EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB connected the EMU4-LM.)

1 Transition to the setup mode		
Screen	Operation	Note
1-1. [Setup] 2 I/O 3 COM ■ Logging ♦	 Push the SETUP key in operation mode. 1-1 will be displayed. Confirm that the cursor focuses the "4 Logging", and push the <i>PHASE</i> key. 2-1 will be displayed. 	

2 Setup the logging unit ID (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB)		
Screen	Operation	Note
2-1. [Logging] ID 2 Data clear 0 Back	 (1) In 2-1, push the or key, and move the cursor to the "1 ID". (2) Push the <i>P</i>/PHASE key. (3) 2-2 will be displayed. 	[ID]: <u>001</u> ~255
2-2.	 Push the T = key, and change the logging unit ID. Push the P + key. Confirm the setting value. 2-1 will be displayed. 	

3 Save the settings			
Screen	Operation	Note	
3-1. Quit Setup Save 2 Not Save 3 Cancel	 After setting all of the items, push the SETUP key. 3-1 will be displayed. When save the settings, push the ▲ or ▼ key, move the cursor to the "1 Save", and push the	 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. 	
*If you change a patting places much the H/PHASE low and he give to determine changes. If without determine the changes will be discorded			

*If you change a setting, please push the *L/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 <u>CIRCUIT</u> key on the "Setup" screen (1-1), select the circuit, make the setting.

6.3.6 Clock setup-the settings for the clock. (Set only EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB connected the EMU4-LM)

1 Transition to the setup mode		
Screen	Operation	Note
1-1. [Setup] 3 COM 4 Logging ▲ S Clock ▼	 Push the <u>SETUP</u> key in operation mode. 1-1 will be displayed. Confirm that the cursor focuses the "5 Clock", push the <u>PHASE</u> key. 2-1 will be displayed. 	

2 Clock Setup (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB)			
Screen Operation		Note	
2-1. (1) I [Clock] 20∰/01/01 00:00 OK Cancel (4) F (5) I 2-2. (6) A t will be cleared. (7) F (8) 2 (9) V t (10) A	In 2-1, Push the ▲ or ▼ key, and move the cursor to the "Year". Push the + or ← key. Change the set value. Push the ▼ key, and move the cursor to the "Month". Push the + or ← key. Change the set value. In a similar way, change the "Day", "Hour", "Minute". ^{Note 1} After setting all of the items, push the ▲ or ▼ key, and move the cursor to the "OK". Push the ✔/PHASE key, and clock setting changed. ^{Note2} 2-2 will be displayed. When to exit the clock setup, push the + or ← key, and move the cursor to the "OK", and push the ✔/PHASE key.(If select the "Cancel", return to 1-1) After completing the settings saving, and 1-1 will be displayed.	[Year]:00⇔01⇔02⇔⇔13⇔⇔99⇔ [Month]:01⇔02⇔03⇔04⇔⇔12⇔ [Day]:01⇔02⇔⇔29⇔30⇔31⇔ [Hour]:00⇔01⇔⇔12⇔13⇔23⇔ [Minute]:00⇔01⇔⇔59⇔ Note 1 : The setting range of the day changes with setting in the year and the month. Note 2 : It becomes "00" second when the timing of pushing the ✔/PHASE key at the clock setup screen. Note 3: The logging data stored in EMU4-LMis deleted if clock setting is changed. Measured data stored in SD card is not deleted	

*If you change a setting, please push the *LPHASE* 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. *Setup value is stored in Logging unit (EMU4-LM). *If you want to set the other circuit, push the <u>CIRCUIT</u> key on the "Setup" screen (1-1), select the circuit, make the setting.

6.3.7 Display setup - Setup about display such as LCD contrast or backlight lighting pattern.

1 Transition to the setup mode			
Screen	Operation	Note	
1-1. [Setup] 4 Logging 5 Cloock ◙ Display ↓	 Push the <u>SETUP</u> key in operation mode. 1-1 will be displayed. Confirm that the cursor focuses the "6 Display, push the <i>PHASE</i> key. 2-1 will be displayed. 		

2 Setup the LCD contrast				
Screen	Operation	Note		
2-1. [Display] Contrast 2 Backlight 0 Back	 (1) In 2-1, push the ▲ or ▼ key, and move the cursor to the "1 Contrast". (2) Push the	[Contrast]:		A Pale
2-2. [Contrast] □■■■■■□□□□⊞	 Push the + or - key, and change the LCD contrast value. Push the //PHASE key. 2-1 will be displayed. 			↓↓ ↓ Dark

3 Setup the backlight			
Screen	Operation	Note	
3-1. [Display] 1 LCD 2 Backlight 0 Back	 In 3-1, push the or key, and move the cursor to the "2 Backlight". Push the <i>P</i>/PHASE key. 3-2 will be displayed. 	Auto OFFIf 5 minute has passed since the last key operation, backlight will be OFF automatically. There are any key operation, backlight will be lighted again. Always ONBacklight is always lighted.	
3-2. [Backlight] Auto OFF Always On	 Push the ▲ or ▼ key, and select the backlight condition. (Auto OFF/Always ON) Push the ✔/PHASE key. 3 3-1 will be displayed. 		

4 Save the settings				
Screen	Operation	Note		
4-1. Quit Setup 3 Save 2 Not Save 3 Cancel	 After setting all of the items, push the SETUP key. 4-1 will be displayed. When save the settings, push the ▲ or ▼ key, move the cursor to the "1 Save", and Push the	 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. 		

*If you change a setting, 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. * Setup value is stored in Display unit (EMU4-D65).

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

6.3.8 F/W VER. setup - Display the F/W Version of Energy Measuring Unit.

1 Transition to the setup mode			
Screen	Operation	Note	
1-1. [Setup]	 Push the SETUP key in operation mode. 1-1 will be displayed. 		
6 Display	 (1) Confirm that the cursor focuses the "7 F/W VER.", push the <i>PHASE</i> key. (2) 2-1 will be displayed. 		

2 Display the F/W version		
Screen	Operation	Note
2-1. [F/W VER.] 1000 MODEL: EMU4-BM1-MB	 (1) Transition to the following screen by push the specific key push. Push the <i>P</i>/PHASE key → To 1-1 Push the CIRCUIT key → To 2-1(defferent circuit) Push the or key → To 2-2 	Display the model and F/W Version of energy measurement unit that is connected. *In ver.1.05: 2-2 is not displayed, when push or version version ver
2-2. [F/W VER.] 2000 MODEL: [EMU4-D65]	 (1) Transition to the following screen by push the specific key push. Push the	Display the model and F/W Version of display unit. *In ver.1.05: 2-2 is not displayed.

6.4 Alarm setup mode

6.4.1 Flow of alarm setting

「(1)Upper/Lower limit alarm」「(2)Leak current alarm」 is setup when connected to EMU4-** in alarm setting.

(1) Upper/Lower limit alarm

Setting for the Upper/Lower alarm of current, voltage, electric power and power factor in MU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2, EMU4-PX4 and EMU4-AX4. *****6.4.2 Setup the upper/lower limit alarm.



(2) Leak current alarm The settings for the limit alarm of the Leak current lo, lor EMU4-LG1-MB only. 6.4.3 Setup the monitoring leak current alarm

EMU4-LG1-MB	
Transition to the alarm setting mode(Leak current alarm)	
lo monitoring element	
↓	
lo1-alarm	
↓	
lo2-alarm	
Io1-alarm count	
lo2-alarm count	
1	
lor monitoring element	
lor1-alarm	
lor2-alarm	
1	
lor1-alarm count	
1	
lor2-alarm count	
Alarm output target	
1	
Alarm delay	
+	
Reset Mode	
1	
Save the setting (End of the alarm mode)	

6.4.2 Setup the upper/lower limit alarm condition

Setup the upper/lower limit alarm condition. Setup in EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2, EMU4-PX4 and EMU4-AX4.

1(1) Transition to the Alarm setup mode (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operation	Note
1(1)-1. [Alarm Set.] Limit 2 lo/lor	 Push the <u>SETUP</u> key in alarm mode. 1(1)-1 will be displayed. Push the confirm the cursor on the "1 Limit" <i>PHASE</i> key. 1(1)-2 will be displayed. 	Push simultaneous A V key, and transition from in operation mode to alarm mode.
1(1)-2. 2 circuit measuring only ↓ [Alarm] [1] off	 Push the	[Demand] <u>Off</u> ⇔On⇔
1(1)-3. 2 circuit measuring only [Elements] [1] A upp. 2 A low. 3 VL-L Upp. 4 VL-L Low. 5 VL-N Upp. 6 VL-N Low. 7 W Upp. 8 W Low. 9 PF Upp. 10PF Low. 11A _N Upp. 12 PLS.Upp. 13UNB.A Upp. 14UNB.V Low. 0 Back	A upper alarm \rightarrow To 2 A lower alarm \rightarrow To 3 V _{L-L} upper alarm \rightarrow To 4 V _{L-L} lower alarm \rightarrow To 5 V _{L-N} lower alarm \rightarrow To 6 V _{L-N} lower alarm \rightarrow To 7 W upper alarm \rightarrow To 7 W upper alarm \rightarrow To 8 W lower alarm \rightarrow To 9 PF upper alarm \rightarrow To 10 PF lower alarm \rightarrow To 10 PF lower alarm \rightarrow To 11 A _N upper alarm \rightarrow To 12 PULSE upper alarm \rightarrow To 13 UNB.A upper alarm \rightarrow To 14 UNB.V upper alarm \rightarrow To 15	

1(2) Transition to the Alarm setup mode (EMU4-PX4, EMU4-AX4)		
Screen	Operation	Note
1(2)-1. [Alarm Set.] 1 Limit 2 Io/Ior	 Push the SETUP key in alarm mode. 1(2)-1 will be displayed. Push the confirm the cursor on the "1 Limit"	Push simultaneous () key, and transition from in operation mode to alarm mode.

2 Setup the upper limit alarm (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operate	Note
2-1.	(1) In 2-1, Push the 🔺 or 💌 key, and move the cursor to the "1 A Upp.".	
2 circuit measuring only	(2) Push the (2/PHASE) key.	
▼	(3) 2-2 will be displayed.	
2 A Low.		
3 V _{L-L} Upp. _▼		
2-2.	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	[A Upp.] : 0~120% of primary current (100%)
2 circuit measuring only	(2) Push the $\mathbf{\Psi}$ /PHASE key and confirm the setting value	*The minimum step of settable value is varies by
↓ ↓	(3) 2-3 will be displayed	primary current.
[A Upp.] [1]		Fewer than 40A Step: 0.01A
0100.0 A		40A ~ 400A Step: 0.1A
		400A ~ 4000A Step: 1A
		4000A ~ Step: 10A
2-3. 2 circuit measuring only	(1) Push the \pm or \equiv key, and select the alarm delay time.	[Delay]: Usec \$55ec \$105ec \$205ec \$305ec \$
	(2) Push the (PHASE) key.	40sec⇔50sec⇔1min⇔2min⇔3min⇔
	(3) 2-4 will be displayed.	4min⇔5min⇔
2-4.	(1) Push the \pm or \equiv key, and select the reset mode.	[Ksetiviode]: <u>Auto</u> ⇔Hold⇔
2 circuit measuring only	(2) Push the (PHASE) key.	AutoAlarm is reset automatically when measured
	(3) Transition to the following screen by the setting wiring type.	Hold Alarm is hold until alarm released even
ResetModej [1]	2 circuit measurement \rightarrow To 2-5	thought measured value is less than setting
	Non-2 circuit measurement \rightarrow 10 1(1)-1	value.
		(Release alarm 🖝 6.8.3 Release alarm)
2-5.	(1) Push the \pm or $-$ key, and select the alarm existence of second circuit.	[Alarm]∶ Off ⇔On⇔
2 circuit measuring only	(2) Push the (2/PHASE) key.	
	(3) Transition to the following screen by setting the alarm existence.	
[Alarm] [2]	[Off] setting \rightarrow To 1(1)-1	
	[On] setting \rightarrow To 2-6	
2-6.	(1) In 2-6, Push the \blacktriangle or ∇ key, and move the cursor to the "2 A Low.".	
2 circuit measuring only	(2) Push the (/PHASE) key.	
	(3) 2-7 will be displayed.	
[Element] [2]		
2 A Low.		
3 VL-L Upp.		
2-7.	(1) Push the 🔺 💌 🕂 — key, and change the current lower limit.	[A Upp.] : 0~120% of primary current (100%)
2 circuit measuring only	(2) Push the <i>PHASE</i> key, and confirm the setting value.	*The minimum step of settable value is varies by
	(3) 2-8 will be displayed.	primary current.
[A Low.] [2]		Fewer than 40A Step: 0.01A
0100.0 A		$40A \sim 400A$ Step. 0. 1A $400A \sim 4000A$ Step: 1A
		4000A ~ Step: 1A
2-8.	(1) Push the + or - key, and select the alarm delay time of second circuit	[Delay]: 0sec⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(2) Push the $\mathbf{\Psi}$ /PHASE key	40sec⇔50sec⇔1min⇔2min⇔3min⇔
↓	(3) 2-9 will be displayed.	4min⇔5min⇔
[Delay] [2]		
0sec		
2-9.	(1) Push the (\pm) or (\pm) key and select the reset mode of second circuit	[RsetMode]: Auto ⇔Hold⇔
2 circuit measuring only	(2) Push the \mathbf{P} /PHASE key	AutoAlarm is reset automatically when measured
↓ ↓ ¹	(2) 1(1)-1 will be displayed	value is less then setting value.
[ResetMode] [2]		HoldAlarm is hold until alarm released even
Auto		thought measured value is less than setting
		Value.
		(Release alarm 🐨 6.8.3 Release alarm)

3 Setup the lower limit alarm (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operate	Note
3-1	(1) In 3-1, push the 🔺 or 💌 key and move the cursor to the "2 A Upp.".	
2 circuit measuring only	(2) Push the (2/PHASE) key.	
↓	(3) 3-2 will be displayed.	
[Element] [1]		
1 A Upp		
 2 circuit measuring only 	(1) Push the (1) (1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	[ALOW]: $0 \sim 120\%$ of primary current ($\underline{0\%}$)
2 choat modeaning only	(2) Push the PHASE key, and confirm the setting value.	nime minimum step of settable value is valies by
	(3) 3-3 will be displayed.	Fewer than 40A Step: 0.01A
		40A ~ 400A Step: 0.1A
		400A ~ 4000A Step: 1A
		4000A ~ Step: 10A
3-3.	(1) Push the \pm or \Box key, and select the alarm delay time.	[Delay]:0sec⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(2) Push the /PHASE key	40sec⇔50sec⇔1min⇔2min⇔3min⇔
↓	(3) 3-4 will be displayed	4min⇔5min⇔
[Delay] [1]		
Osec		
 2 circuit measuring only 	(1) Push the \pm or \equiv key, and select the reset mode.	[RsetMode]: <u>Auto</u> ⇔Hold⇔
L	(2) Push the (PHASE J key.	AutoAlarm is reset automatically when measured
[PosotModo] [1]	(3) Transition to the following screen by the setting wiring type.	Hold Alarm is hold until alarm released even
Auto	2 circuit measurement \rightarrow 10 3-5	thought measured value is less than setting
	Non-2 circuit measurement \rightarrow 10 1(1)-1	value.
		(Release alarm 🖝 6.8.3 Release alarm)
3-5.	(1) Push the \pm or $-$ key, and select the alarm existence of second circuit.	[Alarm]: <u>Off</u>⇔On⇔
2 circuit measuring only	(2) Push the <i>I</i> /PHASE key.	
↓	(3) Transition to the following screen by setting the alarm existence.	
[Alarm] [2]	[Off] setting \rightarrow To 1(1)-1	
	[On] setting \rightarrow To 3-6	
3-6.	(1) In 3-6 Push the (A) or (V) key and move the cursor to the "2 A I ow"	
2 circuit measuring only	(2) Push the $\mathbf{\Psi}$ /PHASE key	
↓ ↓	(3) 3-7 will be displayed	
[Element] [2]	(o) o i will be displayed.	
1 A Upp		
J VL-LOPP Ţ		
3-7.	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	[ALow]: $0 \sim 120\%$ of primary current (<u>0%</u>)
2 circuit measuring only	(2) Push the (PHASE) key, and confirm the setting value.	* The minimum step of settable value is varies by
*	(3) 3-8 will be displayed.	primary current.
[A Low.] [2]		$400 \sim 4000$ Step: 0.01A
00.1 A		400A ~ 4000A Step: 0.17
		4000A ~ Step:10A
3-8.	(1) Push the (+) or (-) key and select the alarm delay time of second circuit	[Delav] 0sec⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(1) I doin the PDF Rey, and select the alarm delay time of second circuit.	40sec⇔50sec⇔1min⇔2min⇔3min⇔
↓ ↓	(2) 2 Q will be displayed	4min⇔5min⇔
[Delay] [2]	(3) 3-9 will be displayed.	
Osec		
3-9. 2 circuit measuring only	(1) Push the \pm or \ddagger \Box key, and select the reset mode of second circuit.	[RsetMode]: <u>Auto</u> ⇔Hold⇔
	(2) Push the (/PHASE) key.	AutoAlarm is reset automatically when measured
	(3) 1(1)-1 will be displayed.	Hold Alarm is hold until alarm released even
Auto		thought measured value is less than setting
		value.
		(Release alarm 🖝 6.8.3 Release alarm)

4 Setup the upper /log	wer limit alarm line voltage (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-	VA2)
Screen	Operation	Note
4-1.	(1) In 3-1, Push the ▲ or ▼ key, and move the cursor to the 3 VL-Upp.".	
2 circuit measuring only	(2) Push the //PHASE key.	
↓	(3) 4-2 will be displayed.	
[Element] [1]		
1 A Upp.		
4-2.	(1) Push the \square \square \square key, and change the upper limit value of line	[V _{L-L} Upp.]:0 ≦primary voltage ≤ 100%×15/11
2 circuit measuring only	voltage.	(<u>110% of primary voltage)</u>
▼	(2) Push the <i>PHASE</i> key, and confirm the setting value.	I he minimum step of settable value is varied by primary
$ V_{L-L}Upp. $ [1]	(3) 4-3 will be displayed.	Voltage.
00242 V		$300/_{-}3000/$ Step: 1/
		3000V~110000V Step: 10V
4-3.	(1) Push the + or - key and select the delay	[Delay]: 0sec \$5sec \$10sec \$20sec \$30sec \$
2 circuit measuring only	(1) Push the <i>H</i> /PHASE low	40sec⇔50sec⇔1min⇔2min⇔3min⇔
1		
[Delay] [1]	(3) 4-4 will be displayed.	
Osec		
4-4.	(1) Push the \vdash or \Box key, and select the Reset Mode.	[RsetMode]∶ <u>Auto</u> ⇔Hold⇔
2 circuit measuring only	(2) Push the <i>PHASE</i> key.	AutoAlarm is reset automatically when measured
•	(3) Transition to the following screen by the selection of wiring type.	value is less then setting value.
[Reset Mode] [1]	2 circuit measurement \rightarrow To 4-5	HoldAlarm is hold until alarm released even
Auto	Non-2 circuit measurement \rightarrow To 1-1	unought measured value is less than setting
		(Release alarm 1006 8.3 Release alarm)
4-5	(1) Push the \pm or \pm \pm key select the alarm existence of second circuit	
2 circuit measuring only		
↓ ↓ · ·		
[Alarm] [2]	(3) Transition to the following screen by the setting the alarm existence.	
Off	$[Off]$ setting \rightarrow 10 1(1)-1	
	[OII] setung \rightarrow 10 4-6	
4-6. 2 circuit measuring only	(1) In 4-6, push the \square or \square key, and move the cursor to the "4 V _{L-L} Low.".	
	(2) Push the (PHASE) key.	
[Element] [2]	(3) 4-7 will be displayed.	
1 A Upp.		
2 A Low.		
🖸 V _{L-L} Upp. 🌻		
4-7.	(1) Push the 🔺 💌 🛨 🖃 key, and change the lower limit value of line	[V _{L-L} Low.]:0≦Primary voltage≦100%×15/11
2 circuit measuring only	Voltage.	(110% of primary voltage)
	(2) Push the (PHASE) key, and confirm the setting value.	The minimum step of settable value is varied by primary
[V _{L-L} Low.] [2]	(3) 4-8 will be displayed.	voltage.
00242 V		Fewer than 300V Step: 0.1V
		300V~3000V Step: 1V
4-8	(1) Duch the (\pm) or (\pm) key and the elerm delay time	[Delay]: 0sec = 5sec = 10sec = 20sec = 30sec =
2 circuit measuring only		[Delay]. <u>Usec</u> = 0 Sec = 10 Sec = 20 Sec = 50 Sec = 40 Sec = 50 Sec = 1 min = 2 min = 2 min = 2
↓ ↓	(2) Push the (PHASE) key.	
[Delav] [2]	(3) 4-9 will be displayed.	4111110051111100
Osec		
		[DeetMede]: Aute # Lold#
4-9. 2 circuit measuring only	(1) Push the \pm or \equiv key, and select the Reset Mode.	
L	(2) Push the (/PHASE) key.	value is less then setting value
▼ [Deest Medel [0]	(3) 1(1)-1 will be displayed.	Hold Alarm is hold until alarm released even
		thought measured value is less than setting
		value.
		(Release alarm 🖝 6.8.3 Release alarm)

5 Setup the lower limit alarm line voltage (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operation	Note
5-1.	(1) In 5-1, Push the 🔺 or 💌 key, and move the cursor to the "4 VL-Low.".	
2 circuit measuring only	(2) Push the //PHASE key.	
↓	(3) 5-2 will be displayed.	
[Element] [1]		
1 A Low.		
ISIV Low ▲		
D-Z. 2 circuit measuring only	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	$[V_{L-L} Low.]: 0 \ge primary voltage \ge 100\% \times 15/11$
		(<u>0% of primary voltage)</u>
	(2) Push the (PHASE) key, and confirm the setting value.	I ne minimum step of settable value is varied by primary
[000085] V	(3) 5-3 will be displayed.	Fewer than 300V Step: 0.1V
		300V~3000V Step: 1V
		3000V~110000V Step: 10V
5-3.	(1) Push the \pm or \Box key, and select the delay.	[Delay]:0sec⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(2) Push the (PHASE) key	40sec⇔50sec⇔1min⇔2min⇔3min⇔
↓	(3) 5-4 will be displayed	4min⇔5min⇔
[Delay] [1]	(o) o + will be displayed.	
Osec		
5-4	(1) Push the + or - key and select the Reset Mode	[RsetMode] · Auto ⇔Hold⇔
2 circuit measuring only	(1) I ush the <i>II</i> /PHASE key	Auto Alarm is reset automatically when measured
l ↓	(2) Push the <u>collection</u> key.	value is less then setting value.
[Reset Mode] [1]	(3) Transition to the following screen by the selection of wining type.	HoldAlarm is hold until alarm released even
Auto	2 circuits measurement \rightarrow To 1(1)-1	thought measured value is less than setting
	$101^{-2} \text{ circuits measurement} \rightarrow 101(1)^{-1}$	value.
		(Release alarm •6.8.3 Release alarm)
5-5.	(1) Push the $+$ or t $-$ key, select the alarm existence of second circuit.	[Alarm]∶ Off ⇔On⇔
2 circuit measuring only	(2) Push the (PHASE) key.	
↓ ↓	(3) Transition to the following screen by the setting the alarm existence.	
[Alarm] [2]	[Off] setting \rightarrow To 1(1)-1	
	[On] setting \rightarrow To 5-6	
5-6.	(1) In 5-6, push the \frown or \bigtriangledown key, and move the cursor to the "4 V _{L-L} Low.".	
2 circuit measuring only	(2) Push the (PHASE) key.	
↓	(3) 5-7 will be displayed.	
[Element] [2]		
2 A LOW.		
VL-LLOW. ♦		
5-7.	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	[V _{L-L} Low.]:0≦Primary voltage≦100%×15/11
2 circuit measuring only	Voltage.	(<u>0% of primary</u> voltage)
€	(2) Push the (PHASE) key, and confirm the setting value.	The minimum step of settable value is varied by primary
[V _{L-L} Low.] [2]	(3) 5-8 will be displayed.	voltage.
<u>0</u> 00085 V		Fewer than 300V Step: 0.1V
		300V~3000V Step: 1V
5-8		
2 circuit measuring only		[Deldy]: <u>Usec</u> Stell 10sec 20sec 30sec
↓ J	(2) Push the (PHASE) key.	
[Delay] [2]	(3) 5-9 will be displayed.	400000
Osec		
5.0		[PootMode]: Autochilde
2 circuit measuring only	(1) Push the the or the key, and select the Reset Mode.	
Letter and the second sec	(2) Push the (PHASE) key.	value is less then setting value
[Reset Mode] [2]	(3) 1(1)-1 will be displayed.	HoldAlarm is hold until alarm released even
Auto		thought measured value is less than setting
		value.
		((Release alarm 🖝 6.8.3 Release alarm)

6 Setup the upper limit phase voltage (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operation	Note
6-1. [Element] 3 V _{L-L} Upp. 4 V _{L-L} Low. 5 V _{L-N} Upp. ♦	 (1) In 6-1 push ▲ or ▼ key, and move the cursor to the "5 V_{L-N}Upp.". (2) Push the	
6-2. [VL-NUpp.] [00242 V	 (1) Push the ▲ ▼ + - key, and change the V_{L-N}Upp. Value. (2) Push the <i>I</i>/PHASE key, and confirm the setting value. (3) 6-3 will be displayed. 	[VL-N Upp]: 0≦Primary voltage≤100%×15/11 (110% of primary voltage) The minimum unit of settable value is varid by primary voltage. Fewer than 300V Step: 0.1V 300V~3000V Step: 1V 3000V~110000V Step: 10V
6-3. [Delay] 0sec	 Push the ± or key, and select the delay time. Push the key. 6-4 will be displayed. 	[Delay]: <u>0sec</u> ⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔
6-4. [ResetMode]	 Push the ± or key, and select the Resetmode. Push the PPIASE key. 1(1)-1 will be displayed. 	[RsetMode]: <u>Auto</u> ⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm ♥ 6.8.3 Release alarm)

7 Setup the lower limit phase voltage (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operation	Note
7-1. [Element] 4 V _{L-L} Low. 5 V _{L-N} Upp. 3 V _{L-N} Low. ♦	 (1) In 7-1, push the ▲ or ▼ key,and move the cursor to the "6 V_{L-N} Upp.". (2) Push the	
7-2. [VL-N Upp.] 000085 V	 Push the ▲ ▼ + - key, and change the V_{L-N} Upp Push the <i>P</i>/PHASE key, and confirm the setting value. 7-3 will be displayed. 	[VL-N Low]: 0≦Primary voltage≦100%x15/11 (0% of primary voltage) The minimum step of settable value is varied by primary voltage. Fewer than 300V Step: 0.1V 300V~3000V Step: 1V 3000V~110000V Step: 10V
7-3. [Delay] Osec	 Push the + or - key, and select the delay. Push the + PHASE key. 7-4 Will be displayed. 	[Delay]: <u>0sec</u> ⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔
7-4. [ResetMode]	 Push the + or key, and select the ResetMode. Push the //PHASE key. 1(1)-1 will be displayed. 	[RsetMode]: <u>Auto</u> ⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm ●6.8.3 Release alarm)

8 Setup the Upper de	mand electric energy (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)	
Screen	Operation	Note
8-1.	(1) In 8-1, push the 🔺 or 💌 key, and move the cursor to the "7 W Upp.".	
2 circuit measuring only	(2) Push the /PHASE key.	
↓ ↓	(3) 8-2 will be displayed.	
[Element] [1]		
6 VLN LOW		
₩Üpp.		
8-2.	(1) Push the 🔺 🔽 🛨 🗔 key, and change the W Upp	[W upper]: -120≦Full load≦120%
2 circuit measuring only	(2) Push the (PHASE) key and confirm the setting value	(<u>100% of full load</u>)
<u> </u>	(3) 8-3 will be displayed.	The minimum unit of settable value is variesby full
[W Upp.] [1]		load (Wfull).
<u>0</u> 01000 kVV		Wfull < 12kW Step: 0.001kW
		$12KW \le VVTUII < 120KW \qquad Step: 0.01KW \\ 120KW \le M(full < 1200KW \qquad Step: 0.1kW$
		$1200kW \le Wfull < 1200kW \qquad Step: 0.1kW$
		$12000kW \le Wfull < 12000kW$ Step: 10kW
		$120000 \text{kW} \le \text{Wfull}$ Step: 100kW
8-3.	(1) Push the \pm or \Box key, and select the Delay	[Delay]:0sec⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(2) Push the /PHASE key	40sec⇔50sec⇔1min⇔2min⇔3min⇔
↓	(3) 8-4 will be displayed	4min⇔5min⇔
[Delay] [1]		
Usec		
8-4.	(1) Push the + or - key and select the ResetMode	[RsetMode]: Auto⇔Hold⇔
2 circuit measuring only	(2) Push the \mathbf{U} /PHASE key	AutoAlarm is reset automatically when measured
↓	 (2) Transition to the following screen by the setting wiring type 	value is less then setting value.
[Resetmode] [1]	$2 \text{ circuit measurement} \rightarrow To 8-5$	HoldAlarm is hold until alarm released even
Auto	Non-2 circuit measurement \rightarrow To 1(1)-1	thought measured value is less than setting
		Value.
8.5		(Release alarm - 6.8.3 Release alarm)
2 circuit measuring only		
L	(2) Push the PHASE key.	
[Alarm] [2]	(3) Transition to the following screen by the setting alarm existence.	
Off	$[OII] setting \rightarrow 10 1(1)-1$	
	$[OII]$ seturing $\rightarrow 10.6-1$	
ö-ö. 2 circuit measuring only	(1) In 8-6, push the local or local key, and move the cursor to the "7" W. Upp.".	
	(2) Push the (PHASE) key.	
[Element] [2]	(3) 8-7 will be displayed.	
5 V _{L-N} Upp.		
6 V _{L-N} Low.		
0-7. 2 circuit measuring only	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	[W upper]: $-120 \ge Full load \ge 120\%$
	(2) Push the (2/PHASE) key, and cofirm the setting value.	(<u>100% of full load</u>)
[W ow] [2]	(3) 8-8 will be displayed.	
001000 kW		Wfull < 12kW Step: 0.001kW
-		12kW ≤ Wfull < 120kW Step: 0.01kW
		120kW ≤ Wfull < 1200kW Step: 0.1kW
		1200kW ≤ Wfull < 12000kW Step: 1kW
		12000kW ≤ Wfull < 120000kW Step: 10kW
0 0		120000kW S WIUII Step: 100kW
2 circuit measuring only		
L	(2) Push the (PPHASE) key.	
[Alarm] [2]	(3) 8-9 will be displayed.	400000
Osec		
2 circuit measuring only	(1) Push the to or the key, and select the ResetMode	Licseliviodej: <u>Auto</u> ⇔Hold⇔
L	(2) Push the CAPHASE key.	value is less then setting value
▼ [ResetMode] [2]	(3) 1(1)-1 will be displayed.	HoldAlarm is hold until alarm released even
Auto		thought measured value is less than setting
		value.
		((Release alarm @ 6.8.3 Release alarm)

9 Setup the Lower demand electric energy (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operation	Note
9-1	(1) In 9-1, push the 🔺 or 💌 key, and move the cursor to the "8 W Low.".	
2 circuit measuring only	(2) Push the //PHASE key.	
	(3) 9-2 will be displayed.	
[Element] [2]		
7 W Upp.		
🛢 W Low. 🛔		
9-2	(1) Push the 🔺 💌 🕂 🗔 key, and change the W Upp	[W lower]: -120≦Full load≦120%
2 circuit measuring only	(2) Push the //PHASE key, and confirm the setting value.	(<u>0% of full load</u>)
*	(3) 9-3 will be displayed.	The minimum unit of settable value is variesby full
		load (Wfull).
		VVTUII < 12kVV
		$120 \text{kW} \le \text{Wfull} < 1200 \text{kW}$ Step: 0.0 kW
		1200kW ≤ Wfull < 12000kW Step: 1kW
		12000kW ≤ Wfull < 120000kW Step: 10kW
		120000kW ≤ Wfull Step: 100kW
9-3	(1) Push the 🖽 or 🗔 key, and select the Delay	[Delay]: 0sec ⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(2) Push the /PHASE key.	40sec⇔50sec⇔1min⇔2min⇔3min⇔
▼	(3) 9-4 will be displayed.	4min⇔5min⇔
9-4	(1) Push the $+$ or $-$ key, and select the ResetMode.	[RsetMode]: <u>Auto</u> ⇔Hold⇔
2 circuit measuring only	(2) Push the (PHASE) key.	AutoAlarm is reset automatically when measured
*	(3) Transition to the following screen by the setting wiring type.	Value is less then setting value.
Resetmodej [1]	2 circuit measurement \rightarrow To 9-5	thought measured value is less than setting
	Non-2 circuit measurement \rightarrow To 1(1)-1	value.
		((Release alarm @~6.8.3 Release alarm)
9-5	(1) Push the \pm or \Box key, and select alarm existence of second circuit.	[Alarm]∶ Off ⇔On⇔
2 circuit measuring only	(2) Push the //PHASE key.	
↓ <u>↓</u>	(3) Transition to the following screen by the setting alarm existence.	
[Alarm] [2]	[Off] setting \rightarrow To 1(1)-1	
	[On] setting \rightarrow To 9-6	
9-6	(1) In 9-6, push the 🔺 or 💌 key, and move the cursor to the "8 W Low".	
2 circuit measuring only	(2) Push the (/PHASE) key.	
[Element] [2]	(3) 9-7 will be displayed.	
$6 V_{L-N}$ Low.		
7 W Upp.		
🛿 W Low. 🏺		
9-7	(1) Push the 🔺 💌 🕂 🗁 key, and change the W Low. value.	[W lower]: -120≦Full load≦120%
2 circuit measuring only	(2) Push the (PHASE) key, and cofirm the setting value.	(<u>0% of full load</u>)
▼	(3) 9-8 will be displayed.	The minimum unit of settable value is variesby full
000010 kW		Wfull < 12kW Step: 0.001kW
		12kW ≤ Wfull < 120kW Step: 0.01kW
		120kW ≤ Wfull < 1200kW Step: 0.1kW
		1200kW ≤ Wfull < 12000kW Step: 1kW
		12000kW ≤ Wfull < 120000kW Step: 10kW
0.9		120000kW ≤ Wfull Step: 100kW
2 circuit measuring only		
↓ J	(2) Push the (Prince key.	
[Alarm] [2]	(3) 9-9 will be displayed.	
0sec		
9-9	(1) Push the \pm or $=$ key and select the ResetMode	[RsetMode]: Auto ⇔Hold⇔
2 circuit measuring only	(2) Puch the \mathbf{P} /PHASE kov	AutoAlarm is reset automatically when measured
↓ ↓	(3) 1(1)-1 will be displayed	value is less then setting value.
[ResetMode] [2]		HoldAlarm is hold until alarm released even
Auto		thought measured value is less than setting
		Value.
11 1		(Increase dialiti 🐨 0.0.3 Kelease dialiti)

10 Setup the upper limit power factor (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operation	Note
10-1	(1) In 10-1, push the () or (key, and move the cursor to the "9 PFUpp.".	
2 circuit measuring only	(2) Push the (/PHASE) key.	
↓ ↓	(3) 10-2 will be displayed	
[Element] [1]		
7 W Upp.		
10-2	(1) Push the 🔔 💌 🛨 🗁 key, and change the PF upper limit.	[PF Upp.]:-0.050⇔-0.100⇔⇔-0.950⇔1.000⇔
2 circuit measuring only	(2) Push the (2/PHASE) key, and confirm the setting value and, confirm the	0.950⇔⇔0.100⇔0.050⇔ (<u>-0.500</u>)
_	setting value.	
[PF Upp.] [1]	(3) 10-3 will be displayed.	
0.500		
10-3	(1) Push the + or - key and select the delay time	[Alarm]· 0sec ⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only		
↓ · ·		
[Delav] [1]	(3) 10-4 will be displayed.	411111005111110
Osec		
10-4	(1) Push the \pm or \Box key, and select the ResetMode.	[RsetMode]∶ Auto ⇔Hold⇔
2 circuit measuring only	(2) Push the (PHASE) key.	AutoAlarm is reset automatically when measured
•	(3) Transition to the following screen by the setting wiring type	value is less then setting value.
[ResetMode] [1]	2 circuit measurement \rightarrow To 10-5	HoldAlarm is hold until alarm released even
<u>AUIO</u>	Non-2 circuit measurement \rightarrow To 1(1)-1	thought measured value is less than setting
		((Release alarm • 6.8.3 Release alarm)
2 circuit measuring only	(1) Push the (\pm) or (\pm) key, and select alarm existence of second circuit.	[Alarm]: Off⇔nold⇔
	(2) Push the (/PHASE) key.	
▼	(3) Transition to the following screen by the setting alarm existence.	
[Alarm] [2]	[Off] setting \rightarrow To 1(1)-1	
	[On] setting \rightarrow To 10-6	
10-6	(1) In 10-6, push the 🔺 or 💌 key, and move the cursor "10 PFUpp.".	
2 circuit measuring only	(2) Push the (PHASE) key	
↓	(3) 10-7 will be displayed	
[Element] [2]		
8 W Low.		
9 PF Upp.		
2 circuit measuring only	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	[PFL0W.]:-0.050 -0.100 -0.100 -0.950 -0.0000
	(2) Push the (/PHASE key, and, confirm the setting value.	0.950⇔⇔0.100⇔0.050⇔ (<u>-0.500</u>)
[PELInn 1 [2]	(3) 10-8 will be displayed.	
0.500		
10-8	(1) Push the \pm or \Box key, and select the alarm time.	[Alarm]: 0sec ⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(2) Push the (2/PHASE) key.	40sec⇔50sec⇔1min⇔2min⇔3min⇔
+	(3) 10-9 will be displayed	4min⇔5min⇔
[Alarm] [2]		
Usec		
10-9	(1) Push the + or - key and select the ResetMode	[RsetMode]: Auto ⇔Hold⇔
2 circuit measuring only	(2) Push the UPHASE key	AutoAlarm is reset automatically when measured
¥ ´	(2) Push the displayed key.	value is less then setting value.
[ResetMode] [2]	(3) T(T)-T will be displayed.	HoldAlarm is hold until alarm released even
Auto		thought measured value is less than setting
		value.
		((Release alarm 🖝 6.8.3)
11 Setup the upper limit power factor (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
---	--	--
Screen	Operation	Note
11-1	(1) In 11-1, push the ▲ or ▼ key, and move the cursor to the "9 PFUpp.".	
2 circuit measuring only	(2) Push the (2/PHASE) key.	
↓	(3) 11-2 will be displayed.	
[Element] [1] 8 W Low. 9 PF Upp. ™ PF Low. ♦		
11-2	(1) Push the 🔺 💌 🕂 🗁 key, and change the PF upper limit.	[PF lower]:-0.050⇔-0.100⇔…⇔-0.950⇔1.000⇔
2 circuit measuring only	(2) Push the (/PHASE) key, and confirm the setting value and, confirm the	0.950⇔…⇔0.100⇔0.050⇔ (<u>0.500</u>)
↓ [PF Upp.] [1] •0.500	setting value. (3) 11-3 will be displayed.	
11-3	(1) Push the + or - key, and select the delay time	[Alarm]: 0sec⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(1) Push the H/PHASE key	40sec⇔50sec⇔1min⇔2min⇔3min⇔
↓ ↓	(2) Push the degleved	
[Delay] [1] 0sec	(3) 11-4 will be displayed.	
11-4	(1) Push the 🕂 or 🔄 key, and select the ResetMode.	[RsetMode]: <u>Auto</u> ⇔Hold⇔
2 circuit measuring only	(2) Push the /PHASE key.	AutoAlarm is reset automatically when measured
↓ ↓	(3) Transition to the following screen by the setting wiring type	value is less then setting value.
[ResetMode] [1]	2 circuit measurement \rightarrow To 11-5	HoldAlarm is hold until alarm released even
Auto	Non-2 circuit measurement \rightarrow To 1(1)-1	thought measured value is less than setting
		value.
		((Release alarm * 6.8.3 Release alarm)
11-5	(1) Push the \pm or \equiv key, and select alarm existence of second circuit.	[Alarm]: <u>Off</u> ⇔hold⇔
2 circuit measuring only	(2) Push the //PHASE key.	
↓ ▼	(3) Transition to the following screen by the setting alarm existence.	
[Alarm] [2]	[Off] setting \rightarrow To 1(1)-1	
	[On] setting \rightarrow To 11-6	
11.6	(4) ln 40 C nucle the \blacktriangle or ∇ low and move the surger "40 DELINN"	
2 circuit measuring only		
L	(2) Push the (PHASE J key.	
[[lomont] [2]	(3) 11-7 will be displayed.	
8 W Low		
9 PF Upp.		
10 PF Low.		
11-7	(1) Push the (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	[PFLow.]:-0.050⇔-0.100⇔⇔-0.950⇔1.000⇔
2 circuit measuring only	(2) Push the $\mathbf{\Psi}$ /PHASE key and confirm the setting value	0.950⇔⇔0.100⇔0.050⇔ (0.500)
↓	(2) 11 8 will be displayed	· · · · · · · · · · · · · · · · · · ·
[PFUpp.] [2]	(3) TTO WII DE displayed.	
-0.500		
11-8 2 oirouit measuring arts	(1) Push the \pm or \equiv key, and select the alarm time.	[Alarm]: <u>Usec</u> ⇔5sec⇔10sec⇔20sec⇔30sec⇔
2 circuit measuring only	(2) Push the /PHASE key.	40sec⇔50sec⇔1min⇔2min⇔3min⇔
•	(3) 11-9 will be displayed.	4min⇔5min⇔
[Alarm] [2]		
USEC		
11-9	(1) Push the + or - key and select the ResetMode	[RsetMode]: Auto⇔Hold⇔
2 circuit measuring only	(2) Duch the //PHASE key	AutoAlarm is reset automatically when measured
Ť	(2) f(4) f	value is less then setting value
[ResetMode] [2]	(3) T(T)-T WIII be displayed.	HoldAlarm is hold until alarm released even
Auto		thought measured value is less than setting
		value.
		((Release alarm 🖝 6.8.3 Release alarm)

12 Setup the upper limit alarm N phase demand current (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)			
Screen	Operation	Note	
12-1. [Element] 9 PF Upp. 10 PFLow. M A _N Upp. ♦	 In 12-1, push the or key, and move the cursor to the "11 A_N Upp.". Push the //PHASE key. 12-2.will be displayed. 	*Only setup in 3P4W	
12-2. [A _N Upp.] 0 0100 A	 Push the Push the	[A _N Upp.]: 0≦Primary current≦120% (<u>100% of primary current</u>)	
12-3. [Alarm] Osec	 Push the + or - key, and select the alarm time. Push the P/PHASE key. 12-4 will be displayed. 	[Alarm]: <u>0sec</u> ⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔	
12-4. [ResetMode]	 Push the + or - key, and select the ResetMode. Push the /PHASE key. 1(1)-1 will be displayed. 	[RsetMode]: <u>Auto</u> ⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm ● 6.8.3)	

13(1) Setup the upper limit alarm pulse converted value (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)		
Screen	Operation	Note
13(1)-1 2 circuit measuring only L	 (1) In 13(1)-1, push the ▲ or ▼ key, and move the cursor to the "12 PLS. Upp.". Upp. up = u	
[Element] [1] 10 PF Low. 11 A _N Upp.	 (2) Push the (PPRASE) key. (3) 13(1)-2 will be displayed. 	
13(1)-2 2 circuit measuring only [PLS.Upp.] [1] 00.000	 Push the T + - key, and change the Pulse upper limit. Push the Pulse key, and, confirm the setting value. 13(1)-3 will be displayed. 	[PLS.Upp.]:1~999999(<u>100000</u>)
13(1)-3 2 circuit measuring only ↓ [Alarm] [1] OSEC	 Push the ± or key, and select the alarm time. Push the PHASE key. 13(1)-4 will be displayed. 	[Alarm]: <u>0sec</u> ⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔
13(1)-4 2 circuit measuring only [ResetMode] [1]	 Push the	 [RsetMode]: Auto ⇔ Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm ♥ 6.8.3 Release alarm)
13(1)-5 2 circuit measuring only ↓ [Alarm] [2] ♥i	 Push the ± or key, and select the alarm existence of second circuit. Push the PHASE key. Transition to the following screen by the setting alarm existence. [Off] setting → 1(1)-1 [On] setting → 13(1)-6 	[Alarm]: <u>Off</u>⇔On⇔
13(1)-6 2 circuit measuring only ↓ [Element] [1] 10 PF Low. 11 A _N Upp. ₽ LS.Upp. ↓	 (1) In 9-6, push the ▲ or ▼ key, and move the cursor to the "12 PLS.Upp." (2) Push the <i>√</i>/PHASE key. (3) 13(1)-7 will be displayed. 	
13(1)-7 2 circuit measuring only ↓ [PLS.Upp.] [2] ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	 Push the (1) Push the (1) Push the (2) Push the (3) 13(1)-8 will be displayed. 	[PLS.Upp]:1~999999(<u>100000</u>)
13(1)-8 2 circuit measuring only ↓ [Delay] [2] 0sec	 (1) Push the + or - key, and select the alarm time. (2) Push the <i>√</i>/PHASE key. (3) 13(1)-9 will be displayed. 	[Alarm]: <u>0sec</u>⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔
13(1)-9 2 circuit measuring only [ResetMode] [2]	 Push the ± or = key, and select the ResetMode. Push the <i>I</i>/PHASE key. 1(1)-1 will be displayed. 	[RsetMode]: <u>Auto</u> ⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm ●6.8.3 Release alarm)

13(2) Setup the upper limit alarm pulse converted value (EMU4-PX4 only)		
Screen	Operation	Note
13(2)-1 [Alarm] [1] Díi	 Push the	[Alarm]: Off⇔On⇔ *If input setting value is set to anything other than pulse, this CH is not displayed.
13(2)-2 [PLS.Upp.] [1] 1 .000	 Push the T + - key, and change the Pulse upper limit. Push the P/PHASE key, and, confirm the setting value. 13(2)-3 will be displayed. 	[PLS.Upp.]:0.1~99999.9(<u>1.000</u>)
13(2)-3 [Alarm] [2] Díi	 Push the + or key, and select the alarm existence. Push the //PHASE key. Transition to the following screen by the setting alarm existence. [Off] setting → To 13(2)-5 [On] setting → To 13(2)-4 	[Alarm]: Off⇔On⇔ *If input setting value is set to anything other than pulse, this CH is not displayed.
13(2)-4 [PLS.Upp.] [2] 1.000	 Push the T + - key, and change the Pulse upper limit. Push the P/PHASE key, and, confirm the setting value. 13(2)-5 will be displayed. 	[PLS.Upp.]:0.1~99999.9(<u>1.000</u>)
13(2)-5 [Alarm] [3] Ofi	 Push the ± or _ key, and select the alarm existence. Push the <i>P</i>/PHASE key. Transition to the following screen by the setting alarm existence. [Off] setting → To 13(2)-7 [On] setting → To 13(2)-6 	[Alarm]: Off ⇔On⇔ *If input setting value is set to anything other than pulse, this CH is not displayed.
13(2)-6 [PLS.Upp.] [3] 1 .000	 Push the Pulse upper limit. Pulse upper limit.<td>[PLS.Upp.]:0.1~999999.9(<u>1.000</u>)</td>	[PLS.Upp.]:0.1~999999.9(<u>1.000</u>)
13(2)-7 [Alarm] [4] Ofi	 Push the ± or key, and select the alarm existence. Push the PHASE key. Transition to the following screen by the setting alarm existence. [Off] setting → To 13(2)-9 [On] setting → To 13(2)-8 	[Alarm]: Off ⇔On⇔ *If input setting value is set to anything other than pulse, this CH is not displayed.
13(2)-8 [PLS.Upp.] [4] 1 .000	 Push the T + - key, and change the Pulse upper limit. Push the P/PHASE key, and, confirm the setting value. 13(2)-9 will be displayed. 	[PLS.Upp.]:0.1~99999.9(1.000)
13(2)-9 [Alarm target CH]	 Push the ± or key, and select the CH to output the alarm state from contact output terminals. Push the PPHASE key, and, confirm the setting value. 1(2)-1 will be displayed. 	[Alarm target CH]: <u>Non</u> ⇔[1]⇔[2]⇔[3]⇔[4]⇔ *If alarm existence setting is set to off, this CH is not displayed.

14 Setup the upper limit alarm current unbalance rate (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)			
Screen	Operation	Note	
14-1 2 circuit measuring only ↓ [Element] [1] 11 A _N Upp. 12 PLS.Upp. ↓ 13 UNB.AUpp.	 In 14-1, push the a or key, and move the cursor to the "13 UNB.AUpp.". Push the P/PHASE key. 14-2 will be displayed. 	相線式を 1P2W 以外に設定した場合に設定できます。	
14-2 2 circuit measuring only ↓ [UNB.AUpp.] [1] 010.00 %	 Push the T = key, and change the current unbalance rate. Push the PHASE key, and confirm the setting value. 14-3 will be displayed. 	[UNB.A upper]:0.01~999.99%(<u>30.00</u>)	
14-3 2 circuit measuring only ↓ [Delay] [1] 0scc	 Push the ± or key, and select the alarm time. Push the PHASE key. 14-4 will be displayed. 	[Delay]: 0sec ⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔	
14-4 2 circuit measuring only ↓ [ResetMode] [1]	 Push the ± or key, and select the ResetMode. Push the PHASE key. 1(1)-1 will be displayed. 	 [RsetMode]: <u>Auto</u>⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm ●6.8.3) 	

15 Setup the upper limit alarm voltage unbalance rate (EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2)			
Screen	Operation	Note	
15-1 2 circuit measuring only ↓ [Element] [1] 12PLS.Upp. 13UNB.A Upp. [I]UNB.V Upp.	 In 15-1, push the or key, and move the cursor to the "14 UNB.V Upp.". Push the //PHASE key. 15-2 will be displayed. 	相線式を 1P2W 以外に設定した場合に設定できます。	
15-2 2 circuit measuring only ↓ [UNB.AUpp.] [1] 010.00 %	 Push the	[UNB.V upper]∶0.01∼999.99%(<u>3.00</u>)	
15-3 2 circuit measuring only ↓ [Delay] [1] 0sec	 Push the + or key, and select the alarm time. Push the PHASE key. 15-4 will be displayed. 	[Delay]: 0sec ⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔	
15-4 2 circuit measuring only ↓ [ResetMode] [1]	 Push the ± or key, and select the ResetMode. Push the PPHASE key. 1(1)-1 will be displayed. 	 [RsetMode]: <u>Auto</u>⇔ Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm ● 6.8.3 Release alarm) 	

16 Setup the limit ala	rm scaling value (EMU4-AX4 only)	bl-t-
16-1.	(1) Push the \pm or $-$ key, and select the alarm existence.	[Alarm]: <u>Non</u> ⇔Upp.⇔Low.⇔Upp.&Low.⇔
[Alarm] [1] Non	 (2) Push the <i>PHASE</i> key. (3) Transition to the following screen by the setting alarm existence. [Non] setting → To 16-5 	
16-2. [Scaling [1] alarm value] Upp:∎04095 Low.: 00000	Other setting → To 16-2 (1) Push the ▲ ▼ + - key, and change the scaling alarm value. (2) Push the ✔/PHASE key, and confirm the setting value. (3) 16-3 will be displayed.	[Scaling alarm value Upp.]: Scaling Low.~ Scaling Upp. *If you set Scaling Upp. <scaling default="" is<br="" low.,="" the="">Scaling Low. [Scaling alarm value Low.]: Scaling Low.~ Scaling Upp. *If you set Scaling Upp.<scaling default="" is<="" low.="" td="" the=""></scaling></scaling>
16-3. [Delay] [1] 0sec	 (1) Push the ± or key, and select the alarm time. (2) Push the PHASE key. (3) 16-4 will be displayed. 	Scaling Upp. [Delay]: <u>Osec</u> ⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔
16-4. [ResetMode] [1]	 (1) Push the ± or key, and select the ResetMode. (2) Push the <i>PHASE</i> key. (3) 16-5 will be displayed. 	[RsetMode]: <u>Auto</u> ⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value.
16-5. [Alarm] [2] Non	 (1) Push the ± or key, and select the alarm existence. (2) Push the PHASE key. (3) Transition to the following screen by the setting alarm existence. [Non] setting → To 16-9 Other setting → To 16-6 	((Release alarm ⁽ ●^ 6.8.3) [Alarm]: <u>Non</u> ⇔Upp.⇔Low.⇔Upp.&Low.⇔
16-6. [Scaling [2] alarm value] Upp:: [04095 Low.: 00000	 (1) Push the ▼ 10 10 10 10 10 10 10 10 10 10 10 10 10	[Scaling alarm value Upp.]: Scaling Low.~ Scaling Upp. *If you set Scaling Upp. <scaling default="" is<br="" low.,="" the="">Scaling Low. [Scaling alarm value Low.]: Scaling Low.~ Scaling Upp.</scaling>
16-7. [Delay] [2] 0sec	 (1) Push the ± or key, and select the alarm time. (2) Push the <i>P</i>/PHASE key. (3) 16-8 will be displayed. 	Scaling Upp. [Delay]: <u>0sec</u> ⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔
16-8. [ResetMode] [2]	 (1) Push the ± or	[RsetMode]: <u>Auto</u> ⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value.
16-9. [Alarm] [3] Non	 Push the ± or — key, and select the alarm existence. Push the <i>P</i>/PHASE key. Transition to the following screen by the setting alarm existence. [Non] setting → To 16-13 Other setting → To 16-10 	[Alarm]: Non ⇔Upp.⇔Low.⇔Upp.&Low.⇔
16-10. [Scaling [3] alarm value] Upp.:∎04095 Low.: 00000	 Push the (1) Push the (1) Push the (2) Push the (2) Push the (2) Push the (3) 16-11 will be displayed. 	[Scaling alarm value Upp.]: Scaling Low.~ Scaling Upp. *If you set Scaling Upp. <scaling default="" is<br="" low.,="" the="">Scaling Low. [Scaling alarm value Low.]: Scaling Low.~ Scaling Upp.</scaling>
16-11. [Delay] [3]	 Push the + or - key, and select the alarm time. Push the /PHASE key. 16-12 will be displayed. 	Scaling Upp. [Delay]:0sec⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔
16-12. [ResetMode] [3]	 Push the ± or key, and select the ResetMode. Push the P/PHASE key. 16-13 will be displayed. 	[RsetMode]: <u>Auto</u> ⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm (● 6.8.3)

Screen	Operation	Note
16-13. [Alarm] [4] Non	 Push the + or - key, and select the alarm existence. Push the //PHASE key. Transition to the following screen by the setting alarm existence. [Non] setting → To 16-17 Other setting → To 16-14 	[Alarm]∶ Non ⇔Upp.⇔Low.⇔Upp.&Low.⇔
16-14. [Scaling [4] alarm value] Upp:∎04095 Low.: 00000	 Push the T + - key, and change the scaling alarm value. Push the /PHASE key, and confirm the setting value. 16-15 will be displayed. 	[Scaling alarm value Upp.]: Scaling Low.~ Scaling Upp. <scaling default="" is<br="" low.,="" the="">Scaling Low. [Scaling alarm value Low.]: Scaling Low.~ Scaling Upp. *If you set Scaling Upp.<scaling default="" is<br="" low.,="" the="">Scaling Upp.</scaling></scaling>
16-15. [Delay] [4] Osec	 Push the + or - key, and select the alarm time. Push the <i>PHASE</i> key. 16-16 will be displayed. 	[Delay]: <u>0sec</u>⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔
16-16. [ResetMode] [4]	 Push the + or - key, and select the ResetMode. Push the //PHASE key. 16-17 will be displayed. 	 [RsetMode]: <u>Auto</u>⇔Hold⇔ AutoAlarm is reset automatically when measured value is less then setting value. HoldAlarm is hold until alarm released even thought measured value is less than setting value. ((Release alarm ● 6.8.3)
16-17. [Alarm target CH]	 Push the ± or ⇒ key, and select the CH to output the alarm state from contact output terminals. Push the //PHASE key, and, confirm the setting value. Transition to the following screen by setting Alarm target CH and alarm existence. Alarm target CH : [Non] setting → To 1(2)-1 Alarm target CH : Other setting Alarm existence : [Upp.&Low.] setting → To 16-18 Alarm existence : Other setting → To 1(2)-1 	[Alarm target CH]: <u>Non</u> ⇔[1]⇔[2]⇔[3]⇔[4]⇔ *If alarm existence setting is set to non, this CH is not displayed.
16-18. [Output] Upp.Alarm	 Push the + or - key, and select the output alarm state. Push the for the key. 1(2)-1 will be displayed. 	OutputSetting the output alarm state from external output terminal. [Output]: Upp.Alarm⇔Low.Alarm⇔ Upp.&Low.Alarm⇔

17 Save the settings				
Screen	Operation	Note		
17-1 Quit Setup Save 2 Not Save 3 Cancel	 After setting all of the items, push the SETUP key. 17-1 will be displayed. When save the settings, push the or key, move the cursor to the "1 Save", and Push the <i>√PHASE</i> key. After completing the settings saving, "Completed" message will be displayed. Push the <i>√PHASE</i> key. Return to the alarm mode, and it will be displayed alarm list screen. 	1 Save 2 Not Save 3 Cancel	 → Save settings and return to the alarm mode. → Discard the changes and return to the alarm mode. →Continue the setup (1(1)-1 or 1(2)-1). 	

*Setting for the measurement mode can only be in the display unit is set to master. (Setting for the measurement mode can not be 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 <u>CIRCUIT</u> key on the "Setup" screen (1(1)-1 or 1(2)-1), select the circuit, make the setting.

6.4.3 Leak current condition setup—The settings for the limit alarm of the Leak current Io, Ior. EMU4-LG1-MB only. 1 Transition to the alarm setup mode

i mansidon to die alarm setup mode		
Screen	Operation	Note
1-1.	(1) Push the SETUP key in alarm mode.	Push simultaneous 🔺 💌 key, and transition
[Alarm Set]	(2) 1-1 will be displayed.	from in operation mode to alarm mode.
	(1) Push the or key, and move the cursor to the "2 lo/lor".	
	Push the <i>PHASE</i> key.	
	(2) 2-1 will be displayed.	

2 Setup the leak cu	urrent alarm	
Screen	Operation	Note
2-1.	(1) In 2-1, Push the 🔺 or 💌 key, and select the lo-Alarm.	[Io-Alarm] : <u>Current VAL.</u> ⇔Demand.VAL.⇔
[lo-Alarm]	(2) Push the /PHASE key.	
Current \/AL	(3) 2-2 will be displayed.	
Current VAL.		
2-2.	(1) Push the \square \square \square \square key, and change the lo2-Alarm.	
[lo1-Alarm]	(2) Push the (PHASE) key, and confirm the setting value.	$[101-Alarm] : \underline{0} \sim 1000 \text{mA}$
	(3) 2-3 will be displayed.	Lligh CENC mode
		* If value is set 0, alarm monitoring is not conducted
2-3	(1) Duch the \blacksquare \blacksquare \blacksquare \blacksquare have and change the log Alarm	Low SENS mode
[lo2-Alarm]		$[lo2-Alarm] : 0 \sim 1000 \text{mA}$
1000 mA	(2) Push the relation line key, and confirm the setting value.	[
	(3) 2-4 will be displayed.	High SENS mode
		[lo2-Alarm] : <u>0.00</u> ~100.00mA
		* If value is set 0, alarm monitoring is not conducted.
2- <u>4.</u>	(1) Push the 🔺 💌 🕂 🗁 key, and change the Io1-Alarm count.	[Io1-Alarm count] : <u>0</u> ~9999999
[lo1-Alarm	(2) Push the (/PHASE) key, and confirm the setting value.	* If value is set 0, alarm monitoring is not conducted
Countj	(3) 2-5 will be displayed.	in value is set o, alarm monitoring is not conducted.
2-5	(1) Duch the $\mathbf{A} \mathbf{\nabla} \mathbf{+} \mathbf{-}$ key and shares the left Alerm second	$[lo2-Alarm count] : 0 \sim 999999$
[lo2-Alarm	(1) Fush the (1 / PHASE) have and configure to 2-Alarm count.	
count]	(2) Push the (PPRASE) key, and confirm the setting value.	* If value is set 0, alarm monitoring is not conducted.
0 00100	(3) Transition to the following screen by the setting wiring type.	
	$\frac{112}{2} \frac{112}{12}	
2-6	$\begin{array}{c} 3F4W \rightarrow 102^{-11} \\ \hline \end{array}$	[lor-Alarm] : Current VAL ⇔Demand VAL ⇔
[lor-Alarm]	(1) Fush the (D/PHASE) have	
Current VAL.	(2) Push the (-7) key.	Alarm about lor can't be setup in 3P4W
	(3) 2-7 will be displayed.	
2-7.	(1) Push the 🚺 🔽 🛨 🗁 key, and change the lor1-Alarm.	Low SENS mode
[lor1-Alarm]	(2) Push the (/PHASE) key, and confirm the setting value.	[lor1-Alarm] : <u>0</u> ~1000mA
1000 mA	(3) 2-8 will be displayed.	Llich CENC made
		High SENS mode
		* If value is set 0, alarm monitoring is not conducted
2-8	(1) Push the \blacksquare \blacksquare \blacksquare \blacksquare have and change the lor? Alarm	Low SENS mode
[lor2-Alarm]	(1) Fush the CI/PHASE have and confirm the action walks	$[lor 2-Alarm] \cdot 0 \sim 1000 \text{mA}$
1000 mA	(2) Push the displayed	[
	(3) 2-9 will be displayed.	High SENS mode
		[lor2-Alarm] : 0.00 ~100.00mA
		* If value is set 0, alarm monitoring is not conducted.
2-9.	(1) Push the 🚺 🔽 🛨 🗁 key, and change the lor1-Alarm count.	[lor1-Alarm count] : <u>0</u> ~9999999
[lor1-Alarm	(2) Push the /PHASE key, confirm the setting value.	
Countj	(3) 2-10 will be displayed.	* If value is set 0, alarm monitoring is not conducted.
2-10.	(1) Push the 🚺 🔽 🕂 🗔 key, and change the lor2-Alarm count.	[lor2-Alarm count] : <u>0</u> ~9999999
[lor2-Alarm	(2) Push the (/PHASE) key, and confirm the setting value.	
	(3) 2-11 will be displayed.	[^] If value is set 0, alarm monitoring is not conducted.
2-11.	(1) Push the (1) or (1) key, and change the Output	[Output] : Io1-Alarm⇔Off⇔lo2-Alarm⇔
[Output]	(2) Push the /PHASE key	lor1-Alarm⇔lor2-Alarm⇔
	(3) 2-12 will be displayed	Io1-Alarm count⇔Io2-Alarm count⇔
lo1-Alarm		lor1-Alarm count⇔lor2-Alarm count⇔
		Select alarm that output from external output
		terminal.
2-12.	(1) Push the \pm or $-$ key, and change the alarm delay time.	[Delay] : <u>0sec</u>⇔ 5sec⇔10sec⇔20sec⇔30sec⇔
[Delay]	(2) Push the //PHASE key.	40sec⇔50sec⇔1min⇔2min⇔3min⇔
	(3) 2-13 will be displayed.	4min⇔5min⇔
2-13.	(1) Push the $+$ or $-$ key and select the resot mode	[RsetMode]: Auto⇔Hold⇔
[ResetMode]	(2) Duch the $\square/PHASE$ key	Auto Alarm is reset automatically when measured
Auto	(2) Push the displayed	value is less then setting value.
	(3) I-I WIII DE DISPIAYED.	HoldAlarm is hold until alarm released even
		thought measured value is less than setting
		value.
		((Release alarm 🖝 6.8.3 Release alarm)

3 Save the settings			
Screen	Operation	Note	
3-1. Quit Setup I Save 2 Not Save 3 Cancel	 After setting all of the items, push the SETUP key. 3-1 will be displayed. When save the settings, push the ▲ or ▼ key, move the cursor to the "1 Save", and push the √/PHASE key. After completing the settings saving, "Completed" message will be displayed. Push the √/PHASE key. Return to the alarm mode, and it will be displayed alarm list screen. 	 1 Save → Save settings and return to the alarm mode. 2 Not Save → Discard the changes and return to the alarm mode. 3 Cancel → Continue the setup (1-1). 	

6.5.1 About test mode

Test mode has the functions which you can utilize in such as the launch of equipment. The functions in test mode are as follows:

Test menu	Details
1.Discrimination support function for improper connection	For EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2, indicate phase angle of current and voltage, electric power, voltage and current of each phase. You can discriminate easily whether the input connection for measurement (voltage and current) is proper or not by checking each indicated values.
2.Communication test	For the device with communication function, it can send back the fixed numerical data without the input of measurement (voltage and current). Use for such as the opposing test to host system.
3.Pulse output test	For EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2, you can check the pulse output without the input of measurement (voltage and current). Use for such as the check of the connection to the receiving device.
4.Alarm output test	You can check the alarm output without the input of measurement (voltage and current). Use for such as the check of the connection to the receiving device.

*In the case of master of display unit MASTER LED is light while in test mode. "In test mode" is displayed in LCD display of slave unit.

	EMU4-BM1-MB	EMU4-HM1-MB	EMU4-A2 EMU4-VA2	EMU4-LG1-MB	EMU4-PX4 EMU4-AX4
Discrimination support function for improper connection	O*1	O*1	O*1	-	-
Communication test	0	0	0	0	0
Pulse output test	-	0	0	-	-
Alarm output test	-	0	0	0	0

*1 If setting 1P2W in wiring type, you can not use this function.

6.5.2 Support of incorrect wiring discrimination

1 Transition to the	alarm setup mode
Screen	Operation
1-1. Do you run test mode? OK Cance	 (1) Push the ± and = key in time in Operation mode. (2) 1-1 will be displayed.
1-2. [Test mode] [Connection 2 COM. 3 Pulse	 Push the ▲ key, and move the cursor to the "OK" and push the (/PHASE) key. 1-2 will be displayed after a whille displayed transition screen to test mode. Push the ▲ or ▼ key, and move the cursor to the "1 in correct wiring discrimination " and push the (/PHASE) key.





■ Display example of discrimination support function for improper connection Display example (Connection example for three-phase 3-wire) Indicates improper connection

	_				At th	ne averaç	ge curre	nt (V12=	=V23、I1	=I3)				
No.	Power factor (Input)	P	hase an	gle displ	ay	Electric disp	: power olay	Vol	tage dis	olay	Cu	rrent disp	lay	Wiring
	(input)	∠V12	∠V23	∠lı	∠lз	W1	Wз	V12	V23	V31	l1	l2	l3	
	Forward 0.707			345	225	W12	>W3							123
	Forward 0.866			0	240	_	-							
Normal status	1	0	300	30	270	W1=	=W3	V12	=V23=	V31		l1=l2=l3		
	Delayed 0.866			60	300		<14/-							
	Delayed			75	315	VV1<	VV3							
	Forward 0.707			165	45									Connection between P1 and P2 are reserved. $1 \ 2 \ 3$
	Forward			180	60	W1=N	egative							
1	1	0	60	210	90	va wa-5	lue	V12	=V23=	V31	1	1= 2= 3		
	Delayed 0.866			240	120	vv3—P val	ue							
	Delayed 0.707			255	135									
	Forward			165	45									Connection of VT side "1"is reversed.
	Forward 0.866			180	60	W1=N	egative							
2	1	0	120	210	90	vai	ue	V12	=V23<	V31		1=l2=l3		ЗК ЗL
	Delayed 0.866			240	120	W3=P val	ositive ue							
	Delayed 0.707			255	135									† √ ∨ ‡ ·[P3]
	Forward 0.707			165	225									Connection of CT on side "1" is reversed.
	Forward 0.866			180	240	W1=N	egative							К 1К
3	1	0	300	210	270	W3=P	ue Positive	V12	=V23=	V31		l1=l3 <l2< td=""><td></td><td></td></l2<>		
	Delayed 0.866			240	300	val	ue							
	Delayed 0.707			255	315									
	Forward 0.707			225	345	W1=N val	egative ue							CT side "1" and "3" are swapped.
	Forward 0.866			240	0	W3=P val	ositive ue							к П
4	1	0	300	270	30	W1=V	Wз=0	V12	=V23=	V31		1=l2=l3		к
	Delayed 0.866			300	60	W1=P val	ositive ue							
	Delayed 0.707			315	75	W3=N val	egative ue							
	Forward			225	105	W1=N val	egative ue							Connection of VT's terminals in order of P2, P3, P1 to measuring
	Forward 0.866			240	120	W3=N val	egative ue							instrument's terminals P1, P2, P3.
5	1	0	300	270	150	W1 W3=N	=0 egative	V12	=V23=	V31		1= 2= 3		
	Delayed 0.866			300	180	W1=P val	ositive ue							
	Delayed 0.707			315	195	W3=N val	egative ue							P2

Display example (Connection example for single-phase 3-wire)

----- Indicates improper connection

				A	t the ave	erage cu	urrent	(V12='	V23 、 I	1=I3)								Conn	ection
No.	Power factor (Input)	Р	hase a	angle dis	play	Elec pov disp	ctric ver blay	Volta	ige dis	splay	Curr	ent dis	play	V	olta	ge	Cu	rrent	Connecting diagram
		∠V12	2∠V23	∠l1	∠lз	W1	Wз	V12	V23	V31	I 1	l 2	lз	1	2	3	CT(sid e "1")	CT(sid e "3")	
	Forward 0.707			315	135														1 2 3
N	Forward 0.866			330	150							1 1.							
INORMA	1	0	180	0	180	W1=	=W3	V12=	=V23<	<v31< td=""><td></td><td>11=13</td><td></td><td>P1</td><td>P2</td><td>Р3</td><td>1K 1L Forward</td><td>3K 3L Forward</td><td>J J J J J J J J J J J J J J J J J J J</td></v31<>		11=13		P1	P2	Р3	1K 1L Forward	3K 3L Forward	J J J J J J J J J J J J J J J J J J J
status	Delayed			30	210							12=0							P1 P2
	Delayed			45	225	Ī													
	Forward			135	315														Connection between P1 and P2 are reserved.
	Forward			150	330	W1= Negati	ve												1 2 3 К 1К
1	1	0	0	180	0	value		V12=V23 <v31< td=""><td></td><td colspan="3">11=13</td><td>P1</td><td>Р3</td><td>1K 1L</td><td>3K 3L</td><td></td></v31<>				11=13			P1	Р3	1K 1L	3K 3L	
	Delayed			210	30	W3= Positiv	e					l2=0					TUIWalu	i orward	3L P1
	Delayed			225	45	value													P2 P3
	Forward			135	315														Connection of P1, P2, P3 terminals of measuring instrument
	Forward			150	330	W1= Negati	ve												is reversed (P2, P3, P1).
2	0.866	0	0	180	0	value		V12>V23=V31			I1=I3		P2	P3	P1	1K 1L	зк з∟		
	Delayed			210	30	W3= Positiv	e				l2=0					Forward	Forward		
	0.866 Delayed			225	45	value												P2	
	0.707 Forward			315	315														Connection of CT side "3" is
	0.707 Forward			330	330	W1= Positiv	e												
3	0.866	0	180	0	0	value		V12=	=V23<	<v31< td=""><td> 1</td><td>= 3<</td><td>12</td><td>P1</td><td>P2</td><td>P3</td><td>3K 3L</td><td>3K 3L Revers</td><td>L 1L 3K</td></v31<>	1	= 3<	12	P1	P2	P3	3K 3L	3K 3L Revers	L 1L 3K
	Delayed			30	30	W3= Negati	VA										Forward	e	P1
	0.866 Delayed			45	45	value													P2 P3
	0.707 Forward			135	315														CT side "1" and "3" are swapped.
	0.707 Forward			150	330	W1= Negati	VA												
4	0.866	0	180	190	0	value	ve	V/12-	-1/22	1/21		I1=I3		D1	D2	22	3K 3L	1K 1L	K 3K
4	Delayed		100	210	30	W3=	VO	V12-	- V23 \	< V 31		l2=0		· ·	12	r J	Forward	Forward	P1
	0.866 Delayed			210	45	value	ve												P2 P3
	0.707 Forward			125	215														Connection of P1, P2, P3
	0.707 Forward			150	220	W1=	W1=												terminals of measuring instrument is reversed (P3, P2, P1).
F	0.866		100	100	330	Negative value W3=	Via	-\/cc			I1=I3			D 2		1K 1L	зк зL		
5	Delayed	0	180	180	0		v12=	- v23<	ςV31		l2=0		173	P2		Forward	Forward	3K L 3L	
	0.866 Delaved			210	30	Negati value	ve										P1 P2		
	0.707			225	45														P3

	Power							At the average current	(V1N=V2N=V	3N, I1=I2=I3)	
No.	factor		Phas	se angl	e disp	lay		Electric power display	Voltage display	Current display	Wiring
	(input)	∠V1N	∠V2N	∠Vзм	∠lı	∠l2	∠l₃	W1 W2 W3	V1N V2N V3N	l1 l2 l3	
	Forward 0.707				315	75	195				
	Forward 0.866				330	90	210				
Normal status	1	0	120	240	0	120	240	W1=W2=W3	V1N=V2N=V3N	l1=l2=l3	
	Delayed 0.866				30	150	270				
	Delayed 0.707				45	165	285				
1	Forward 0.707				315	75	195				Negative phase sequence1 Negative phase sequence 2
	Forward 0.866				330	90	210				
	1	0	120	240	0	120	240	W1=W2=W3	V1N=V2N=V3N	l1=l2=l3	
	Delayed 0.866				30	150	270				$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
2	Delayed 0.707				45	165	285	W1=Negative value			$\left \left \right \left \bigcup_{v} \underbrace{\forall s_{v}^{u}}_{v} \xrightarrow{\downarrow} \cdots \xrightarrow{\downarrow r_{2}} \right \left \left \left \bigcup_{v} \underbrace{\forall s_{v}^{u}}_{v} \xrightarrow{\downarrow} \cdots \xrightarrow{\downarrow r_{2}} \right \right $ Connection between P1 and P2
	Forward 0.707				190	315	75	W2=Positive value W3=Positive value W1=Negative value	-		are reserved. $1 \ 2 \ 3 \ 0$ $\downarrow K \ \downarrow I \ I \ I \ I \ I \ I \ I \ I \ I \$
	0.866				210	330	90	W ₂ =0 W ₃ =Positive value W ₁ =Negative value	-		
	1 Delaved	0	240	120	240	0	120	W2=Negative value W3=Positive value W1=0	V1N=V2N=V3N	l1=l2=l3	
	0.866 Delayed				270	30	150	W ₂ =Negative value W ₃ =Positive value W ₁ =Positive value			
3	0.707 Forward				285	45	165	W2=Negative value W3=Positive value W1=Positive value			Connection between P2 and P3
	0.707 Forward				330	90	210	W ₂ =Negative value W ₃ =Positive value W ₁ =Positive value	-		
	0.866	0	240	120	0	120	240	W ₃ =0 W ₁ =Positive value W ₂ =Negative value	V1N=V2N=V3N	l1=l2=l3	
	Delayed				30	150	270	W3=Negative value W1=Positive value W2=0	-		
	Delayed 0.707				45	165	285	W ₃ =Negative value W ₁ =Positive value W ₂ =Positive value	-		
4	Forward 0.707				75	195	315	W1=Positive value W2=Positive value W3=Negative value			Connection between P1 and P3 are reserved.
	Forward 0.866				90	210	330	W1=0 W2=Positive value W3=Negative value	1		
	1	0	240	120	120	240	0	W1=Negative value W2=Positive value W3=Negative value	V1N=V2N=V3N	l1=l2=l3	
	Delayed 0.866				150	270	30	W1=Negative value W2=Positive value W3=0			
F	Delayed 0.707				165	285	45	W1=Negative value W2=Positive value W3=Positive value			
5	Forward 0.707				135	255	15				connection between P1 and P0 are reserved. 1 2 3 0 κ
	Forward 0.866				150	270	30	W1=Negativo voluce			
	1	0	330	30	180	300	60	W1-INEGATIVE VALUE W2=Positive value W3=Positive value	V1N <v2n=v3n< th=""><th>l1=l2=l3</th><th></th></v2n=v3n<>	l1=l2=l3	
	Delayed 0.866				210	330	90				
	Delayed 0.707				225	345	105				

----- Indicates improper connection

	Power		Dhaa		م مائم م			At the average current	(V1N=V2N=V3	3N, I1=I2=I3)			
No.	factor		Phas	se angle	e aispi	ay		Electric power display	Voltage display	Current display	Wiring		
	(input)	∠V1N	∠V2N	∠Vзм	∠lı	∠l2	∠l₃	W1 W2 W3	V1n V2n V3n	l1 l2 l3			
	Forward 0.707				345	105	225				Connection between P2 and P0 are reserved.		
	Forward 0.866				0	120	240						
6	1	0	330	300	30	150	270	W1=Positive value W2=Negative value W3=Positive value	tositive value egative value V1N=V3N > V2N ositive value	I1=I2=I3			
	Delayed 0.866				60	180	300						
	Delayed 0.707				75	195	315						
	Forward 0.707				285	45	165				Connection between P3 and P0 are reserved.		
	Forward 0.866				300	60	180						
7	1	0	60	30	330	90	210	W1=Positive value W2=Positive value W3=Negative value	V1N=V2N>V3N	I1=I2=I3			
	Delayed 0.866				0	120	240						
	Delayed 0.707				15	135	255						
	Forward 0.707				135	75	195				Connection of CT on side "1" is reserved.		
	Forward 0.866				150	90	210						
8	1	0	120	240	180	120	240	W1=Negative value W2=Positive value W3=Positive value	V1N=V2N=V3N	I1=I2=I3			
	Delayed 0.866				210	150	270						
	Delayed 0.707				225	165	285						
	Forward 0.707				315	255	195				1 2 30		
	Forward 0.866				330	270	210	W4 - Positive value					
9	1	0	120	240	0	300	240	W1=1 Ositive value W2=Negative value W3=Positive value	V1N=V2N=V3N	I1=I2=I3			
	Delayed 0.866				30	330	270						
	Delayed 0.707				45	345	285				Connection of CT on side "3" is		
	Forward 0.707				315	75	15				1 2 3 0		
	Forward 0.866				330	90	30	W1=Positive value					
10	1 Delayed	0	120	240	0	120	60	W ₂ =Positive value W ₃ =Negative value	V1N=V2N=V3N	I1=I2=I3	$ \begin{vmatrix} \mathbf{L} \\ \mathbf{L}$		
	0.866 Delaved				30	150	90				U u P1 √8 0 P2 √8 0 P3 √8 93 P3 √8 93 P3 √8 93 P3		
	0.707				45	165	105	W1=Positive value			₩ 😌 📩 🛄 CT side "1" and "2" are swapped.		
	0.707 Forward				75	315	195	W2=Negative value W3=Positive value W1=0					
11	0.866	0	100	240	90	330	210	vv2=Negative value W3=Positive value W1=Negative value	Va-V V	14-1- 1-			
11	1 Delayed	U	120	240	120	0	240	w2=rvegative value W3=Positive value W1=Negative value W2=0	V1N=V2N=V3N	n l1=l2=l3	4=V3N I1=I2=I3		
	0.866 Delayed				150	30	270	W2=0 W3=Positive value W1=Negative value W2=Positive value					
	0.707				165	45	285	W ₂ =Positive value W ₃ =Positive value					

	Power		Dhaa			lau (At the average current	(V1N=V2N=V	3N, I1=I2=I3)	
No.	factor		Phas	e angle	e aisp	lay		Electric power display	Voltage display	Current display	Wiring
	(input)	∠V1N	∠V2N	∠Vзм	∠lı	∠l2	∠lз	W1 W2 W3	V1n V2n V3n	l1 l2 l3	CT side "2" and "3" are ewapped
	Forward 0.707				315	195	75	W1=Positive value W2=Positive value W3=Negative value			Grade Z and G are swapped.
	Forward 0.866				330	210	90	W1=Positive value W2=0 W3=Negative value			
12	1	0	120	240	0	240	120	W ₁ =Positive value W ₂ =Negative value	V1N=V2N=V3N	l1=l2=l3	$\begin{array}{c c} & 1 \\ \kappa \\ \mu
	Delayed				30	270	150	W1=Positive value W2=Negative value			
	Delayed				45	285	165	W ₃ =0 W ₁ =Positive value W ₂ =Negative value			↓ <u>u</u> ² ↓ <u>u</u> ↓ <u>u</u>
	Forward				195	75	315	W ₃ =Positive value W ₁ =Negative value W ₂ =Positive value			CT side "1" and "3" are swapped.
	0.707 Forward				100	10	010	W ₃ =Positive value W ₁ =Negative value			
	0.866				210	90	330	W2=Positive value W3=0 W1=Negative value			
13	1	0	120	240	240	120	0	W2=Positive value W3=Negative value W1=0	V1N=V2N=V3N	l1=l2=l3	
	Delayed 0.866				270	150	30	W ₂ =Positive value W ₃ =Negative value			
	Delayed 0.707				285	165	45	W1=Positive value W2=Positive value W3=Negative value			
	Forward 0.707				15	315	75	W1=Positive value W2=Positive value W3=Positive value			Connection between P1 and P2 are reserved. And connection of CT on side *1* is reserved.
	Forward 0.866				30	330	90	W1=Positive value W2=0 W3=Positive value			
14	1	0	240	120	60	0	120	W ₁ =Positive value W ₂ =Negative value W ₃ =Positive value	V1N=V2N=V3N	l1=l2=l3	
	Delayed 0.866				90	30	150	W1=0 W2=Negative value			
	Delayed 0.707				105	45	165	W1=Negative value W2=Negative value			
	Forward 0.707				135	75	195	W ₃ =Positive value W ₁ =Negative value W ₂ =Negative value			Connection between P2 and P3 are reserved. And connection of
	Forward				150	90	210	W ₃ =Positive value W ₁ =Negative value W ₂ =Negative value			
15	1	0	240	120	180	120	240	W ₃ =0 W ₁ =Negative value W ₂ =Negative value	V1N=V2N=V3N	l1=l2=l3	
	Delayed				210	150	270	W ₃ =Negative value W ₁ =Negative value W ₂ =0			
	Delayed				225	165	285	W ₃ =Negative value W ₁ =Negative value W ₂ =Positive value			+ ¥/₹% P0 + ₩/₹% - + ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹% - - ₩/₹ - - ₩/₹% - - ₩/₹ - - ₩/₹ - - ₩/₹ - - ₩/₹ - - ₩/₹ - - ₩/₹ - - ₩ - - ₩ - - ₩ - - ₩ - - ₩ - - ₩ - - ₩ - - ₩ - - ₩ -
	Forward				255	195	315	W ₃ =Negative value W ₁ =Negative value W ₂ =Positive value			Connection between P1 and P3 are reserved. And connection of
	Forward				270	210	330	W ₃ =Negative value W ₁ =0 W ₂ =Positive value			CT on side "1" is reserved. $\begin{vmatrix} z & z & z \\ k & & & & & & - [1 x & & \\ \end{vmatrix}$
16	1	0	240	120	300	240	0	W ₃ =Negative value W ₁ =Positive value W ₂ =Positive value	V1N=V2N=V3N	l1=l2=l3	
	Delayed				330	270	30	W ₃ =Negative value W ₁ =Positive value W ₂ =Positive value			
	Delayed				345	285	45	W ₃ =0 W ₁ =Positive value W ₂ =Positive value			
	0.707 Forward				315	255	15	W3=Positive value			Connection between P1 and P0 are reserved. And connection of
	0.707 Forward				330	270	30				CT on side "1" is reserved.
17	0.866	0	330	30	0.00	300	60	W1=Positive value	V1N <v2n=v2n< td=""><td>1=12=13</td><td></td></v2n=v2n<>	1=12=13	
	Delayed	Ū	550	50		200	00	W ₃ =Positive value		=12=13	
	0.866 Delayed				30	330	90				$\begin{array}{c c} & & & & & & & & & & & & & & & & & \\ \hline & & & &$
	0.707				45	345	105				

	Power		Phas	se angl	e disp	lav		At the average current	(V1N=V2N=V	3N, I1=I2=I3)	
No.	factor (input)	/////	(1/a)	<u>////au</u>			<u> </u>	display	display	display	Wiring
	Forward 0.707	Z V 1N	Z V2N	Z_ V 3N	165	105	225	VV1 VV2 VV3	VIN VZN V3N	11 12 13	Connection between P2 and P0 are reserved. And connection of CT on side "1" is reserved.
	Forward 0.866				180	120	240				
18	1	0	330	300	210	150	270	W1=Negative value W2=Negative value W3=Positive value	V1N=V3N>V2N	I1=I2=I3	
	Delayed 0.866				240	180	300				
	Delayed 0.707				255	195	315				
	Forward 0.707				105	45	165				Connection between P3 and P0 are reserved. And connection of CT on side ~1~ is reserved.
	Forward 0.866				120	60	180				
19	1	0	60	30	150	90	210	W1=Negative value W2=Positive value W3=Negative value	V1N=V2N>V3N	I1=I2=I3	
	Delayed 0.866				180	120	240				
	Delayed 0.707				195	135	255				
	Forward 0.707				195	135	75	W1=Negative value W2=Negative value W3=Positive value			Connection between P1 and P2 are reserved. And connection of CT on side "2" is reserved.
	Forward 0.866				210	150	90	W1=Negative value W2=0 W3=Positive value			
20	1	0	240	120	240	180	120	W1=Negative value W2=Positive value W3=Positive value	V1N=V2N=V3N	I1=I2=I3	
	Delayed 0.866				270	210	150	W1-0 W2=Positive value W3=Positive value			
	Delayed 0.707				285	225	165	W1=Positive value W2=Positive value W3=Positive value			Connection between P2 and P3 are
	Forward 0.707				315	255	195	W1=Positive value W2=Positive value W1=Positive value			reserved. And connection of CT on side "2" is reserved.
	0.866				330	270	210	W ₂ =Positive value W ₃ =0 W ₁ =Positive value			
21	1 Delayed	0	240	120	0	300	240	W2=Positive value W3=Negative value W1=Positive value	V1N=V2N=V3N	I1=I2=I3	
	0.866 Delaved				30	330	270	W2=0 W3=Negative value W1=Positive value			
	0.707 Forward				45	345	285	W2=Negative value W3=Negative value W1=Positive value			Connection between P1 and P3 are
	0.707 Forward				90	30	310	W2=Negative value W3=Negative value W1=0 W2=Negative value			side "2" is reserved.
22	0.866	0	240	120	120	60	0	W3=Negative value W1=Negative value W2=Negative value	V1N=V2N=V3N	I1=I2=I3	
	Delayed				150	90	30	W3=Negative value W1=Negative value W2=Negative value			
	Delayed 0.707				165	105	45	W3=0 W1=Negative value W2=Negative value W2=Regitive value			
	Forward 0.707				135	75	15	W3-1 Ostave Value			Connection between P1 and P0 are reserved. And connection of CT on side "2" is reserved.
	Forward 0.866				150	90	30				
23	1	0	330	30	180	120	60	W1=Negative value W2=Negative value W3=Positive value	V1N <v2n=v3n< td=""><td>I1=I2=I3</td><td></td></v2n=v3n<>	I1=I2=I3	
	Delayed 0.866				210	150	90				
	Delayed 0.707				225	165	105				

Diopic	ly oxampic	, (0011	nootic		mpi			At the everage current	(\/1NI-)/2NI-)/	201 11-12-12)	Indicates improper connection
	Power		Phas	e and	o disr	lav		At the average current	(VIN=V2N=V	3N, 11=12=13)	
No.	factor		1 nac	ic angi	c uiop	nay		display	display	display	Wiring
	(input)	∠V1N	∠V2N	∠V3N	∠lı	$\angle _2$	∠l₃	W1 W2 W3	V1N V2N V3N	11 12 13	
											Connection between P2 and P0
	Forward				345	285	225				are reserved. And connection of
	0.707										CT on side "2" is reserved.
	Forward										
	0.866				0	300	240				
24	1	0	330	300	30	330	270	W1=Positive value		11-12-12	
24	'	Ŭ	000	000	30	550	210	W ₃ =Positive value		11=12=13	
	Delayed				60	0	300				<u> </u>
	0.000										
	Delaved										
	0.707				75	15	315				
											Connection between P3 and P0
	Forward				285	225	165				are reserved. And connection of
	0.707										CT on side "2" is reserved.
	Ferward										1 2 3 0
	0.866				300	240	180				
25	4	0	60	20	220	270	240	W1=Positive value		k-lo-lo	
20	1	0	00	30	330	270	210	W ₂ =Negative value	V 1N= V 2N / V 3N	11=12=13	
	Delayed				0	300	240				
	0.000										
	Delayed										
	0.707				15	315	255				
								147 AL			T Connection between D1 and D2
	Forward				105	315	255	W1=Negative value			are reserved. And connection of
	0.707				100	010	200	W ₃ =Negative value			CT on side "3" is reserved.
	Francis							W1=Negative value	1		1 2 3 0
	Forward 0.866				210	330	270	W2=0			
	0.000							W3=Negative value			
								W1=Negative value			
26	1	0	240	120	240	0	300	W2=Negative value	V1N=V2N=V3N	11=12=13	
								W ₄ =0			
	Delayed				270	30	330	W1=0 W2=Negative value			
	0.866							W3=Negative value			
	Delayed							W1=Positive value	1		
	0.707				285	45	345	W2=Negative value			
								W3=Negative value			T Occurrentian instrument DO and DO
	Forward				215	75	15	W1=Positive value			connection between P2 and P3 are reserved. And connection of
	0.707				315	75	15	W ₂ =Negative value			CT on side "3" is reserved.
								W1=Positive value	1		1 2 3 0
	Forward				330	90	30	W2=Negative value			К
	0.000							W3=0			
07			0.40	100				W1=Positive value			
27	1	0	240	120	0	120	60	W ₂ =Negative value W ₂ =Positive value	V1N=V2N=V3N	11=12=13	
								W ₁ =Positive value	1		
	Delayed				30	150	90	W1=1 Oslive value W2=0			
	0.866							W3=Positive value			
	Delayed							W1=Positive value			
	0.707				45	165	105	W2=Positive value			
			-					Wa - Positive value			Connection between P1 and P3
	Forward				75	195	135	W ₂ =Positive value			are reserved. And connection of
	0.707							W3=Positive value			CT on side "3" is reserved.
	Forward							W1=0	1		
	0.866				90	210	150	W2=Positive value			
								W3=Positive value	1		
20	1	~	240	100	100	240	100	W1=Negative value	Value Von V.	14-lo- l-	
20		U	240	120	120	240	180	W ₃ =Positive value	v 1N=V2N=V3N	11=12=13	
								W1=Negative value	1		
	Delayed				150	270	210	W2=Positive value			
	0.000							W3=0	1		
	Delaved							W1=Negative value			
	0.707				165	285	225	W2=Positive value			
											Connection between P1 and P0
	Forward				135	255	195				are reserved. And connection of
	0.707										CT on side "3" is reserved.
	Forward										
	0.866				150	270	210				
					-			M - No			
29	1	0	330	30	100	300	240	W1=Negative value	V1N < V2N-V2N	1=12-12	
23		5	000	30	180	300	24U	W3=Negative value		=12=13	
	D.:							5 · · · · ·			
	0 866				210	330	270				
	0.000										
	Delaved										
	0.707				225	345	285				

----- Indicates improper connection

	Power		5.					At the average current	(V1N=V2N=V3	3N, I1=I2=I3)	
No.	factor		Phas	e angle	e disp	ay		Electric power display	Voltage display	Current display	Wiring
	(input)	∠V1N	∠V2N	∠Vзм	∠lı	∠l2	∠l₃	W1 W2 W3	V1N V2N V3N	l1 l2 l3	
	Forward 0.707				345	105	45				Connection between P2 and P0 are reserved. And connection of CT on side "3" is reserved.
	Forward 0.866				0	120	60				
30	1	0	330	300	30	150	90	W1=Positive value W2=Negative value W3=Negative value	V1N=V3N>V2N	l1=l2=l3	
	Delayed 0.866				60	180	120				
	Delayed 0.707				75	195	135				
	Forward 0.707				285	45	345				Connection between P3 and P0 are reserved. And connection of CT on side "3" is reserved.
	Forward 0.866				300	60	0				
31	1	0	60	30	330	90	30	W1=Positive value W2=Positive value W3=Positive value	V1N=V2N>V3N	l1=l2=l3	
	Delayed 0.866				0	120	60				
	Delayed 0.707				15	135	75				
	Forward 0.707				315	195	75				Connection between P1 and P2 Connection between P2 and P3 are reserved. And CT side "1" are reserved. And CT side "1" and "3" are swapped. 1 2 3 0 1 2 3 0 1 2 3 0 1 2 3 0 1 2 3 0
	Forward 0.866				330	210	90				
32	1	0	240	120	0	240	120	W1=W2=W3	V1N=V2N=V3N	l1=l2=l3	
	Delayed 0.866				30	270	150				$\begin{array}{c c c c c c c c c c c c c c c c c c c $
	Delayed 0.707				45	285	165				Connection between P2 and P3 Connection between P1 and P3 Connection between P1 and P2
	Forward 0.707				75	315	195				are reserved. And CT side "1" and "2" are swapped. ¹ 2 3 0 ¹ 2 ¹ 2 3 0 ¹ 2 ¹ 2 3 0 ¹ 2 ¹ 2 ¹ 0 ¹ 2 ¹ 3 0
	Forward 0.866				90	330	210				
33	1 Delayed	0	240	120	120	0	240	W1=W2=W3	V1N=V2N=V3N	l1=l2=l3	
	0.866				150	30	270				U U P1 U U P1 VFAU P0 VFAU P0 VFAU P0 VFAU P1 P0 VFAU P0 VFAU P0 VFAU P1 P0 VFAU P0 VFAU P0 VFAU P0 VFAU P1 P1 P1 P1 P1 P0 P1 P1
	0.707				165	45	285				Connection between P1 and P3 Connection between P1 and P3
	0.707 Forward				195	75	315				and "Same swapped. And C1 side 1 and "Same swapped. and "Same swapped. 1 2 3 0 1 2 3 0 1 2 3 0 1 2 3 0 1 2 3 0 1 2 3 0 1 1 2 3 0 1 1 2 3 0 1 1 2 3 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
34	0.866		240	120	210	120	330	W1-W2-W2	Van=V2n=V2n	11-12-12	
34	Delayed		240	120	240	120	30	VV1-VV2-VV3	V IN- V 2N- V SN	11-12-13	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
	0.866 Delayed				285	165	45				VI P0 VI P0 VI VI P1 P2 VI P2
	Forward				255	135	15	W1=Negative value W2=Negative value			Connection between P1 and P0 are reserved. And CT side "1"
	Forward				270	150	30	W ₃ =Positive value W ₁ =0 W ₂ =Negative value			and "2" are swapped.
35	1	0	330	30	300	180	60	W3=Positive value	V1n <v2n=v3n< td=""><td>l1=l2=l3</td><td>$\begin{array}{c} L \\ L$</td></v2n=v3n<>	l1=l2=l3	$\begin{array}{c} L \\ L $
	Delayed 0.866				330	210	90	W1=Positive value W2=Negative value			
	Delayed 0.707				345	225	105	vv3=Positive value			$\begin{array}{c c c c c c c c c c c c c c c c c c c $

	Demer	,						At the average current	(V1N=V2N=V	3N, I1=I2=I3)	
No.	factor		Phas	se angl	e disp	lay		Electric power	Voltage	Current	Wiring
	(input)	∠V1N	∠V2N	∠Vзм	∠lı	∠l2	∠l₃	W1 W2 W3	V1N V2N V3N	l1 l2 l3	
	Forward 0.707				105	345	225				Connection between P2 and P0 are reserved. And CT side "1" and "2" are swapped.
	Forward 0.866				120	0	240	W1=Negative value W2=Positive value W3=Positive value			
36	1	0	330	300	150	30	270		V1N=V3N>V2N	l1=l2=l3	
	Delayed 0.866				180	60	300	W1=Negative value W2=0 W3=Positive value			
	Delayed 0.707				195	75	315	W1=Negative value W2=Negative value W3=Positive value			P3 + U38 + U38 + U38 + P2 + P2
	Forward 0.707				45	285	165	W1=Positive value			Connection between P3 and P0 are reserved. And CT side "1" and "2" are swapped.
	Forward 0.866				60	300	180	W ₂ =Negative value W ₃ =Negative value			$1 2 3 0$ $K_{1} = = = = = = = = = = = = = = = = = = =$
37	1	0	60	30	90	330	210	W1=0 W2=0 W3=Negative value	V1N=V2N>V3N	l1=l2=l3	
	Delayed 0.866				120	0	240	W1=Negative value			
	Delayed 0.707				135	15	255	W3=Negative value			
	Forward 0.707				135	15	255	W1=Negative value W2=Positive value			Connection between P1 and P0 are reserved. And CT side "2" and "3" are swapped.
	Forward 0.866				150	30	270	W3=Negative value			
38	1	0	330	30	180	60	300	W1=Negative value W2=0 W3=0	V1N <v2n=v3n< td=""><td>l1=l2=l3</td><td></td></v2n=v3n<>	l1=l2=l3	
	Delayed 0.866				210	90	330	W1=Negative value W2=Negative value			$\begin{array}{c} u \\ \downarrow \\$
	Delayed 0.707				225	105	345	Wa=Positive value			Connection between P2 and P0
	Forward 0.707				345	225	105	W1=Positive value W2=Negative value W3=Negative value			are reserved. And CT side "2" and "3" are swapped.
	Forward 0.866				0	240	120	W ₂ =0 W ₃ =Negative value	-		
39	1 Defended	0	330	300	30	270	150	W1=Positive value	V1n=V3n>V2n	l1=l2=l3	
	0.866				60	300	180	W ₂ =Positive value W ₃ =Negative value			
	0.707				75	315	195				Connection between P3 and P0
	0.707				285	165	45	W1=Positive value			are reserved. And CT side "2" and "3" are swapped. 1 2 3 0
10	0.866				300	180	60	W2=Negative value W3=Positive value			
40	1 Delaved	0	60	30	330	210	90	W1=Positive value	V1n=V2n>V3n	l1=l2=l3	
	0.866 Delayed				0	240	120	W2=Negative value W3=0 W1=Positive value	-		
	0.707 Forward				15	205	135	W ₃ =Negative value			Connection between P1 and P0 are reserved. And CT side "1"
	0.707 Forward				30	270	150	W1=Positive value W2=Positive value			and "3" are swapped.
41	0.866	0	330	30	60	300	180	W ₃ =Negative value	V1N <v2n=v3n< td=""><td>l1=l2=l3</td><td></td></v2n=v3n<>	l1=l2=l3	
	Delayed				90	330	210	W1=0 W2=Positive value	$W_{1=0}$ W_{1		
	Delayed 0.707				105	345	225	W ₃ =Negative value W ₁ =Negative value W ₂ =Positive value W ₃ =Negative value			$ \begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $

	Power							At the average current (V1N=V2N=V3N, I1=I2=I3)								
No.	factor		Phas	se angl	e disp	lay		Electric po	ower	Voltage	С	urrent	Wiring			
	(input)	∠V1N	∠V2N	V2N ∠V3N		∠ 2 ∠ 3		W1 W2	W3	V1N V2N V3N		lispiay				
	- ·	_										12 10	Connection between P2 and P0			
	0.707				225	105	345	M					are reserved. And CT side "1"			
	0.101							W ₂ =Negativ	e value				and "3" are swapped.			
	Forward 0.866 1 Delayed 0.866 Delayed 0.707				240	120	0	W3=Positiv	e value							
42		0	330	300	270	150	30	W1=0 W2=Negativ) e value	V1N=V3N>V2N	l1=l2=l3					
								W3=0)							
					300	180	60	W1=Positiv	ve value ive value							
					315			W2=Negativ								
						195	5 75	w3-negative value								
													Connection between D2 and D0			
	Forward				165	45	285	W1=Negativ W2=Positiv	e value e value				are reserved. And CT side "1"			
	0.707							W3=Negativ	tive value			and "3" are swapped.				
	Forward 0.866							W1=Negative value								
					180) 60	300	W2=Positiv W3=0	e value)							
										1						
42	1	0	60	30	210	90	330			V1N=V2N>V3N	l1	1 = 2 = 3				
								W1=Negativ	e value							
	Delayed 0.866				240	120	0	W2=Positiv	e value							
								W3=Positiv	e value							
	Delayed 0.707				255	5 135 15	15									

	3 End of test mode	
I	Screen	Operation
	3-1. Do you run test mode? OK Cancel	 (1) Push the <u>SETUP</u> key in display of incorrect wiring discrimination. (2) 3-1 will be displayed.
	3-2. [Test mode] 1 Connection 2 COM 3 Pulse ▼	 (1) Push the key, and move the cursor to the "OK", push the /PHASE key. (2) 3-2 will be displayed.
	3-3. Do you exit test mode? OK Cance	 Push the key, and move the cursor to the "5 Finish" and push the PHASE key. 3-1 will be displayed. Push the key, and move the cursor to the "OK" and push the PHASE key. Operating mode is displayed after exit test mode.

6.5.3 Communication test

You can monitor non-zero values without voltage or current input.

	Monitoring the fixed value determined by the set value (phase wire system, primary voltage, primary current) is possible.												
	1 Transition to the t	1 Transition to the test mode (communication test)											
2	Screen	Operation											
P	-1.	(1) Push the \pm and \Box key in Operation Mode.											
	Do you run test mode?	(2) 1-1 will be displayed.											
	OK Cancel												
ŀ	-2.	(1) Push the 🔺 key, and move the cursor to the "OK" and push the 🖉 /PHASE key.											
l	[Test mode]	(2) 1-2 will be displayed after in transition display.											
	1 Connection COM.	(3) Push the \blacktriangle or \bigtriangledown key, and move the cursor to the "2 COM" and push the \checkmark PHASE key.											
	3 Puise												

2 Communication test									
Display example (Wh) DEMAND MAX. HARM. PRESENT TOTAL MIN. 6 6 6 6 6 5 \bullet x 10 k W h									
Confirm by key operation									
Operation	Function								
Push the 🔺 💌	Change the elements								
Push the /PHASE	Change the phases								

3 End of test mode	(communication test)
Screen	Operation
3-1. Do you exit COM. test? OK Cance	 (1) Push the <u>SETUP</u> key in communication test screen. (2) 3-1 will be displayed.
3-2. [Test mode] 1 Connection 2 COM. 3 Pulse ↓	 (1) Push the ▲ key, and move the cursor to the"OK" and push the (✔/PHASE) key. (2) 3-2. will be displayed after displayed in ending screen.
3-3. Do you exit test mode? OK Cancel	 Push the key, an d move the cursor to the "5 End" and push the /PHASE key. 3-3 will be displayed. Push the key, and move the cursor to the "OK" and push the /PHASE key. Operating mode is displayed after exit test mode.

6.5.4 Pulse output test

1 Transition to the	test mode(pulse output test)										
Screen	Operation										
1-1. Do you run test mode? OK Cancel	 (1) Push the (-) key in operation display (2) 1-1 will be displayed. 										
1-2. [Test mode] 1 Connection 2 COM. 2 Pulse ↓	 Push the ▲ key, and move the cursor to the "OK" and push the (PHASE) key. 1-2 will be displayed after displayed in transition screen. Push the ▲ or ▼ key, and move the cursor to the "3 Pulse output" and push the (PHASE) key. 2-1 will be displayed. 										

2 Pulse output test		
Screen	Operation	Note
2-1. [Pulse output] 2 Set number 2 Continous	 Push the ▲ or ▼ key, and the select the how to pulse output. Push the //PHASE key, and confirm the setting value. Transition to the following screen by how to pulse output. Specific number output → To 2-2 	[Pulse output test]∶Specific number⇔ Continuous⇔
2-2. [Pulse Test] 001 Pulse OK Cancel	 (1) Push the ▲ ▼ H = - key, and change the setting value. (2) Push the ▲ ▼ key, and move the cursor to the "OK" and push the <i>I</i>/PHASE key. (3) Return 2-2 after output specific number output . (4) Push the ▲ ▼ key, and move the cursor to the "Cancel" and push the, <i>I</i>/PHASE key. (5) 2-1 will be displayed. 	[Specific number output]: 001~255
2-3. During Output pulse Stop	 (1) Push the <i>PHASE</i> key after confirm the pulse output. (2) 2-1 will be displayed. 	

3 End of test mode	e (Pulse output test)
Screen	Operation
3-1. Do you exit pulse test? OK <u>Cance</u>	 (1) Push the <u>SETUP</u> key in pulse output test. (2) 3-1 will be displayed.
3-2. [Test mode] 1 Connection 2 COM. ■ Pulse ◆	 (1) Push the key, and move the cursor to the "OK" and push the (/PHASE) key. (2) 3-2 will be displayed after displayed ending the pulse output test.
3- <u>3.</u> Do you exit test mode? OK Cance	 Push the ▼ key, and move the cursor to the "5 END" and push the PHASE key. 3-3 will be displayed. Push the ▲ key, and move the cursor to the "OK" and push the PHASE key. Operating mode is displayed after exit test mode.

6.5.5 Alarm output test

	1 Transition to the	est mode(alarm output test)												
Screen		Operation												
	1-1. Do you run test mode? OK Cancel	 Push the + exp simultaneous in the operation mode. 1-1 will be displayed. 												
	1-2. [Test mode] 2 COM. 3 Pulse ▲ Alarm ★	 Push the ▲ key, and move the cursor to the "OK" and push the (✔/PHASE) key. 1-2 will be displayed after displayed in transition screen. Push the ▲ or ▼ key, and move the cursor to the "4 Alarm output" and push the (✔/PHASE) key. 2-1 will be displayed. 												

2 Alarm output test	
[Alarm output test] ■ ■ ■ ■ ■ ■ ■ ■ [Alarm output test] ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	Push the 🛨 🖃 key, and change On ⇔ Off.

-		
	3 End of test mode	(alarm output test)
S	creen	Operation
3	-1. Do you exit alarm test? OK Cancel	 (1) Push the <u>SETUP</u> key in alarm output test. (2) 3-1 will be displayed.
3	-2. [Test mode] 2 Com. 3 Pulse ☑ Alarm ♦	 (1) Push the key, and move the cursor to the "OK" and push the (P/PHASE) key. (2) 3-2 will be displayed after displayed ending the alarm output test.
3	-3. Do you exit test mode? OK Cancel	 Push the ▼ key, and move the cursor to the "5 END" and push the PHASE key. 3-3 will be displayed. Push the ▲ key, and move the cursor to the "OK" and push the PHASE key. Operating mode is displayed after reset display unit.

6.6.1 Transition of display

Transition in operation mode is showed follow.













*Screen what display or not appear is different based on the models connected measure unit. (• 6.6.2 Correspondence of connected models and display.)

6.6.2 Correspondence of connected models and display.

Screen what display or not appear is different based on the models connected measure unit.

	EMILIA			EMILIA		2					EMILIAI	C1 MR			
	EIVIU4-E			EIMU4-F				EIVIU4-AZ/	EIVIU4-VA2				EIVIU4-AX4	EIVIU4-PX4	
		Wh+A+4	elements	Wh+A+4	elements	Det harm	ail of Ionics	Wh+A+4 elements		Detail of harmonics		Low / High Sensitivity		-	-
		1P2W	1P3W /3P3W	1P2W	1P3W /3P3W /3P4W	1P2W	1P3W /3P3W /3P4W	1P2W	1P3W /3P3W /3P4W	1P2W	1P3W /3P3W /3P4W	1P2W /1P3W /3P3W	3P4W	_	_
(1)Electric energy	Present value		•	•				•				_	—	_	_
(2) Electric energy converted	Present value	_	_	0	0	•	•	0	0	•	•	—	—	—	—
(3) Period electric energy	Present value		_	0	0	•	•		-		-	-	-	_	—
(4)Operating time	Present value	0	0	0	0	•	•	0	0	•	•	—	—	_	•
(5)Regeneration electric energy	Present value	0	0	0	0	•	•	0	0	•	•	—	_	—	_
(6)Pulse count value	Present value	_	_	0	0	•	•	_	_	_	_		_	_	•
(7)Pulse converted value	Present value														
(o)Current	1,2,3,1N, 10tal												_		_
(9)Demand current	Max and Min	•	•	•	•	•	•	•	•	•	•				
(10)Voltage	1-2,2-3,3-1,1-N, 2-N,3-N,Total ³²	0	0	0	0	•	•	0	0	•	•	_	_	_	_
(11)Electric power	Present value									1					
(12)Demand electric power	Present value Max., Min. value	0	0	0	0	•	•	0	0	•	•	_	_	-	—
(13) Reactive power	Present value	0	0	0	0	•	•	0	0	•	•	-	—	_	—
(14) Apparent power	Present value		_	_	O*7	-	_	-	O*7	_	O*7	_	_	_	_
(15) Power factor	Present value Max., Min. value	0	0	0	0	•	•	0	0	•	•	_	-	_	_
(16) Frequency	Present value	0	0	0	0	•	•	0	0	•	•	_	_	_	_
(17)(18) Harmonics current total effective / distortion	1,2,3,N ^{**3}	—	_	0	0	O*5	O*5	0	0	O*5	O**5	—	_	—	-
(19) (20) Harmonics voltage total effective / distortion	1-2,2-3,3-1, 1-N,2-N,3-N ^{**4}	I	_	0	0	O*5	O*5	0	0	O**5	O**5	_		-	_
(21)(22)1-13N harmonics current effective / distortion	1,2,3,N ^{**3}	_	—	—	—	O*5	O*5	_	—	O*5	O*5	—	—	—	-
(23) (24) 1-13N harmonics voltage effective / distortion	1-2,2-3, 1-N,2-N,3-N ^{**4}	-	-	-	-	O*5	O*5	-	-	O*5	O*5	-	-	—	-
(25) Leak current	Present value	0	0	0	0	-	—	0	0	-	—	-	_	—	—
(26) Current unbalance rate	Present value Max. value	O*6	0	O*6	0	-	0	O*6	0	_	0	-	_	-	_
(27) Voltage unbalance rate	Present value Max. value	O*6	0	O*6	0	_	0	O*6	0	—	0			_	_
(28)Leak current	Present value	_	_	_	_	_		_	_	-	_	•	•	_	-
(29)Demand leak current	Present value	-	_	_	-	-	_	_	-	-	_	•	•		_
(30)Leak current of resistance	Present value	_	_	_	_	_	_	_	_	_			_		_
(31) Demand leak current	Present value											•			
of resistance	Max. value	_			_	_	_	_	_	_	_	•			_
(32)Differential conversion Value demand leak current	Present value Max value	_	_	_	_	_	—	-	_	_	—	•**	_	_	_
of resistance (33) Scaling value	Present value	_		_	_	_		_	_	_				•	_
(34) Number of times	Max., Min. value Present value														
(35) Number of times exceeding the Limit B	Present value														
(36) Number of times exceeding the Limit C	Present value	_	-	_	-	_	-	-	-	_	-	_	_	•	—
(37) Number of times exceeding the Limit D	Present value														
(38)Time	Present value	•**	● ^{*9}	•**	•*9	● ^{%9}	•*9	—	—	—	—	● ^{※9}	● ^{※9}	—	—
(39)Error	-	•	•	•	•	•	•	•	•	•	•	•	٠	•	•

•...Displayed elements o...element displayed only setting -...Not displayed elements

*1 2 and 3 phases is not displayed in wiring setting 1P2W. N phase is only displayed in 3P4W setting.

*2 Between 2 and 3, 3 and 1 is not displayed in setting 1P2W1-N. Between 2 and N, 3 and N is displayed in 3P4W setting.

*3 If wiring setting is 1P2W, 3 phase is not displayed. 2 phase is only displayed in setting 3P4W.

*4 If wiring setting is 1P2W, between 2 and 3 is not displayed. Between 1 and N, 2 and N, 3 and N is only displayed.

*5 Either effective value and content rate ,distortion by the setting elements of HA and HV.

*6 Current unbalance rate, voltage unbalance rate is displayed 0% in 1P2W setting.

*7 Apparent power is only measured in 3P4W setting

*8 Measured value is displayed differential conversion setting is ON.

*9 Present time is only displayed when connected EMU4-LM.

6.6.3 Detail of display

	Caraon	Key operati	on	Nata
Screen name	Screen	Key	Operation	Note
(1)	Measured value		Measured value in previous is	Integral power consumption is displayed.
Electric	DEMAND MAX. HARM.		displayed	"•" mark is displayed while measuring
energy			Measured value in next is displayed	•[1] and [2] is displayed as a measurement target
0,	115398		Key operation is invalid	circuit in the bottom left of the screen in 1P2W.
			Change 3 side circuit in the 1P2W	The phase type is displayed when other wiring.
			setting	•Measured value is multiplied by the displayed value
	Multiplying factor		Displayed circuit is changed	displayed
	Mark of measure	RESET/SET	Transition to the Reset/Preset mode	alopiayout
	Measurement	▲ +▼	Transition to the Alarm mode	
	target circuit	(+) + (-)	Transition confirmation screen is	
(0)			displayed	The value multiplied electric energy and patting
(Z) Electric			displayed	electric energy converted value is displayed.
Electric			Measured value in next is displayed	
converted	DEMAND MAX. HARM. PRESENT TOTAL MIN.	+	Key operation is invalid	•[1] and [2] is displayed as a measurement target
	CONV. Wh		Change 3 side circuit in the 1P2W	The phase type is displayed when other wiring.
value	3 4 3 7 1 5	✓/PHASE	setting	•Measured value is multiplied by the displayed value
	1) x 10 ³ J		Displayed circuit is changed.	and multiplying factor if multiplying factor is
	Multiplying		Transition to the Setup mode	displayed.
	factor		Transition to the Alarm mode	
	Measurement		Transition confirmation screen is	
	target circuit		displayed	
(3)			Measured value in previous is	Integral electric energy is displayed while contact
Periodic	Measured value		displayed Measured value in part is displayed	input is ON.
electric			Key operation is invalid	•[1] and [2] is displayed as a measurement target
energy	PRESENT TOTAL MIN.		Key operation is invalid	circuit in the bottom left of the screen in 1P2W.
	PRD. Wh	/PHASE	Change 3 side circuit in the 1P2W	The phase type is displayed when other wiring.
	3642		setting Displayed circuit is changed	 Measured value is multiplied by the displayed value and multiplying factor if multiplying factor is
	🕕 🗴 10 ³ k W h		Transition to the Setup mode	displayed.
	 Multiplying factor 	[RESET/SET]	Transition to the Reset/Preset mode	
	Measurement	▲+▼	Transition to the Alarm mode	
	target circuit	++-	Transition confirmation screen is	
(4)			Measured value in previous is	Operating time is displayed.
Operating			displayed.	
time	Operating time		Measured value in next is displayed.	•[1] and [2] is displayed as a measurement target
	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Key operation is invalid	Circuit in the bottom left of the screen in 1P2W.
	OP. Time		Change 3 side circuit in the 1P2W	
	75634	(PHASE)	setting	
	11 hour		Displayed circuit is changed	
		RESET/SET	Transition to the Reset/Preset mode	
	Measurement	▲+▼	Transition to the Alarm mode	
		(+) + (-)	Transition confirmation screen is	
(5)			aisplayed	Integral power consumption in regenerated side is
(D) Regeneration	Macoured value		displayed	displayed.
electric			Measured value in next is displayed.	
energy			Key operation is invalid	•[1] and [2] is displayed as a measurement target
energy			Change 3 side circuit in the 1P2W	The phase type is displayed when other wiring.
	185933	(/ PHASE	setting	•Measured value is multiplied by the displayed value
	() (x 10 ³) k W h		Displayed circuit is changed	and multiplying factor if multiplying factor is
			Iransition to the Setup mode	aispiayea.
	Measurement		Transition to the Alarm mode	
	target circuit		Transition confirmation screen is	
			displayed	
(6)			Measured value in previous is	Input pulse count value is displayed.
Pulse	Pulse count value		Measured value in next is displayed	·[1], [2], [3], [4] is displayed as a measurement target
count	DEMAND MAX. HARM.	+	Key operation is invalid	circuit (Represent the CH) in the bottom left of the
value	PRESENT TOTAL MN. PLS.CNT.		Key operation is invalid	screen if models is EMU4-PX4.
	258960	✓/PHASE	EMU4-PX4	
			Displayed circuit is changed	
	· ·	SETUP	Transition to the Setup mode	
	The measurement		Transition to the Reset/Preset mode	
	target circuit		Transition confirmation screen is	
			displayed	

Screen	Seroon	Key operati	on	Noto
name	Screen	Key	Operation	Note
(7)			Measured value in previous is displayed	The value multiplied pulse count value and setting
Pulse	Converted value		Measured value in next is displayed	puise. Converted rate is displayed
converted	DEMAND MAX HARM		Key operation is invalid	
value		/PHASE	Display the other CH if models is	•[1], [2], [3], [4] is displayed as a measurement target
	406863		EMU4-PX4 Displayed circuit is changed	screen if models is EMU4-PX4.
	400003		Transition to the Setup mode	
	(¹¹) <u>x 10³ J</u>	RESET/SET	Transition to the Reset/Preset mode	
	L The measurement target circuit	▲)+(▼)	Transition to the Alarm mode	-
		++-	displayed	
(8)			Measured value in previous is displayed	Present current is displayed
Current	Measured value		Measured value in next is displayed.	•Push the (/PHASE) key, and change follow.
	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Key operation is invalid	P_2W setting $[1](1side^*) \rightarrow [2](3side^*)$
		PHASE	Display by changed phase	\rightarrow [1](1side total) \rightarrow [2](3side total)
	1497		Change measured circuit	1P3W. 3P3W setting
			Transition to the Setup mode	
		(RESET/SET)	Transition to the Alarm mode	3P4W setting
	Phase display		Transition confirmation screen is	
			displayed	
				* Measured value connected to 1 side is displayed.
(9)			Measured value in previous is displayed	Demand current value is displayed.
Demand	When max is		Measured value in next is displayed.	•Push the •PHASE key, and change follow.
current	measured	+	Maximum demand current value is displayed	$\stackrel{1P2W \text{ setting}}{\vdash} [1](1 \text{ side}^*) \rightarrow [2](3 \text{ side}^*) \qquad \neg$
value	PRESENT TOTAL MIN.		Minimum demand current value is	
	04/01 14:33		displayed	1P3W, 3P3W setting ↑ 1phase→2 phase→3 phase ¬
	9999		Display by changed phase.	2011// 2011/
		SETUP	Transition to the Setup mode	\rightarrow 1 phase \rightarrow 2 phase \rightarrow 3 phase \rightarrow N phase
	1 + Max	RESET/SET	Transition to the Reset/Preset mode	* Measured value connected to 1 side is displayed
	DEMAND MAX. HARM. PRESENT TOTAL MIN.	▲+▼	Transition to the Alarm mode	* Measured value connected to 3 side is displayed.
		++-	Transition confirmation screen is	
	1 5 1 2		uspiayed	If you push the ⊥ or ⊥ key, Max/Min value displayed
				Return the standard display if push same key again.
	Measured value			Max/min value of 1 side circuit is displayed after
				push \pm or \pm key in 1 side in1P2W setting.
	DEMAND MAX. HARM.			push \pm or \Box the key in 3 side.
	04/0117:20			
	Min			
	When the data measuerd			
(10)			Measured value in previous is displayed	Present voltage is displayed.
Voltage	When max is measured		Measured value in next is displayed.	
	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Maximum voltage value is displayed	•Push the <i>PHASE</i> key, and change follow.
		(↓/PHASE)	Display by changed phase	$[1](1side^*) \rightarrow [2](3side^*) \rightarrow$
	04/01 14:33 Max		Change measured circuit	[1](1side total)→[2](3side total)
	2 3 8 9 Max		Transition to the Setup mode	1P3W, 3P3W setting
			Transition to the Alarm mode	► 1-2→2-3→3-1→total
	Measured value		Transition confirmation screen is	3P4W setting ► 1-2→2-3→3-1→1-N→2-N→3-N→total
	DEMAND MAX. HARM.		displayed	
				* Measured value connected to 1 side is displayed.
	1792			•If you push the + or - kev. Max/Min value
				displayed.
	L Phase display			Return the standard display if push same key again.
	1			push + or kev in 1 side in1P2W setting
	When min measured			Max/min value of 3 side circuit is displayed after
	DEMAND MAX. HARM. PRESENT TOTAL MIN.			push \pm or \Box the key in 3 side.
	04/0117:20			
	1 0 9 9 1 0 9 9			
	Min.			

Screen	Screen	Key operation		Note
name	Olicell	Key	Operation	
(11)	Mana		Measured value in previous is displayed	Present electric power is displayed.
Electric	Inteasured value		ivieasured value in next is displayed	•[1] and [2] is displayed as a measurement target
energy	PRESENT TOTAL MIN.		Key operation is invalid	circuit in the bottom left of the screen in 1P2W.
			Change 3 side circuit in the 1P2W	The phase type is displayed when other wiring.
	1 2 3 4		setting	 Measured value is multiplied by the displayed value
	(1) x 10 ² k W		Change measured circuit Transition to the Setup mode	displayed
	Multipling factor	RESET/SET	Transition to the Reset/Preset mode	
	The measurement	▲+▼	Transition to the Alarm mode	
	target circuit	(+)+(-)	Transition confirmation screen is	
(12)			displayed Measured value in previous is displayed	Present electric power is displayed
(12) Demand			Measured value in next is displayed	
electric	PRESENT TOTAL MIN	(+)	Maximum demand electric power value	•[1] and [2] is displayed as a measurement target
energy	04/01 14:33		is displayed Minimum demand electric power value is	Circuit in the bottom left of the screen in 1P2W.
0	99999 Max.	—	displayed	•Measured value is multiplied by the displayed value
	[1] x 10 ² k W	✓/PHASE	Change 3 side circuit in the 1P2W	and multiplying factor if multiplying factor is
			Setting Change measured circuit	displayed.
		SETUP	Transition to the Setup mode	·If you push the ⊕ or — key, Max/Min value
	PRESENT TOTAL MIN.	RESET/SET	Transition to the Reset/Preset mode	displayed.
		▲+▼	Transition to the Alarm mode	Return the standard display if push same key again.
	<u> </u>	++-	Transition confirmation screen is	push \pm or $-$ kev in 1 side in1P2W setting
			displayed	Max/min value of 3 side circuit is displayed after
	Multiplied factor			push \pm or \Box the key in 3 side.
	target circuit			
	1			
	DEMAND MAX. HARM. PRESENT TOTAL MIN			
	04/01 17:20			
	$\begin{bmatrix} 9 & 9 & 9 \end{bmatrix}$			
	When min measured			
(13)			Measured value in previous is displayed	Present reactive value is displayed
Reactive	LEAD/LAGD is play		Measured value in next is displayed	
electric	Measured value	+	Key operation is invalid	•[1] and [2] is displayed as a measurement target
energy	PRESENT TOTAL MIN.		Key operation is invalid	circuit in the bottom left of the screen in 1P2W.
onorgy			Change measured circuit	The phase type is displayed when other winng.
	LEAD 1523	SETUP	Transition to the Setup mode	 "Lead" is display when data is -, "LAG" is displayed
	(<mark>]) k v a r</mark>	RESET/SET	Transition to the Reset/Preset mode	when data is + in LEAD/LAG display
	Multiplied value		Transition to the Alarm mode	
	The measurement taeget	(+)+(-)	displayed	
(14)	Measured value		Measured value in previous is displayed	Present apparent power is displayed.
Apparent	DEMAND MAX. HARM.		Measured value in next is displayed	Apparent power is only measured in 2D4W setting
power	A NUM		Key operation is invalid	•Apparent power is only measured in 3P4W setting.
-	85261	(₽/PHASE)	Key operation is invalid	
			Change measured circuit	
			Transition to the Setup mode	
	 Multiplied factor 		Transition to the Alarm mode	
			Transition confirmation screen is	
			displayed	
(15)	When max measured		Measured value in previous is displayed	Present power factor is displayed.
Force	PRESENT TOTAL MIN.		Maximum power factor value is	 [1] and [2] is displayed as a measurement target
Tactor	04/01 14:33		displayed	circuit in the bottom left of the screen in 1P2W.
	LAG 0.9.9.9	—	Minimum power factor value is displayed	I ne phase type is displayed when other wiring.
			Change 3 side circuit in the 1P2W	displayed.
			setting	Return the standard display if push same key again.
	Measured value		Transition to the Setup mode	push + or - key in 1 side in1P2W setting
	DEMAND MAX. HARM. PRESENT TO AL MIN.	(RESET/SET)	Transition to the Reset/Preset mode	Max/min value of 3 side circuit is displayed after
			Transition to the Alarm mode	push \pm or \Box the key in 3 side.
	0715	(+)+(-)	Transition confirmation screen is	
	(1) c o s φ		displayed	
	LEAD/LAG display			
	 I ne measurement target circuit 			
	PRESENT TOTAL MIN.			
	LEAD 0,721 Min			
	🛛 cos 🛛			
	When min measured			

Screen	Saraan	Key operation		Noto
name	Scieen	Key	Operation	note
(16)			Measured value in previous is displayed	Present frequency is displayed.
Frequency	Measured		Measured value in next is displayed	
rioquonoy	value	+	Key operation is invalid	
			Key operation is invalid	
	PRESENT TOTAL MIL	(PHASE	Key operation is invalid	
			Change measured circuit	
	602		Transition to the Setup mode	
		(RESET/SET)	Transition to the Reset/Preset mode	
	Hz			
		++-	displayed	
(17)			Measured value in previous is displayed	Harmonics current effective value is displayed.
Harmonics			Measured value in next is displayed	
current		+	Key operation is invalid	 Push the <i>PHASE</i> key, and change follow.
totol	Measured value	_	Key operation is invalid	1P2W setting
		PHASE	Display by changed phase	[1](1side*)→[2](3side*)
effective	DEMAND MAX. HAHM. PRESENT TOTAL MIN		Change measured circuit	
value		(SETUP)	Transition to the Setup mode	1P3W, 3P3W setting
	9999	RESET/SET	Transition to the Reset/Preset mode	Iphase→3phase
		▲+▼	Transition to the Alarm mode	3PAW setting
		(+) ₊ (-)	Transition confirmation screen is	→1phase→2phase→3phase→Nphase →
	Phase display		displayed	
				* Measured value connected to 1 side is displayed.
				^ Measured value connected to 3 side is displayed.
(18)			Measured value in previous is displayed	Harmonics current total distortion is displayed.
Harmonics			Measured value in next is displayed	
current			Key operation is invalid	• Push the (PHASE) key, and change follow.
total	Measured value		Ney operation is invalid	1P2W setting
distortion	DEMAND MAX. HARM.		Change measured circuit	
distortion	PRESENT TOTAL MIN		Transition to the Setup mode	1D211/ 2D211/ sotting
		RESET/SET	Transition to the Reset/Preset mod	1phase→3 phase
	1000		Transition to the Alarm mode	
			Transition confirmation screen is	3P4W setting
		(+)+(-)	displayed	\rightarrow 1 phase \rightarrow 2 phase \rightarrow 3 phase \rightarrow N phase \neg
	Phase display			
				* Measured value connected to 1 side is displayed
				* Measured value connected to 1 side is displayed.
(19)			Measured value in previous is displayed	Harmonics voltage total effective value is displayed.
Harmonics			Measured value in next is displayed	
		+	Key operation is invalid	•Push the <i>P</i> /PHASE key, and change follow.
voltage	Measured value	—	Key operation is invalid	1P2W setting
total	Measured value	PHASE	Display by changed phase	[1](1side [*])→[2](3side [*])
effective	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Change measured circuit	
value			Transition to the Setup mode	1P3W, 3P3W setting
		RESET/SET	I ransition to the Reset/Preset mode	▶ 1-2→2-3→3-1
	<u> </u>		Transition to the Alarm mode	2D4W potting
	<u>1 – 2</u> V	++-	Transition confirmation screen is	3P4W setting $1-N \rightarrow 2-N \rightarrow 3-N$
	Phase display		displayed	
				* Measured value connected to 1 side is displayed.
				* Measured value connected to 3 side is displayed.
(20)			Measured value in previous is displayed	Harmonics voltage total distortion is displayed.
Harmonics			Measured value in next is displayed	
voltage	Measured value		Key operation is invalid	• Push the PIASEJ key, and change follow.
total	DEMAND MAX HADM		Ney operation is invalid	172W Setting
distortion	PRESENT TOTAL MIN.		Change measured circuit	
rato			Transition to the Setup mode	1P3W 3P3W setting
iale		RESET/SET	Transition to the Reset/Preset mode	1-2→2-3→3-1
			Transition to the Alarm mode	
	<u> </u>		Transition confirmation screen is	3P4W setting
	Phase display		displayed	ר 1-N→2-N→3-N
				* Massured value connected to 1 side is displayed
				* Measured value connected to 3 side is displayed.



Screen	Screen	Key operatio	n Operation	Note
(24)		i key	Operation Measured value in previous is displayed	Harmonics voltage of contained rate each degree
(24) Harmonics	Measuerd		Measured value in previous is displayed	hamonics volage of contained rate each degree.
voltago	value	+	The order in next is displayed	 Push the <i>P</i>/PHASE key, and change follow.
1 st_1 3th	DEMAND MAX. HARM. PRESENT TOTAL MIN.		The order in previous is displayed	1P2W setting
contained			Display by changed phase	$[1](1side^*) \rightarrow [2](3side^*)]$
rate	1000	SETUP	Transition to the Setup mode	1P3W. 3P3W setting
1010	1-2 3 r d V 96	RESET/SET	Transition to the Reset/Preset mode	r 1-2→2-3 ¬
		▲+▼	Transition to the Alarm mode	
	DEMAND MAX. HARM.	++-	Transition confirmation screen is	\rightarrow 1-N \rightarrow 2-N \rightarrow 3-N \neg
	PRESENT TOTAL MIN		displayed	
	1000			* Measured value connected to 1 side is displayed. * Measured value connected to 3 side is displayed.
	1 - 2 (5 th V 96			
				•Push the \pm key, and change follow.
				\checkmark 3rd \rightarrow 5th \rightarrow 7th \rightarrow 9th \rightarrow 11th \rightarrow 13 th
	display			 Push the key, and change follow.
				→ $3rd \rightarrow 13th \rightarrow 11th \rightarrow 9th \rightarrow 7th \rightarrow 5th$
	PRESENT TOTAL MIN.			
	1-2 13 th V %			
(25)			Measured value in previous is displayed	Present reactive power is displayed.
Reactive	Measured value		Measured value in next is displayed	
electric		+	Key operation is invalid	•[1] and [2] is displayed as a measurement target
energy	PRESENT TOTAL MIN.		Change 3 side circuit in the 1P2W	The phase type is displayed when other wiring.
0,		✓/PHASE	setting	•Measured value is multiplied by the displayed value
	9999999		Displayed circuit is changed	and multiplying factor if multiplying factor is
	x 10 ³ k v a r h	RESET/SET	Transition to the Setup mode	uispiayeu.
	Degree	▲+▼	Transition to the Alarm mode	
	6	++-	Transition confirmation screen is	
(26)			Measured value in previous is displayed	Max, and Min, current unbalance rate is displayed.
Current	When max measured		Measured value in next is displayed	
unbalance	DEMAND MAX. HARM. PRESENT TOTAL MIN	+	Current Unbalance Rate is displayed	• Push the $+$ key, and display the maximum value,
rate	04/01 14:33	/PHASE	Key operation is invalid	and push again return standard display.
	999.99 Ma	× CIRCUIT	Change measured circuit	
	<u>UNB.A</u> 96	SETUP	Transition to the Setup mode	
	‡ +	(RESET/SET)	Transition to the Reset/Preset mode	
	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Transition confirmation screen is	
	A		displayed	
	999999			
	UNBA %			
	Measured value			
(27)	When max measured		Measured value in previous is displayed	Max. and Min. voltage unbalance rate is displayed.
Voltage	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Measured value in next is displayed	
unbalance			Maximum voltage value is displayed	• Push the 🖽 key, and display the maximum value,
rate	99999 Max	/PHASE	Key operation is invalid	and push again return standard display.
	UNB. V %	CIRCUIT	Change measured circuit	
	1 +		Transition to the Setup mode	
	DEMAND MAX. HARM. PRESENT TOTAL MIN.	(RESET/SET)	Transition to the Reset/Preset mode	
	^	+-	Transition confirmation screen is	
	<u>999</u> 99		displayed	
	<u>UNB. ∨</u> %			
(20)	When max measured -		Measured value in providue is displayed	May, and Min, leak ourrant is displayed
(28) Leek			Measured value in previous is displayed Measured value in next is displayed.	wan and with lear cutterit is displayed.
current		(+)	Maximum leak current value is	
Sanon	04/01 14:33 12612	 lak	displayed Key operation is invalid	
	Io m A	(PHASE)	Key operation is invalid	
	1 (+)		Key operation is invalid	
	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Transition to the Setup mode	
	A		Transition to the Alarm mode	
	10280		Transition confirmation screen is	
	Io / m A		displayed	
	Measured value —			

Screen	Scroop	Key		Noto
name	Screen	Key	Operation	Note
(29)	When max measured		Measured value in previous is displayed	Demand leak current is displayed.
Demand	DEMAND MAX. HARM.		Measured value in next is displayed	
leak		+	Maximum leak current demand value is	 Measured value is multiplied by the displayed value and multiplying factor if multiplying factor is
current	04/01 14:33		Key operation is invalid	displayed
	1 3 8,9 0 Max	/PHASE	Key operation is invalid	•Push the + key, and display the maximum value,
	I o m A		Key operation is invalid	and push again return standard display.
	DEMAND MAX. HARM.	SETUP)	Transition to the Setup mode	
	PRESENT TOTAL MIN.	RESET/SET	Transition to the Reset/Preset mode	
		(▲)+(▼)	Transition to the Alarm mode	
	10/25	++-	I ransition confirmation screen is	
	Io m A			
	Measured value			
(30)	When max measured		Measured value in previous is displayed	Present and maximum value of leak current for
Leak	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Measured value in next is displayed	resistance is displayed.
Current		+	Maximum leak current value is	
for	04/01 14:33	—	Key operation is invalid	
resistance	Ior mA	✓/PHASE	Key operation is invalid	
			Key operation is invalid	
	DEMAND MAX. HARM.		Transition to the Setup mode	
	PRESENT TOTAL MIN.	RESET/SET	Transition to the Reset/Preset mode	
			Transition to the Alarm mode	
	6 5 <u>8</u> 4	++-	displayed	
	lor m A			
	Measured value			
(31)	When max measured		Measured value in previous is displayed	Demand and maximum demand value of leak current
Demand	DEMAND MAX. HARM.		Measured value in next is displayed	for resistance is displayed.
current		+	Maximum demand value of leak current	• Push the + key and display the maximum value
of	04/01 14:33		Key operation is invalid	and push again return standard display
resistance	<u>89.76</u> Max	/PHASE	Key operation is invalid	
		CIRCUIT	Key operation is invalid	
		SETUP	Transition to the Setup mode	
	PRESENT TOTAL MIN.	RESET/SET	Transition to the Reset/Preset mode	
		▲+	Transition to the Alarm mode	
	8537	++-	Transition confirmation screen is	
	Ior m A			
	Measured value			
(32)	When max measured		Measured value in previous is displayed	Present and maximum value of differential converted
Leak	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Measured value in next is displayed	leak current is displayed.
current	0.4/0.1 14:33	+	leak current is displayed	•Push the \pm key, and display the maximum value,
converted	<u>107.25</u> Max	—	Key operation is invalid	and push again return standard display.
value	DIF.lor m A	✓/PHASE	Key operation is invalid	
for	1 (+)		Key operation is invalid	
resistance	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Transition to the Setup mode	
	A		Transition to the Alarm mode	
	10268		Transition confirmation screen is	
	DIF Lor m A	(+)+(-)	displayed	
	Measured value			
(33)			Measured value in previous is displayed	Present, maximum and minimum value of scaling
Scaling value	- Max		Measured value in next is displayed	value is displayed.
	DEMAND MAX. HARM. PRESENT TOTAL MN.	+	Maximum value of Scaling value is	[1] [2] [2] [4] is displayed as a massyrement to set
			displayed Minimum value of Scaling value is	circuit (Represent the CH) in the bottom left of the
		—	displayed	screen.
	[4 0 9 5]	✓/PHASE	Display the other CH	 If you push the
	 ↑ (∓)		Key operation is invalid	valuedisplayed. Return the standard display if push
			Transition to the Setup mode	same key again.
			Transition to the Alarm mode	
	A NR.		Transition confirmation screen is	
	4095	(+)+(-)	displayed	
	target circuit			
	10			
	DEMAND MAX. HARM			
	PRESENT TOTAL MIN.			
	L Min			

Screen	Caraan	Key		Nata
name	Screen	Key	Operation	Note
(34)			Measured value in previous is displayed	Present value of number of times exceeding the Limit
Number of	Measured value		Measured value in next is displayed	A is displayed.
times	DEMAND M.X. HARM	<u>+</u>	Key operation is invalid	
evceeding	▲ LimitA		Key operation is invalid	•[1], [2], [3], [4] is displayed as a measurement target
the Limit A	Limit A 128		Display the other CH	screen
			Transition to the Setup mode	
	(11) <u>x 10 times</u>	BESET/SET	Transition to the Reset/Preset mode	
	Degree	<u>(((2021) 021)</u>	Transition to the Alarm mode	
	The measurement		Transition confirmation screen is	
			displayed	
(35)			Measured value in previous is displayed	Present value of number of times exceeding the Limit
Number of	Measured value		Measured value in next is displayed	B is displayed.
times	PRESENT TOTAL MN.		Key operation is invalid	•[1] [2] [3] [4] is displayed as a measurement target
exceeding	▲ Limit B	/PHASE	Display the other CH	circuit (Represent the CH) in the bottom left of the
the Limit B	128		Key operation is invalid	screen.
		SETUP	Transition to the Setup mode	
		RESET/SET	Transition to the Reset/Preset mode	
	The measurement	▲+▼	Transition to the Alarm mode	
	target circuit	(+).(-)	Transition confirmation screen is	
()			displayed	
(36)			Measured value in previous is displayed	Present value of number of times exceeding the Limit
Number of			Key operation is invalid	C is displayed.
times	PRESENT TOTAL MN.		Key operation is invalid	•[1], [2], [3], [4] is displayed as a measurement target
exceeding	Limit C	/PHASE	Display the other CH	circuit (Represent the CH) in the bottom left of the
the Limit C	128	CIRCUIT	Key operation is invalid	screen.
	(11) x 10 t i m e s	SETUP	Transition to the Setup mode	
	Degree	RESET/SET	Transition to the Reset/Preset mode	
	The measurement	▲+▼	Transition to the Alarm mode	
	target circuit	+ + -	Transition confirmation screen is	
(27)			Measured value in previous is displayed	Present value of number of times exceeding the Limit
(<i>ST</i>)	Measured value		Measured value in next is displayed	D is displayed.
	DEMAND M.X. HARM	<u>+</u>	Key operation is invalid	
times	PRESENT TOTAL MIN		Key operation is invalid	 [1], [2], [3], [4] is displayed as a measurement target
exceeding		(→/PHASE)	Display the other CH	circuit (Represent the CH) in the bottom left of the
the Limit D	128		Key operation is invalid	screen.
	[1] x 10 t imes		Transition to the Setup mode	-
	Degree		Transition to the Reset/Preset mode	
	The measurement		Transition confirmation scroon is	
	target circuit	(+)+(-)	displayed	
(38)			Measured value in previous is displayed	Present time is displayed.
Present			Measured value in next is displayed]
time		<u> </u>	Key operation is invalid	 display format is showed follow.
	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Key operation is invalid	Year/Month/Day
	2015/04/01		Key operation is invalid	Hour: Minuite
	12:34		Transition to the Setup mode	*Only displayed when connected to EMI I4-I M
		RESET/SET	Transition to the Reset/Preset mode	Contry displayed when connected to Entry Entry
	·	▲+▼	Transition to the Alarm mode	
			Transition confirmation screen is	
			displayed	
(39)	Error number		Measured value in previous is displayed	Error number is displayed when there are error.
Error			Inveasured value in next is displayed	ii unere are no error, "" IS displayed.
	PRESENT TOTAL MIN.		Key operation is invalid	1
	Error:	PHASE	Key operation is invalid	1
	NU. = <u>UUZ8</u>]		Change measured circuit	1
		SETUP	Transition to the Setup mode]
		RESET/SET	Transition to the Reset/Preset mode	1
		▲+▼	Transition to the Alarm mode	4
		++-	I ransition confirmation screen is displayed	

6.6.4 Display significant digits

In this section, significant digits by measured method can be displayed. Resolution of measured data references to energy measure unit's manual.

Electric energy(kWh), Periodic electric energy(kWh), regeneration electric energy(kWh), Reactive electric energy(kvarh). Full load is calculated is below equation.

Full load [kW]=	Wiring coefficients (V/T) (CT Primary current)		Wiring coefficient :1	Single-phase 2-wire
			2	Single-phase 3-wire
			1.732	3-phase 3-wire
	1000		3	3-phase 4-wire

*1. Using direct connection, replace VT primary voltage with direct voltage in calculation above. *2. In case 3P4W, apply the not phase voltage but line voltage as primary voltage.

Full load	Less than 12kW	12kW≦ Full Load ≦120kW	120kW≦ Full Load ≦1200kW	1200kW≦ Full Load ≦12000kW	120000W≦ Full Load ≦120000k	More than 120000kW
Display significant digits	**** **	**** *	*****.* x10	*****.* x10 ²	*****.* x10 ³	*****.* x10 ⁴
unit	kWh kvarh	kWh kvarh	kWh kvarh	kWh kvarh	kWh kvarh	kWh kvarh
Screen example	No multiplying factor 1 2 3 4 5 6 • k W h Measured value is=1234.56kWh	No multiplying factor 1 2 3 4 5 6 • k W h Measured value is 12345.6kWh	Multiplying factor"10" 1 2 3 4 5 6 • x 10 k W h Measured value is 12345.6x10 =123456kWh	Multiplying factor" $10^{2"}$ 1 2 3 4 5 6 • $\times 10^{2}$ k W h Measured value is 12345.6x100 =1234560kWh	Multiplying factor" $10^{3"}$ 1 2 3 4 5 6 • $\times 10^3$ k W h Measured value is 12345.6x1000 =12345600kWh	Multiplying factor" $10^{4"}$ 1 2 3 4 5 6 • $\times 10^4$ k W h Measured value is 345.6x10000 =123456000kWh

■Present electric energy(kW), Demand electric energy(kW), Reactive electric energy(kvar), apparent power(kVA) Full load is present follow.

Full load	Less than 12kW	12kW≦ Full Load ≦120kW	120kW≦ Full Load ≦1200kW	1200kW≦ Full Load ≦12000kW	120000W≦ Full Load ≦120000k	More than 120000kW
Display significant digits	** ***	*** **	**** *	****	***** x10	***** x10 ²
Unit	kW kvar kVA	kW kvar kVA	kW kvar kVA	kW kvar kVA	kW kvar kVA	kW kvar kVA
Screen example	No multiplying factor 1 2.3 4 5 Measured value is =12.345kW	No multiplying factor 1 2 3 4 5 k w Measured value is =123.45kW	No multiplying factor 1 2 3 4 5 k W Measured value is =1234.5kW	No multiplying factor 1 2 3 4 5 k W Measured value is =12345kW	Multiplying factor" 10" 1 2 3 4 5 x imes 10 k W Measured value is 12345x10 =123450kW	Multiplying factor" $10^{2"}$ 1 2 3 4 5 1 2 3 5 1 2 3 5 1 2 3 5 1 3 5 1 3 5 1 3 5 1 3 5 1 3 5 1 3 5

■Converted value of electric energy

Calculated by full load in follow. Unit is determined by setting for value of electric energy converted.

(**1**6.3.2 Measuring setup)

Full load	Less than 12kW	12kW≦ Full Load ≦120kW	120kW≦ Full Load ≦1200kW	1200kW≦ Full Load ≦12000kW	120000W≦ Full Load ≦120000k	More than 120000kW
Display Significant digits	**** **	*****	*****.* x10	*****.* x10 ²	*****.* x10 ³	*****.* x10 ⁴
Screen example	No multiplying factor CONV. PLS 1 2 3 4 5 6	No multiplying factor CONV. PLS 1 2 3 4 5 6	Multiplying factor"10" CONV. PLS 1 2 3 4 5 6 x 10 J	Multiplying factor"10 ² " CONV. PLS 1 2 3 4 5 6 x 10 ² J	Multiplying factor" 10 ³ " CONV. PLS 1 2 3 4 5 6 x 10 ³ J	Multiplying factor" 10 ⁴ " CONV. PLS 1 2 3 4 5 6 x 10 ⁴ J
	Measured value is =1234.56J	Measured value is =12345.6 J	Measured value is 12345.6x10 =123456 J	Measured value is 12345.6x100 =1234560 J	Measured value is 12345.6x1000 =12345600 J	Measured value is 12345.6x10000 =123456000 J
■Converted value of pulse Calculated by converted value of pulse in follow. Unit is determined by setting for value of pulse conveted. ((*****6.3.3 Input/Output setup**)

Value of pulse converted	0.001~0.009	0.01~0.099	0.1~0.999	1~9.999	10~99.99	100~999.9
Display significant digits	*** ***	**** **	***** *	*****.* x10	*****.* X10 ²	*****.* X10 ³
Screen example	No multiplying factor CONV. PLSE 1 2 3 4 5 6 J Measured value is =123.456 J	No multiplying factor CONV. PLS 1 2 3 4 5 6 J Measured value is =1234.56 J	No multiplying factor CONV. PLS 1 2 3 4 5 6 J Measured value is 12345.6 J	Multiplying factor"10" CONV. PLS 1 2 3 4 5 6 x 10 J Measured value is 12345.6x10 =123456 J	Multiplying factor"10 ² " CONV. PLS 1 2 3 4 5 6 x 10 ² J Measured value is 12345.6x100 =1234560 J	Multiplying factor" 10 ³ " CONV. PLS 1 2 3 4 5 6 x 10 ³ J Measured value is 12345.6x1000 =12345600 J

Value of pulse converted	1000~10000	
Display significant digits	*****.* x10 ⁴	
Screen example	Multiplying factor" 10 ⁴ " CONV. PLS 1 2 3 4 5 6 x 10 ⁴ J Measured value is 12345.6x10000 =123456000 J	

Present current, Demand current, Harmonics current effective value Calculated by setup the primary voltage value.

Oulculated by t	setup the phinary	voltage value.		
Primary current	Less than 40A	40A≦primary current≦400A	400A≦primary current≦4000A	More than 4000A
Display significant digits	** **	*** *	****	****0
Unit	А	А	А	А
Screen example	No multiplying factor 1 2 3 4	No multiplying factor 1 2 3 4	No multiplying factor 1 2 3 4	No multiplying factor 1 2 3 4 0 1 A

■Present voltage, Harmonics voltage effective value

Calculated by s	Calculated by setup the primary voltage value.					
Primary voltage	Less than 300V	300V≦primary voltage≦3000V	More than 3000V			
Display significant digits	*** *	****	****0			
unit	V	V	V			
Screen example	No multiplying factor ▲ 1 2 3 4 1 - 2 ▼	No multiplying factor 1 2 3 4 1 - 2	No multiplying factor 1 2 3 4 0 $1 - 2 \checkmark$			

■Power factor

Display significant digits	* ***
unit	—
Screen	No multiplying
example	Tactor
·	▲
	LAG 0.975
	$c \circ s \phi$

■Frequency

Display significant digits	** *
unit	Hz
Screen example	No multiplying factor
	▲ 6 0 2 H z

Harmonics current and voltage, Distortion, contained rate

Display significant digits	*** *
unit	%
Screen	No multiplying
example	factor
	1000
	1 A %

Present scaling value				
Display significant digits	****			
Unit	Any unit			
Screen example	No multiplying factor 4 0 9 5			

Number of times exceeding the limit

	0		
Display significant digits	***** x10 [*]		
Unit	Any unit		
Screen example	Multiplying factor"10'" (It can be set to any value) Limit A 1 2 8 [1] x 10 times		

6.7 Alarm mode

- 6.7.1 Transition of display
 - In this section, transition of display is showed.
 - (1) Upper/lower limit alarm is available (Only can monitoring when connected to EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2, EMU4-PX4, EMU4-AX4)
 - In the case of EMU4-BM1-MB, EMU4-HM1-MB, EMU4-A2, EMU4-VA2
 Push ▲ or ▼ key, Screen is transit in below figure.



Change 3 side ... Push the U/PHASE key, and change display 2nd circuit In 1P2W(2 circuits measuring)

• In the case of EMU4-PX4

Push *P*/PHASE key, Screen is transit in below figure. (If set external input is non, next display is showed.)



In the case of EMU4-AX4

Push *P*/PHASE key, Screen is transit in below figure. (If set external input is non, next display is showed.)



(2) Leakage alarm(Only can monitoring when connected to EMU4-LG1-MB) Push ▲ or ▼ key, Screen is transit in below figure.



6.7.2 Screen detail

(1	I)Up	oper/lower limit alarm	

Screen	Sereen	Key operation	on	Noto
name	Scieen	Key	Operation	NOLE
(1) Upper/ lower alarm state*1	Alarm contact output state Alarm – A Upp. Alarm condition The measurement taret circuit	▲ + - CIRCUIT SETUP (RESET/SET) ▲+▼ ++	Alarm display in the previous is displayed Alarm display in the next is displayed Key operation is invalid Key operation is invalid Change 3 side circuit in the 1P2W setting Displayed circuit is changed Transition to the alarm setting mode Key operation is invalid Transition to the operate mode. (displayed electric energy) Key operation is invalid	Alarm state of elements is displayed Signs mean below. 「−J…Not alarm monitoring (impossible) 「◦J…Alarm non-occurrence 「●J…Alarming or during latch
(2) Contact point input state	Alarm – Contact •	▲ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Alarm display in the previous is displayed Alarm display in the next is displayed Key operation is invalid Key operation is invalid Displayed circuit is changed Transition to the alarm setting mode. Key operation is invalid Transition to the operate mode (displayed electric energy) Key operation is invalid	State that contact input is displayed.

*1 Elements in below table can be alarm monitoring. Please reference to below table about the existence of measurement target circuit.

Alarm element	Display	The existence of measurement target circuit in 1P2W (2 circuits measuring)
Upper limit Current	A upper	Yes
Lowe limit Current	A lower	Yes
Line voltage upper	V _{L-L} upper	Yes
Line voltage lower	V _{L-L} lower	Yes
Phase voltage upper	V _{L-N} upper	No
Phase voltage lower	V _{L-N} lower	No
Upper electric power	W upper	Yes
Lower electric power	W lower	Yes
Upper power factor	PF upper	Yes
Lower power factor	PF lower	Yes
N phase current upper	A _N upper	No
Upper limit pulse	Pulse upper	Yes
Upper Current unbalance rateupper	UNB.A upper	No
Upper Voltage unbalance rateupper	UNB.V upper	No
Upper limit alarm of Scaling value	Scaling upper	-
Lower limit alarm of Scaling value	Scaling lower	-

Screen	Screen	Keyoperation		Note	
name	Screen	Key	Operation	Note	
(1)			Alarm display in the previous is	lo(leak current) alarm state is displayed.	
lo	Alarm contact point		displayed Alarm display in the payt is displayed	Sign means below	
alarm	output state	(+)	Key operation is invalid	ro IAlarm non-occurrence	
state	Alarm Status -		Key operation is invalid	「●」…Alarming	
	(O N)		Key operation is invalid		
	lo 1 alarm		Key operation is invalid Transition to the alarm setting mode		
	lo 2 alarm O	RESET/SET	Key operation is invalid		
			Transition to the operate mode		
	Alarming _/		(displayed electric energy)		
		(±)+(=)	Key operation is invalid		
(2)			Alarm display in the previous is	Count of lo upper current alarm is displayed.	
lo	Alarm contact point	▼	Alarm display in the next is displayed	Sign measn below.	
upper		+	Key operation is invalid	$\overline{\Gamma} \circ J$ Lo alarm count is not more than set number of	
limit	Alarm count		Key operation is invalid	alarm count.	
olorm			Key operation is invalid	alarm count	
alarm	lo 1 alarm		Transition to the alarm setting mode		
count	10 2 alarm 0	RESET/SET	Key operation is invalid		
Slale	Alerming	▲+▼	Transition to the operate mode		
	Alaming _	$\left[+\right]_{+}\left[-\right]$	(uisplayed electric energy) Key operation is invalid		
(3)	lo1 alarm count		Alarm display in the previous is	lo1-Alarm and lo2-Alarm count is displayed	
			displayed	is a sum and to sum obuilt to displayou.	
alarm	Alarm Count		Alarm display in the next is displayed		
count	Alaim Count		Key operation is invalid		
oount		/PHASE	Key operation is invalid		
			Key operation is invalid		
		(SETUP)	Transition to the alarm setting mode		
	lo2 alarm count	RESET/SET	Key operation is invalid		
		▲+▼	(displayed electric energy)		
		++-	Key operation is invalid		
(4)	Alarm contact point		Alarm display in the previous is	lo(leak current) alarm state is displayed.	
lor	output state		Alarm display in the next is displayed	Sign means below	
alarm	Alarm Status —	(+)	Key operation is invalid	rolAlarm non-occurrence	
status	(O N)		Key operation is invalid	「●」…Alarming	
	Ior 1 alarm		Key operation is invalid		
	lor 2 alarm O		Key operation is invalid Transition to the alarm setting mode		
		RESET/SET	Key operation is invalid		
	Alarming _/	▲+▼	Transition to the operat mode		
			(displayed electric energy)		
(5)			Alarm display in the previous is	Upper limit of lor alarm count is display	
lor	Alarm contact point		displayed		
upper	output state		Alarm display in the next is displayed	Sign means below.	
alarm count	Alarm Count		Key operation is invalid	alarm count.	
	(ON)		Key operation is invalid	「●」Lo alarm count is more than set number of	
	lor 1 alarm		Key operation is invalid	alarm count.	
	lor 2 alarm	SETUP	Transition to the alarm setting mod		
		RESET/SET	Key operation is invalid		
	Alarming	▲ + ▼	Transition to the operate mode		
			(displayed electric energy)		
(6)	lotalorm count		Alarm display in the previous is	Lo1-Alarm and Io2-Alarm count is displayed	
(0) Ior			displayed	Los mann and loz-mann count is displayed.	
alarm	Alorm Count		Alarm display in the next is displayed		
count	Alarm Count		Key operation is invalid		
500 m		PHASE	Key operation is invalid		
	1011.9999999		Key operation is invalid		
	1015 (99999)		Transition to the alarm setting mode		
	lo2 alarm count	[RESET/SET]	Key operation is invalid		
		(▲)+(▼)	(displayed electric energy)		
		++-	Key operation is invalid		

You can reset each max/min value and integral vale, reset alarm value and preset integral value. You can release the alarm and latch of contact point input.

6.8.1 Data reset

(1) Data can be reset

Data can be reset is differed in below table what models connect.

Reset target	Models	Reset data			
-		1P2W		1P3W, 3P3W, 3P4W	
		1side([1])	3side([2])		
Maximum(all data)	EMU4-BM1-MB	Current demand	Current demand	Current demand	
-only selected circuit	EMU4-HM1-MB	Voltage	Voltage	Voltage	
	EMU4-A2	Electric power	Electric power	Electric power demand	
	EMU4-VA2	demand	demand		
		Power factor	Power factor	Power factor	
				Current unbalance rate	
				Voltage unbalance rate	
	EMU4-LG1-MB	Present leak current			
		Leak current deman	d		
		Present leak current	for resistance		
		Current demand leal	k current for resistance	9	
		Leak current convert	ted value for resistanc	e. Current demond	
Minimum (all data)		Current demand	Veltege	Voltage	
 only selected circuit 		Voltage	Vollage	Vollage	
	EMU4-A2	domand	domand	Electric power demand	
	EMU4-VA2	Power factor	Dower factor	Power factor	
	EMU4-LG1-MB		T OWEI Idetoi		
Integral value (Wh. varh)	EMU4-BM1-MB	Electric energy	Electric energy	Electric energy	
		Electric chergy	Electric chergy	Reactive electric energy	
		Operation time	Operation time	Operation time	
		Regeneration ^{*1}	Regeneration	Regeneration electric	
		electric energy	electric energy	energy	
	EMU4-HM1-MB	Electric energy	Electric energy	Electric energy	
		Reactive electric	Reactive electric	Reactive electric energy	
		energy ^{*1}	energy		
		Converted electric		Converted electric energy	
		energy			
		Period electric	Period electric	Period electric energy ¹¹	
		energy	energy ²		
		Operation time	Operation time	Operation time	
		Regeneration	Regeneration	Regeneration electric	
		Pulse count value*3	electric energy	energy	
				Puise count value -	
		regeneration*3		T OLOL regeneration	
	FMI 14-A2	Electric energy	Electric energy	Electric energy	
	EMU4-VA2	Electric chergy	Electric chergy	Reactive electric energy	
			Converted electric	Converted electric energy	
			energy		
		Operation time	Operation time	Operation time	
		Regeneration	Regeneration	Regeneration electric	
		electric energy	electric energy	energy	
	EMU4-LG1-MB	-			
Alarm value	EMU4-BM1-MB	IB —			
 only selected circuit 	EMU4-HM1-MB	1-MB —			
	EMU4-A2	-			
	EMU4-VA2	-			
	EMU4-LG1-MB	Leak current, leak cu	urrent for resistance, lo	o1 and lo2 alarm count	
Release alarm	All models	Alarm state			
Release contact input	All models	Contact input state			

 Release contact input
 All models
 Contact input state

 *1 External input when it is contact input become only reset target.

*2 External input when it is contact input become only reset target.

*3 External input when it is pulse input become only reset target.

(2) Reset data

1 Transition to the Reset/Preset mode				
Screen	Operation	Note		
1-1. [Reset/Set] 2 Reset 2 Set 3 AL.Release	 Push the <u>RESET/SET</u> key in operation mode. 1-1 will be displayed. Push the ▲ or ▼ key, and move the cursor to the "1 Data Reset". Push the PPIASE key. 2-1 will be displayed. 			

2 Select the items want to reset					
Screen	Operation	Note			
2-1. [₩MAX.MIN ☑Integrate □Alarm	 Push the CIRCUIT key, and select the measurement target circuit. (LED of the selected circuit is light.) Push the ▲ or ▼ key, and move the cursor to the item you want to reset. Push the + or → key, and check the check box. (If you push the + or → key, and check the check box. Repeat (1)~(3) operation and check the all check box you want to reset. Push the ↓ PHASE key after select all data. Display transit to follow by the Checked/Non-checked in the models and setting of 2 circuits measuring existence. All items is non-checked → Return to operation display. Models is EMU4-PX4 or EMU4-AX4, or Checked either items in 1P2W(2 circuits measuring) → To 2-2 Other models and checked either items in Non-1P2W(2 circuits measuring) 	□(Non-checked), ⊠(Checked)			
2-2. [Taeget]	 Push the ± or key, and select the measure target circuit. PHASE key. 2-3 will be displayed. 	[measure target circuit]:[1]⇔[2]⇔			
2-3. Do you really execute? OK Cancel	 Push the key, and move the cursor to the "OK" and push the //PHASE key. (Return to the 2-1, if you push cancel key.) 2-4 will be displayed after rest data. 				
2-4. Completed	(1) Push the <i>PHASE</i> key.				

6.8.2 Data preset

(1) Data can be preset

Data can be preset is differs as below table by connected models.

	EMU4-BM1-MB	EMU4-HM1-MB	EMU4-A2 EMU4-VA2	EMU4-LG1-MB	EMU4-PX4	EMU4-AX4
Electric energy	0	0	0	-	-	-
Reactive electric energy	O*1	O*1	O*1	-	-	-
Conversion electric energy	-	0	0	_	-	_
Period electric energy	O*2	O*2	O*2	-	-	_
Operating time	0	0	0	-	O*2	_
Regeneration electric energy	0	0	0	_	_	_
Pulse count value	O*3	O*3	O*3	_	O*3	_
Pulse conversion	O*3	O*3	O*3	_	O*3	_

*1 Can't preset when wiring type is 1P2W (2 circuits measuring).
*2 Can preset only when input is contact point input.
*3 Can preset only when input is pulse input.

(2) Preset data

1 Transition to the Reset/Preset mode				
Screen	Operation	Note		
1-1. [Reset/Set] 1 Reset 2 Set 3 AL.Release	 (1) Push the <u>RESET/SET</u> key in operation mode. (2) 1-1 will be displayed. (1) Push the ▲ or ▼ key, and move the cursor to the "2 Data Preset" and push <i>√</i>/PHASE key. (2) 2 4 big langed 	-		

2 Preset data (Exan	nple:Electric energy	
Screen	Operation	Note
2-1. [Set] 1 Wh 2 varh 3 CONV.Wh	 In 2-1, push the ▲ or ▼ key, and move the cursor to the "1 Consumed Wh" and push the	
2-2. [Wh] 2345.6 [1]	 Push the ▲ ▼ + - key, and set the electric energy. Push the ✔/PHASE key. Transition to the following screen by the 2 circuits measure existence. 1P2W(2 circuits measuring) → To 2-3 Non-1P2W(2 circuits measuring) To → 2-4 	
2-3. [Wh] 2345.6 kWh [2]	 Set the electric energy of 2nd circuit. Push the <i>P</i>/PHASE key. 2-4 will be displayed. 	
2-3(1) [OP.Time] ©00000 hour [1]	If models is EMU4-PX4 or EMU4-AX4, transition the 2-3(1)~(4). (exanple: Operating time) That CH is not displayed if measurement elements is different.	
2-3(2) [OP.Time] ©00000 hour [2]		
2-3(3) [OP.Time] 000000 hour [3]		
2-3(4) [OP.Time] @00000 hour [4]		

Screen	Operation	Note
2-4. Do you really execute? OK Cance	 Push the	
2-5. Completed	(1) Push the <i> √</i> /PHASE key, and end preset.	

6.8.3 Release alarm

(1) Release alarm

1 Transition to the reset/preset mode				
Screen	Operation	Note		
1-1. [Rese/Set] 1 Reset 2 Set 2 AL.Release	 (1) Push the <u>RESET/SET</u> key in the operation mode. (2) 1-1 will be displayed. (1) Push the or key, and move the cursor to the "3 Release alarm" and push the //PHASE key. 			
	(2) 2-1 will be displayed.			

2 Release alarm				
Screen	Operation	Note		
2-1. [Releasealarm] MAlarm ☐Contact	 In 2-1, push the ▲ or ▼ key, and move the cursor to the item to release alarm. Push the ± or → key, and check the check box. (If you push the ± or → key again, Non-checked item turned to checked.) Repeat (1)~(3) operation and check the all check box you want to reset. Push the ✔/PHASE key. Transition to the following screen by whether checked/non-checked items. All items are non-checked → Return to operation display. Either items ate checked → To 2-2 	☐ (Non-checked), ⊠ (checked)		
2-2. Do you really execute? OK Cancel	 Push the key, and move the cursor to the "OK" and push the (PHASE) key. (If you select cancel, return to 2-1) After released alarm 2-3 will be displayed. 			
Completed				

6.9 Change the setup circuit of same voltage system

6.9.1 Automatic reflect of setup value in same voltage system.

- Below caution is required about Wring type, 2 circuits measuring, Rating voltage and Simple measuring in using extension unit.
 - Setup value of same voltage system unit is automatically changed when Wring type, 2 circuits measuring, Rating voltage and Simple measuring are changed in using EMU4-D65.
 - Please be careful about the initialization of setup value even if setup value is changed in automatically. (Please reference to the each manuals of measuring unit for check initialized items)
 - Items you need to change and automatically changed are below table.

		Changing setting value				
		Wiring	Voltage	2 circuit	Simple	
		wiring	rating	measurement	measurement	
lue	Wiring	0	0	0	×	
ect va	Voltage rating	0	0	0	×	
Ref ting	2 circuit measuremen	0	0	0	×	
set	Simple measurement	×	×	×	0	

*Wiring type is only reflected in EMU4-LG1-MB.

*Setup value of EMU4-PX4 and EMU4-AX4 is not changed because setup item is different.

Example of reflection of setup value is displayed in below.

(1) In the case of change the measuring unit (EMU4-BM1-MB/ EMU4-HM1-MB/ EMU4-LG1-MB) a. In the case of the unit of the right side is same voltage system expansion unit(EMU4-A2).



b. In the case of the unit of the right side is different voltage system expansion unit (EMU4-VA2).



Change setup

1	23	45	6 7
EMU4- BM1/HM1 /LG1-MB	EMU4- VA2	EMU4- A2	EMU4- A2

c. In the case of the unit of the right side is pulse input unit (EMU4-PX4) or analog input unit (EMU4-AX4).



*②EMU4-AX4/PX4 is not reflected the setup value.

(2) In the case of change the same voltage expansion system (EMU4-A2).

a. In the case of the unit of the left side is same voltage system expansion unit (EMU4-A2).



b. In the case of the unit of left side is different voltage system expansion unit (EMU4-VA2).



*6 EMU4-AX4/PX4 is not reflected the setup value.

c. In the case of the unit of left side is pulse input unit(EMU4-PX4) or analog input unit(EMU4-AX4).



*④EMU4-AX4/PX4 is not reflected the setup value.

- (3) In the case of change the different voltage expansion system (EMU4-VA2).
- a. In the case of the unit of the left side is same voltage system expansion unit (EMU4-A2).



b. In the case of the unit of left side is different voltage system expansion unit (EMU4-VA2).



c. In the case of the unit of left side is pulse input unit(EMU4-PX4) or analog input unit(EMU4-AX4).



* (4) EMU4-AX4/PX4 is not reflected the setup value.

- 6.9.2 Operation in the case of the setup value is different in same voltage system
- Below error is displayed when the setup value of same voltage system is different in the exchange and expansion of units.
- Please push *Please* key to transition setup mode.

ЖЕrrorЖ
Same voltage
different
setting OK

Please operate below in basis unit of same voltage system for reflect setting value.

- (1) Please setup any one of "Wiring, voltage, 2 circuit measurements" for reflect setting value.to same voltage system.
- (2) Please setup "simple measurement" for reflect setting value.to same voltage system.

Operation method (when connected to EMU2-** to MDU2-**)

In this section operation method is showed when connected EMU2-** and MDU2-**.

Reference to **(C**) when connected to EMU4-**) when connected to EMU4 -**.

7.1 Operation mode

7.



7.2 Setup mode

7.2.1 Follow of setup

Setup the $\lceil (1)$ Measure setting $\rfloor \lceil (2)$ Clock setting $\rfloor \lceil (3)$ Display setting \rfloor in setup mode when connected EMU2-** and MDU2-**.

(1) Measure setting · · · Setup the measure conditions of connected measure unit. (7.2.2 Measure setup



(2) Clock setting · · · Setup the clock of connected measure unit. <a>T.2.3 Setup clock All models except EMU2-BM1-B and EMU2-PM1-P.

/ 11 11100010 0/0	opu				-	
				EMU2-RD _D -F		
EMI 12-HM1-B				EMU2-RD□-B		MDU2-□-B
EMU2-HM1-C		EMU2-VS1-P		EMU2-RD _D -C		MDU2-□-C
				EMU2-RD□-L		MDU2-□-L
				EMU2-RD□-△-4W		
Transition to the clock						
Set for Clock						
End the setup						

(3) Display setting ···· Setup about display such as LCD contrast or backlight lighting pattern. (7.2.4 Setup display

EMU2-BM1-B	EMU2-HM1-B EMU2-HM1-C	EMU2-PM1-P	EMU2-VS1-P	EMU2-RDD-F EMU2-RDD-B EMU2-RDD-C EMU2-RDD-L EMU2-RDD-A-4W	MDU2-□-B MDU2-□-C MDU2-□-L
	Trasition to the Setup Mode				
LCD Contrast					
Ļ					
Back light					
•					
Save the setting(End of setup mode)					

7.2.2 Measure setup

1 Transition to the Setup			
Screen	Operation	Note	
1 <u>-1.</u>	(1) Push the SETUP key in Operation Mode.		
[Setup]	(2) 1-1 will be displayed.		
2 Clock	(1) Confirm that the cursor focuses the "1 Measure", push the <i>I</i> /PHASE key.		
3 Display V	(2) 2-1 will be displayed.		

2 Setup the phase wire system (All models)			
Screen	Operation	Note	
2-1.	(1) In 2-1, push the 🔺 or 💌 key, and move the cursor to the "1 Wiring".	[Wiring]:1P2W⇔1P3W⇔3P3W⇔3P4W⇔	
[Measure]	(2) Push the //PHASE key.		
1 Wiring	(3) 2-2 will be displayed.	*"3P4W" setting is EMU2-RD□-△-4W only.	
2 V rate		(3P4W fixed)	
		* □=2,4, △=B,C,L	
2 <u>-2.</u>	(1) Push the \pm or $-$ key, and change the setting value.		
[Wring]	(2) Push the (PHASE) key, and confirm the setting value.	*In the case of the model MDU2-□-△, displays all	
3P3W	(3) 2-1 will be displayed.	1P2W ~ 3P4W, but can not be set for 3P4W in the	
		case of connection breaker 3 pole products.	

3 Setup the primary voltage (EMU2-BM1-B, EMU2-HM1-∆, EMU2-PM1-P, EMU2-VS1-P, EMU2-RD□-∆)				
Screen	Operation	Note		
3-1.	(1) In 3-1, push the or key, and move the cursor to the "2 V rate".	1P2W, 3P3W		
[Measure]	(2) Push the //PHASE key.	[V rate]:110V Direct⇔220V Direct⇔440V⇔690V⇔		
1 Wiring	(3) 3-2 will be displayed.	1100V⇔2200V⇔3300V⇔6600V⇔11000V⇔		
a virale 3 Airate ≜		13200V⇔13800V⇔15000V⇔16500V⇔		
		22000V⇔24000V⇔33000V⇔66000V⇔		
3-2.	(1) Push the \pm or $=$ key, and change the setting value.	77000V⇔110000V⇔		
[V rate]	(2) Push the (PHASE) key, and confirm the setting value.			
220V Direct	(3) 3-1 will be displayed.	1P3W		
		[V rate]: 110V Direct only		
		3P4W(display the phase voltage / line voltage.)		
		[V rate]:63.5V/110V⇔110V/190V⇔120V/208V⇔		
		<u>220V/380V</u> ⇔240V/415V⇔254V/440V⇔		
	*1: In case of the model EMU2-BM1-B, EMU2-HM1-B, EMU2-VS1-P, set only value of 1	10V Direct, 220V Direct, 440V.		
	² 2: In case of the model EMU2-RD□-Δ-4W settings about voltage surveillance is common for circuit1 and circuit2, or circuit3 and circuit4.			
	For example, if you change the primary voltage of the circuit 1, circuit 2 will also be	e changed at the same time.		

4 Setup the primary current (EMU2-BM1-B, EMU2-HM1-Δ, EMU2-PM1-Ρ, EMU2-VS1-Ρ, EMU2-RD□-Δ)			
Screen	Operation	Note	
4-1. [Measure] 1 wiring 2 V rate S A raete ♦	 In 4-1, push the or key, and move the cursor to the "3 A rate". Push the H/PHASE key. 4-2 will be displayed. 	[Sensor]∶ <u>Direct</u> ⇔5A⇔ Direct setting [A rate]:50A⇔ <u>100A</u> ⇔250A⇔400A⇔600A⇔	
4-2. [Sensor] 54 [A rate] 100A	 Push the ▲ or ▼ key, and move the cursor to the "Sensor". Push the + or - key, and select sensor type. Push the ▲ or ▼ key, and move the cursor to the "A rate". Push the + or - key, and change the primary current value. Push the	- 5A setting [A rate]:5A⇔6A⇔7.5A⇔8A⇔10A⇔12A⇔15A⇔ 20A⇔25A⇔30A⇔40A⇔50A⇔60A⇔75A⇔80A⇔ 100A⇔120A⇔150A⇔200A⇔250A⇔300A⇔ 400A⇔500A⇔600A⇔750A⇔800A⇔1000A⇔ 1200A⇔1500A⇔1600A⇔2000A⇔2500A⇔3000A⇔ 4000A⇔5000A⇔6000A⇔750A⇔8000A⇔ 10000A⇔12000A⇔20000A⇔25000A⇔30000A⇔	

5 Setup the measurement mode (EMU2-RDA, MDU2A)			
Screen	Operation	Note	
5-1. [Measure] 2 V rate 3 A rate ☑ Mode ♦	 In 5-1, Push the or key, and move the cursor to the "4 Measure". Push the PPHASE key. 5-2 will be displayed. 		
5-2. [Mode] Wh+A+4 Harmonics	 Push the or key, and select the "Mode". Push the PPHASE key. Transition to the following screen by the selection of measurement mode. [Wh+A+4] setting → To 5-3 [Harmonics] setting → To 5-4 	[Mode]: <u>Wh+A+4</u> ⇔Harmonics⇔ Wh+A+4In addition to the active energy and current, up to 4 items can bedisplayed by selection. (The harmonics data is only about total.) HarmonicsIt can display about harmonic data at each order. (Maximum and minimum values, demand, reactive power can not be displayed.)	
5-3. [Element] ☑V ☑W □var	 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.) Push the + or - key, and choose the selected or deselected. When selecting the other measurement item, repeat the operation from (1) to (2). Push the ✔/PHASE key, and determine the setting. 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, PF, Hz, varh, Demand, HA, HV, le, Hle □ (Deselected), □ (Selected) *The selectable number of elements is up to4. So, change the selection at the state that already 4 items are selected, deselect the items before changing.	
5-4. [HA, HV] [AMIS]	 (1) Push the ± or = key, and change the "HA, HV" value. (2) Push the P/PHASE key. (3) 5-1 will be displayed 	 [HA, HV]: <u>r.ms.</u>⇔%⇔ r.m.sDisplay the RMS value of harmonic current or harmonic voltage. (Not display harmonic current and harmonic voltage.) % Display the distortion rate and content rate of harmonic current or harmonic voltage. (Not display the r.m.s.) 	

6 Setup the der	nand time(All models *However, EMU2-BM1-B, EMU2-PM1-P is only Current demar	nd.)
Screen	Operation	Note
6-1. [Measure] 3 A rate 4 Mode 5 Demand	 (1) In 6-1, Push the iver vertical or vertical ways and move the cursor to the "5 Demand". (2) Push the vertical verti	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⇔
6-2. [Demand] A : 2min W : 2min	 Push the or key, and move the cursor to the A (Current). Push the or key, and change the demand time value. Push the or key, and move the cursor to the W (Electric power). Push the or key, and change the demand time value. Push the key, and change the demand time value. Push the key, and confirm the setting value. Fush the key, and confirm the setting value. 	

7 Setup the pulse unit (EMU2-PM1-P, EMU2-VS1-P)			
Screen	Operation	Note	
7-1. [Measure] 4 Mode 5 Demand	 In 7-1, push the or key, and move the cursor to the "6 Pulse". Push the //PHASE key. 7-2 will be displayed. 	The pulse output unit cha [Pulse] : Full load power (kW)	anges by the full load power. Setting range
o Puise Ţ		Wfull<12kW	⇔ <u>0.001</u> ⇔0.01⇔0.1⇔1⇔
7-2.	(1) Push the \pm or $-$ key, and change the set value.	$12kW \le Wfull < 120kW$	⇔ <u>0.01</u> ⇔0.1⇔1⇔10⇔
[Pulse] 10	 (2) Push the <i>I</i>/PHASE key, and confirm the setting value. (3) 7-1 will be displayed. 	120kW ≤ Wfull < 1200kW	⇔ <u>0.1</u> ⇔1⇔10⇔100⇔
kwn/pulse		1200kW ≤ Wfull < 12000kW	⇔ <u>1</u> ⇔10⇔100⇔1000⇔
		12000kW ≤ Wfull < 120000kW	⇔ <u>10</u> ⇔100⇔1000⇔ 10000⇔
		120000kW ≤ Wfull	⇔ <u>100</u> ⇔1000⇔10000⇔ 100000⇔

8 Setup 1-3Change (MDU2-□-△)			
Screen	Operation	Note	
8-1. [Measure] 5 Demand 6 Pulse ☑ 1-3Change∳	 In 8-1, Push the or vector key, and move the cursor to the "7 1-3Change". Push the vector key. 8-2 will be displayed. 	[1-3Change]: <u>Standard</u> ⇔Change⇔ StandardFrom breaker of the left pole, turn to 1,2,3 (R, S, T) assigned in phase.	
8-2. [1-3Change] Stancard	 Push the ± or = key, and change the set value. Push the PHASE key, and confirm the setting value. 8-1 will be displayed. 	ChangeFrom breaker of the right pole, turn to 3,2,1 (T, S, R) assigned in phase.	

9 Save the settings		
Screen	Operation	Note
9-1. Quit Setup 2 Save 2 Not Save 3 Cancel 9-2. Completed	 After setting all of the items, push the Setup key. 9-1 will be displayed. When save the settings, push the ▲ or ▼ key, move the cursor to the "1 Save", and Push the /PHASE key. After completing the settings saving, 9-2 will be displayed. Push the /PHASE key. Return to the operation mode, and it will be displayed electric energy screen. 	 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.

*Setting for the measurement mode can only be in the display unit is set to master. (Setting for the measurement mode can not be in the display unit is set to slave.) *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 \rightarrow 1, 3P3W/3P4W \rightarrow 1.73

*Primary voltage setting value × primary current setting value can not be set in excess of 88665kW. For example, if the primary current is set to 30,000 A when the primary voltage setting is 110,000 V, the primary voltage setting is automatically initialized to 220 V. If the primary voltage is set to 110,000 V when the primary current setting is 30,000 A, the primary current setting is automatically initialized to 100 A.

*If you change a settings, please push the e/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.

7.2.3 Clock setup-the settings for the clock.

Setup the clock connected measure unit.

1 Transition to the setup mode		
Screen	Operation	Note
	(1) Push the SETUP key in operation mode.	
	(2) 2-1 will be displayed.	

2 Clock setup (EMU2-HM1-Δ, EMU2-VS1-P, EMU2-RD□-Δ, MDU2-□-Δ)		
Screen	Operation	Note
2-1. [Setup] 1 Measure 2 Clock 3 Display	 In 2-1, push the ive vertices and move the cursor to the "Clock". Push the ive vertices vert	[Year]:00⇔01⇔02⇔ <u>03</u> ⇔04⇔⇔99⇔ [Month]: <u>01</u> ⇔02⇔03⇔04⇔⇔12⇔ [Day]: <u>01</u> ⇔02⇔⇔29⇔30⇔31⇔ [Hour]: <u>00</u> ⇔01⇔⇔12⇔13⇔23⇔ [Minute]:00⇔01⇔⇔59⇔
2-2. [Clock] 20 [5 /01/01 00:00 OK Cancel	 Push the ▲ or ▼ key, and move the cursor to the "Year". Push the + or → key, and change the set value. Push the ▲ key, and move the cursor to the "Month". Push the + or → key, and change the set value. In a similar way, change the "Day", "Hour", "Minute".^{note 1} After setting all of the items, push the ▲ or ▼ key, and move the cursor to the "OK". Push the	 Note 1: Setting range of day will change depending on the setting of the year and month. Note 2: It becomes "00" second when the timing of pushing the <i>I</i>/PHASE key at the clock setup screen.

3 To exit the the setup mode		
Screen	Operation	Note
3-1. Quit Setup Save 2 Not Save 3 Cancel	 In 2-1, Push the <u>SETUP</u> key. Push the <u>or</u> <u>v</u> key, and move the cursor to the "2 Not Save"^{Note1} Push the <u>v/PHASE</u> key. Return to the operation mode, and it will be displayed electric energy screen. 	Note 1: If change the measurement settings and the display settings, select the "1 Save".

*In case of the model EMU2-BM1-B, EMU2-PM1-P, you can not clock set because it does not have a clock function. *Setting for clock can only be in the display unit is set to master. (Setting for clock can not be in the display unit is set to slave.) *If you change a setting, please push the *PPHASE* 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.

7.2.4 Setup the display Setup about display such as LCD contrast or backlight lighting pattern.

	1 Transition to the setup mode		
S	creen	Operation	Note
1	·1.	(1) Push the SETUP key in operation mode.	
	[Setup]	(2) 1-1 will be displayed.	
	2 Clock	(1) In 1-1, push the 🔺 or 💌 key, and move the cursor to the "Display".	
	3 Display	(2) Push the <i>H/PHASE</i> key.	
		(3) 2-1 will be displayed.	

2 Setup the LCD contrast		
Screen	Operation	Note
2-1.	 Push the or key, and move the cursor to the "1 Contrast". 	[Contrast]:∎□□□□□□⇔
[Display]	(2) Push the //PHASE key.	
2 Backlight	(3) 2-2 will be displayed.	
0 Back		◼■■■□□□□⇔
2-2.	(1) Push the \pm or \Box key, and change the LCD contrast value.	■■■■■■□□⇔
[Contrast]	(2) Push the VPHASE key.	■■■■■■■□⇔ ጚ፟፟፟፟፟፟
▏▎▎▎▆▆▆▆▆▋ŬŬŬŬŬĔ	(3) 2-1 will be displayed.	
		,
		1

3 Setup the backlight		
Screen	Operation	Note
3-1. [Display] 1 Contrast 2 Backlight 0 Back	 Push the or vertical key, and move the cursor to the "2 Backlight". Push the vertical key. 3-2 will be displayed. 	[Backlight]: Auto OFF⇔ <u>Always ON</u> Auto OFF: If 5 minute has passed since the last key operation, backlight will be OFE automatically. There are
3-2. [Backlight] Auto OFF Always ON	 Push the or vector key, and select the backlight condition. Push the vector key. 3-1 will be displayed. 	any key operation, backlight will be lighted again. Always ON: Backlight is always lighted.

4 Save the settings			
Screen	Operation	Note	
4-1. Quit Setup Save 2 Not Save 3 Cancel	 After setting all of the items, push the <u>SETUP</u> key. 4-1 will be displayed. When save the settings, push the ▲ or ▼ key, move the cursor to the "1 Save", and Push the <u>√PHASE</u> key. After completing the settings saving, "Completed" message will be displayed. Push the <u>√PHASE</u> key. Return to the operation mode, and it will be displayed electric energy screen. 	 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. 	

*If you change a settings, please push the *I*/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 <u>CIRCUIT</u> key on the "Setup" screen (1-1), select the circuit, make the setting.

7.3 Alarm setup mode

7.3.1 Follow of alarm setting

- Setup \lceil (1)Upper/lower limit alarm \rceil \lceil (2)Voltage sag alarm \rceil \lceil (3)BreakerAL \rceil when connected to EMU2-** and MDU2-**. (1) Upper/lower limit alarm
 - Setup upper/lower limit alarm for current, voltage, electric power and power factor. (You can't setup upper/lower limit alarm when EMU2-BM1-P, EMU2-VS1-P)



(2) Voltage sag alarm setting

Setup the condition of Voltage sag alarm setting up to 4. (Only EMU2-VS1-P)



(3) Breaker alarm

Setup condition of breaker alarm monitoring. (Only setup MDU2-D-A.)



7.3.2 Upper / lower limit alarm condition setup The settings for the upper / lower limit alarm of current, voltage, electric power, power factor.

1 Transition to the alarm setup mode		
Screen	Operation	Note
1- <u>1.</u>	(1) Push the SETUP key in alarm mode.	
[Alarm Set] Limit	(2) 1-1 will be displayed.	
2 VSay	(1) Confirm that the cursor focuses the "1 Limit", push the <i>I</i> /PHASE key.	
	(2) 2-1 will be displayed.	

2 2 Setup the current upper/lower limit alarm (EMU2-PM1-P, EMU2-HM1-Δ, EMU2-RD□-Δ, MDU2-□-Δ)		
Screen	Operation	Note
2-1. [Limit] 1 A Limit 2 V Limit 3 W Limit ▼	 Push the or key, and move the cursor to the check box of A Upper. Push the PHASE key. 2-2 will be displayed. 	 [A Upper]: 0A~(Primary current)A [A Lower]: 0A~(Primary current)A *The minimum step of settable value is varied by primary current.
2-2.	 Push the ▲ or ▼ key, and move the cursor to the check box of A Upper. Push the + or - key, and setting A Upper limit alarm existence. If it is set to alarm, push the ▲ or ▼ key, and move the cursor, and change the limit value. In a similar way, setting the A Lower limit alarm. Push the ▲ /PHASE key, and confirm the setting value. 2-1 will be displayed. 	5A~30A Step:0.01A 40A~300A Step:0.1A 400A~3000A Step:1A 4000A~30000A Step:10A

3 Setup the Voltage upper/lower limit alarm (EMU2-PM1-P, EMU2-HM1-Δ, EMU2-RD -Δ, MDU2-□-Δ)		
Screen	Operation	Note
3-1. [Limit] 1 A Limit 2 V Limit 3 W Limit ♥	 Push the rel or rel key, and move the cursor to the "2 V Limit". Push the rel /PHASE key. 3-2 will be displayed. 	[V Upper]:0V~(Primary voltagex15/11)V [V Lower]:0V~(Primary voltagex15/11)V *The minimum step of settable value is varied by primary voltage.
3-2. V Upper 2200V	(1) In a similar way as 2-2, change the setting of the voltage limit alarm.	Fewer than 440V Step:0.1V 440V~2200V Step:1V 3300V~110000V Step:10V
Ø V Lower 2200V	Note 1 : In case of the model EMU2-RD□-△-4W,Upper and lower limits of the voltage for the the upper limit lower limit value of the voltage in the circuit 1, the same value is also limits of the voltage for the circuit 3 and circuit 4 set in the circuit 3. If you set the up circuit 3, the same value is also set in the circuit 4. The circuit of even number is no the voltage. (Setting is invalid.) Note 2: Upper and lower limits of the voltage is monitored at the <u>line voltage</u> . It is not poss	e circuit 1 and circuit 2 set in the circuit 1. If you set o set in the circuit 2. Similarly, Upper and lower oper limit lower limit value of the voltage in the it used for setting upper and lower limits value of ible to monitor the phase voltage.

4 Setup the electric power upper/lower limit alarm (EMU2-HM1-Δ, EMU2-RD□-Δ, MDU2-□-Δ)		
Screen	Operation	Note
4-1.	 Push the or v key, and move the cursor to the "3 W Limit". Duch the W/PHASE leave 	[W Upper]:0W~ <u>(Full load)W</u>
1 A Limit 2 V Limit ☑ W Limit ♦	(3) 4-2 will be displayed.	*The minimum step of settable value is varies by full load(Wfull). Wfull<2kW Step: 0.001kW
4-2.	(1) In a similar way as 2-2, change the setting of the electric power limit alarm.	12kW ≤ Wfull < 120kW Step: 0.01kW 120kW ≤ Wfull < 1200kW

5 Setup the Powe	5 Setup the Power factor upper/lower limit alarm (EMU2-HM1-Δ, EMU2-RD□-Δ, MDU2-□-Δ)					
Screen	Operation	Note				
5-1. [Limit] 2 V Limit 3 W Limit ☑ PF Limit ♦	 Push the or key, and move the cursor to the "4 PF Limit". Push the P/PHASE key. 5-2 will be displayed. 	[PF Upper]:- <u>0.500</u> ⇔-0.550⇔⇔-0.950⇔ 1.000⇔0.950⇔⇔0.500⇔ [PF Lower]:-0.500⇔-0.550⇔⇔-0.950⇔ 1.000⇔0.950⇔⇔ <u>0.500</u> ⇔				
5-2.	(1) In a similar way as 2-2, change the setting of the power factor limit alarm.					

6	6 Setup for alarm delay time (EMU2-PM1-P, EMU2-HM1-Δ, EMU2-RD□-Δ, MDU2-□-Δ)							
Screen		Operation		Note				
6-1. [Limit] 3 W Limit 4 PF Limit 5 Delay ↓ 6-2. [Delay]		(1) Pu(2) Pu(3) 6-2	ush the ▲ or ▼ key, and move the cursor to the "5 Delay". ush the ✔/PHASE key. 2 will be displayed.	[Delay]:0sec⇔5sec⇔10sec⇔20sec⇔30sec⇔ 40sec⇔50sec⇔1min⇔2min⇔3min⇔ 4min⇔5min⇔				
		(1) Pu	ush the 🛋 or 💌 key, and change the alarm delay time.					
		(2) Pu (3) 6-1	ush the <i>Importance</i> with the setting value. 1 will be displayed.					
			In case of the model EMU2-RD□-△-4W, alarm delay time that affects the upper and low delay time setting value of circuit 1. Similarly, alarm delay time that affects the upper ar alarm delay time setting value of circuit 3. Alarm delay time of the circuit of even number limits of the voltage.	ver limits of voltage for the circuit 2 use the alarm ad lower limits of voltage for the circuit 4 use the er does not affect the monitoring of upper and lower				

7 Save the settings							
Screen	Operation	Note					
7-1. Quit Setup Save 2 Not Save 3 Cancel	 After setting all of the items, push the SETUP key. 7-1 will be displayed. When save the settings, push the ▲ or ▼ key, move the cursor to the "1 Save", and Push the	 Save → Save settings and return to the operation mode. Not Save → Discard the changes and return to the operation mode. Cancel → Continue the setup. 					

(1) Return to the alarm mode, and it will be displayed alarm first screen.
 (2) Return to the alarm mode, and it will be displayed alarm first screen.
 *In case of the model EMU2-BM1-B, the alarm setup mode can not be used.
 *Setting for alarm mode can only be in the display unit is set to master. (Setting for alarm mode can not be in the display unit is set to slave.)
 *If you change a setting, please push the
 (IPHASE) 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
 (IRCUIT) key on the "Setup" screen (1-1), select the circuit, make the setting.

7.3.3 Setup the Voltage sag alarm

Setup the Voltage decreasing rate and duration of Voltage sag alarm. (Only EMU2-VS1-P)

1 Transition to the alarm setup mode					
Screen	Operation	Note			
1-1. [Alarm Set] 1 Limit 2 Vsag 3 Breaker	 Push the SETUP key in alarm mode. 1.1 will be displayed 				
	 (1) Confirm that the cursor focuses the "2 Voltage sag alarm", push the <i>PPHASE</i> key. (2) 2-1 will be displayed. 				

2 Setup the monit	2 Setup the monitoring condition of Voltage sag alarm. (EMU2-VS1-P)					
Screen	Operation	Note				
2-1. [Vsag] 1 Alarm A 2 Alarm B 3 Alarm C _▼	 Push the or key, and move the cursor to the "1_Alarm A". Push the <i>PPHASE</i> key. 2-2 will be displayed. 	<v decreasing="" rate=""> 0%~100%(1% step) <duration> 20ms~10000ms(10ms step)</duration></v>				
2-2. Sag Rate : Duration : 01000ms Sag Rate : 20% Duration : 1000ms	 Push the ▲ or ♥ key, and move the cursor to the item decreasing rate of V. Push the + or - key, and setup decreasing rate of voltage sag. Push the ▲ or ♥ key, and move cursor to the voltage sag time. (Cursor is moved by 1 digit.) Push the + or e key, and setup the voltage sag time. Repeat (3)~(4) operation and setup all digits Push the ♥ /PHASE key, and confirm the setting value. Return to 2-1. 	*Alarm is not monitored when voltage decreasing rate is set 0%.				
	(1) In a similar way, setup alarm B, C, D.					

3 Return to defaul	3 Return to default setting of voltage sag alarm (EMU2-VS1-P)						
Screen	Operation	Note					
3-1. [Vsag] 3 Alarm C 4 Alarm D 3 Default ♦	 (1) Push the or key, and move the cursor to the "5 Return default" (2) Push the //PHASE key. 	Default value is in below. V decreasing rate Duration Alarm A 20% 1000ms Alarm B 30% 500ms Alarm C 50% 200ms					
$\begin{matrix} \textbf{3-2.} \\ \textbf{A 20\%} & 1000^{m}{}_{s} \\ \textbf{B 30\%} & 500^{m}{}_{s} \\ \textbf{C 50\%} & 200^{m}{}_{s} \\ \textbf{D 100\%} & 20^{m}{}_{s} \end{matrix}$	 Push the <i>PHASE</i> key, after confirm the default setting value. (Voltage decreasing rate and duration return to the default value.) 3-1 will be displayed. 	Alarm D 100% 20ms					

4 Save the settin	4 Save the settings						
Screen	Operation	Note					
4-1. Quit Setup I Save 2 Not Save 3 Cancel	 After setting all of the items, push the SETUP key. 4-1 will be displayed. When save the settings, push the ▲ or ▼ key, move the cursor to the "1 Save", and Push the <i>√PHASE</i> key. After completing the settings saving, "Completed" message will be displayed. Push the <i>√PHASE</i> key. Beturn 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.					

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

7.3.4 Setup breaker alarm

Setup for breaker alarm monitoring (Only MDU2-□-△ models)

1 Transition to the alarm setup mode						
Screen	Operation	Note				
1-1. [Alarm Set] 1 Limit 2 Vsag B Breaker	 Push the <u>SETUP</u> key in alarm mode. 1-1 will be displayed. Confirm that the cursor focuses the "3 Breaker" and <u><i>P</i>/PHASE</u> key. 2-1 will be displayed. 					

2 Setup PAL/EPAL (Only MDU2-□-△models) Screen Operation Note Push the or key, and move the cursor to the "1 PAL/EPAL". -1 <PAI > [Breaker] PAL/EPAL Reset Reset Return 70%~100%(1% step) (3) 2-2 will be displayed. EPAL> 0mA~rated leak current for measurex1/2 (1) Push the 🔺 or 💌 key, and move the cursor to the "PAL". (1mA step) (2) Push the \pm or \Box key, and change the PAL setting value. [PAL] 100% (3) Push the 🛋 or 💌 key, and move the cursor to the "EPAL". *Alarm monitoring is not work when EPA is set [EPAL] 0mA. *The items are different by the connected 0000mA [PAL] (5) Repeat (3) \sim (4) operation and setup all digits. models. 100% ·PAL: setup only when less than 250A frames. [EPAL] 0**0**00mA (6) Push the *I*/PHASE key, and confirm the setting value. '---" is displayed when connected (7) 2-1 will be displayed. models can't setup (more than 400 frames) ·EPAL: leakage breaker, Leak current alarm can be setup. You can operate the change the value but setup value is not. (Fixed 0A) (1) When you setup other circuits, push the CIRCUIT key, and select the circuit and repeat above operation

3 Setup Reset Mode of Breaker alarm (MDU2-□-△)					
Screen	Operation	Note			
3-1. [Breaker] 1 PAL/EPAL 2 ResetMode 3 Rerturn 3-2. [Reset mode] Auto reset	 (1) Push the ▲ or ▼ key, and move the cursor to the "2 ResetMode". (2) Push the <i>I</i>/PHASE key. (3) 3-2 will be displayed. (1) Push the + or key, and change the Reset mode. (2) Push the <i>I</i>/PHASE key, and confirm the setting value. (3) 2-1 will be displayed. 	Auto Reset, ····Auto Reset is automatically worked if removed the cause of each alarm PAL, EPAL, ECA. Hold ····Alarm is hold if removed the cause of each alarm PAL, EPAL, ECA. (Reset is worked at breaker AL reset 7.6.1 Reset measured data)			
	(1) When you setup other circuits, push the CIRCUIT key, and select the circuit and repeat above operation.				

4 Save the setting	4 Save the settings							
Screen	Operation	Note						
4-1. Quit Setup Save 2 Not Save 3 Cancel	 After setting all of the items, push the SETUP key. 4-1 will be displayed. When save the settings, push the ▲ or ▼ key, move the cursor to the "1 Save", and Push the. (1) After completing the settings saving, "Completed" message will be displayed. Push the	 1 Save → Save settings and return to the alarm mode. 2 Not Save → Discard the changes and return to the alarm mode. 3 Cancel → Continue the setup(1-1). 						

*If you change a setting, please push the *erephase* key and be sure to determine changes. If without determine, the changes will be discarded.

7.4.1 Transition of display

Transition of display in operation mode is showed below.



.. Push the *I*/PHASE key, and display switched phase of current or voltage.

... Push the \pm or - key, and showed the Max and Min value.

... Push the \pm or \Box key, and display switched degree of harmonics current or voltage.

*"(20)Preset time" is not displayed in EMU2-D65. *Displayed screen is different by the connected models and setup. (()7.4.2 Connected model and Correspondence of connected models and display screen) *Record measured target in operation mode at 10 minutes period. When turned on after power outage, screen before power outage will be displayed. *Measured circuit by more than 2 circuits measure unit is switched and displayed in any screen except (20)preset time, (21)error by push the <u>CIRCUIT</u> key.

7.4.2 Correspondence of connected models and display screen Screen what display or not appear is different based on the models connected measure unit.

 Displayed elements 	 element displayed only setting 	Not displayed elements

				Display	red data in each	models			
		EMU2-BM1-B	EMU2-HM1-B,C	EMU2-PM1-P	EMU2-VS1-P	EMU2-RE EMU2-RDE	D□-Δ ^{*6} -Δ-4W ^{*6}	MDU2-	-∆ ^{*6}
	Data	-	-	-	-	Wh+A +4elements	Detail of harmonics	Wh+A +4 elements	Detail of harmo nics
(1)Electric energy		•	•	•	•	•	•	•	•
(2)Present current	R S T N total ¹	•	•	•	ė	•	•	•	•
(3)Demand current	$R S T N^{1}$			•	, i				, i
(-)	Max Min value			_	_		_		_
	When measured max and min value	_	•	_	_	•	_	•	-
(4)Demand voltage	R-S, S-T, T-R, total ^{*2} R-N, S-N, T-N	_	•	•	•		•		٠
	Max., Min. value	_	•	—	—	0	—	0	—
	When measured max and min value	_	•	-	_		_		—
(5)Present electric power		_	•	—	•		•		
(6)Demand electric power	Present	_	•	—	•		•		
	Max., Min. value	_	•	—	—	0	—	0	—
	When measured max and min value		•	1	_		-		—
(7)Reactive electric power		_	—		—	0	•	0	•
(8)Power factor	Present		•	-	•		•		
	Max., Min. value	_	•	_	_		_	0	_
	When measured max and min value	_	•	_	_	Ŭ	_	Ũ	—
(9)Frequency		—	—	—		0	•	0	•
(10) Voltage sag	R-S, S-T, T-R ^{*2}	_	—	—	•	_	—	—	—
(11),(12)Total effective value and distortion of harmonics current ^{'5}	R, S, T ^{•3}	_	-	_	_	0	•	0	•
(13),(14) Total effective value and distortion of harmonics voltage ^{'5}	R-S, S-T ^{'4} R-N, S-N, T-N		Ι		_	0	•		_
(15),(16)1-13st Effective value/ content rate of harmonics current ^{*5}	R, S, T ^{*3}		I	l	—		•		•
(17),(18) 1-13st Effective value/ content rate of harmonics voltage ⁵	R-S, S-T ^{*4} R-N, S-N, T-N	_	_	_	—	_	•	_	—
(19) Simple demand		_	•	-	—	0	_	_	-
(20) Error		•	•	•	•	•	•		
(21) Reactive power		—	—	—	—	0	—	0	
(22) Present leak current value		_	-	-	—	—	—		•
(23)Demand leak	Present	—	_	_	—	—	_		
current value	Max./Min.	_	_	_	_		-	0	-
	When measured max and min value	_	_	_	_	_	_		_
(24) Present value of harmonic	s including leak current		_	_			-		•
(25)Demand value of leak	Present	_	_	_			_		
current including harmonics	Max./Min.	_	_	—	—		—	0	_
	When measured max and min value	_	_	_	_	_	_		—

*1 S and T phase are not displayed when the wiring set 1P2W. N phase is displayed only setup 3P4W. All phases that in breakers are displayed in MDU2 regardless of wiring. *2 S-T and T-R are not displayed when the wiring set 1P2W. R-N, S-N, T-N is displayed only setup 3P4W.

All values of between the lines of breaker are displayed in MDU2 regardless of wiring.

*3 T phase is not displayed when the wiring set 1P2W. S phase is displayed only setup 3P4W. All values are displayed in MDU2 regardless of wiring.

S-T is not displayed when the wiring set 1P2W. R-N, S-N, T-N are only displayed in 3P4W. Harmonics voltage is measured as *4 phase voltage in 3P4W. It is displayed in between the lines. Please read replace R-S⇒R-N, S-T⇒S-N, T-R⇒T-N.

*5 Either effective value/ content rate or distortion is displayed by the setup of HA,HV.

*6number of measure circuit 1~ 7,Communication specification B(B/NET), C(CC-Link), L(LONWORKS).

7.4.3 Detail of display



Screen	Saraan	Keyoperation		Noto
name	Screen	Key	Operation	Note
(6)	W/hen may		Measured value in previous is	Demand electric power is displayed.
Demand	/ measured		displayed Measured value in port is displayed	Measured value is multiplied by the displayed
electric	DEMAND MAX. HARM. PRESENT TO AL MIN.		Maximum demand electric power value is	value and multiplying factor if multiplying factor
power		[+]	displayed	is displayed.
	499 Max	\Box	Minimum demand electric power value is displayed	 Push the ± key, and display the maximum value, and push again return standard display.
	x 10 ² k W	(→/PHASE)	Key operation is invalid	Time when measured max and min is displayed
	Heasured	CIRCUIT	Change measured circuit	MM/DD hh:mm.
	PRESENT TOTAL MAL	SETUP	Transition to the Setup mode	
		RESET/SET	Transition to the Reset/Preset mode	
	Multiplying 2 0.6	▲+▼	Transition to the Alarm mode	
	x 10 ² k W			
	1 -			
	DEMAND MAX. HARM. PRESENT TOTAL MIN.			
	8.3 Min			
	x 10 ² k W			
	When min measured			
(7)			Measured value in previous is displayed	Reactive electric power is displayed.
Reactive			Measured value in next is displayed	Measured value is multiplied by the displayed
electric	PRESENT TOTAL MIN		Key operation is invalid	value and multiplying factor if multiplying factor
power			Key operation is invalid	is displayed.
	LEAD 9.7		Change measured circuit	LEAD and LAG is displayed in left side of
	<u>x 10² k v a r</u>		Transition to the Setup mode	measured value.
	Multiplying factor	RESET/SET	Transition to the Reset/Preset mode	
	Progress/Lag		Transition to the Alarm mode	
(8)	When max measured		Measured value in previous is displayed	Power factor is displayed.
Power	DEMAND MAX. HARM. PRESENT TOTAL MIN.		Measured value in next is displayed	
factor		+	Maximum power factor value is displayed	•Push the 土 key, and display the maximum
	03/01 18:05	<u> </u>	Minimum power factor value is displayed	•Time when measured max and min is displayed
		✓/PHASE	Key operation is invalid	MM/DD hh:mm.
	Measure		Change measured circuit	 LEAD and LAG is displayed in left side of
		SETUP	Transition to the Setup mode	measured value.
			Transition to the Reset/Preset mode	
	$\begin{bmatrix} AG \\ 0 & 7 & 1 & 5 \end{bmatrix}$	(▲)+(▼)	I ransition to the Alarm mode	
	Progress			
	04/01 12:05 LEAD 0721 Min			
	cosø			
(9)			Measured value in previous is displayed	Present frequency is displayed.
Frequency	DEMAND MAX. HARM.		Measured value in next is displayed	
			Key operation is invalid	
	602		Key operation is invalid	
	002		Change measured circuit	
	Measured value		Transition to the Setup mode	
		RESET/SET	Transition to the Reset/Preset mode	
		▲+▼	Transition to the Alarm mode	
(10)			Measured value in previous is displayed	Present voltage sag is displayed.
Voltage	Measured value		Measured value in next is displayed	
sag		+	Key operation is invalid	 Push the PHASE Key, switch below. 1P2W/setting
Ĭ		<u> </u>	Key operation is invalid	R-S
	1092	PHASE	Display by changed phase	1P3W, 3P3W setting
	R-S sag V		rey operation is invalid	► R-S→S-T→T-R
	Phase	RESET/SET	Transition to the Reset/Preset mode	
			Transition to the Alarm mode	

Screen	Screen	Keyoperation		Note	
name	Scieen	Key	Operation	Note	
(11)	Measured value		Measured value in previous is displayed	Total effective value of harmonics current is	
Total	DEMAND MAX. HARM.		Measured value in next is displayed	displayed.	
effective	PRESENT TOTAL MIN.	+	Key operation is invalid	•Push the <i>P</i> /PHASE key, and switch below.	
value		—	Key operation is invalid	1P2W setting	
of	9999	✓/PHASE	Display by changed phase	R phase	
harmonics	R	CIRCUIT	Change measured circuit	\rightarrow R phase \rightarrow T phase $-$	
current		SETUP	Transition to the Setup mod		
	Phase		Transition to the Reset/Preset mode	\rightarrow B phase \rightarrow S phase \rightarrow T phase \neg	
			Transition to the Alam mode		
(12)	Measured value		Measured value in previous is displayed	Total distortion of harmonics current is displayed.	
Total	DEMAND MAX HARM		Measured value in next is displayed		
distortion	PRESENT TOTAL MIN.		Key operation is invalid	1P2W setting	
of		PHASE)	Display by changed phase	R phase	
harmonics	1000		Change measured circuit	1P3W, 3P3W setting	
current	R A %		Transition to the Setup mode	r phase→r phase	
	Phase		Transition to the Alarm mode	3P4W setting	
				\rightarrow R phase \rightarrow S phase \rightarrow I phase \rightarrow	
(13)			Measured value in previous is displayed	Total effective value of harmonics voltage.	
Total	Measured value		Measured value in next is displayed		
effective	DEMAND MAX. HARM. PRESENT TOTAL MIN.	+	Key operation is invalid	•Push the <i>PPHASE</i> key, and swotch below.	
value			Key operation is invalid Display by changed phase	1P2W setting R-S	
of	9999		Change measured circuit	1P3W, 3P3W setting	
harmonics		SETUP	Transition to the Setup mode	R-S→S-T	
voltage	Phase	RESET/SET	Transition to the Reset/Preset mode	3P4W setting	
				► R-S→S-T→T-R	
				Please read repleace R-S⇒R-N, S-T⇒S-N, T-R⇒	
				T-N.	
(1.1)	Measured value		Measured value in provious is	Total distortion of harmonics voltage is displayed	
(14) Totol	DEMAND MAX. HARM.		displayed	Total distolution of harmonics voltage is displayed.	
distortion	PRESENT TOTAL MIN.		Measured value in next is	•Push the <i>P</i> /PHASE key, and switch below.	
of			displayed Key operation is invalid	1P2W setting	
harmonics			Key operation is invalid	1P3W, 3P3W setting	
voltage	<u>R – S</u> V %	✓/PHASE	Display by changed phase	R-S→S-T	
5	Phase		Change measured circuit	3P4W setting	
		RESET/SET	Transition to the Reset/Preset mode	$ ightarrow m R-S \rightarrow S-T \rightarrow T-R$	
		▲+▼	Transition to the Alarm mode		
				Please read replace R-S⇒R-N, S-T⇒S-N, T-R⇒	
		_		T-N.	
(15)	Measured		Measured value in previous is displayed	The nth effective value of harmonics current	
1-13st			The order in next is displayed	• Push the (\mathbf{P}^{PHASE}) key, and switch below.	
degree			The order in previous is displayed	1P2W setting	
effective	Phase QQQQ	(→ / PHASE)	Display by changed phase	R phase	
value			Change measured circuit Transition to the Setup mode	\rightarrow R phase \rightarrow T phase $-$	
barmonics		RESET/SET	Transition to the Reset/Preset mode		
current	DEMAND MAX. HARM.		Transition to the Alarm mode	$3P4W$ setting \square R phase \rightarrow S phase \rightarrow T phase \square	
ourroint	PRESENT TOTAL MIN.				
	9999			Push the + key, and switch below.	
				Push the 📃 key, and switch below.	
				$rac{1}{st}$ →13th→11th→9th→7th→5th→3 rd	
	DEMAND MAX. HARM.				
	PRESENT TOTAL MIN				
	3 3 3 3				





Screen	Screen	Keyoperation	n	Note
name	Scieen	Key	Operation	NOLE
(25) Present leak current harmonics	DEMAND MAX. HARM. PRESENT TOTAL MAX. HARM. 1 0 2.8 1 e m A	▲ + - CIRCUIT SETUP RESET/SET ▲+▼	Measured value in previous is displayed Measured value in next is displayed. Key operation is invalid Key operation is invalid Change measured circuit. Transition to the Setup mode Transition to the Reset/Preset mode Transition to the Alarm mode	Present leak current contend harmonics.
(26) Demand leak current content harmonics	When max measured Max Max Max Max Max Max Max Max Max Max	▲ ▼ + CIRCUIT SETUP RESET/SET ▲+▼	Measured value in previous is displayed Measured value in next is displayed Maximum leak current value content harmonics is displayed Minimum leak current value content harmonics is displayed Key operation is invalid Change measured circuit Transition to the Setup mode Transition to the Reset/Preset mode Transition to the Alarm mode	 Demand leak current contend harmonics. Push the + or key, and display the maximum or minimum value, and push again return standard display. Time when measured max and min is displayed MM/DD hh:mm.

7.4.4 Display significant digits

In this section, significant digits by measured method can be displayed. Resolution of measured data references to energy measure unit's manual.

The indication format of electric energy, reactive energy and periodic energy is as follows depending on the full load power:

	α×(VT primary voltage)×(CTprimary current)	α: 1 2	Single-phase, 2-wire Three-phase, 3-wire
Full load power[kw] = =	1000	3	Three-phase, 4-wire

*1: Using direct connection, replace VT primary voltage with direct voltage in calculation above.

*2: In three-phase	*2: In three-phase 4-wire system, replace VT primary voltage or direct voltage with phase voltage in calculation above.						
Full load	Less than 12kW	12kW≦ Full Load ≦120kW	120kW≦ Full Load ≦1200kW	1200kW≦ Full Load ≦12000kW	120000W≦ Full Load ≦120000k	More than 120000kW	
Display significant digits	****.** (kWh)	*****.* (kWh)	*****.* x10(kWh)	x10 ² (kWh)	***** <u>*</u> x10 ³ (kWh)	*****.* x10 ⁴ (kWh)	
Screen example	No multiplying factor 1 2 3 4 5 6 K W h Measured value is 1234.56kWh	No multiplying factor 1 2 3 4 5.6 K W h Measured value is 12345.6kWh	Multiplying factor"10" 1 2 3 4 5 6 * 10 k W h Measured value is 12345.6kWh	Multiplying factor"10 ² " 1 2 3 4 5 6 \times 10 ² k W h Measured value is 12345.6x100 =1234560kWh	Multiplying factor" $10^{3"}$ 1 2 3 4 5.6 $\times 10^3$ k W h Measured value is12345.6x1000 =12345600kWh	Multiplying factor" 10 ⁴ " 12345.6 × 10 ⁴ k W h Measured value is 12345.6x10000 =123456000kWh	

■Present electric energy(kW), Demand electric energy(kW), Reactive electric energy(kvar).

Full load is present follow.						
Full load	Less than 12kW	12kW≦ Full	120kW≦ Full	1200kW≦ Full	120000W≦ Full	More than
		Load ≥120KW	Load =1200KVV	Load ≥12000KW	Load ≥120000K	120000kvv
Display significant digits	**.*** (kW)	***.** (kW)	****.* (kW)	***** (kW)	*****x10 (kW)	*****x10² (kW)
	No multiplying factor	No multiplying factor	Multiplying factor"10"	Multiplying factor"10"	Multiplying factor" 10 ³ "	Multiplying factor" 10 ⁴ "
Screen	12345 ĸw	12 <u>3</u> 45 ĸw	12345 ĸw	12345 ĸw	12345 × 10 k W	12345 x 10 ² k W
example	Measured value	Measured value	Measured value	Measured value	Measured value	Measured value
	is	is	is	is	is	is
	12.345kW	123.45kW	1234.5kW	12345kW	12345x10	12345x100
					=1234500kW	=12345000kW

Present current, Demand current, Effective value of harmonics current Showed in below table by the primary current setting.

Primary current	5A~30A	40A~300A	400A~3000A	4000A~ 30000A
Display significant digits	**.** (A)	***.* (A)	**** (A)	****0 (A)
Screen example	No multiplying factor 1 2 3 4 R	No multiplying factor 1 2 3 4 R	No multiplying factor 1 2 3 4 R	No multiplying factor 12340

■Present voltage, effective value of harmonics voltage Showed in below table by the setting of primary voltage

Primary voltage	110V~220V	440V~2200V	3300V~ 110000V
Display significant digits	***.* (V)	**** (V)	****0 (V)
Screen example	No multiplying factor 2 1 9 4 R - S	No multiplying factor 2 1 9 4 R - S	No multiplying factor 1 1 2 3 0 R - S

■Frequency

Display significant digits	**.* (Hz)
Screen	No multiplying factor
example	6 0.2
	Hz

■Power factor

Display	* ***	
significant		
digits		
	No multiplying	
Screen	factor	
example	[▲] 0.975 ∞∞∞φ	

■Voltage sag Displayed fixed decimal point one digit regardless of the setting of primary voltage

Jai uless of the set	ung or primary vo
Primary voltage	_
Display	
significant	***.* (V)
digits	
	No multiplying
	factor
Screen	A
example	109.2
	R−S sagV

■Harmonics current and voltage distortion ∕ content rate

Display significant digits	***.* (%)
Screen	No multiplying factor
example	1000
	R A %

■Electric energy, Reactive power

Calculated by the a frame connected MDU breaker.			
MDU Breaker	Less than	More than	
A frame	250A frame	400A frame	
Display significant digits	*****.* (kWh)	*****.*x10(kWh)	
Screen example	No multiplying factor 1 2 3 4 5 6 K W h Measured value is 12345.6kWh	Multiplying factor"10" 1 2 3 4 5 6 • x 10 k W h Measured value is 12345.6x10 =123456kWh	

Decimal point position is fixed in below items.

Present electric power, Demand electric power, Reactive power

Display significant digits	****.* (kW)
Screen example	No multiplying factor
	12345
	k W

Present voltage value

Display significant digits	***.* (V)
Screen example	No multiplying factor
	▲ 2 1 9.4 _{R-S} ▼

■Power factor

Display	* ***
significant	
digits	
Screen example	No multiplying factor
	ΔAG 0.975

■Present current, Demand current, Effective value of harmonics current

LIEGUIV	e value of narmonics
Display	
significant	****.* (A)
digits	
Screen example	No multiplying factor
	1 2 3 4
	R A

■Frequency

Display significant digits	**.* (Hz)
Screen example	No multiplying factor 6 0.2

■Distortion / content rate of harmonics current

Display significant digits	***.* (%)
Screen example	No multiplying factor 1 0 0.0

■Present leak current, Demand leak current, Present leak current contend harmonics, Demand leak current contend harmonics

Display significant digits	****.* (A)
	No multiplying factor
Screen example	▲ 1028
	10 m A
7.5.1 Transition of display

Transition to display in alarm mode.



Note 1: EMU2-BM1-B can't use alarm mode.

Note 2: EMU2-PM1-P model can monitoring upper/lower limit of voltage and current alarm. Display of upper /lower alarm of electric energy and power factor Is not displayed.

Note 3: Display of monitoring elements is not displayed in "alarm monitoring unexecuted" setting.

Note 4: Push the CIRCUIT key, and switch measure circuit and display when using more than 2 energy measure units in any display



Note 1: Display of monitoring elements is not displayed in "alarm monitoring unexecuted" setting.

Note 2: Screen of upper/lower limit alarm is not displayed when operation mode is harmonics detail mode.

Note 3: Push the CIRCUIT key, and switch measure circuit and display when using more than 2 energy measure units in any display.



- Note 1: Voltage sag alarm is only worked in the EMU2-VS1-P models.
- Note 2: Alarm monitoring is not worked if voltage decrease rate is 0%. Items setup that voltage decrease rate is 0% In voltage sag alarm screen (upper figures (2)-(5)) is not displayed.
- Note 3: In voltage sag alarm screen A-D, phase can be switched and displayed like $ightarrow
 m R-S \Rightarrow S-T \Rightarrow T-R \neg$ in 1P3W, 3P3W.

Screen	Saraan	Keyoperation		Noto	
Name	Screen	Key	Operation	Note	
(1)	Alarm contact		Alarm display in the previous is	All upper/lower limit alarm conditions are	
List of			displayed	confirmed in this screen.	
alarm	conditions		Key operation is invalid	Condition of output of alarm is displayed at	
conditions		$\overline{\Box}$	Key operation is invalid	upper left in EMO2-PM1-P models.	
	Alarm Status —	PHASE	Key operation is invalid	Signs mean below	
	(ON) A V W P F		Displayed circuit is changed	$\int -1$ Not alarm monitoring (impossible)	
	Upp. ● − O O	SETUP	Transition to the alarm setting mode		
	Low. $\bigcirc \bigcirc \bigcirc \bigcirc$	DESET/SET	to "OFF" when alarm is occurred	「○」Alarming or during latch	
		(RESET/SET)	(connected toMU2-PM1-P)		
	Alarm occurred _/		Transition to the operate mode		
	condition		(displayed electric energy)		
(2)	Date of alarm		Measured value in previous is	Latest date and value when upper limit	
Upper limit	occured		Measured value in next is displayed	current alarm occurred of displayed.	
of	occurcu		Key operation is invalid	*Volue is displayed in below when clarm	
current		$\overline{-}$	Key operation is invalid	doog not work once	
alarm		✓/PHASE	Key operation is invalid		
	13493		Displayed circuit is changed	-/'	
		SETUP	Transition to the alarm setting mode	<value></value>	
	Opp.	DESET/SET	to "OFE" when alarm is accurred	OA	
	Value when	(RESET/SET)	(connected toMU2-PM1-P)	Date is displayed/:, because	
	alarm worked		Transition to the operate mode	EMU2-PM1-P does not have clock	
		(▲)+(▼)	(displayed electric energy)	function.	
(3)			Measured value in previous is	Latest date and value when lower limit	
Lower limit	Date of alarm		displayed	current alarm occurred of displayed.	
of	occured		Measured value in next is displayed.		
current			Key operation is invalid	*Value is displayed in below when alarm	
alarm		PHASE	Key operation is invalid	does not work once.	
	1251		Displayed circuit is changed	<date></date>	
		SETUP	Transition to the alarm setting mode	/: <value></value>	
	Low. A		Output of alarm contact point is turned		
		(RESET/SET)	to "OFF" when alarm is occurred	Date is displayed/: because	
	value when _	Ō	Transition to the operate mode	EMU2-PM1-P does not have clock	
		(▲)+(▼)	(displayed electric energy)	function.	
(4)			Measured value in previous is	Latest date and value when upper limit	
Úpper limit	Date of alarm		displayed	voltage alarm occurred of displayed.	
of	occured		Measured value in next is displayed		
current			Key operation is invalid	*Value is displayed in below when alarm	
alarm	04/01 12:00	/PHASE	Key operation is invalid	does not work once.	
	120100		Displayed circuit is changed	<date></date>	
		(SETUP)	Transition to the alarm setting mode	/:	
	Upp. V		Output of alarm contact point is turned		
		(RESET/SET)	to "OFF" when alarm is occurred	Date is displayed/: because	
	value when _		Transition to the operate mode	EMU2-PM1-P does not have clock	
		(▲)+(▼)	(displayed electric energy)	function.	
(5)	Data of claure		Measured value in previous is	Latest date and value when lower limit	
Lower limit			displayed	voltage alarm occurred of displayed.	
of	occureu		Measured value in next is displayed.		
voltage			Key operation is invalid	*Value is displayed in below when alarm	
alarm	04/01 12:00	PHASE	Key operation is invalid	does not work once.	
	9108		Displayed circuit is changed	 Uate> / 	
		SETUP	Transition to the alarm setting mode	/	
	Low.		Output of alarm contact point is turned	ΛΔ	
		RESET/SET	to "UFF" when alarm is occurred	Date is displayed/ because	
	Value when J alarm worked		Transition to the operate mode	EMU2-PM1-P does not have cloc function.	
		▲+▼	(displayed electric energy)		
		_			

Screen	Scroop	Keyoperation	า	Note	
name	Screen	Key	Operation	Note	
(6) Lipper	When max		Measured value in previous is displayed	Latest date and value when upper limit Electric energy alarm occurred of	
limit	measured		Measured value in next is	displayed.	
alarm	Value when	(+)	Key operation is invalid		
of electric			Key operation is invalid	 Measured value is multiplied by the displayed 	
energy	04/0112:00	(H/PHASE)	Key operation is invalid	value and multiplying factor if multiplying factor	
0,	3385.6		Displayed circuit is changed		
	Upp. $\times 10^2$ k W	SETUP	mode	*Value is displayed in below when alarm	
		RESET/SET	Key operation is invalid	does not work once.	
	Multiplying		Transition to the operate mode	<date></date>	
	factor		(displayed electric energy)	/ <u>-</u>	
				OkW	
(7)			Measured value in previous is	Latest date and value when lower limit	
Lower			Measured value in next is	Electric energy alarm occurred of	
limit	Date of alarm		displayed	displayed.	
alarm		+	Key operation is invalid	•Measured value is multiplied by the displayed	
of	04/01 12:00		Key operation is invalid	value and multiplying factor if multiplying factor	
electric	4 4 5 2		Displayed circuit is changed	is displayed.	
energy	1 ow $x 10^2 \text{ k}$ W		Transition to the alarm setting	·Value is displayed in below when alarm	
			mode	does not work once.	
	Multiplying factor	RESET/SET	Key operation is invalid	<date></date>	
	Value when	(▲)+(▼)	(displayed electric energy)	<value></value>	
	alarm is worked			OkW	
(8)			Measured value in previous is displayed	Latest date and value when upper limit	
Upper	Date of alarm		Measured value in next is		
alarm	occured		displayed	·Time when measured max and min is displaye	
of			Key operation is invalid	MM/DD hh:mm.	
nower	04/01 12:00	PHASE	Key operation is invalid	Value is displayed in below when alarm	
power			Displayed circuit is changed	does not work once.	
		SETUP	I ransition to the alarm setting	/:	
	Upp. cos ø	RESET/SET	Key operation is invalid	<value></value>	
	Value when alarm is worked		Transition to the operate mode	1.000	
	Display delay		(displayed electric energy)		
	and progress				
(9)			Measured value in previous is	Latest date and value when lower limit	
Lower			displayed	power factor alarm occurred of displayed.	
limit			vieasured value in next is displayed		
alarm	Data of alarm occured	+	Key operation is invalid	Time when measured may and min is diaplayed	
of			Key operation is invalid	MM/DD hh:mm.	
power	04/01 12:00		Key operation is invalid	•LEAD and LAG is displayed in left side of	
factor			Transition to the alarm setting	measured value.	
			mode	*Value is displayed in below when alarm	
		RESET/SET	Key operation is invalid	does not work once.	
	Display delay and progress	▲+▼	I ransition to the operate mode		
				<value></value>	
				1.000	

Screen	Sereen	Keyoperation		Noto	
name	Screen	Key	Operation	Note	
(10) Breaker alarm status	– Alarm Status – Breaker PAL OVER ECA EPAL		Alarm display in the previous is displayed Alarm display in the next is displayed Key operation is invalid Key operation is invalid Displayed circuit is changed Transition to the alarm setting mode Key operation is invalid Transition to the operate mode (displayed electric energy)	All breakers alarm conditions are confirmed in this screen. •Alarm name is displayed when alarm occurred. •Nothing is displayed when not occurring.	
(11) Accident information of breaker	Fault current Trip – 450.8 EAL m A unit Cause of accident		Measured value in previous is displayed Measured value in next is displayed Key operation is invalid Key operation is invalid Displayed circuit is changed Transition to the alarm setting mode Key operation is invalid Transition to the operate mode (displayed electric energy)	Latest breaker accident is displayed. Meaning of cause of accident is below. 「LTDJOverload 「S/IJShort circuit 「ALJOverload or short circuit 「EALJLeakage Below is displayed when accident is not occurred. Cause of accident: not displayed Accident current: 0A	



7.6 Reset/Preset mode

7.6.1 Reset the measured data.

1 Transition to the Reset/Preset mode			
Screen	Operation	Note	
[Reset/Set] [Reset 2 Set	 Push the <u>RESET/SET</u> key in the Operation Mode. Rest / Preset menu will be displayed. In Reset / Preset menu screen, push the ▲ or ▼ key, and move the cursor to the "1 Data Reset". Push the <u>√PHASE</u> key. Data Reset will be displayed. 	*If you want to cancel reset / preset, push the <u>RESET/SET</u> key, return to operation mode. (screen of electric energy)	

2 Select the items you want to reset			
Screen	Operation	Note	
[Data Reset] -Max-Min -AL (Limit) -AL (Vsag) -Wh, varh -Logging -Braker AL -Trip	 Push the <u>CIRCUIT</u> key, and select the target circuit to reset. (LED of selected circuit is lighted.) Push the ▲ or ▼ key, and move the cursor to the target item to reset. (3 items are only displayed.) Push the + or ► key, and move the cursor to the checkbox. (If you push the + or ► key again, Non-checked item turned to checked) Repeat (2) and (3) operation and check in all check box want to reset. Repeat (1)-(4) operation when reset other circuits. 	*If you want to cancel reset / preset, push the <u>RESET/SET</u> key, return to operation mode (screen of electric energy) *Logging is conduct only EMU2-D65-Mmodel.	

3 Conc	duct reset		
Screen	1	Operation	Note
	o you really execute? Cancel	 Push the <i>P</i>/PHASE key after select all items you want to reset. Confirmation reset screen will be displayed. Push the <i>key</i>, and move the cursor to the "OK" push <i>P</i>/PHASE key. (Return to Data reset screen after push "Cancel" key.) Reset is conducted after push the confirmation key. 	*If you want to cancel reset / preset, push the <u>RESET/SET</u> key, return to operation mode (screen of electric energy)
		 (5) Confirmation screen will be displayed. Push the <i>I</i>/PHASE key. (6) Return to the operation mode. (Screen of electric energy). 	

1 Transition to the Reset/Preset mode.				
Screen	Operation	Note		
[Reset/Set]	 Push the <u>RESET/SET</u> key in operation mode. Reset /Preset menu will be displayed. 	*If you want to cancel reset / preset, push the RESET/SET key, return to operation mode.		
1 Reset 2 Set	 In Reset/Preset setting menu screen, push the or key, and move the cursor to the "2 DataPreset". Push the /PHASE key. Data preset menu will be displayed. 	(screen of electric energy)		

2 Preset the electric energy value				
Screen	Operation	Note		
[Set] Wh 2 varh	 In Data preset menu, push the <u>CIRCUIT</u> key, select the target circuit to reset. (LED of selected circuit is lighted.) In data preset screen, push the ▲ or ▼ key, and select the"1 Integral Wh value". Push the <u>√PHASE</u> key. Setup screen of integral Wh value will be displayed. (Present integral electric energy is displayed) 	*If you want to cancel reset / preset, push the <u>RESET/SET</u> key, return to operation mode. (screen of electric energy)		
[Wh] 13541.8 × 10 ³ kWh	 Push the ▲ or ▼ key, and move the cursor to change the value of digit. Push the + or key, and change the value. In similar way, setup all digits. After change the value, push the PHASE key. Confirmation of preset will be displayed. 	*If you want to cancel reset / preset, push the RESET/SET key, return to operation mode. (screen of electric energy)		
Do you really execute? OK Cancel	 Push the key, and move the cursor to the "OK" and push the <i>PPHASE</i> key (Return to operation mode (electric energy screen), after select "Cancel".) Push the <i>PPHASE</i> key, preset is conducted. Confirmation screen will be displayed. Push the <i>PPHASE</i> key. Return to the operation mode. 			

3 Preset the reactive po	wer value.	
Screen	Operation	Note
[Set] 1 Wh ⊠ varh	 Push the <u>CIRCUIT</u> key, and select the target circuit to reset. (LED of selected circuit is lighted.) In data preset screen, push the ▲ or ▼ key, and select the "2 integral varh value". Push the <u>√PHASE</u> key. Setup screen integral varh will be displayed. (Present value of integral reactive electric power is displayed. 	*If you want to cancel reset / preset, push the RESET/SET key, return to operation mode (screen of electric energy)
[varh] 2 2371.9 × 10 ³ kvarh	 Push the or key, and move the cursor to the digit want to change. Push the or key, and change the value. In similar way, setup all digits. After change the value, push the //PHASE key. Confirmation for reset be displayed. 	*If you want to cancel reset / preset, push the RESET/SET key, return to operation mode (screen of electric energy)
Do you really execute? OK Cancel	 Push the key, and move the cursor to the "OK" and push the <i>PHASE</i> key. (Return to operation mode (electric energy screen), after select "Cancel".) Push the <i>PHASE</i>, and preset is conducted. Confirmation screen will be displayed. Push the <i>PHASE</i> key. Return to the operation mode. 	

8. Common items

In this section common item is showed regardless the connected models.

8.1 How to switch the language

1 Setting language			
Screen	Operation	Note	
1-1. 日本語	 (1) Push the <u>CIRCUIT</u> key, and turn on in the key pushing, (2) 1-1 will be displayed. 		
	 Push the		

9.1 In case you think the unit is in failure

If an abnormal sound, bad-smelling smoke, fever break out from this unit, switch it off promptly and don't use it. If you think the unit is in failure, check the following before sending for repair.

Include EMULet** EMULet** EMULet** Nothing is displayed. -Connection is energy measure unit is connected right? O O ** is displayed as a measured value on the connected is disconnection? O O O ** is displayed as a measured value. * Connection is right? O O ** * Scienced bit is disconnection? O O * * Connection is right? O O	Symptom		Check point	Connected models	
Nothing is displayed. Connector to energy measure unit is connected right? PMOUCE "" is displayed as a measure. Connector to energy measure unit is turned orf? O O "" is displayed as a measure. Measure Systems in Syste				EMU4-**	EMU2-**
Power supply of antray measure unit is turned on? Power supply of antray measure unit is turned on? Power supply of antray measure unit is turned on when display unit a connected more fina 2 ? Power supply of antray measure unit is turned on when display unit a connected more fina 2 ? Connection is right? Connection is right? Power supply of antray measure unit is turned off? Connection is right? Connection right? Connection is right? Connection i	Nothing is displayed	d	Connector to energy measure unit is connected right?	-	MDU2-***
	r tou in ig to alopidy of		Power supply of energy measure unit is turned on?		
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			is connected more than 2?	Ŭ	Ŭ
Image:			Connection is right?		
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Instrument Instrument <thinstrument< th=""> Instrument Instrume</thinstrument<>	operation mode.		Confirm the signal mark and check the communication connector,	0	0
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Error number "UU90/" is displayed in operation mode. There is a possibilities that setup data file for logging is wrong or out of range of the data. Confirm the contents of setup data file again. O — Turn off f the back light. If back light is setup automatic turning-off, light is automatically turned off in 5 O O	operation mode.				ļ
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	i um oπ t the back li	ignt.	IT back light is setup automatic turning-off, light is automatically turned off in 5	0	0

9.2 After-sales service

If you have any questions or the product is broken down, contact our sales representative near you. (For details, refer to the end of this manual.)

- Gratis warranty is effective until the earlier of 1 year after the date of your purchase or 18 months after manufacturing.
- The gratis warranty shall apply if the product fails even though it is being used properly in the conditions, with the methods and under the environments in accordance with the terms and precautions described in the catalogs, the instruction manual, caution label on the product, etc.
 - Repair shall be charged for the following cases even during the gratis warranty period.
 - Failures occurring due to your improper storage or handling, carelessness or fault.
 - Failures due to faulty workmanship
 - Failures due to faults in use and undue modification
 - Failures due to accidental force such as a fire, abnormal voltage, etc. and force majeure such as an earthquake, wind, flood, etc.
 - Failures due to matters unpredictable based on the level of science technology at the time of product.
- 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

10. Requirement for the compliance with EMC Directives

EMC Directives prescribe both "Emission (electromagnetic interference): Do not radiate strong electromagnetic waves outside" and "Immunity (electromagnetic susceptibility): Do not be influenced by electromagnetic waves from outside".

This section compiles the precautions for the compliance of the system incorporating the energy measuring unit (target model: EMU4-BD1-MB and EMU4-HD1-MB) with the EMC Directives. The manufacturer of the system finally needs to evaluate the way of the compliance with EMC Directives and whether the system complies with them or not.

(1) Harmonized standard for EMC Directives: EN61326-1:2013

(a) Compatibility condition for harmonized standard

The energy measuring unit is the open type device (i.e. the device incorporated in other device), and needs to be installed in the conductive control panel. The unit is tested with installed in the control panel for the emission and the immunity out of the test items for the standard.

(2) Recommended condition for installation in the control panel

- (a) Control panel
 - Control panel needs to have conducting property.
 - When bolting the top panel, bottom panel etc. of the control panel, mask the grounding part of the panel so as not to be painted.
 - In inner panel, keep the conductivity in as large area as possible by masking the bolting part to the main panel to keep the electric contact to main panel.
 - Ground the main panel by the thick wire so as to keep high impedance even for high-frequency wave.
- (b) Installation of power line and ground line
 - Set up the ground point to the control panel near the energy measuring unit, and ground the frame GND terminal of the unit to the ground terminal of the control panel (PE) by as thick and short wires as possible. (wire length is 30cm or shorter)

(3)Cable

(a) Auxiliary power, Input voltage, CC-Link cable, MODBUS cable, Small display unit cable

When it is necessary to comply with the EMC Directive (EN-61326-1), attach ferrite cores to each cable. Ferrite cores used in our testing is below.

- Auxiliary power
 - KITAGAWA INDUSTRIES CO.,LTD., RFC-H13 KITAGAWA INDUSTRIES CO.,LTD., TRM-31-20-15E-WE
- Input voltage KITAGAWA INDUSTRIES CO., LTD., RFC-H13
- CC-Link cable, MODBUS cable
- KITAGAWA INDUSTRIES CO., LTD., RFC-20
- Small display unit cable
 - KITAGAWA INDUSTRIES CO., LTD., RFC-H13

(b)External input signal line, External output signal line

- Wiring of each connection wire should satisfy the following conditions.
 - For wiring inside buildings, the wiring length should not exceed 30 m.
 - Do not route wiring from the inside of the building to the outside of the building.

11.1 Specifications

Item			Specification	
Product name			Display unit	
Model name			EMU4-D65	
Display part			Dot matrix Liquid Crystal Display (with backlight)	
Rating			9V DC	
Math			100g	
Display update of	cycle		500ms	
Compensation	(1)Positio	on of display	(1)Record in EEPROM (Nonvolatile memory). (record period is 10 minutes)	
for power	(Opera	ation mode)	(2) Record in EEPROM (Nonvolatile memory). (change the setup)	
failure	(2)Setup	for display	*Data in left table and setup value is not deleted in power outage.	
	(LCD	contrast,	*If power outage is occurred while saving setting, display setup value may return to	
	back	(light)	initial when power is recovered.	
		C C	(LCD contrast is "4", Back light is "continuous lighting")	
Applicable mode	el e		Energy Measuring Unit (EcoMonitorPlus)	
			Energy Measuring Unit (EcoMonitorPro)	
			Mitsubishi Measuring Units for MDU Breakers (MDU2)	
Connecting met	hod		Connecting by dedicated cable (Bundled in this product Length: 1m)	
Number of conn	ected		For a single Energy Measuring I Init until seven*	
	00100		*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.,	
			ITD) the power supply cable (optional : EMI I4-CB-DPS) and display unit	
			connection cable (for between the display unit connection)	
			Model: FMU2-CB1-DP.	
Maximum exten	sion distar	nce	10m (However, the sum of the length of the extension cable that was connected to a	
			single unit)	
Lisage environm	ent	Operating	-5°C~+555°C	
Obage charlen		temperature		
		Operating	30%~85%Rh(No condensation)	
h		humidity		
Storage		Storage	-10°C~+60°C	
temperature		temperature		
How to installation			IEC rail installation (You can install 2 directions)	
			Plate mounting	

12. Option devices

12.1 Option devices

Following devices can available for this product.

Product name	Model		Note
Supply cable	EMU4-CB-DPS		It is required to connect DC power supply on the market and small display unit.
Cable of small display between the units (Connecting for between display units)	EMU2-CB1-DP	0.3m	It is required to connect the energy measure unit to more than 2 small display units.
Extension cable	EMU2-CB-T1M	1m	10m (However, the sum of the length of the extension
	EMU2-CB-T5M	5m	cable that was connected to a single unit)
	EMU2-CB-T10M	10m	
	EMU2-CB-T20M	20m	

12.2 External dimensions of option devices







13. External dimensions



Mark

Mark	
+ key	5
- key	5
▲ key	5
▼ key	5

Alphabet

AD converted setting	17
Auto off	
Backlight	24 91
Breaker alarm status	108
Breaker trin	100
Breaker alarm Reset Mode	100
Dieakei alaini Kesel Moue	121
Cable of small display between the units	119
Circuit LED	5
Clock setting	23,90
Compensation for power failure	
Connectable devices	7
Contained rate	67,68,72
Continous lighting	24,91
Current demand	64
Decreasing rate of voltage	
Delay time	94
Demand (Simple demand)	97.103
Demand electric energy	65 100
Demand leak current	69 103
Demand leak barmonics current	104
Demand time	15 88
Detail of harmonice	1/ 99
Direct oppor	
Direct Serisor	14,07
Display F/VV Version	
Display mode	
Display update rate	
Distortion	
Duration	95
Effective value	66,101
Electric energy	15
Error number	116
Extension cable	119
Frequency	14 66 100
How to installation	6
IEC rail instration	6
INT IND	5 5
Installation to bood	5 5
LCDcontrast	24.91
Limit setting	
Loaging elements	23
Master LED	43
Master setting	37
Maximum extendable distance	6.118
Measure mode	
	- , -
N th content rate of harmonics current	
N th content rate of harmonics voltage	
N th effective value of harmonics current	67 101
N the effective value of harmonics current	67,101 70
N the effective value of harmonics current Number of times exceeding the Limit	67,101 70
N the effective value of harmonics current Number of times exceeding the Limit	67,101 70 118
N the effective value of harmonics current Number of times exceeding the Limit Operating humidity Operating tempurature	67,101 70
N the effective value of harmonics current Number of times exceeding the Limit Operating humidity Operating tempurature	67,101 70
N the effective value of harmonics voltage Number of times exceeding the Limit Operating humidity Operating tempurature	67,101 70
N the effective value of harmonics current Number of times exceeding the Limit Operating humidity OUT1	
N th effective value of harmonics current	
N th effective value of harmonics current	

Present current value	64,99
Present leak current	
Present leak harmonics current value	
Present time	70
Present voltage value	
Pulse unit	
Rated current	16
Rated voltage	
Reactive electric energy	
Reset/Set key	5
Scaling value	69
Setting	11,86
Setup key	5
Split type 5A current sensor	7
Storage temperature	118
Tighted torque	6
Total distortion of harmonics current	
Total distortion of harmonics voltage	
Total effective value of harominics current	
Total effective value of haromics voltage	
Upper and Lower alarm	110
Voltage sag alarm	95
Voltage sag alarm display	112
Voltage sag value	
Wh+A+4 elements	11
Wiring	
vviiiiig	

Small type Display Unit for Energy Measuring Unit

Service Network

Country/Region	Corporation Name	Address	Telephone
Australia	Mitsubishi Electric Australia Pty. Ltd.	348 Victoria Road, Rydalmere, N.S.W. 2116, Australia	+61-2-9684-7777
Algeria	Mec Casa	Rue i N 125 Hay-Es-Salem, 02000, W-Chlef, Algeria	+213-27798069
	PROGRESSIVE TRADING CORPORATION	HAQUE TOWER,2ND FLOOR,610/11,JUBILEE ROAD, CHITTAGONG, BANGLADESH	+880-31-624307
Bangladesh	ELECTRO MECH AUTOMATION&	SHATABDI CENTER, 12TH FLOOR, SUITES: 12-B, 292, INNER CIRCULAR ROAD,	+88-02-7192826
	ENGINEERING LTD.	FAKIRA POOL, MOTIJHEEL, DHAKA-1000, BANGLADESH	100 02 1 102020
Belarus	Tehnikon	Oktyabrskaya 19, Off. 705, BY-220030 Minsk, Belarus	+375 (0)17 / 210 46 26
Belgium	Koning & Hartman B.V.	Woluwelaan 31, BE-1800 Vilvoorde, Belgium	+32 (0)2 / 25/0240
Brazil	Mitsubishi Electric do Brasil Comercio e Serviços	Avenida Adelino Cardana, 293 – 21º Andar, Bethaville, Barueri, SP, Brasil, CEP 06401-147	+55-11-4689-3000
Cambodia		#245 St Ten Phan Phnom Penh Cambodia	+855-23-007-725
Control Amorico	Automation International LLC	#245, St. Tep Frian, Findin Felm, Cambodia 7050 W. Dalmotte Dark Road Suite #15 DMP #555, Road Patent EL 22422	+1 561 227 5229
Central America	Rhona S.A. (Main office)	Via Agua Santa (211 Casilla 30- # 15 Hild #555), dal Mar Chila	+56-32-2-320-600
Cillie	Mitsubishi Electric Automation (China) Ltd	Vite: Agua Canta 42 Fr Cashina 30-0 (1.0. Dox) vina der War, Oma	+86-21-2322-3030
	Mitsubishi Electric Automation (China) Ltd.		
	BeiJing	5/F,ONE INDIGO,20 Jiuxianqiao Road Chaoyang District,Beijing, China 100016	+86-10-6518-8830
	Mitsubishi Electric Automation (China) Ltd.	Louis A. Oslaw, World Tours D. 4 Value David Learning District Obserbary, Object 540400	. 00 755 0000 0070
China	ShenZhen	Level o, Galaxy world Tower B, T Tabao Road, Longgang District, Shenzhen, China 516129	+00-755-2599-6272
Onina	Mitsubishi Electric Automation (China) Ltd.	Rm.1006, A1 Times E-Park, No.276-282, Hanxi Road East, Zhongcun Street, Panyu Distric,	+86-20-8923-6730
	GuangZhou	Guangzhou, China 510030	100 20 0020 0100
	Mitsubishi Electric Automation (China) Ltd.	1501-1503, 15F, Guang-hua Centre Building-C, No.98 North Guang Hua 3th Rd Chengdu, China	+86-28-8446-8030
	Mitaubiahi Electric Automation (Hang Kang) Ltd	010000	1952 2510 0555
Colombia	Productrice Representaciones S.A.	20/F., Citypiaza Olle, TTT King S Road, Taikoo shing, Hong Kong	+632-2310-0335
Czech Republic	AUTOCONT CONTROL SYSTEMS S.R.O	Cantera 42 Nr 73 = 507 Bodega 105, ragui, Mederim, Antioquia, Colombia	+420 505 601 150
Denmark	BELIER ELECTRONICS A/S	Technologicka 57470, 02-700 00 Costava - Lastovec	+45 (0)46/ 75 76 66
Eavot	Cairo Electrical Group	9 Rostoum St. Garden City P.O. Box 165-11516 Maglis El-Shaab Cairo - Egypt	+20-2-27961337
Erance	Mitsubishi Electric Europe B V Erench Branch	ER-92741 Nanterre Cedex	+33 (0)1 55 68 57 01
Germany	Mitsubishi Electric Europe B.V.	Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany	+49 (0) 2102 4860
,	KALAMARAKIS - SAPOUNAS S.A.	IONIAS & NEROMILOU STR., CHAMOMILOS ACHARNES. ATHENS. 13678 Greece	+30-2102 406000
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		India	
India	Mitsubishi Electric India Private Limited Pune	ICC-Devi Gaurav Technology Park, Unit no. 402, Fourth Floor, Survey no. 191-192 (P), Opp. Vallabh	+91-20-68192100
	Sales Office	Nagar Bus Depot, Pune – 411018, Maharashtra, India	2. 20 00.02100
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	Center	Ahmedabad 380015,Gujarat. India	
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Lebanon	Comptoir d'Electricite Generale-Liban	Cebaco Center - Block A Autostrade Dora, P.O. Box 11-2597 Beirut - Lebanon	+961-1-240445
Lithuania	Rifas UAB	Tinklu 29A, LT-5300 Panevezys, Lithuania	+370 (0)45-582-728
	Mittric Sdp Bbd	No. 5 Jalan Pemberita U1/49, Temasya Industrial Park, Glenmarie 40150 Shah Alam, Selangor,	+603-5569-3748
Malaysia		Malaysia	1000 0000 0140
	Flexible Automation System Sdn Bhd	60, Jalan USJ 10/1B,UEP Subang Jaya,47620 Selangor Darul Ehsan,Malaysia	+603-5633-1280
Malta	ALFATRADE LTD	99 PAOLA HILL, PAOLA PLA 1/02, Malta	+356 (0)21-697-816
Maroco	SCHIELE MAROC	KM 7,2 NOUVELLE ROUTE DE RABAT AIN SEBAA, 20600 Casabianca, Maroco	+212 661 45 15 96
Myanmar	Peace Myanmar Electric Co.,Ltd.	NO13//139 Botantaung Pagoda Road, Botantaung Town Ship 11161, Yangon, Myanmar	+95-(0)1-202589
Nepai	Imtoch Marina & Offehora R V	KHA 2-65, Volt House Dillibazar Post Box: 2108, Kathmandu, Nepal	+977-1-4411330
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Mexico	Branch	Miguel Hidalgo, Ciudad de México, CP 11520, México	+52-55-3067-7511
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5			5/533/3
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Republic of			
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Slovakia	PROCONT, Presov	Kupelna 1/, SK - 08001 Presov, Slovakia	+421 (0)51 - 7580 611
Siovaida	SIMAP	Jana Derku 1671, SK - 91101 Trencin, Slovakia	+421 (0)32 743 04 72
Slovenia	Inea RBT d.o.o.	Stegne 11, SI-1000 Ljubljana, Slovenia	+386 (0)1-513-8116
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Ou data a set	Euro Energy Components AB	Jarnvagsgatan 36, S-434 24 Kungsbacka, Sweden	+46 (0)300-690040
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Vietnam	Wildebield Benefic Vietnam OU., Ltd. Flead Office	City, Vietnam	-04-20-0010-0040
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