



[About Manuals]  
This manual is digest version.  
For detail, refer to "Mitsubishi Energy Measurement Unit Instruction Manual" (Document No. IB63G65).  
It is possible to access from the two-dimensional code on the left.  
For other related materials, see the Mitsubishi Electric Global Website You can download it.

## Before using the instrument

Before using this unit, please read both this manual and the instruction manual carefully and pay attention to safety to handle this unit correctly for use properly.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

Deliver this user's manual to the end user.

Be sure to check the following items of the instruction manual.

- Name and function of each part
- Attaching and removing
- Wiring
- Requirement for the compliance with EMC Directives
- Warranty

## 1. Safety Precautions

In this instruction manual, the following safety alert symbols are used in the following meanings.

Symbols	Meaning explanation
DANGER	Indicates that incorrect handling occurs hazardous conditions, resulting in death or severe injury.
WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in severe injury.
CAUTION	Indicates that incorrect handling may cause in personal injury.
NOTICE	Indicates that incorrect handling may cause in damage machines.

Even the items listed in "Attention" and "Notice" may have serious consequences depending on the situation.

### 1.1 Precautions for Operating Environment

Do not use this product in the places listed below. Failure to follow the instruction may cause malfunctions and a life decrease of product.

- Places the Ambient temperature exceeds the range -5 to +55°C.
- Places the average daily temperature exceeds +35°C.
- Places the Relative humidity exceeds the range 30 to 85% or places with dewfall.
- Dirt, corrosive gas(Note), saline and oil smoke exist.  
(Note) Gas that attacks metals and plastics (Such as sulfur dioxide, ammonia, hydrogen sulfide)
- Vibration and impact exceed the specifications.
- Places exposed to rain or water drop.
- Places exposed to direct sunlight
- Place exposed to strong induction noises, electric fields, magnetic fields.
- Places exposed to large amounts of external noise.
- Altitude exceeds 2000m.
- Places metal fragments or conductive substance are flying.

### 1.2 Precautions for Operating Conditions

Over voltage category of measuring circuit in this unit is CAT III(Note), and that of auxiliary power circuit is overvoltage category III(Note).

This unit is premised on being used in pollution degree 2(Note) environment. When used in higher pollution degree, protect this unit from pollution on another device side to be incorporated.

For the precautions for the compliance of the system incorporating this unit with the EMC Directives, refer to the User's Manual.

(Note) For the definition of the pollution degree and the over voltage category, refer to EN 61010-1.

CAUTION	<ul style="list-style-type: none"> <li>·Any person who is involved should be fully competent to do this work.</li> <li>·This unit is the open type device, which are designed to be housed within another device for prevention of electric shock. House this unit within the device such as the control panel before use. (Indoor use)</li> </ul>
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### 1.3 Installation and Wiring Precautions

- Work under the electric outage condition. Do not do hot-line work. Failure to do so may cause electric shock, a fire, a failure etc.
- Check the Wiring Diagram carefully before making any connections. Failure to do so may cause electric shock, a fire, a failure etc.
- After wiring, confirm whether there is a wiring forgetting or a faulty wiring. Failure to do so may cause electric shock, a fire, a failure etc.
- Use only wires and solderless terminals that conform to the applicable requirements. Use of inappropriate wires or solderless terminals may cause electric shock, a fire, a malfunction etc.
- Do not use spade solderless terminals. If the screws become loose, they may fall off, and cause electric shock, a fire, a failure etc.
- After tightening the screws, be sure to check all the screws tightened. Loose screw may cause electric shock, a fire, a failure etc.
- Be sure to ground the Frame GND terminal to use. The ground resistance is 100Ω or less.
- This product make sure to use it in combination with the dedicated current sensor.
- The dedicated current sensor (EMU-CT\*\*\*, EMU-CT\*\*\*-A) is used only for low voltage circuit. If it connects to a high voltage circuit by mistake, it may cause a burnout of the device and a fire. When measuring a high-voltage circuit, connect the EMU2-CT5 to the secondary side (5A) of the current transformer.
- Rating voltage for each phase wire system in the voltage circuit is as follows.

EMU4-BD1A-MB

Phase wire type	Connection type	Rating voltage	Figure No.
3-phase 3-wire	Delta	Max 220 V AC (L-L)	Figure 2
	Star	Max 220 V AC (L-L)	Figure 3
1-phase 3-wire	—	Max 110 V AC (L-N)/ 220 V AC (L-L)	Figure 4
1-phase 2-wire(*1)	Delta	Max 220 V AC (L-L)	Figure 5
	Star	Max 220 V AC (L-L)	Figure 6

EMU4-HD1A-MB

Phase wire type	Connection type	Rating voltage	Figure No.
3-phase 4-wire	Star	Max 277 V AC (L-N)/ 480 V AC (L-L)	Figure 1
3-phase 3-wire	Delta	Max 220 V AC (L-L)	Figure 2
	Star	Max 440 V AC (L-L)	Figure 3
1-phase 3-wire	—	Max 220 V AC (L-N)/ 440 V AC (L-L)	Figure 4
1-phase 2-wire(*2)	Delta	Max 220 V AC (L-L)	Figure 5
	Star	Max 440 V AC (L-L)	Figure 6

\*1: The maximum rating of the circuit drawn from 3-phase 3-wire system and 1-phase 3-wire system, and transformer circuit of 1-phase 2-wire system is "AC220V (L-L)".

\*2: The maximum rating of the circuit drawn from delta connection of 3-phase 3-wire system and transformer circuit of 1-phase 2-wire system is "AC220V (L-L)".  
The maximum rating of the circuit drawn from 3-phase 4-wire system, 3-phase 3-wire star connection system, and single-phase 3-wire system is "AC440V (L-L)".

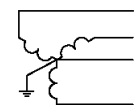


Figure1. 3-PHASE  
4-WIRE(STAR)

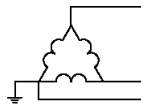


Figure2. 3-PHASE  
3-WIRE(DELTA)

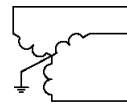


Figure3. 3-PHASE  
3-WIRE(STAR)

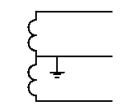


Figure4. 1-PHASE  
3-WIRE

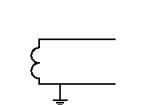


Figure5. 1-PHASE  
2-WIRE(DELTA)

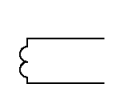


Figure6. 1-PHASE  
2-WIRE(STAR)

WARNING

## 1.4 Matters concerning the precaution before use

⚠ CAUTION	·Make sure that the circuit to be connected to this equipment is within the Rating .If used outside the rating, it may cause electric shock, a fire, a failure etc.
NOTICE	·The setting of this unit is necessary before use it. If the setting is wrong, it will not work properly. ·For insulation resistance test and withstand voltage test, test with the specified terminals. And do not exceed the specified voltage range.

## 1.5 Precautions for Use

⚠ DANGER	·Do not disassemble or modify this unit. It may cause electric shock, a fire, a failure, a malfunction etc. ·Do not touch the terminals or other energized part. It may cause electric shock, a fire, a failure, a malfunction etc. ·If this equipment is used in the usage not specified in this instruction manual, the protective functions may be impaired. Use the device according to the usage described in this instruction manual for this unit.
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## 1.6 Precautions for case of failure or abnormality

If you have any questions or the product is broken down, contact our sales representative near you. (For details, refer to "Catalog" or "User's Manual").

⚠ WARNING	·If an abnormal sound, bad-smelling smoke, fever break out from this unit, switch it off promptly and do not use it.
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## 1.7 Maintenance Precautions

For details on maintenance, see "5 Maintenance" in the instruction manual.

⚠ WARNING	·Work under the electric outage condition. Do not do hot-line work. Failure to do so may cause electric shock, a fire, a failure etc.
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## 1.8 Storage Precautions

Please refer to "4.Storage" about storage. For long-time storage, avoid the following places.

·Places the Ambient temperature exceeds the range -10 to +60°C.	·Vibration and impact exceed the specifications.
·Places the average daily temperature exceeds +35°C.	·Places exposed to rain or water drop.
·Places the Relative humidity exceeds the range 30 to 85% or places with dewfall.	·Places exposed to direct sunlight
·Dirt, corrosive gas(Note), saline and oil smoke exist.	·Place exposed to strong induction noises, electric fields, magnetic fields.
(Note)Gas that attacks metals and plastics(Such as sulfur dioxide, ammonia, hydrogen sulfide)	·Places metal fragments or conductive substance are flying.

⚠ WARNING	·Work under the electric outage condition. Do not do hot-line work. Failure to do so may cause electric shock, a fire, a failure etc.
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## 1.9 Disposal Precautions

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

## 2. Package names and numbers

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

Energy Measuring unit x1                      User's Manual (Digest) x1

## 3. Care

Care as follows.

(1)If the surface of this equipment is dirty with dust, wipe it with a dry cloth each time.

(2)Do not let a chemical cloth remain on the surface for an extended period of time nor wipe the surface with thinner or benzene. Cause deformation.

## 4. Storage

Storage as follows.

·Removing the unit (1) Turn off the power to the circuit to which is connected. (2) Disconnect any cables that are connected. (3) Remove the unit in the reverse order of the mounting Please refer to " The instruction manual 5.Attaching and removing" for the maintenance details.	·Storage Turn off the power, disconnect the wires, remove the unit from the panel, and store it in a polyethylene bag.
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## 5. Maintenance

Maintenance as follows.

Daily maintenance	Periodical maintenance
(1) No damage on this unit (2) No abnormal heat (3) No abnormal noise or smell (4) No interfere with the reading of the displayed values by dust and dirt or LCD failure (5) No dust or dirt adhering to the current-carrying part.	Please maintenance every year the listed below. (1) No damage on this unit (2) No cable disconnection (3) No looseness with wire connection

## 6. Contained harmful substances

(1)电器电子产品有害物质限制使用标识



根据《电器电子产品有害物质限制使用管理办法》，该标记适用于在中国销售的电器电子产品，其中的数字为产品的环保使用期限。只要遵守本产品在安全和使用方面的注意事项，从生产日期算起的环保使用期限内不会造成环境污染或对人体、财产产生深刻的影响。  
注)产品正常使用废弃后，应按照国家 and 地方的法律法规完成该电器电子产品的回收和再利用。

(2)产品中有害物质的名称及含量

本产品中所含有的 6 种有害物质的名称、含有信息及含有部件如下表所示。

产品中有害物质的名称及含量

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

本表格依据 SJ/T11364 的规定编制。

○：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

×：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572 规定的限量要求。

且虽然目前业界没有成熟的替代方案，但是符合欧盟 RoHS 指令要求。

## 7. Warranty

Please refer to "User's Manual" about warranty.

## 8. Trademarks of other companies

·MODBUS is a trademark of Schneider Electric USA Inc.

Other company and product names herein are trademarks or registered trademarks of their respective owners.

In the text, trademark symbols such as "TM" and "®" may not be written.

## 9. Customer Service

### MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

Please refer to "Catalog" or "User's Manual" for more detail.