

# MODEL EMU2-CT5, EMU2-CT5-4W

## INSTRUCTION MANUAL

EMU2-CT5 / EMU2-CT5-4W is split current sensor for energy measuring unit.

Read this manual thoroughly before using the equipment for proper handling.

This manual should be retained for the future reference.

Be sure that the manual is delivered to the end users.

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

- (1) Split current sensor x1 (2) Instruction manual x1

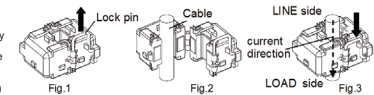
If you are considering using this unit for special purpose such as nuclear power plants, aerospace, medical care, or passenger vehicles, please refer to our sales representative.

## 2 Installation

### ●Installation

#### <Installation>

- Slide the lock pin to the direction indicated by the arrow. (See Fig.1)
- Pass the electric wire through the clamp (See Fig.2), and close the clamp.
- Push the lock pin to be locked while keeping the clamp fully closed with fingers. (See Fig.3)



CAUTION !  
LINE side Power Supply side

#### <Remarks>

- The lock pin is a metallic part. Touching a live part may cause electric shocks, unit failures or fires.
- The core may be damaged by excessive stress. The damaged core directly affects the unit performance. Take care not to put excessive stress on the core.
- Even minute particles between cores on the surface directly affect the performance (measurement values can be lower). Check the surface carefully.
- Do not put excessive stress on the open clamp. Doing so may damage the clamp.
- Make sure the directions of LINE and LOAD sides are correct. When tightening, if the clamp is set in a wrong direction, measuring cannot be performed properly. Use the tying bands with a width of 2.6 mm or less used to fix the tightening wire and the main body.
- When fitting, pass the cable tie through one of the holes for fixing the current sensor and fix the cable. Be careful not to over-tighten.

- There are a total of four holes on each side of the current sensor to hold the current sensor in place.
- Make sure the clamping phase is correct. (L1, L2 and L3) If the clamp is set in a wrong phase, measuring cannot be performed properly.

#### ●Connection

- For the details, see the manual for the combination measurement unit.
- See the manual, please wire the polarity (Power supply side, Load side), 1 side (R phase), 2 side (S phase), 3 side (T phase) and the polarity (k, l) of the secondary side of the CT to the k, l terminal of the measuring unit.

## 3 Specification

Model		EMU2-CT5, EMU2-CT5-4W
Maximum voltage (voltage to ground/line voltage)*		150V/280V AC~
Rated primary current		5A AC
Frequency		45 to 65Hz
Ratio error		±1% (5% to 100% of rating, RL ≤ 10Ω)
Phase displacement		±0.9 crad (5% to 100% of rating, RL ≤ 10Ω)
Measurement (installation) category		CAT III
Pollution degree		2
Applicable wire size (reference)	Single wire	3mm <sup>2</sup> or less
	double wire	5 mm <sup>2</sup> or less
Working temperature range		-5°C to +55°C (daily mean temperature: +35°C or less)
Working humidity range		5% to 95%RH (no condensation)
CE marking and UKCA marking conformity standard		EN61010-2-032
EMU2-CT5	UL/UL-L conformity combination unit Unité à combinaison conformée au UL/UL-L standard	This sensor confirm UL/UL-L in a condition to make combination use with Mitsubishi MEL SEC-C-series programmable controllers Energy Measuring Unit (Models QE81WH, QE81WH4W, QE84WH and QE83WH4W). When EMU2-CT5 is combined with EcoMonitorLight (Model: EMU4-BD1+MB, EMU4-HD1+MB), EcoMonitorPlus (Model: EMU4-BM1+MB, EMU4-HM1+MB, EMU4-A2, EMU4-A2), and Mitsubishi MEL SEC IC-R-series programmable controllers Energy Measuring Unit (Model: RE81WH), it is necessary to confirm compatibility with an end product. Ce détecteur est conforme au UL/UL-L standard sous condition d'être utilisé et combiné avec série MEL SEC-C de Mitsubishi appareil de contrôle et programmable, Unité d'Énergie Mesurant (Modèle: QE81WH, QE81WH4W, QE84WH et QE83WH4W). Lorsque l'EMU2-CT5 est combiné avec EcoMonitorLight (Modèle: EMU4-BD1+MB, EMU4-HD1+MB) et EcoMonitorPlus (Modèle: EMU4-BM1+MB, EMU4-HM1+MB, EMU4-A2, EMU4-A2) et EcoMonitorPlus (Modèle: RE81WH), il est nécessaire de confirmer la compatibilité avec le produit final.
EMU2-CT5-4W	UL/UL-L conformity combination unit Unité à combinaison conformée au UL/UL-L standard	This sensor confirm UL/UL-L in a condition to make combination use with Mitsubishi MEL SEC-C-series programmable controllers Energy Measuring Unit (Models QE81WH4W, QE83WH4W) and EcoMonitorPlus (Model: EMU4-HD1+MB) and EcoMonitorPlus (Model: EMU4-HM1+MB, EMU4-A2, EMU4-A2). It is necessary to confirm compatibility with an end product. Ce détecteur est conforme au UL/UL-L standard sous condition d'être utilisé et combiné avec série MEL SEC-C de Mitsubishi appareil de contrôle et programmable, Unité d'Énergie Mesurant (Modèle: QE81WH4W, QE83WH4W). Lorsque l'EMU2-CT5-4W est combiné avec EcoMonitorLight (Modèle: EMU4-HD1+MB) et EcoMonitorPlus (Modèle: EMU4-HM1+MB, EMU4-A2, EMU4-A2) il est nécessaire de confirmer la compatibilité avec le produit final.

\*Please check the maximum voltage for the combination measurement unit.

## 1 Safety Precautions

### 1.1 Precautions concerning working environment and conditions

- Do not use the unit in any of the following places. Doing so may cause malfunctions or a reduction in service life.
  - Places where the ambient temperature exceeds the working temperature range (-5°C to +55°C).
  - Places where the humidity exceeds the humidity range (5% to 95%RH) or where condensation occurs.
  - Places with a lot of dust, corrosive gas, salt or oily smoke.
  - Places where metal pieces may be exposed to rain or drops of water.
  - Places where the unit pieces or inductive substances are laying around.
- Places where the daily average temperature exceeds +35°C.
- Places with a lot of vibration or impacts.
- Places exposed to direct sunlight.
- Places where the out of the cabinet.
- Places with strong electromagnetic field or noise.
- Place where the altitude exceeds 2000m.

### 1.2 Precautions concerning preparations before using the equipment

- Use the unit in the specified usage environment and conditions.

### 1.3 Precautions concerning installation and connection

Make sure to use the module by following cautions of this section.



- Perform installation, disassembly, the wiring work after intercepting a power supply by all means. There might be the damage of an electric shock or the product. (⚠)
- Do not install around non-insulated dangerous electric shock conductors that can cause electric shock, electric burn or arc flash. (⚡)



- <Precautions concerning installation and connection>
  - Any person who is involved in the installation and the wiring of this Programmable Controller should be fully competent to do the work.
  - Use an electric wire of the size of penetrating this current sensor for a primary side cable, do not use a non-insulation electric wire or a metal for a primary cable.
  - When threading and wiring, take utmost care that cuttings and wire pieces do not enter the equipment.
  - Connect the wires carefully, checking the wiring diagram. Incorrect wiring can cause unit failures, fires, and electric shocks.
  - Perform wiring work with current off and do not perform live wire operations. Doing so can cause electric shocks, unit failures, and fires.
  - Confirm that a connector is connected surely. The lack of clamping causes malfunction of the machinery, a fire, the electric shock.
  - Read the manual of measuring units which is used with this current sensor, and is used well, and follow it.
  - Use this current sensor in cabinet certainly.
- <To avoid getting shock>
  - As for the panel, it be assumed that it was given the following matters.
    - a) It is necessary to attach a key to the cabinet.
    - b) The structure that the power supply is intercepted automatically is necessary when opening a cabinet.
  - Degrees of protection (IPcode) needs to higher than IP2X level.
- <Precautions concerning usage>
  - Dust or rust on the split part can degrade the performance of the current transformer. Wipe the dirt from the surface with soft dry cloth.
  - Use the unit with in the rated range stated here. Using the unit out of the rated range may cause not only malfunctions or unit failures, but also fires or burnout.
  - The secondary side of the current sensor has a built-in protective circuit against opening of the secondary terminal. No problem occurs by opening the terminal during wiring work. However, for safety, do not continuously apply current while the terminal is open.

### 1.4 Precautions concerning maintenance



- Protect the unit from a power failure. Failure to do so can cause unit failures, fires, or electric shocks.
- Wipe off the surface dirt with tender lint cloth. I let chemical cloths touch it for a long time, and do not wipe it with benzene or thinner.

### 1.5 Precautions concerning inspection



- Perform the check in the state that does not turn on electricity by all means. Check out the following.
  - a) Does not this product have the damage? b) Are not there an abnormal sound, bad-smelling fever? c) Are not there installation, the slack of the screw?

### 1.6 Precautions concerning storage

- When storing the unit, turn off power, disconnect cables and wires, and put them in vinyl bags or the like.
- When storing the unit for a long time, avoid keeping it in the places shown below.
  - Places where the ambient temperature is out of the range from -10°C to +60°C.
  - Places where the humidity exceeds the humidity range (5% to 95%RH) or where condensation occurs.
  - Places with a lot of dust, corrosive gas, salt or oily smoke.
  - Places where metal particles or inductive substances are laying around.
  - Places where the daily average temperature exceeds +35°C.
  - Places with a lot of vibration or impact.
  - Places where metallic particles or inductive substances are laying around.

### 1.7 Precautions concerning disposal

Dispose this product appropriately in accordance with the national or community rule. (Refer to 3.1 WEEE Directive.)



- <Usage as the CE marking and UKCA marking conformity article>
  - Use in the environment with the pollution degree 2 or less.
  - Install the current sensor to the secondary of the circuit breaker.
  - Install the current sensor in the cabinet.
  - Use the PVC insulation electric wire. (less than heat-resistant temperature +70°C, the rating voltage 300V class.)

## 4 Contained harmful substances

(1) 电制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》，该标识适用于在中国销售的电制电子产品，其中的数字为产品的环保使用期限，只要数字产品在安全和使用的方面的注意事项，从生产日期起环保使用期限内不会造成环境污染对人体或财产产生深刻的影响。  
注：产品正常使用期满后，按国家地方的法律法规完成电制电子产品回收和再利用。  
本产品中所有的有害物质名称及含量信息表及含有附件列表所示。

部件名称	产品中有害物质的名称及含量					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
核心	○	○	○	○	○	○
内部焊点	×	○	○	○	○	○
插子	○	○	○	○	○	○
螺丝	○	○	○	○	○	○
螺母	○	○	○	○	○	○
连接皮	○	○	○	○	○	○

本产品依据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  
GB/T 26572 规定的限量要求。  
且虽然RoHS指令并没有强制的替代方案，但是符合欧盟RoHS指令中要求。

## 5 Customer Service