Panasonic® Installation instructions

KW2M Eco-POWER METER Expansion Unit

Read these instructions carefully for proper installation.
After installation, keep it in a safe place for reference when required.

For User's manual — You can download the user's manual from our website.
http://panasonic.net/id/pidsx/global

1. Before use

●Refer to Installation instructions of Main Unit.

■For your safety, make sure to satisfy the following conditions.
- Overvoltage category:Ⅲ, Pollution degree 2
- Indoor use
- An ambient temperature of -10 to 50℃
- An ambient non-condensing humidity of 30 to 85%RH (at 20℃)
- Altitude of 2000m or less

■Do not use in the following environments.
- Where it will be exposed to direct sunlight
- Where inflammable or corrosive gas might be produced
- Where it will be exposed to excessive airborne dust or metal particles
- Where it will be exposed to water, oil or chemicals
- Where direct vibration or shock might be transmitted
- Where the place near high-voltage cable, power line or machineries which occurs the big switching surge.

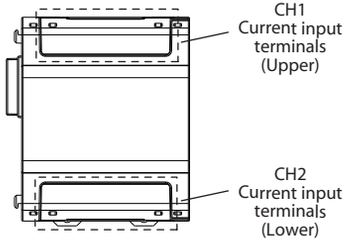
■Pursuant to the directive 768/2008/EC
Manufacturer : Panasonic Industrial Devices SUNX Co.,Ltd.
2431-1 Ushiyama-cho, Kasugai-shi, Aichi, 486-0901, Japan
Importer : Panasonic Electric Works Europe AG
Robert-Koch-Strasse 100 85521 Ottobrunn, Germany
Contact for CE: Panasonic Marketing Europe GmbH Panasonic Testing Center
Winsbergring 15, 22525 Hamburg, Germany

■This product has been developed / produced for industrial use only.

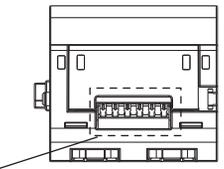
2. Parts Name

●Power

◆Front

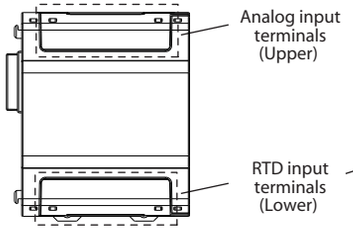


◆Side

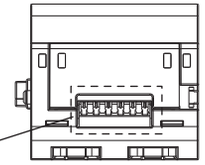


●Multi analog input

◆Front

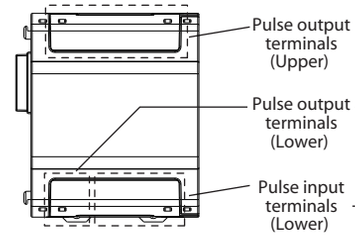


◆Side

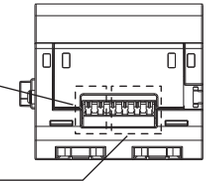


●Digital I/O

◆Front



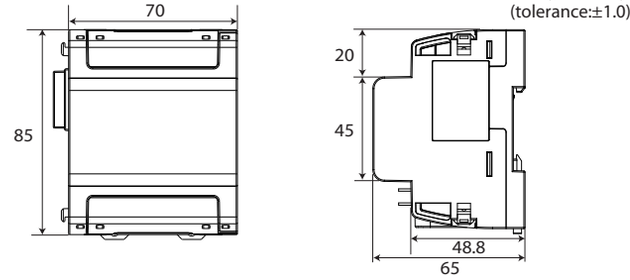
◆Side



3. How to Mount

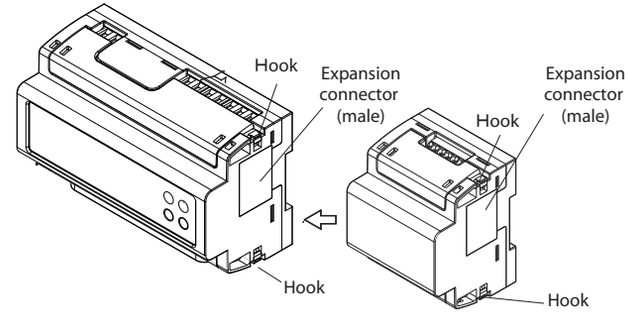
●Dimensions

(unit: mm)
(tolerance:±1.0)



●How to connect the expansion unit
- Turn off the power when connecting the expansion units.
- Peel off connector label on the side before connecting.
  (Do not peel off connector labels when not connecting.)
- It expands by connecting each male connector to female connector on the each side.
- After connecting, push the hooks into the unit to fix the expansion units.
- Up to 3 expansion units can be connected per one main unit.

Caution) Communication will be stopped or the measurement data will be lost when the units are removed or connected with the power on.



4. Wiring

- Be sure to wire correctly according to the wiring diagrams.
- Never open the secondary circuit of CT under applying current to load, it will cause electric shock or breakdown CT.

●Terminal arrangement

◆Power

Current input terminals (Upper)

Terminal number	1	2	3	4	5	6
Functions	k	ℓ	k	ℓ	k	ℓ
	CH1(CT1)		CH1(CT2)		CH1(CT3)	
	Measured current(CH1)					

*Lower terminals are used for CH2.

◆Multi analog input

Analog input terminals (Upper)

Terminal number	1	2	3	4	5	6
Functions	V/I	COM	V/I	COM	V/I	COM
	CH1		CH2		CH3	
	Voltage / Current input					

RTD input terminals (Lower)

Terminal number	1	2	3	4	5	6
Functions	A	B	b	A	B	b
	CH1			CH2		
	RTD					

◆Digital I/O

Pulse output terminals (Upper)

Terminal number	1	2	3	4	5	6
Functions	+	−	+	−	+	−
	Pulse output (OUT1)		Pulse output (OUT2)		Pulse output (OUT3)	

Pulse output / input terminals (Lower)

Terminal number	1	2	3	4	5	6
Functions	+	−	+	−	+	−
	Pulse output (OUT4)		Pulse input (IN1)		Pulse input (IN2)	

●Applicable wire (Crimp-type terminal is recommended.)
- Stripping length: 7 to 8mm
- Push IN type
  Sectional area: single /stranded wire 0.13 to 1.5mm² (AWG24 to 16)
  *Use applicable wire according to the measured current.

●Applicable ferrules (by Weidmuller)

Wire size	0.75mm²	1.25mm²
Name	H0.75/14D GR	H1.5/14D SW
Part number	9019040000	9019120000

5. How to attach Current Transformer

- Use CT that the secondary side current is 5A or 1A.
- One CT is needed when measuring 1-circuit of 1P2W.
  Two CTs are needed when measuring 1P3W/3P3W (4 CTs for 2-circuit).
  Three CTs are needed when measuring 3P4W (6 CTs for 2-circuit).
  Using all CTs for one unit should be the same.
- Use the applicable wire, or it might cause a breakdown, burnout or electric shock.
- When connecting CT, connect the secondary side to the terminal of the main unit first, and after that wire the primary side to a load electric wire. Incorrect order might cause an electric shock or break CT.
- The CT has polarity. Wire correctly according to the K and L marks. Wrong direction can' t measure correctly.
- If there is some distortion by harmonic or waveform, it may not measure correctly. Please check with the actual system before adopts it.
- Separate the wiring (strong electric part) of the measured voltage input terminal (operating power supply terminal) from the CT cable. It may not satisfy the accuracy due to noise.

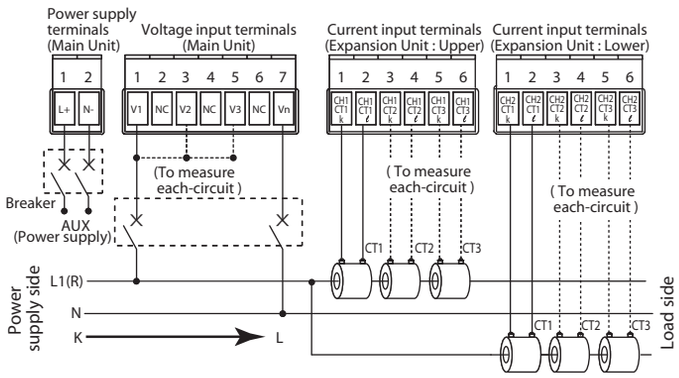
6. Wiring Diagram

- Recommended breaker: 3 -15A (IEC approved or UL listed)
- Recommended fuse: Time-lag fuse Rated current 2A (IEC approved or UL listed)

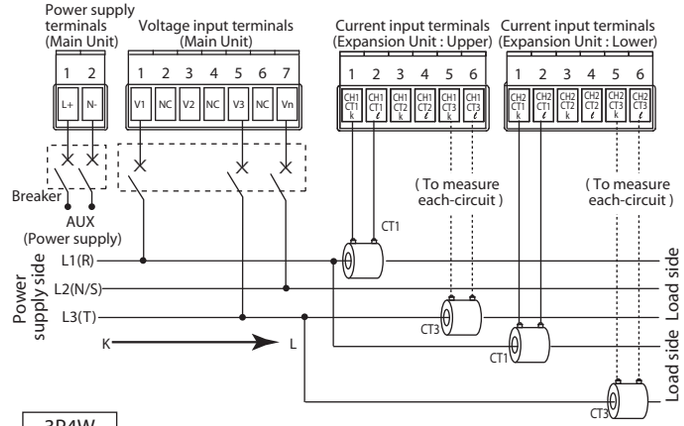
⚠ Vn terminal should be connected to N-phase which is grounded.

●Power measurement

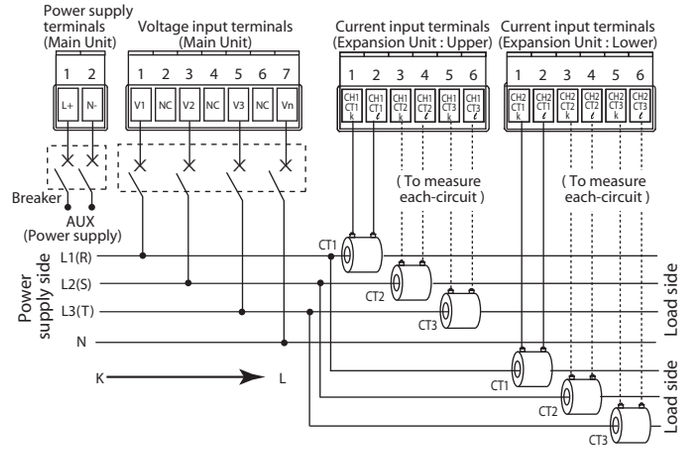
1P2W



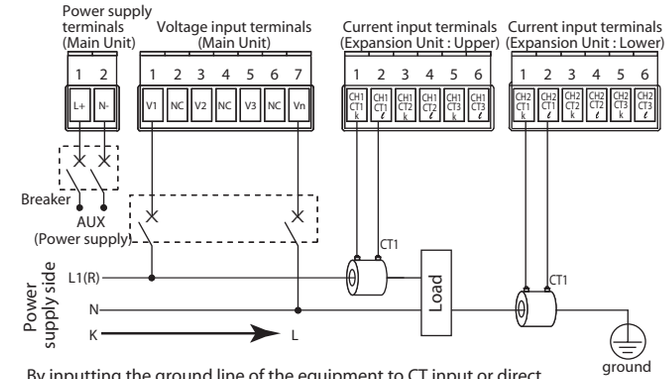
1P3W／3P3W



3P4W



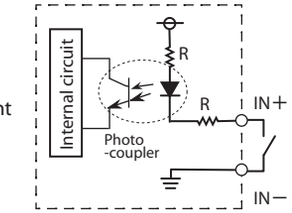
●Leak current measurement (Only Expansion unit CH2)



By inputting the ground line of the equipment to CT input or direct current input, it is possible to measure the leakage current of the ground, and it can be used as equipment maintenance.

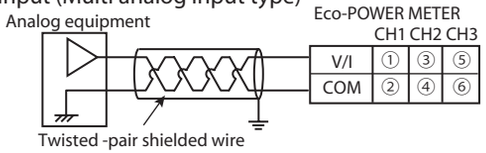
7. For Input Connection

◆Pulse input



- Contact input
  Use highly reliable metal plated contacts. Since the contact' s bounce time leads directly to error in the count value, use contacts with as short a bounce time as possible. In general, select 30Hz for max. counting speed.
- Non-contact input (Transistor input)
  Connect with an open collector.
  Use the transistor with the following specifications.
  V_{CEO}=20V min. I_C=20mA min. I_{CBO}=6μA max.
  Use transistors with a residual voltage of less than 3V when the transistor is ON.
  *Short-circuit impedance should be less than 1kΩ.
  Open-circuit impedance should be more than 100kΩ.
  (When the impedance is 0 Ω, drain current is approx. 10mA.)
- Input wiring
  Please wire up as short as possible by using a shielded wire or a metallic electric wire tube individually.

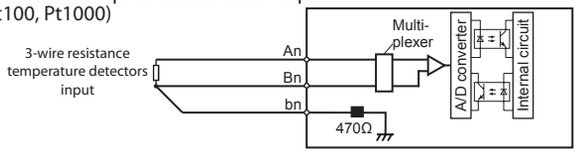
◆Analog input (Multi analog input type)



- Use double-core twisted-pair shielded wires. It is recommended to ground them. However, depending on the conditions of the external noise, it may be better not to ground the shielding.
- Do not have the analog input wiring close to AC wires, power wires, or load.
- Digital conversion value is not stable when it is not wired.

◆RTD input (Multi analog input type)

- Resistance temperature detectors input (Pt100, Pt1000)



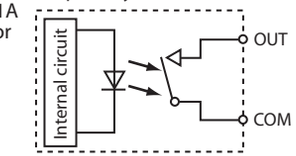
*Notes on resistance temperature detectors input signal wiring

- For copper wires for wiring, use thick wires having insulation performance of IEC60227-3 or equivalent to prevent a large increase in the electric resistance. (It is recommended to use shielded wires and to ground the shielding.)
- Do not have the resistance temperature detectors input wiring close to AC wires, power wires, or load.

8. For Output Connection

◆PhotoMOS relay output

- It adopts PhotoMOS relay output, there is no polarity.
  Output: Rated capacity 30V AC/DC,0.1A
- Do not connect devices that voltage or load exceeds the rated capacity (30V AC/DC,0.1A)
- Please wire less than 100m for output. If it is long, it may not work correctly due to floating capacitance.



Panasonic Industrial Devices SUNX Co., Ltd.
http://panasonic.net/id/pidsx/global

Overseas Sales Division (Head Office)
2431-1 Ushiyama-cho, Kasugai-shi, Aichi, 486-0901, Japan Phone: +81-568-33-7861 FAX: +81-568-33-8591

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