Panasonic[®]

Installation instructions

KW9M Eco-POWER METER Advanced Type

http://panasonic.net/id/pidsx/global

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

You can download the user's manual from our website.

1. Before use

- Eco-POWER METER is designed chiefly to manage saving energy. It is neither intended nor can it be legally used for billing.
- Eco-POWER METER is designed to be used installing in a control panel.
- Please use Eco-POWER METER according to the specification described. Otherwise, it may malfunction or cause fire and an electric shock.
- •Connect Eco-POWER METER to the power supply in compliance with the rating.
- Refer to the wiring diagram to ensure proper wiring for the power supply, input and output.
- •Use an electric wire applicable to the rated current.
- •Do not perform wiring or installation with a live line. It may also lead to circuit burnout or fire by way of the secondary CT side opening.
- Do not connect voltage input, current input, pulse input wires parallel to high-voltage or power cables and avoid using the same conduit. Use shielded wires as short as possible.
- Do not turn on the power supply or input until all wiring is completed.
- Do not use at secondary side circuit of inverter. It might cause exothermic heat or damage.
- If additional noise effects power supply line, voltage input line, current input line, incorrect measurements may result.
- •Installation and wiring must be performed by expert personnel for electrical work or electric piping.
- Please wipe dirt of the main unit with soft cloth etc. When thinner is used, the unit might deform or be discolored.
- Do not add an excess power to the display. It might break the inner liquid
- For your safety, make sure to satisfy the following conditions.
- Overvoltage category: II, Pollution degree 2
- Indoor use
- An ambient temperature of -25 to 55°C
- An ambient non-condensing humidity of 30 to 85%RH (at 20°C)
- · Altitude of 2000m or less

5. Wiring Diagram

1P2W

1P3W/3P3W

Recommended breaker: 3 -15A

Terminal block A (upper)

Terminal block A (upper)

■ 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

· Recommended fuse: Time-lag fuse Rated current 2A

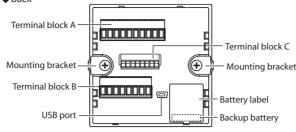
· Where the place near high-voltage cable, power line or machineries which occurs the big switching serge.

Terminal block B (lower)

Terminal block B (lower)

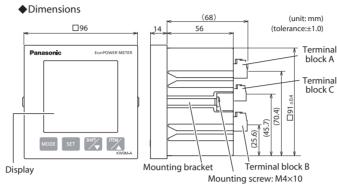
1 2 3 4 5 6 7 8

2. Parts Name Load ratio indication Alarm indication **♦**Front Eco-POWER METER 88 88 Sub-indication -88888) Log indication -88888; TX/RX mark -88888° Pulse output Pulse input ∑ 8888888 J Measured value **◆**Back Terminal block A



Please remove and throw away the battery according to the instruction of your area when throwing the product.

3. How to Mount



◆Panel cut-out 92 ±0.

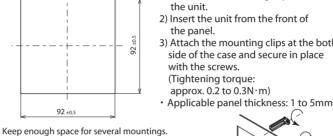
1) Remove the mounting clips from

the panel.

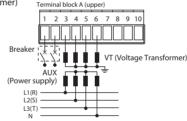
3) Attach the mounting clips at the both side of the case and secure in place with the screws. (Tightening torque:

recommended space: 130mm the left, right, top and bottom from center of the unit





When using VT(voltage transformer)

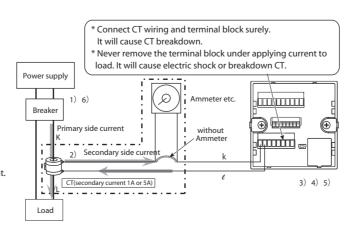


6. How to attach Current Transformer

- Use CT that the secondary side current is 5A or 1A.
- · One CT is needed for 1 unit when measuring 1P2W (2 CTs for 2-circuit, 3CTs for 3-circuit). Two CTs are needed when measuring 1P3W/3P3W. Three CTs are needed when measuring 3P4W (4 CTs to measure N-phase). Using all CTs for one unit should be the same
- Use the applicable wire, or it might cause a breakdown, burnout or
- 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.

♦How to connect CT

- (1) Power off the measured devices.
- (2) Install applicable CT.
- (3) Remove terminal block of KW9M. (4) Connect CT to the terminal block.
- (5) Insert terminal block to KW9M surely.
- (6) After confirm all wiring correct, turn on the power of the load and KW9M.



4. Wiring

- Be sure to wire correctly according to the wiring diagrams.
- Please connect breakers or fuses to the power supply input part for safety reasons and to protect the device.

This product has no built-in power switch, circuit breaker or fuse. Therefore it is necessary to install them in the circuit near this unit.

- Do not turn on the power supply or input until all wiring is completed.
- · Never open the secondary circuit of CT under applying current to load, never remove the terminal block under applying current to load, it will cause electric shock or breakdown CT.

◆Terminal arrangement

Terminal block A (upper) 10P

No.	1	2	3	4	5	6	7	8	9	10
	L+	N —	V1	V2	V3	Vn	NC	SG	A +	В —
Function	Al (Power		Mea	sured v	oltage i	nput	vacant		RS485	
Terminal block C (middle) 8P										

NO.	1	2	3	4	5	6	/	8
		COM1	OUT2	COM2	IN1+	IN1 —	IN2+	IN2-
Function	Outp	out 1	Output 2		Input 1		Input 2	

Terminal block B (lower) TOP									
No.	1	2	3	4	5	6	7	8	
Function	CT1 k	CT1 ℓ	CT2 k	CT2 ℓ	CT3 k	CT3	CTn k	CTn ℓ	
	Measured current input								

The input voltage to each terminal is as follows.

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Terminal	Phase and wire system	Terminal No.	Input voltage					
Power supply	Single-phase two-wire	1 - 2	85~264VAC [85~264V \cdot \cdot \] 100~300VDC [100~300V \cdot \cdo					
Measured voltage input	Single-phase two-wire	3 - 6						
	Single-phase three-wire	3 - 5 - 6	0~500VAC [0~500V ∼]					
	Three-phase three-wire	3 - 5 - 6	0~300VAC [0~300V 0]					
	Three-phase four-wire	3 - 4 - 5 - 6						

◆Applicable wire (Crimp-type terminal is recommended.) · Stripping length: 7 to 8mm

Power supply/Measured voltage/RS485 communication

Terminal block: A

Screw size: M2.5 Tightening torque: 0.4 to 0.5N·m

Sectional area

single /stranded wire 0.5 to 4mm² (AWG20 to12)

single/stranded wire 2pcs.×0.5 to 2mm² (AWG20 to 14) *Use shielded wire for RS485 communication.

 CT Input (Measured current) Output/Input Terminal block: B Terminal block: C Screw size: M2 Screw size: M2.5

Tightening torque: 0.2 to 0.25N·m Sectional area: single /stranded wire

0.5 to 1.5mm²(AWG20 to 16)

Tightening torque: 0.4 to 0.5N⋅m Sectional area: single /stranded wire

0.5 to 4mm²(AWG20 to12)

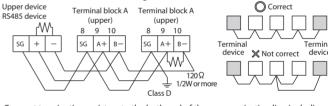
Applicable ferrules (by Weidmuller)

Wire size		0.75mm ²	1.25mm ²	2mm² *
For 1pc.	Name	H0.75/14D GR	H1.5/14D SW	H2.5/15D BL
	Part number	9019040000	9019120000	9019160000
For 2pcs. *	Name	H0.75/14D ZH GR	H1.5/16D ZH SW	
	Part number	9037410000	9037470000	

*Only for terminal block A and B. It cant be used for C.

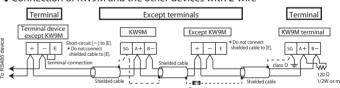
7. For RS485 Connection

◆RS485 communication wiring



Connect terminating resistors to the both end of the communication line including a upper device. Connect terminating resistors (120 $\Omega\,$ 1/2W or more) between [A+] and [B-] of Eco-POWER METER connected the end of RS485 line

◆Connection of KW9M and the other devices with 2-wire



8. 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 gen 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 2V when the transistor is ON *Short-circuit impedance should be less than $1k\Omega$

Open-circuit impedance should be more than $100k\Omega$.

Leak current in shorted is about 10mA.

Input wiring Please wire up as short as possible by using a shielded wire or a metallic electric wire tube individually.

9. For Output Connection

◆PhotoMOS relay output

- · PhotoMOS relay is mounted in this product, therefore it has no polarity.
- Wire up to 100m for output connection.

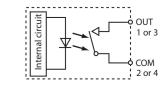
Output (rated capacity 30V AC/DC, 0.1A)

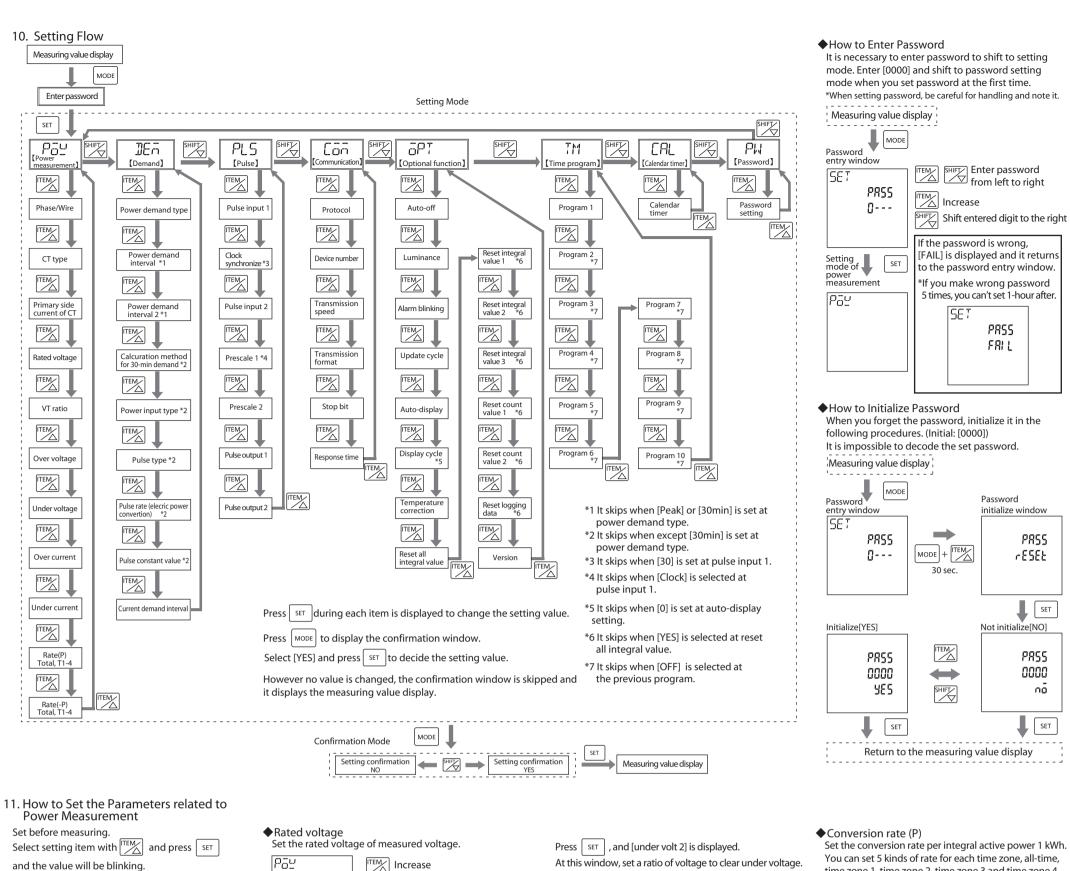
3P4W Terminal block A (upper) Terminal block B (lower) N-phase) L1(R) L2(S) CTn

CT1

CTn is not necessary for normal measurement Vn terminal should be connected to N-phase which is grounded. The input number 6 of terminal block A has to be connected to protective earth to ensure installation safety

Connect CTn to measure N-phase.



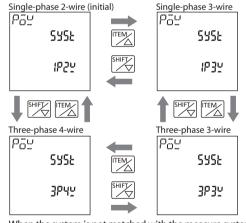


Set with and SHIFT

When you select [YES] with the confirmation window

and press | SET | , the setting values are decided. ◆Phase / Wire

Select measured phase and wire system.



it doesn't measure correctly

◆CT type

Select using CT type (secondary side current).

P54 გგა [6-5] [6-6 5

To use CT with secondary side current 5A: [5] (initial) To use CT with secondary side current 1A: [1]

Primary side current of CT

Set the primary side current of using CT. Enter the primary side current of CT that is set at CT type

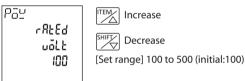
Under Voltage / Under Voltage 2



Increase

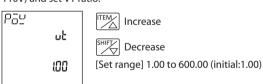
Decrease [Set range] 1 to 65535 (initial: 5)

Primary side current of using CT is 400A: [400]



◆VT ratio

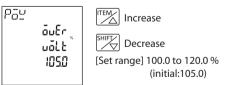
Select the voltage input method, input voltage directly or uses a voltage transformer (VT: secondary side rating 110V) and set VT ratio.



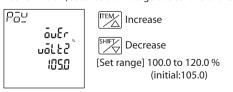
Input directly without VT: [1.00] Use VT : [1.01 to 600.00]

◆Over Voltage/ Over Voltage 2

Set the ratio for the rated voltage to judge to be over voltage at [over volt] window



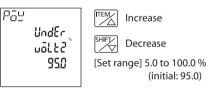
Press SET , and [over volt 2] is displayed. At this window, set a ratio of voltage to clear overt voltage.



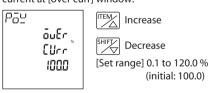
Set the ratio for the rated voltage to judge to be under voltage at [under volt] window



At this window, set a ratio of voltage to clear under voltage.



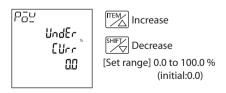
◆Over Current /Over Current 2 Set the ratio for the rated voltage to judge to be over current at [over curr] window.



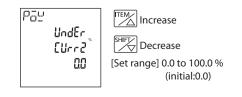
Press | SET |, and [under curr 2] is displayed. At this window, set a ratio of voltage to clear under voltage.



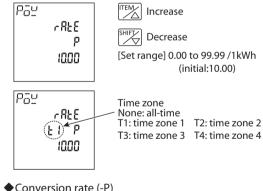
Under Current /Under Current 2 Set the ratio for the rated current to judge to be under current at [under curr] window.



Press | SET |, and [under curr 2] is displayed. At this window, set a ratio of current to clear under current.



time zone 1, time zone 2, time zone 3 and time zone 4. Rate for all-time is used when time program is not set. When you set one or more time programs, the rates for time zone 1, 2, 3 and 4 are used. Rate for all-time is not used.





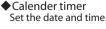
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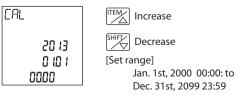
Set the conversion rate per integral export power (-P) 1 kWh.

Increase









In order to use the logging function, set the date and time.

• Refer to User's manual for the other settings.

(initial: 95.0)