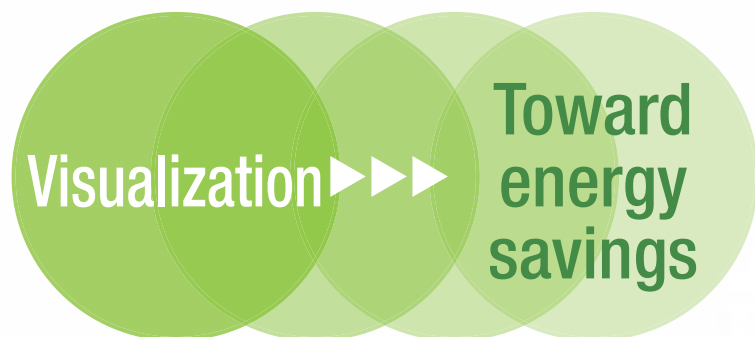


KW8M

Eco-POWER METER

1A/5A CT Input type



Makes us more ecological!



KW8M Eco- POWER METER
(1A/5A CT Input type)
AKW8115
Available from: May 2010

Direct input of secondary side 1A/5A CT

Direct input from "secondary side 1A/5A" type domestic and overseas CTs. Dedicated CTs are no longer needed, which lowers the cost of implementation.

High current circuit measurement

Even for high currents that exceed 400 A on the primary side, a wide range of currents up to 4,000 A can be measured using a CT with secondary side current 1A/5A.

400 V and Three-phase four-wire system

With 400 VAC Transformer-less input possible, it is compatible with three-phase, four-wire systems. Direct connection is possible to the dynamic power systems of large-scale factories and buildings.

Pulse measurement and Networking

Carried on from the standard KW8M specifications, features such as simultaneous pulse measurement, networking and the notification function are provided.



KW8M Eco-POWER METER 1A/5A CT Input type

Main unit

| Phase and wire system | Operating power supply | Measured voltage input | Measured current input | Terminal type | Model No. |
|--------------------------------|------------------------------|--|---|----------------------------------|-----------|
| Single-phase two-wire system | 100 to 240 V AC, 50/60 Hz | <ul style="list-style-type: none"> • 400 V AC • 100/200 V AC | Max. 4,000 A (Secondary side of CT: 1A or 5A) | Screw terminal (M3 "+" screw) | AKW8115 |
| Single-phase three-wire system | | | | | |
| Three-phase three-wire system | | | | | |
| Three-phase four-wire system | | | | | |

Options

| Product name | Model No. |
|----------------|-----------|
| Terminal cover | AKT8801 |
| Mounting frame | AKW8822 |

Measurement items

| Item | Unit | Data range (Display range) |
|------------------------------|----------------|---|
| Integrated electric power | Active power | kWh 0.00 to 9999999.9 |
| | Reactive power | kvarh 0.00 to 9999999.9 |
| | Apparent power | kVAh 0.00 to 9999999.9 |
| Instantaneous electric power | Active power | kW 0.00 to 999999.99 |
| | Reactive power | kvar -99999.99 to 0.00 to 999999.99 |
| | Apparent power | kVA 0.00 to 999999.99 |
| Current | A | 0.0 to 6000 |
| Voltage | V | 0.0 to 9999 |
| Electricity charge*1 | | 0.00 to 99999999 |
| Power factor | | 0.00 to 1.00 (Distinguishes if leading-phase (LEAD) or lagging-phase (LAG). (Within range of phase angle $\theta = -90$ to 0 to $+90^\circ$) |
| Frequency | Hz | 47.5 to 63.0 |
| Hour meter | ON time | h 0.0 to 99999.9 |
| | OFF time | |
| Pulse counter | | 0 to 99999999 (at prescale setting: 1.000)*2 |

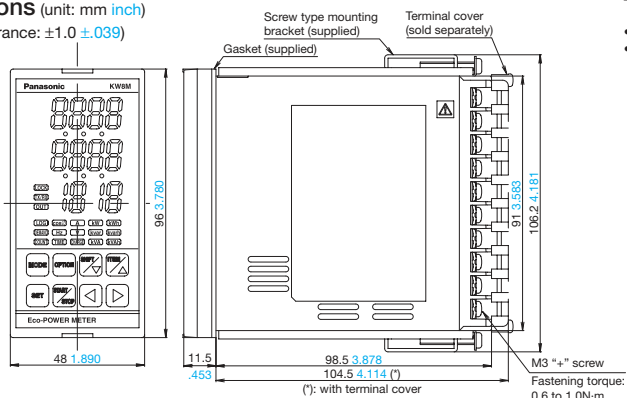
*1 Eco-POWER METER is designed chiefly for managing energy saving. It is not intended to be used for billing. Also, this instrument has not been certified by an institution designated under the measurement law; therefore, it cannot be used to provide proof of electric power usage.
*2 The number of display digits of the pulse counter changes in accordance with the pre-scale value that was set (max. 13 digits).

Accuracy (without error in CT and VT)

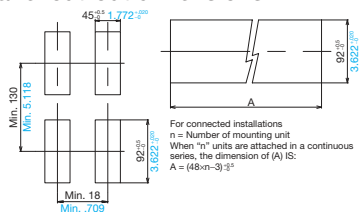
| Item | |
|---|---|
| Electric power (active/apparent) | |
| Integrated electric power (active/apparent) | Max. \pm (1.5% F.S. + 1digit) |
| Voltage | (at 20°C 68°F, rated input, rated frequency, power-factor: 1) |
| Current | *Accuracy coverage: 10 to 100% of rated current |
| Electricity charge | |
| Electric power (Reactive) | Max. \pm (3.0% F.S. + 1digit) |
| Integrated electric power (Reactive) | (at 20°C 68°F, rated input, rated frequency, power-factor: 1) |

Dimensions (unit: mm inch)

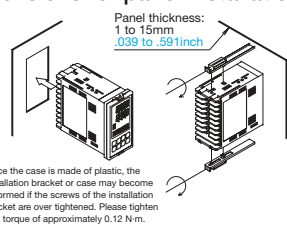
(General tolerance: $\pm 1.0 \pm 0.039$)



Panel cut-out dimensions



Dimensions for panel installations



Wiring diagrams

Be sure to wire according to the terminal arrangement or wiring diagrams.

Terminal arrangement

| Function | Terminal No. | Function | Back view |
|------------------------|--------------|----------|-----------|
| N.C. | ① ⑪ | P1 | ① ⑪ |
| Operating power supply | L ② | P0 | ② ⑫ |
| | N ③ | P2 | ③ ⑬ |
| | | | |
| Pulse input | + ④ | P3 | ④ ⑭ |
| | - ⑤ | CT1 (+) | ⑤ ⑮ |
| Pulse output | + ⑥ | CT1 (-) | ⑥ ⑯ |
| | - ⑦ | CT2 (+) | ⑦ ⑰ |
| RS485 | + ⑧ | CT2 (-) | ⑧ ⑱ |
| | - ⑨ | CT3 (+) | ⑨ ⑲ |
| | E ⑩ | CT3 (-) | ⑩ ⑳ |

The input voltage to each terminal is as follows.

| Terminal | Phase and wire system | Terminal | Input voltage |
|------------------------------|-------------------------|----------|--|
| Operating power supply input | Single-phase two-wire | ②—③ | 100 to 240VAC (100 to 240V-) (Line voltage) |
| Measured voltage input | Single-phase two-wire | ⑪—⑫ | 0 to 440VAC (0 to 440V-) (Line voltage) |
| | Single-phase three-wire | ⑪—⑫—⑬ | 0 to 220VAC (0 to 220V-: 3W) (Phase voltage) |
| | Three-phase three-wire | ⑪—⑫—⑬ | 0 to 440VAC (0 to 440V 3-) (Line voltage) |
| | Three-phase four-wire | ⑪—⑫—⑬—⑭ | 0 to 254VAC (0 to 254V 3N-) (Phase voltage) |

Recommended Current Transformer (CT)

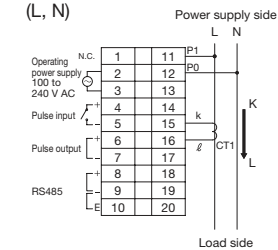
U.R.D. co., Ltd. Clamp-on type CTL Series

*Please check the maker's specifications before using.

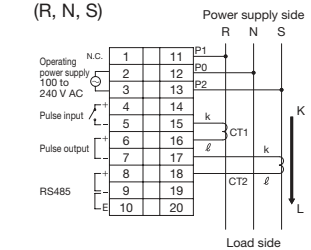
Terminal arrangement and Wiring diagrams

- In order to promote safety and protect the device, please connect a breaker at the voltage input.
- In low-voltage circuits, grounding on the secondary side is not required for the VT (voltage transformer) and CT (current transformer).

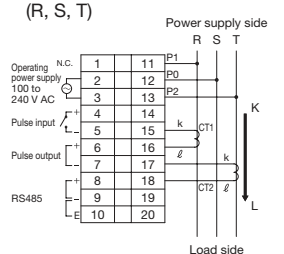
• Single-phase two-wire system (L, N)



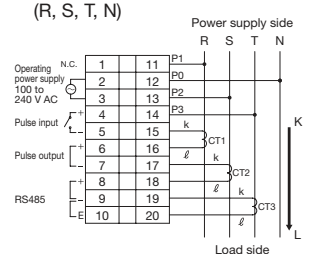
• Single-phase three-wire system (R, N, S)



• Three-phase three-wire system (R, S, T)



• Three-phase four-wire system (R, S, T, N)



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Panasonic

ideas for life

Lineup with new energy saving and environmentally friendly features!

KW8M

Eco-POWER METER (DIN48 96)



AKW8111/
AKW8111H
(High performance type)

AKW8115
(1A/5A CT input type)

FEATURES

- Direct measurement of 400 V power loads
- Three-phase four-wire system available
- Simultaneous power and pulse measurement
- Supports Networking (RS485 communications port comes standard)

- Only AKW8111H
- Log data can be saved to memory of main unit.
 - Built-in battery (for memory backup)

- Only AKW8115
- CT with secondary side output 1A/5A can be connected directly.
 - High current circuit measurement

Compliance with RoHS Directive

PRODUCT TYPES

■ Main unit

| Phase and wire system | Operating power supply | Measured voltage input | Measured current input | Log function | Model number | Terminal type |
|---|------------------------------|----------------------------------|--|---------------|--------------|------------------------------|
| Single-phase two-wire system Single-phase three-wire system Three-phase three-wire system Three-phase four-wire system | 100 to 240 V AC, 50/60 Hz | 100/200/400 V AC (selectable) | Dedicated CT type 5A/50A, 100A, 250A, 400A | Not available | AKW8111 | Screw terminal (M3 screw) |
| | | | | Available | AKW8111H | |
| | | | Secondary current of CT Max. 4000A (Secondary current: 1A or 5A) | Not available | AKW8115 | |

■ Dedicated current transformer (CT) (Dedicated CT cannot be used with the AKW8115.)

| Rated primary current | Model number |
|-----------------------|--------------|
| 5A/50A (common) | AKW4801C |
| 100A | AKW4802C |
| 250A | AKW4803C |
| 400A | AKW4804C |

For AKW8111 and AKW8111H, please order in accordance with the type of power distribution system you will be measuring. (Even if you will be using a secondary 5A CT, you will need an AKW4801C.)

■ Options

| Product name | Available model | | | Model number |
|------------------|-----------------|-----------|---------------|--------------|
| | AKW8111 | AKW8111H | AKW8115 | |
| Terminal cover | Available | Available | Available | AKT8801 |
| Spare battery*1 | Not available | Available | Not available | AFC8801 |
| Mounting frame*2 | Available | Available | Available | AKW8822 |

Notes: *1. The spare battery is attached to AKW8111H when shipped.

*2. The mounting bracket is attached to the main unit in KW8M. Use when installation on the board is not possible.

■ Tool and Software

| Product name | Descriptions | Remark |
|--|--|--|
| KW Monitor*1 (Data collection software for Eco-POWER METER) | For parameter settings, editing of measurement values, and monitoring, etc. | You can download from our website (free of charge)*2 |
| KW Watcher (Electric power monitoring software) | Please use in situations where Web Datalogger Unit (DLU)/Data Logger Light (DLL) and Eco-POWER METER are used together. For easy "visualization" of data collected in DLU or DLL | |

■ Other tool

| Product name | Descriptions | Remark |
|--|---|--|
| KW8M Eco-POWER METER User's manual (pdf) | Detailed explanation of Eco-POWER METER usage | You can download from our website (free of charge)*2 |

Notes: *1. KW Monitor only uses MEWTOCOL. You cannot use Modbus (RTU) type.

*2. Customer registration is required to download data.

KW8M Eco-POWER METER (DIN48×96) (AKW8)

MEASUREMENT ITEMS

| Item | | Unit | Data range |
|------------------------------|---------------------------|-------|---|
| Integrated electric power | Active power | kWh | 0.00 to 9999999.9 |
| | Reactive power | kvarh | 0.00 to 9999999.9 |
| | Apparent power | kVAh | 0.00 to 9999999.9 |
| Instantaneous electric power | Active power | kW | 0.00 to 999999.99 |
| | Reactive power | kvar | -99999.99 to 0.00 to 999999.99 |
| | Apparent power | kVA | 0.00 to 999999.99 |
| Current | CT1 phase current | A | 0.0 to 6000 |
| | CT2 phase current | A | 0.0 to 6000 |
| | CT3 phase current | A | 0.0 to 6000 |
| Voltage | Voltage between P1 and P0 | V | 0.0 to 9999 |
| | Voltage between P2 and P0 | V | 0.0 to 9999 |
| | Voltage between P3 and P0 | V | 0.0 to 9999 |
| Electricity charge Note) | | — | 0.00 to 99999999 |
| Power factor | Display | | 0.00 to 1.00 (Distiguishes if ahead (LEAD) or behind (LAG).) |
| | Communication | | -1.00 to 0.00 to 1.00 (Within range of phase angle $\theta = -90$ to 0 to $+90^\circ$) |
| Frequency | | Hz | 47.5 to 63.0 |
| Hour meter | ON time | Time | 0.0 to 99999.9 |
| | OFF time | | |
| Pulse counter | | — | 0 to 99999999 (at pre-scale: 1.000*1) |

Note: Eco-POWER METER is designed chiefly for managing energy saving. It is not intended to be used for billing.

*1. Applies to AKW8115 only. The number of pulse counter digits displayed changes according to the set pre-scale value. (13 digits max.)

SPECIFICATIONS

■ Main unit

| Item | Specifications | |
|------------------------------------|--|---|
| Rated operating voltage | 100 to 240V AC | |
| Rated frequency | 50/60Hz common | |
| Rated power consumption | 8VA (240V AC at 25°C) | |
| Allowable operating voltage range | 85 to 264V AC (85% to 110% of rated operating voltage) | |
| Allowable momentary power-off time | 10ms | |
| Ambient temperature | -10 to +50°C (-25°C to +70°C at storage) | |
| Ambient humidity | 30 to 85%RH (at 20°C non-condensing) | |
| Breakdown voltage (initial) | Between the isolated circuits: 2000V for 1min | <ul style="list-style-type: none"> ● Outer edge (case) ⇔ All terminals ● Insulated circuit • Operating power supply terminals ⇔ Analog input terminals*1 • Operating power supply terminals ⇔ Pulse input terminal • RS485 ⇔ All other terminals • Pulse output terminals ⇔ All other terminals |
| Insulation resistance (initial) | Between the isolated circuits: 100MΩ or more (measured at 500V DC) | |
| Vibration resistance | 10 to 55Hz (1cycle/min) single amplitude: 0.375mm (1h on 3 axes) | |
| Shock resistance | Min. 294m/s ² (5 times on 3 axes) | |
| Display method | 8-digit, 7-segment LED | |
| Power failure memory method | EEP-ROM (more than 100,000 overwrite) | |
| Size | 48 × 96 × 98.5 mm | |
| Weight*2 | AKW8111: approx. 235g, AKW8111H: approx. 250g, AKW8115: approx. 265g | |

*1. Analog input terminals: No.11 to 20 / Pulse input terminal: No.4 and 5

*2. Without mounting bracket

KW8M Eco-POWER METER (DIN48×96) (AKW8)

■ Electrical power input specifications

| Item | | Specifications |
|---------------------------------------|---|---|
| Phase and wire system | | Single-phase two-wire system, Single-phase three-wire system, Three-phase three-wire system, Three-phase four-wire system (common) |
| Measured input voltage | Rating | Single-phase two-wire: 0 to 440V AC (Line voltage) Single-phase three-wire: 0 to 220V AC (Phase voltage) Three-phase three-wire: 0 to 440V AC (Line voltage) Three-phase four-wire: 0 to 254V AC (Phase voltage) |
| | Allowable measurement voltage | Up to 120% of rated input voltage Single-phase two-wire: 0 to 528V AC (Line voltage) Single-phase three-wire: 0 to 264V AC (Phase voltage) Three-phase three-wire: 0 to 528V AC (Line voltage) Three-phase four-wire: 0 to 300V AC (Phase voltage) |
| | VT ratio | 1.00 to 99.99 (Set with setting mode) *Voltage transformer (VT) is required when you measure a load with voltage over 440V AC system. (Secondary side: 110V) |
| Measured input current | Primary side rating | <In case using dedicated CT> (AKW8111 and AKW8111H) • 5A/50A/100A/250A/400A (Select with setting mode) <In case using CT with secondary rating 5A> • 1 to 4000A (Set with setting mode) *Accuracy coverage: 10 to 100% of rated current of CT (AKW8115) • Current set value of primary side CT: 1 to 4000A • 1A/5A (Select with setting mode) *Use a commercial CT with secondary side current 1A or 5A *Accuracy coverage: 10 to 100% of rated current of CT (Without error in input current of commercial CT) |
| Special functions | Cut-off current | 1.0 to 50.0%F.S. (Select with setting mode) |
| | Current threshold for hour meter | 1.0 to 100.0%F.S. |
| Accuracy (without error in CT and VT) | Electric power (active/reactive/apparent) Integrated electric power (active/reactive/apparent) | AKW8111 and AKW8111H (Electric power and Integrated electric power: active/reactive/apparent): ±2.5% F.S. +1digit (at 20°C, rated input, rated frequency, power factor 1) *Accuracy coverage: 10 to 100% of rated current of CT |
| | | AKW8115 (Electric power and Integrated electric power: active/apparent): Within ±1.5% F.S. +1digit (at 20°C, rated input, rated frequency, power factor 1) *Accuracy coverage: 10 to 100% of rated current |
| | | AKW8115 (Electric power and Integrated electric power: reactive): Within ±3.0% F.S. +1digit (at 20°C, rated input, rated frequency, power factor 1) |
| | Voltage Current Electricity charge | Excluding the above: ±2.5% F.S. +1digit (at 20°C, rated input, rated frequency, power factor 1) *Accuracy coverage: 10 to 100% of rated current of CT |
| | Hour meter | ±0.01%±1digit (at 20°C) (In case power on start or current energizing: ±0.01%+1s±1 digit) |
| | Temperature characteristics | AKW8111 AKW8111H |
| AKW8115 | | Within ±1.0% F.S. /10°C +1digit (Range of -10 to 50°C for rated input, power factor 1) |
| Frequency characteristics | | ±1.5% F.S.±1 digit (Frequency change±5% based on rated frequency, for rated input, power factor 1) |

■ Pulse input specifications

| Item | | Specifications |
|----------------------------------|---------------|--|
| Input mode | | Addition (Fixed) |
| Max. counting speed | | 2kHz/30Hz (Select with setting mode) |
| Pulse input | | Min. input signal width: 0.25ms (When 2kHz selected)/16.7ms (When 30Hz selected) ON:OFF ratio = 1 : 1 |
| Input signal | | Contact/No contact (open collector) • Impedance when shorted: Max. 1kΩ • Residual voltage when shorted: Max. 2V • Impedance when open: Min. 100kΩ |
| Output mode | | HOLD (Over count) |
| Number of digit | | 8-digit (0 to 99999999) |
| Pre-scale setting (AKW8115 only) | Decimal point | Setting possible up to 3 digits after decimal point |
| | Range | 0.001 to 100.000 (Select with setting mode) |

■ Pulse output (transistor output) specifications

| Item | | Specifications |
|---------------------------|----------------------|---|
| Number of output point | | 1 point |
| Insulation method | | Optical coupler |
| Output type | | Open collector |
| Output capacity | | 100mA 30V DC |
| Pulse width | | Approx. 100ms |
| ON state voltage drop | | 1.5V or less |
| OFF state leakage current | | 100μA or less |
| Pulse output unit | AKW8111 and AKW8111H | 0.001/0.01/0.1/1/10/100 kWh/Power alarm (AL-P)/Current (Cnt) (Select with setting mode) |
| | AKW8115 | 0.001/0.01/0.1/1/10/100 kWh/Power alarm (AL-P)/Current alarm (AL-C)/Standby power alarm (AL-S)/Counter (Cnt) (Select with setting mode) |

* We recommend the setting of minimum unit for pulse output for measurement shown as below.

Output pulse: 4 pulse or less per 1sec.

How to calculate: (Unit for pulse output : PL-P) > (Max. measurement power [kW]) / (3600 [s] × 4 [pulse/s])

Notes: 1. Count errors may occur if pulse output unit is set so that 4 or more pulses are output per 1 second.

2. The connected counter or PLC may cause count errors if the OFF time of the pulse output unit is short.

KW8M Eco-POWER METER (DIN48×96) (AKW8)

■ Communication specifications

| Item | | Specifications |
|---|-------------|---|
| Interface | | Conforming to RS485 |
| Protocol | | MEWTOCOL/MODBUS(RTU) (selectable with setting mode) |
| Isolation status | | Isolated with the internal circuit |
| Number of connected units | | 99 (max.)*2 *3 |
| Transmission distance | | 1200m (max.)*1 |
| Transmission speed (selectable with setting mode) | | AKW8111 and AKW8111H: 19200/9600/4800/2400bps AKW8115: 38400/19200/9600/4800/2400bps |
| Transmission format | Data length | 8bit/7bit (selectable with setting mode)*4 |
| | Parity | Not available / Odd number / Even number (selectable with setting mode) |
| | Stop bit | 1bit (fixed) |
| Communication method | | Half-duplex |
| Synchronous system | | Synchronous communication method |
| Ending resistance | | Approx. 120Ω (built-in) |

Notes: *1. Please check with the actual devices when some commercial devices with RS485 interface are connected. The number of connected devices, transmission distance, transmission speed may be different according to connected devices or using transmission line.

*2. For RS485 converter on the computer side, we recommend SI-35 and SI-35USB (from LINE EYE Co., Ltd.).

*3. When using SI-35, SI-35USB or our PLC (which can be connected up to 99 units), up to 99 Eco-POWER METER can be connected. (Max. 32 when C-NET adapter from our company is connected.) In case using this system with the other devices, up to 31 Eco-POWER METER can be connected.

*4. With MODBUS(RTU) protocol, it works only with data length 8bit.

* MODBUS Protocol is a communications protocol developed for PLCs by Modicon Inc.

■ Optional specifications (AKW8111H high performance type only)

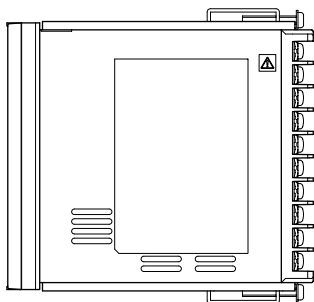
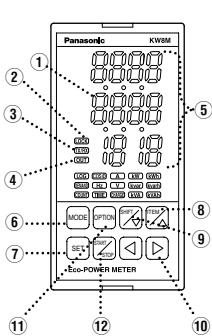
| Item | | Specifications | |
|--|-----------------------|--|--|
| Log function Memory of main unit | Automatic logging | Save cycle | 60 min. |
| | | Save data | Integrated active power, Integrated reactive power, Integrated apparent power |
| | | Save data amount | Max. 2232 records (3 months) |
| | | Display | Integrated electric power by month, Integrated electric power by day, Integrated electric power by hour |
| | Selected logging*1 | Save cycle | 1, 5, 10, 15, 30, 60 min. |
| | | Save data | Integrated active power, Integrated reactive power, Integrated apparent power, Instantaneous voltage, Instantaneous current, Pulse count value |
| Save data amount | | Max. 2160 records *1.5 days (when save cycle is 1 min.) | |
| Calendar timer function | | Time accuracy monthly accuracy: 240 sec. (at -10°C) monthly accuracy: 70 sec. (at 25°C) monthly accuracy: 240 sec. (at 50°C) | |
| Arbitrary integrated active power | | Integrated active power in arbitrary time Display range: 0.00 to 9999999.9 kWh | |
| Content of battery backup | | Time measurement and log data retained | |
| Battery life*2 *3 | | About 5 years (at ambient temperature 25°C) | |

Notes: *1. Another software is required to check selectable log data saved in the built-in memory. The recommended software, KW Monitor, is available for download from our website.

*2. When battery power is reduced, "E" is blinking. Please change the battery according to the battery replacement procedure.

*3. Battery life will shorten if this product is used in high temperature environments.

PARTS NAMES



- ① Display indicator Lighting or blinking according to the display
- ② LOCK indicator Lighting while in lock mode
- ③ TX/RX indicator Blinking while communication
- ④ OUT indicator Lighting when pulse output
- ⑤ Display each value Display each measured value, Display each setting value
- ⑥ MODE key
- ⑦ SET key
- ⑧ ITEM / Δ key
- ⑨ SHIFT / ▽ key
- ⑩ Left / Right (</>) keys
- ⑪ OPTION key
- ⑫ START/STOP key

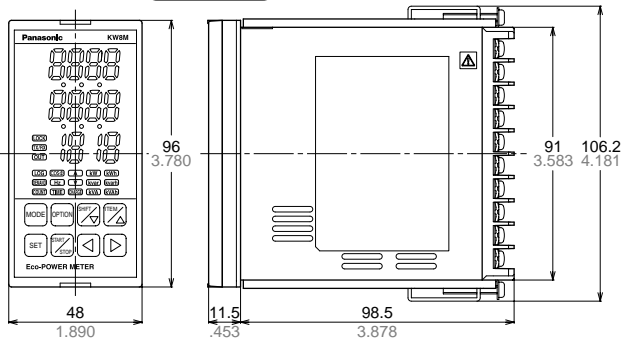
KW8M Eco-POWER METER (DIN48×96) (AKW8)

DIMENSIONS (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://panasonic-electric-works.net/ac>

Main unit **CAD Data**

Tolerance: ±1.0 ±.039



TERMINAL ARRANGEMENT

| No. | Functions | No. | Functions | Back view |
|-----|------------------------|-----|-----------|-----------|
| 1 | GND | 11 | P1 | ① |
| 2 | Operating power supply | 12 | P0 | ② |
| 3 | | 13 | P2 | ③ |
| 4 | Pulse input | 14 | P3 | ④ |
| 5 | | 15 | CT1 (+) | ⑤ |
| 6 | Pulse output | 16 | CT1 (-) | ⑥ |
| 7 | | 17 | CT2 (+) | ⑦ |
| 8 | RS485 | 18 | CT2 (-) | ⑧ |
| 9 | | 19 | CT3 (+) | ⑨ |
| 10 | | 20 | CT3 (-) | ⑩ |

⚠ The input voltage to each terminal is as follows.

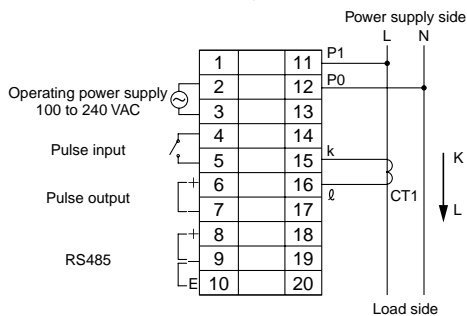
| Terminal | Phase and wire system | Terminal | Input voltage |
|------------------------|-------------------------|----------|--|
| Operating power supply | Single-phase two-wire | ②-③ | 100 to 240VAC (100 to 240V~) (Line voltage) |
| Measured voltage input | Single-phase two-wire | ⑪-⑫ | 0 to 440VAC (0 to 440V~) (Line voltage) |
| | Single-phase three-wire | ⑪-⑫-⑬ | 0 to 220VAC (0 to 220V~: 3W) (Phase voltage) |
| | Three-phase three-wire | ⑪-⑫-⑬ | 0 to 440VAC (0 to 440V 3~) (Line voltage) |
| | Three-phase four-wire | ⑪-⑫-⑬-⑭ | 0 to 254VAC (0 to 254V 3N~) (Phase voltage) |

Wiring diagrams (wiring for electrical power measurement)

When measuring a load of 100 to 200 VAC and 400 VAC system

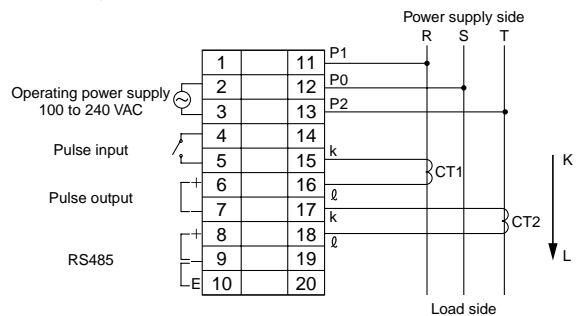
• Single-phase two-wire system

*One current transformer (CT) is required.



• Three-phase three-wire system

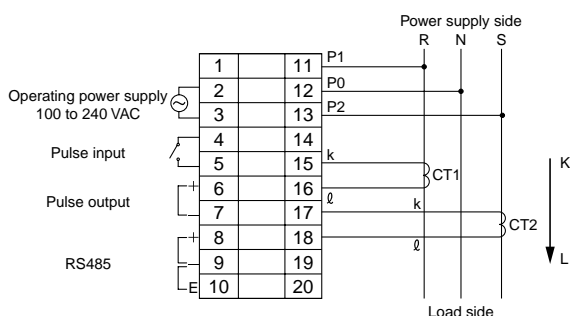
*Two CTs are required.



• Single-phase three-wire system

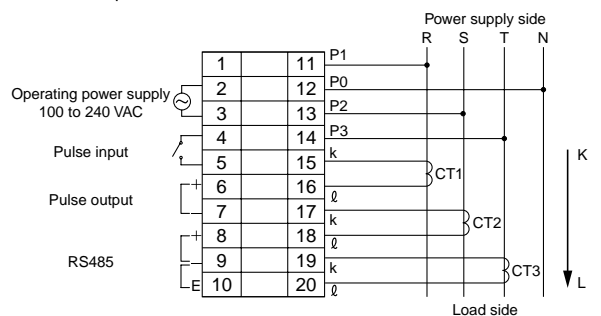
*Two CTs are required.

Wire by diagram of single-phase two-wire system when measure load using R-S with single-phase three-wire system.



• Three-phase four-wire system

*Three CTs are required.

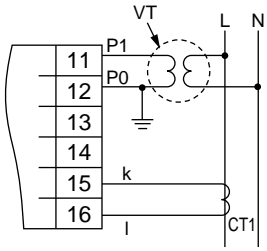


KW8M Eco-POWER METER (DIN48 96) (AKW8)

■ VT (Voltage transformer) is needed when you measure a load with voltage over 440V system.

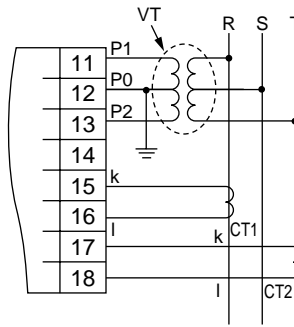
(Use commercial VT, those secondary rating is 110V.)

• Single-phase two-wire system



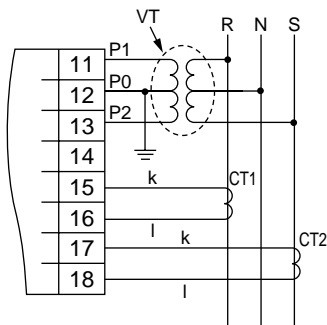
No.13, 14, 17 to 20 are not wired.

• Three-phase three-wire system



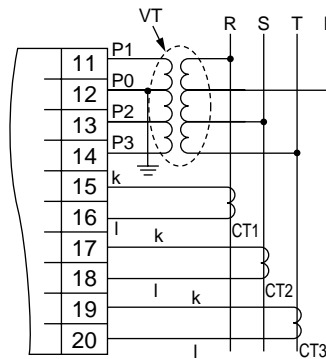
No.14, 19, 20 are not wired.

• Single-phase three-wire system



No.14, 19, 20 are not wired.

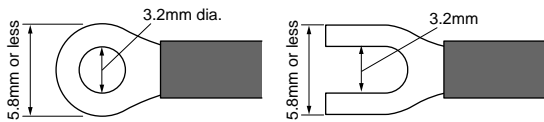
• Three-phase four-wire system



* Grounding the secondary side of voltage transformer (VT) and current transformer (CT) is not necessary with low voltage circuit.

■ Caution for Wiring

(1) Terminal fastening torque should be 0.6 to 1.0N·m. In case of using a crimping terminal, use it with insulating sleeve applicable to M3 screw. (Refer to the below.)



(2) To protect the device, it is necessary to install power switch and circuit breaker in operating power supply circuit. Therefore it is necessary to install them in the circuit near main unit.

(3) The terminal block of KW8M is designed to be wired from left. Insert wires to the terminal from the left and fasten with terminal screws.

(4) We recommend a wire with the cross section of 0.75 to 1.25 mm² for operating power supply line and measured voltage input line.

(5) Use fire resistant electrical wire (UL electrical wire, etc.)

KW8M Eco-POWER METER (DIN48 96) (AKW8)

BATTERY FOR MEMORY BACKUP (only for AKW8111H)

Battery is set to the main unit, when shipping. Be sure to set the battery switch ON before starting the unit.
Also, use an insulated tool to set switch.

It can backup the logging data and time measurement.

*When passing long time with battery OFF, initialize the memory by memory initialize mode (MODE 4).

■ Battery life

Battery life is about 5 years (at 25°C).

Battery life will shorten if this product is used in high temperature environments.

When battery power is reduced, "E" is blinking in the bottom line. Please replace the battery in accordance with the remove and mounting procedure on the KW8M User's Manual.

