

Panasonic
ideas for life

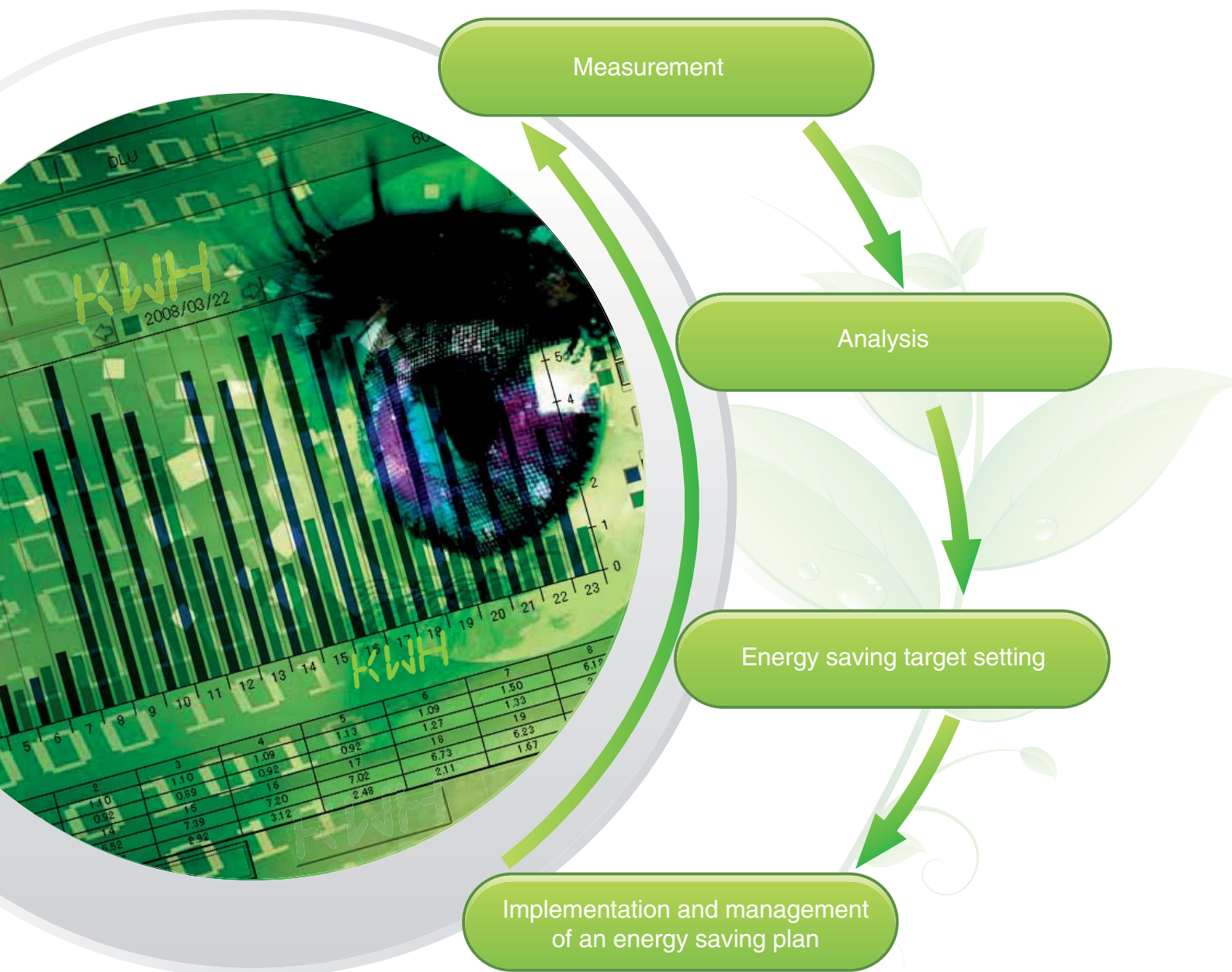
OVERVIEW

ECO-POWER METERS



Visualizing energy consumption to save energy

Install Eco-POWER METERS in lighting equipment, air conditioners, and production equipment to measure power consumption and check the current status. Afterwards, with specific targets in place, the implementation and management of an energy savings plan is quick and simple. Visualizing target achievements improves the energy usage cycle and allows for changes to be made to maximize efficiency.



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Product overview



Performance of Eco-POWER METERS

●: Available
 --: Not available

Product name		KW2G Connector-expandable type		KW1M Standard type		KW1M-H SD memory card type	KW7M DIN rail	KW4M DIN□48 MEWTOCOL type Modbus type		KW8M DIN48x96 High performance type 1A / 5A CT input type				
Appearance														
Model no.		AKW2010G	AKW2110G	AKW1110	AKW1111	AKW1121	AKW7111	AKW5111, AKW5211	AKW5112, AKW5212	AKW8111	AKW8111H	AKW8115		
Dimensions mm (W x H x D)		50 x 95 x 65	25 x 95 x 65	75 x 90 x 50			22.5 x 75 x 100	Screw terminal type: 48 x 48 x 81.9 11-pin type: 48 x 48 x 87.5		48 x 96 x 98.5				
Mounting method	DIN rail*	●	●	●	●	●	●	●	●	—	—	—		
	Screw installation	—	—	●	●	●	—	—	—	—	—	—		
	Mounting frame*	—	—	●	●	●	—	—	●	●	●	●		
	Control panel mounting	●	●	●	●	●	●	● (Terminal socket* is required)		—	—	—		
Control board mounting	—	—	● (Mounting frame* is required)			—	—	●	—	●	●	●		
Operating power supply		100-240VAC												
Measured voltage input (select with setting mode)		100/200VAC system			100/200/400VAC system			100/200VAC system			100/200/400VAC system			
Phase and wire system	Single-phase, two-wire system	●	●	●	●	●	●	●	●	●	●	●		
	Single-phase, three-wire system	●	●	●	●	●	●	●	●	●	●	●		
	Three-phase, three-wire system	●	●	●	●	●	●	●	●	●	●	●		
	Three-phase, four-wire system	—	—	—	●	●	—	—	—	●	●	●		
Measurement function	Load measurement for 400VAC system	External voltage transformer (VT) required			Transformer not required. Direct input possible.			External voltage transformer (VT) required			Transformer not required. Direct input possible.			
	Measuring load that exceeds the rated input voltage	Commercial voltage transformer (VT) (secondary current rating: 110V) is required when you measure a load with voltage over 200VAC system.			Commercial voltage transformer (VT) (secondary current rating: 110V) is required when you measure a load with voltage over 200VAC system.			Commercial voltage transformer (VT) (secondary current rating: 110V) is required when you measure a load with voltage over 200VAC system.			Commercial voltage transformer (VT) (secondary current rating: 110V) is required when you measure a load with voltage over 440VAC system.			
Current transformer (CT)		5A and 50A: AKW4801C, 100A: AKW4802C, 250A: AKW4803C, 400A: AKW4804C (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.)										(Note 1)		
Communication	Interface	Conforming to RS485												
	Communication protocol	MEWTOCOL/Modbus (Selectable with setting mode)					MEWTOCOL/Modbus		MEWTOCOL		Modbus		MEWTOCOL/Modbus (Selectable)	
	Restrictions apply. Please check communication specific. column	Restrictions apply. Please check communication specific. column					Restrictions apply. Please check communication specifications column.							
Number of connected units		99 (max.)												
Alarm signal output	Pulse output	●	—	●	●	●	●	●	●	●	●	●		
	Instantaneous active electric power	●	—	●	●	●	—	—	—	—	—	●		
	Current value	●	—	●	●	●	—	—	—	—	—	●		
	Stand-by electric power	●	—	—	●	●	—	—	—	—	—	●		
Preset value		●	—	—	●	●	—	—	—	●	●	●		
Main unit memory function		—	—	—	—	●	—	—	—	—	●	—		
External memory function		—	—	—	—	●	—	—	—	—	—	—		
Calendar timer function		—	—	—	—	●	—	—	—	—	●	—		
Measuring items	Integrated electric power	● (Active)									● (Active, Reactive, Apparent)			
	Instantaneous electric power	● (Active, Reactive, Apparent)			● (Active)						● (Active, Reactive, Apparent)			
	Current	● (R, N/S and T)		● (R and T)	● (R and T)	● (R and T)	● (CT1 and CT2)			● (CT1, CT2 and CT3)				
	Voltage	● (RS, RT and TS)		● (R and T)	● (R,S,T)	● (RS,RT,TS)	● (between 1 and 2, between 2 and 3)			● (between P1 and P0, between P2 and P0), between P3 and P0)				
	Electricity charge (Note 2)	●	Displayed on the main unit	●	●	●	●	●	●	●	●	●		
	Conversion CO ₂ value	●		●	●	●	—	●	●	—	—	—		
	Power factory	●		—	●	●	●	—	—	—	●	●	●	
	Frequency	●		—	●	●	●	—	—	—	●	●	●	
	Hour meter	—	—	●	●	●	—	—	—	●	●	●		
	Pulse counter	●	—	—	●	●	—	—	—	●	●	●		
Simultaneous power/pulse measurement	●	—	—	●	●	—	—	—	●	●	●			
Tool and software**	KW Monitor	●	●	●	●	●	●	●	—	●	●	●		
	KW Watcher (Note 3)	●	●	●	●	●	●	●	—	●	●	●		
	KW View	—	—	—	—	●	—	—	—	—	—	—		
Mark	CE			CE and S-MARK			CE, UL and S-MARK			CE and S-MARK				
Reference page	Pages 5 to 7			Pages 8 and 9			Pages 10 to 13							

* sold separately, ** free of charge

Notes: 1) Commercially available current transformer (CT) when using secondary current 1A or 5A and when primary current is 4000A or less.
 2) The Eco-POWER METER is designed chiefly for managing energy saving. It is not intended to be used for billing.
 3) DLU is required.

Panasonic's new KW2G Eco-POWER METER allows you to manage energy more efficiently than ever. You can easily add up to 7 expansion units to the KW2G Eco-POWER METER, allowing you to gather data for several circuits at once.

Features

- Measure energy produced and consumed
- USB port for easy PC connection
- Simultaneous measurement of power and pulse input
- Up to 8 circuits (1-phase, 3-wire and 3-phase, 3-wire systems), 16 circuits for 1-phase, 2-wire systems
- Main unit can display measured values for both itself and expansion units
- Easy expansion: Eliminate excess wiring by using up to seven expansion units to add the required number of CT inputs for your application
- Quick installation



Order guide

Product name		Phase and wire system	Measured voltage input	Current transformer (sold separately)	Model no.
KW2G Eco-POWER METER	Main unit	Single-phase, two-wire system	100 / 240VAC system	Dedicated CT type 5A / 50A (common), 100A, 250A, 400A, 600A	AKW2010G
	Expansion unit	Single-phase, three-wire system Three-phase, three-wire system			AKW2110G

Measurement items

Item	Unit	Data display range
Integrated electric power (active) (Note 1)	kWh/MWh	0.00 to 9999.99 kWh to 9999.99 MWh, 0.00 to 9999999.99 kWh (when 9-digit display)
Instantaneous electric power	Active (Note 2)	kW
	Reactive (Note 2)	kvar
	Apparent	kVA
Current	R-current	A
	N/S-current	A
	T-current	A
Voltage	R (RS)-voltage	V
	S (RT)-voltage	V
	T (TS)-voltage	V
Electricity charge (Note 3)		0.00 to 999999
Conversion carbon dioxide value	kg-CO ₂	0.00 to 999999
Power factor (Note 2)	Displayed on the main unit	-1.00 to 1.00 (without identify leading phase and lagging phase)
Frequency	Hz	47.5 to 63.0
Pulse counter (Note 4)		0 to 999999

Notes: 1) KW2G can measure regeneration electric power. Integrated electrical power is not integrated (not subtracted) when detecting regeneration electric power.

2) While detecting regeneration electric power, minus is displayed on instantaneous active electric power and power factor.

3) The Eco-POWER METER is designed chiefly to manage saving energy. It is neither intended nor can it be legally used for billing.

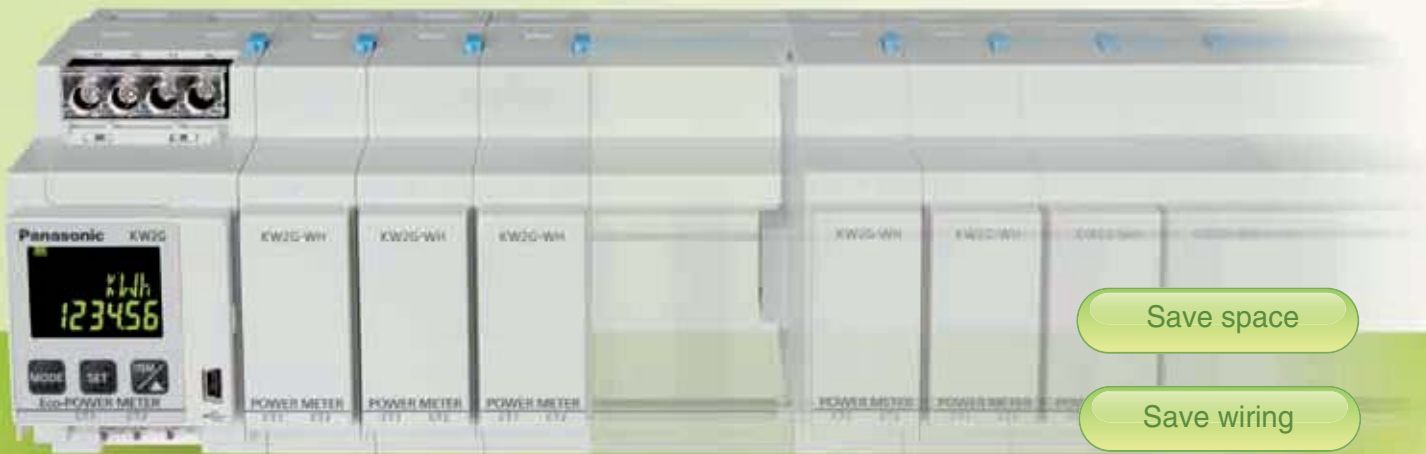
4) Displayed digit of pulse counter differs according to the pre-scale set by pre-scale setting mode.

Specifications

Item	Main unit and expansion unit specifications
Rated operating voltage	100 to 240VAC (Add to main unit)
Rated frequency	50 / 60Hz common
Rated power consumption	Main unit: 6VA, Expansion unit: 0.5VA / unit (240VAC at 25°C)
Allowable operating voltage range	85 to 264VAC (85% to 110% of rated operating voltage)
Allowable momentary power-off time	10ms
Ambient temperature	-10 to +50°C (-25 to +70°C at storage)
Ambient humidity	30 to 85% RH (at 20°C non-condensing)
Display method	LCD with backlight (green), Upper: 5-digit (7-segment 1-digit+16-segment 4-digit), Lower: 6-digit (7-segment)
Number of connectable expansion units	Max. 7 units
Power failure memory method	EEPROM (more than 1,000,000 overwrite), Memory items: setting value and integral measuring value
Weight	Main unit: 180g, Expansion unit: 80g

Up to 16 circuits!
(Single-phase, two-wire system)

Expandable and efficient!



Save space

Save wiring

8-unit connection

Pulse input specifications (for AKW2010G)

Item	Specifications
Input mode	Addition (Fixed)
Max. counting speed	50kHz / 30Hz (Select with setting mode)
Pulse input (Min. input signal width)	0.01ms (When 50kHz 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

Pulse output specifications (for AKW2010G)

Item	(Transistor output) specifications
Number of output point	1 point
Insulation method	Optical coupler
Output type / Output capacity	Open collector / 100mA 30VDC
Pulse width (when pulse output with integrated active electric power selected)	100ms approx.
ON-state voltage drop	1.5V or less
OFF-state leakage current	100μA or less
Pulse output unit (selectable with setting mode)	0.001kWh, 0.01kWh, 0.1kWh, 1kWh, 10kWh, 100kWh / Power alarm (AL-P) / Current alarm (AL-C) / Stand-by power alarm (AL-S) / Counter (Cnt)

Note: We recommend setting a minimum unit for pulse output for measurement shown as below. Output pulse: 4 pulses or less per 1 sec. Count errors may occur if the pulse output unit is set so that 4 or more pulses are output per 1 second. - How to calculate unit for pulse output: PL-P > Max. measurement power (kW) / 3600 sec × 4 pulse/sec

Communication specifications

Item	Specifications	
	RS485 communication	USB communication (full speed) (Note 3)
Protocol	MEWTOCOL / Modbus (RTU) (selectable with setting mode) (Note 2)	MEWTOCOL
Number of connected units	99 units max. (Note 1)	1

Notes: 1) Please check with the actual devices when some commercial devices with RS485 interface are connected. The number of connected devices, transmission distance, and transmission speed may differ depending on the transmission line.

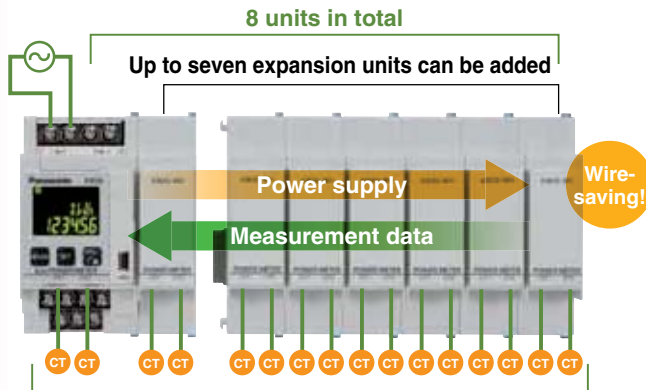
2) With Modbus (RTU) protocol, it works only with 8-bit.

3) When using the USB port, install the dedicated USB driver.

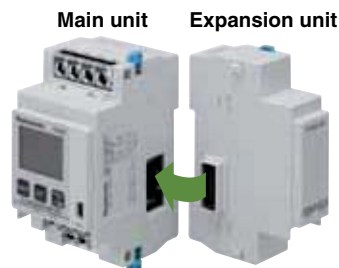
Features
1

Easy, wire-saving expansion

Eliminate excess wiring by using up to seven expansion units to add the required number of CT inputs for your application.



Connector for easy expansion!

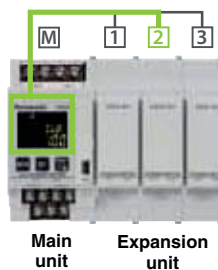


16 circuits (single-phase, two-wire system)
8 circuits (single-phase, three-wire system and three-phase, three-wire system)

■ The data of each unit can also be displayed.

Displaying the data of main unit [M]

Displaying the data of expansion unit [2]

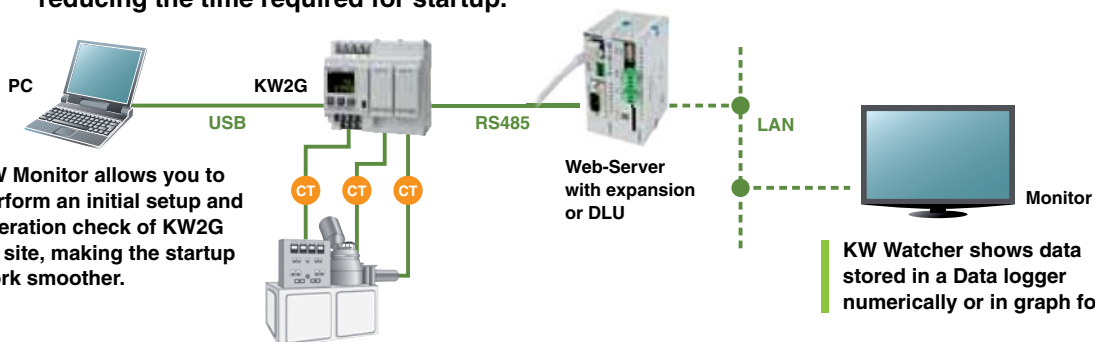


The main unit can display data of expansion units by a simple switching operation.

Features
2

Quick initial setting via USB

The unit can be connected to a PC via USB. KW Monitor, an operation setting and check tool, allows you to configure and check the operation of KW2G on site, reducing the time required for startup.



KW Monitor allows you to perform an initial setup and operation check of KW2G on site, making the startup work smoother.

KW Watcher shows data stored in a Data logger numerically or in graph form.

Features
3

Quick installation

The units can be mounted on DIN rails.



Features
4

A variety of measurements are possible.

- Capable of simultaneously measuring the electric power and pulse input (e.g. flow amount)
- Measurement of inverter power supplies (primary side) is also available.

KW1M / KW1M-H



The Panasonic KW1M Eco-POWER METER, which consumes less power itself than its predecessor, can be hooked up directly to industrial 400V AC networks.

Features

- Screw and DIN-rail installation possible
- Integrated RS485 interface (Modbus RTU/MEWTOCOL)
- Automatic logging of measurement data at numerous selectable intervals (can be saved on SD card)
- Diverse alarm functions, e.g. when current consumption levels are exceeded
- Calendar function
- Suited for measuring 3-phase currents of up to 400VAC
- Monitors and displays the most important electrical parameters

Order guide

Product name	Phase and wire system	Operating power supply	Measured voltage input	Current transformer (sold separately)	Model no.
KW1M Standard type	Single-phase, two-wire system Single-phase, three-wire system	100 to 240VAC 50 / 60Hz	100 / 240VAC system	Dedicated CT type 5A / 50A (common), 100A, 250A and 400A	AKW1110
KW1M-H Eco-POWER METER SD memory card type	Three-phase, three-wire system Three-phase, four-wire system		100 / 200 / 400VAC (Select with setting mode)		AKW1111
			AKW1121		

Measurement items

Item	Unit	Data display range
Instantaneous electric power (active)	kW	0.00 to 9999.99
Integrated electric power (active)	kWh/ MWh	0.00 to 9999.99 MWh
		0.00 to 9999999.99 kWh (when 9-digit display)
Current	R-current	A
	S-current	A
	T-current	A
Voltage	R (RS)-voltage	V
	S (RT)-voltage	V
	T (TS)-voltage	V
Electricity charge	-	0.00 to 999999
Conversion carbon dioxide value	kg-CO ₂	0.00 to 999999
Power factor	-	0.00 to 1.00 [Identify leading phase (-) or lagging phase] (Only in range of phase angle = -90° to +90°)
Frequency	-	47.5 to 63.0Hz
Hour meter	ON-time	h (Hour)
	OFF-time	h (Hour)
Pulse counter	-	0 to 999999

Note: The Eco-POWER METER is designed chiefly to manage saving energy. It is neither intended nor can it be legally used for billing.

Main unit specifications

Item	Specifications
Rated operating voltage	100 to 240V AC
Rated frequency	50 / 60 Hz common
Rated power consumption	6 VA, 8 VA (AKW1111, AKW1121), 5 VA (AKW1000) (240VAC at 25°C)
Allowable operating voltage range	85 to 264VAC (85% to 110% of rated operating voltage)
Allowable momentary power-off time	10ms
Ambient temperature	-10 to +50°C (-25 to +70°C at storage)
Ambient humidity	30 to 85% RH (at 20°C non-condensing)

Item	Specifications
Display method	LCD with backlight Upper: green, 4-digit, 16-segment Lower: amber, 6-digit, 7-segment
Power failure memory method	AKW1110, AKW1111, AKW1112, AKW1121 FROM (more than 100,000 overwrite) EEPROM (more than 100,000 overwrite)
Weight	170g approx. (AKW1111), 180g approx. (AKW1121), 160g approx.

Pulse input specifications (for AKW1111/AKW1121)

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 (at 20°C)	Contact / No contact (open collector) - Impedance when shorted: Max. 1kΩ - Residual voltage when shorted: Max. 2V - Impedance when open: Min. 100kΩ	
Mode	HOLD (Over count)	
Prescale	Decimal point	Setting possible up to under 3-digit
	Range	0.001 to 100.000 (Set with setting mode)

Specifications of the pulse output of integrated electric active power

Item	Specifications (transistor output)
Number of output point	1 point
Insulation method	Optical coupler
Output type	Open collector
Output capacity	100mA 30VDC
Pulse width	100ms approx.
ON state voltage drop	1.5V or less
OFF state leakage current	100μA or less
Pulse output unit (selectable with setting mode)	0.001kWh, 0.01kWh, 0.1kWh, 1kWh, 10kWh, 100kWh / Power alarm (AL-P) / Current alarm (AL-C) / Stand-by power alarm (AL-S) (Note 1) / Counter output (Cnt) (Note 2)

Notes: 1) For **AKW1111, AKW1121**

2) We recommend setting a minimum unit for the pulse output for measurement as shown below.

Output pulse: 4 pulses or less per 1 sec. Counting errors may occur if pulse output unit is set so that 4 or more pulses are output per 1 second.

- How to calculate -

Unit for pulse output: PL-P > Max. measurement power (kW) / 3600 sec × 4 pulse/sec

Communication

Item	Specifications RS485 communication
Protocol	MEWTOCOL and Modbus (RTU) (selectable with setting mode)
Number of connected units	Max. 99 units

Memory specifications of main unit (for AKW1121)

Item	Specifications	
File type 1 (instantaneous value)	Save cycle	60min (on the hour) (fixed)
	Save data	(Instantaneous value) integrated electric power, instantaneous electric power, current, voltage, power factor, frequency, and count value
	Save data amount	24 records per file (max. approx. 1.5 years worth of data)
File type 2 (difference value)	Save cycle	60 min. (on the hour) (fixed)
	Save data	(Difference value) Integrated electric power and Count value
	Save data amount	24 records per file (max. approx. 1.5 years worth of data)
File type 3 (instantaneous value detail)	Save cycle	Select among 1, 5, 10, 15, 30 or 60min (saved timing) When 1min is selected: 00 sec after the minute When 5min is selected: 00, 05, 10, 15, 20, 25, 30... min after the hour When 10min is selected: 00, 10, 20, 30, 40, 50min after the hour When 15min is selected: 00, 15, 30, 45min after the hour When 60min is selected: 00 min after the hour
	Save data	Integrated electric power, instantaneous electric power, current, voltage, power factor, frequency, and count value
	Save data amount	Max. 7,200 records, 5 days approx. period (when the save cycle is set to one minute)
Main unit display	Integrated electric power by month (latest data covering 1.5 year period) / integrated electric power by day (latest data covering 1 month period) / integrated electric power by hour (latest data covering 24 hours period)	

External memory specifications SD memory card slot (for AKW1121 only)

Item	Specifications
Support media	SD memory card (Note 1)
Supported format standards	Compliant with SD and SDHC standards (Note 2)

Notes: 1) Operation verified maker: Panasonic Corporation (PRO HIGH SPEED memory card 2 GB and 1 GB) (HIGH SPEED memory card 1 GB)

2) To format SD memory cards, please download and use the formatting software available on the Panasonic website. <http://panasonic.jp/support/global/cs/sd/download>
The file system on a SD memory card that was formatted using standard PC software does not comply with the SD memory card standard.

20/12/2011



Features

AKW8111

- Direct measurement of 400V power loads
- Three-phase, four-wire system compatibility
- Improved measurement function
- Instantaneous electrical power
- Integrated electrical power
- Voltage and current measurement for each phase
- Frequency
- Power factor
- Simultaneous power and pulse measurement
- Supports networking (up to 99 units can be connected)
- RS485, MEWTOCOL/Modbus (RTU)

AKW8111H

- Includes all the features of AKW8111
- Built-in memory
- Log data can be saved to memory of main unit
- Built-in battery (for memory backup)
- Protects log data and time measurements from power failures
- Optional functions (3 items) added
- Each integrated electric power by month, day and hour
- Arbitrary integrated active electrical power
- Calendar timer function

AKW8115

- Direct input of 1A/5A current transformers (CT)
- Dedicated CT no longer required

Main unit

Phase and wire system	Measured voltage input	Measured voltage input	Current transformer	Terminal type	Log function	Part no.
Single-phase two-wire system, Single-phase three-wire system Three-phase four wire system	400VAC 100/200VAC	5A/100A/240A/400A	Dedicated CT type (5A, 50A (common)/ 100A/250A/400A)	Screw terminal (M3 "+" screw)	Not available	AKW8111
			Standard CT type 1A/5A secondary current)		Available	AKW8111H
					Not available	AKW8115

Measurement Items

Item		Unit	Data range		
Integrated electrical power	Active power	kWh	0.00 to 9999999.9	Input mode	Addition (fixed)
	Reactive power	kvarh	0.00 to 9999999.9	Max. counting speed	2kHz/30Hz (selectable with setting mode)
	Apparent power	kVAh	0.00 to 9999999.9	Pulse input	Min. input signal width: 0.25ms (when 2kHz selected)/ 16.7ms (when 30Hz selected), ON : OFF ratio = 1 : 1
Instantaneous electrical power	Active power	kW	0.00 to 9999999.99	Input signal	Contact/No contact (open collector)
	Reactive power	kvar	-99999.99 to 0.00 to 999999.99		- Impedance when shorted: 1 kΩ
	Apparent power	kVA	0.00 to 9999999.99		- Residual voltage when shorted: Max. 2V
Voltage	CT1 phase current	A	0.0 to 6000	- Impedance when open: 100 kΩ	
	CT2 phase current	A	0.0 to 6000	Output mode	HOLD (over count)
	CT3 phase current	A	0.0 to 6000	Number of digits	8 digit (0.00 to 99999999)
	Voltage between P1 an P0	V	0.0 to 9999	Number of output points	1 point
	Voltage between P2 an P0	V	0.0 to 9999	Insulation method	Optical coupler
	Voltage between P3 an P0	V	0.0 to 9999	Output type	Open collector
Electricity charge*		-	0.00 to 99999999	Output capacity	100mA 30VDC
Power factor	Display	-	0.00 to 1.00	Pulse width	Approx. 100ms
	Communication	-	-1.00 to 0.00 to 1.00	ON stage voltage drop	1.5V or less
Frequency		Hz	47.5 to 63.0	OFF stage voltage drop	100μA
Hour meter	ON time	Time	0.0 to 99999.9	Pulse output unit	0.001/0.01/0.1/1/10/100kWh Alarm(AL-P)/Counter(CNT) (selectable with setting mode)
	OFF time				
Pulse counter		-	0 to 99999999		

*The Eco-POWER METER is designed chiefly to manage saving energy. It is neither intended nor can it be legally used for billing.

Specifications

Rated operating voltage	100 to 240VAC	
Rated frequency	50 / 60Hz common	
Rated power consumption	8VA (240VAC at 25°C)	
Allowable operating voltage range	85 to 264VAC (85% to 110% of rated operating voltage)	
Allowable momentary power-off time	10ms	
Ambient temperature	-10 to +50°C (-25 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 (measured with 500VDC)	Outer edge (case) all terminals between insulated circuits <ul style="list-style-type: none"> • Operating power supply terminals analog input terminals • Operating power supply terminals pulse input terminal • RS485 communication terminals all other terminals • Pulse output terminals all other terminals
Insulation resistance (initial)	Between the isolated circuits: 100MΩ or more (measured with 500VDC)	
Vibration resistance	10 to 55Hz (1 cycle/min.), single amplitude: 0.375mm (1 hour 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	EEPROM (more than 100,000 overwrite)	
Size	48 x 96 x 98.5mm	
Weight (without mounting bracket)	235g approx. (AKW8111), 250g approx. (AKW8111H high performance type), 265g approx. (AKW8115 1A / 5A CT input type)	

Optional specifications (AKW8111H)

Log function Memory of main unit	Automatic logging	Save cycle	60min.
		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	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 frequency is 1min.)	
Calendar time function (Time accuracy)		Monthly accuracy: 240sec (at -10°C), 70sec (at 25°C), 240sec (at 50°C)	
Arbitrary integrated active power		Integrated active power in arbitrary time, display range: 0.00 to 9999999.9kWh	
Content of battery backup Battery life		Time measurement and log data retained About 5 years (at ambient temperature 25°C)	

Communication

Item	Specifications RS485 communication
Protocol	MEWTOCOL and Modbus (RTU) (selectable with setting mode)
Number of connected units	Max. 99 units



Features

- Compatible with systems of up to three-phase, three-wire
- Support for 400VAC power measurement (use with external voltage transformer)
- Also easy to mount on a panel surface with a mounting frame (sold separately)
- Supports networking (RS485 port)
- Protective structure: IEC IP66 (Only the panel front with rubber gasket)
- UL-compliant
- DIN rail type (KW7M) ideal for installation in a panel

Order guide

Product name	Phase and wire system	Operating power supply	Measured voltage input	Current transformer	Model no.
KW4M Eco-POWER METER DIN □ 48 type	Single-phase, two-wire system Single-phase, three-wire system Three-phase, three-wire system	100 to 240VAC, 50 / 60Hz	100 / 200VAC system	Dedicated CT type 5A / 50A (common), 100A, 250A and 400A	AKW5111 AKW5112 AKW5211 AKW5212 AKW7111
KW7M Eco-POWER METER DIN- rail type	Single-phase, two-wire system Single-phase, three-wire system Three-phase, three-wire system	100 to 120 / 200 to 240VAC 50 / 60Hz	100 / 200VAC system		

Main unit specifications

Item	KW4M	KW7M
Rated operating voltage	100 to 120VAC / 200 to 240VAC	
Rated frequency	50 / 60Hz common	
Rated power consumption	8VA (240VAC at 25°C)	6VA (240VAC at 25°C)
Allowable operating voltage range	85 to 132VAC / 170 to 264VAC (85% to 110% of rated operating voltage)	
Allowable momentary power-off time	10ms	
Ambient temperature	-10 to +50°C (-25 to +70°C at storage)	
Ambient humidity	30 to 85% RH (at 20°C non-condensing)	
Vibration resistance	10 to 55Hz (1 cycle/min.), single amplitude: 0.75mm (1 hour on 3 axes) / KW7M: 0.375mm (1 hour on 3 axes)	
Shock resistance	Min. 294m/s ² (5 times on 3 axes)	
Display method	6-digit (KW7M: 8-digit), 7-segment (set value) with backlight and 4-digit, 16-segment (mode), LCD upper section: green, lower section: amber	
Power failure memory method	EEPROM (more than 100000 overwrite)	

Measurement items

Item	Unit	KW4M	KW7M
		Data display range	
Instantaneous electric power	kW	0.00 to 9999.99	0.00 to 999999.99
Integrated electric power	kWh	0.00 to 9999.99 kWh to 10.00 MWh to 9999.99 MWh	0.00 to 9999999.9
	MWh	When 9-digit display: 0.00 to 9999999.99 kWh	–
Current	L1 (CT1) - phase current	A	0.0 to 999.9
	L2 (CT2) - phase current	A	0.0 to 999.9
Voltage	Voltage between 1-2	V	0.0 to 9999.9
	Voltage between 2-3	V	0.0 to 9999.9
Electricity charge	Yen	JPY	0 to 999999
	Dollars	\$	0.0 to 99999.9
	Euros	EUR	0.0 to 99999.9
	Yuan	CNY	0 to 999999
	No currency	CHG	0 to 999999
Conversion carbon dioxide value	kg-CO2	0.0 to 999999	–
Hour meter	ON-time	h (Hour)	0.0 to 99999.9
	OFF-time	h (Hour)	0.0 to 99999.9
Pulse input	Count	0 to 999999	–

Communication

Item	Specifications RS485 communication
Protocol	MEWTOCOL/Modbus (RTU)
Number of connected units	Max. 99 units

For detailed information please refer to our website
www.panasonic-electric-works.com

Current transformers



Specifications

Item	AKW4801C	AKW4802C	AKW4803C	AKW4804C
Primary side rated current	5 A/50A	100A	250A	400A
Secondary side rated current	1.67mA/16.7mA	33.3mA	125mA	200mA
Winding (Turn)	3000	3000	2000	2000
Ratio error	± 2.0% F.S.			
Through hole	ø10	ø16	ø24	ø36
Breakdown voltage (initial)	1000VAC / 1min (Between through hole and output lead wire)		2000VAC / 1min (Between through hole and output lead wire)	
Insulation resistance (initial)	Min. 100MΩ (at 500VDC) (Between through hole and output lead wire)			
Functional vibration resistance	10 to 55Hz (1 cycle / min), single amplitude: 0.15mm (10min on 3 axes)			
Vibration resistance	10 to 55Hz (1 cycle / min), single amplitude: 0.375mm (1 hour on 3 axes)			
Functional shock resistance	Min. 98m/s ² (4 times on 3 axes)			
Shock resistance	Min. 294m/s ² (5 times on 3 axes)			
Output protection level	± 7.5V with clamp element		± 3.0V with clamp element	
Permissible clamping frequency	100 times approx.			
Ambient temperature range	-10 to +50°C (without frost and non-condensing)			
Storage temperature	-20 to +60°C (without frost and non-condensing)			
Ambient humidity	35 to 85% RH (at 20°C non-condensing)			
Weight	60g approx. (Trunk cable included)	90g approx. (Trunk cable included)	215g approx. (Trunk cable included)	315g approx. (Trunk cable included)

Notes:

- 1) Dedicated current transformers (CT), AKW4801C, AKW4802C, AKW4803C and AKW4804C, are dedicated for low voltage under 440VAC systems. They cannot be used for high voltage circuits.
- 2) In each type of Eco-POWER METER excluding AKW8115, a combination of commercially secondary side 5 A CTs and dedicated CTs for 5 A (AKW4801C) is used for measuring high voltage circuits; therefore, AKW4801C is definitely necessary. For details, confirm with each respective user's manual.
- 3) Since dedicated CTs (AKW48**) cannot be used when measuring with AKW8115, please be careful and do not purchase a dedicated CT by mistake.
- 4) For the AKW8115 current transformer (CT), current transformers manufactured by U.R.D. Co., Ltd. (clamp-on type CT CTL-CL series) are recommended. Please confirm the specification beforehand.
- 5) Dedicated current transformers (CT) are not included with Eco-POWER METERS.
- 6) Each dedicated current transformer (CT) includes a 1 m trunk cable, respectively.

Trunk cable



Product name	Model no.
Trunk cable for CT	3m AKW4703
Option of Eco-POWER METER dedicated current transformer (CT)	5m AKW4705
	10m (special order) AKW4710

Mounting parts

Mounting frame: For KW4M



AKW4822

* Enclosed in the KW4M

Backup battery: For KW8M

for high performance type (AKW811H)



AFC8801

* Packaged with the main unit

Terminal protective cover: For KW4M screw terminal type (AKW5111 and AKW5112)



AKW4823

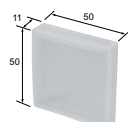
Mounting frame: For KW1M and KW1M-H



AKW1822

* Sold separately

Protective cover for DIN 48 size (flexible type): For KW4M



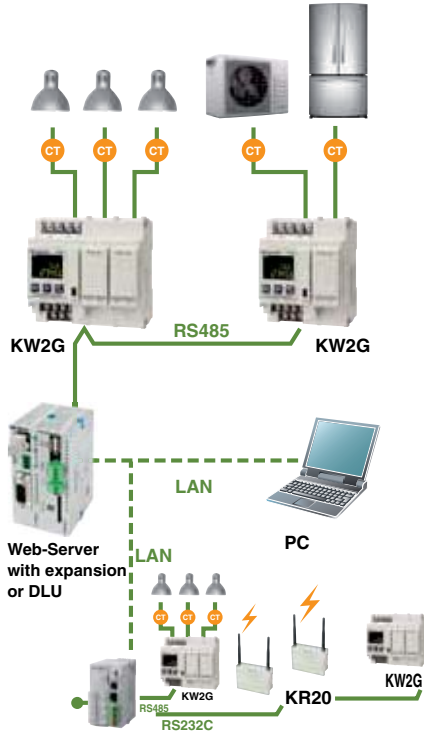
AQM4803

Applications examples



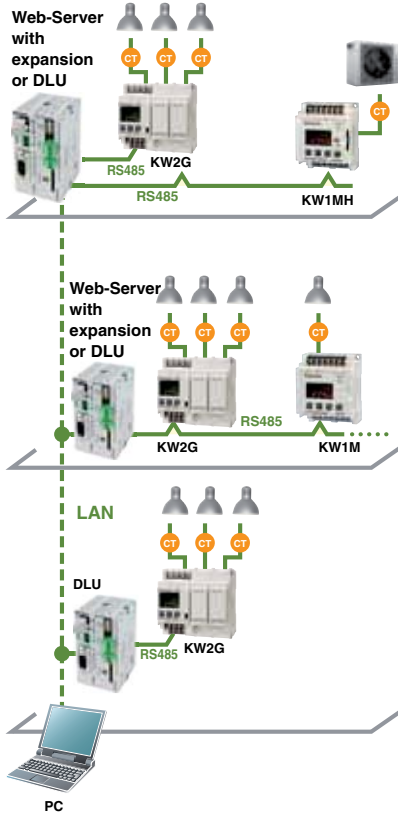
Small retailers

Convenience stores



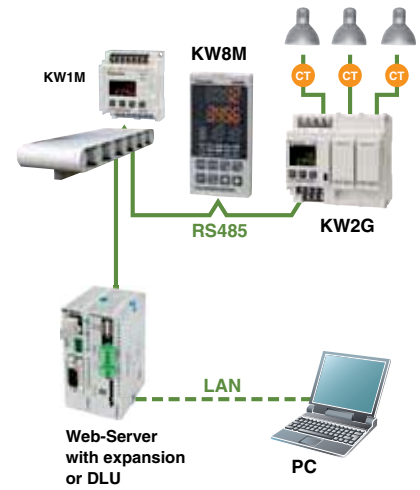
Airports, universities hospitals

Public facilities



Plants with large equipment

Plants



You can add only the required number of units in a small switch-board. Ideal for small stores.

Connector-expandable type

KW2G Eco-POWER METER

Mountable on a panel.

Waterproof type (IP66)

KW4M Eco-POWER METER

Designed for DIN-rail mounting, ideal for installation in a panel.

Panel-mount DIN rail type

KW7M Eco-POWER METER



You can add only the required number of units, preventing waste.

Connector-expandable type

KW2G Eco-POWER METER



Easy to measure. You can immediately check data on a PC.

SD memory card type

KW1M-H Eco-POWER METER



Mountable on a panel surface. Applicable to 400 V equipment.

Panel surface mount type

KW8M Eco-POWER METER

Easy to measure. You can immediately check data on a PC.

SD memory card type

KW1M-H Eco-POWER METER



KW1M Eco-POWER METER

CE marking

When using in the application conforming to EN61010-1/ IEC61010-1, make sure to satisfy the following (environmental) conditions:

- Overvoltage category II, Pollution degree 2
- Indoor use
- An ambient temperature of -10 to 50°C
- An ambient non-condensing humidity of 35 to 85%RH (at 20°C)

- Altitude of 2000 m or less [Mount the product in a place with]
 - A minimum of dust, and an absence of corrosive gases
 - No flammable, explosive gasses
 - Few mechanical vibrations or shocks
 - No exposure to direct sunlight
 - No large capacity electromagnetic switches or cables through which large current is flowing
- Applicable standard: Safety Standard: EN61010-1 / EMC: EN61326-1**

Software

KW Monitor

Software
Eco-POWER METER

Centralized control
by PC | Analysis |



For easy "visualization" of data directly collected from the Eco-POWER METER

- You can directly access the Eco-POWER METER via your PC. Data can be constantly collected and easily displayed numerically or in graph form.
- Measuring can be selected among 1sec, 5sec, 10sec, 15sec, 30sec, 60sec, 1min, 5min, 15min, 30min, and 60min units.
- Electrical power can be measured either integrated or instantaneous.

Note: All software tool can be downloaded* free of charge from our website. You can also check the required operating environments.

KW View

SD memory card type
For KW1M-H

Power display tool | Verification |



For easy "visualization" of power data collected by an SD memory card.

- Simply load the power data (CSV file) collected in an SD/SDHC memory card into your PC. You can then display the data as a graph by month, day and hour, and print it out.
- Using easy operation, you can manage Eco-POWER METER data for up to 99 units.
- Graph display is in 1 hour units (fixed).

KW Watcher

Data logger
For DLU*

Electric power
monitoring software | Management |



For easy "visualization" of data collected in DLU.

- Data per unit time is stored in the data logger. You can access and collect the data via your PC when necessary.
- Gather power, water amount, temperature, primary unit and air flow amount measurement data collected in the DLU* to easily create graphs and numerical displays, etc.
- Measurement is in 15min, 30min, and 60min units.

*DLU is the abbreviation for Web Datalogger Unit.

Other products

Energy efficient support equipment lineup

For cases where wire connection is difficult

Monitoring by LAN (Ethernet)

Data collection and storage

KR20 wireless unit



Wireless communication of RS232C/RS485 power data 2.4GHz band wireless communications

KS1 signal converter



Converting RS232C/RS485 power data for communication by LAN

FP Web-Server with FP Web expansion unit



The FP Web-Server and FP Web expansion unit connects all FP series and Eco-POWER METERS to the Ethernet.

DLU (Web datalogger unit)



- Collecting and storing power data of Eco-POWER METER
- Store collected data in CF cards
- Provided with an RS232C communication modem
- Provided with four parallel input points

North America

Europe

Asia Pacific

China

Japan

Panasonic Electric Works

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