

For Electric Power Monitoring

KW2M SERIES Eco-POWER METER



Energy saving and electric power quality monitoring with multiple circuits.

e.Xtreme



Main unit
KW2M-X
AKW264100A



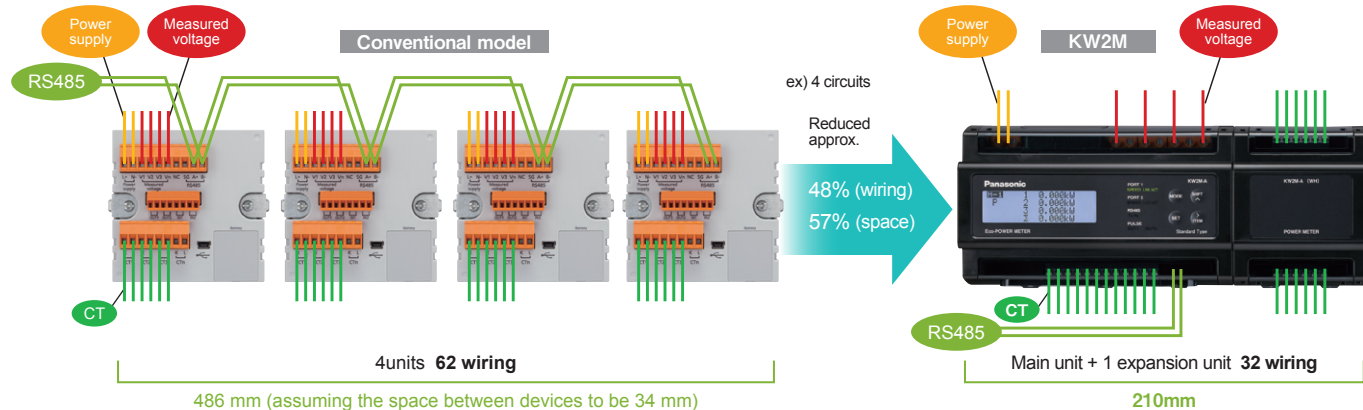
Expansion unit
AKW272100A

- One unit can measure two circuits. Up to three expansion units may be connected for the required number of circuits.

Up to 8 circuits (three-phase four-wire), or up to 24 circuits (single-phase two-wire)

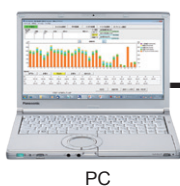
- Wire-saving and space-saving

Reduced man-hours through wire-saving. Easy wiring with push-in connectors. (Ø2.6mm single-core cables)



- Internal memory(KW2M-X) e.Xtreme

- Measured data can be saved in CSV files and visualized by **KW Watcher**.



PC

Visualization software, **KW Watcher** can be downloaded for free from our website.

* Registry of customer information is required.

* For KW2M-A, DLL or ELC is required to use "KW Watcher".

- Ethernet communication

- Equipped with two Ethernet communication ports, so devices can be daisy chained without adding a HUB.
- Connectable to both **KW Watcher** and Central monitoring system / SCADA at the same time.



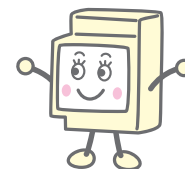
HUB

Central monitoring system SCADA

Ethernet



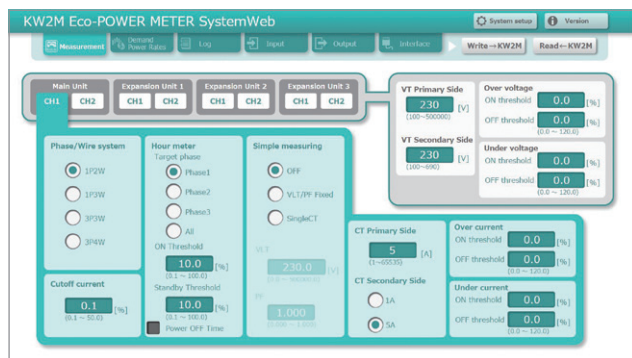
New Product!!



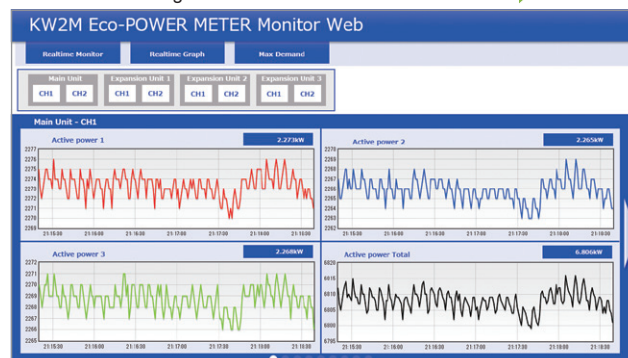
Web server functionality

Web server functionality allows operational settings of the device and upgrading the version of the main unit's firmware without conventional dedicated software tools. Also real-time monitoring is possible with **KW2M-X**.

Measurement Screen



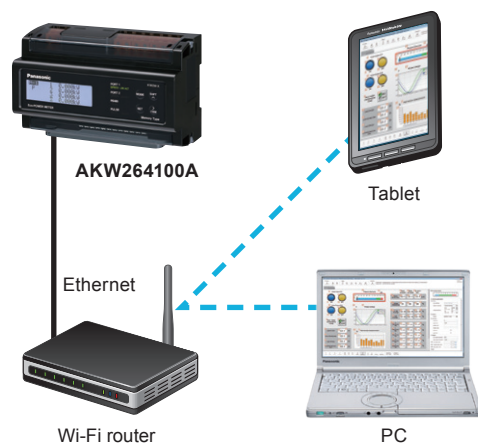
Real-time Monitoring Screen



※KW2M-X (AKW264100A) only

Web Creator (KW2M-X) e.Xtreme

By uploading screens (content) that are setup as desired by the user with Control Web Creator to **KW2M-X**, the information in the **KW2M-X** internal Web server can be monitored on a browser.

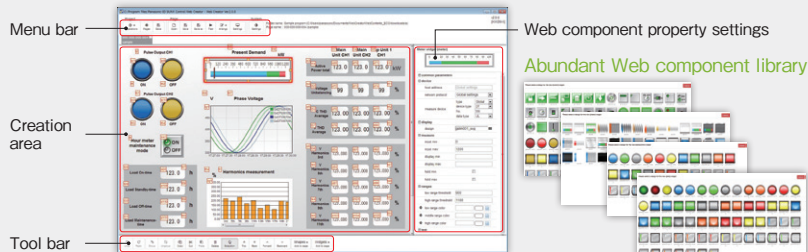


* Wi-Fi is a registered trademark of Wi-Fi Alliance.
* Please provide commercially available products.

[Control Web Creator]

You, too, are a Web content creator

This is a graphics creation tool that allows you to easily design Web content that is published by the **KW2M-X**. You can creatively design content by arranging Web components such as switches, lamps and meters on the screen and then setting the properties. Your content will be linked to information in the **KW2M-X** without any knowledge of HTML.



- Same style of operation as the program display image creation tool
- Components can be arranged by dragging and dropping.
- Detailed component settings are easy using properties.
- Components don't lose quality when enlarged or reduced, and you can color them as desired.
- Images can be pasted in.

* Key unit (sold separately) is required to use Control Web Creator.

Power quality measurements (THD , harmonics up to the 31st order , and unbalance)

Hour meter function

IEC61010-1 CAT III

Type

	Product name	Phase and wire system	Operating power supply	Input measured voltage	Applicable current sensor *1	Model No.
KW2M-A/KW2M-X Eco-POWER METER	Main unit	KW2M-A (standard type)	100 to 240 V AC 50/60 Hz	0 to 690V AC * When UL standard is supported 0 to 300V AC	CT with secondary side output 1A or 5A	AKW263100A
		KW2M-X (memory type)				AKW264100A
	Expansion unit	Single-phase two-wire system Single-phase three-wire system Three-phase three-wire system Three-phase four-wire system				AKW272100A

*1 Dedicated current sensor (CT) cannot be used. Please use a general-purpose CT with a secondary side current 1A or 5A.

Web screen creation tools *1

Product name	Descriptions	Model No.
Control Web Creator	Windows version. Downloadable free of charge from our website. Please purchase Key unit separately.	AFPSWC
Key unit*2	License key for Control Web Creator. 1 license. For USB port.	AFPSWCKEY

*1 Only for AKW264100A

*2 Key unit is required to create Web content. You do not need Key unit to view Web content on a browser.

For Electric Power Monitoring

Specifications Use safely and correctly after carefully reading the product specification manual, user manual, and operational instruction manual.

Measurement items

Item			Data display range
Instantaneous power	Active		-999.99GW to 0.000kW to 999.99GW
	Reactive		
	Apparent		
Integral power (import)	Active		0.000kWh to 9999.9PWh
	Reactive		
	Apparent		
Integral power for each time zone (4 zone) (import)	Active		0.000kWh ~ 9999.9PWh
	Reactive		
	Apparent		
Integral power (export)	Active		0.000kWh to 9999.9PWh
	Reactive		
Integral power for each time zone (4 zone) (export)	Active		0.000kWh ~ 9999.9PWh
	Reactive		
Current			0.000 to 99.999kA
N-phase when 3P4W			
Voltage (Phase and Line voltage)			0.00 to 999.99kV
Power factor			-1.000 to 0.000 to 1.000
Frequency			0.00Hz to 99.99Hz
Pulse count value			0.000 to 99999999
Power conversion value			0.000kWh to 9999.9PWh
Power quality	Unbalanced current	Each phase	0.00% to 300.00%
	Unbalanced voltage	Each phase	0.00% to 300.00%
	Current THD (total harmonic distortion)	Each phase	0.00% to 400.00%
	Voltage THD (total harmonic distortion)	Each phase	0.00% to 400.00%
	Current harmonics (2nd to 31st)	Each phase	0.00% to 400.00%
	Voltage harmonics (2nd to 31st)	Phase	0.00% to 400.00%
		Line	0.00% to 400.00%
Hour-meter measurement	ON		0.0h to 99999.9h
	OFF		0.0h to 99999.9h
	Standby		0.0h to 99999.9h
	Maintenance		0.0h to 99999.9h
Present demand (Present value (inst. value) / Maximum demand)	Active		0.000 kW to 999.9MW
	Reactive		
	Apparent		
	Active (export)		
	Reactive (export)		
	Current		

* The data display range is the numerical value range which can be displayed by the main unit's display section and is not the allowable measurement range.

* If the voltage to be measured is not the rated (commercial) frequency, it may take time for THD (total harmonic distortion) to stabilize.

* Please use this demand function as your standard.

The demand value calculated with this function is not guaranteed.

General specifications

Item		Specifications
Supply voltage range		100 to 240V AC
Rated frequency		50/60Hz
Nominal power consumption		15VA (240V AC)
Inrush current		30 A or less (240 V AC at 25°C)
Allowable momentary power-off time		10ms
Ambient temperature		Operation: -10 to +50°C 14 to 122°F Storage: -25 to +70°C -13 to 158°F
Ambient humidity		30 to 85% RH (at 20°C 68°F) with non-condensing
Breakdown voltage(initial)		Between the isolated circuits: 2000 V/1 min ● Enclosure - All terminals ● Between primary and secondary insulated circuits (Double insulation is supported) (1) Power supply terminals - other terminals (2) Voltage input terminal - other terminals
Insulation resistance(initial)		Between the isolated circuits: 100 MΩ or more
Vibration resistance		10 to 150 Hz (7.5 minutes/cycle) Single amplitude: 0.75 mm 0.030 in (1 h on 3 axes) 10 to 55 Hz (1 minute/cycle) Single amplitude: 0.375 mm 0.015 in (1 h on 3 axes)
Shock resistance		Min. 294 m/s ² (5 times on 3 axes)
Display method		Black-and-white LCD with backlight (graphic form)
Display updating time cycle		500, 1000, 2000, 3000 ms (set with setting mode)
Power failure memory method		Internal memory
Sea level altitude		Under 2,000 m 6,562 ft
Overvoltage category		III
Pollution degree		2
Dimensions W/H/D		Main unit: 85×140×65 mm 3.346×5.512×2.559 in Expansion unit: 85×70×65 mm 3.346×2.756×2.559 in
Weight		Approx. 450 g (Main unit) Approx. 200 g (Expansion unit)
Calendar timer *1	Range	January 1, 2015 00:00:00 to December 31, 2099 23:59:59 (leap year supported)
	Time accuracy	Monthly accuracy max. 15 sec. (at 25°C)
	Back up period	About 1 month (by secondary battery *When power off after 48-hour or more of power on time, at 23°C)

*1 Only **AKW264100A**

Accuracy

Item	Specification
Electrical power	0.5% Active electric power Compliant Class 0.5S (IEC 62053-22) *1 Reactive electric power Compliant Class 2 (IEC 62053-23)
Current	0.2% *2 * Single-phase three-wire system 2 (N) phase current, three-phase three-wire system 2 (S) phase current, 0.5%
Voltage	0.2% * Single-phase three-wire system 2 (N) phase voltage, three-phase three-wire system between 3-1 voltage, three-phase four-wire system line voltage is 0.5%

* The tolerances of CT sensor and VT (instrument voltage transformer) are not included.

* 1 IEC62053 is the international standard for electrical power measuring devices.

* 2 Current less than 5% of rated value may be outside of accuracy assurance range according to CT setting (maximum tolerance: 0.5%).

Demand monitoring and specifications

Demand type	● IEC61557-12 Compliant demand 1. Sliding block interval demand 2. Fixed block interval demand 3. Current demand
Demand monitor input type	Current transformer input Pulse input *1 (set with setting mode)
Demand time span	1 to 60 min. (set with setting mode)
Demand measurement item	Present demand
Demand data update cycle	1 min.
Display	Present demand (Active / Reactive / Apparent / Active (export) / Reactive (export) / Current)
Saved data	Max.demand, Monthly max. demand (Latest 13 months)*2

*1 Only CH1 of main unit is available.

Only current transformer input is available for CH2 of main unit and expansion unit.

*2 Only **AKW264100A**

Web server specifications

Simultaneous access number	6 sessions
Web browser *1	Windows Google Chrome Mozilla Firefox iOS *2 Safari Google Chrome Android *2 Google Chrome

* Windows is the trademark of Microsoft Corporation in USA and other countries.

Google Chrome and Android are the trademarks of Google Inc.

Firefox is the trademark of Mozilla Foundation in USA and the other countries.

Safari and OS X are the trademark or the registered trademark of Apple Inc. of USA.

iOS is the trademark or the registered trademark of Cisco in USA and the other countries.

*1 Use OS and browser with the latest version.

*2 System Web is not supported.

Main unit memory specifications (for **AKW264100A**)

5-min. instantaneous value	Save cycle	5 minutes
	Saved data	R-current, S-current, T-current, N-current, Average of current R-voltage (L1-N), S-voltage (L2-N), T-voltage (L3-N), Average of phase-voltage, RS-voltage (L1-L2), ST-voltage (L2-L3), TR-voltage (L3-L1) Average of line-voltage Pulse count value
	Write timing	Every hour xx:05:05 (fixed)
	Saved data amount	96 records for 1 file (for one-day) (Max. 60 days)
15-min. instantaneous value	Save cycle	15 minutes
	Saved data	All items excluding for harmonics and conversion value for integral active power
	Write timing	Every hour xx:15:05 (fixed)
	Saved data amount	2976 records for 1 file (for one-month) (Max. 24 months)
Demand	Save cycle	1 minute
	Saved data	Present demand (active power, reactive power, apparent power, active power(export), reactive power(export)) Pulse conversion value for integral power, Present current demand (1), (2), (3)
	Write timing	Every hour xx:25:05 (fixed)
	Saved data amount	1000 records for 1 file (Max. 100 files)
Power quality	Saved data	Power interruption, Over voltage, Under voltage, Over current, Under current (with time stamp of event occurrence and occurrence period)
	Write timing	Every hour xx:35:05 (fixed)
	Saved data amount	1000 records for 1 file (Max. 100 files)

Specifications Use safely and correctly after carefully reading the product specification manual, user manual, and operational instruction manual.

Communication specifications (for AKW263100A and AKW264100A) (RS485)

Interface		Conforming to RS485
Communication method		Half-duplex
Synchronous system		Synchronous communication method
Isolation status		Isolated with the internal circuits
Protocol		MEWTOCOL, MODBUS (RTU) (select with setting mode)
Number of connected unit		99 units (max.) *1
Transmission distance		1,200 m 3,937 ft *2
Transmission speed		115200, 57600, 38400, 19200, 9600, 4800, 2400 bps (select with setting mode)
Transmission format	Data length	8bit (fixed)
	Parity	Not available / Odd number / Even number (select with setting mode)
	Stop bit	1bit, 2bit (select with setting mode)

*1 For RS485 converter on the computer side, we recommend SI-35 and SI-35USB (from LINE EYE Co., Ltd.). When using SI-35, SI-35USB or PLC from our company (which can be connected up to 99 units), up to 99 can be connected. In case using this system with the other devices, up to 31 can be connected.

*2 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 be different according to using transmission line.

(Ethernet)

Number of communication ports		2
Interface		IEEE802.3u, 100BASE-TX / 10BASE-T
Connector type		RJ45
Transmission specifications	Transmission speed	100 Mbps / 10 Mbps
	Transmission method	Base band
	Max. segment length	100m 328ft
Communication cable		UTP (category 5)
Protocol (DNS, DHCP)		TCP/IP, UDP/IP
Web server		Setting, Monitoring measured values, Web customization *2*3
Function		Auto-negotiation function *1 MDI/MDI-X auto-crossover function
Dedicated communication		MEWTOCOL, MODBUS(TCP) (2 session for each)

*Ethernet is the trademark of Xerox of USA.

*This product has the software developed by OpenSSL Project in order to use OpenSSL Toolkit. (<http://www.openssl.org/>)

*1 It changes the transmission speed automatically with auto-negotiation function.

*2 Control Web Creator is necessary to customize the webpage.

*3 Only **AKW264100A**

Output specifications (for AKW263100A and AKW264100A)

Item		Specifications
Output points		Two channels * Non-insulated between channels
Insulation method		PhotoMOS relay
Output type		1a
Output capacity		100 mA, 30 V AC/DC
Output mode		・ Pulse by integral power ・ Output by alarm or events (set with setting mode)
Pulse Output by integral power	Pulse width	1 ms to 100 ms (set with setting mode)
	Pulse output unit	0.001 kWh / 0.01 kWh / 0.1 kWh / 1 kWh / 10 kWh / 100 kWh
Alarm output Event output	Type	Stand-by alarm/ Under voltage alarm/ Over voltage alarm/ Power interruption alarm/ Under current alarm/ Over current alarm/ Active power alarm/ Reactive power alarm/ Apparent power alarm/ PF alarm/ Over frequency alarm/ Under frequency alarm/ Voltage harmonics alarm/ Current harmonics alarm/ Voltage THD alarm/ Current THD alarm/ Unbalanced voltage alarm/ Unbalanced current alarm/Power demand alarm/ Current demand alarm/ Counter output/ Level output (external control) / Time control *1
	Alarm reset	Self-reset (according to the setting) / Manual-reset
	Protection element	
Alarm output <OUT1> <OUT2>	Display	Lighting alarm mark
	Output signal	・ Normal: OFF ・ Alarm: ON
	Output capacity	100 mA, 30 V AC/DC

*1 Only **AKW264100A**

*2 Varistor is mounted internal as a protection element.

Install a protective device in case of using at the place where it effects by surge.

Input specifications (for AKW263100A and AKW264100A)

Item			Specifications	
Input points			1 channel	
Insulation method			Input dedicated insulation (insulated with other function terminals)	
Input method			Connection point / non-voltage a contact or open collector (operated by internal power source)	
Input signal			Non-voltage input • Impedance during short-circuit: 1 kΩ or less (short-circuit current, approx. 1 0 mA or less) • Residual voltage during short-circuit: 3 V or less • Impedance while open: 100 kΩ or more	
Input mode			Pulse input Synchronized with input from outer device *1 Measure maintenance time *1	
Maximum counting speed			2000 Hz / 30 Hz	
Minimum input signal width			0.25 ms (2000 Hz selected) / 16.7 ms (30 Hz selected) ON : OFF ratio=1:1	
Pre-scale setting	Decimal point		Up to three decimal points can be selected	
	Range		0.001 to 100.000 (set with setting mode)	
Output mode (during pulse output selection)			HOLD	
Protection element			Zener diode	
Pulse input	Pulse input		1,000 to 99,000 pulse/kWh Arbitrary setting (External pulse converter required)	
	Pulse rate		0.001 to 100.000 kWh/pulse	
	Pulse input condition	2000Hz	Pulse width	0.25 ms or more
			Pulse interval	0.5 ms or more (OFF time 0.25 ms or more)
		30Hz	Pulse width	16.7 ms or more
			Pulse interval	33.4 ms or more (OFF time 16.7 ms or more)
Operation voltage / current		5 V DC 10 mA		

*1 Only **AKW264100A**

Dimensions (unit: mm in)

Tolerance $\pm 1.0 \pm 0.04$

AKW263100A / AKW264100A	Main unit	AKW272100A	Expansion unit