



Conforming to
EMC Directive



US

*UL61010-1:2012
CAN/CSA-C22.2 No.61010-1-12

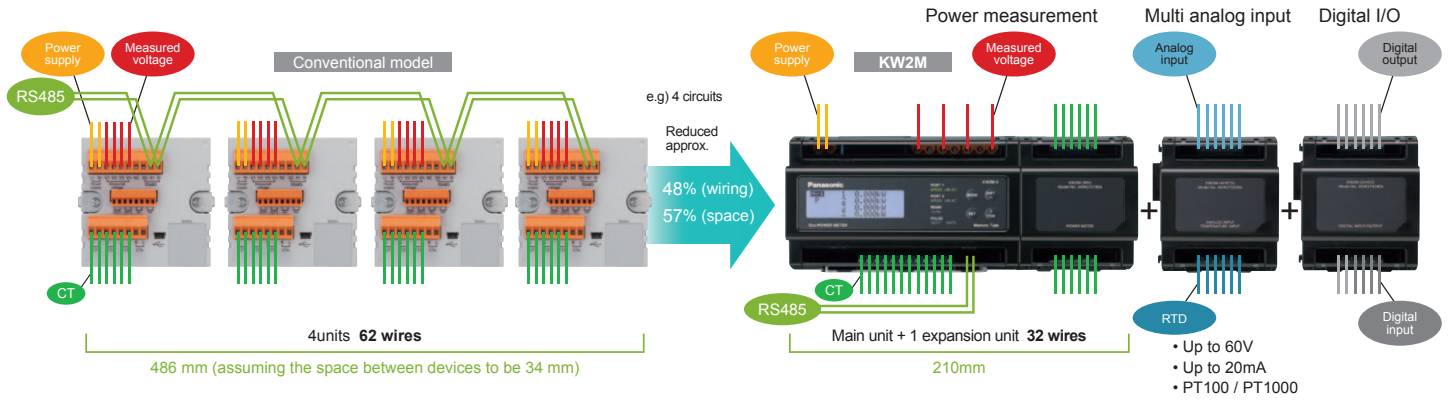
Monitoring various parameters with one power meter!

Equipped with multi functionalities and two Ethernet ports



Expansion units and two Ethernet ports allow you

Wire-saving and space-saving



Two-circuit measurement

One unit can measure two circuits

Expandable

Up to three expansion units can be connected

Fast and easy wiring

Push-in connectors (Ø2.6mm single-core cables)

Connectable to various sensors as well as electric power

Not only power, but monitoring of various parameters is possible.
 Analog input (3CH), RTD (2CH), digital input (2CH), digital output (4CH)

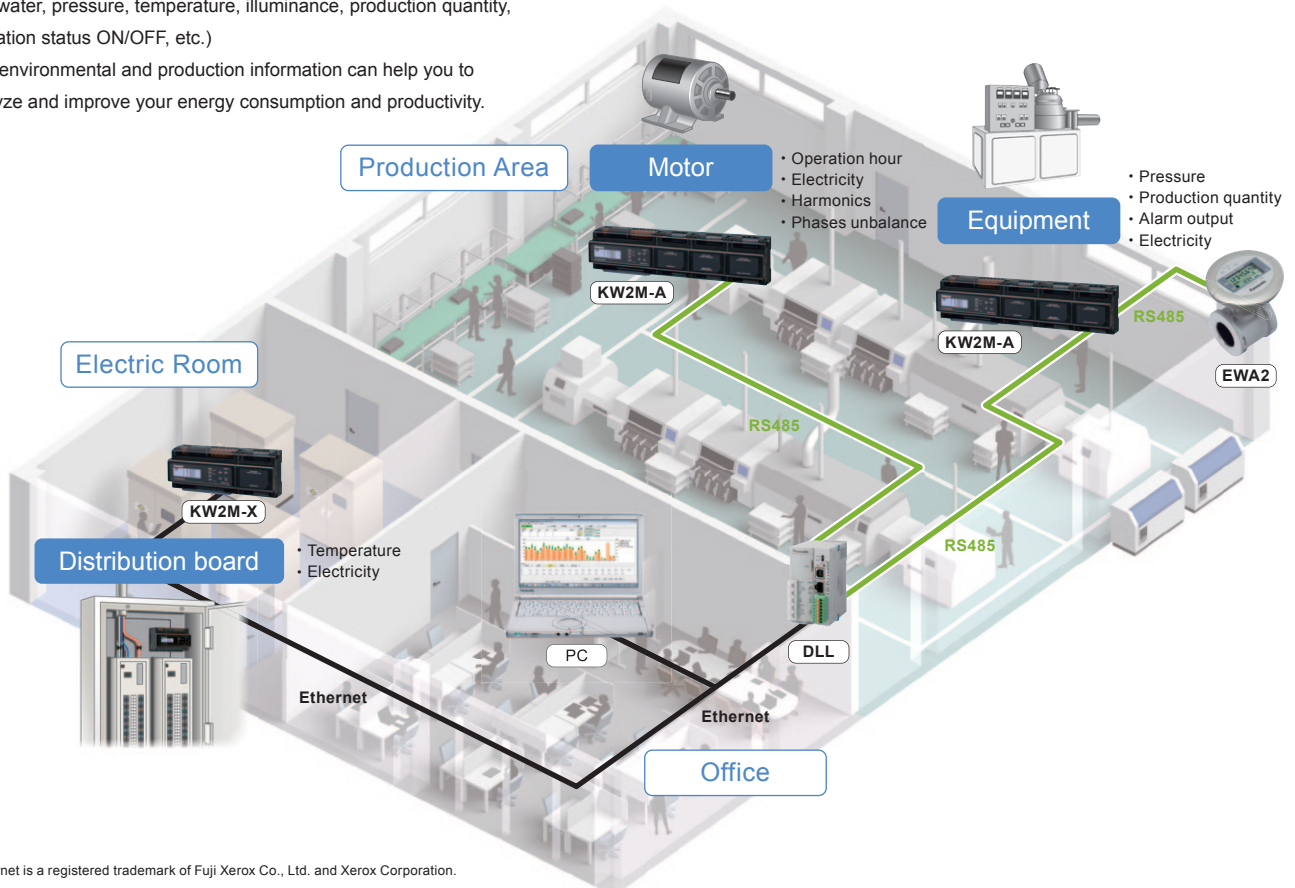
Electric Power quality monitoring

Harmonics and unbalance measurement

Application Factory

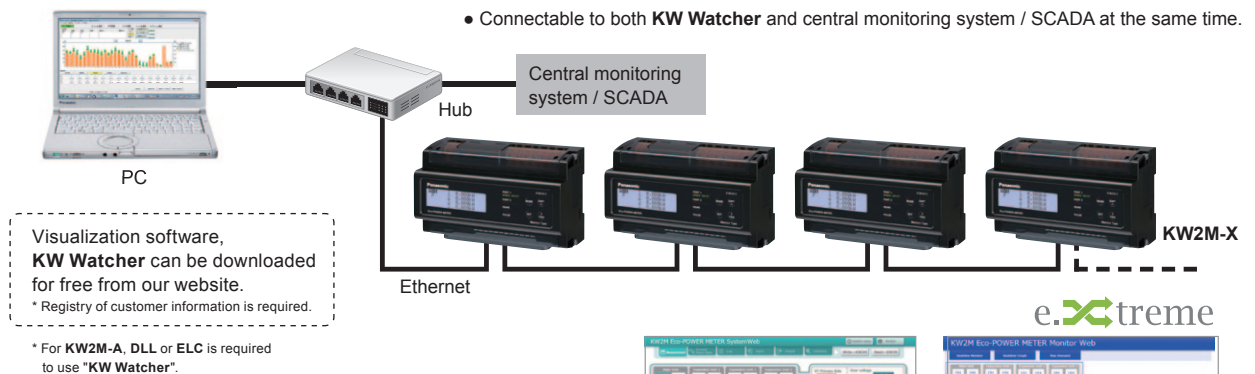
KW2M can collect various parameters as well as electricity without a PLC (Air, water, pressure, temperature, illuminance, production quantity, operation status ON/OFF, etc.)

This environmental and production information can help you to analyze and improve your energy consumption and productivity.



* Ethernet is a registered trademark of Fuji Xerox Co., Ltd. and Xerox Corporation.

to optimize your energy consumption



Two Ethernet ports

Devices can be daisy-chained without adding a Hub

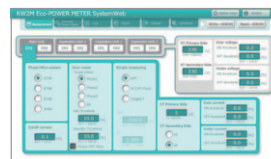
Internal memory (only KW2M-X)

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

Web server functionality

Operational settings on the PC via Ethernet cable.
Also real-time monitoring is possible with **KW2M-X**.

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Operational setting



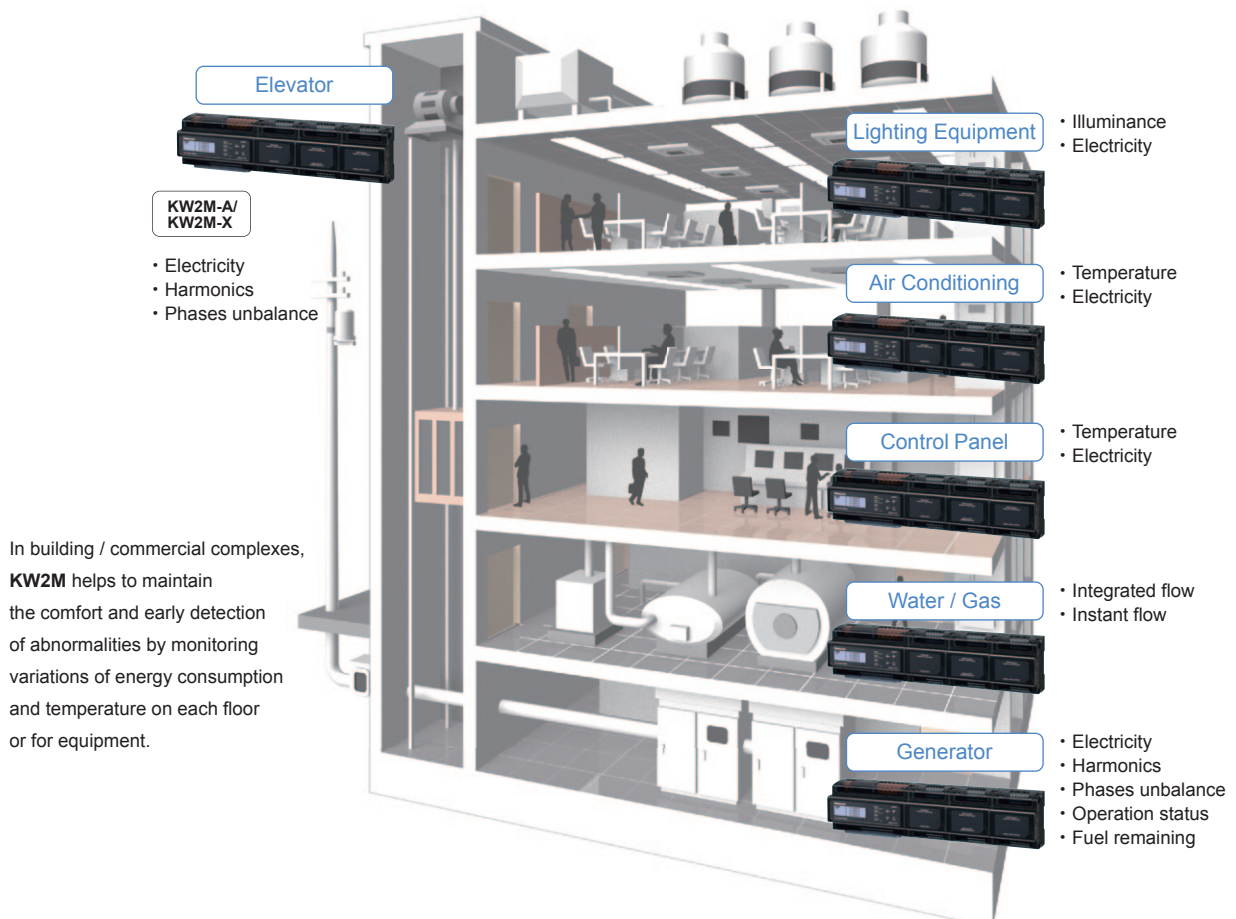
Real-time monitoring (KW2M-X only)

Function comparison (for KW2M-A and KW2M-X)

Function	Product name	
	KW2M-A	KW2M-X
Logging	Not available	Available (CSV format)
Web Creator	Not available	Available
Integral power for each time zone	Not available	Available (4-zone)
Demand saved data	Available (Only Max. demand)	Available (Monthly max.demand) 12 records(12-month)

Application

Building / Commercial complex

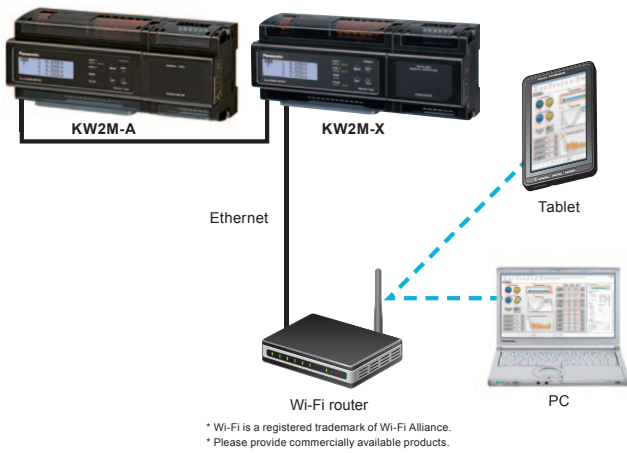


to monitor various parameters via Ethernet

Web Creator (KW2M-X) 

By uploading user-defined screens (content) with **Control web Creator** to the web server integrated in the **KW2M-X**, users can monitor the information in a browser.

* The data of **KW2M-A** can be also displayed when connected to **KW2M-X** via Ethernet.



[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. You can link your content to information in the **KW2M-X** without any knowledge of HTML.

Menu bar

Creation area

Tool bar

Web component property settings

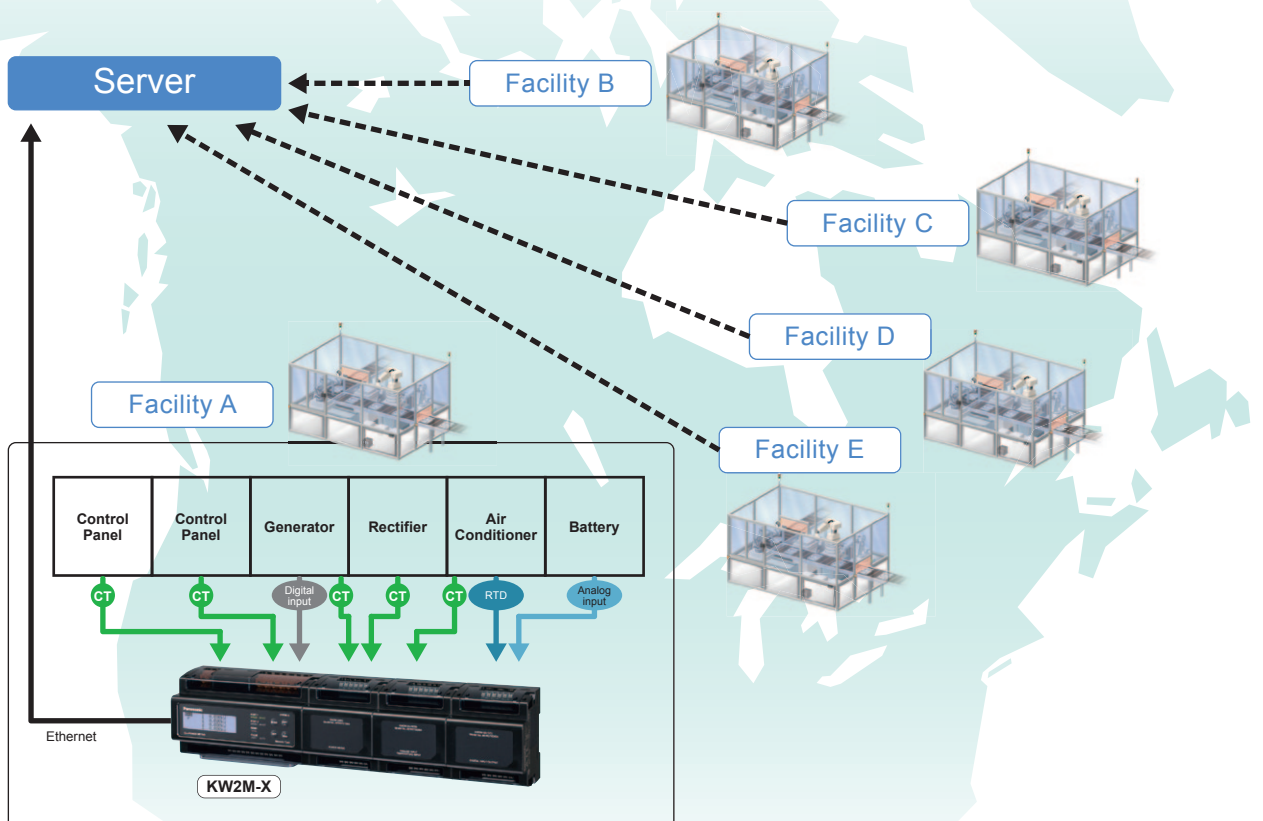
Abundant Web component library

- 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 can be resized without reduction in quality.
- Images can be pasted in.

Note: A key unit (sold separately) is required to use Control Web Creator.

Application Remote network monitoring

Thanks to Ethernet communication functionality, the server can collect remote data through the **KW2M**. This reduces the cost and time needed for monitoring each remote site.

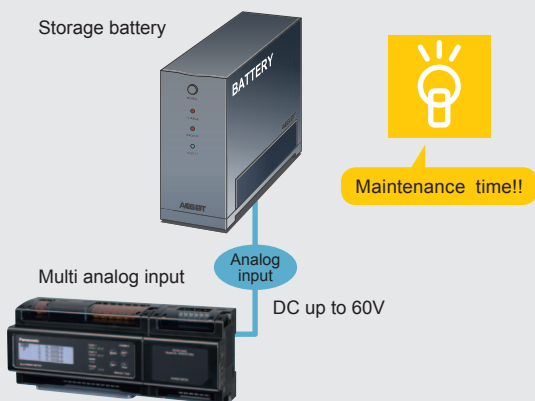


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Application examples of expansion units

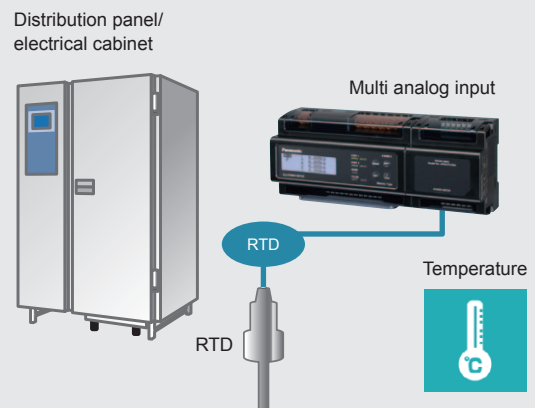
Predictive maintenance of storage battery (Multi analog input unit)

Measure the DC voltage to get information about when the battery is deteriorated and needs to be replaced. This helps with maintenance planning.



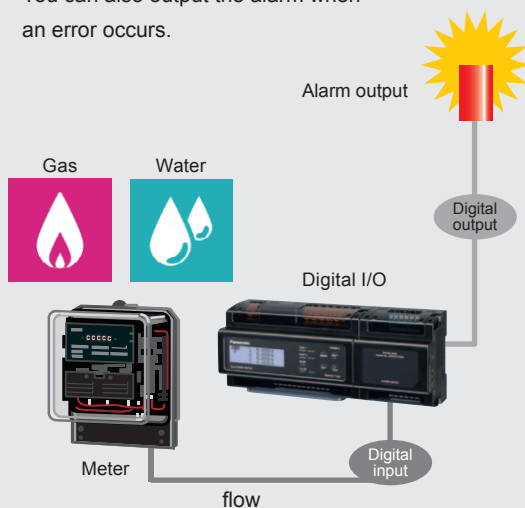
Predictive maintenance of panel (Multi analog input unit)

By measuring the temperature inside electrical cabinet at the transformer, you can easily determine when it is time for maintenance.



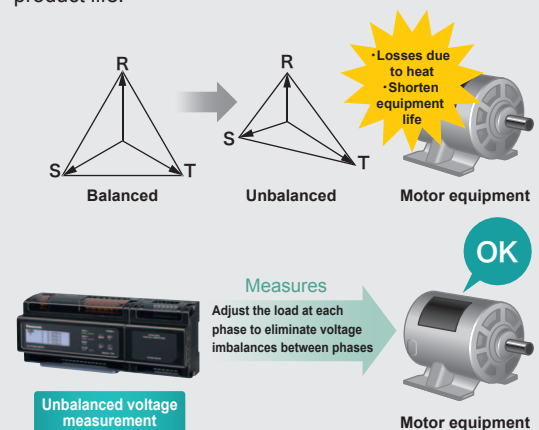
Alarm output (Digital I/O unit)

Integrated flow data monitoring is possible using the digital I/O unit. You can also output the alarm when an error occurs.



Elimination of voltage imbalances between phases (Power measurement unit)

If there is an unbalanced load due to a V-connected transformer or a heater, a voltage imbalance occurs between phases, and the motor torque becomes insufficient, causing a rise in heat or a reduction in product life.



Product Types and Specifications

Order guide

Product name		Phase and wire system	Operating power supply	Input measured voltage	Applicable current transformer *1	Model No.	
KW2M-A/KW2M-X Eco-POWER METER	Main unit	KW2M-A (standard type)	Single-phase two-wire system 100-240V AC 50 / 60 Hz	0-690V AC When UL standard is supported 0-300V AC	CT with secondary side output 1A or 5A	AKW263100A	
		KW2M-X (memory type)				AKW264100A	
	Expansion unit	Power measurement	Single-phase three-wire system Three-phase three-wire system Three-phase four-wire system				AKW272100A
		Multi analog input	Number of input points		Input range		AKW273230A
			Analog input (Voltage/Current) 3 channels		0-60 V, 0-20 mA, 4-20 mA		
		Digital I/O	Resistance temperature detector input (RTD) 2 channels		PT100 / PT1000		AKW274240A
Number of I/O points			Input method				
		Pulse input 2 channels, Pulse output 4 channels		Contact / non-voltage a contact or open-collector			

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

Specifications

General specifications

Item	Specification	
Supply voltage range	100-240V AC	
Rated frequency	50 / 60Hz	
Nominal power consumption	15VA approx. (240V AC at 25°C)	
Inrush current	30A or less (240V AC/DC at 25°C)	
Allowable momentary power-off time	10ms	
Ambient temperature	Operation	-10 to +50°C
	Storage	-25 to +70°C
Ambient humidity	30 to 85%RH (at 20°C) non-condensing	
Breakdown voltage (initial)	Between the isolated circuits: 2,000V / 1min	
	a) enclosure ↔ all terminals b) primary insulated circuits ↔ secondary insulated circuits (Double insulation) • power supply terminals ↔ other terminals • voltage input terminals ↔ other terminals	
Insulation resistance (initial)	Between the isolated circuits: 100 MΩ or more	
Vibration resistance	10 to 150Hz (7.5 minutes/cycle) single amplitude: 0.075mm (1h on 3 axes)	
	10 to 55Hz (1 minute/cycle) single amplitude: 0.375mm (1h on 3 axes)	
Shock resistance	Min. 294m/s ² (5 times on 3 axes)	
Display method	LCD with backlight	
Display updated cycle	500, 1,000, 2,000, 3,000 ms (set with setting mode)	
Power failure memory method (when power is off)	Internal memory	
Sea level altitude	Under 2,000m	
Overvoltage category	III	
Pollution degree	2	
Dimensions W/H/D	Main unit	85 x 140 x 65 mm
	Expansion unit	85 x 70 x 65 mm
Weight	Main unit	450 g approx.
	Expansion unit (Power measurement)	200 g approx.
	Expansion unit (Digital I/O, Multi analog input)	140 g approx.
	Calendar timer *1	Range
	Time accuracy	Monthly accuracy Max. 15 sec. (at 25°C)
	Back up period	About 1 month (by secondary battery when power off after 48-hours) or more of power on time, at 23°C

*1 only KW2M-X

Measurement items (for AKW263100A, AKW264100A and AKW272100A)

Item	Display data range	
Instantaneous power (Active, Reactive, Apparent)	-999.99P to 999.99P (W, var, VA)	
Total integral power (import) (Active, Reactive, Apparent)	0.000k to 9999.9P (Wh, varh, VAh)	
Total integral power (export) (Active, Reactive)	0.000k to 9999.9P (Wh, varh)	
Current	0.000 to 999.99k (A)	
Voltage	0.00 to 9999.9k (V)	
Power factor	-1.000 to 0.000 to 1.000	
Frequency	0.00 to 99.99 (Hz)	
Pulse count value	0.000 to 999999	
Power conversion value	0.000k to 9999.9P	
Leakage current	0.0000 to 99999.9999 (A)	
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, Line)	0.00 to 400.00 %
Hour Meter (ON-time, OFF-time, Stand-by time, Maintenance time)	0.0 to 99999.9 h	
Present demand *1	Active, Reactive, Apparent, Active (export), Reactive (export)	0.000k to 999.99M (W, var, VA)
	Current	0.000k to 999.99k (A)

* 'Display data range' is the range to be able to indicate with the main unit display, it is not a range that can be measured.

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

*1 Please use this demand function as your standard.

The demand value calculated with this function is not guaranteed.

Accuracy (for AKW263100A, AKW264100A and AKW272100A)

Item	Specifications	
Electrical power	±0.5%	Active power Compliant Class 0.5S (IEC 62053-22) Reactive power Compliant Class 2 (IEC 62053-23)
	Current	±0.2% *1 ±0.5% for 2(N)-phase of 1P3W and 2(S)-phase of 3P3W.
Voltage	±0.2%	±0.5% for 2-phase of 1P3W, 3-1 voltage of 3P3W and line voltage of 3P4W.

*1 When it measures current under 5% of rating, it may not satisfy the accuracy according to setting of CT. (Max.error 0.5%)
The tolerance of CT sensor and VT (instrument voltage transformer) are not included.

Output specifications (for AKW263100A, AKW264100A and AKW274240A)

Item	Specifications	
Number of output point	Main unit	2 points (insulate between output terminals)
	Expansion unit (Digital I/O)	4 points (insulate between output terminals)
Insulation method	MOSFET relay	
Output type	1a	
Output capacity	100mA, 30V AC/DC	
Output mode (OUT1/OUT2)	• Pulse by integral power • Output by alarm or events (set with setting mode)	

Digital input specifications (for AKW263100A, AKW264100A and AKW274240A)

Item	Specifications	
Number of input point	Main unit	1 point
	Expansion unit (Digital I/O)	2 points
Insulation method	Designated insulation for input (insulate to the other functions)	
Input method	Contact / non-voltage a contact or open-collector	
Input signal	Non-voltage	• Impedance; Max. 1kΩ (when short-circuit current: Max. 10mA) • Residual voltage when shorted; Max. 3V • Impedance when open: Min. 100kΩ
Input mode	Pulse input Synchronized with input from outer device *1 Measure maintenance time *1	
Max. counting speed	2000Hz / 30Hz	
Min. input signal width	0.25ms (when 2000Hz is set) / 16.7ms (when 30Hz is set) ON:OFF ratio=1:1	

*1 only KW2M-X

Analog input specifications (for AKW273230A)

Item	Specifications	
Input channel	3 channels	
Input range (select with setting mode)	Voltage	0 to 60V
	Current	0 to 20mA / 4 to 20mA (set with setting mode)
Resolution	24bit	
Total accuracy	Within ±0.1%F.S. (at 25°C), Within ±0.3%F.S. (at -10 to 50°C)	

RTD input specifications (for AKW273230A)

Item	Specifications	
Input channel	2 channels	
Input range	PT100	-200.0 to +200.0°C
	PT1000	-200.0 to +200.0°C
Resolution (24bit)	0.1°C	
Total accuracy	CH1	Within ±0.3%F.S. (at 25°C), Within ±0.5%F.S. (at -10 to 50°C)
	CH2	Within ±0.5%F.S. (at 25°C), Within ±1.0%F.S. (at 10 to 40°C), Within ±1.5%F.S. (at -10 to 50°C)

Standard

UL, CSA	Certified by TÜV Rheinland (NRTL), UL61010-1:2012, CAN/CSA-C22.2 No.61010-1-12
CE	EN61326-1:2013, EN61010-1:2010