Panasonic

CE
Conforming to
EMC Directive
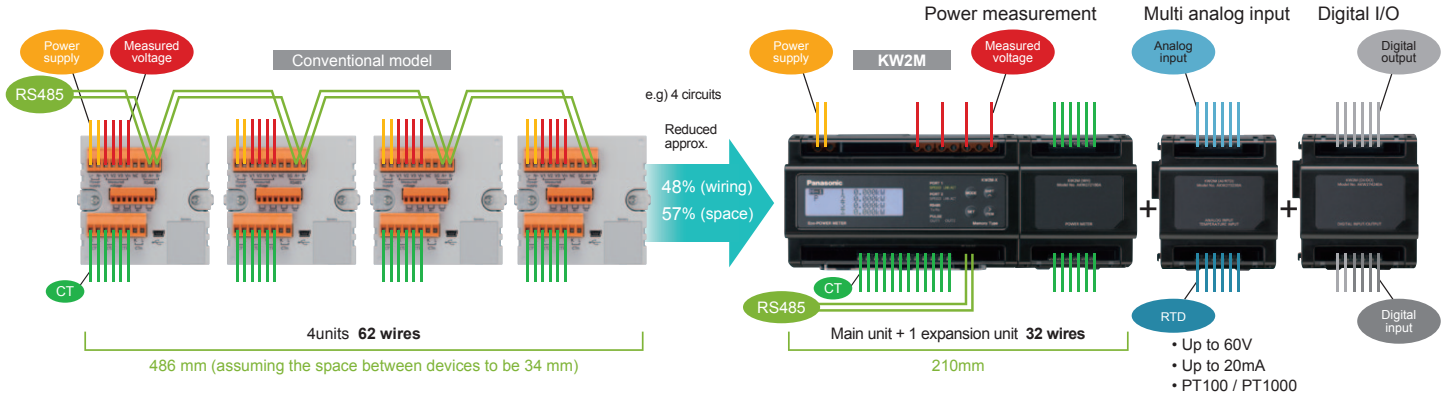
C US *

*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

KW2M-A / KW2M-X | Power measurement | Multi analog input | Digital I/O

3 Year Warranty

Expansion units and two Ethernet ports allow you

Wire-saving and space-saving

Power supply
Measured voltage
RS485
Conventional model

Power supply
Power measurement
KW2M
Measured voltage
Multi analog input
Analog input
Digital I/O
Digital output

CT

e.g) 4 circuits

Reduced approx.
48% (wiring)
57% (space)

RS485
CT

RTD
Digital input

4units **62 wires**

486 mm (assuming the space between devices to be 34 mm)

Main unit + 1 expansion unit **32 wires**

210mm

• Up to 60V
• Up to 20mA
• PT100 / PT1000

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.
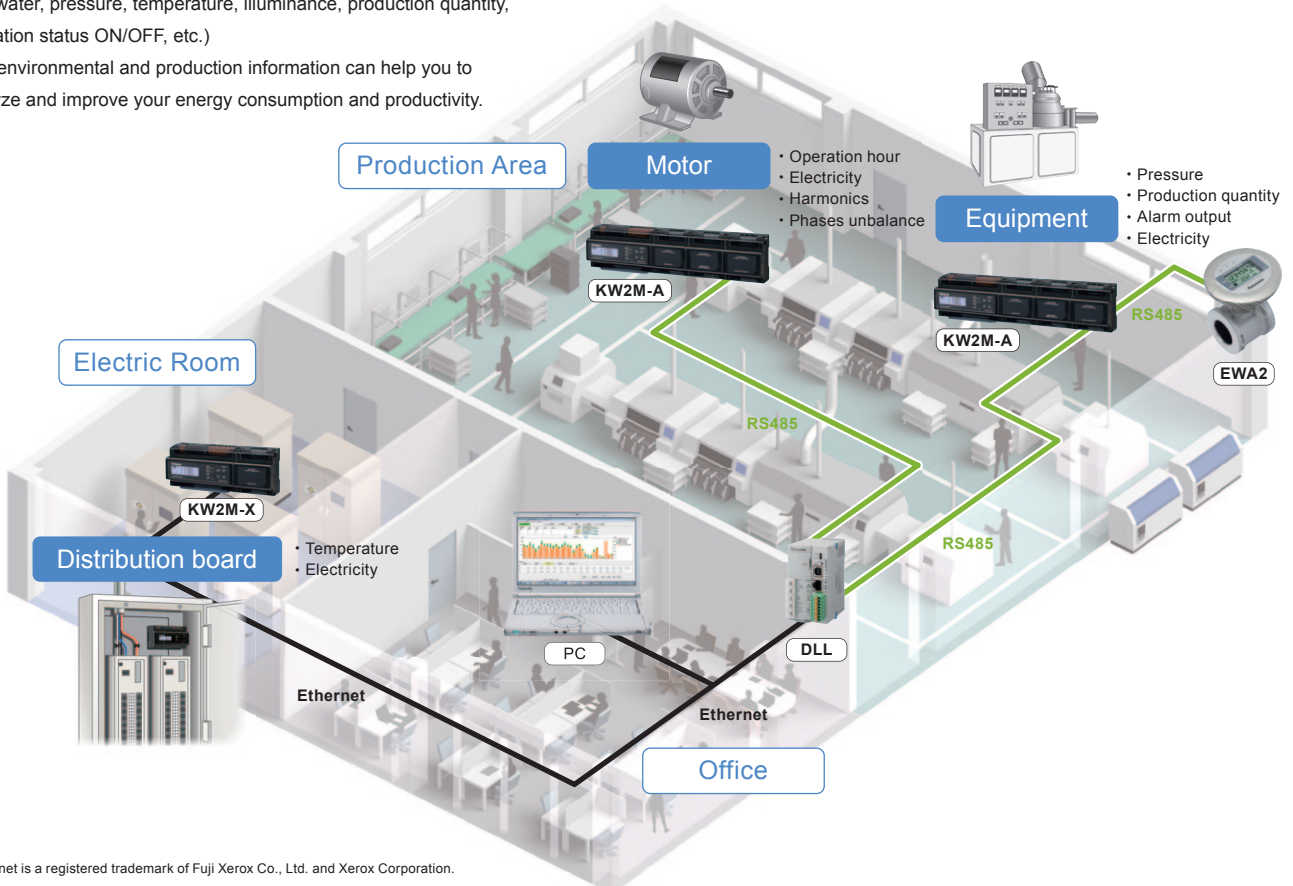Analog input (3CH), RTD (2CH), digital input (2CH), digital output (4CH)

Electric Power quality monitoring
Harmonics and unbalance measurement

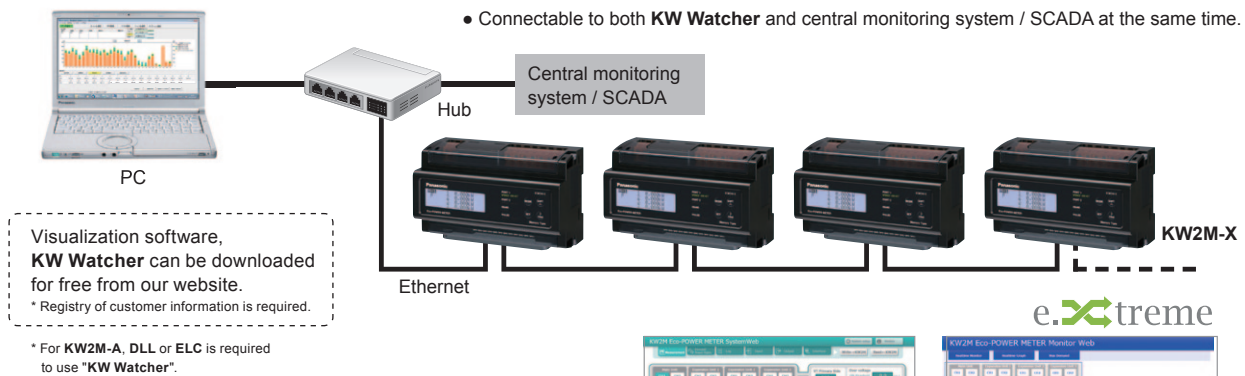| Application	Factory

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.

Production Area
Motor
• Operation hour
• Electricity
• Harmonics
• Phases unbalance

Equipment
• Pressure
• Production quantity
• Alarm output
• Electricity

KW2M-A

KW2M-A

RS485

EWA2

Electric Room

RS485

KW2M-X

RS485

Distribution board
• Temperature
• Electricity

PC

DLL

Ethernet

Ethernet

Office

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

to optimize your energy consumption

● Connectable to both **KW Watcher** and central monitoring system / SCADA at the same time.

Central monitoring system / SCADA

PC

Hub

Ethernet

KW2M-X

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**".

Two Ethernet ports
Devices can be daisy-chained without adding a Hub

Internal memory (only KW2M-X) e.**X**treme
Measured data can be saved in CSV files and
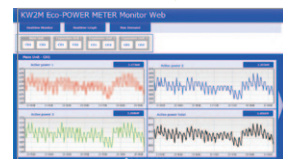visualized by **KW Watcher**

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

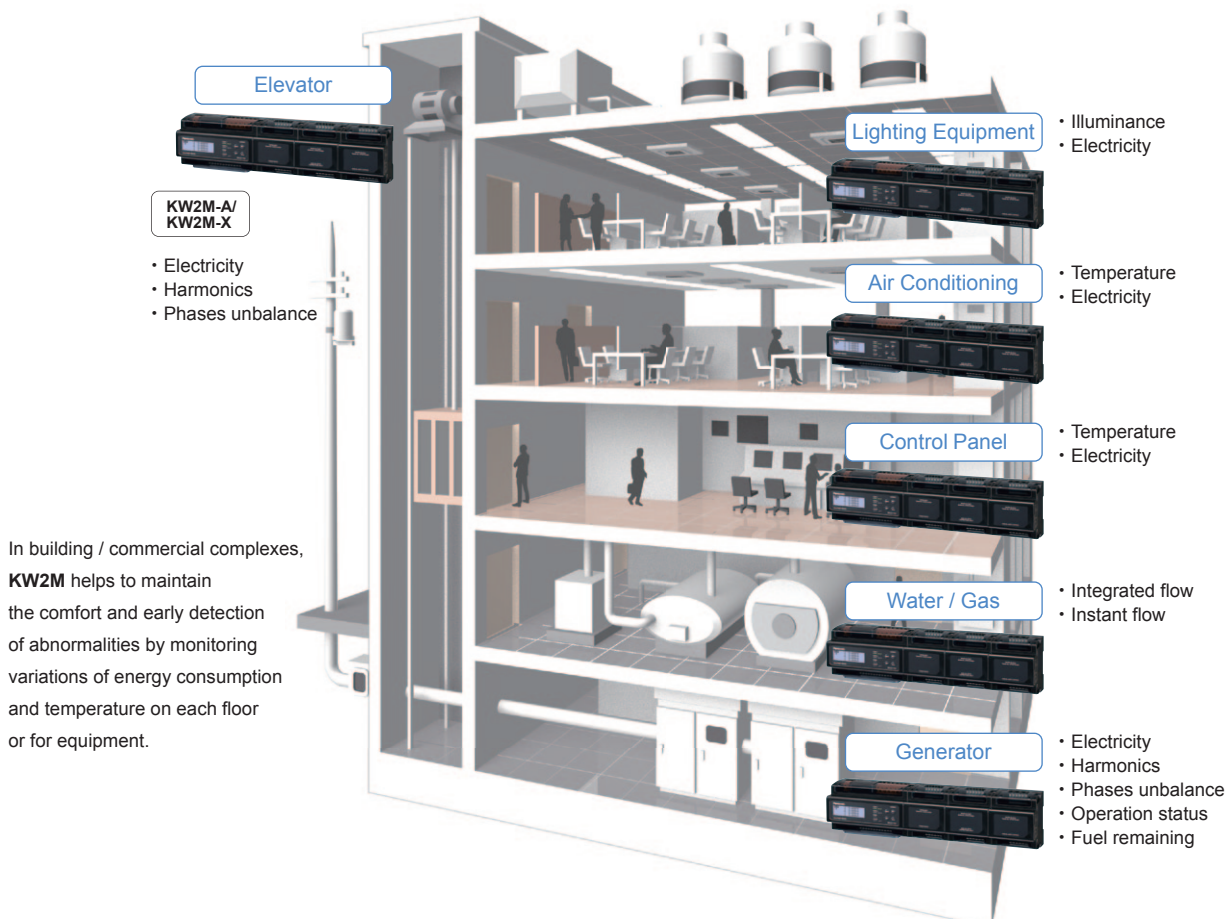* Ethernet is a registered trademark of Fuji Xerox Co.,Ltd. and Xerox Corporation.

e.**X**treme
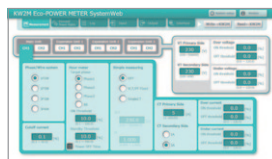
Operational setting

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**

Elevator

**KW2M-A/
KW2M-X**

・Electricity
・Harmonics
・Phases unbalance

Lighting Equipment
・Illuminance
・Electricity

Air Conditioning
・Temperature
・Electricity

Control Panel
・Temperature
・Electricity

Water / Gas
・Integrated flow
・Instant flow

Generator
・Electricity
・Harmonics
・Phases unbalance
・Operation status
・Fuel remaining

In building / commercial complexes,
KW2M helps to maintain
the comfort and early detection
of abnormalities by monitoring
variations of energy consumption
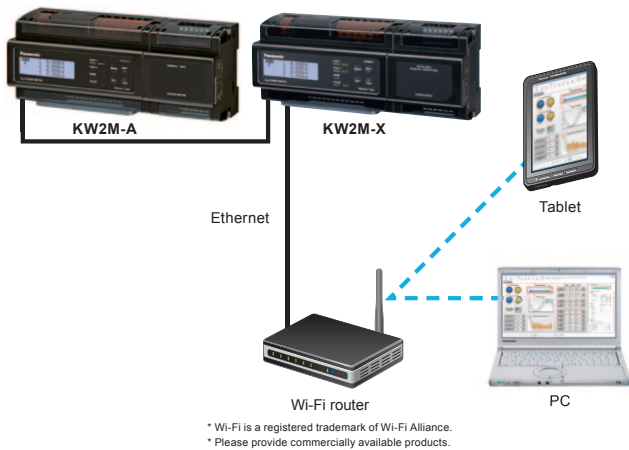and temperature on each floor
or for equipment.

to monitor various parameters via Ethernet

Web Creator (KW2M-X)   e.Xtreme

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.

KW2M-A

KW2M-X

Tablet

Ethernet

Wi-Fi router

PC

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

Menu bar

Web component property settings

Abundant Web component library
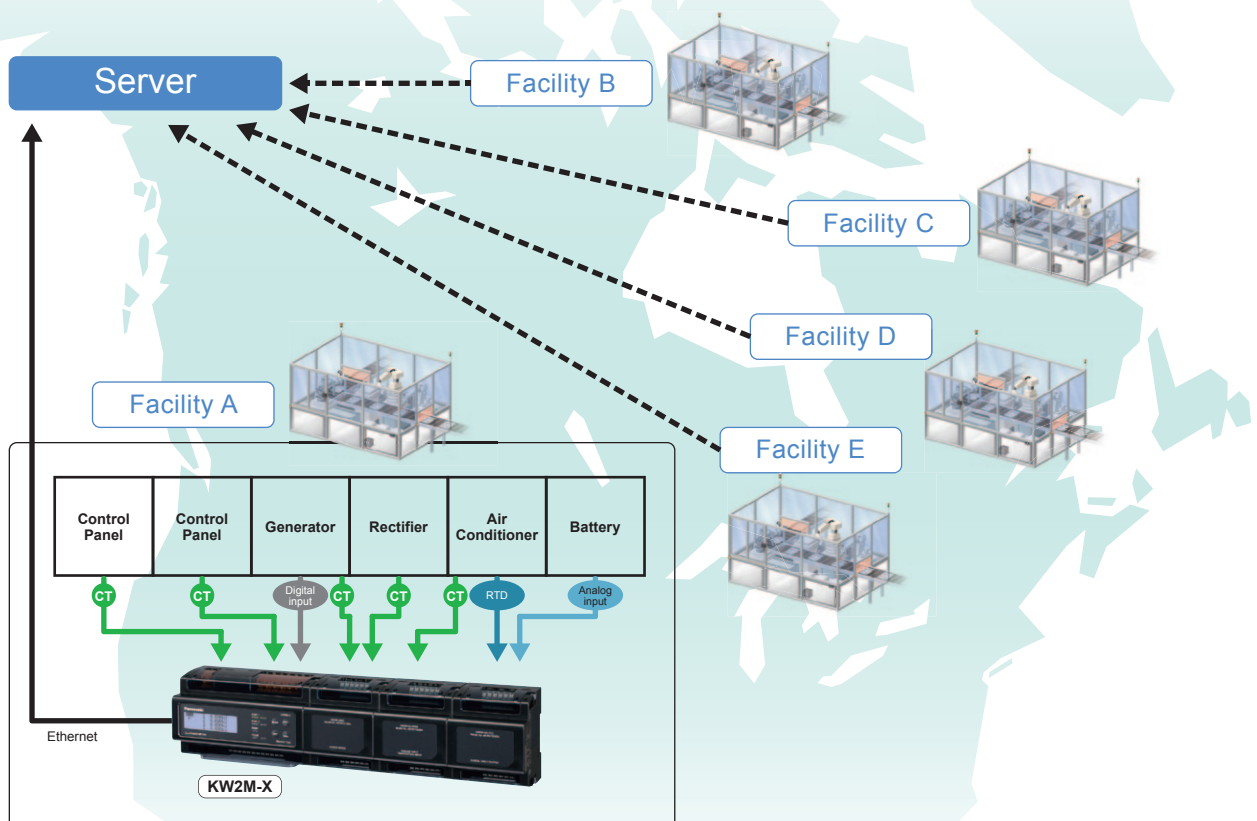
Creation area

Tool bar

■ 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.

Server

Facility B

Facility C

Facility D

Facility E

Facility A

| Control Panel | Control Panel | Generator | Rectifier | Air Conditioner | Battery |

CT   CT   Digital input   CT   CT   CT   RTD   Analog input

Ethernet

KW2M-X

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

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.

Storage battery

BATTERY

Maintenance time!!

Multi analog input

Analog input

DC up to 60V
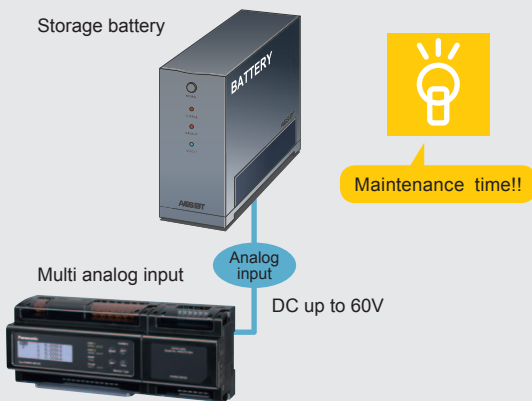
Predictive maintenance of panel
(Multi analog input unit)

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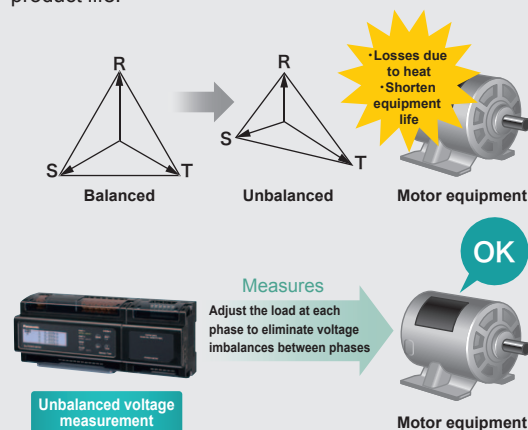
Distribution panel/ electrical cabinet

Multi analog input

RTD

RTD

Temperature
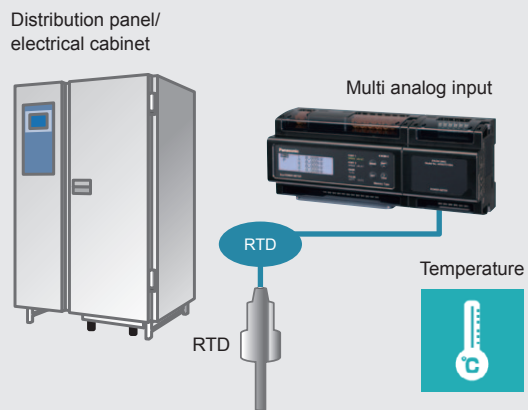
Alarm output
(Digital I/O unit)

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

Alarm output

Gas   Water

Digital output

Digital I/O

Meter

Digital input

flow
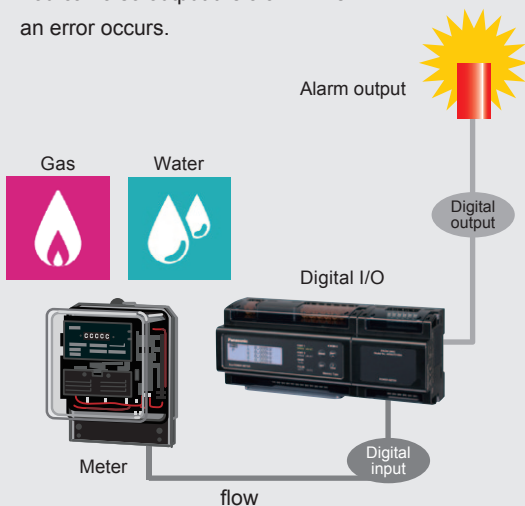
Elimination of voltage imbalances between phases
(Power measurement unit)

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.

R   R

S   S

T   T

Balanced   Unbalanced

・Losses due to heat
・Shorten equipment life

Motor equipment

OK

Measures

Adjust the load at each phase to eliminate voltage imbalances between phases

Unbalanced voltage measurement

Motor equipment

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 Single-phase three-wire system Three-phase three-wire system Three-phase four-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					AKW272100A
		Multi analog input	Number of input points		Input range		AKW273230A
			Analog input (Voltage/Curret) 3 channels		0-60 V, 0-20 mA, 4-20 mA		
			Resistance temperature detector input (RTD) 2 channels		PT100 / PT1000		
		Digital I/O	Number of I/O points		Input method		AKW274240A
			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/s² (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.
Calender 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-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 999.9k (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 999.9k (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 (slect 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

	Specifications
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

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