For Electric Power Monitoring

KW2M SERIES  Eco-POWER METER

Energy saving and electric power quality monitoring with multiple circuits.

- 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.x.treme
  - Measured data can be saved in CSV files and visualized by 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.

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

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.

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

Hour meter function

IEC61010-1 CAT III

Type

<table>
<thead>
<tr>
<th>Product name</th>
<th>Phase and wire system</th>
<th>Operating power supply</th>
<th>Input measured voltage</th>
<th>Applicable current sensor</th>
<th>Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>KW2M-A/KW2M-X</td>
<td>Single-phase two-wire system</td>
<td>100 to 240 V AC 50/60 Hz</td>
<td>0 to 690V AC CT</td>
<td>CT with secondary side output 1A or 5A</td>
<td>AKW263100A/KW264100A/KW272100A</td>
</tr>
<tr>
<td>Main unit</td>
<td>Single-phase three-wire system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KW2M-X (memory type)</td>
<td>Three-phase three-wire system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion unit</td>
<td>Three-phase four-wire system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*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 *

<table>
<thead>
<tr>
<th>Product name</th>
<th>Descriptions</th>
<th>Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Web Creator</td>
<td>Windows version. Downloadable free of charge from our website. Please purchase Key unit separately.</td>
<td>AFPSWC</td>
</tr>
<tr>
<td>Key unit*2</td>
<td>License key for Control Web Creator. 1 license. For USB port.</td>
<td>AFPSWCKEY</td>
</tr>
</tbody>
</table>

* 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.
## Specifications

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

### Measurement items

<table>
<thead>
<tr>
<th>Item</th>
<th>Data display range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous power</td>
<td>Active 999.99kW to 0.000kW to 999.99kW</td>
</tr>
<tr>
<td>Integral power (import)</td>
<td>Active 0.000kWh to 9999.99PWh</td>
</tr>
<tr>
<td>Integral power for each time zone (4 zone) (import)</td>
<td>Active 0.000kWh to 9999.99PWh</td>
</tr>
<tr>
<td>Integral power (export)</td>
<td>Active 0.000kWh to 9999.99PWh</td>
</tr>
<tr>
<td>Integral power for each time zone (4 zone) (export)</td>
<td>Active 0.000kWh to 9999.99PWh</td>
</tr>
</tbody>
</table>

**Current**

- Active 0.000kWh to 9999.99PWh
- Reactive 0.000kWh to 9999.99PWh

**Voltage (Phase and Line voltage)**

- Active 0.00 to 999.99V
- Reactive 0.00 to 999.99V

**Power factor**

- 1.00 to 0.00 to 1.00

**Frequency**

- 0.00 to 99.99Hz

**Pulse count value**

- 0.00 to 99999999

**Power quality**

- Unbalanced current: Each phase 0.5% to 300.0%
- Voltage THD (Total Harmonic Distortion) Each phase: 0.5% to 400.0%
- Current THD (Total Harmonic Distortion) Each phase: 0.5% to 400.0%
- Voltage harmonics (2nd to 31st) Power: 0.5% to 400.0%

**Hour-meter measurement**

- Off: 0.0 to 999999.99
- On: 0.0 to 999999.99
- Standby: 0.0 to 999999.99
- Measurement: 0.0 to 999999.99

**Present demand**

- Active 0.000kWh ~ 9999.9PWh
- Reactive 0.000kWh ~ 9999.9PWh

**Power interruption memory method**

- Internal memory

**Thermal sensor**

- Maximum: 100 MΩ or more

**Ambient temperature**

- Storage: -25 to +70 ℃
- Operation: -10 to +50 ℃

**Ambient humidity**

- 20 to 85% RH (at 20 ℃, 60% RH) with non-condensing

**Inrush current**

- 30 A or less (240 V AC at 25°C)

**Single amplitude**

- 0.375 mm (0.015 in) (1 hour on 3 axes)
- 0.75 mm (0.030 in) (1 hour on 3 axes)

**Pulse count value**

- 0.000 to 99999999

**Web server specifications**

**Simultaneous access number**

- 6 sessions

**Web browser**

- Windows
- Google Chrome
- iOS
- Mozilla Firefox
- Android
- Google Chrome

**Main unit memory specifications**

**5-min. instantaneous value**

- 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, R-phase-voltage (L1-L2), S-phase-voltage (L2-L3), T-phase-voltage (L3-L1)

**15-min. instantaneous value**

- Saved data
  - 96 records for 1 file (for one day) (Max. 60 days)

**Saved data amount**

- 2976 records for 1 file (for one month) (Max. 24 months)

**Demand monitoring and specifications**

**Demand type**

- IEC61565-12 Compliant demand
  - 1. Blocking 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.
* *2 Only AKW264100A is available.

**Power supply**

- Nominal power consumption 15VA

**Dimension**

- Main unit: 85×140×45 mm 3.349×5.512×1.772 in
- Expansion unit: 60×70×45 mm 2.362×2.756×1.772 in

**Weight**

- Main unit: 450 g (Main unit)
- Expansion unit: 200 g (Expansion unit)

**Calendar timer**

- 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)

**Power quality**

- Power factor: −1.000 to 0.000 to 1.000

**Accuracy**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical power</td>
<td>0.5%</td>
</tr>
<tr>
<td>Active electric power</td>
<td>0.5%</td>
</tr>
<tr>
<td>Compliant Class 0.5S</td>
<td>1</td>
</tr>
<tr>
<td>Reactive electric power</td>
<td>0.2%</td>
</tr>
<tr>
<td>Compliant Class 2</td>
<td>2</td>
</tr>
<tr>
<td>Current</td>
<td>0.2%</td>
</tr>
<tr>
<td>Single-phase three-wire system 2 (N) phase current, three-phase three-wire system 2 (S) phase current, 0.5%</td>
<td>2</td>
</tr>
<tr>
<td>Voltage</td>
<td>0.2%</td>
</tr>
<tr>
<td>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</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

* The tolerances of CT sensor and VT are not included.
* *1 Use OS and browser with the latest version.
  - Windows
  - Google Chrome
  - OS: *2
  - Mozilla Firefox
  - Android: *2
  - Google Chrome

*1 Only AKW264100A is available.

**Main unit memory specifications**

**5-min. instantaneous value**

- 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, R-phase-voltage (L1-L2), S-phase-voltage (L2-L3), T-phase-voltage (L3-L1)

**15-min. instantaneous value**

- Saved data
  - All data excluding for harmonics and conversion

**Demand**

- Saved data
  - Present demand (active power, reactive power, apparent power, active power(export), reactive power(export))

**Power interruption**

- Present demand
  - Active power, Reactive power, Apparent power, Active power(export), Reactive power(export)

**Web server specifications**

**Simultaneous access number**

- 6 sessions

**Web browser**

- Windows
- Google Chrome
- IOD: *2
- Safari
- Google Chrome
- Android: *2
- Google Chrome

**Main unit memory specifications**

**5-min. instantaneous value**

- 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, R-phase-voltage (L1-L2), S-phase-voltage (L2-L3), T-phase-voltage (L3-L1)

**15-min. instantaneous value**

- Saved data
  - 96 records for 1 file (for one day) (Max. 60 days)

**Demand**

- Saved data
  - Present demand (active power, reactive power, apparent power, active power(export), reactive power(export))

**Power interruption**

- Present demand
  - Active power, Over voltage, Under voltage, Over current, Under current  
    (with time stamp of event occurrence and occurrence period)
### Specifications

**Communication specifications (for AKW263100A and AKW264100A)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>Conforming to RS485</td>
</tr>
<tr>
<td>Communication method</td>
<td>Half-duplex</td>
</tr>
<tr>
<td>Synchronous system</td>
<td>Synchronous communication method</td>
</tr>
<tr>
<td>Isolation status</td>
<td>Isolated with the internal circuits</td>
</tr>
<tr>
<td>Protocol</td>
<td>MEWTCOOL, MODBUS (RTU) (select with setting mode)</td>
</tr>
<tr>
<td>Number of connected units</td>
<td>99 units (max)</td>
</tr>
<tr>
<td>Transmission distance</td>
<td>1,200 m (3.937 ft)</td>
</tr>
<tr>
<td>Transmission speed</td>
<td>115,200 bps (select with setting mode)</td>
</tr>
</tbody>
</table>

**Output specifications (for AKW263100A and AKW264100A)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output points</td>
<td>Two channels * Non-insulated between channels</td>
</tr>
<tr>
<td>Insulation method</td>
<td>PhotoMOS relay</td>
</tr>
<tr>
<td>Output type</td>
<td>1a</td>
</tr>
<tr>
<td>Output capacity</td>
<td>100 mA, 30 V AC/DC</td>
</tr>
</tbody>
</table>
| Pulse Output by integral power | - Pulse by integral power  
- Output by alarm or events (set with setting mode) |
| 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 |

**Alarm output Event output**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand-by alarm</td>
<td>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</td>
</tr>
</tbody>
</table>

**Protection element**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm reset</td>
<td>Self-reset (according to the setting) / Manual-reset</td>
</tr>
<tr>
<td>Alarm output</td>
<td>Varistor 2</td>
</tr>
</tbody>
</table>

**Protection element**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm output</td>
<td>Lighting alarm mark</td>
</tr>
</tbody>
</table>

**Input points**

<table>
<thead>
<tr>
<th>Input points</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 channel</td>
<td></td>
</tr>
</tbody>
</table>

**Insulation method**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduction point</td>
<td>Non-voltage connection (operated by internal power source)</td>
</tr>
</tbody>
</table>

**Input signal**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-voltage input</td>
<td></td>
</tr>
</tbody>
</table>
- Impedance during short-circuit: 1 kΩ or less  
- Impedance during short-circuit: 10 mΩ or less  
- Residual voltage during short-circuit: 5 V or less  
- Impedance while open 100 kΩ or more |

**Input mode**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse input</td>
<td>Synchronized with input from outer device 1</td>
</tr>
</tbody>
</table>

**Output specifications (for AKW263100A and AKW264100A)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse interval</td>
<td>33.4 ms or more (OFF time 16.7 ms or more)</td>
</tr>
</tbody>
</table>

**Protection element**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zener diode</td>
<td></td>
</tr>
</tbody>
</table>

**Tolerance**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>± 1.0</td>
<td>± 0.04</td>
</tr>
</tbody>
</table>

*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.

### Dimensions (unit: mm)

<table>
<thead>
<tr>
<th>Model</th>
<th>Main unit</th>
<th>Expansion unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKW263100A / AKW264100A</td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminal cover</th>
<th>Main unit</th>
<th>Expansion unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKW263100A / AKW264100A</td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

* Only AKW264100A

**Note:**

- 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 31 can be connected. To use these units, the number of connected devices, transmission distance, and transmission speed may be different according to using transmission line.

- Only AKW264100A

- Please check with the actual devices when some commercial devices with RS485 interface are connected. The number of connected units is 99 units (max.) *1.

- It changes the transmission speed automatically with auto-negotiation function.*2

- Control Web Creator is necessary to customize the webpage.

- 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.openss.org/) *3

- Only AKW264100A

- The DIN hook is used when connecting an expansion unit. Removing when connecting an expansion unit.

- DIN hook (sold separately)

- To use these hooks when connecting an expansion unit, remove when connecting an expansion unit.