Multi function type developed by adding a power surveillance function to a simple power meter

Application examples

- **Office area**
  - Distribution board (for lighting system)
  - Lights
  - Motor pump, blower and fan heater

- **Factory area**
  - Distribution board (for power system)
  - Control panel
  - Motor
  - Production equipment

- **Energy harvesting**
  - Solar tracker
  - Wind farm

For details of products other than KW9M, please refer to the individual catalogs.

Tools and applications:
- Excel
- Browser
- Smartphone
Specifications

Order guide

<table>
<thead>
<tr>
<th>Product name</th>
<th>Phase and wire system</th>
<th>Measurement voltage</th>
<th>Measurement current</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>KW9M Eco-POWER METER</td>
<td>1-phase, 2-wire system</td>
<td>0 to 500V AC</td>
<td>1 to 4000A</td>
<td>AKW91110</td>
</tr>
<tr>
<td>Standard type</td>
<td>1-phase, 3-wire system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-phase, 3-wire system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-phase, 4-wire system</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Please contact our sales offices for current transformers (CT) with a secondary current of 1A or 5A.

Measurement items

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Data display range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric energy (import)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>kWh</td>
<td>0.000 to 99999999.9</td>
</tr>
<tr>
<td>Reactive</td>
<td>kvarh</td>
<td></td>
</tr>
<tr>
<td>Apparent</td>
<td>kVAh</td>
<td></td>
</tr>
<tr>
<td>Electric energy (export)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>kW</td>
<td></td>
</tr>
<tr>
<td>Reactive</td>
<td>kvar</td>
<td></td>
</tr>
<tr>
<td>Apparent</td>
<td>kVA</td>
<td></td>
</tr>
<tr>
<td>Instantaneous electric power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>A</td>
<td>0.000 to 8000.0</td>
</tr>
<tr>
<td>Voltage</td>
<td>V</td>
<td>0.00 to 999999</td>
</tr>
<tr>
<td>Power factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>Hz</td>
<td>0.00 to 99.99</td>
</tr>
<tr>
<td>Conversion value</td>
<td></td>
<td>0.000 to 99999999.9</td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

Measurement input specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>1P2W L-L 0 to 500VAC 1P3W L-N 0 to 500VAC 3P3W L-L 0 to 500VAC 3P4W L-N 0 to 289VAC</td>
</tr>
<tr>
<td>Voltage</td>
<td>Impedance 2MΩ or more (L-N, V1/V2/V3-Vn)</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1V</td>
</tr>
<tr>
<td>Accuracy1)</td>
<td>0.5%</td>
</tr>
<tr>
<td>VT ratio</td>
<td>1.0 to 600.0 (set with setting mode) Voltage transformer (VT) is required when you measure a load with voltage over rated voltage.</td>
</tr>
<tr>
<td>Current</td>
<td>Input current (with CT) Primary current 4000A or less Secondary current 1A or 5A Max. current 10A (200% of input current) Overload capacity 1000% of input current for 3s Resolution 0.001A Accuracy1) 0.5%</td>
</tr>
<tr>
<td>Power</td>
<td>Power accuracy1) Active power class 1 (IEC 62053-21) Reactive power class 2 (IEC 62053-23)</td>
</tr>
<tr>
<td>Temperature</td>
<td>Accuracy ±5.0°C</td>
</tr>
</tbody>
</table>

1) Errors resulting from current transformers (CT) and voltage transformers (VT) are not considered.

General unit specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating voltage</td>
<td>AC 85 to 264V DC 100 to 300V</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60Hz</td>
</tr>
<tr>
<td>Rated power consumption</td>
<td>5VA approx. (240V AC at 25°C) 3W approx. (240V DC at 25°C)</td>
</tr>
<tr>
<td>Momentary power-off time</td>
<td>10ms</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Accuracy guarantee: –10 to +55°C Storage: –25 to +70°C</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>30 to 85% RH (at 20°C) non-condensing</td>
</tr>
<tr>
<td>Display method</td>
<td>LCD with backlight</td>
</tr>
<tr>
<td>Measurement speed</td>
<td>Sampling rate 1.024 MHz (1.0µs approx.) Data update time 100ms</td>
</tr>
<tr>
<td>Power failure memory</td>
<td>Internal memory (overwrite 1010 or more) Saved data: setting and measurement values 1.0%</td>
</tr>
<tr>
<td>Dimensions W/H/D</td>
<td>96 x 96 x 56mm (without terminal block) 96 x 96 x 68mm (with terminal block)</td>
</tr>
<tr>
<td>Weight</td>
<td>450g approx.</td>
</tr>
</tbody>
</table>

Communication

<table>
<thead>
<tr>
<th>Item</th>
<th>RS485</th>
<th>USB (Full Speed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>MEWTTOCOL/Modbus (RTU) (selectable)</td>
<td>MEWTTOCOL</td>
</tr>
<tr>
<td>Max. number of stations</td>
<td>99</td>
<td>1</td>
</tr>
<tr>
<td>Transmission speed</td>
<td>38400/19200/9600/4800/2400/1200bit/s</td>
<td></td>
</tr>
</tbody>
</table>
**Panel mounting**

1) Remove the mounting clips from the unit.
2) Insert the unit from the front of the panel.
3) Attach the mounting clips at both sides of the case and secure in place with the screws.

*Applicable panel thickness: 1 to 5mm

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**Terminal arrangement and wiring diagrams**

### Rear view

- **Terminal block A (upper)** 10P
  - Terminal number: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
  - Functions: L+ N V1 V2 V3 Vn SG A+ B-
  - AUX, voltage measurement input: RS485

- **Terminal block B (lower)** 8P
  - Terminal number: 1, 2, 3, 4, 5, 6, 7, 8
  - Functions: CT1 CT2 CT3 NC NC

*CT1 = current transformer

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**Wiring diagrams**

1-phase, 2-wire system: Terminal block A (upper)

1-phase, 3-wire system: Terminal block B (lower)

3-phase, 3-wire system: Terminal block A (upper)

3-phase, 4-wire system: Terminal block B (lower)
Features

Feature 1
- Large-screen LCD with backlight clearly displays values in four lines
- High accuracy! Instantaneous active power: 1%, class 1 (IEC62053-21)
  Display updating time: 0.1s

Feature 2
- The total and individual power values of each phase are displayed on one screen, enabling you to check the phase balance at a glance. The data is useful for power quality checks and power factor improvements.
- Capable of displaying voltages, currents, electric power (active, reactive, apparent) and power factor

Feature 3
- Panel-mount type capable of multi-circuit measurement
- Capable of simultaneously measuring up to three circuits in a single phase, two-wire system of same power supply

Feature 4
- Capable of displaying currents as low as 1mA
- This allows standby power consumption to be monitored, which helps save energy

Feature 5
- Regenerative power can also be measured by one KW9M Eco-POWER METER. Bidirectional integrated electric power of each circuit can be measured.

Feature 6
- Measuring power using large-capacity general-purpose CT (secondary side current 1A/5A)

Feature 7
- Compatible with AC/DC power supply
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