PowerLogic

Wireless energy metering

Catalogue
PowerLogic wireless range is designed to retrofit existing switchboards, and enhance energy efficiency of buildings in operation for many years, by:

- Monitoring energy consumption, to detect potential savings.
- Monitoring operation of the electrical system, to optimize service to the building occupants.
- PowerLogic EM4300 meters collect a broad scope of electrical data, from the distribution line they are fitted on.
- PowerLogic WT 4200-transmitters collect data from various meters (water, air, gas, steam etc.) with pulse outputs.

Collected data from both these sources are transmitted to a data concentrator, which enables their reading by various energy management services and software.

For data concentrators of various types, see:

- Com’X for Ethernet networks [Link]
- SmartStruXure Lite MPM managers for BACnet, EnOcean, CANbus nest works [Link]
PowerLogic EM4300
Wireless metering system (cont.)

Functions
Electrical circuits and loads monitoring, through a combination of power and energy metering with wireless communication.

Features and benefits
- Installation time and therefore total cost of ownership is minimized thanks to:
  - wireless communication.
  - attached flexible current sensors, immediately fitted around any cable or bar without disconnection. Power-off time to fit several, meters in a switchboard is a matter of minutes.
- Equipment can be scaled over time, according to savings fields identification, or other matters of interest.
- Broad scope of collected data make PowerLogic EM4300 of high added-value for:
  - energy management.
  - energy cost allocations.
  - electrical network management and supervision.

Collected information
- Energy: active, reactive, apparent, phase by phase and aggregated.
- Active, reactive and apparent powers, power factor.
- RMS Voltage and frequency.
- Maximum RMS current and minimum RMS voltage over the last minutes (1 to 30).

Wireless data transmission
- Zigbee Pro HA protocol.
- 2.4 GHz radio frequency.
- Maximum power: 10 mW (10 dBm).
- Compatible with Com’X and MPM gateways, data loggers and energy servers.

RF Operating range
The recommended distances between the meter and the receiver are shown below:

- Wireless meters are inside electrical switchboards.
- Wireless receivers are located in the technical room with up to 20 meters range.
- Location of each element has to match distances as described on the picture.
- All barriers, walls or pipes have to be considered during the installation. Moving an element by few centimeters can increase or decrease the wireless transmission performance.
- Checking the LQI (Link Quality Index) is recommended to build a robust network.

Note: Do not install the meter if there is a solid concrete wall between the meter and the gateway.

Certain installation locations or scenarios should be avoided.
- Do not install the meter in front of or close to metallic parts, which may reduce the efficiency of the embedded antenna.
- Do not install in a location that directly blocks the antenna on the meter.
## Commercial reference numbers

<table>
<thead>
<tr>
<th>Model</th>
<th>Current rating</th>
<th>Current sensor inner Ø</th>
<th>Ref. number</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM4302</td>
<td>200 A</td>
<td>55 mm (2.17 in)</td>
<td>METSEEM4302</td>
</tr>
<tr>
<td>EM4305</td>
<td>500 A</td>
<td>55 mm (2.17 in)</td>
<td>METSEEM4305</td>
</tr>
<tr>
<td>EM4310</td>
<td>1000 A</td>
<td>125 mm (4.92 in)</td>
<td>METSEEM4310</td>
</tr>
<tr>
<td>EM4320</td>
<td>2000 A</td>
<td>125 mm (4.92 in)</td>
<td>METSEEM4320</td>
</tr>
</tbody>
</table>

## Technical characteristics

### Control power
- Powered by L1-N measured input voltage: 90 V to 300 V - 50/60 Hz
- Maximum supply current: 4 A
- Maximum burden: 2.0 W

### Measurement characteristics
- Input voltage: 90 V to 300 V
- Frequency range: 50/60 Hz
- Current range: 0 % to 120 % of rated value (200, 500, 1000 or 2000 A)
- Current sensors: 3 attached to the meter and calibrated as a single unit
- Accuracy: 1 % on active energy (3-phase with neutral)

### Mechanical characteristics
- Degree of protection (for indoor use only, not suitable for wet locations): IP20, IK06
- Insulation: Class II (IEC 61010-1 CAT III 300 V)

### Environmental characteristics
- Operating temperature: -10°C to 55°C (14°F to 131°F)
- Moisture withstand: 5 % to 90 % relative humidity, non-condensing, maximum dewpoint 38°C (100°F)
- Pollution degree: 2
- Voltage surges: Category III
- Altitude: 2000 m (6562 ft) above sea level

### Standards compliance
- Safety: IEC/EN 61010-1 ed. 3, UL 61010-1 ed. 3
- Electromagnetic compatibility: EN 61326-1:2013
- Wireless communication: FCC CFR Part 15, subparts and C
PowerLogic EM4300
Wireless metering system (cont.)

Mounting
- DIN-rail or flat surface.
- Flexible current sensors around conductor to be monitored.
Max inner Ø 55 or 125 mm. For safe and correct mounting, refer to the installation guide.

Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>I (A)</th>
<th>Ø (mm / in)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM4302</td>
<td>200</td>
<td>55 / 2.17</td>
<td>*</td>
</tr>
<tr>
<td>EM4305</td>
<td>500</td>
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<td>2000</td>
<td>125 / 4.92</td>
<td>*</td>
</tr>
</tbody>
</table>

*Please consult your Schneider Electric representative.
WT4100 / WT4200 series
Functions and characteristics

WAGES (Water, Air, Gas, Electricity, Steam) energy monitoring can be challenging, especially if the monitoring devices are installed in hazardous conditions or remote locations with rough or difficult-to-access terrain. The WR4100 series / WR4200 series devices help provide an easy and reliable solution.

This long-range radio frequency (RF) wireless solution consists of transmitters and a receiver. Typically, repeaters are also installed and located between the transmitter and receiver to boost the transmission signal when the line-of-sight distance between the transmitter and receiver is greater than the transmitter’s range.

Physical obstructions, such as buildings, reduce the effective transmission range of a transmitter, so repeaters are also installed in these situations. The wireless devices are grouped according to model numbers, and these identify a device’s RF transmission frequency. It is common for countries to limit RF transmission to a specific radio frequency.

- WT4200 series, WR4200 series, WA4200 series, 169MHz for EEC
- WT4100 series, WR4100 series, WA4100 series, 153MHz for USA and Canada

(Before installing and operating the wireless devices, check the rules and restrictions on RF transmission for your country and make sure your devices’ transmission frequency matches the allowed radio frequency.)

Main components

**Transmitter Pulse counters** - This Modbus device pulse counter transmitter detects and counts pulses from a meter’s pulse output. It can count pulses with a 0.1 to 10 Hz frequency and the value is transmitted once every 15 minutes.

**Water pit pulse counter** - Designed for use with a water flowmeter and is easily installed by magnetic force to cast-iron covers.

**ATEX-rated pulse counter** - Designed for use with devices such as a gas meter, compliant with ATEX II 3G and Ex ic IIA T3 for use in hazardous or explosive environments.

**Receiver** - The gateway between sensors (transmitters) and the Modbus network. Data can be accessed via Modbus using a Com’X or EGX gateway device.

**Wireless repeater** - this device extends the operating range between transmitters and receivers.

<table>
<thead>
<tr>
<th>Part number</th>
<th>Product name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>METSEWT4211</td>
<td>WT4211</td>
<td>Single Pulse 169 MHz</td>
</tr>
<tr>
<td>METSEWT4216</td>
<td>WT4216</td>
<td>Single Pulse Water Pit 169 MHz</td>
</tr>
<tr>
<td>METSEWT4214</td>
<td>WT4214</td>
<td>Single Pulse ATEX 169 MHz</td>
</tr>
<tr>
<td>METSEWT4212</td>
<td>WT4212</td>
<td>Dual Pulse 169 MHz</td>
</tr>
<tr>
<td>METSEWT4232</td>
<td>WT4232</td>
<td>Alarm Status Dual 169 MHz</td>
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<tr>
<td>METSEWT4222</td>
<td>WT4222</td>
<td>Analogue 0-10 V Dual 169 MHz</td>
</tr>
<tr>
<td>METSEWT4241</td>
<td>WT4241</td>
<td>Temperature Single Internal 169 MHz</td>
</tr>
<tr>
<td>METSEWR4200</td>
<td>WR4200</td>
<td>Modbus Receiver 169 MHz</td>
</tr>
<tr>
<td>METSEWR4290</td>
<td>WR4290</td>
<td>Repeater 169 MHz</td>
</tr>
<tr>
<td>METSEWA4275</td>
<td>WA4275</td>
<td>Dipole Antenna 169 MHz</td>
</tr>
<tr>
<td>METSEWA4277</td>
<td>WA4277</td>
<td>Whip Antenna 169 MHz</td>
</tr>
</tbody>
</table>

**Common accessories**

- METSEWA4X82 WA4X82 5 m antenna extension cable 169 MHz
- METSEWA4X84 WA4X84 10 m antenna extension cable 169 MHz

Contact your Schneider Electric representative for complete ordering information
Wireless field sensors

WT4100 / WT4200 series
Functions and characteristics (cont.)

Pulse counter parts

A  Antenna location
B  Reed switch location
C  Single channel (2 wire)
D  Dual channel (4 wire)
E  Internal temperature sensor
F  Serial # (transmitter ID)

A  Mounting magnet
B  Reed switch location
C  Input wiring
D  Serial # (transmitter ID)

A  Antenna
B  Reed switch location
C  Input wiring connector
D  Serial # (transmitter ID)

The receiver is delivered by default with a small antenna that will work if the transmitters are in the same room than the receiver.

Dipole antenna for outdoor use (left) and whip antenna for indoor use (right)

Extension cable

The receiver is delivered by default with a small antenna that will work if the transmitters are in the the same room than the receiver.
Wireless field sensors

WT4100 / WT4200 series
Dimensions and connection

**Pulse counter**

**Single pulse, water pit**

**Single pulse, Atex**
Wireless field sensors

WT4100 / WT4200 series
Dimensions and connection

Receiver, repeater, and antenna options

![Diagram](image1)

Wireless receiver

Wireless repeater

Whip antenna

Dipole antenna

Receiver, repeater, and antenna dimensions

WR4100 / WR4200

WR4100 / WR4290

WA4177 / WA4277

WA4175 / WA4275

Dimensions (mm)

Dimensions (in)