PowerLogic power-monitoring units

PM700 series power meter

Technical data sheet

2011
Mid-range metering

**PM700 series**

**Functions and characteristics**

The PowerLogic PM700 series meters offer all the measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit extending only 50 mm behind the mounting surface.

With its large display, you can monitor all three phases and neutral at the same time. The anti-glare display features large 11 mm high characters and powerful backlighting for easy reading even in extreme lighting conditions and viewing angles.

The PowerLogic PM700 series meters are available in four versions to better fit specific applications:

- PM700, basic metering with THD and min/max readings
- PM700P, same functions as the PM700, plus two solid-state pulse outputs for energy metering
- PM710, same functions as the PM700, plus one RS-485 port for Modbus communication
- PM750, same functions as the PM710, plus two digital inputs, one digital output and alarms.

**Applications**

- Panel instrumentation
- Sub- and main metering
- Remote monitoring of an electrical installation
- Harmonic monitoring (THD)
- Alarming with under/over conditions and I/O status (PM750).

**Characteristics**

- Requires only 50 mm behind mounting surface
- The PM700 series meters can be mounted on switchboard doors to maximise free space for electrical devices.
- Large back light display with integrated bar charts
- Displays 4 measurements at a time for fast readings. Uses only two clips for installation; no tools necessary.

**Intuitive use**

- Easy navigation using context-sensitive menus.
- Bar charts
- Graphical representation of system loading and Status of Inputs/Outputs (PM750 and PM700P) provide system status at a glance.

**Power and current demand, THD and min/max reading in basic version**

A high-performance solution for trouble-free monitoring of your electrical installation.

**Active energy class** IEC 60233-22 class 0.5S (PM750) and IEC 60233-21 class 1 (PM700, PM700P, PM710)

Suitable for sub- and main metering applications.

IEC 61557-12 Performance Standards

Meet IEC-61557-12 PMD/S/K55/1 (PM750) and IEC-61557-12 PMD/S/K55/1 (PM700, PM700P, PM710) requirements for combined Performance Measuring and monitoring Devices (PMD).

**Innovative Power Meter**

RS-485 communications, alarming and digital I/O in a single Power Meter (PM750).

**Part numbers**

<table>
<thead>
<tr>
<th>Power Meter</th>
<th>Schneider Electric</th>
<th>Square D</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM700 power meter</td>
<td>PM7035RG</td>
<td>PM700</td>
</tr>
<tr>
<td>PM700P power meter</td>
<td>PM7035PG</td>
<td>PM700P</td>
</tr>
<tr>
<td>PM710 power meter</td>
<td>PM7155RG</td>
<td>PM710</td>
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<tr>
<td>PM750 power meter</td>
<td>PM7555RG</td>
<td>PM750</td>
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</tbody>
</table>

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<thead>
<tr>
<th>DIN rail mounting kit</th>
<th>PM72DINRAILKIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set of connectors replacement (PM700, PM700P, PM750)</td>
<td>PM70AND2WVKIT</td>
</tr>
<tr>
<td>Set of connectors replacement (PM750 only)</td>
<td>PM750HWKIT</td>
</tr>
</tbody>
</table>

**Selection guide**

<table>
<thead>
<tr>
<th>PM700</th>
<th>PM700P</th>
<th>PM710</th>
<th>PM750</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance standard</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IEC 61557-12 PMD/S/K55/1 (PM700, PM700P, PM710)</td>
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<tr>
<td>IEC 61557-12 PMD/S/K55/1 (PM750)</td>
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<td></td>
<td></td>
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<tr>
<td><strong>General</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Use on LV and HV systems</td>
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<td></td>
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<tr>
<td>Current</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Voltage</td>
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<td></td>
<td></td>
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<tr>
<td>Frequency</td>
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<td>Real and reactive power</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Residual energy accuracy</td>
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<td></td>
<td></td>
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<tr>
<td>Sampling rate (samples/cycle)</td>
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<td></td>
<td></td>
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<tr>
<td><strong>Instantaneous rms values</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td></td>
<td></td>
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<tr>
<td>Voltage</td>
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| **Energy values** | | | | |
| Active and reactive energy | | | | |
| Apparent energy | | | | |
| **Demand values** | | | | |
| Current | | | | |
| Voltage | | | | |
| Setting of power demand calculation mode | | | | |
| **Other measurements** | | | | |
| Power quality measurements | | | | |
| Harmonic selection | | | | |
| **Data recording** | | | | |
| Minimum of instantaneous values | | | | |
| **Alarm** | | | | |
| **Inputs/Outputs** | | | | |
| Digital input | | | | |
| Digital output | | | | |
| **Display** | | | | |
| Green backlit LCD display | | | | |
| **Communication** | | | | |
| RS-485 port | | | | |
| Firmware update via RS485 serial port | | | | |

(1) Signed real and reactive power and energy. The power meter includes net value only.
(2) To register e.g. kW, negative sign “-” indicates high. The measurement is recorded under load and over conditions in combination with digital inputs or output status.
(3) 2 operation modes are available: normal or input demand synchronization.
(4) kWh and kVARh pulse output mode only.
(5) 2 operation modes are available: normal or input demand synchronization.

**PM750.**

1. Control power.
2. Voltage inputs.
4. RS-485 port.
5. Digital input/output.
7. Mounting kit.
Electrical characteristics

**Type of measurement**

- True rms up to the 15th harmonic on three-phase (3P, 3P + N) two-phase and single-phase AC systems; 32 samples per cycle.

**Measurement accuracy**

- ± 0.5% from 1A to 6 A (PM700, PM700P, PM710) ± 0.6% from 1A to 6 A (PM750).
- ± 0.3% from 50V to 277V (PM700, PM700P, PM710) ± 0.5% from 50V to 277V (PM750).

**Power Factor**

- ± 0.5% from 1A to 6 A (PM700P, PM750) ± 0.5% from 0.1A to 10 A.

**Frequency**

- ± 0.02 Hz from 45 to 65 Hz.

**Active Energy**

- IEC 62053-21 Class 1.

**Reactive Energy**

- IEC 62053-22 Class 0.5S.

**Data update rate**

- 1 s.

**Input-voltage characteristics**

- Measured voltage:
  - 10 to 480 V AC (direct Ph-Ph).
  - 10 to 277 V AC (direct Ph-N).
  - Up to 1.6 MV AC (with external VT); the lower limit of the measurement range depends on the PT ratio.

**Impedance**

- 2 MΩ (Ph-Ph) / 1 MΩ (Ph-N).

**Frequency range**

- 45 to 65 Hz.

**Input-current characteristics**

- **CT ratings**
  - **Primary**
    - Adjustable from 1 A to 32767 A.
  - **Secondary**
    - 1 A or 5 A.

- **Measurement input range**
  - 5 mA to 6 A.

- **Permissible overload**
  - 15 A continuous, 50 A for 10 seconds per hour, 120 A for 1 second per hour.

**Impedance**

- < 0.12 W (Ph-Ph).

**Load**

- < 0.15 VA.

**Power supply**

- **AC**
  - 100 to 415 ±10 % V AC, 5 VA; 50-60 Hz.

- **DC**
  - 125 to 250 ±20 % V DC, 3 W.

**Ride-through time**

- 100 ms at 120 V AC.

**Input**

- Digital inputs (PM750)
  - 12 to 36 V DC, 24 V DC nominal, 1.2 kΩ impedance, 2.5 kV rms isolation, max. frequency 25 Hz, response time 10 ms.

**Output**

- Digital or pulse output (PM750)
  - 8 to 36 V DC, 24 V DC nominal at 25 °C, 3.0 kV rms isolation, 28 W on-resistance at 100 mA.

**Mechanical characteristics**

- **Weight**
  - 0.37 kg.

- **IP degree of protection (IEC 60529)**
  - IP52 front display, IP30 meter body.

**Environmental conditions**

- **Operating temperature**
  - Meter: -5 °C to +60 °C.
  - Display: -10 °C to +55 °C.

- **Storage temp.**
  - Meter + Display: -40 °C to +85 °C.

- **Humidity rating**
  - 5 to 95 % RH at 50 °C (non-condensing).

- **Pollution degree**
  - 2.

- **Safety**
  - Europe: as per IEC 61010-1.
  - U.S. and Canada: cULus (UL508 and CAN/CSA C22.2 No. 14-999, Industrial Control Equipment).

**Electromagnetic compatibility**

- **Electrostatic discharge**
  - Level III (IEC 61000-4-2).

- **Immunity to radiated fields**
  - Level III (IEC 61000-4-3).

- **Immunity to fast transients**
  - Level III (IEC 61000-4-4).

- **Immunity to voltage dips**
  - Level III (IEC 61000-4-11).

- **Conducted and radiated emissions**
  - As per EN 55011, EN 50082-1, FCC Part 15 class B, EN 50081-2.

- **Harmonics emissions**
  - IEC 61000-3-2.

- **Flicker emissions**
  - IEC 61000-3-3.

**Display characteristics**

- **Dimensions**
  - 73 x 69 mm.
  - Green back-lit LCD.

- **Display**
  - 6 lines total, 4 concurrent values.

- **Protected throughout by double insulation**.

**Safety**

- Europe: as per IEC 61010-1.

- U.S. and Canada: cULus (UL508 and CAN/CSA C22.2 No. 14-999, Industrial Control Equipment).

**Communication**

- RS 485 port (PM710 and PM750)
  - 2-wire, up to 19200 bauds, Modbus RTU (double insulation).

**Display characteristics**

- Dimensions: 73 x 69 mm.

- Green back-lit LCD.

- 6 lines total, 4 concurrent values.

- (1) Protected throughout by double insulation.
Mid-range metering

Power Meter Series 700
Installation and connection

Dimensions

Front-panel mounting

4-wire connection with 3 CTs and no PT

3-wire connection with 2 CTs and 2 PTs

Note: other types of connection are possible. See product documentation.
**Power Meter Series 700**

Installation and connection (cont.)

**PM700P pulse output capabilities**

There are two solid-state KY outputs. One is dedicated to kWh and the other to kVARh.

Pulse Output: KY is a solid state pulse output rated for 240 V AC/DC max.

- **Power source**: 240 V AC/DC max.
- **Current rating**: 0-4 A max.

1. The power source should not be a safety extra low voltage (SELV) circuit. Pulse outputs are not SELV rated.
2. Overcurrent protective device (not supplied). This device must be rated for short circuits at the connection point.

**PM700P**

**PM750 input/output capabilities**

The PM750 has two digital inputs and one digital output. The digital inputs have two operating modes: Normal and Demand Sync.

The digital output has three operating modes: External Control (default), Alarm and kWh Pulse mode. When configured in Alarm mode, the digital output can be controlled by the meter in response to an alarm condition.

1. The power source should not be a safety extra low voltage (SELV) circuit. Pulse outputs are not SELV rated.
2. Overcurrent protective device (not supplied). This device must be rated for short circuits at the connection point.

**Communications (PM710 and PM750)**

2-wire daisy-chain connection of devices (RS 485)

- Belden 9841 or equivalent
- MCT2W terminator on the last device of the daisy chain

Belden 9841 wire colors: blue with white stripe (+), white with blue stripe (-), and silver (ground).