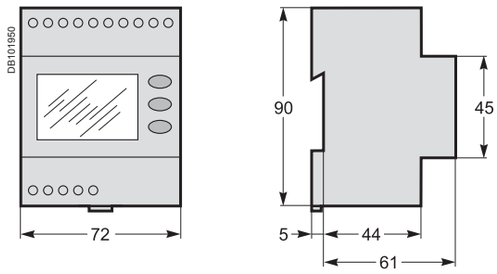
# Power Meter Series PM9
## Functions and characteristics (cont.)

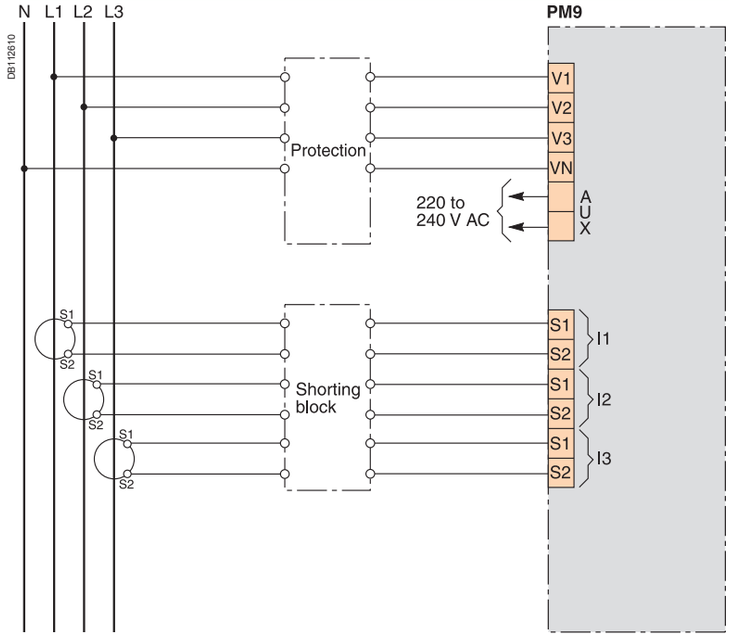
| | | |
|---|---|---|
| **Electrical characteristics** | | |
| Type of measurement | | On single-phase (1P + N) or three-phase (3P, 3P + N) AC systems |
| Measurement accuracy | Current and voltage | 0.5 % of reading |
| | Power | 1 % of reading from pf 0.8 leading to 0.5 lagging |
| | Frequency | 0.2 Hz |
| | Power factor | 2 % from 0.8 leading to 0.5 lagging |
| | Active energy | Class 1 as defined by IEC 62053-21 and IEC 61557-12 |
| | Reactive energy | Class 2 as defined by IEC 62053-23 and IEC 61557-12 |
| Input-voltage characteristics | Measured voltage | 50 to 450 V AC (direct)<br>and up to 1000 V AC (with external VT) |
| | Permissible overload | 1.15 Un |
| | Frequency measurement range | 45 to 65 Hz |
| Input-current characteristics | CT ratings | Adjustable from 5 to 10000 A |
| | Secondary | 5 A |
| | Metering over-range | 15 mA to 6 A |
| | Permissible overload | 6 A continuous<br>20 A 10 s<br>50 A 1 s |
| | Load | 0.55 VA |
| | Input current | Not isolated |
| Control Power | AC | 220 to 240 V AC (±10 %), < 5 VA |
| Pulse output (PM9P) | | Static output, 350 V AC/DC max.,<br>130 mA max. at 25°C, derating 1 mA/°C above 25°C,<br>5 kV insulation |
| **Mechanical characteristics** | | |
| Weight | | 0.3 kg |
| IP degree of protection | | IP52 (front display) |
| Dimensions | | 72 x 90 x 66 (mm) |
| Connection | | Tunnel terminals, 1 x 4 $mm^2$ |
| **Environmental conditions** | | |
| Operating temperature | | -5°C to +55°C |
| Pollution degree | | 2 |
| Installation category | | III for distribution systems<br>up to 260/450 V |
| 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 IV (IEC 61000-4-4) |
| | Immunity to impulse waves | Level IV (IEC 61000-4-5) |
| | Conducted and radiated emissions | Class B (CISPR11) |
| **Safety** | | |
| | | CE |
| **Communication** | | |
| RS485 port (PM9C) remote reading and reset | | 2-wire, 9600 or 19200 bauds, Modbus RTU, ELSV circuit, 6 kV impulse withstand (double insulation) |
| **Standards compliance** | | |
| IEC 61557-12 | | PMD/SD/K55/1<br>PMD/SS/K55/1 |

# Power Meter Series PM9
## Installation and connection

### Dimensions



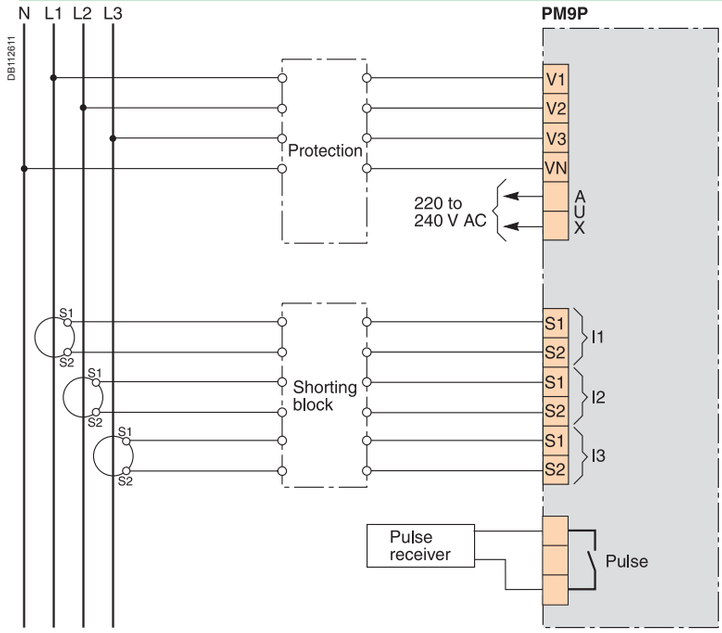

### PM9/4-wire connection with 3 CTs




*Connection example.*

# Power Meter Series PM9
## Installation and connection (cont.)

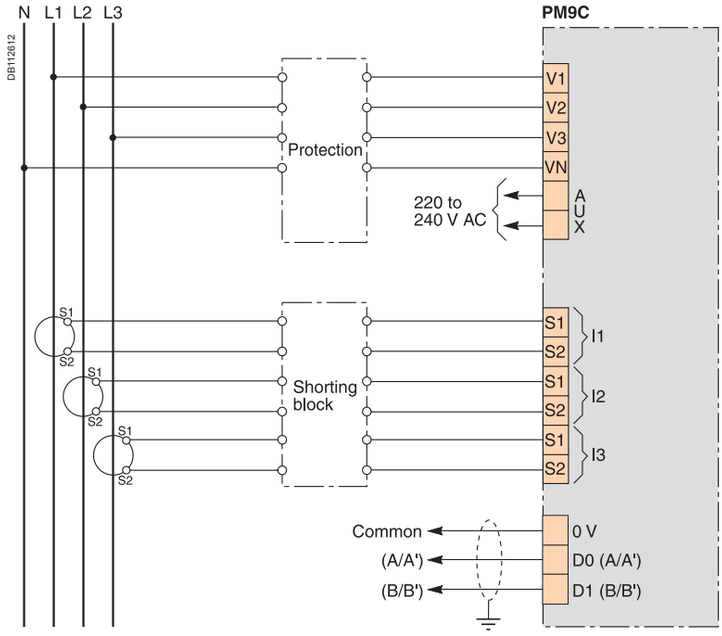
### PM9P/4-wire connection with 3 CTs




*Connection example.*

***Note:** other types of connection are possible. See product documentation.*

### PM9C/4-wire connection with 3 CTs




*Connection example.*

# Power Meter Series iEM3000
## Functions and characteristics

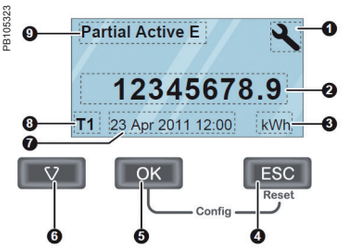
PB108410


*Energy Meter Series iEM3100*

PB106420


*Energy Meter Series iEM3255*

PB105323




**Front of meter parts**
**1** Configuration mode
**2** Values and parameters
**3** Unit
**4** Cancellation
**5** Confirmation
**6** Selection
**7** Date and time
**8** Tariff currently used (iEM3255)
**9** Functions/Measurements

This PowerLogic Power meter offers basic to advanced measurement capabilities. With compact size and DIN rail mounting, the PM3200 allows mains and feeders monitoring in small electrical cabinets. Combined with current transformers and voltage transformers, these meters can monitor 2-, 3- and 4-wire systems. The graphic display gas intuitive navigation to easily access important parameters.

Four versions are available offering basic to advanced applications:
- iEM3100/iEM3200: kWh meter with partial counter
- iEM3110/iEM3210: kWh meter with partial counter and pulse output. MID certified
- iEM3115/iEM3215: multi tariff meter controlled by digital input or internal clock. MID certified
- iEM3150/iEM3250: kWh meter with partial counter and current, voltage, power measurement. Modbus communication
- iEM3155/iEM3255: energy meter, four quadrant, multi tariffs with partial counter and current, voltage, power measurement. Modbus communication, digital input/output and MID certified.

Innovative design makes the meters smart and simple:
- Easy to install for panel builders
- Easy to commission for contractors and installers
- Easy to operate for end users.

### Applications

#### Cost management applications
- Bill checking
- Sub-billing, including WAGES view
- Cost allocation, including WAGES view.

#### Network management applications
- Basic electrical parameters like current, voltage and power
- Onboard overload alarm to avoid circuit overload and trip
- Easy integration with PLC system by input/output interface.

#### Market segments
- Buildings
- Industry
- Data centres and networks
- Infrastructure (airports, road tunnels, telecom).

### Characteristics
- Self powered
- Chain measurement (meters + CTs) accuracy class 1
- Compliance with IEC 61557-12, IEC 62053-21/22, IEC 62053-23, EN50470-3
- Graphical display for easy viewing
- Easy wiring (without CTs)
- Compact size
- Double fixation on DIN rail (horizontal or vertical)
- Anti-tamper security features ensure the integrity of your data.

### Part numbers

The Acti 9 iEM3000 series has ten references from which to choose:
- The iEM3100 series meters provide direct measurement up to 63 A in 3-phase circuits
- The iEM3200 series meters series meters are designed for measurement with 1A/5 A inputs (CTs) in 3-phase circuits.

| Meter model and description | Current measurement | Part no. |
|---|---|---|
| iEM3100 basic energy meter | Direct connected 63 A | **A9MEM3100** |
| iEM3110 energy meter with pulse output | Direct connected 63 A | **A9MEM3110** |
| iEM3115 multi-tariff energy meter | Direct connected 63 A | **A9MEM3115** |
| iEM3150 energy meter & electrical parameter plus RS485 comm port | Direct connected 63 A | **A9MEM3150** |
| iEM3155 advanced multi-tarrif energy meter & electrical parameter plus RS485 comm port | Direct connected 63 A | **A9MEM3155** |
| iEM3200 basic energy meter | Transformer connected 6 A | **A9MEM3200** |
| iEM3210 energy meter with pulse output | Transformer connected 6 A | **A9MEM3210** |
| iEM3215 multi-tariff energy meter | Transformer connected 6 A | **A9MEM3215** |
| iEM3250 energy meter & electrical parameter plus RS485 comm port | Transformer connected 6 A | **A9MEM3250** |
| iEM3255 advanced multi-tarrif energy meter & electrical parameter plus RS485 comm port | Transformer connected 6 A | **A9MEM3255** |

# Power Meter Series iEM3000
## Functions and characteristics (cont.)

| Function guide | iEM3100 | iEM3110 | iEM3115 | iEM3150 | iEM3155 | iEM3200 | iEM3210 | iEM3215 | iEM3250 | iEM3255 |
|---|---|---|---|---|---|---|---|---|---|---|
| Direct measurement (up to 63 A) | ■ | ■ | ■ | ■ | ■ | | | | | |
| CTs inputs (1 A, 5 A) | | | | | | ■ | ■ | ■ | ■ | ■ |
| VTs inputs | | | | | | | | | ■ | ■ |
| Active energy measurements | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Four quadrant energy measurements | | | | | ■ | | | | | ■ |
| Electrical measurements (I, V, P, etc.) | | | | ■ | ■ | | | | ■ | ■ |
| Multi-tariff (internal clock) | | | 4 | | 4 | | | 4 | | 4 |
| Multi-tariff (external control) | | | 4 | | 2 | | | 4 | | 2 |
| Measurement display | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Programmable inputs | | | 2 | | 1 | | | 2 | | 1 |
| Programmable digital outputs | | | | | 1 | | | | | 1 |
| Pulse output | | ■ | | | | | ■ | | | |
| kW overload alarm | | | | | ■ | | | | | ■ |
| Modbus RS485 | | | | ■ | ■ | | | | | ■ |
| MID (legal metrology certification) | | ■ | ■ | | ■ | | ■ | ■ | | ■ |
| Width (18 mm module in DIN Rail mounting) | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |

*Example WebMeter page showing realtime values.*


*Direct connected up to 63 A*


*CTs connected (1 A / 5 A)*

| Connectivity advantages | |
|---|---|
| Programmable digital input | External tariff control signal (4 tariffs)<br>Remote Reset partial counter<br>External status like breaker status<br>Collect WAGES pulses |
| Programmable digital output | kWh overload alarm (i EM3155/iEM5255)<br>kWh pulses |
| Graphic LCD display | Scroll energies<br>Current, voltage, power, date and time |
| Communication | Modbus RS485 with screw terminals allows connection to a daisy chain |
| **Standards** | |
| IEC standardsntegrated display | IEC 61557-12, IEC 61036, IEC 61010, IEC 62053-21/22 Class 1 and Class 0.5S, IEC 62053-23 |
| MID | EN 50470-1/3 |

**Multi-tariff capability**
The iEM3000 range allows arrangement of kWh consumption in four different registers. This can be controlled by:
- Digital Inputs. Signal can be provided by PLC or utilities
- Internal clock programmable by HMI
- Through communication.

This function allows users to:
- Make tenant metering for dual source applications to differentiate backup source or utility source
- Understand well the consumption during working time and non working time, and between working days and weekends
- Follow up feeders consumption in line with utility tariff rates.

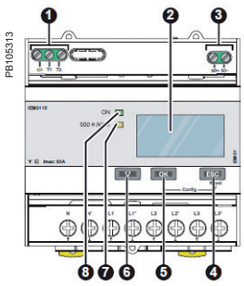
# Power Meter Series iEM3000
## Functions and characteristics (cont.)

| Specification guide | iEM3100 Range | | | | |
|---|---|---|---|---|---|
| | iEM3100 | iEM3110 | iEM3115 | iEM3150 | iEM3155 |
| Current (max.) Direct connected | 63 A | | | | |
| Meter constant LED | 500/kWh | | | | |
| Pulse output | | Up to 1000 p/ kWh | | | Up to 1000 p/ kWh |
| Multi-tariff | | | 4 tariffs | | 4 tariffs |
| Communication | | | | Modbus via RS485 | Modbus via RS485 |
| DI/DO | | 0/1 | 2/0 | | 1/1 |
| MID (EN50470-3) | | ■ | ■ | | ■ |
| Network | 1P+N, 3P, 3P+N | | | | |
| Accuracy class | Class 1 (IEC 62053-21 and IEC61557-12) Class B (EN50470-3) | | | | |
| Wiring capacity | 16 mm² | | | | |
| Display max. | LCD 99999999.9 kWh | | | | |
| Voltage (L-L) | 3 x 100/173 V AC to 3 x 277/480 V AC (50/60 Hz) | | | | |
| IP protection | IP40 front panel and IP20 casing | | | | |
| Temperature | -25°C to 55°C (K55) | | | | |
| Product size | 10 steps of 9 mm | | | | |
| Overvoltage and measurement | Category III, Degree of pollution 2 | | | | |
| kWh | ■ | ■ | ■ | ■ | ■ |
| kVARh | | | | | ■ |
| Active power | | | | ■ | ■ |
| Reactive power | | | | | ■ |
| Currents and voltages | | | | ■ | ■ |
| Overload alarm | | | | | ■ |
| Hour counter | | | | | ■ |

| Specification guide | iEM3200 Range | | | | |
|---|---|---|---|---|---|
| | iEM3200 | iEM3210 | iEM3215 | iEM3250 | iEM3255 |
| 1 A / 5 A CTs (max current) | 6 A | | | | |
| Meter constant LED | 5000/kWh | | | | |
| Pulse output frequency | | Up to 1000 p/kWh (primary counting) | | | Up to 1000 p/kWh (primary counting) |
| Multi-tariff | | | 4 tariffs | | 4 tariffs |
| Communication | | | | Modbus via RS485 | Modbus via RS485 |
| DI/DO | | 0/1 | 2/0 | | 1/1 |
| MID (EN50470-3) | | ■ | ■ | | ■ |
| Network | 1P+N, 3P, 3P+N support CTs | | | 1P+N, 3P, 3P+N support CTs & VTs | |
| Accuracy class | Class 0.5S (IEC 62053-22 and IEC61557-12) Class C (EN50470-3)(1) | | | | |
| Wiring capacity | 6 mm² for currents and 4 mm² for voltages | | | | |
| Display max. | LCD 99999999.9 kWh or 99999999.9 MWh | | | | |
| Voltage (L-L) | 3 x 100/173 V AC to 3 x 277/480 V AC (50/60 Hz) | | | | |
| IP protection | IP40 front panel and IP20 casing | | | | |
| Temperature | -25°C to 55°C (K55) | | | | |
| Product size | 10 steps of 9 mm | | | | |
| Overvoltage & measurement | Category III, Degree of pollution 2 | | | | |
| kWh | ■ | ■ | ■ | ■ | ■ |
| kVARh | | | | | ■ |
| Active power | | | | ■ | ■ |
| Reactive power | | | | | ■ |
| Currents and voltages | | | | ■ | ■ |
| Overload alarm | | | | | ■ |
| Hour counter | | | | | ■ |

***(1)*** *For 1 A CTs Class 1 (IEC6253-21 and IEC61557-12 Class B (EN50470-3).*

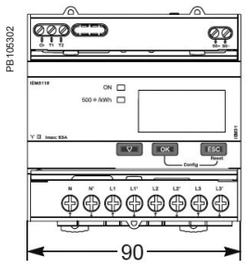
# Energy Meter Series iEM3000
## Installation and connection

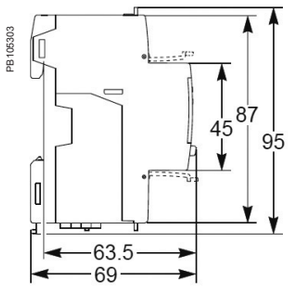



**EM3000 series parts**

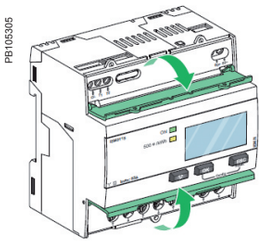
**1** Digital inputs for tariff control (iEM3115 / iEM3215)
**2** Display for measurement and configuration
**3** Pulse out for remote transfer (iEM3110 / iEM3210)
**4** ESC Cancellation
**5** OK Confirmation
**6** ▽ Selection
**7** Flashing yellow meter indicator to check accuracy
**8** Green indicator: on/off, error

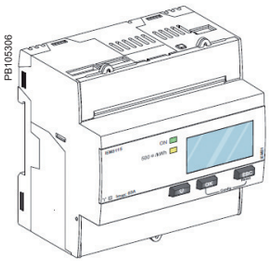
### iEM3000 series dimensions

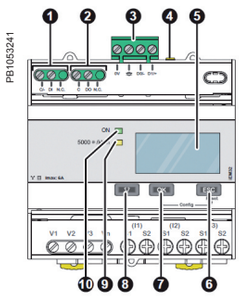



### iEM3000 series front flaps open and closed



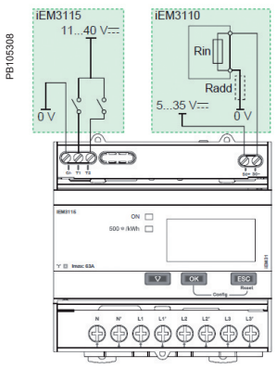



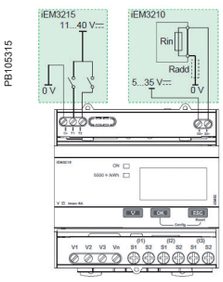

**iEM3x50 and iEM3x55 Comm./terminal parts**

**1** Digital inputs for tariff control (iEM3255 / iEM3255)
**2** Digital output (iEM3255)
**3** Communication port
**4** Yellow indicator for communication diagnosis
**5** Display for measurement and configuration
**6** ESC Cancellation
**7** OK Confirmation
**8** ▽ Selection
**9** Flashing yellow meter indicator to check accuracy
**10** Green indicator: on/off, error

***Note**: These are sample wiring diagrams only. For further information please see the Installation Guide and User Guide documents for these products.*

### Pulse Output and Digital Input sample wiring diagrams



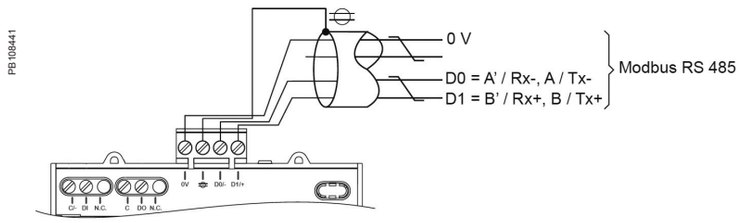



# Energy Meter Series iEM3000

## Installation and connection (cont.)

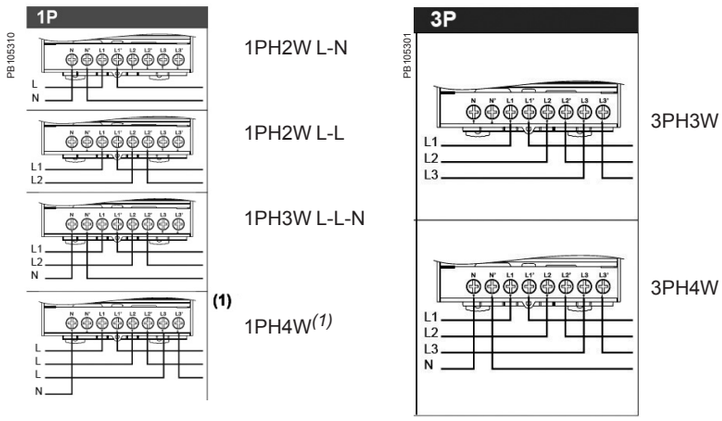
***Note**: These are sample wiring diagrams only. For further information please see the Installation Guide and User Guide documents for these products.*

### Modbus communications wiring diagram



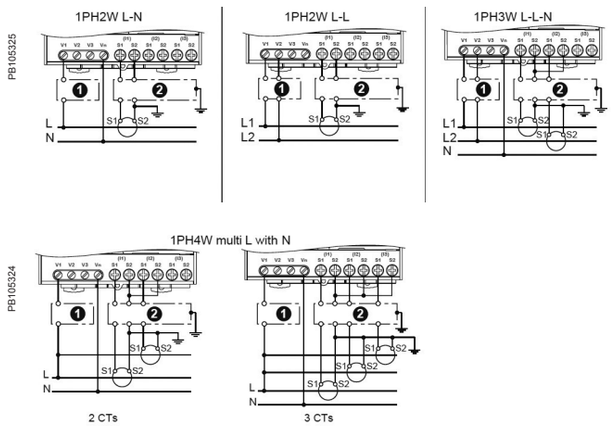

### iEM31xx series sample wiring diagrams - 1 and 3 phase

***(1)** - Single phase wiring supported only by iEM3150 and iEM3155.*
*- Neutral (N') must not be connected to avoid possible damage to the meter.*



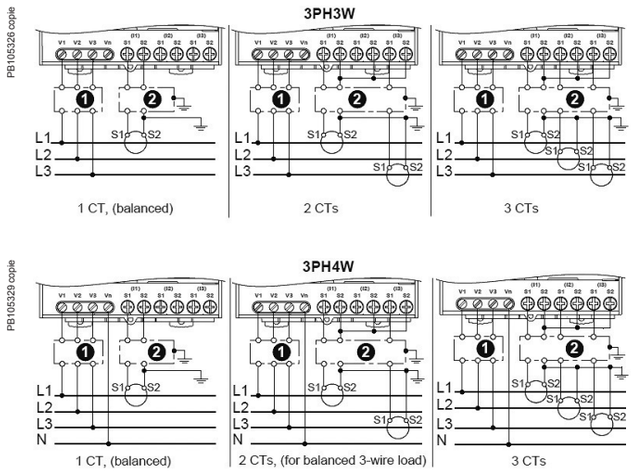

### iEM32xx series sample wiring diagrams -1 phase

***Note**: These are sample wiring diagrams only. For further information please see the Installation Guide and User Guide documents for these products.*

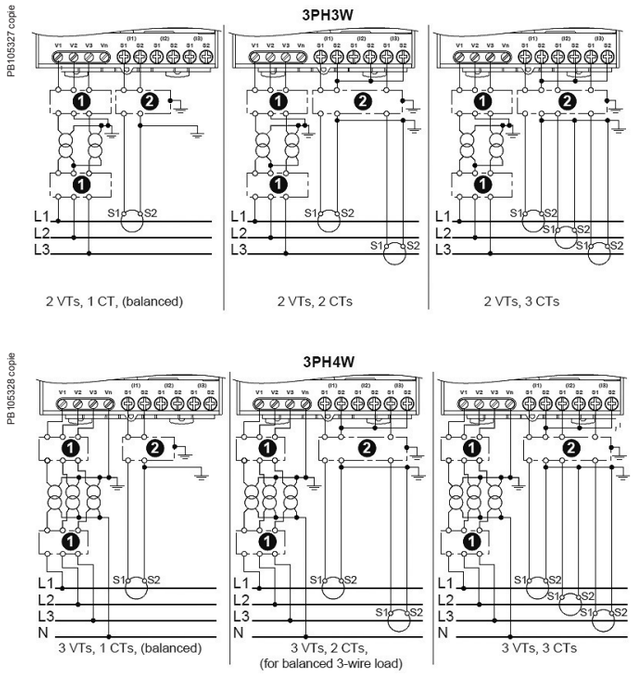


# Energy Meter Series iEM3000
## Installation and connection (cont.)

### iEM32xx Series sample wiring diagrams - 3 phase without VTs




### iEM32xx Series sample wiring diagrams - 3 phase with VTs




***Note**: These are sample diagrams only. For further information please see the Installation Guide and User Guide documents for these products.*

# P1000 series
## Functions and characteristics

PE86260


*PowerLogic™ PM1000 power meter.*

PE86261


The PowerLogic PM1000 series power meters are easy-to-use, cost effective meters that offer the basic measurement capabilities required to monitor an electrical installation.

Characterized by their rugged construction, compact size, and low installation costs, these state-of-the-art multi-function meters are ideal for control panels, motor control centers and genset panels.

The PowerLogic PM1000 series power meter is available in two different versions to better fit specific applications:
PM1000, basic version
PM1200, basic version plus an RS485 port for Modbus communication.

### Applications
Power monitoring operations.
Load studies and circuit optimisation.
Equipment monitoring and control.
Preventative maintenance.

### Main characteristics
**Accurate metering**
The meter conforms to accuracy class 1.0 as per IEC 62052-11 and IEC 62053-21.

**Easy to read display**
The bright, alphanumeric, 15mm high LED display provides 3 lines for measurement values with 4 digits per line. The display auto-scales for Kilo, Mega and Giga values. Auto scrolling mode allows for easy reading.

**Analogue load bar**
The colour-coded analogue load bar indicates the percentage of load through 12 LED segments.

**Turbo Key access to information**
The Turbo Key button lets you access to the most commonly viewed parameters or enter set up mode with a single push of the button.

**Quick and easy installation**
Setup is done through the front panel keys. Quick entry to setup during power up by TURBO key. Direct connection for metering voltage inputs up to 480 V AC L-L.

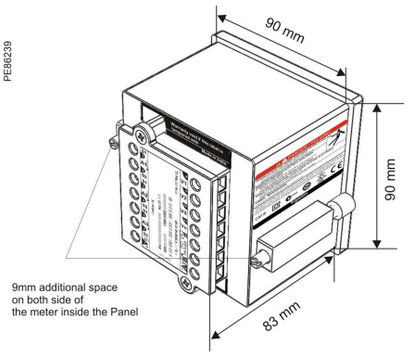
**Colour-coded terminal board labeling**
The colour-coded label on the terminal board helps ensure accurate wiring.

**Secure settings**
Safeguard access to setup parameters with unique password protection. A keypad lock lets you display a user selected page by default.

### Part numbers

| Description | Schneider Electric |
|---|---|
| PM1000 power meter with basic readings, energy and demand parameters, and summary screens; no communications | **METSEPM1000** |
| Same as PM1000 plus an RS485 communication port | **METSEPM1200** |

# PM1000 series
## Functions and characteristics (cont.)




*PowerLogic PM1000 series power meter dimensions*

| Selection guide | | PM1000 | PM1200 |
|---|---|---|---|
| **General** | | | |
| Use on LV and HV systems | | ■ | ■ |
| Current and voltage accuracy | | 1.0 % | 1.0 % |
| Power accuracy | | 1.0 % | 1.0 % |
| Energy accuracy | | 1.0 % | 1.0 % |
| Number of samples per cycle | | 20 at 50 Hz | 20 at 50 Hz |
| **Instantaneous rms values** | | | |
| Current | Per phase & Neutral | ■ | ■ |
| Voltage | Average, Phase to Neutral & Phase to Phase | ■ | ■ |
| Frequency | | ■ | ■ |
| Active, apparent power | Total & per phase | ■ | ■ |
| Power factor | Average & per phase | ■ | ■ |
| Unbalance | Current, voltage | ■ | ■ |
| Phase angle | Between V & I, Ph1, Ph2, Ph3 | ■ | ■ |
| RPM | For generator only, speed calculated on generator voltage output and number of machine poles | ■ | ■ |
| **Energy values** | | | |
| Active, reactive, apparent energy | | ■ | ■ |
| **Demand values** | | | |
| Current | Present & max. | ■ | ■ |
| Active apparent power | Present & max. | ■ | ■ |
| Active apparent power settable by user* | | ■ | ■ |
| ** Client can select one parameter only: A, kW, or kVA* | | | |
| **Power quality measurements** | | | |
| Total harmonic distortion | Current, voltage, per phase | ■ | ■ |
| **Other measurements** | | | |
| Run hours | Operating time for load in hours | ■ | ■ |
| ON hours | Operating time for meter in hours | ■ | ■ |
| INTR | Number of interruptions | ■ | ■ |
| **Display** | | | |
| LED display | | ■ | ■ |
| **Communication** | | | |
| RS-485 port | | - | 1 |
| Modbus protocol | | - | ■ |

# PM1000 series
## Functions and characteristics (cont.)

| | | | |
|---|---|---|---|
| **Electrical characteristics** | | | |
| Type of measurement | | | True RMS up to the 9th harmonic<br>20 samples per cycle at 50 Hz |
| Measurement accuracy* | Current and voltage | | 1.0 % of reading |
| | Power | Active | 1.0 % of reading |
| | | Reactive | 2.0 % of reading |
| | | Apparent | 1.0 % of reading |
| | Frequency | | 0.1 % of reading |
| | Power factor | | 1.0 % of reading |
| | Energy | Active | IEC 62053-21 Class 1 |
| | | Reactive | IEC 62053-23 Class 2 |
| | | Apparent | 1.0 % of reading |
| ** Additional error of 0.05% of full scale, for meter input current below 100 mA* | | | |
| Data update rate | | | 1 sec |
| Input-voltage characteristics | Inputs | | V1, V2, V3, Vn |
| | Measured voltage | | 80 - 480 V AC L-L without PTs<br>Up to 999 kV with external PTs |
| | Permissable overload | | 1.10 Un (480 V L-L) |
| | Burden | | 0.2 VA per phase max. |
| | Impedance | | VLL - 4 Mohms, VLN – 2 Mohms |
| | Frequency range | | 45 - 65 Hz |
| Input-current characteristics | CT ratings | Primary | 1 A - 99.0 kA |
| | | Secondary | 1 A - 5 A |
| | Measurement range | | 50 mA - 6 A (5 mA is the starting)` |
| | Permissible overload | | 10 A continuous |
| | Burden | | 0.2 VA per phase max. |
| | Impedance | | < 0.1 ohm |
| Power supply | AC | | 44 - 277 V AC at 50 Hz/60 Hz |
| | DC | | 44 - 277 V DC |
| | Ride-through time | | 100 ms at 50 V |
| | Burden | | 3 VA max. |
| **Mechanical characteristics** | | | |
| Weight | | | 0.500 kg (shipping), 0.400 kg (unpacked) |
| IP degree of protection | | | Front: IP 51; Back: IP 40 |
| Dimensions | | | Bezel: 96 x 96 mm<br>Depth: 80 mm behind bezel<br>Panel cutout: 92 x 92 mm |
| **Environmental conditions** | | | |
| Operating temperature | | | -10°C to +60°C |
| Storage temperature | | | -25°C to +70°C |
| Humidity rating | | | 5 to 95 % RH non-condensing |
| Altitude | | | 2000 m |
| Measurement CAT | | | III |
| Pollution degree | | | 2 |
| Protection class | | | 2 |
| **Electromagnetic compatibility** | | | |
| Electrostatic discharge | | | IEC 61000-4-2 |
| Immunity to electromagnetic RF fields | | | IEC 61000-4-3 |
| Immunity to electrical fast transients | | | IEC 61000-4-4 |
| Immunity to surge waves | | | IEC 61000-4-5 |
| Conducted disturbance immunity | | | IEC 61000-4-6 |
| Damped oscillatory waves immunity | | | IEC 61000-4-12 |
| Impulse voltage withstand | | | 6 kV for 1.2/50 µS per IEC 60060-1 |
| Conducted and radiated emissions | | | CISPR11 Class A, FCC Part 15 Class A |
| **Safety and standards** | | | |
| Safety construction | | | Self extinguishable V0 plastic; UL 508 |
| CE certification IEC61010 | | | Yes |

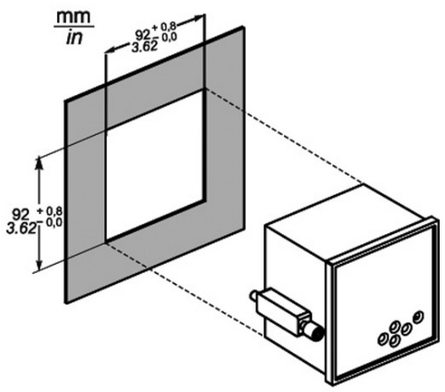
Complies with Regulation (EC) n° 1907/2006 of Dec 18 2006 named REACH (related to the Registration, Evaluation, Authorization and restrictions applicable to Chemical substances)

# PM1000 series
## Functions and characteristics (cont.)

| | |
|---|---|
| **Communication** | |
| RS-485 port | 2 terminals only<br>Baud rate up to 19,200 bps<br>Protocols: Modbus RTU |
| **Display characteristics** | |
| Integrated LED display | View 3 parameters together on 3 line, 4 digits per line display. Auto-scaling capability for Kilo, Mega, and Giga values. User-selectable default display page. Password protection for setup parameters. |
| Analogue load bar | Colour-coded analogue indicator provides an option to select the full scale of the load bar based on the sanctioned power limit. |

# PM1000 series
## Installation and connections

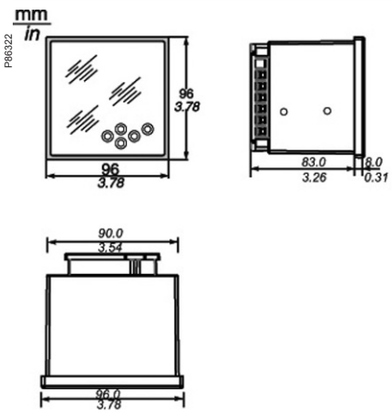
PE86321




*Front-panel mounting*

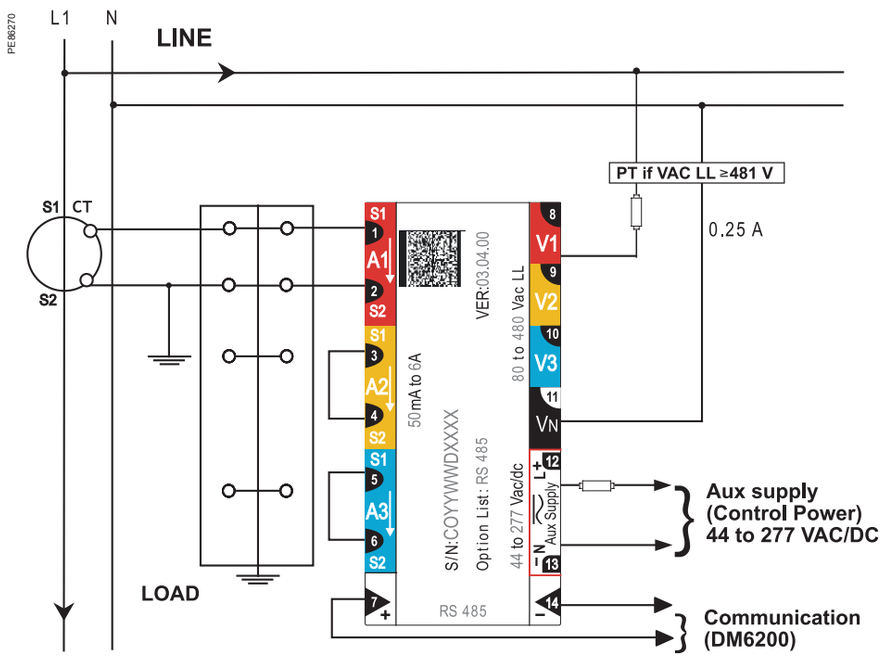
### PM1000 series meter dimensions

P86322




### Single phase connection

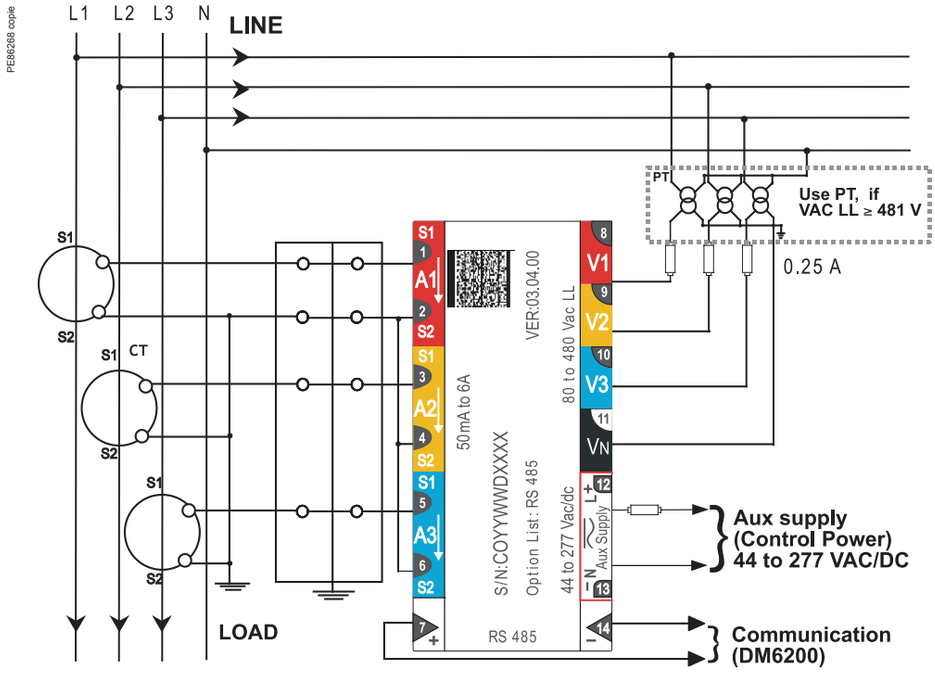
PE86270




*Connection representation only. Other types of connection are possible.*
*Refer to the PM1000 series Quick Start Guide for details.*

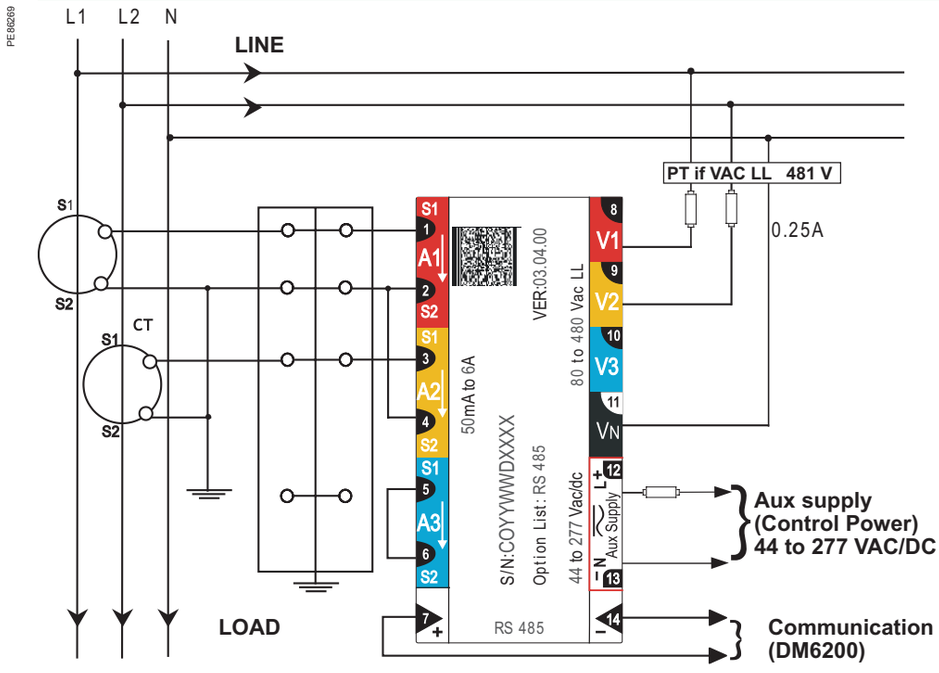
# PM1000 series
## Installation and connections

### Three phase 4 wire WYE connection with 3 CTs and 3 PTs




*Connection representation only. Other types of connection are possible.*
*Refer to the PM1000 series Quick Start Guide for details.*

### Two phase 3 wire connection with 3 CTs




*Connection representation only. Other types of connection are possible.*
*Refer to the PM1000 series Quick Start Guide for details.*

# PM200 series
## Functions and characteristics

PE86217


The PowerLogic PM200 series power meter is an easy-to-use, cost effective meter that offers the basic measurement capabilities required to monitor an electrical installation. The compact 96 x 96 mm meter simultaneously monitors all three phases of voltage and current. Energy and demand readings provide the information needed to measure and control energy costs.

The meter includes an easy-to-read, anti-glare, back-lit LCD display. It features an intuitive interface with context-based navigational menus. Summary screens and bar charts provide system status at a glance. The default screen displays real energy and per-phase current values. The energy summary screen displays total real, reactive, and apparent energy. The power demand summary screen displays real, reactive, and apparent demand. The current demand summary screen provides the per-phase and peak values needed to understand circuit performance and loading.

The PowerLogic PM200 series power meter is available in three different versions to better fit specific applications:
- PM200, basic version
- PM200P, basic version plus two pulse outputs for energy metering
- PM210, basic version plus an RS485 port for Modbus communication.

## Applications
OEM applications.
Panel instrumentation.
Applications with space restrictions.
Remote monitoring of an electrical installation.
Sub-billing / cost allocation / utility billing verification.
Cost constrained applications.

## Characteristics
**Compact**
With a mounting depth of only 50 mm, the PM200 series is the perfect space saver.

**Large, easy-to-read display**
Summary screens for current, voltage, energy and demand on an anti-glare, green back-light display.

**Bar charts**
Graphical representation of system loading and Outputs status (PM200P) provide system status at a glance.

**Easy to operate**
Intuitive navigation with context-based menus for easy use.

**Modbus communications and digital outputs**
The PM210 provides standard Modbus communications. The PM200P provides two integrated digital outputs.

**IEC 62053-21 Class 1 for real energy**
Accurate measurement for sub-billing and cost allocation.

**IEC 61557-12 performance standard**
Meets IEC 61557-12 PMD/S/K55/1 requirements for combined **P**erformance **M**easuring and monitoring **D**evices (PMD).

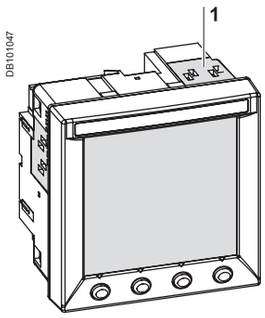
**Direct connection for metering voltage inputs**
No external PTs needed for voltages up to 480 V AC (L-L).

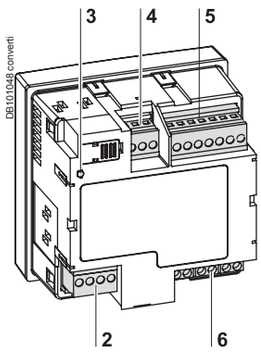
**Easy to install**
Uses only two clips. No tools needed.

## Part numbers

| Description | Schneider Electric |
|---|---|
| **Meter with Integrated Display** | |
| Meter PM200 power meter with basic readings, demand, and summary screens | **PM200MG** |
| Same as PM200 plus two digital outputs | **PM200PMG** |
| Same as PM200 plus an RS485 communication port | **PM210MG** |
| **Parts and accessories** | |
| DIN-rail Mounting Kit | **PM72DINRAILKIT** |
| Set of connectors | **PM7AND2HWKIT** |

# PM200 series
## Functions and characteristics (cont.)




*PM200 series power meter.*

**1** Mounting slots.
**2** RS485 communications (PM210) or 2 pulse outputs (PM200P).
**3** Heartbeat LED.
**4** Power supply.
**5** Voltage inputs.
**6** Current inputs.

| Meter selection guide | | PM200 | PM200P | PM210 |
|---|---|---|---|---|
| **Performance standard** | | | | |
| IEC 61557-12 PMD/S/K55/1 **P**erformance **M**easuring and monitoring **D**evices (PMD) | | ■ | ■ | ■ |
| **General** | | | | |
| Use from LV to HV power systems | | ■ | ■ | ■ |
| Current and voltage accuracy | | 0.5 % | 0.5 % | 0.5 % |
| Active and reactive power accuracy | | 1 % | 1 % | 1 % |
| Active energy accuracy | | 1 % | 1 % | 1 % |
| Reactive energy accuracy | | 2 % | 2 % | 2 % |
| Sampling rate (samples/cycle) | | 32 | 32 | 32 |
| **Instantaneous rms values** | | | | |
| Current | Per-phase | ■ | ■ | ■ |
| Voltage | Ph-Ph and Ph-N | ■ | ■ | ■ |
| Frequency | | ■ | ■ | ■ |
| Active and reactive power; and apparent power (1) | Total | signed | signed | signed |
| Power factor | Total | signed | signed | signed (2) |
| **Energy values** | | | | |
| Active, reactive, apparent energy (1) | Total | signed | signed | signed |
| **Demand values** | | | | |
| Current (thermal calculation mode only) | Present and max. values | ■ | ■ | ■ |
| Active, reactive, apparent power | Present and max. values | ■ | ■ | ■ |
| Setting of power demand calculation mode | Sliding, fixed, rolling block | ■ | ■ | ■ |
| **Outputs** | | | | |
| Digital pulse outputs | | - | 2(3) | - |
| **Display** | | | | |
| Green backlit LCD display | | ■ | ■ | ■ |
| IEC or IEEE menu mode | | ■ | ■ | ■ |
| **Communication** | | | | |
| RS485 (one port) | | - | - | 2-wire |
| Modbus protocol | | - | - | ■ |
| Firmware update via RS485 serial port | | | | ■ |

***(1)*** *Signed real and reactive power and energy. The power meter includes net values only.*
***(2)*** *See register 4048. Negative sign "-" indicates lag. PM210 only.*
***(3)*** *kWh and kVARh pulse output mode only.*

# PM200 series
## Functions and characteristics (cont.)

PB100710

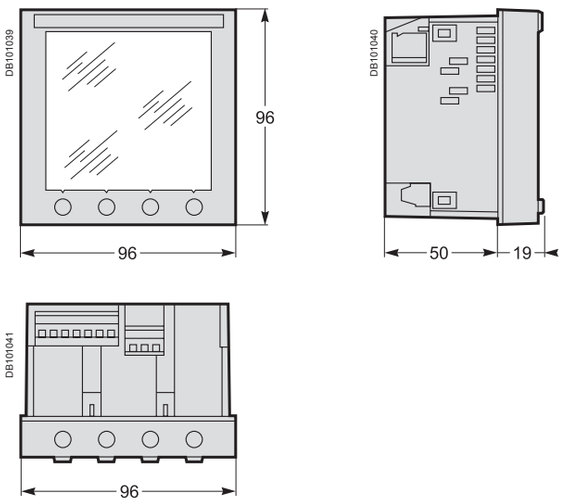

*Rear view of PowerLogic PM200 series meter.*

| | | | |
|---|---|---|---|
| **Electrical characteristics** | | | |
| Type of measurement | | | True rms up to the 15th harmonic on single, two or three-phase (3P, 3P + N) AC systems<br>32 samples per cycle |
| Measurement accuracy | Current | | ± 0.5 % from 1 A to 6 A |
| | Voltage | | ± 0.5 % from 50 V to 277 V |
| | Power factor | | ± 0.0034, from 1 A to 6 A and from -0.5 to +0.5 |
| | Power | | ± 1 % |
| | Frequency | | ± 0.02 Hz from 45 to 65 Hz |
| | Active energy | | IEC 62053-21 Class 1 |
| | Reactive energy | | IEC 62053-23 Class 2 |
| Data update rate | | | 1 s |
| Input-voltage | Measured voltage | | 10 to 480 V AC (direct Ph-Ph)<br>10 to 277 V AC (direct Ph-N)<br>up to 1.6 MV AC (with external VT)(1) |
| | Metering over-range | | 1.2 Un |
| | Impedance | | 2 MΩ (Ph-Ph) / 1 MΩ (Ph-N) |
| | Frequency range | | 45 to 65 Hz |
| Input-current | CT ratings | Primary | Adjustable from 1 A to 32767 A |
| | | Secondary | 5 A or 1 A |
| | Measurement input range | | 5 mA to 6 A |
| | Permissible overload | | 15 A continuous<br>50 A for 10 seconds per hour<br>120 A for 1 second per hour |
| | Impedance | | < 0.12 Ω |
| | Load | | < 0.15 VA |
| Control power | AC | | 100 to 415 ± 10 % V AC, 5 VA; 50 to 60 Hz |
| | DC | | 125 to 250 ± 20 % V DC, 3 W |
| | Ride-through time | | 100 ms at 120 V AC |
| Output | Pulse outputs | (PM200P) | Static output 240 ± 10 % V AC, 100 mA max at 25°C,(derate 0.56 mA per °C above 25°C), 2.41 kV rms isolation, 30 Ω on-resistance at 100 mA |
| **Mechanical characteristics** | | | |
| Weight | | | 0.37 kg |
| IP degree of protection (IEC 60529) | | | Designed to IP52 front display, IP30 meter body |
| Dimensions | | | 96 x 96 x 69 mm (meter with display)<br>96 x 96 x 50 mm (mounting depth) |
| **Environmental characteristics** | | | |
| Operating temperature | Meter | | - 5°C to + 60°C |
| | Display | | - 10°C to + 55°C |
| Storage temperature | Meter + display | | - 40°C to + 85°C |
| Humidity rating | | | 5 to 95 % RH at 50°C (non-condensing) |
| Pollution degree | | | 2 |
| Metering category (voltage inputs and control power) | | | CAT III, for distribution systems up to 277 V Ph-N / 480 V AC Ph-Ph |
| Dielectric withstand | | | EN 61010, UL508<br>Double insulated front panel display |
| Altitude | | | 3000 m |
| **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 impulsive waves | | | Level III (IEC 61000-4-5) |
| Conducted immunity | | | Level III (IEC 61000-4-6) |
| Immunity to magnetic fields | | | Level III (IEC 61000-4-8) |
| Immunity to voltage dips | | | Level III (IEC 61000-4-11) |
| Conducted and radiated emissions | | | CE commercial environment/FCC part 15 class B EN 55011 |
| Harmonics | | | IEC 61000-3-2 |
| Flicker emissions | | | IEC 61000-3-3 |
| **Safety** | | | |
| Europe | | | CE as per IEC 61010-1 |
| U.S. and Canada | | | cULus (UL508 and CAN/CSA C22.2 No. 14-M95, Industrial Control Equipment) |
| **Communication** | | | |
| RS485 port (PM210) | | | 2-wire, up to 19200 bauds, Modbus RTU, SELV circuit, 6 kV impulse (double insulation) |
| **Display characteristics** | | | |
| Dimensions 73 x 69 mm | | | Green back-lit LCD<br>(6 lines total, 4 concurrent values) |

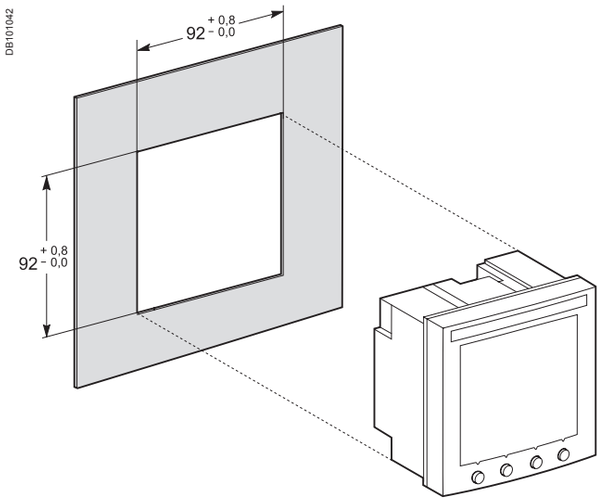
***(1)*** *Lower limit of measurement range depends upon PT ratio.*

# Power Meter Series 200
## Installation and connection

### Dimensions

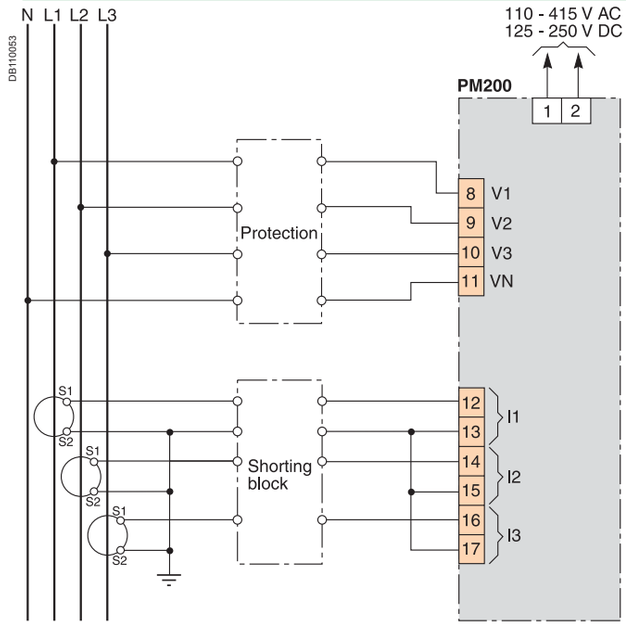



### Front-panel mounting



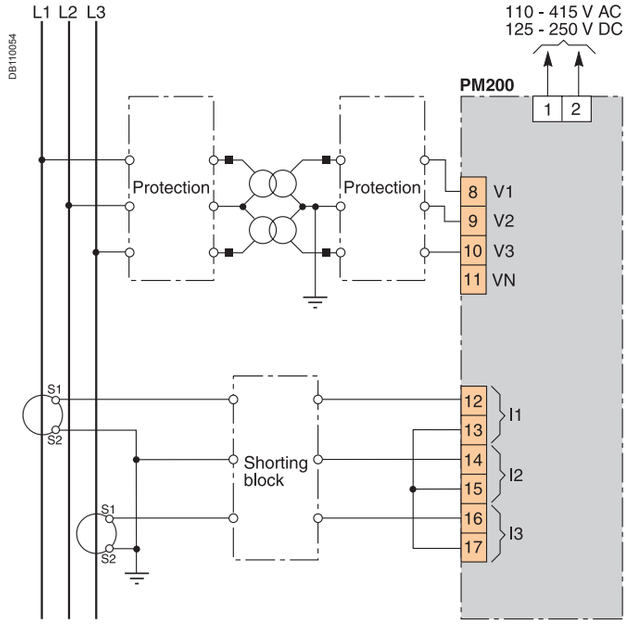
# Power Meter Series 200
## Installation and connection (cont.)

### 4-wire connection with 3 CTs and no PT




*Connection example.*

### 3-wire connection with 2 CTs and 2 PTs

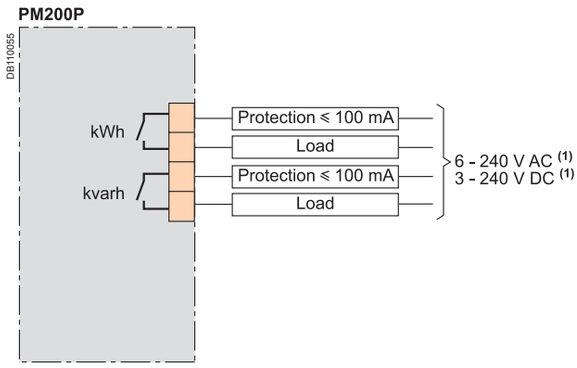



*Connection example.*

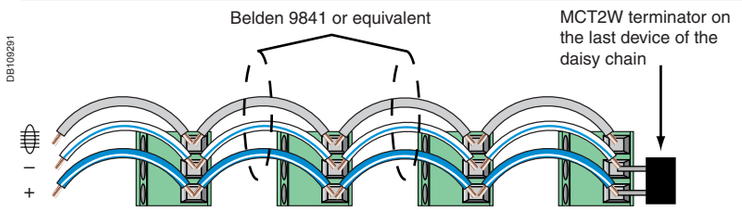
**Note:** *Other types of connection are possible. See product documentation.*

# Power Meter Series 200
## Installation and connection (cont.)

### PM200P: pulse outputs connection




### Meter (2-wire)




Power Meter 200 or other POWERLOGIC 2-wire compatible devices
Belden 9841 wire colors: blue with white stripe (+), white with ble stripe (–), and silver (shield)

# PM700 series
## Functions and characteristics

PE86157


*PowerLogic PM700.*

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-billing and cost allocation.
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 lit 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 62053-22 class 0.5S (PM750) and IEC 62053-21 class 1 (PM700, PM700P, PM710)**
Suitable for sub-billing and cost-allocation applications.

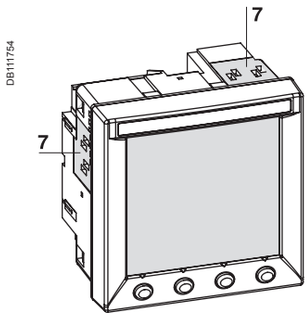
**IEC 61557-12 Performance Standard**
Meet IEC 61557-12 PMD/S/K55/0.5 (PM750) and IEC61557-12 PMD/S/K55/1 (PM700, PM700P, PM710) requirements for combined **P**erformance **M**easuring and monitoring **D**evices (PMD).

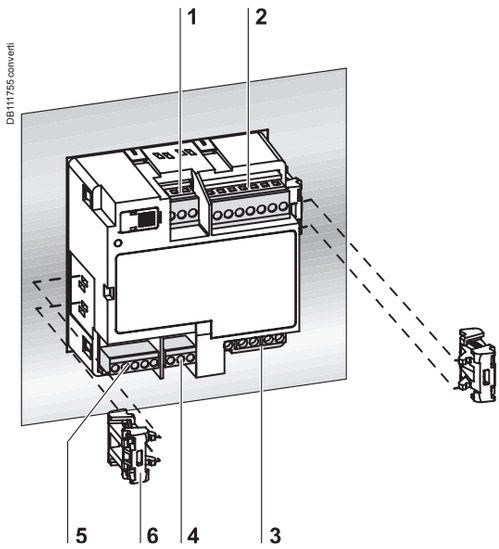
**Innovative Power Meter**
RS 485 communications, alarming and digital I/O in a single Power Meter (PM750).

### Part numbers

| Power Meter | Schneider Electric |
|---|---|
| PM700 power meter - with basic readings including THD and Min/Max | **PM700MG** |
| PM700P power meter - same as PM700 plus two pulse outputs | **PM700PMG** |
| PM710 power meter - same as PM700 plus RS 485 port | **PM710MG** |
| PM750 power meter - same as PM700 plus RS 485 port, 2 Digital inputs and 1 Digital output, and alarms | **PM750MG** |
| **Parts and accessories** | |
| DIN-rail Mounting Kit | **PM72DINRAILKIT** |
| Set of connectors replacement (PM700, PM700P, PM710) | **PM7AND2HWKIT** |
| Set of connectors replacement (PM750 only) | **PM750HWKIT** |

# PM700 series
## Functions and characteristics (cont.)




**PM750.**
**1** Control power.
**2** Voltage inputs.
**3** Current inputs.
**4** RS 485 port.
**5** Digital input/output.
**6** Mounting clips.
**7** Mounting slot.

| Selection guide | | PM700 | PM700P | PM710 | PM750 |
|---|---|---|---|---|---|
| **Performance standard** | | | | | |
| IEC 61557-12 PMD/S/K55/1 Requirements for combined Performance Measuring and monitoring Devices (PMD) | | ■ | ■ | ■ | - |
| IEC 61557-12 PMD/S/K55/0.5 Requirements for combined Performance Measuring and monitoring Devices (PMD) | | - | - | - | ■ |
| **General** | | | | | |
| Use on LV and HV systems | | ■ | ■ | ■ | ■ |
| Current accuracy | | 0.5 % | 0.5 % | 0.5 % | 0.4 % |
| Voltage accuracy | | 0.5 % | 0.5 % | 0.5 % | 0.3 % |
| Active and reactive power accuracy | | 1.0 % | 1.0 % | 1.0 % | 0.5 % |
| Active energy accuracy IEC 62053-21 | | Class 1 | Class 1 | Class 1 | |
| Active energy accuracy IEC 62053-22 | | | | | Class 0.5 S |
| Reactive energy accuracy | | 2 % | 2 % | 2 % | 2 % |
| Sampling rate (samples/cycle) | | 32 | 32 | 32 | 32 |
| **Instantaneous rms values** | | | | | |
| Current | Total, Phases and neutral | ■ | ■ | ■ | ■ |
| Voltage | Total, Ph-Ph and Ph-N | ■ | ■ | ■ | ■ |
| Frequency | | ■ | ■ | ■ | ■ |
| Real and reactive power (1) and apparent power | Total and per phase | signed | signed | signed | signed |
| Power factor | Total | signed | signed | signed (2) | signed (2) |
| **Energy values** | | | | | |
| Active and reactive energy (1); and apparent energy | | signed | signed | signed | signed |
| **Demand values** | | | | | |
| Current<br>Thermal calculation mode only | Present and max. | ■ | ■ | ■ | ■ |
| Active, reactive, apparent power | Present and max. | ■ | ■ | ■ | ■ |
| Setting of power demand calculation mode | Sliding, fixed and rolling block | ■ | ■ | ■ | ■ |
| **Other measurements** | | | | | |
| Hour counter | | ■ | ■ | ■ | ■ |
| **Power quality measurements** | | | | | |
| Harmonic distortion | Current and voltage | ■ | ■ | ■ | ■ |
| **Data recording** | | | | | |
| Min/max of instantaneous values | | ■ | ■ | ■ | ■ |
| Alarms | | - | - | - | ■ (3) |
| **Inputs/Outputs** | | | | | |
| Digital inputs | | - | - | - | 2 (4) |
| Digital outputs | | - | 2 (5) | - | 1 (6) |
| **Display** | | | | | |
| Green backlit LCD display | | ■ | ■ | ■ | ■ |
| IEC or IEEE visualization mode | | ■ | ■ | ■ | ■ |
| **Communication** | | | | | |
| RS 485 port | | - | - | ■ | ■ |
| Modbus protocol | | - | - | ■ | ■ |
| Firmware update via RS485 serial port | | | | ■ | ■ |

***(1)*** *Signed real and reactive power and energy. The power meter includes net values only.*
***(2)*** *See register 4048. Negative sign "-" indicates lag.*
***(3)*** *15 user-configurable under and over conditions and in combination with digital inputs or output status.*
***(4)*** *2 operation modes are available: normal or input demand synchronisation.*
***(5)*** *kWh and kVARh pulse output mode only.*
***(6)*** *3 operation modes are available: external, alarm or kWh pulse output.*

# PM700 series
## Functions and characteristics (cont.)


PB102030-1

*Rear view of PM750.*

| | | | |
|---|---|---|---|
| **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 | Current | | ± 0.5 % from 1 A to 6 A (PM700, PM700P, PM710)<br>± 0.4 % from 1 A to 6 A (PM750) |
| | Voltage | | ± 0.5 % from 50 V to 277 V (PM700, PM700P, PM710)<br>± 0.3 % from 50 V to 277 V (PM750) |
| | Power Factor | | ± 0.0034, from 1 A to 6 A and from -0.5 to +0.5 |
| | Power | | ± 1 % (PM700, PM700P, PM710)<br>± 0.5 % (PM750) |
| | Frequency | | ± 0.02 Hz from 45 to 65 Hz |
| | Active Energy | | IEC 62053-21 Class 1 (1)<br>IEC 62053-22 Class 05.S (2) |
| | Reactive Energy | | IEC 62053-23 Class 2 |
| Data update rate | | | 1 s |
| Input-voltage characteristics | Measured voltage | | 10 to 480 V AC (direct Ph-Ph)<br>10 to 277 V AC (direct Ph-N)<br>up to 1.6 MV AC (with external VT) the lower limit of the measurement range depends on the PT ratio |
| | Metering over-range | | 1.2 Un (20 %) |
| | 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,<br>120 A for 1 second per hour |
| | Impedance | | < 0.12 Ω |
| | 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,<br>12 kΩ impedance, 2.5 kV rms isolation,<br>max. frequency 25 Hz, response time 10 ms |
| Output | Pulse outputs (PM700P) | | 3 to 240 V DC or 6 to 240 V AC,<br>100 mA at 25°C, derate 0.56 mA per °C above 25°C, 2.41 kV rms isolation,<br>30 Ω on-resistance at 100 mA |
| | Digital or pulse output (PM750) | | 8 to 36 V DC, 24 V DC nominal at 25°C,<br>3.0 kV rms isolation,<br>28 Ω on-resistance at 100 mA |
| **Mechanical characteristics** | | | |
| Weight | | | 0.37 kg |
| IP degree of protection (IEC 60529) | | | IP52 front display, IP30 meter body |
| Dimensions | | | 96 x 96 x 69 mm (meter with display)<br>96 x 96 x 50 mm (behind mounting surface) |
| **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 |
| Metering category | | | III, for distribution systems up to 277/480 V AC |
| Dielectric withstand | | | As per EN 61010, UL508 - Double insulated front panel display |
| Altitude | | | 3000 m max. |
| **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 impulse waves | | | Level III (IEC 61000-4-5) |
| Conducted immunity | | | Level III (IEC 61000-4-6) |
| Immunity to magnetic fields | | | Level III (IEC 61000-4-8) |
| Immunity to voltage dips | | | Level III (IEC 61000-4-11) |
| Conducted and radiated emissions | | | CE commercial environment/FCC part 15 class B EN 55011 |
| Harmonics emissions | | | IEC 61000-3-2 |
| Flicker emissions | | | IEC 61000-3-3 |

***(1)*** *PM700, PM700P, PM710.* ***(2)*** *PM750.*

# PM700 series
## Functions and characteristics (cont.)

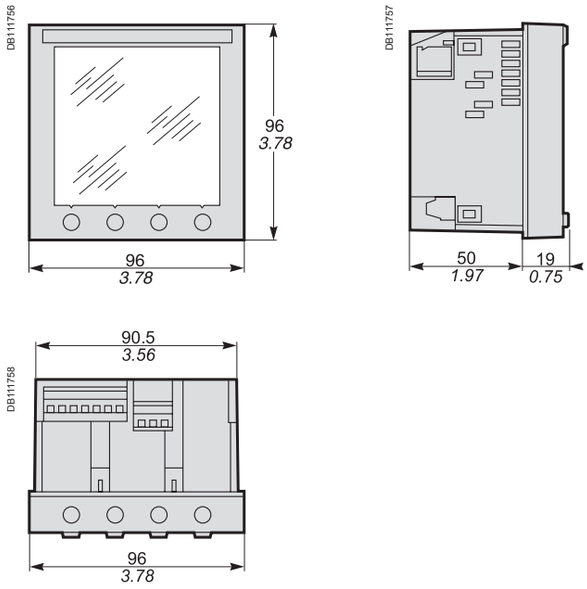
| | |
|---|---|
| **Safety** | |
| Europe | CE, as per IEC 61010-1 ⧈ (1) |
| U.S. and Canada | cULus (UL508 and CAN/CSA C22.2 No. 14-M95, Industrial Control Equipment) |
| **Communication** | |
| RS 485 port (PM710 and PM750) | 2-wire, up to 19200 bauds, Modbus RTU (double insulation) |
| **Display characteristics** | |
| Dimensions 73 x 69 mm | Green back-lit LCD<br>(6 lines total, 4 concurrent values) |

***(1)*** *Protected throughout by double insulation.*

# Power Meter Series 700
## Installation and connection

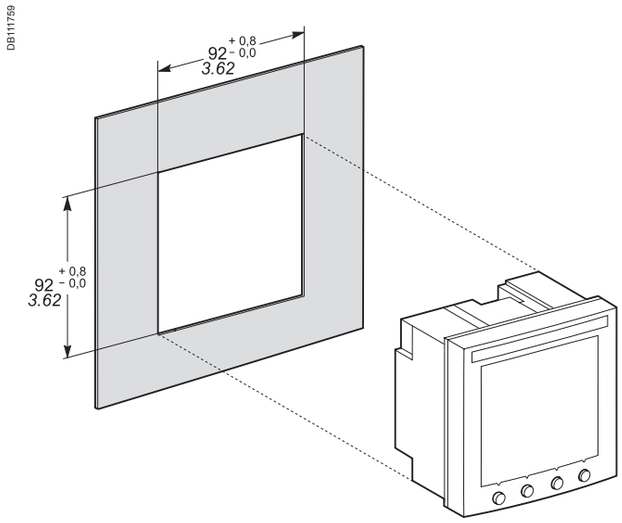
### Dimensions

mm
*in*



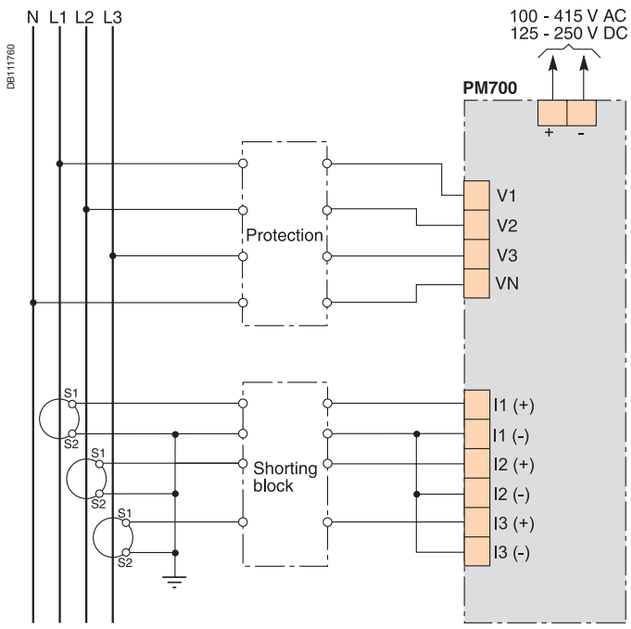

### Front-panel mounting

mm
*in*



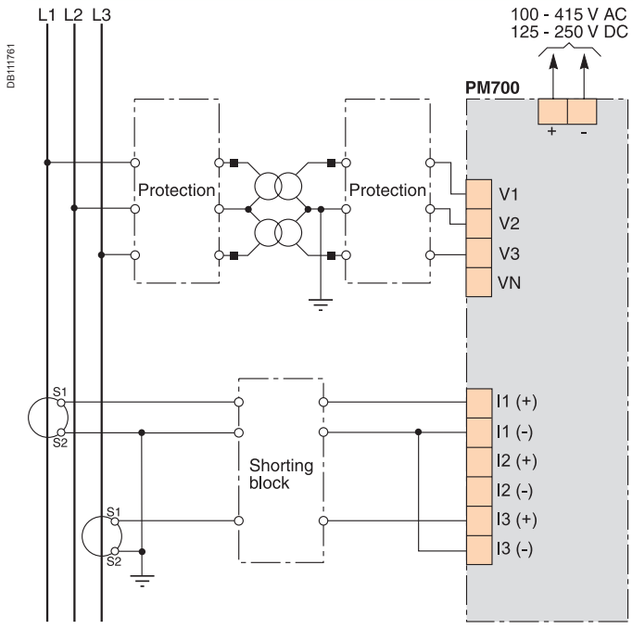
# Power Meter Series 700
## Installation and connection (cont.)

### 4-wire connection with 3 CTs and no PT




*Connection example.*

### 3-wire connection with 2 CTs and 2 PTs




*Connection example.*

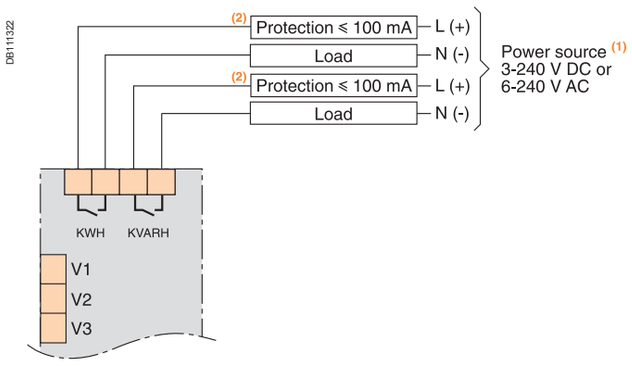
***Note**: other types of connection are possible. See product documentation.*

# 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.



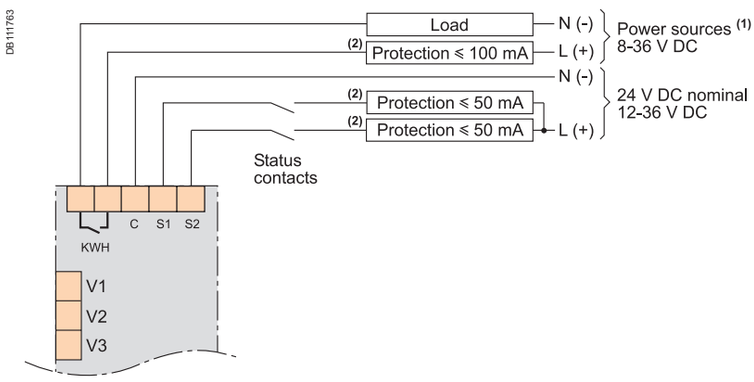

**PM700P**

***(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.*

### 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.

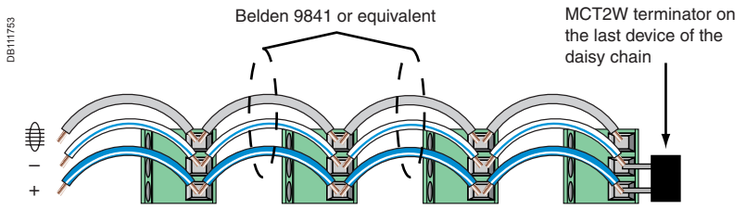



**PM750**

***(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.*

# Power Meter Series 700
## Installation and connection (cont.)

### Communications (PM710 and PM750)
### 2-wire daisy-chain connection of devices (RS 485)




*Belden 9841 wire colors: blue with white stripe (+), white with blue stripe (–), and silver (shield).*

# PM800 series
## Functions and characteristics

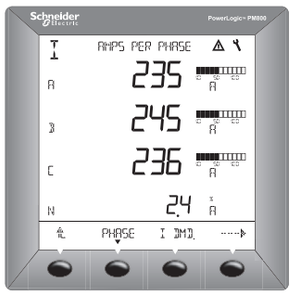
PE86134


*Front view of PowerLogic PM800 series meter with integrated display.*

PB101823-50


*Rear view of PowerLogic PM800 series meter.*

PE86229




*PowerLogic PM800 series meter display screen showing bar graphs.*

The PowerLogic PM800 series meters offers many high-performance capabilities needed to meter and monitor an electrical installation in a compact 96 x 96 mm unit. All models include an easy-to-read display that presents measurements for all three phases and neutral at the same time, an RS-485 Modbus communication port, one digital input, one KY-type digital output, total harmonic distortion (THD) metering, and alarming on critical conditions. Four models offer an incremental choice of custom logging and power quality analysis capabilities. Expand any model with field-installable option modules that offer a choice of additional digital inputs and outputs, analogue inputs and outputs, and Ethernet port.

## Applications

- Panel instrumentation
- Sub-billing, cost allocation and energy management
- Remote monitoring of an electrical installation
- Power quality analysis
- Utility bill verification, utility contract optimization and load preservation.

## Characteristics

**Easy to install**
Mounts using two clips, with no tools required. Direct connect the voltage inputs, with no need for potential transformers (PTs) up to 600 V AC.

**Easy to operate**
Intuitive navigation with self-guided, language-selectable menus.

**System status at a glance**
Large, anti-glare display with back-light provides summary screens with multiple values. Bar charts graphically represent system loading and I/O.

**Custom alarming with time stamping**
Over 50 alarm conditions, including over or under conditions, digital input changes, phase unbalance and more. The models PM850 and PM870 offer boolean logic that can be used to combine up to four alarms.

**Power quality analysis**
The PM800 series offers an incremental range of features for troubleshooting and preventing power quality related problems. All models offer THD metering. The PM810 with PM810LOG option and PM820 offer individual current and voltage harmonics readings. The PM850 and PM870 offer waveform capture (PM870 is configurable) and power quality compliance evaluation to the international EN50160 -ITI(CBEMA)/SEMI F-47 standards. The PM870 offers voltage and current disturbance (sag/swell) detection.

**Extensive on-board memory**
All models offer billing (energy and demand), maintenance, alarm and customizable data logs, all stored in non-volatile memory (PM810 requires PM810LOG option).

**ANSI 12.20 Class 0.2S and IEC 62053-22 Class 0.5S accuracy for active energy**
Accurate energy measurement for sub-billing and cost allocation.

**IEC61557-12 performance standard**
Meets PMD/SD/K70/0.5 and PMD/SS/K70/0.5 requirements for combined **P**erformance **M**easuring and monitoring **D**evices (PMD).

**Trend curves and short-term forecasting**
The models PM850 and PM870 offer trend logging and forecasting of energy and demand readings to help compare load characteristics and manage energy costs.

**Expandable I/O capabilities**
Use the on-board or optional digital inputs for pulse counting, status/position monitoring, demand synchronisation or control (gating) of the conditional energy metering. Use the on-board or optional digital outputs for equipment control or interfacing, controllable by internal alarms or externally through digital input status. Use the optional analogue inputs and outputs for equipment monitoring or interfacing.

**Metering of other utilities (WAGES)**
All models offer five channels for demand metering of water, air, gas, electricity or steam utilities (WAGES) through the pulse counting capabilities of the digital inputs. Pulses from multiple inputs can be summed through a single channel.

**Modular and upgradeable**
All models offer easy-to-install option modules (memory, I/O and communications) and downloadable firmware for enhanced meter capabilities.

**Remote display**
The optional remote display can be mounted as far as 10 m from the metering unit. The adapter includes an additional 2- or 4-wire RS-485/RS-232 communication port.

# PM800 series
## Functions and characteristics (cont.)

PB101814-36

*PowerLogic PM800 series meter without display.*

PE86134


*PowerLogic PM800 series meter with integrated display.*

PB101822-68

*PowerLogic PM800 series meter with remote display.*

PE86135


*Remote display adapter with display and cable.*

PB101819-32


*Remote display adaptor alone.*

## Part Numbers

| Description | Schneider Electric |
|---|---|
| **Meter without display** | |
| Use the base meter unit without display to comply with voltage limitations for local regulations when door mounting is not possible, or when meter voltage exceeds regulations, or when local display is not required. When the meter is used without a display, configuration of the communications port is limited to the default (address 1, 9600 baud, parity even). Requires software to read data. | |
| **PM810 meter** unit only, no display, basic instrumentation, THD, alarming, 80 kB logging (with PM810LOG) | **PM810UMG** |
| **PM820 meter** unit only, no display, basic instrumentation, THD, alarming, 80 kB logging | **PM820UMG** |
| **PM850 meter** unit only, no display, basic instrumentation, THD, alarming, 800 kB logging, waveform capture | **PM850UMG** |
| **PM870 meter** unit only, no display, basic instrumentation, THD, alarming, 800 kB logging, configurable waveform capture and disturbance detection. | **PM870UMG** |
| **Meter with integrated display** | |
| Use the meter with integrated display for panel mounting when door space is available and when voltage usage is within the local regulation limits. | |
| **PM810 meter** with integrated display | **PM810MG** |
| **PM820 meter** with integrated display | **PM820MG** |
| **PM850 meter** with integrated display | **PM850MG** |
| **PM870 meter** with integrated display | **PM870MG** |
| **Meter with remote display** | |
| Conveniently packaged kit consist of a base meter (810, 820, 850 or 870) with a remote display, remote display adapter, and remote display cable 3 m (9.ft 10 inches). | |
| **PM810 meter** with remote display | **PM810RDMG** |
| **PM820 meter** with remote display | **PM820RDMG** |
| **PM850 meter** with remote display | **PM850RDMG** |
| **PM870 meter** with remote display | **PM870RDMG** |
| **Parts and accessories** | |
| **Remote display adapter with remote display and a 3 m (9 ft 10 inch) cable**<br>Use this combination of remote display, adapter, and 3 m cable to equip a base meter unit for use with a remote display. In addition, the display can be carried from meter to meter, enabling you to purchase one display for multiple meters. Each base unit meter must be equipped with a remote display adapter (PM8RDA). | **PM8RDMG** |
| **Remote display adapter alone**<br>When added to the front of the base unit (PM8xxU), the adapter brings two additional communication ports: one for the remote display and one 4-wire/2-wire RS 485/RS 232. | **PM8RDA** |

*Part number list continued on next page.*

# PM800 series
## Functions and characteristics (cont.)

DB119011

*PowerLogic PM870 with ECC module (bottom view showing connectors and configuration switches).*

DB119012

*ECC module (front view)*

DB119013

*ECC module (side view showing LED indicators).*

PB1018216-34

*PowerLogic PM8M26 module.*

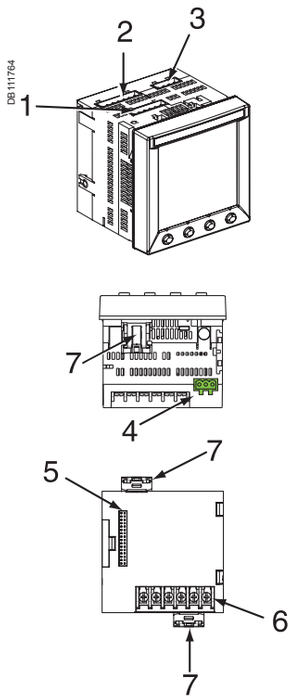
PB1018224-50

*PowerLogic PM800 with PM8M22 and PM8M26 modules.*

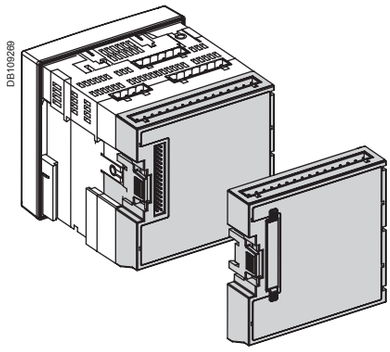
## Part Numbers - continued

| Description | |
|---|---|
| **Optional modules** | |
| Ethernet communication module provides a 10/100BaseTx UTP port, an RS-485 Modbus serial master port, Ethernet-to-serial line gateway functionality, and an embedded web server that is fully compliant with Transparent Ready - Level 1 (TRe1) systems.<br><br>The PM8ECC supports a private host PM8ECC MIB. Use of this MIB allows the reading of Basic Metering Data, Configuration and Status of I/Os and Configuration and Status of Alarms, plus SNMP Trap generation in response to any PM8 on-board alarms. | **PM8ECC** |
| 2 relay outputs, 2 digital inputs | **PM8M22** |
| 2 relay outputs, 6 digital inputs | **PM8M26** |
| 2 relay outputs, 2 digital inputs, 2 analogue outputs, 2 analogue inputs | **PM8M2222** |
| PM810 optional logging module for on-board data recording, uses a non-volatile, battery-backed internal clock | **PM810LOG** |
| RJ11 Extender kit to mount RJ11 jack in panel door (for use with PM800, CM3000, and CM4000 series meters) | **RJ11EXT** |
| Cable for remote display adapter 1.25 m (4 ft) | **CAB4** |
| Cable for remote display adapter 3 m (9 ft 10 inch) | **CAB12** |
| Cable for remote display adapter 9.14 m (30 ft) | **CAB30** |

# PM800 series
## Functions and characteristics (cont.)




**PowerLogic PM800 series connectors.**
**1** Control power.
**2** Voltage inputs.
**3** Digital input/output.
**4** RS 485 port.
**5** Option module connector.
**6** Current inputs.
**7** Mounting clips.




*PowerLogic PM800 series meter with I/O module.*

| Selection guide | | PM810 | PM820 | PM850 | PM870 |
|---|---|---|---|---|---|
| **Peformance standard** | | | | | |
| ANSI 12.20 Class 0.2S | | ■ | ■ | ■ | ■ |
| IEC 61557-12 PMD/SD/K70/0.5 and PMD/SS/K70/0.5 | | ■ | ■ | ■ | ■ |
| **General** | | | | | |
| Use on LV and HV systems | | ■ | ■ | ■ | ■ |
| Current and voltage accuracy | | 0.5 %/0.2 % | 0.5 %/0.2 % | 0.5 %/0.2 % | 0.2 %/0.2 % |
| Active energy accuracy (5 % to 200 % of load) | | 0.2 % | 0.2 % | 0.2 % | 0.2 % |
| Number of samples per cycle | | 128 | 128 | 128 | 128 |
| **Instantaneous rms values** | | | | | |
| Current, voltage, frequency | | ■ | ■ | ■ | ■ |
| Active, reactive,apparent power | Total & per phase | ■ | ■ | ■ | ■ |
| Power factor | Total & per phase | ■ | ■ | ■ | ■ |
| **Energy values** | | | | | |
| Active, reactive, apparent energy | | ■ | ■ | ■ | ■ |
| Configurable accumulation mode | | ■ | ■ | ■ | ■ |
| **Demand values** | | | | | |
| Current | Present & max. | ■ | ■ | ■ | ■ |
| Active, reactive, apparent power | Present & max. | ■ | ■ | ■ | ■ |
| Predicted active, reactive, apparent power | | ■ | ■ | ■ | ■ |
| Synchronisation of the measurement window | | ■ | ■ | ■ | ■ |
| Demand calculation mode | Block, sliding, thermal | ■ | ■ | ■ | ■ |
| **Other measurements** | | | | | |
| Hour counter | | ■ | ■ | ■ | ■ |
| **Power quality measurements** | | | | | |
| Harmonic distortion | Current & voltage | ■ | ■ | ■ | ■ |
| Individual harmonics | Current & voltage | 31 (1) | 31 | 63 | 63 |
| Waveform capture | | - | - | ■ | ■ (2) |
| EN50160 - ITI(C⇦EMA)/SEMI F-47 | | | | ■ (4) | ■ |
| Sag and swell detection | | - | - | - | ■ |
| **Data recording** | | | | | |
| Min/max of instantaneous values | | ■ | ■ | ■ | ■ |
| Data logs | | 2 (1) | 2 | 4 | 4 |
| Event logs | | - | ■ | ■ | ■ |
| Trending / forecasting | | - | - | ■ | ■ |
| GPS synchronisation | | ■ (1) | ■ | ■ | ■ |
| Alarms | | ■ | ■ | ■ | ■ |
| Time stamping | | ■ (1) | ■ | ■ | ■ |
| **Display and I/O** | | | | | |
| White backlit LCD display | | ■ | ■ | ■ | ■ |
| Multilingual | | ■ | ■ | ■ | ■ |
| Digital input (standard/optional) | | 1/12 | 1/12 | 1/12 | 1/12 |
| Digital output (standard/optional) | | 1 KY/4 RY | 1 KY/4 RY | 1 KY/4 RY | 1 KY/4 RY |
| Analogue inputs (standard/optional) | | 0/4 | 0/4 | 0/4 | 0/4 |
| Analogue outputs (standard/optional) | | 0/4 | 0/4 | 0/4 | 0/4 |
| Input metering capability (number of channels) | | 5 | 5 | 5 | 5 |
| **Communication** | | | | | |
| RS 485 port | | 2-wire | 2-wire | 2-wire | 2-wire |
| Modbus protocol | | ■ | ■ | ■ | ■ |
| RS 232/RS 485, 2- or 4-wire Modbus RTU/ ASCII (with addition of PM8RDA module) | | ■ | ■ | ■ | ■ |
| Ethernet 10/100Base Tx UTP port and RS485 Modbus serial master port with PM8ECC | | ■ | ■ | ■ | ■ |

## Option modules selection guide

The PM800 can be fitted with 2 optional modules, unless otherwise indicated (3)

### PM8ECC module

10/100BaseTx UTP port, RS-485 Modbus serial master port, Ethernet to serial line gateway, embedded web server

| Input/Output modules | PM8M22 | PM8M26* | PM8M2222 |
|---|---|---|---|
| Relay outputs | 2 | 2 | 2 |
| Digital inputs | 2 | 6 | 2 |
| Analogue outputs 4-20 mA | | | 2 |
| Analogue inputs 0-5 V DC or 4-20 mA | | | 2 |

** Includes a 24 V DC Power Supply that can be used to power the digital inputs*
***(1)** With PM810LOG, battery-backed internal clock and 80 kB memory. **(2)** Configurable.*
***(3)** Series 800 Power Meters supports up to two option modules. When PM8M2222 & PM8ECC are mounted together with control power>370 V AC temperature rating must be reduced to -25°C to 50°C. Same applies when using two PM8M2222. **(4)** PM850 does not include sag or swell detection.*

# PM800 series
## Functions and characteristics (cont.)

| | | | |
|---|---|---|---|
| **Electrical characteristics** | | | |
| Type of measurement | | | 63rd harmonic, 128 samples per cycle |
| Measurement accuracy standard IEC 61557-12 compliant | | | |
| | Current | | 0.5 % from 0.5 A to 10 A |
| | Voltage | | 0.2 % 10 V - 277 V |
| | Power Factor | | +/- 0.002 from 0.500 leading to 0.500 lagging |
| | Active Power | | 0.2 % |
| | Frequency | | +/- 0.01 Hz at 45 to 67 Hz<br>+/- 0.01 Hz at 350 to 450 Hz |
| | Active Energy | | IEC 62053-22 Class 0.5S and<br>ANSI C12.20 Class 0.2S |
| | Reactive Energy | | IEC 62053-23 Class 2 |
| Data update rate | | | 1 s |
| Input-voltage characteristics | Measured voltage | | 0 to 600 V AC (direct L-L)<br>0 to 347 V AC (direct L-N)<br>up to 3.2 MV AC (with external VT) |
| | Metering over-range | | 1.5 Un |
| | Impedance | | 5 MW |
| | Frequency measurement range | | 45 to 67 Hz and 350 to 450 Hz |
| Input-current characteristics | CT ratings | Primary | Adjustable from 5 A to 32767 A |
| | | Secondary | 1 A or 5 A |
| | Measurement input range | | 5 mA to 10 A AC |
| | Permissible overload | | 15 A continuous<br>50 A for 10 seconds per hour<br>500 A for 1 second per hour |
| | Impedance | | < 0.1 Ω |
| | Load | | < 0.15 VA |
| Control Power | AC | | 115 to 415 ±10 % V AC, 15 VA with options at 45 to 67 Hz or 350 to 450 Hz |
| | DC | | 125 to 250 ±20 % V DC, 10 W with options |
| | Ride-through time | | 45 ms at 120 V AC or 125 V DC |
| **Inputs/Outputs** [2] | | | |
| Standard (meter unit) | 1 digital KY pulse output | | 6 to 220 V AC ± 10 % or 3 to 250 V DC ± 10 %, 100 mA max. at 25°C, 1350 V rms isolation |
| | 1 digital input | | 24 to 125 V AC/DC ±10 %, < 5 mA maximum burden, 1350 Vrms isolation |
| PM8M22 option | 2 relay outputs [1] | | 6 to 240 V AC or 6 to 30 V DC<br>2 A rms, 5 A max. for 10 seconds per hour |
| | 2 digital inputs | | 19 to 30 V DC, 5 mA max. at 24 V DC |
| PM8M26 option | 2 relay outputs [1] | | 6 to 240 V AC, 6 to 30 V DC<br>2 A rms, 5 A max. for 10 seconds per hour |
| | 6 digital inputs | | 20 to 150 V AC/DC, 2 mA max. |
| | 24 V internal supply | | 20 - 34 V DC, 10 mA max. (feeds 6 digital inputs) |
| PM8M2222 option | 2 relay outputs [1] | | 6 to 240 V AC, 6 to 30 V DC<br>2 A rms, 5 A max. for 10 seconds per hour |
| | 2 digital inputs | | 20 to 150 V AC/DC, 2 mA max. |
| | 2 analogue outputs | | 4 to 20 mA dc into 600 ohms maximum |
| | 2 analogue inputs | | Adjustable from 0 to 5 V DC or 4-20 mA |
| Switching frequency (digital I/O) | Standard | Input/output | 25 Hz, 50 % duty cycle (20 ms ON/OFF) |
| | PM8M22 | Input/output | 1 Hz, 50 % duty cycle (500 ms ON/OFF) |
| | PM8M26 and PM8M2222 | Input | 25 Hz, 50 % duty cycle (20 ms ON/OFF) |
| | | Output | 1 Hz, 50 % duty cycle (500 ms ON/OFF) |
| **Mechanical characteristics** | | | |
| Weight (meter with integrated display) | | | 0.6 kg |
| IP degree of protection (IEC 60529) | | | IP52 integrated display. Type 12 compliant remote display (with gasket). IP30 meter body |
| Dimensions | Without options | | 96 x 96 x 70 mm (mounting surface) |
| | With 1 option | | 96 x 96 x 90 mm (mounting surface) |
| **Environmental conditions** | | | |
| Operating temperature | Meter | | -25°C to +70°C [2] |
| | Display | | -10°C to +50°C |
| Storage temp. | Meter + display | | -40°C to +85°C |
| Humidity rating | | | 5 to 95 % RH at 40°C (non-condensing) |
| Pollution degree | | | 2 |
| Installation category | | | III, for distribution systems up to 347 V L-N / 600 V AC L-L |
| Dielectric withstand | | | As per EN 61010, UL508 |
| Altitude | | | 3000 m max. |

*(1) Mechanical endurance: 15 million operations, Electrical endurance: 25000 commutations at 2 A / 250 V AC. (2) Series 800 Power Meters supports up to two option modules. When PM82222 & PM8ECC are mounted together with control power >370 V AC temperature rating must be reduced to -25°C to 50°C. Same is true when using two PM8M2222.*

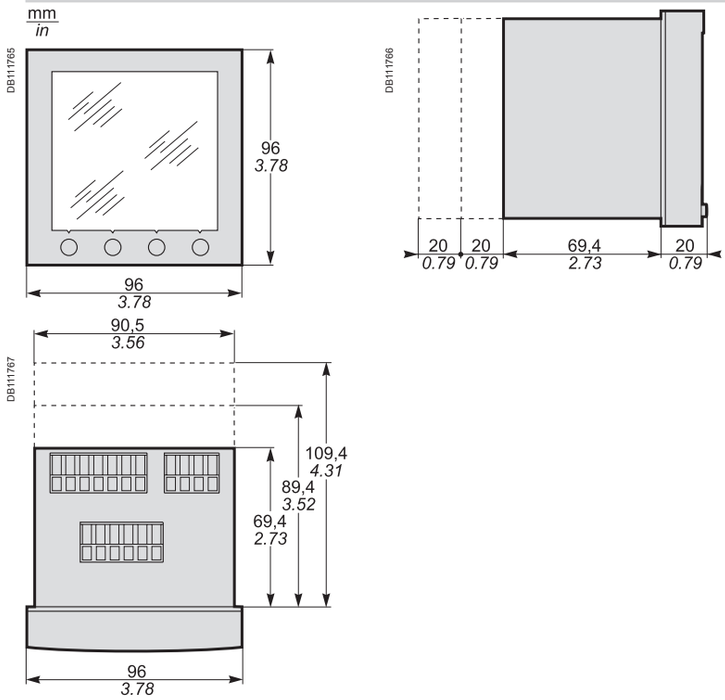
# PM800 series
## Functions and characteristics (cont.)

| | | | |
|---|---|---|---|
| **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 impulse waves | Level III (IEC 61000-4-5) | | |
| Conducted immunity | Level III (IEC 61000-4-6) | | |
| Immunity to magnetic fields | Level III (IEC 61000-4-8) | | |
| Immunity to voltage dips | Level III (IEC 61000-4-11) | | |
| Conducted and radiated emissions | CE industrial environment/FCC part 15 class A EN 55011 | | |
| Harmonics emissions | IEC 61000-3-2 | | |
| Flicker emissions | IEC 61000-3-3 | | |
| Surge immunity | IEC 61000-4-12 | | |
| Surge withstand capability (SWC) | ANSI C37.90.1.2002 | | |
| **Safety** | | | |
| Europe | CE, as per IEC 61010-1 ⧈ (1) | | |
| U.S. and Canada | cULus (UL508 and CAN/CSA C22.2 No. 14-M95, Industrial Control Equipment) | | |
| **Onboard communications** | | | |
| RS 485 port | 2-wire, up to 38400 baud, Modbus | | |
| **Model-dependent characteristics** | | | |
| Data Logs | PM810 with PM810LOG, PM820, PM850 and PM870:<br>- 1 billing log<br>- 1 customisable log<br>PM850 and PM870 only: 2 additional custom logs | | |
| Min./max. | Worst min. and max. with phase indication for Voltages, Currents, Voltage unbalance, and THD. Min. and max. values for power factor (True and Displacement), power (P, Q, S) and frequency | | |
| One event log | Time stamping to 1 second | | |
| Trend curves (PM850 and PM870 only) | Four trend curves: 1 minute, 1 hour, 1 day and 1 month. Min./max./avg. values recorded for eight parameters:<br>- every second for one minute for the 1-minute curve<br>- every minute for one hour for the 1-hour curve<br>- every hour for one day for the 1-day curve<br>- every day for one month for the 1-month curve | | |
| Hour counter | Load running time in days, hours and minutes | | |
| Energy per shift | Up to three user-defined intervals per day<br>Available for all models (the PM810 requires the PM810LOG module) | | |
| Forecasting (PM850 and PM870 only) | Forecasting of the values for the trended parameters for the next four hours and next four days | | |
| PM850 waveform capture | Triggered manually or by alarm, 3-cycle, 128 samples/cycle on 6 user configurable channels | | |
| PM870 enhanced waveform capture | From 185 cycles on 1 channel at 16 samples per cycle up to 3 cycles on 6 channels at 128 samples per cycle | | |
| Alarms | Adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm<br>Historical and active alarm screens with time stamping<br>Response time: 1 second<br>Boolean combination of four alarms is possible using the operators NAND, AND, OR, NOR and XOR on PM850 and PM870 Digital alarms: status change of digital inputs | | |
| Memory available for logging and waveform capture (2) | 80 kbytes in PM810 with PM810LOG and PM820<br>800 kbytes in PM850 and PM870 | | |
| Firmware update (all models) | Update via the communication ports<br>File download available free from www.powerlogic.com | | |
| Bar graphs (all models) | Graphical representation of system performance | | |
| **Display characteristics** | | | |
| Languages | English, French, Spanish, German, Russian, Turkish and Portuguese. | | |
| Display screen | Back-lit white LCD (6 lines total, 4 concurrent values) | | |
| Dimensions | Display screen viewable area | | 73 x 69 mm |
| | Integrated display | Overall | 96 x 96 mm |
| | | Depth meter + display | 69.4 mm + 17.8 mm |
| | Remote display | Overall | 96 x 96 x 40 mm |
| Weight | Meter with remote display adapter | | 0.81 kg |
| | Remote display | | 0.23 kg |

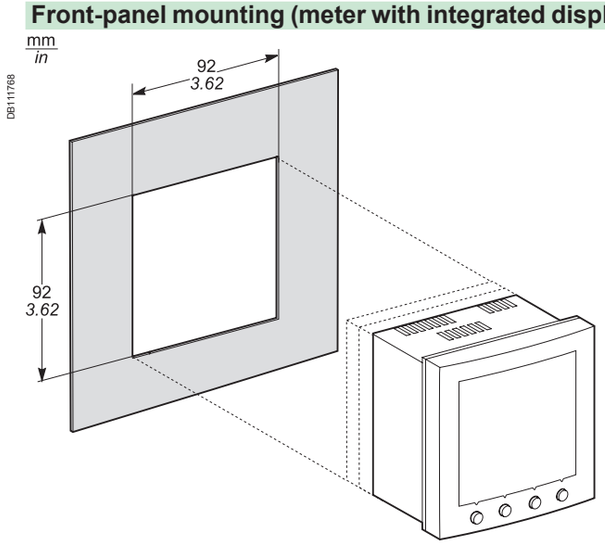
*(1) Protected throughout by double insulation. (2) Waveform capture with PM850 and PM870 only.*

# Power Meter Series 800
## Installation and connection

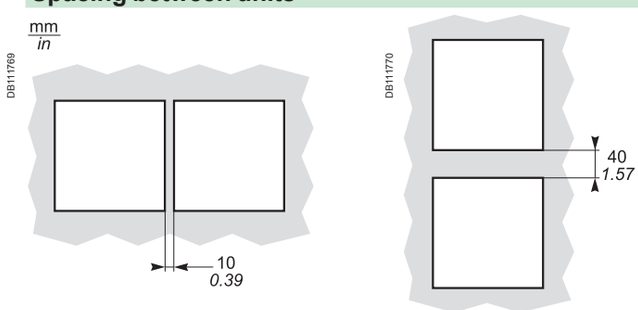
### Power meter with integrated display
#### Dimensions




### Front-panel mounting (meter with integrated display)



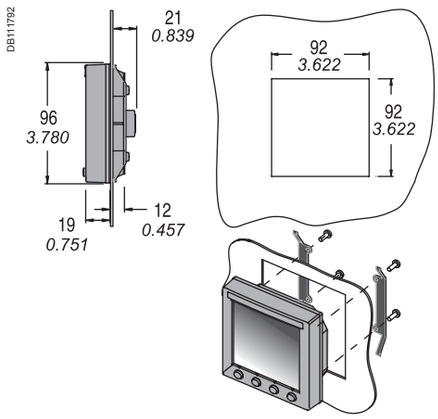

### Spacing between units



# Power Meter Series 800
## Installation and connection (cont.)

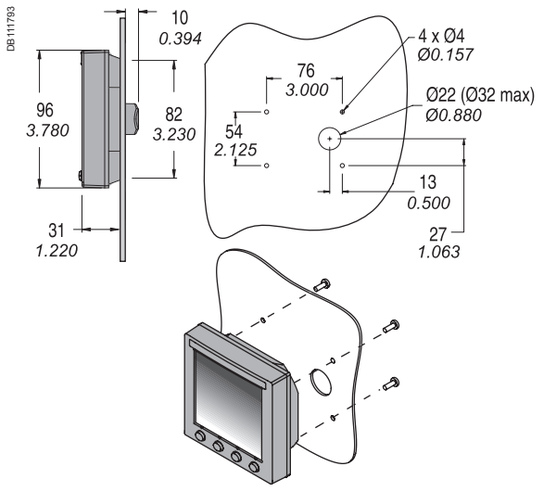
### Remote display door mounting
#### Flush mounting

mm
in



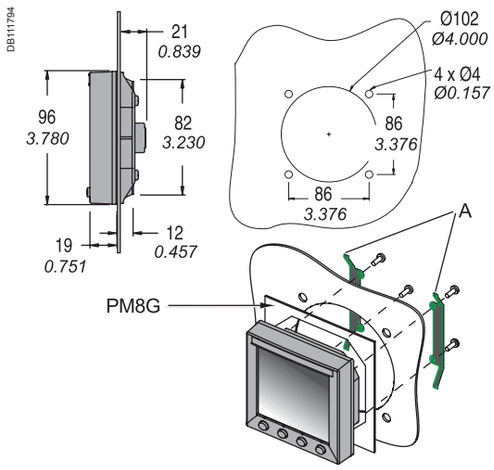

### Surface mount

mm
in



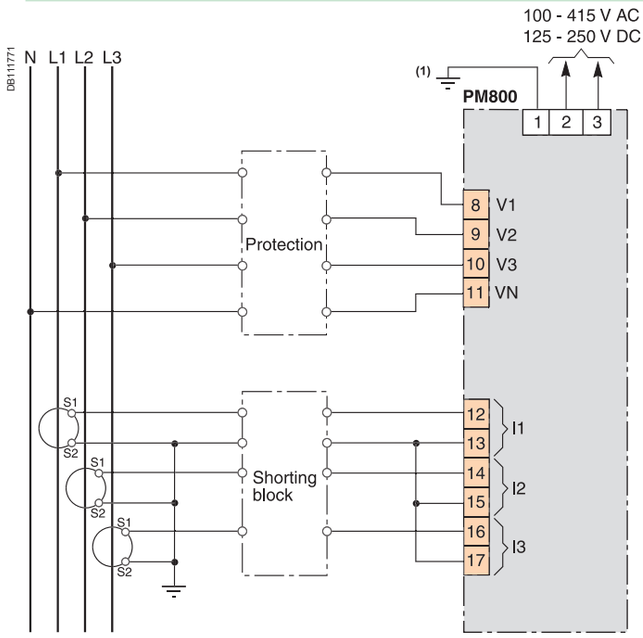

### Mounting in a Ø102 cutout (replace analogue device: ammeter, voltmeter, etc.)

mm
in



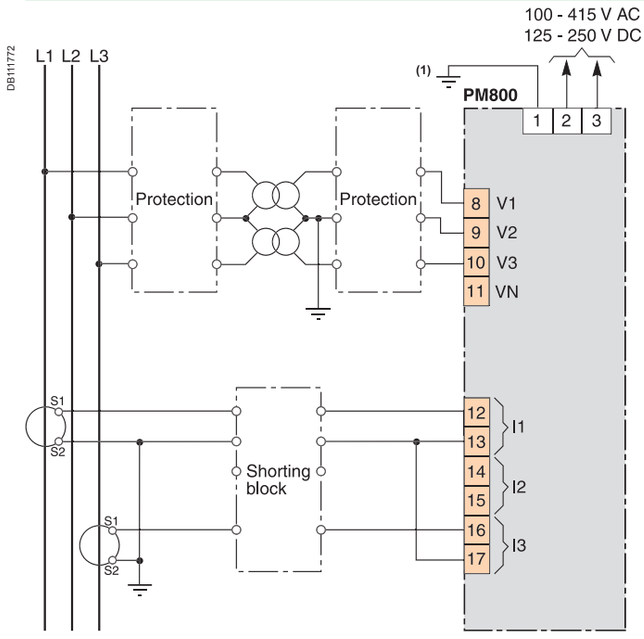
# Power Meter Series 800
## Installation and connection (cont.)

### 4-wire connection with 3 CTs and no PT




*Connection example.*

### 3-wire connection with 2 CTs and 2 PTs




*Connection example.*

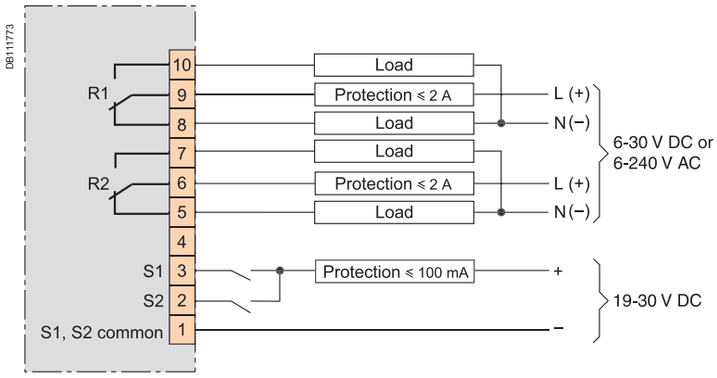
***(1)** Functional earth terminal.*

***Note:** Other types of connection are possible. See product documentations.*

# Power Meter Series 800
## Installation and connection (cont.)

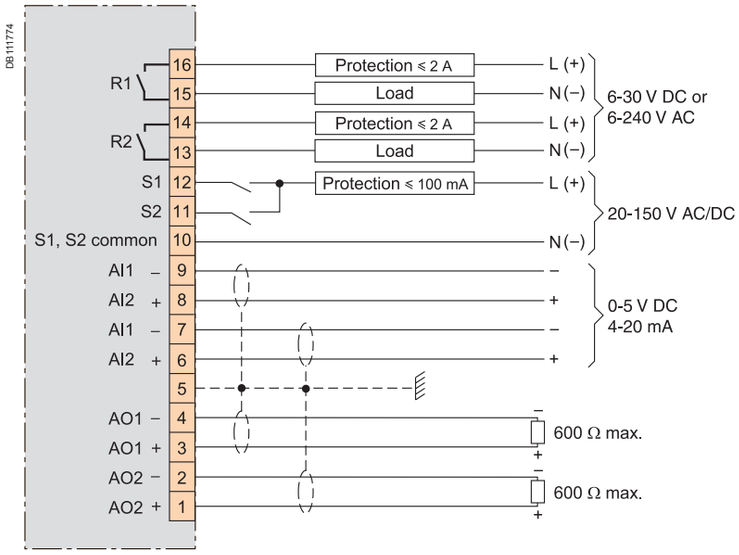
### PM8M22 module

**PM8M22**




### PM8M2222 module

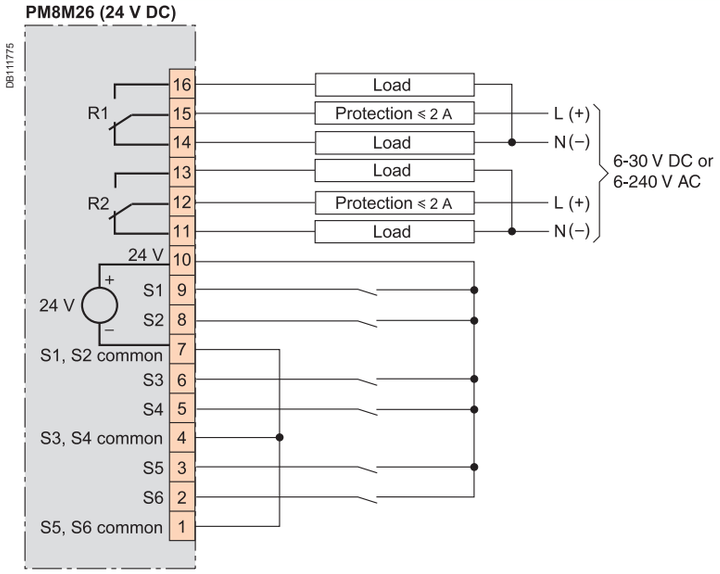
**PM8M2222**



# Power Meter Series 800
## Installation and connection (cont.)

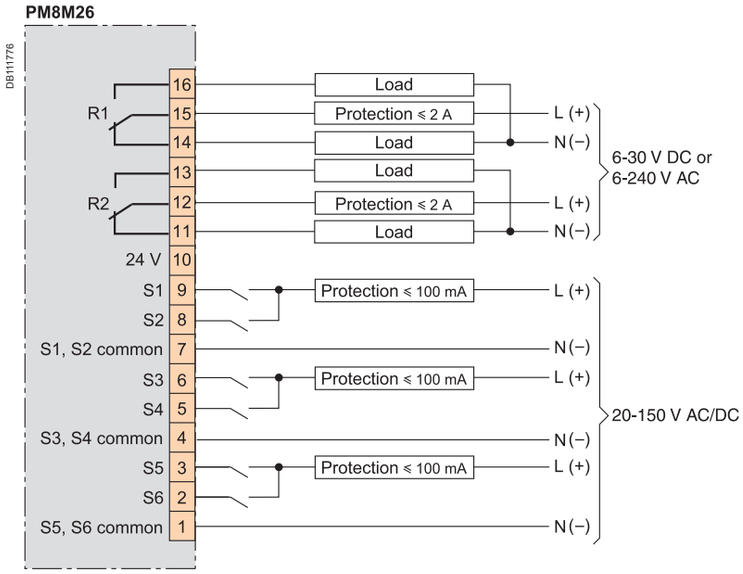
### PM8M26 module internal 24 V DC power supply

**PM8M26 (24 V DC)**



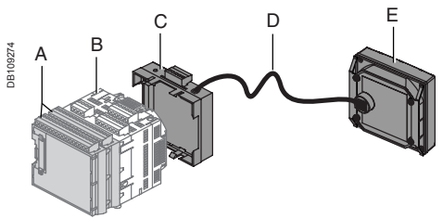

### PM8M26 module external power supply

**PM8M26**



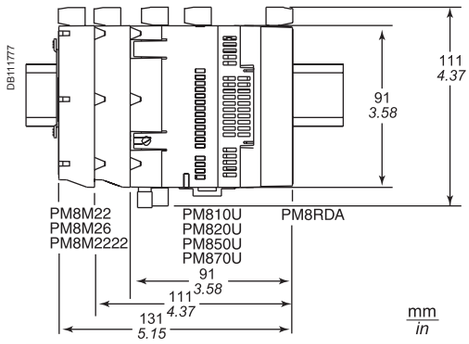
# Power Meter Series 800
## Installation and connection (cont.)

### Remote display kit

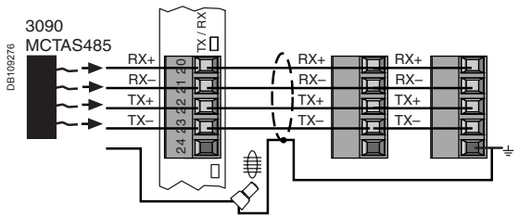



**A** I/O modules
**B** Power meter 800 series (base unit)
**C** Remote display adapter
**D** CAB12 cable
**E** Remote display (rear view)

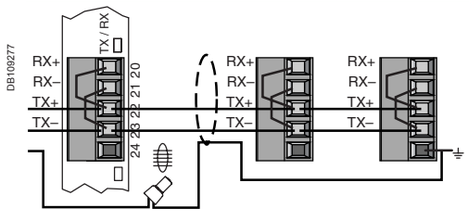
### Dimension (meter with I/O and remote display adapter)




### 4-wire connection (RS 485) of remote display adapter




### 2-wire connection (RS 485) of remote display adapter



# Power Meter Series 800
## Installation and connection (cont.)

### RS-485 wiring color codes

2-wire connections

Belden 9841 cable:
- (+) blue, white stripe
- (–) white, blue stripe
- (shield)

4-wire connections

Belden 9843 cable:
- (TX+) blue, white stripe
- (TX–) white, blue stripe
- (RX+) orange, white stripe
- (RX–) white, orange stripe
- (SG) green, white stripe
- (unused) white, green stripe
- (shield)

Belden 9842 cable:
- (TX+) blue, white stripe
- (TX–) white, blue stripe
- (RX+) orange, white stripe
- (RX–) white, orange stripe
- (shield)

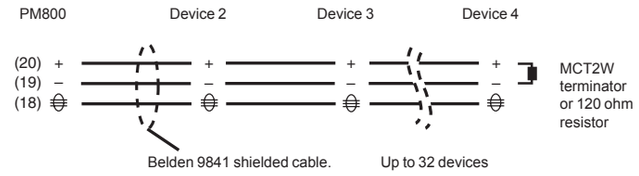
Belden 8723 cable:
- (TX+) green
- (TX–) white
- (RX+) red
- (RX–) black
- (shield)

### Surge protection

For surge protection, it is recommend that the PM8ECC signal ground wire be connected directly to an external earth ground at a single point.

### PM800 meter unit RS-485 port 2-wire daisy-chain connection

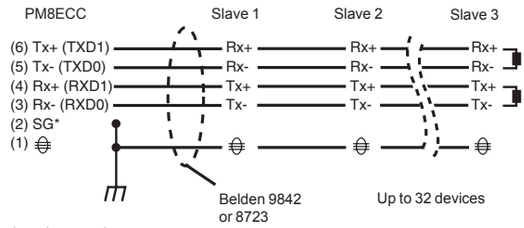
PE86121



# Power Meter Series 800
## Installation and connection (cont.)

### PM8ECC module RS-485 port connections for 4-wire devices that do not support separate signal ground and shield wire

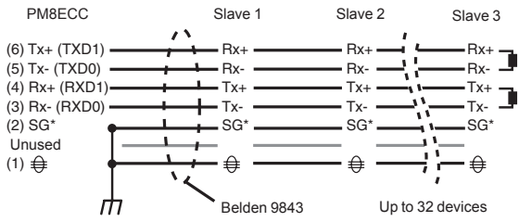
PLSD110343




***Note:*** *SG is signal ground.*

### PM8ECC module RS-485 port connections for 4-wire devices that support separate signal ground and shield wire

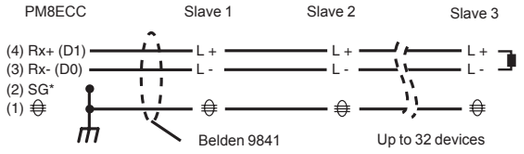
PLSD110351




***Note:*** *SG is signal ground.*

### PM8ECC module RS-485 port connections for 2-wire devices that do not support separate signal ground and shield wire

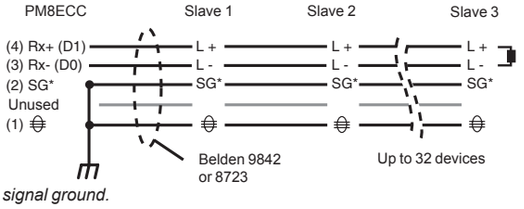
PLSD110344




***Note:*** *SG is signal ground.*

### PM8ECC module RS-485 port connections for 2-wire devices that support separate signal ground and shield wire

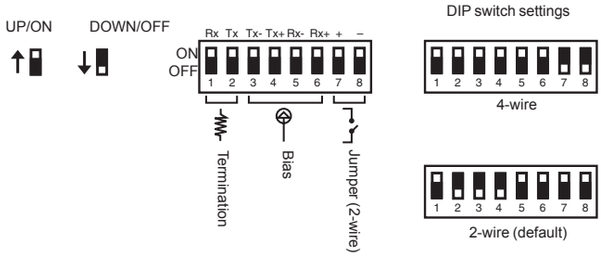
PLSD110352




***Note:*** *SG is signal ground.*

### PM8ECC module RS-485 port biasing and termination

PLSD110345



# ION7550 / ION7650
## Functions and characteristics

PE86126


*PowerLogic™ ION 7650*

*ION7550 and ION7650 meters can have integrated or remote displays. The meter can be mounted at the front of the panel, with integrated display, or in the back of the panel (tran unit) with a remote display mounted on the front.*

Used at key distribution points and sensitive loads, PowerLogic™ ION7550 and ION7650 meters offer unmatched functionality including advanced power quality analysis coupled with revenue accuracy, multiple communications options, web compatibility, and control capabilities. Customise metering or analysis functions at your work station, without hard wiring. Just link drag-and-drop icons or select default settings. Integrate the meters with StruxureWare Power Monitoring software or share data with SCADA systems via multiple communication channels and protocols.

### Applications

Reduce energy costs.
Increase equipment utilisation.
Comply with environmental and regulatory requirements.
Improve power quality and reliability.
Improve customer satisfaction and retention.
Monitor and control equipment.
Integrated utility metering.
Allocate or sub-bill energy costs to departments, processes or tenants.

### Main characteristics

**Anticipate, diagnose and verify to increase efficiency**
Reveal energy inefficiencies or waste and optimise equipment operation to increase efficiency. Isolate reliability risks, diagnose power-related equipment issues and verify reliable operation.

**Summarise power quality, set targets, measure and verify results**
Consolidate all the power quality characteristics into a single trendable index. Benchmark power quality and reliability and compare against standards, or compare facilities or processes.

**Easy to use, multilingual, IEC/IEEE configureable display**
Bright LCD display with adjustable contrast. Screen-based menu system to configure meter settings including IEC or IEEE notations. Multilingual support for English, French, Spanish and Russian. 12/24 hour clock support in multiple formats.

**Modbus Master functionality**
Read information from downstream Modbus devices and view it via the front panel or store in memory until you upload to the system level.

**IEC 61850 protocol**
Increase interoperability and decrease engineering time using standard protocol.

**Gateway functionality**
Access through the meter's Ethernet port (EtherGate) or telephone network (ModemGate) to Modbus communicating devices connected to meter serial ports.

**Detect and capture transients as short as 20µs at 50Hz (17µs at 60 Hz)**
Identify problems due to short disturbances, e.g. switching of capacitors, etc.

**Power quality compliance monitoring**
Monitor compliance with international quality-of-supply standards (IEC 61000-4-30 class A ed. 2[1], EN50160[1], IEC 61000-4-7[1], IEC 61000-4-15[1], IEEE 519, IEEE 1159, and CBEMA/ITIC). Evaluate flicker based on IEC 61000-4-15[1] and IEEE 1453[1].

**Detect waveshape changes**
Detection of phase switching phenomena (for example during the transfer of a high-speed static switch) not detected by classical threshold-based alarms.

**Record ultra-fast electrical parameters every 100 ms or every cycle**
Preventive maintenance: acquisition of a motor startup curve, etc.

**Trend curves and short-term forecasting**
Rapid trending and forecasting of upcoming values for better decision making.

**Disturbance direction detection**
Determine disturbance location and direction relative to the meter. Results captured in the event log, along with a timestamp and certainty level.

**Alarm setpoint learning**
The meter analyses the circuit and recommends alarm setpoints to minimise nuisance or missed alarms.

**Notify alarms via email**
High-priority alarms sent directly to the user's PC. Instant notification of power quality events by email.

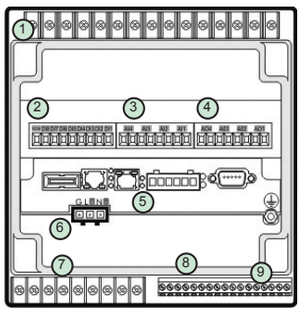
*[1] ION7650 only*

### Part numbers

| ION7550 / ION7650 | |
|---|---|
| ION7550 | **M7550** |
| ION7650 | **M7650** |
| SE remote display | **M765RD** |
| SE remote display w/power supply | **M765RDPS** |

# ION7550 / ION7650
## Functions and characteristics (cont.)

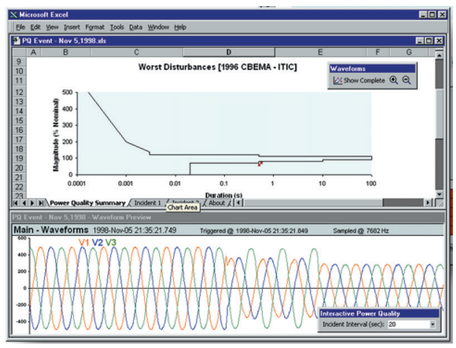
PE86288




*PowerLogic™ ION7550 / ION7650 rear view.*

**1** Current/voltage inputs
**2** Digital inputs
**3** Analogue inputs
**4** Analogue outputs
**5** Communications card
**6** Power supply
**7** Form C digital outputs
**8** Digital inputs
**9** Form A digital outputs

PE86002




*Disturbance waveform capture and power quality report*

| Selection guide | | ION7550 | ION7650 |
|---|---|---|---|
| **General** | | | |
| Use on LV and HV systems | | ■ | ■ |
| Current accuracy (1A to 5A) | | 0.1 % reading | 0.1 % reading |
| Voltage accuracy (57V to 288V) | | 0.1 % reading | 0.1 % reading |
| Energy accuracy | | 0.2 % | 0.2 % |
| Nbr of samples/cycle or sample frequency | | 256 | 1024 |
| **Instantaneous rms values** | | | |
| Current, voltage, frequency | | ■ | ■ |
| Active, reactive, apparent power | Total and per phase | ■ | ■ |
| Power factor | Total and per phase | ■ | ■ |
| Current measurement range (autoranging) | | 0.01 - 20 A | 0.01 - 20 A |
| **Energy values** | | | |
| Active, reactive, apparent energy | | ■ | ■ |
| Settable accumulation modes | | ■ | ■ |
| **Demand values** | | | |
| Current | Present and max. values | ■ | ■ |
| Active, reactive, apparent power | Present and max. values | ■ | ■ |
| Predicted active, reactive, apparent power | | ■ | ■ |
| Synchronisation of the measurement window | | ■ | ■ |
| Setting of calculation mode | Block, sliding | ■ | ■ |
| **Power quality measurements** | | | |
| Harmonic distortion | Current and voltage | ■ | ■ |
| Individual harmonics | Via front panel | 63 | 63 |
| | Via ION Enterprise | 127 | 511 |
| Waveform capture | | ■ | ■ |
| Detection of voltage swells and sags | | ■ | ■ |
| Detection and capture of transients | | - | 20 µs(1) |
| Flicker | | - | ■ |
| Fast acquisition of 100 ms or 20 ms data | | ■ | ■ |
| EN50160 compliance checking | | - | ■ |
| Programmable (logic and math functions) | | ■ | ■ |
| **Data recording** | | | |
| Min/max of instantaneous values | | ■ | ■ |
| Data logs | | ■ | ■ |
| Event logs | | ■ | ■ |
| Trending/forecasting | | ■ | ■ |
| SER (Sequence of event recording) | | ■ | ■ |
| Time stamping | | ■ | ■ |
| GPS synchronisation (1 ms) | | ■ | ■ |
| Memory (in Mbytes) | | 10 | 10 |
| **Display and I/O** | | | |
| Front panel display | | ■ | ■ |
| Wiring self-test | | ■ | ■ |
| Pulse output | | 1 | 1 |
| Digital or analogue inputs(max) | | 20 | 20 |
| Digital or analogue outputs (max, including pulse output) | | 12 | 12 |
| **Communication** | | | |
| RS 485 port | | 1 | 1 |
| RS 485 / RS 232 port | | 1 | 1 |
| Optical port | | 1 | 1 |
| Modbus protocol | | ■ | ■ |
| IEC 61850 protocol | | ■ | ■ |
| Ethernet port (Modbus/TCP/IP protocol, IEC 61850 (2)) | | 1 | 1 |
| Ethernet gateway (EtherGate) | | 1 | 1 |
| Alarms (optional automatic alarm setting | | ■ | ■ |
| Alarm notification via email | | ■ | ■ |
| HTML web page server (WebMeter) | | ■ | ■ |
| Internal modem | | 1 | 1 |
| Modem gateway (ModemGate) | | ■ | ■ |
| DNP 3.0 through serial, modem, and I/R ports | | ■ | ■ |

***(1)*** *For 50 Hz line frequency; 17µs for 60 Hz line frequency.*