

# Power and energy meters

## PowerLogic® PM800





# Power Meter Series 800

## Functions and characteristics



The PowerLogic® Power Meter Series 800 offers all the high-performance measurement capabilities needed to monitor an electrical installation in a compact 96 x 96 mm unit. Its easy-to-read display shows all three phases and neutral at the same time.

Standard features of the Series 800 Power Meters include an RS485 Modbus communication port (ASCII and RTU), digital input and digital output, THD metering, alarming and input metering capability. The PM820 and PM850 also offer custom onboard logging and individual current and voltage harmonic readings. The PM850 includes waveform capture. The PM870 is the first compact meter to offer voltage and current disturbance (sag and swell) detection and configurable waveform capture.

### Applications

Panel instrumentation

- Sub-billing, cost allocation and utility bill verification
- Remote monitoring of an electrical installation
- Mid-range power quality analysis and energy management (the PM870 includes sag and swell detection)
- Utility contract optimization and load preservation

### Characteristics

#### Easy to install

Mounts with only two clips. No tools required.

#### Direct connect voltage inputs

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. Boolean logic can be used to combine up to four alarms.

#### Power quality analysis

The Power Meter Series 800 supports EN 50160 power quality evaluation. The PM850 includes waveform capture. The PM870 features voltage and current disturbance (sag and swells) detection and configurable waveform capture. And both the PM850 and PM870 include current and voltage individual harmonic magnitudes and angles that help troubleshoot and prevent power quality problems.

#### Extensive on-board memory

Billing (energy and demand), power quality and alarm logs are stored in non-volatile memory.

#### IEC 62053-22 class 0.5S for real energy

Accurate energy measurement for sub-billing and cost allocation.

#### Trend curves and short-term forecasting (PM850 and PM870)

Trend and compare energy and demand readings. Forecast upcoming values to anticipate and manage future energy costs.

#### WAGES capability

Five channels available on all models for input metering of various utilities (WAGES: water, air, gas, electricity, steam).

#### Modular and upgradeable

Easy-to-install option modules (memory and I/O) 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 RS485/RS232 communication port.

#### Serial and Ethernet communications

All modules include an RS-485 port supporting Modbus protocol (ASCII and RTU). An optional module provides Ethernet Modbus TCP/IP communications with e-mail on alarm, full function web server and Ethernet-to-serial line gateway functionality.

# Power Meter Series 800

## Functions and characteristics



Remote display adapter with remote display and cable



Power Meter PM800 with ECC module

### Part Numbers

#### Description

##### Power Meter with Integrated Display

PM810 power meter with integrated display, basic instrumentation, THD, alarming	<b>PM810MG</b>
PM820 power meter with integrated display, basic instrumentation, THD, alarming, 80 kb logging	<b>PM820MG</b>
PM850 power meter with integrated display, basic instrumentation, THD, alarming, 800 kb logging, waveform capture	<b>PM850MG</b>
PM870 power meter with integrated display, basic instrumentation, THD, alarming, 800 kb logging, configurable waveform capture and disturbance detection	<b>PM870MG</b>

##### Power Meter Unit (No Display)

PM810 power meter unit only, no display	<b>PM810UMG</b>
PM820 power meter unit only, no display	<b>PM820UMG</b>
PM850 power meter unit only, no display	<b>PM850UMG</b>
PM870 power meter unit only, no display	<b>PM870UMG</b>

#### 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	<b>PM8ECC</b>
2 digital outputs (relays), 2 digital inputs	<b>PM8M22</b>
2 digital outputs (relays), 6 digital inputs	<b>PM8M26</b>
2 digital outputs (relays), 2 digital inputs, 2 analog outputs, 2 analog inputs	<b>PM8M2222</b>
PM810 optional logging module for on-board data recording, uses a nonvolatile, battery-backed internal clock	<b>PM810LOG</b>

#### Parts and accessories

Remote display and adapter with a 3.55 m (12 ft) cable	<b>PM8RDMG</b>
Remote display adapter only	<b>PM8RDA</b>
RJ11 Extender kit to mount RJ11 jack in panel door (for use with PM800, CM3000, and CM4000 series meters)	<b>RJ11EXT</b>
Cable for remote display adapter 1.25 m (4 ft)	<b>CAB4</b>
Cable for remote display adapter 3.65 m (12 ft)	<b>CAB12</b>
Cable for remote display adapter 9.14 m (30 ft)	<b>CAB30</b>

### Display selection guide

#### Application

##### Meter and integrated display mounted on door

Use the meter with an integrated display when door space is available and when voltage usage is within the local regulation limits.	<b>PM810MG</b>
	<b>PM820MG</b>
	<b>PM850MG</b>
	<b>PM870MG</b>

##### Meter with no display

Use the base meter unit without a 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.	<b>PM810UMG</b>
	<b>PM820UMG</b>
	<b>PM850UMG</b>
	<b>PM870UMG</b>

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 System Manager™ Software (SMS) to read data.

#### Remote display PB101554

##### Meter and remote display kit

Conveniently packaged kit consist of a base meter (810, 820, or 850) with a remote display, remote display adapter, and remote display cable 3.6 m (12 ft).	<b>PM810RDMG</b>
	<b>PM820RDMG</b>
	<b>PM850RDMG</b>
	<b>PM870RDMG</b>
	<b>PB101552</b>

##### Remote display adapter alone

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 RS485/RS232.	<b>PM8RDA</b>
	<b>PB101555</b>

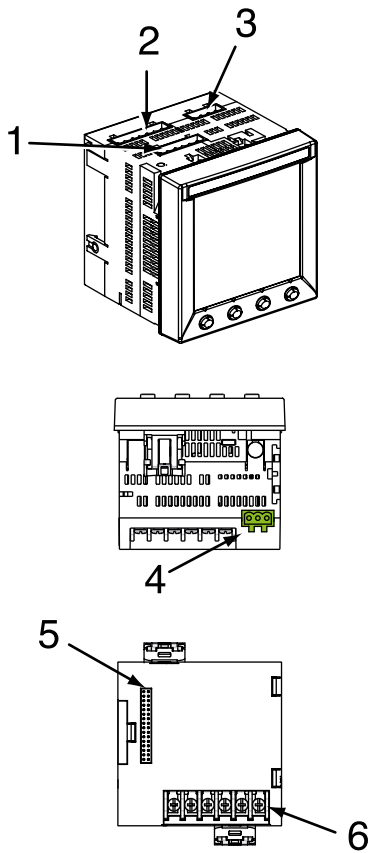
##### Remote display and cable

Use this combination of remote display, adapter, and 3.6 m (12 ft) 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).	<b>PM8RDMG</b>
---	----------------



# Power Meter Series 800

## Functions and characteristics



Power Meter Series 800.

- 1 Control power supply connector.
- 2 Voltage inputs.
- 3 Digital input/output.
- 4 RS485 port.
- 5 Option module connector.
- 6 Current inputs.

Selection guide		PM810	PM820	PM850	PM870
<b>General</b>					
Use on LV and HV systems		■	■	■	■
Current and voltage accuracy		0.1 %	0.1 %	0.1 %	0.1 %
Active energy and power accuracy		0.5 %	0.5 %	0.5 %	0.5 %
Number of samples per cycle		128	128	128	128
<b>Instantaneous rms values</b>					
Current, voltage, frequency		■	■	■	■
Active, reactive, apparent power	Total and per phase	■	■	■	■
Power factor	Total and per phase	■	■	■	■
<b>Energy values</b>					
Active, reactive, apparent energy		■	■	■	■
Configurable accumulation mode		■	■	■	■
<b>Demand values</b>					
Current	Present max. values	■	■	■	■
Active, reactive, apparent power	Present max. values	■	■	■	■
Predicted active, reactive, apparent power		■	■	■	■
Synchronisation of the measurement window		■	■	■	■
Demand calculation mode	Block, sliding	■	■	■	■
<b>Other measurements</b>					
Hour counter		■	■	■	■
<b>Power-quality measurements</b>					
Harmonic distortion	Current and voltage	■	■	■	■
Individual harmonics	Current and voltage	31 (1)	31	63	63
Waveform capture		-	-	■	■
Sag and swell detection		-	-	-	■
<b>Data recording</b>					
Min/max of instantaneous values		■	■	■	■
Data logs		-	2	4	4
Event logs		-	■	■	■
Trending / forecasting		-	-	■	■
Alarms		■	■	■	■
Time stamping		■	■	■	■
<b>Display and I/O</b>					
White backlit LCD display		■	■	■	■
Multilingual: English, French, Spanish		■	■	■	■
Digital input		1	1	1	1
Digital output or pulse output		1	1	1	1
Input metering capability (number of channels)		5	5	5	5
<b>Communication</b>					
RS485 port		2-wire	2-wire	2-wire	2-wire
Modbus protocol		■	■	■	■
RS232/RS485, 2- or 4-wire Modbus RTU/ASCII (with addition of PM8RDA module)		■	■	■	■

(1) With PM810LOG.

### Optional modules selection guide

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

#### PM8ECC module

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

#### PM8M22 module

2 digital outputs (relays) for control or alarms

2 digital inputs for position monitoring

#### PM8M26 module

2 digital outputs (relays) for control or alarms

6 digital inputs for position monitoring or pulse counting

This module includes a 24 V DC power supply that can be used to bias the digital inputs

#### PM8M2222 module

2 digital outputs (relays) for control or alarms

2 digital inputs for position monitoring or pulse counting

2 analog outputs 4-20 mA

2 analog inputs 0-5 V or 4-20 mA

(2) It is not possible to mount two PM8M22 modules. If the supply voltage of the PM800 is less than 208 V, only one PM8M2222 module can be mounted.

When using two PM8M2222 the temperature should not exceed 25°C

# Power Meter Series 800

## Functions and characteristics



### Electrical characteristics

Type of measurement	True rms up to the 63rd harmonic		
	On three-phase AC system (3P, 3P + N)		
	128 samples per cycle		
	On single phase AC system (L-L, L-N, L-L+N)		
Measurement accuracy	Current and voltage	±0.075 % of reading + ±0.025 % of full scale	
	Power	PM810 ±0.5 % of reading + ±0.025 % of full scale	
		PM820/PM850 ±0.15 % of reading + ±0.025 % of full scale	
	Frequency	±0.01 Hz from 45 to 67 Hz	
		±0.01 Hz from 350 to 450 Hz	
Active energy	IEC 62053-22 and ANSI C12.20 Class 0.5S		
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)	
		0 to 347 V AC (direct L-N)	
		0 to 3.2 MV AC (with external VT)	
	Metering over-range	1.5 Un	
	Impedance	2 MW (L-L) / 1 MW (L-N)	
Frequency measurement range	45 to 67 Hz and 350 to 450 Hz		
Input-current characteristics	CT ratings	Primary	Adjustable from 5 A to 32.767 kA
		Secondary	1 A or 5 A
	Measurement input range	0 to 10 A	
	Permissible overload	15 A continuous	
		50 A for 10 seconds per hour	
	500 A for 1 second per hour		
Impedance	< 0.1 W		
Load	< 0.15 VA		
Control Power	AC	110 to 415 ±10 % V AC, 11 VA	
	DC	125 to 250 ±20 % V DC, 6 W	
	Ride-through time	45 ms at 120 V AC	
Input/outputs PM800	Static pulse output	Static output (6 to 220 ±10 % V AC or 3 to 250 ± 10 % V DC, 100 mA max. at 25 °C)	
	Digital input	1350 V rms isolation	
	Digital input	24 to 125 V AC/DC (±10 %) 5 mA max. burden	

### Options

PM8M22	Relay outputs	0 to 240 V AC or 0 to 30 V DC	
		2 A rms, 5 A max. for 10 seconds per hour	
	Digital inputs	19 to 30 V DC, 5 mA max. / 24 V DC	
PM8M26	Relay outputs	0 to 240 V AC, 0 to 30 V DC	
		2 A rms, 5 A max. for 10 seconds per hour	
	Digital inputs	20 to 150 V AC/DC, 2 mA max.	
	24 V internal supply	20 - 30 V DC, 10 mA max. (feeds 8 digital inputs)	
PM8M2222	Relay outputs	0 to 240 V AC, 0 to 30 V DC	
		2 A rms, 5 A max. for 10 seconds per hour	
	Digital inputs	20 to 150 V AC/DC, 2 mA max.	
	Analog outputs	4-20 mA, burden 0 to 600 W max.	
	Analog inputs	Adjustable from 0 to 5 V DC or 4-20 mA	
Switching frequency	PM8M22	Input/output	1 Hz, 50 % duty cycle (500 ms ON/OFF)
	PM8M26 & PM8M2222	Input	25 Hz, 50 % duty cycle (20 ms ON/OFF)
		Output	1 Hz, 50 % duty cycle (500 ms ON/OFF)
Mechanical endurance (digital outputs)	15 million operations		
Electrical endurance (digital outputs)	250000 commutations at 2 A / 250 V AC		
Installation category of options	II (1)		

### Mechanical characteristics

Weight (meter + integrated display)	0.6 kg		
IP degree of protection (IEC 60529)	IP52 front display, IP30 meter body		
Dimensions	Without options	96 x 96 x 70 mm (behind mounting surface)	
	With 1 option	96 x 96 x 90 mm (behind mounting surface)	

### Environmental conditions

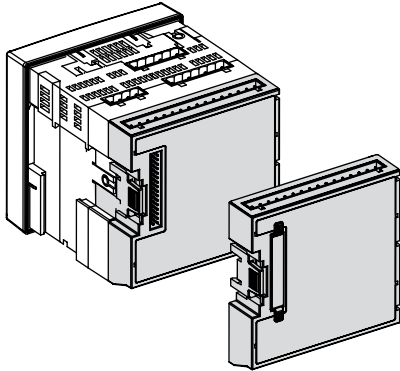
Operating temperature	Meter	-25 °C to +70 °C (2)	
	Display	-10 °C to +50 °C	
Storage temperature	Meter + display	-40 °C to +85 °C	
Humidity rating	5 to 95 % RH at 40 °C (non-condensing)		
Pollution degree	2		
Installation category	III, for distribution systems up to 347 V L-N / 600 V AC L-L		
Dielectric withstand	As per EN 61010, UL508		

(1) Installation category II, for power systems up to 347 V AC / 600 V AC.

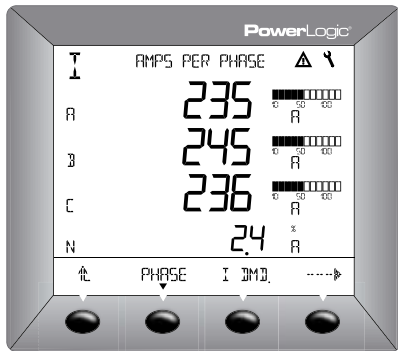
(2) 65 °C if control power is above 305 V AC.

# Power Meter Series 800

## Functions and characteristics



PM800 Series with I/O module.



PM800 Series display screen showing bar graphs.

### 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

### Safety

Europe	CE, as per IEC 61010-1 <sup>(1)</sup>
U.S. and Canada	UL508

### Communication

RS 485 port	2-wire, up to 38400 baud, Modbus
-------------	----------------------------------

### Firmware characteristics

Data Logs	PM820, PM850 and PM870: - 1 billing log - 1 customizable log 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: - every second for one minute for the 1-minute curve - every minute for one hour for the 1-hour curve - every hour for one day for the 1-day curve - every day for one month for the 1-month curve	
Energy per interval	Up to three user-defined intervals per day 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 Historical and active alarm screens with time stamping Four priority levels Response time: 1 second Boolean combination of four alarms is possible using the operators NAND, OR, NOR and XOR on PM850 and PM870 Digital alarms: status change of digital inputs	
Memory available for logging and waveform capture <sup>(2)</sup>	80 kbytes in PM820 800 kbytes in PM850 and PM870	
Firmware update	Update via the communication ports File download available free from powerlogic.com website	
Bar graphs	Graphical representation of system performance	
<b>Display characteristics</b>		
Languages	English, French, Spanish	
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.

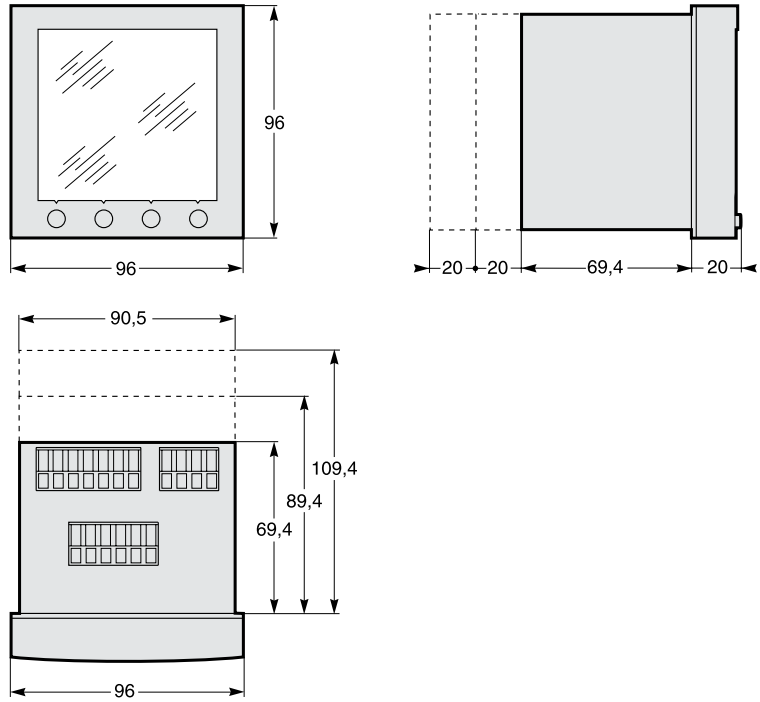
(2) Waveform capture with PM850 and PM870 only.

# Power Meter Series 800

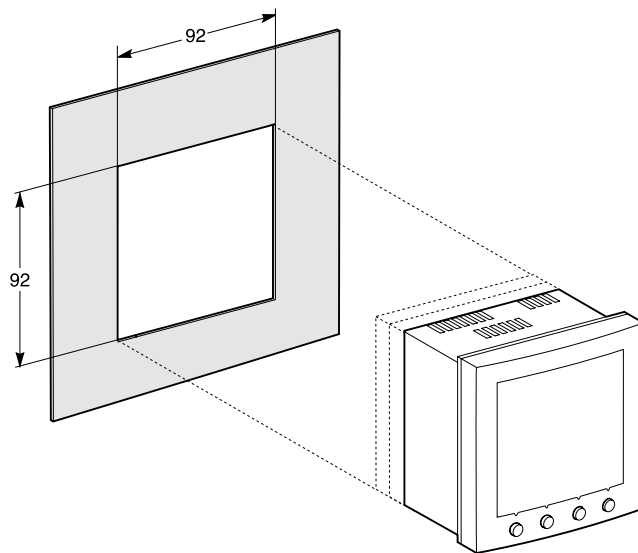
## Installation and connection

### Power meter with integrated display

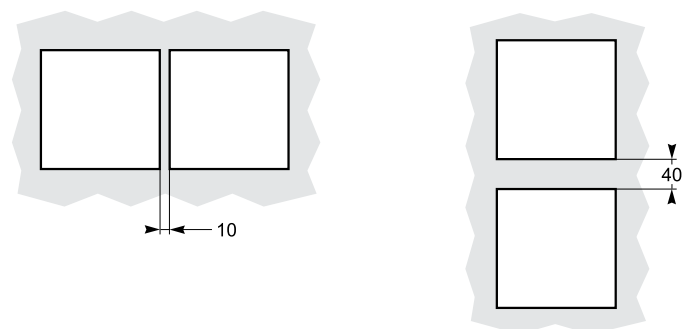
#### Dimensions



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



#### Spacing between units



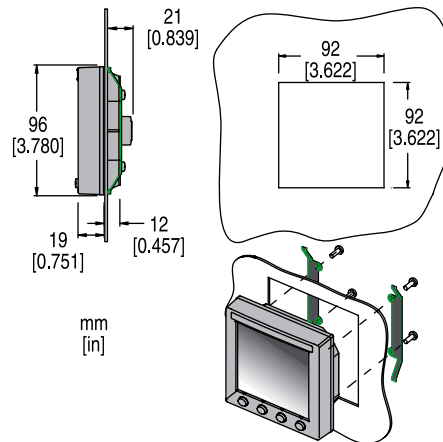


# Power Meter Series 800

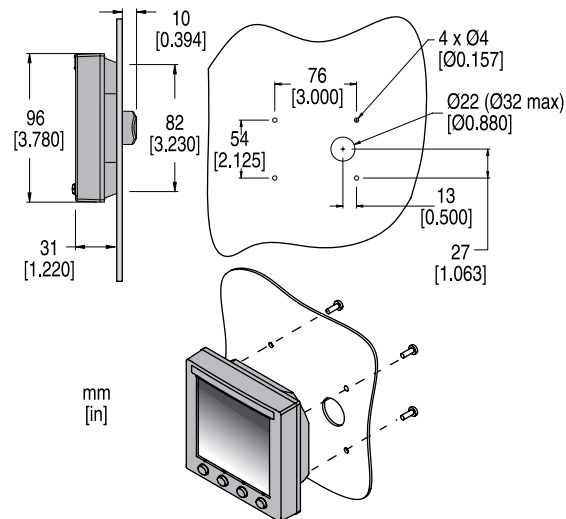
## Installation and connection

### Remote display door mounting

#### Flush mounting

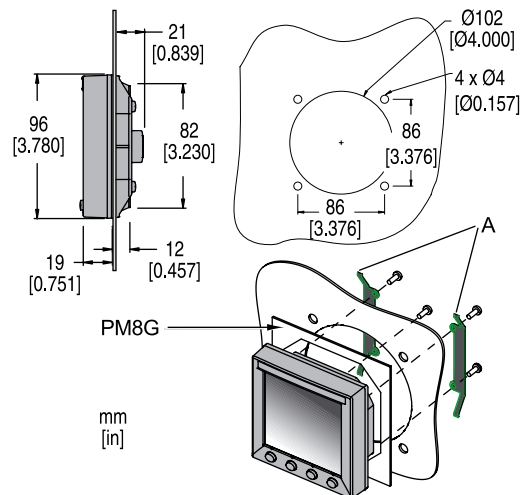


#### Surface mount



#### For mounting in a Ø102 cutout

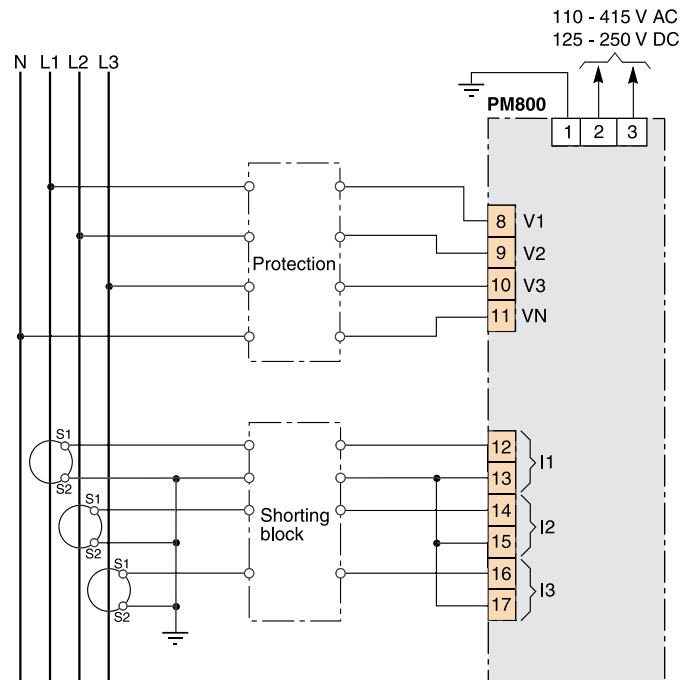
(to replace an analogue device: ammeter, voltmeter, etc.)



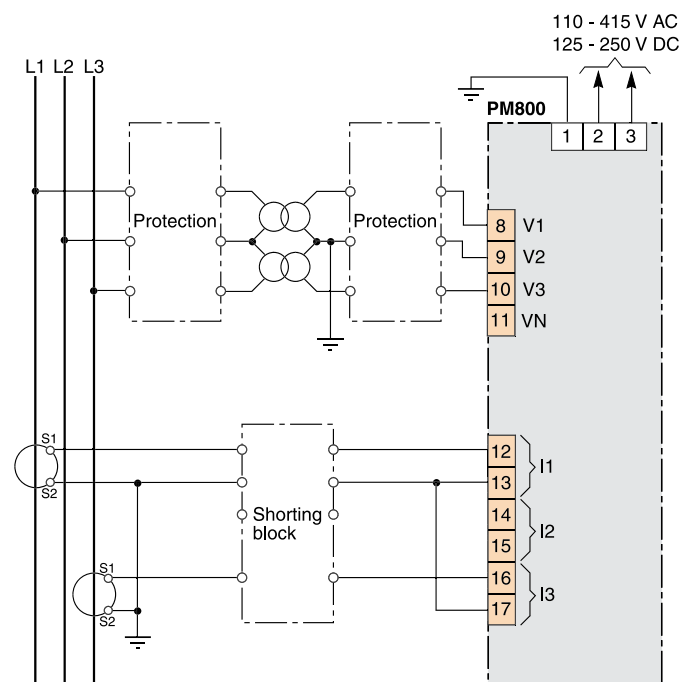
# Power Meter Series 800

## Installation and connection

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



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



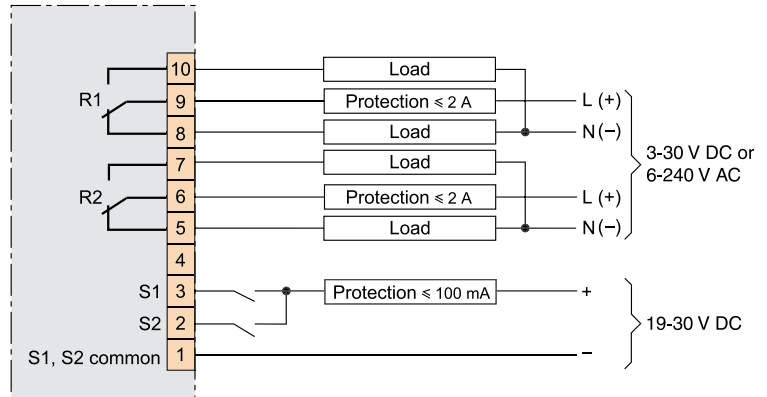
Note: Other types of connection are possible. See product documentation.

# Power Meter Series 800

## Installation and connection

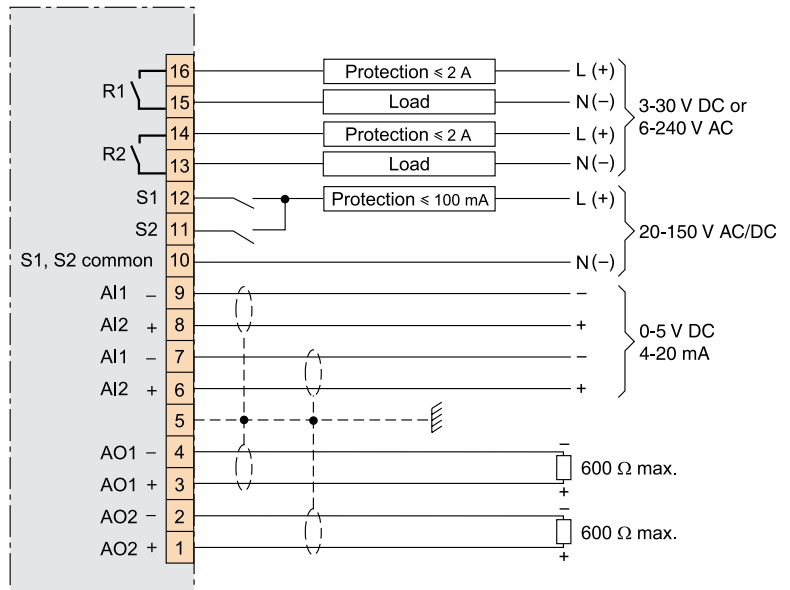
### PM8M22 module

PM8M22



### PM8M2222 module

PM8M2222

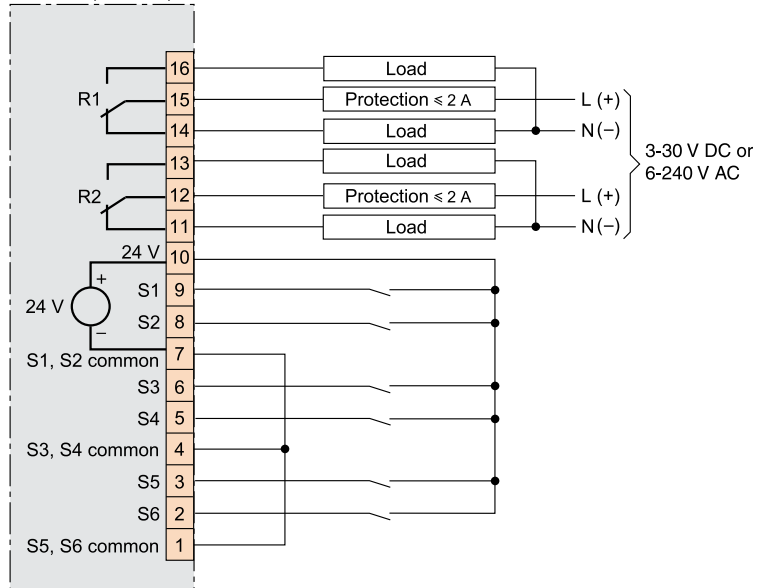


# Power Meter Series 800

## Installation and connection

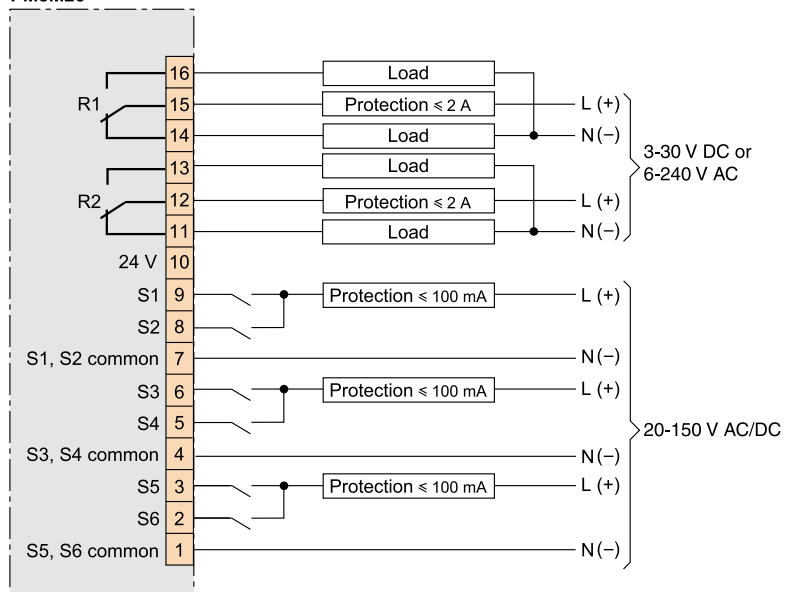
### PM8M26 module internal 24 V DC power supply

PM8M26 (24 V DC)



### PM8M26 module external power supply

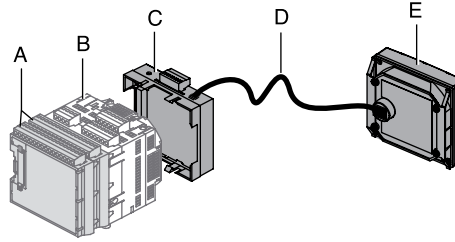
PM8M26



# Power Meter Series 800

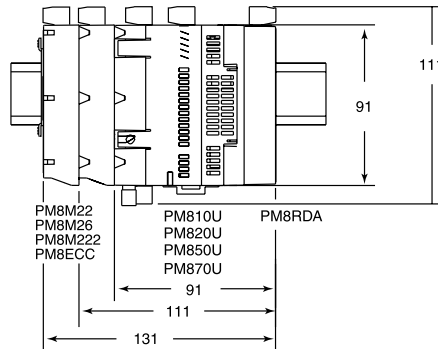
## Installation and connection

### Remote display kit

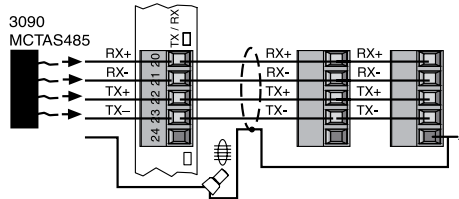


- A. Optional modules
- B. Power meter 800 series (base unit)
- C. Remote display adapter
- D. CAB12 cable
- E. Remote display (rear view)

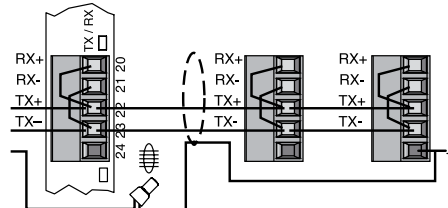
### Dimension (meter with I/O and remote display adapter)



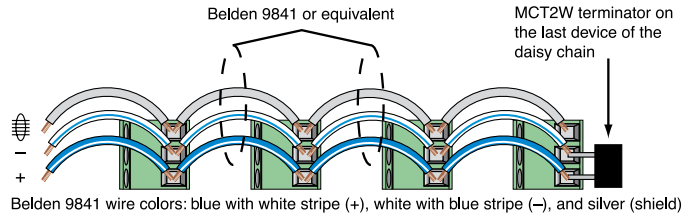
### 4-wire connection (RS 485) of remote display adapter



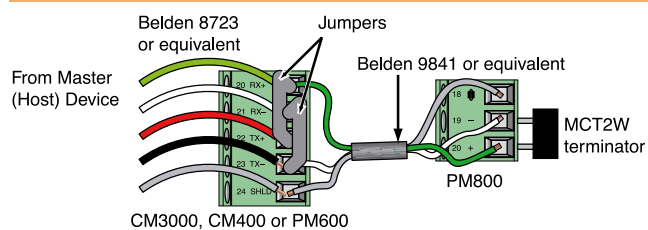
### 2-wire connection (RS 485) of remote display adapter



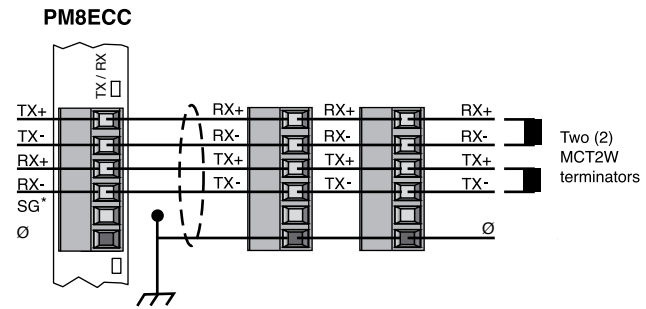
### 2-wire daisy-chain connection of devices (RS 485)



### 4-wire daisy-chain connection of devices, connected to 2-wire Modbus or Jbus connection of devices (RS 485)

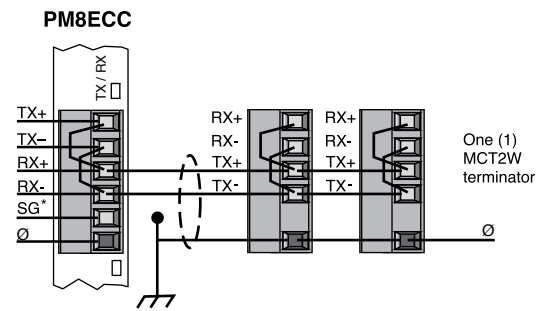


### 4-wire connection (RS 485) of PM8ECC



\* Note: SG = Signal Strength

### 2-wire connection (RS 485) of PM8ECC



\* Note: SG = Signal Strength



This information is supplied by the TBIS Integrator highlighted below...

## Transparent Buildings Systems Integrator Alliance

The T-BIS Systems Integrator alliance is an approved network of experienced systems integrators who have been chosen to deliver the very best in intelligent building integration solutions. The alliance programme has been developed to bring together the very best System Integrators in the marketplace .



### Northern England & Scotland

- 7Global
- ABA Electrical Services Ltd.
- Aduston
- Bankside Engineering Ltd
- Bartec
- Boston Networks
- Cable right
- CAS Electrical and Security
- Claverly Control Installations Ltd.
- Commercial Fitting Services Ltd.
- Commercial Fitting Services Ltd.
- Copperline
- DB Controls
- Deval Engineering
- Electric Works
- EMS (UK) Ltd.
- Enlighten Solutions
- Horizon Control Systems
- Integrated Building Services and Controls
- Integrated Control Ltd
- Intelligent Integrated Systems
- John Heaney (Electrical) Ltd.
- Knight Warner Ltd.
- Laing Utilities
- Laplace Electrical Ltd
- Linear Control Systems
- LWP
- Map Electric Ltd.
- **Meter Manager Ltd 01706 657100**
- MITIE
- NEC Services Ltd.
- PDB Controls Ltd
- Piggot & Whitfield Ltd.
- Project design engineers
- QES
- The Rosebery Group
- Samelco Automation Systems Ltd
- Total Energy Saving Techniques
- Westmont Systems

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [schneider manufacturer](#):*

Other Similar products are found below :

[LU9M1](#) [7D](#) [7S](#) [7XA1](#) [FNQR2](#) [8501RS44V24](#) [8501RSD14P14V51](#) [8501XO20V03Y414](#) [9001KXRK](#) [9001SKR9P35RH25](#) [9001SKT35L31](#)  
[9003K2C003GA](#) [9007AA1](#) [9007BA1](#) [9007C54D](#) [9007C62A2](#) [9007CA11](#) [9007FA3](#) [9007HA4](#) [9007HA6](#) [9007KA1](#) [9007KB11](#)  
[9007MS01S0206](#) [9007MS02S0300](#) [9012GAR4](#) [9012GAW2](#) [9012GBW1](#) [9012GDW5E3](#) [9012GFW1](#) [9012GNG1](#) [9012GNG3](#) [9012GNG6](#)  
[9013FHG39J69](#) [9013GHG2J30](#) [9050JCK2F30V14](#) [GV2ME32](#) [GVAN20](#) [GZ1E02](#) [A9F04102](#) [A9F04106](#) [A9F05110](#) [A9F07102](#)  
[ABL8RPS24030](#) [DL1BLB](#) [ATS01N206QN](#) [RSL1PRJU](#) [9001KA35](#) [9001KA3G](#) [9001KA4](#) [9001KR1GH5](#)