Power Meter Series 700
Functions and characteristics

PB100708

The PowerLogic Power Meter Series 700 offers 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 Power Meter Series 700 is available in three versions:
- PM700, basic version with THD and min/max readings
- PM700P, basic version plus two pulse outputs for energy metering
- PM710, basic version plus an RS 485 port for Modbus communication.

Applications
Panel instrumentation.
Sub-billing and cost allocation.
Remote monitoring of an electrical installation.
Harmonic monitoring (THD).

Characteristics
Requires only 50 mm behind mounting surface
The Power Meter Series 700 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.

Intuitive use
Easy navigation using context-sensitive menu.

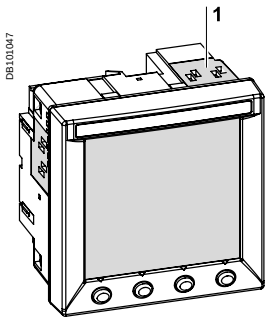
Power and current demand, THD and min/max reading in basic version
A high-performance solution for trouble-free monitoring of your electrical installation.

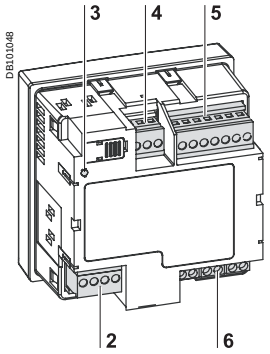
Energy class 1 as defined by IEC 61036
Suitable for sub-billing and cost-allocation applications.

Part numbers

Power Meter Series 700	
PM700 Power Meter	**PM700MG**
PM700P Power Meter	**PM700PMG**
PM710 Power Meter	**PM710MG**

Power Meter Series 700
Functions and characteristics (cont.)





Power Meter Series 700.
1 *Mounting slots.*
2 *RS 485 communications (PM710) or 2 pulse outputs (PM700P).*
3 *Heartbeat LED.*
4 *Power supply.*
5 *Voltage inputs.*
6 *Current inputs.*

Selection guide		PM700	PM700P	PM710
General				
Use on LV and HV systems		■	■	■
Current and voltage accuracy		0.5 %	0.5 %	0.5 %
Energy and power accuracy		1.0 %	1.0 %	1.0 %
Instantaneous rms values				
Current	Phases and neutral	■	■	■
Voltage	Ph-Ph and Ph-N	■	■	■
Frequency		■	■	■
Active, reactive, apparent power	Total and per phase	■	■	■
Power factor	Total	■	■	■
Energy values				
Active, reactive, apparent energy		■	■	■
Demand values				
Current	Present and max.	■	■	■
Active, reactive, apparent power	Present and max.	■	■	■
Setting of calculation mode	Block, sliding	■	■	■
Power quality measurements				
Harmonic distortion	Current and voltage	■	■	■
Data recording				
Min/max of instantaneous values		■	■	■
Display and I/O				
Backlit LCD display		■	■	■
Pulse output		-	2	-
Communication				
RS 485 port		-	-	■
Modbus protocol		-	-	■

Power Meter Series 700
Functions and characteristics (cont.)

PB100710

Rear view of Power Meter Series 700.

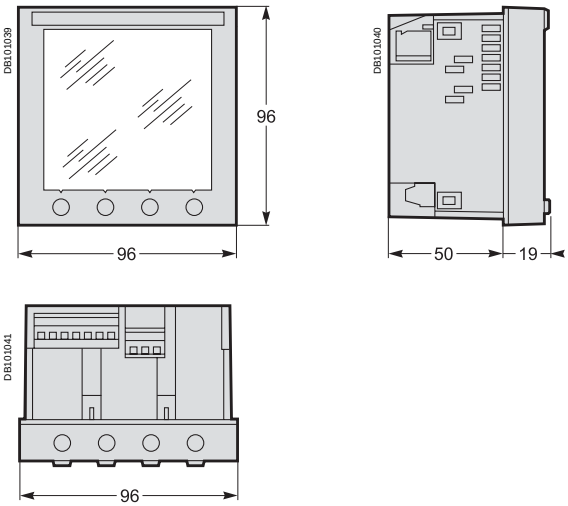
Electrical characteristics			
Type of measurement			True rms up to the 15th harmonic On three-phase (3P, 3P + N) two-phase and single-phase AC systems 32 samples per cycle
Measurement accuracy	Current and voltage		0.5 %
	Power		1 %
	Frequency		±0.01 Hz from 45 to 65 Hz
	Active energy		IEC 61036 Class 1
	Reactive energy		IEC 61036 Class 2
Data update rate			1 s
Input-voltage characteristics	Measured voltage		10 to 480 V AC (direct Ph-Ph) 10 to 277 V AC (direct Ph-N) 10 to 1600 kV AC (with external VT)
	Metering over-range		1.2 Un
	Impedance		2 MΩ (Ph-Ph) / 1 MΩ (Ph-N)
	Frequency range		45 to 65 Hz
Input-current characteristics	CT ratings	Primary	Adjustable from 5 A to 32767 A
		Secondary	5 A
	Measurement input range		10 mA to 6 A
	Permissible overload		15 A continuous 50 A for 10 seconds per hour 120 A for 1 second per hour
	Impedance		< 0.1 Ω
	Load		< 0.15 VA
Power supply	AC		110 to 415 ±10 % V AC, 5 VA
	DC		125 to 250 ±20 % V DC, 3 W
	Ride-through time		100 ms at 120 V AC
Output	Pulse output (PM700P)		Static output 240 ±10 % V AC or 300 ±10 % V DC, 100 mA max. at 25 °C, derate 0.56 mA per °C above 25°C, 2.41 kV rms isolation
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) 96 x 96 x 50 mm (behind mounting surface)
Environmental conditions			
Operating temperature	Meter		0 °C to +60 °C
	Display		0 °C to +50 °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 EN61010, UL508
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 EN55011
Harmonic emissions			IEC 61000-3-2
Flicker emissions			IEC 61000-3-3

Power Meter Series 700
Functions and characteristics (cont.)

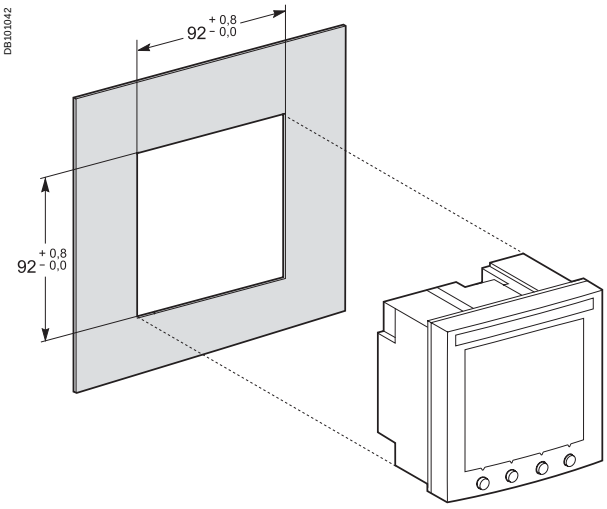
Safety	
Europe	CE, as per IEC 61010-1
U.S. and Canada	UL508
Communication	
RS 485 port (PM710)	2-wire, up to 19200 bauds, Modbus RTU, SELV circuit, 6 kV impulse (double insulation)
Display characteristics	
Dimensions 73 x 69 mm	Back-lit green LCD (6 lines total, 4 concurrent values)
Firmware characteristics	
Min./max.	Worst min. and max. with phase indication for voltages, currents and THD. Min. and max. values for power factor, power (P, Q, S) and frequency

Power Meter Series 700
Installation and connection

Dimensions

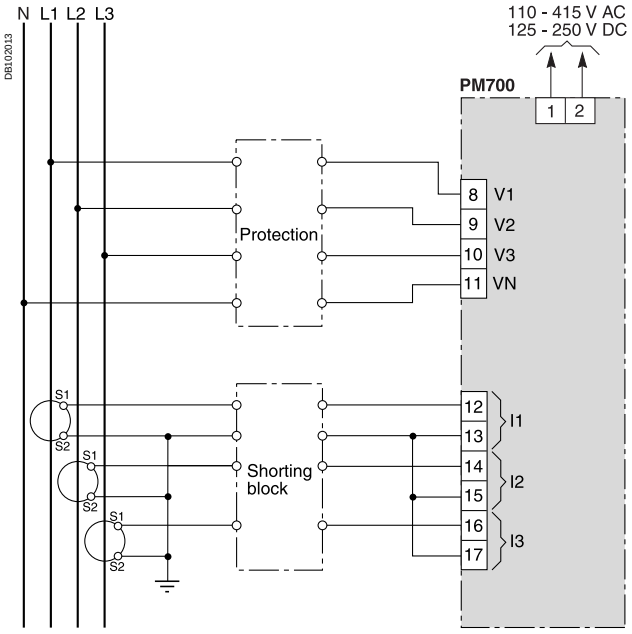


Front-panel mounting



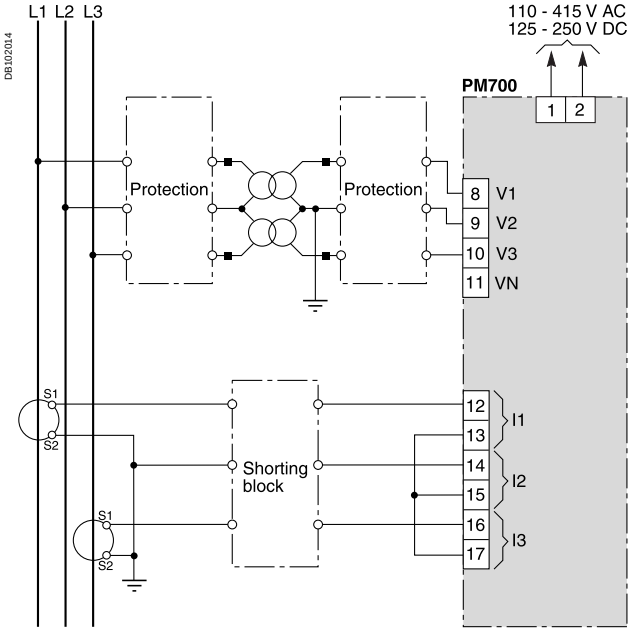
Power Meter Series 700
Installation and connection (cont.)

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 800
Functions and characteristics


PB100313

PowerLogic Power Meters PM810, PM820 and PM850 offer all the high-performance measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit. With its large easy-to-read display, you can monitor all three phases and neutral at the same time. The anti-glare and scratch resistant display features an intuitive interface with context-sensitive menus. A unique white back-light and large digits make it easy to read even in extreme lighting conditions and viewing angles.

The Power Meter Series 800 features as standard an RS 485 communication port, digital input, digital output, THD metering and alarming in the base unit.

The PM820 and PM850 offer custom on-board logging and individual harmonic current and voltage readings. The PM850 is the first meter in this range to offer waveform capture.

Applications

Panel instrumentation.
Sub-billing / cost allocation / bill checking.
Remote monitoring of an electrical installation.
Basic power quality monitoring.
Contract optimisation and load curves.

Characteristics

Large, easy-to-read display
Multiple values displayed at the same time on an anti-glare display featuring a white back-light.

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

Maximum functionality and minimum size
Modbus communications and I/Os integrated in a compact unit (96 x 96 x 70 mm).

Harmonics analysis
Monitoring of individual harmonic magnitudes and angles to help you troubleshoot your system.

On-board memory
Critical information stored in non-volatile memory for billing and troubleshooting.

Modular and upgradable
Downloadable firmware and optional modules let you increase the meter capability.

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

IEC 60687 class 0.5S or IEC 61036 class 1 for energy
Sub-billing and cost allocation in 4 quadrants.


PB100692

PM8M22 module.

Part numbers

Power Meter Series 800	
Power Meter PM810	**PM810MG**
Power Meter PM820	**PM820MG**
Power Meter PM850	**PM850MG**
Options and accessories	
2 relay outputs, 2 digital inputs	**PM8M22**
2 relay outputs, 6 digital inputs	**PM8M26**
2 relay outputs, 2 digital inputs, 2 analog outputs, 2 analog inputs	**PM8M2222**

Power Meter Series 800
Functions and characteristics (cont.)

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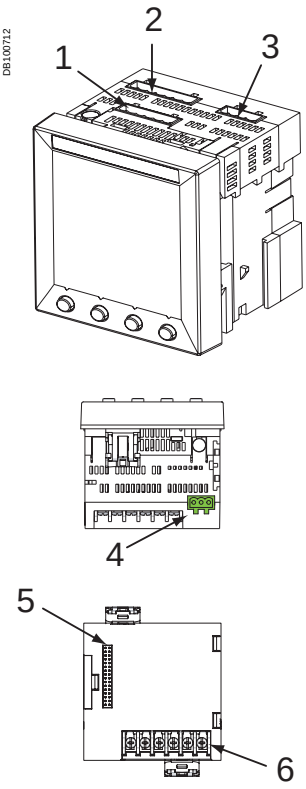


Power Meter Series 800.
1 *Control power supply connector.*
2 *Voltage inputs.*
3 *Digital input/output.*
4 *RS 485 port.*
5 *Option module connector.*
6 *Current inputs.*

Selection guide		PM810	PM820	PM850
General				
Use on LV and HV systems		■	■	■
Current and voltage accuracy		0.1 %	0.1 %	0.1 %
Energy and power accuracy		1 %	0.5 %	0.5 %
Number of samples per cycle		128	128	128
Instantaneous rms values				
Current, voltage, frequency		■	■	■
Active, reactive, apparent power	Total and per phase	■	■	■
Power factor	Total and per phase	■	■	■
Energy values				
Active, reactive, apparent energy		■	■	■
Settable accumulation mode		■	■	■
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		-	31	63
Waveform capture		-	-	■
Data recording				
Min/max of instantaneous values		■	■	■
Data logs		-	2	4
Event logs		-	■	■
Trending / forecasting		-	-	■
Alarms		■	■	■
Time stamping		■	■	■
Display and I/O				
White backlit LCD Display		■	■	■
Multilingual: English, French, Spanish		■	■	■
Digital input		1	1	1
Digital output or pulse output		1	1	1
Communication				
RS 485 port		2-wire	2-wire	2-wire
Modbus protocol		■	■	■

PM800 options

The PM800 can be fitted with 2 optional modules, unless otherwise indicated **(1)**

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

(1) *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.*

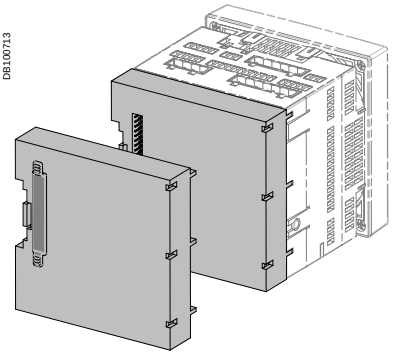
Power Meter Series 800
Functions and characteristics (cont.)

PB100315

Rear view of Power Meter Series 800.

Electrical characteristics			
Type of measurement			True rms up to the 63rd harmonic On three-phase AC system (3P, 3P + N) 128 samples per cycle
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
	Energy	PM810	IEC 61036 Class 1
		PM820/PM850	IEC 60687 and ANSI C12.20 Class 0.5S
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 MΩ (L-L) / 1 MΩ (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 327 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 Ω
	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. à 25 °C) 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 second per hour
	Digital inputs		20 to 150 V AC/DC, 2 mA max.
	Analog outputs		4-20 mA, burden 0 to 600 Ω 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 and 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 commutations
Electrical endurance (digital outputs)			250000 commutations at 2 A / 250 V AC
Installation category of options			II (1)
Mechanical characteristics			
Weight			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 EN61010, UL508

Power Meter Series 800
Functions and characteristics (cont.)



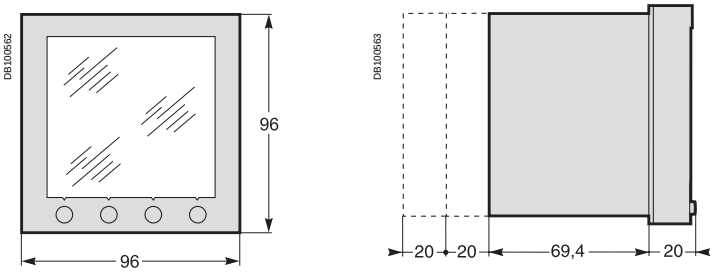
Series 800 with I/O module.

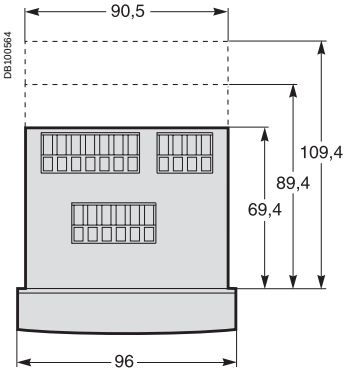
Electromagnetic compatibility	
Electrostatic discharge	Level III (IEC 61000-4-2)
Immunity to radiated fields	Level III (IEC 61000-4-3)
Immunity to fast transients	Level III (IEC 61000-4-4)
Immunity to impulse waves	Level III (IEC 61000-4-5)
Conducted immunity	Level III (IEC 61000-4-6)
Immunity to magnetic 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 EN55011
Harmonic emissions	IEC 61000-3-2
Flicker emissions	IEC 61000-3-3
Safety	
Europe	CE, as per IEC 61010
U.S. and Canada	UL508
Communication	
RS 485 port	2-wire, up to 38400 bauds, Modbus
Firmware characteristics	
Data Logs	PM820 and PM850: - 1 billing log - 1 customizable log PM850 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 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
Forecasting (PM850 only)	Forecasting of the values for the trended parameters for the next four hours and next four days
Waveform capture	Triggered manually or by alarm, 3-cycle, 128 samples/cycle on 6 user configurable channels
Alarms	Adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm Four priority levels Response time: 1 second Boolean combination of four alarms is possible using the operators NAND, OR, NOR and XOR on PM850 Digital alarms: status change of digital inputs
Memory available for logging and waveform capture	80 kbytes in PM820 800 kbytes in PM850
Firmware update	Update via the communication ports
Display characteristics	
Dimensions 73 x 69 mm	Back-lit white LCD (6 lines total, 4 concurrent values)
Languages	English, French, Spanish

(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.*

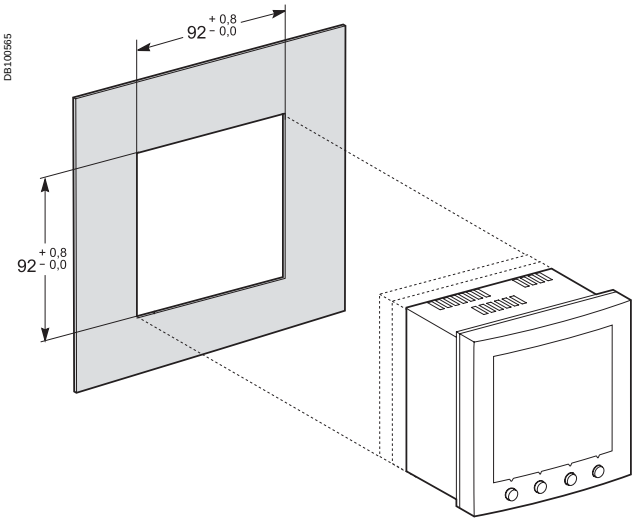
Power Meter Series 800
Installation and connection

Dimensions

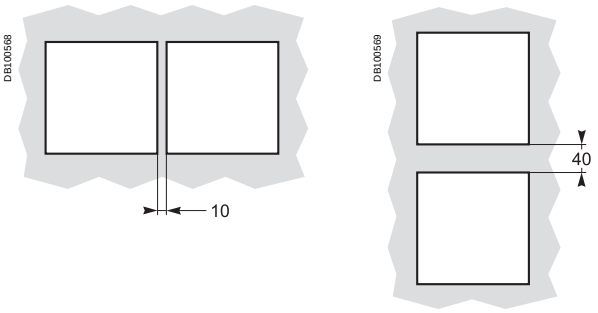




Front-panel mounting

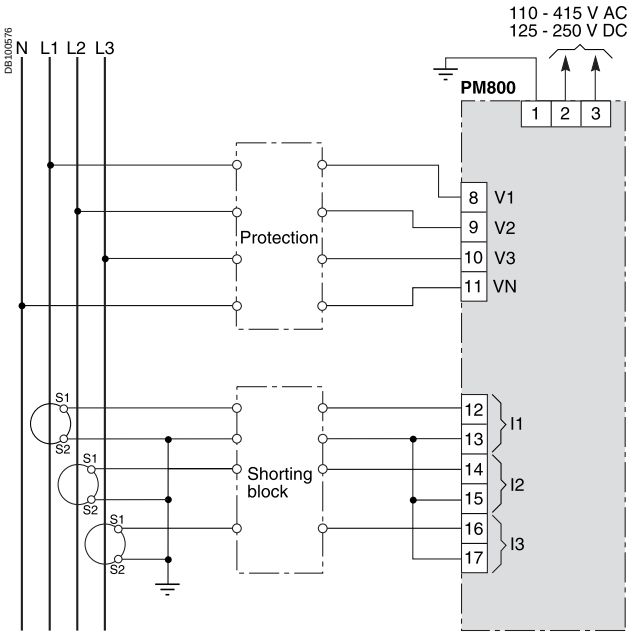


Spacing between units



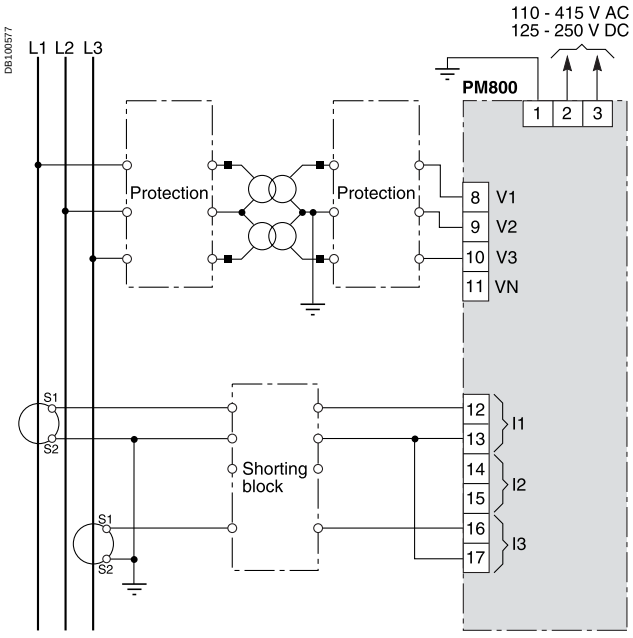
Power Meter Series 800
Installation and connection (cont.)

4-wire connection with 3 CTs and no PT



Connection example.

3-wire connection with 2 CTs and 2 PTs

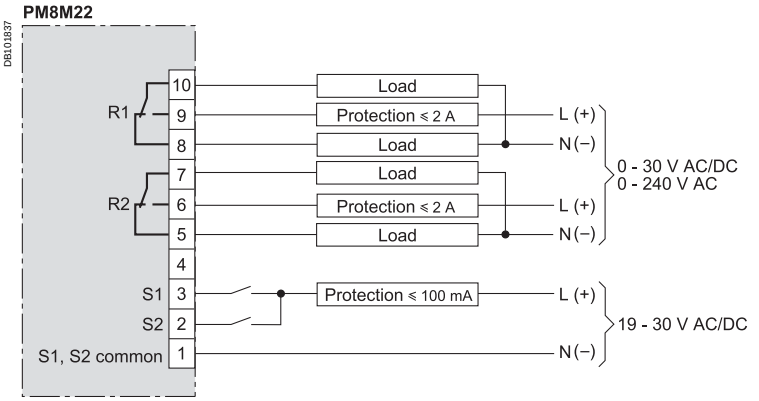


Connection example.

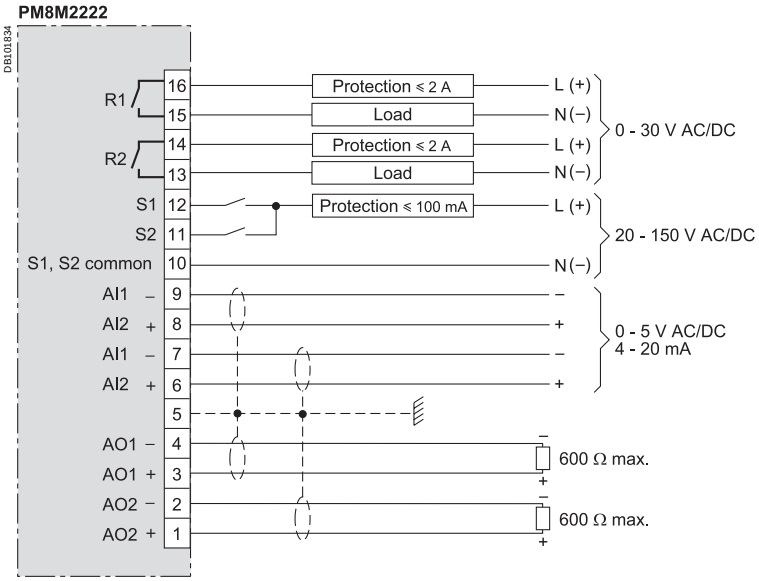
Note: *Other types of connection are possible. See product documentation.*

Power Meter Series 800
Installation and connection (cont.)

PM8M22 module

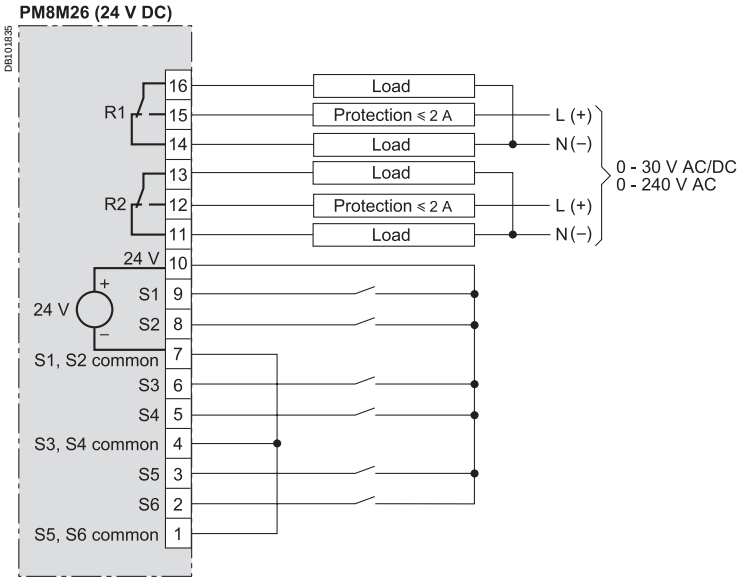


PM8M2222 module



Power Meter Series 800
Installation and connection (cont.)

PM8M26 module internal 24 V DC power supply



PM8M26 module external power supply