PowerLogic power-monitoring units

Power Meter Series 700

Technical data sheet

2007

a brand of Schneider Electric

Merlin Gerin

Power Meter Series 700
Functions and characteristics

E90463

PB102161-51

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 four versions:
- 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, alarms and signed power factor.

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 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 menus.

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.

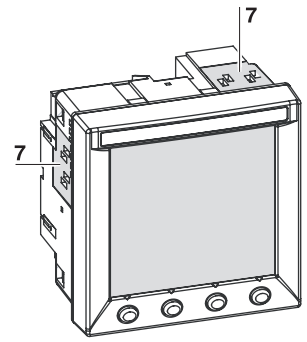
Innovative Power Meter
RS 485 communications, alarming and digital I/O in a single Power Meter (PM750).

Part numbers

Power Meter	
Merlin Gerin brand	
PM700 Power Meter	**PM700MG**
PM700P Power Meter	**PM700PMG**
PM710 Power Meter	**PM710MG**
PM750 Power Meter	**PM750MG**

Power Meter Series 700
Functions and characteristics (cont.)

DB111754



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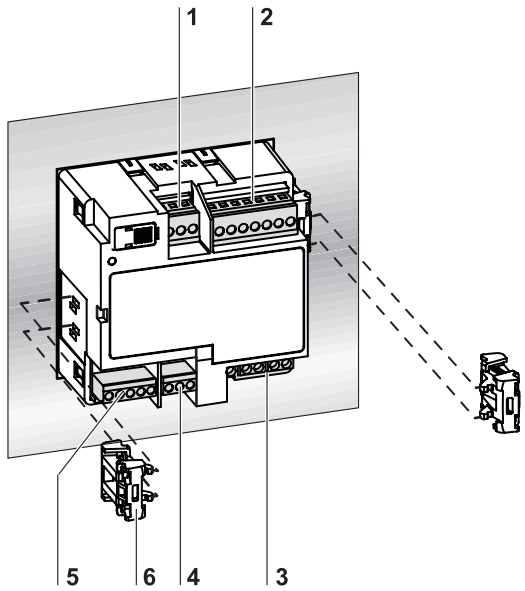

Power Meter 750.
1 Control power.
2 Voltage inputs.
3 Current inputs.
4 RS 485 port.
5 Digital input/output.
6 Mounting clips.
7 Mounting slot.

Selection guide		PM700	PM700P	PM710	PM750
General					
Use on LV and HV systems		■	■	■	■
Current and voltage accuracy		0.5 %	0.5 %	0.5 %	0.5 %
Active energy accuracy		1.0 %	1.0 %	1.0 %	0.5 %
Reactive energy accuracy		2 %	2 %	2 %	2 %
Instantaneous rms values					
Current	Phases and neutral	■	■	■	■
Voltage	Ph-Ph and Ph-N	■	■	■	■
Frequency		■	■	■	■
Active, reactive, apparent power	Total and per phase	■	■	■	signed (1)
Power factor	Total	absolute	absolute	absolute	signed
Energy values					
Active, reactive, apparent energy		■	■	■	signed (1)
Demand values					
Current	Present and max.	■	■	■	■
Active, reactive, apparent power	Present and max.	■	■	■	■
Setting of calculation mode	Block, sliding, input synchronisation mode	■	■	■	■
Other measurements					
Hour counter		■	■	■	■
Power quality measurements					
Harmonic distortion	Current and voltage	■	■	■	■
Data recording					
Min/max of instantaneous values		■	■	■	■
Alarms		-	-	-	■ (2)
Display and I/O					
Backlit LCD display		■	■	■	■
Digital inputs		-	-	-	2 (3)
Digital outputs		-	2 (4)	-	1 (5)
Communication					
RS 485 port		-	-	■	■
Modbus protocol		-	-	■	■

(1) kW, kVAR, kWh and kVARh are signed net consumption values.
(2) 15 user-configurable under and over conditions and in combination with digital inputs or outputs status.
(3) 2 operation modes are available: normal or input demand synchronisation.
(4) kWh and kVARh pulse output mode only.
(5) 3 operation modes are available: external, alarm or kWh pulse output.

Power Meter Series 700
Functions and characteristics (cont.)

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Rear view of Power Meter Series 700 (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
	Voltage		0.5 % from 50 V to 277 V
	Power Factor		0.5 % from 1 A to 6 A
	Power		1 %
	Frequency		±0.02 % from 45 to 65 Hz
	Active Energy		Class 1 as defined by IEC 62053-21 (1) Class 0.5S as defined by IEC 62053-22 (2)
	Reactive Energy		Class 2 as defined by IEC 62053-23
Data update rate			1 s
Input-voltage characteristics	Measured voltage		10 to 480 V AC (direct Ph-Ph) 10 to 277 V AC (direct Ph-N) up to 1.6 MV AC (with external VT) the lower limit of the measurement range depends on the PT ratio
	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	1 A or 5 A
	Measurement input range		5 mA to 6 A
	Permissible overload		15 A continuous 50 A for 10 seconds per hour 120 A for 1 second per hour
	Impedance		< 0.1 Ω
	Load		< 0.15 VA
Power supply	AC		100 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
Input	Digital inputs (PM750)		12 to 36 V DC, 24 V DC nominal, 12 kΩ impedance, 2.5 kV rms isolation, max. frequency 25 Hz, response time 10 ms
Output	Pulse outputs (PM700P)		3 to 240 V DC or 6 to 240 V AC, 100 mA at 25 °C, derate 0.56 mA per °C above 25 °C, 2.41 kV rms isolation, 30 Ω on-resistance at 100 mA
	Digital or pulse outputs (PM750)		8 to 36 V DC, 24 V DC nominal at 25 °C, 3.0 kV rms isolation, 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) 96 x 96 x 50 mm (behind mounting surface)
Environmental conditions			
Operating temperature	Meter		-5 °C to +60 °C
	Display		-10 °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 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.

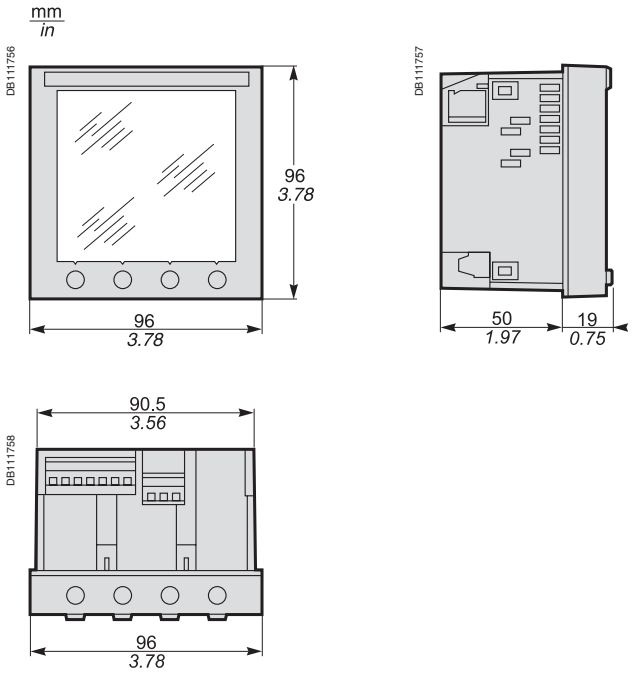
Power Meter Series 700
Functions and characteristics (cont.)

Safety	
Europe	CE, as per IEC 61010-1 ⧈ (1)
U.S. and Canada	UL508
Communication	
RS 485 port (PM710 and PM750)	2-wire, up to 19200 bauds, Modbus RTU (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

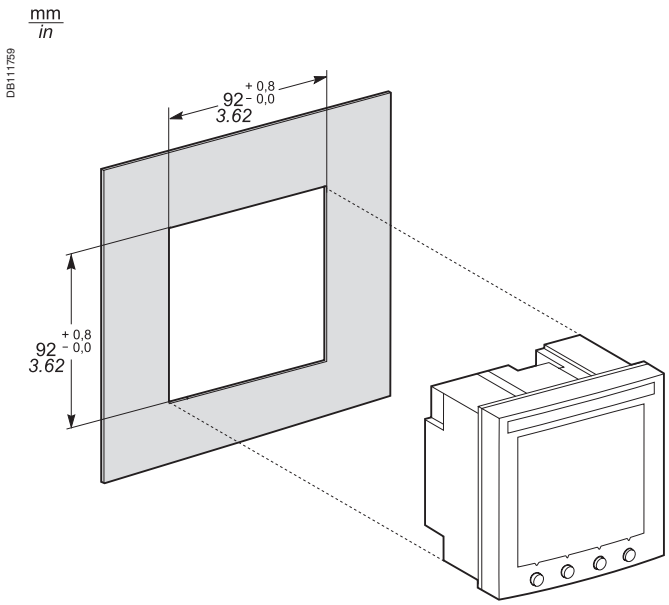
(1) Protected throughout by double insulation .

Power Meter Series 700
Installation and connection

Dimensions

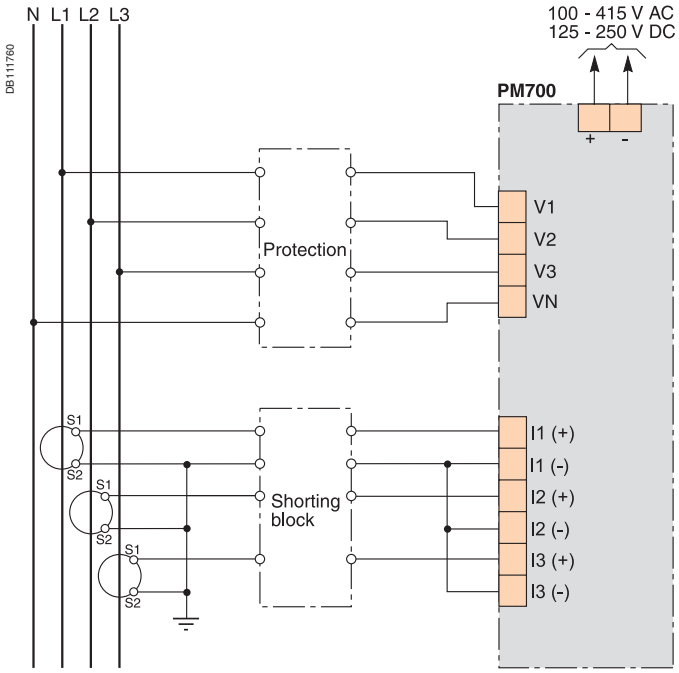


Front-panel mounting



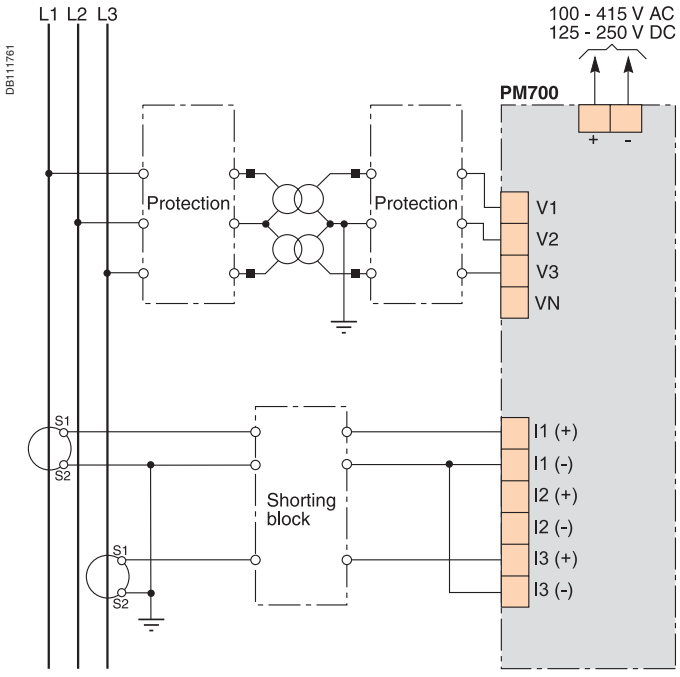
Power Meter Series 700
Installation and connection (cont.)

4-wire connection with 3 CTs and no PT



Connection example.

3-wire connection with 2 CTs and 2 PTs



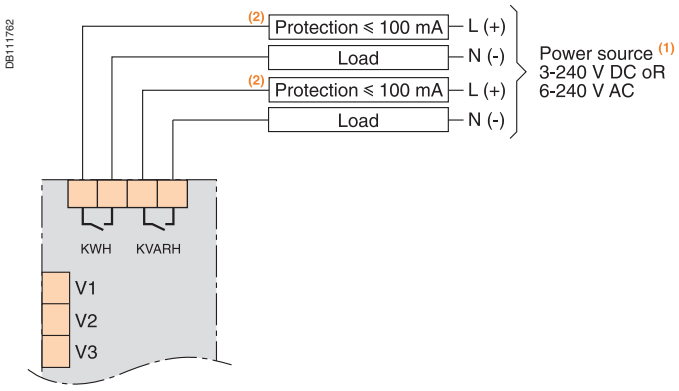
Connection example.

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

Power Meter Series 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.

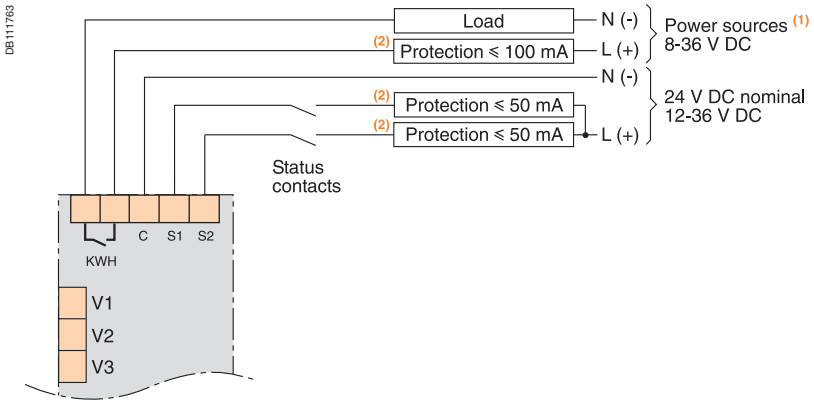


PM700P

(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.

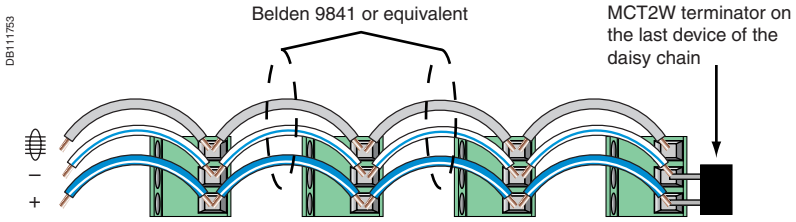


PM750

(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).

Notes

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http://www.schneider-electric.com
http://www.merlin-gerin.com

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