PowerLogic power-monitoring units

Power Meter Series 800

Technical data sheet

2004

a brand of Schneider Electric

Merlin Gerin

Power Meter Series 800
Functions and characteristics

PB100313

The PowerLogic Power Meter Series 800 offers 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 PM800 series features as standard an RS 485 communication port, digital input, digital output, THD metering and alarming in the base unit. In addition, 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.

PB100892

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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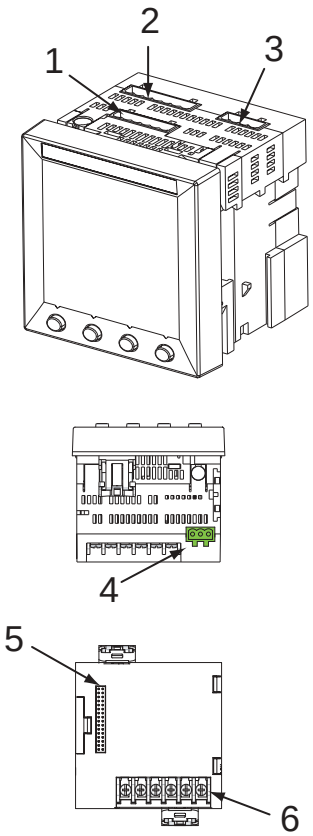

Power Meter Series 800.
1 *Control power supply connector.*
2 *Voltage inputs.*
3 *Digital input/output.*
4 *RS 485 port.*
5 *Option module connector.*
6 *Current inputs.*

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.)

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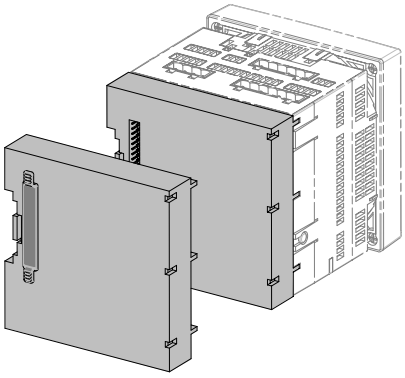


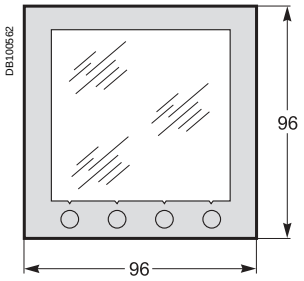
PM800 Series with I/O module.

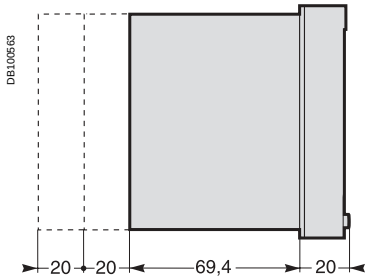
Electromagnetic compatibility	
Electrostatic discharge	Level III (IEC 61000-4-2)
Immunity to radiated fields	Level III (IEC 61000-4-3)
Immunity to fast transients	Level III (IEC 61000-4-4)
Immunity to impulse waves	Level III (IEC 61000-4-5)
Conducted immunity	Level III (IEC 61000-4-6)
Immunity to magnetic 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
Harmonics 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

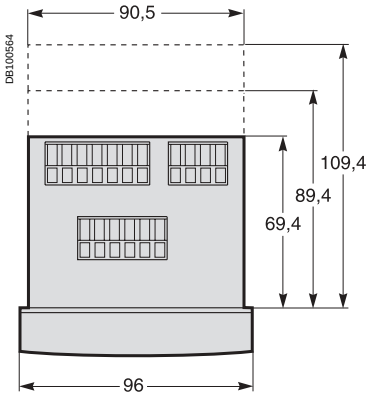
(1) *Installation category II, for power systems up to 347 V AC / 600 V AC.*
(2) *65 °C if control power is above 305 V AC.*

Power Meter Series 800
Installation and connection

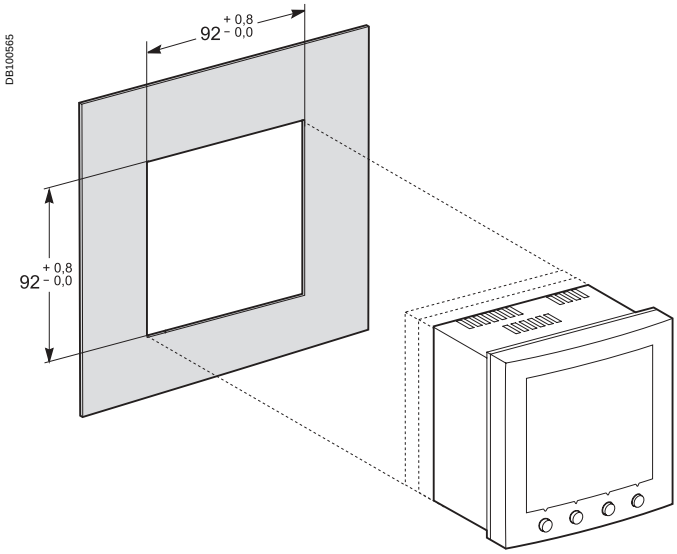
Dimensions



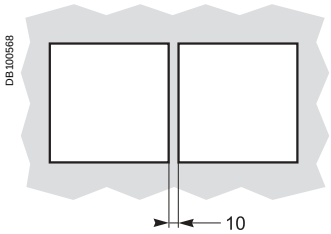


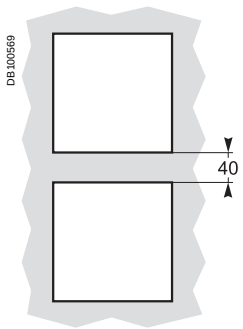


Front-panel mounting



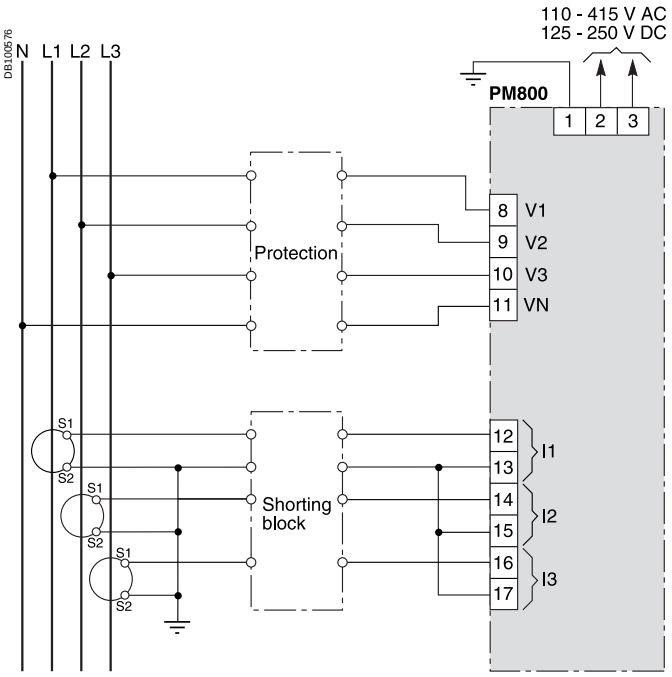
Spacing between units





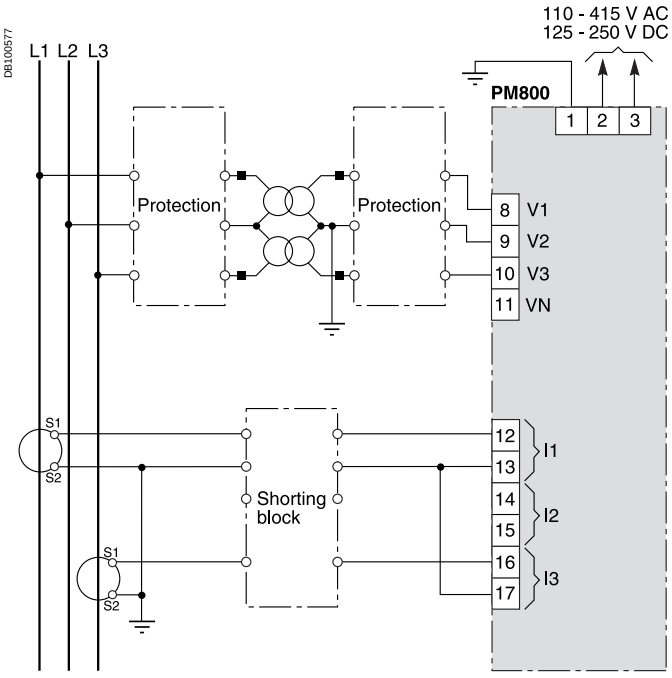
Power Meter Series 800
Installation and connection (cont.)

4-wire connection with 3 CTs and no PT



Connection example.

3-wire connection with 2 CTs and 2 PTs

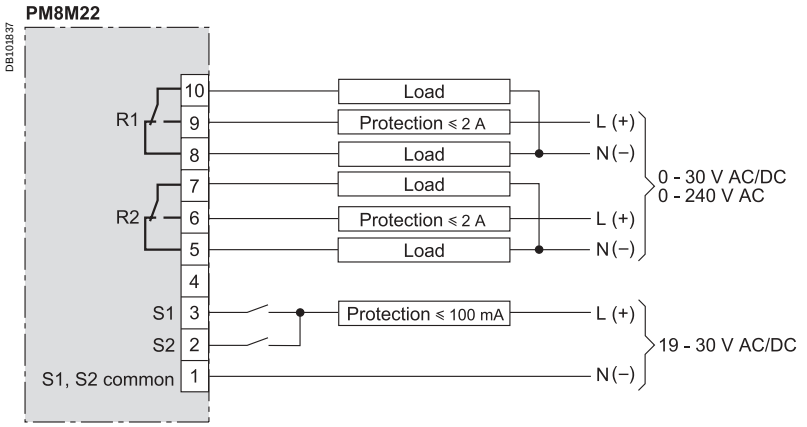


Connection example.

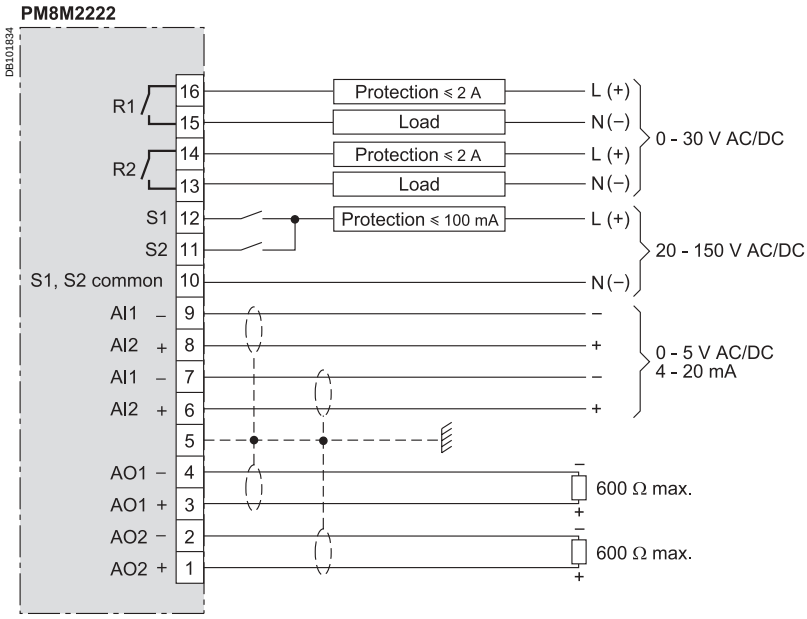
Note: *Other types of connection are possible. See product documentation.*

Power Meter Series 800
Installation and connection (cont.)

PM8M22 module

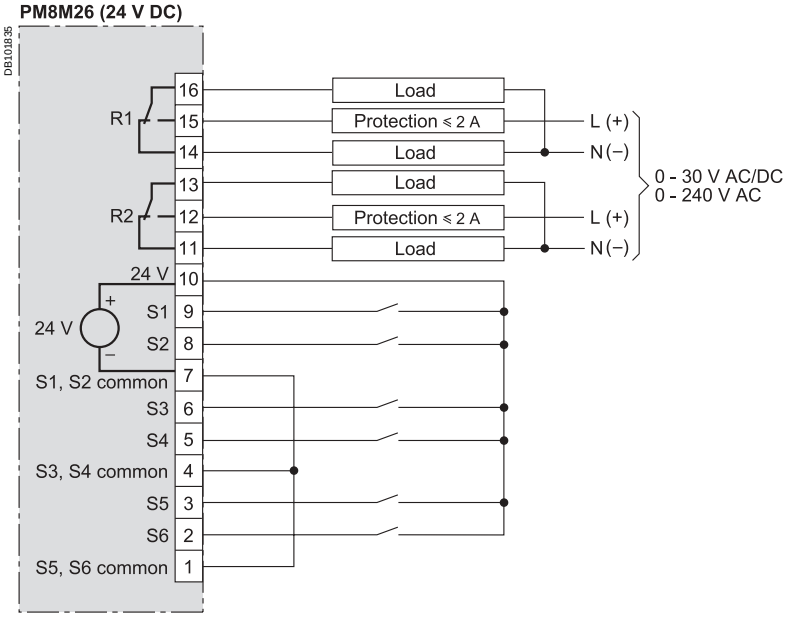


PM8M2222 module

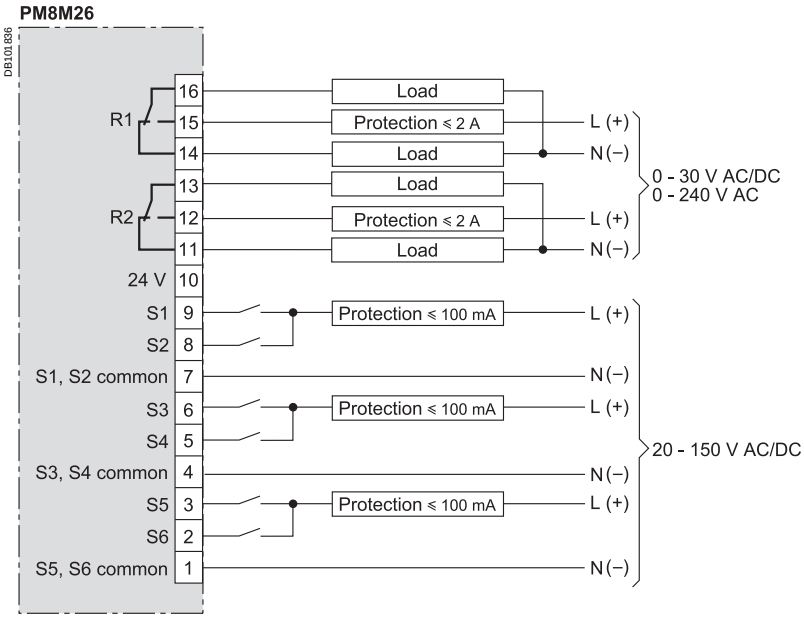


Power Meter Series 800
Installation and connection (cont.)

PM8M26 module internal 24 V DC power supply



PM8M26 module external power supply



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