

PowerLogic power-monitoring units

# Power Meter PM500

Technical data sheet

2006



# Power Meter PM500

## Functions and characteristics



The PowerLogic PM500 Power Meter provides all measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit. It offers a number of advantages over analogue meters.

Ideal for metering and monitoring applications, it can be integrated in a PowerLogic system to increase the reliability of your installation while cutting costs.

### Applications

- Panel instrumentation.
- Sub-billing / cost allocation.
- Remote monitoring of an electrical installation.
- Monitoring of harmonics (THD).

### Characteristics

#### Modular and upgradeable

Optional functions and I/O modules provide an optimum solution that perfectly match your needs.

#### Compact (96 x 96 x 60 mm)

Unit depth just 60 mm or 80 mm with optional modules, for easy integration in switchboards.

#### Large back lit display with integrated bar charts

Displays 5 measurements at a time for fast readings.

#### Power and current demand plus THD included in basic version

A high-performance solution for trouble-free monitoring of your electrical installation.

#### Energy Class 1 as defined by IEC 61036 (4 quadrants)

For sub-billing and cost allocation applications.

### Part numbers

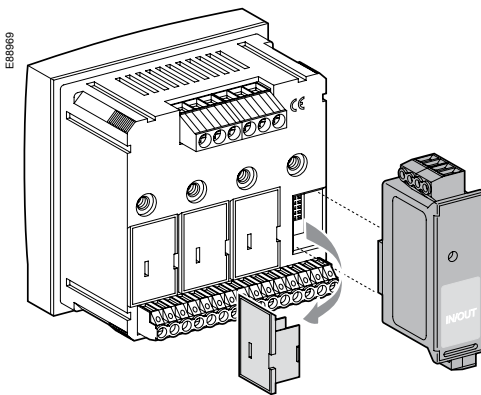
PM500 Power Meter	
110 to 400 V AC / 120 to 350 V DC	50980
24 to 48 V DC	50981
Options	
Modbus RS485 module	50982
IO11 Puls module	50983
IO22 Alarm module	50984
AO20 4-20 mA module	50985
IO02 2 Puls module	50986



Modbus RS485 option.



- 1 Display instantaneous and demand currents.
- 2 Display voltages and frequency.
- 3 Display instantaneous and demand power.
- 4 Display power factor and total harmonic distortion of current and voltage.
- 5 Display maximum demand current and power values.
- 6 Display energy values and operating times.
- 7 Back lit LCD display.



### PM500

For LV and HV distribution systems	■
Current and voltage accuracy	0.5 %
Energy and power accuracy (IEC 61036)	1 %
True rms measurements up to	31st harmonic
Maximum number of snap-in modules	4
Display	Back lit LCD
Direct voltage connection	480 V

### Instantaneous rms values

Current	Phases and	■
Voltage	Ph-Ph and Ph-	■
Frequency		■
Active, reactive, apparent power	Total and per	■
Power factor	Total and per	■

### Energy values

Active, reactive, apparent energy	4 quadrants	■
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### Demand values

Current	Present and	■
Active, reactive, apparent power	Present and	■
Setting of calculation window	5, 8, 10, 15, 20,	■
Synchronisation of the measurement	IO11 option	

### Other measurements

Hour counter		
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### Power quality measurements

Harmonic distortion	Current and	■
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### PM500 options

The PM500 can be fitted with a maximum of 1 optional module of each type.

#### Modbus RS485 module

Modbus RTU 2-wire RS485 port, up to 38400 bauds	■
Remote readings, settings and reset	

#### IO11 Puls module

Synchro <sup>(1)</sup> or digital input	1
Pulsed output for energy metering	1

#### IO22 Alarm module

Alarms for I, U, V, F, PF total, P total, Q total, S total, THD	■
Adjustable high and low thresholds, hysteresis and delay	
Min/Max of instantaneous values on Modbus COM: I, U, THD I, THD U (the calculated value is the min. or max. of the 3 phases), IN, THD IN, F, PF total, P total, Q	■
Digital inputs for position monitoring or pulse counting	2
Relay outputs for control or alarm functions	2

#### AO20 4-20 mA module

0/4-20 mA analogue outputs assignable to I, IN, U, V, F, PF total, P total, Q total, S total	2
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#### IO02 2 Puls module

Pulsed output for energy metering	2
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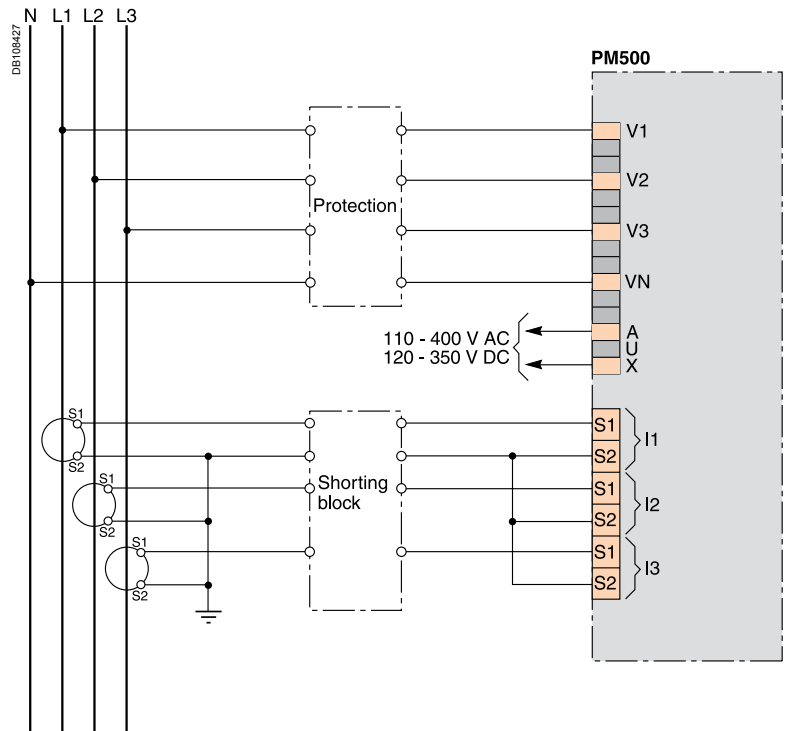
(1) To synchronise the demand current and demand power calculation window.



Electrical characteristics			
Type of measurement		True rms up to the 31st harmonic On three-phase (3P, 3P+N), two-phase and single-phase AC systems	
Measurement accuracy	Current and voltage	0.5 % of reading	
	Power	1 % of reading from 0.8 leading to 0.5 lagging	
	Frequency	0.1 %	
	Power factor	1 % of reading from 0.5 leading to 0.5 lagging	
	Active energy	Class 1 as defined by IEC 61036	
	Reactive energy	Class 2 as defined by IEC 61268	
Data update rate		1 s	
Input-voltage characteristics	Measured voltage	50 to 480 V AC (direct) Up to 400 kV AC (with external PT)	
	Permissible overload	1.5 Un	
	Frequency measurement range	45 to 65 Hz	
Input-current characteristics	CT rating	Adjustable from 5 A to 10 000 A	
	Secondary	1 A or 5 A	
	Measurement range	18 mA to 10 A	
	Permissible overload		20 A continuous 48 A 10 s 150 A 1 s
		Load	0.1 VA
	Isolated current input		2.5 kV
Power supply	AC and DC version	110 to 400 V AC ( $\pm 10\%$ ), 10 VA	
		120 to 350 V DC ( $\pm 20\%$ ), 10 W	
	Other version	24 to 48 V DC ( $\pm 20\%$ ), 10 W	
Input/outputs	Synchro or digital input (IO11 and IO22 option)	10 to 30 V DC	
	Digital output (option IO22)	Relay output (5 A at 250 V AC)	
	Pulse output (IO11 and IO02 option)	Reed relay output (0.5 A at 100 V DC)	
	0/4-20 mA output (AO20 option)	Load from 0 to 600 $\Omega$	
Mechanical characteristics			
Weight		0.4 kg	
IP degree of protection (IEC 60529)		IP5x front face, IP30 rest of case	
Dimensions	Without options	96 x 96 x 60 mm	
	With options	96 x 96 x 80 mm	
Environmental conditions			
Operating temperature		-10 °C to +55 °C	
Storage temperature		-20 °C to +85 °C	
Pollution degree		2	
Installation category		III for installations up to 277/480 V	
Dielectric withstand and impulse withstand		As per IEC 60947-1	
Electromagnetic compatibility	Immunity to electrostatic discharges	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 (Modbus RS485 option)		2-wire, up to 38 400 bauds, Modbus RTU, SELV circuit, 6 kV impulse (double insulation)	
Display characteristics			
Type		Back lit LCD	

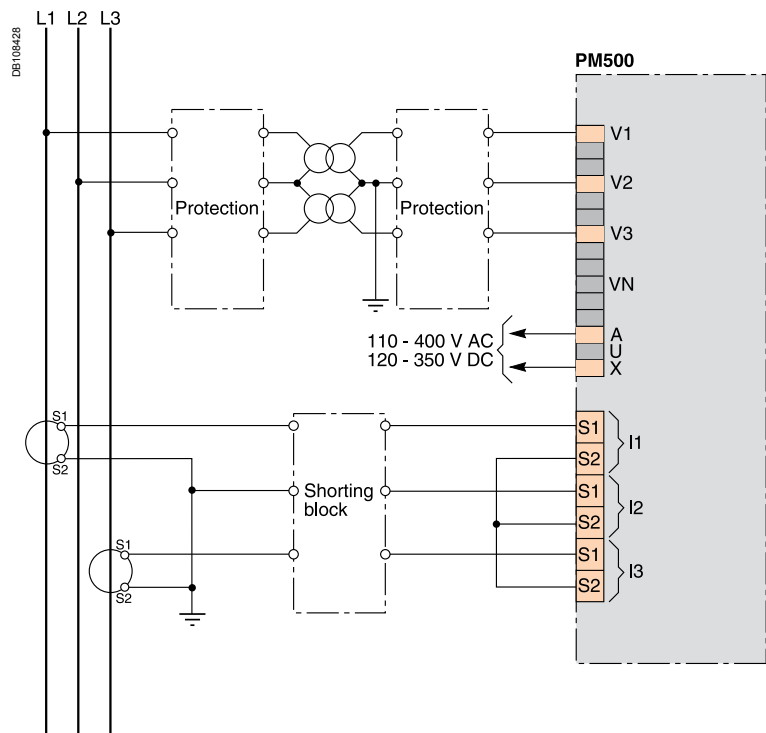
# Power Meter PM500 Installation and connection

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



Connection example.

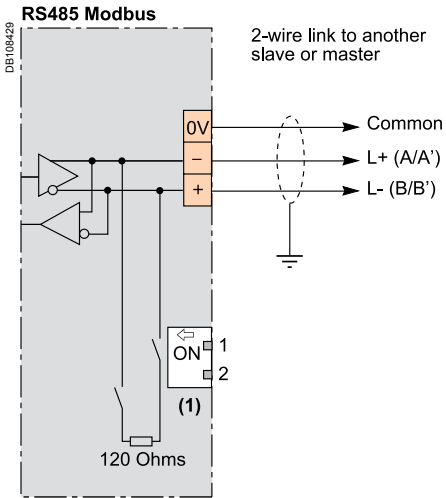
## 3-wire connection with 2 CTs and 2 PTs



Connection example.

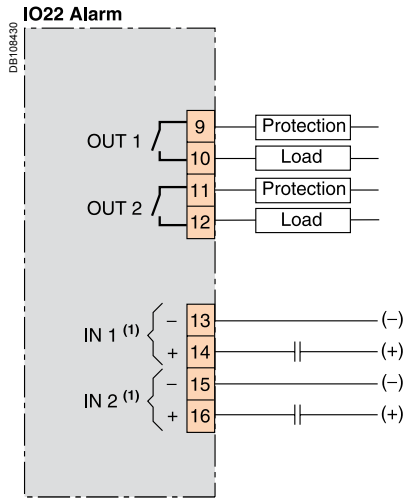
**Nota :** Other types of connection are possible. See product documentation.

### Modbus RS485 module



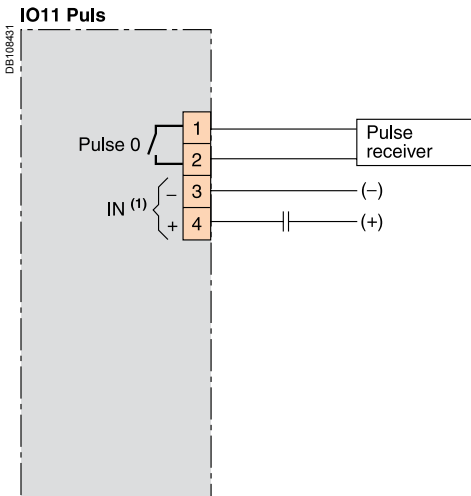
(1) Flip switches 1 and 2 in the direction of the arrow to insert a resistance of 120 Ω. This resistance should be inserted when the PM500 is located at the end of an RS485 line.

### IO22 Alarm module



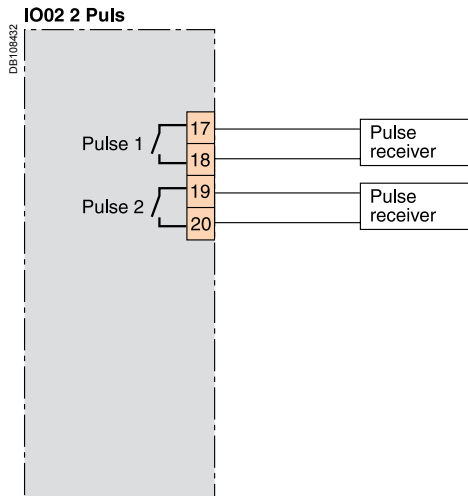
(1) Volt free (external power supply).

### IO11 Puls module

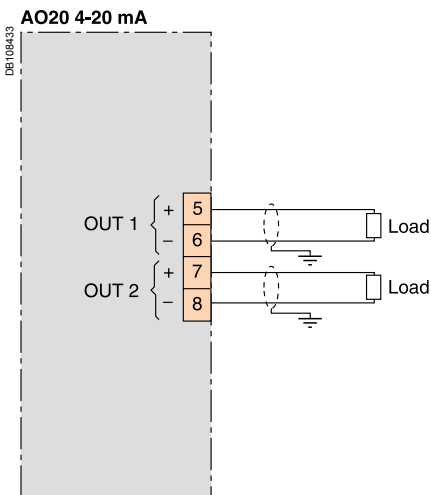


(1) Volt free (external power supply).

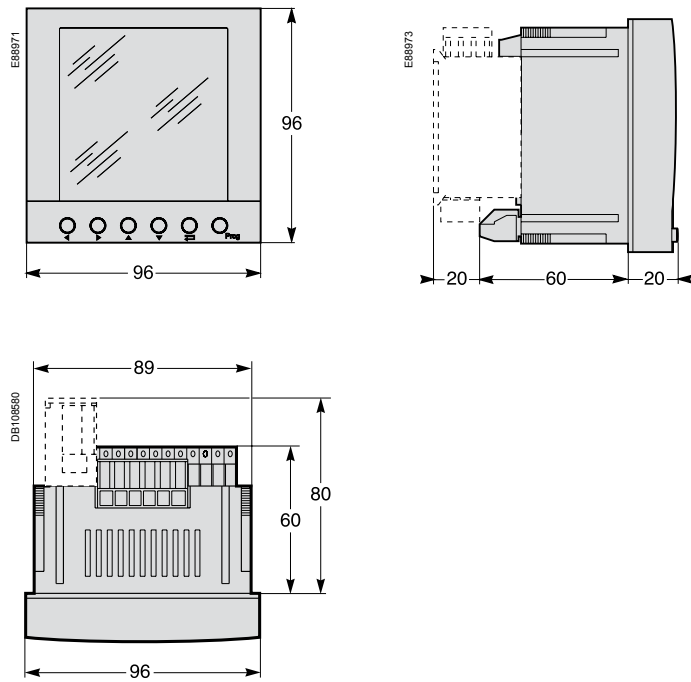
### IO02 2 Puls module



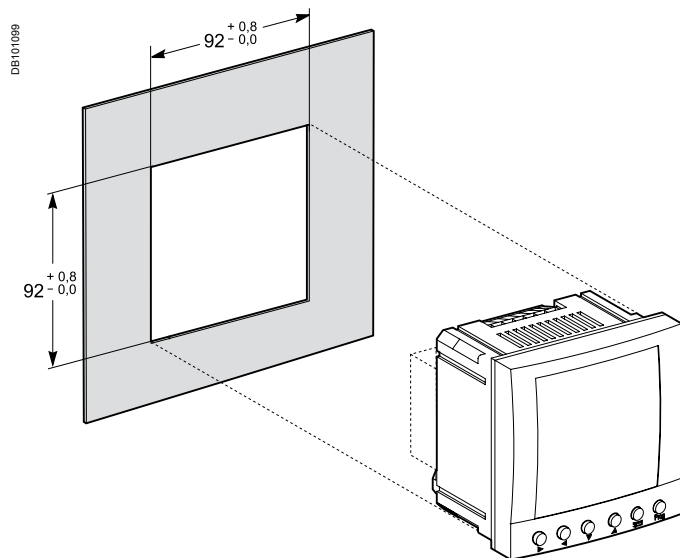
### AO20 4-20 mA module



### Dimensions



### Front-panel mounting



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