PM5000 series Technical Datasheet

The PowerLogic PM5000 series power meters are the new benchmark in affordable, precision metering.

The value you want, the precision you need. Compact, affordable power meters with high-end cost capabilities and basic mobile energy management.

Applications

Capable of essential cost management:

- Sub-billing/tenant metering
- Equipment sub-billing
- Energy cost allocation

Also ideal for electrical network management:

- Track real-time power conditions
- Monitor control functions
- Provide basic power quality values
- Monitor equipment and network status
- BACnet/IP, Ethernet/IP, and DNP3.0 protocol support

PB118061

METSEPM5100

The solution for

Markets that can benefit from a solution that includes PowerLogic PM5000 series meters:

- Buildings
- Industry
- Healthcare
- Data Center and networks
- Infrastructure

Benefits

System integrators' benefit

- Ease of integration
- Ease of setup
- Cost effectiveness

Panel builders' benefit

- Ease of installation
- Cost effectiveness
- Aesthetically pleasing
- Simplified ordering

End users' benefit

- Ease of use
- Precision metering & sub-billing
- Billing flexibility
- Comprehensive, consistent and superior performance

Competitive advantages

- Easy to install and operate
- Easy for circuit breaker monitoring and control
- Power quality analysis
- Load management combined with alarm and timestamping
- High performance and accuracy
- MID ready compliance for legal billing application
- BACnet/IP, Ethernet/IP, and DNP3.0 protocol support

Power management solutions

Schneider Electric provides innovative power management solutions to increase your energy efficiency and cost savings, maximize electrical network reliability and availability, and optimize electrical asset performance.

Conformity of standards

- IEC 61557-12
- IEC 62053-22
- IEC 62053-24
- IEEE 802.3
- EN 50470-1
- EN 50470-3
- IEC 61010-1
- IEC 61326-1
- CISPR22 Class B
- ODVA certification
- ANSI C12.1-2008 (PM55xx)
- ANSI C12.20-210 0.2 & 0.5 (PM55xx)

PM5000 series

PM5000 series feature selection

	PM5100		PM5300						PM5500			PM5600
	PM5100	PM5110	PM5310	PM5310R	PM5320	PM5320R	PM5330	PM5340	PM5560	PM5563	PM5563RD	PM5650
Installation												
Fast installation, panel mount with integrated display	■	■	■	■	■	■	■	■	■	–	–	■
Fast installation, DIN rail mountable	–	–	–	–	–	–	–	–	–	■	■	–
Accuracy	CL 0.5S	CL 0.5S	CL 0.5S	CL 0.5S	CL 0.5S	CL 0.5S	CL 0.5S	CL 0.5S	CL 0.2S	CL 0.2S	CL 0.2S	CL 0.2S
Display												
Backlit LCD, multilingual, bar graphs, 6 lines, 4 concurrent values	■	■	■	■	■	■	■	■	■	■	■	■
Power and energy metering												
3-ph voltage, current, power, demand, energy, frequency, power factor	■	■	■	■	■	■	■	■	■	■	■	■
Multi-tariff	–	–	4	4	4	4	4	4	8	8	8	8
Power quality analysis												
THD, thd, TDD	■	■	■	■	■	■	■	■	■	■	■	■
Harmonics, individual (odd) up to	15th	15th	31st	31st	31st	31st	31st	31st	63rd	63rd	63rd	63rd
Waveform capture & sag/swell detection	–	–	–	–	–	–	–	–	–	–	–	8 cycles @ 128 cycles/ sec
I/Os and relays												
I/Os	1DO	1DO	2DI/2DO	2DI/2DO	2DI/2DO	2DI/2DO	2DI/2DO	2DI/2DO	4DI/2DO	4DI/2DO	4DI/2DO	4DI/2DO
Relays	0	0	0	0	0	0	2	2	0	0	0	0
Alarms and control												
Alarms	33	33	35	35	35	35	35	35	52	52	52	52
Set point response time, seconds	1	1	1	1	1	1	1	1	1	1	1	1
Single and multi-condition alarms	–	–	■	■	■	■	■	■	■	■	■	■
Boolean alarm logic	–	–	–	–	–	–	–	–	■	■	■	■
Memory for data logging	–	–	256KB	256KB	256KB	256KB	256KB	256KB	1.1 MB	1.1 MB	1.1 MB	1.1 MB
Communications												
Serial ports with modbus protocol	–	1	1	1	–	–	1	–	1	1	1	1
Ethernet port with Modbus TCP protocol	–	–	–	–	1	1	–	1	2★	2★	2★	2★
BACnet/IP protocol	–	–	–	–	■	■	–	■	■	■	■	■
Ethernet/IP protocol	–	–	–	–	–	–	–	–	■	■	■	■
DNP3.0 over Ethernet	–	–	–	–	–	–	–	–	■	■	■	■
Onboard web server with web pages	–	–	–	–	–	–	–	–	■	■	■	■
Serial to Ethernet gateway	–	–	–	–	–	–	–	–	■	■	■	■
MID ready compliance, EN50470-1/3, Annex B & Annex D Class C	–	PM5111	–	–	–	–	PM5331	PM5341	PM5561	–	–	–
Short ref. numbers	PM5100	PM5110	PM5310	PM5310R	PM5320	PM5320R	PM5330	PM5340	PM5560	PM5563	PM5563RD	PM5650
(See table below for complete commercial reference numbers)												

★ 2 Ethernet ports for daisy chain, one IP address. NOTE: **PM5310R** and **PM5320R** must be used with Schneider Electric's "Quick Click" 3-in-1 LVCTs

PM5000 series

PM5000 technical specifications

		PM5100	PM5300	PM5500	PM5600
Use on LV and MV systems			■		
Basic metering with THD and min/max readings			■		
Instantaneous rms values					
Current	per phase, neutral and ground (PM5500)		■		
Voltage	Total, per phase L-L and L-N		■		
Frequency			■		
Real, reactive, and apparent power	Total and per phase		Signed, Four Quadrant		
True Power Factor	Total and per phase		Signed, Four Quadrant		
Displacement PF	Total and per phase		Signed, Four Quadrant		
% Unbalanced I, V L-N, V L-L			■		
Direct monitoring of neutral current				■	
Energy values					
Accumulated Active, Reactive and Apparent Energy		Received/Delivered; Net and absolute; Time Counters			
Demand value					
Current average			Present, Last, Predicted, Peak, and Peak Date Time		
Active power			Present, Last, Predicted, Peak, and Peak Date Time		
Reactive power			Present, Last, Predicted, Peak, and Peak Date Time		
Apparent power			Present, Last, Predicted, Peak, and Peak Date Time		
Peak demand with timestamping D/T for current and powers			■		
Demand calculation	Sliding, fixed and rolling block, thermal methods		■		
Synchronisation of the measurement window to input, communication command or internal clock			■		
Settable Demand intervals			■		
Demand calculation for Pulse input (WAGES)				■	
Other measurements					
I/O timer			■		
Operating timer			■		
Load timer			■		
Alarm counters and alarm logs			■		
Power quality measurements					
THD, thd (Total Harmonic Distortion) I, VLN, VLL			I,VLN, VLL		
TDD (Total Demand Distortion)			■		
Individual harmonics (odds)		15th	31st	63rd	
Neutral Current metering with ground current calculation				■	
Waveform capture and sag/swell detection					8 cycles @ 128 cycles/sec
Data recording					
Min/max of instantaneous values, plus phase identification★			■		
Alarms with 1s timestamping★			■		
Data logging			2 fixed parameters kWh and kVAh with configurable interval and duration (e.g. 2 parameters for 60 days at 15 minutes interval)	Up to 14 selectable parameters with configurable interval and duration (e.g. 6 parameters for 90 days at 15 minutes interval)	
Memory capacity			256 kB	1.1 MB	
Min/max log		■	■	■	
Maintenance, alarm and event logs			■	■	
Customisable data logs				■	

★*Stored in non-volatile memory*

PM5000 series

PM5000 technical specifications

		PM5100	PM5300	PM5500	PM5600
Inputs / Outputs / Mechanical Relays					
Digital inputs			2 (SI1, SI2)	4 (SI1, SI2, SI3, SI4) with WAGES support	
Digital outputs		1 (kWh only)	2 (configurable)	2 (configurable)	
Form A Relay outputs			2		
Timestamp resolution in seconds		1	1	1	1
Whetting voltage			■		
Type of measurement: True rms on three-phase (3P, 3P + N)		64 samples per cycle		128 samples per cycle	
Measurement accuracy	IEC 61557-12	PMD/[SD|SS]/K70/0.5		PMD/[SD|SS]/K70/0.2	
	Active Energy	Class 0.5S as per IEC 62053-22		Class 0.2S as per IEC 62053-22	
	Reactive Energy	Class 2S as per IEC 62053-24		Class 2S as per IEC 62053-24	
	Active Energy	±0.5 %		±0.2 %	
	Reactive Energy	±2 %		±1 %	
	Active Power	Class 0.5 as per IEC 61557-12		Class 0.2 as per IEC 61557-12	
	Apparent Power	Class 0.5 as per IEC 61557-12			
	Current, Phase	Class 0.5 as per IEC 61557-12		±0.15 %	
	Voltage, L-N	Class 0.5 as per IEC 61557-12		±0.1 %	
	Frequency	±0.05 %			
	MID Directive EN50470-1, EN50470-3	Annex B and Annex D (Optional model references) Class C			
Input-voltage (up to 1.0 MV AC max, with voltage transformer)	Nominal Measured Voltage range	20 V L-N / 35 V L-L to 400 V L-N /690 V L-L absolute range 35 V L-L to 760 V L-L		20 V L-N / 20 V L-L to 400 V L-N /690 V L-L absolute range 20 V L-L to 828 V L-L	
	Impedance	5 MΩ			
	F nom	50 or 60 Hz ±5 %		50 or 60 Hz ±10 %	
Input-current (configurable for 1 or 5 A secondary CTs)	I nom	5 A			
	Measured Amps with over range and Crest Factor	Starting current: 5 mA Operating range: 50 mA to 8.5 A		Starting current: 5 mA Operating range: 50 mA to 10 A	
	Withstand	Continuous 20 A, 10 s/hr 50 A, 1s/hr 500 A			
	Impedance	< 0.3 mΩ			
	F nom	50 or 60 Hz ±5 %		50 or 60 Hz ±10 %	
	Burden	<0.026 VA at 8.5 A			
AC control power	Operating range	100 - 277 V AC L-N / 415 V L-L +/-10 % CAT III 300V class per IEC 61010		100-480 V AC ±10 % CAT III 600V class per IEC 61010	
	Burden	<5 W,11 VA at 415V L-L		<5W/16.0 VA at 480 V AC	
	Frequency	45 to 65 Hz			
	Ride-through time	80 mS typical at 120V AC and maximum burden. 100 mS typical at 230 V AC and maximum burden 100 mS typical at 415 V AC and maximum burden		35 ms typical at 120 V L-N and maximum burden 129 ms typical at 230 V L-N and maximum burden	
DC control power	Operating range	125-250 V DC ±20 %			
	Burden	<4 W at 250 V DC		typical 3.1W at 125 V DC, max. 5W	
	Ride-through time	50 mS typical at 125 V DC and maximum burden			

PM5000 series

PM5000 technical specifications

			PM5100	PM5300	PM5500	PM5600
Outputs	Relay	Max output frequency		0.5 Hz maximum (1 second ON / 1 second OFF - min times)		
		Switching current		250 V AC at 8.0 Amps, 25 k cycles, resistive 30 V DC at 2.0 Amps, 75 k cycles, resistive 30 V DC at 5.0 Amps, 12.5 k cycles, resistive		
		Isolation		2.5 kV rms		
	Digital outputs	Digital outputs	1	2	2	2
		Max load voltage	40 V DC		30 V AC / 60 V DC	
		Max load current	20 mA		125 mA	
		On Resistance	50 Ω max		8 Ω	
		Meter constant	from 1 to 9,999,999 pulses per kWh			
		Pulse width for Digital Output	50 % duty cycle			
		Pulse frequency for Digital Output	25 Hz max.			
		Leakage current	0.03 micro Amps		1 micro Amps	
		Isolation	5 kV rms		2.5 kV rms	
	Optical outputs	Pulse width (LED)	200 ms			
		Pulse frequency	50 Hz. max.		2.5 kHz. max	
		Meter constant	from 1 to 9,999,999 pulses per k_h			
Status Inputs	ON Voltage			18.5 to 36 V DC	30 V AC / 60 V DC max	
	OFF Voltage			0 to 4 V DC		
	Input Resistance			110 k Ω	100 k Ω	
	Maximum Frequency			2 Hz (T ON min = T OFF min = 250 ms)	25 Hz (T ON min = T OFF min = 20 ms)	
	Response Time			20 ms	10 ms	
	Opto Isolation			5 kV rms	2.5 kV rms	
	Wetting output			24 V DC/ 8 mA max		
	Input Burden			2mA @24V DC	2 mA @ 24 V AC/DC	
Mechanical characteristics						
Product weight			380 g	430 g	450 g	450 g
IP degree of protection (IEC 60529)			IP52 front display, (IP54 for PM53xx and PM55xx), IP30 meter body			
Dimensions W x H x D [protrusion from cabinet]			96 x 96 x 72 mm (77 mm for PM5500) (depth of meter from housing mounting flange) [13 mm]			
Mounting position			Vertical			
Panel thickness			6 mm maximum			
Environmental characteristics						
	Meter		-25 °C to 70 °C			
	Display (Display functions to -25° with reduced performance)		-25 °C to 70 °C			
Storage temp.			-40 °C to 85 °C			
Humidity range			5 to 95 % RH at 50 °C (non-condensing)			
Polution degree			2			

PM5000 technical specifications

Electromagnetic compatibility				
Harmonic current emissions	IEC 61000-3-2			
Flicker emissions	IEC 61000-3-3			
Electrostatic discharge	IEC 61000-4-2			
Immunity to radiated fields	IEC 61000-4-3			
Immunity to fast transients	IEC 61000-4-4			
Immunity to surge	IEC 61000-4-5			
Conducted immunity 150 kHz to 80 MHz	IEC 61000-4-6			
Immunity to magnetic fields	IEC 61000-4-8			
Immunity to voltage dips	IEC 61000-4-11			
Radiated emissions	FCC part 15, EN 55022 Class B			
Conducted emissions	FCC part 15, EN 55022 Class B			
Safety	**PM5100**	**PM5300**	**PM5500**	**PM5600**
Europe	CE, as per IEC 61010-1 Ed. 3, IEC 62052-11 & IEC 61557-12			
U.S. and Canada	cULus as per UL 61010-1 (3rd Edition)			
Measurement category (Voltage & Current inputs)	CAT III up to 400 V L-N / 690 V L-L			
Dielectric	As per IEC/UL 61010-1 Ed. 3			
Protective Class	II, Double insulated for user accessible parts			
RS-485 port Modbus RTU, Modbus ASCII	2-Wire, 9600,19200 or 38400 baud, Parity - Even, Odd, None, 1 stop bit if parity Odd or Even, 2 stop bits if None;			
Ethernet port: 10/100 Mbps; Modbus TCP/IP		1 Optional	2 (daisy chain only, 1 IP address)	
Native Ethernet/IP & DNP3.0 over Ethernet			Yes	Yes
Native BACnet/IP Support		Yes	Yes	Yes
Firmware and language file update	Meter firmware update via the communication ports			
Isolation	2.5 kVrms, double insulated			
Human machine interface				
Display type	Monochrome Graphics LCD			
Resolution	128 x 128			
Backlight	White LED			
Viewable area (W x H)	67 x 62.5 mm			
Keypad	4-button			
Indicator Heartbeat / Comm activity	Green LED			
Energy pulse output / Active alarm (configurable)	Optical, amber LED			
Wavelength	590 to 635 nm			
Maximum pulse rate	2.5 kHz			

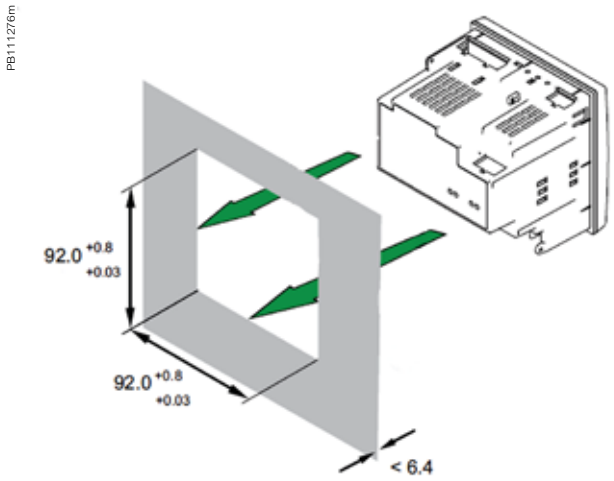
Comm ref numbers	Description
METSEPM5100	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 15th harmonic, no communication, 1DO
METSEPM5110	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 15th harmonic, RS-485 Modbus, 1DO
METSEPM5111	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 15th harmonic, RS-485 Modbus, 1DO, MID cert.
METSEPM5310	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 31st harmonic, 256 kB, RS-485 Modbus, 2DI/2DO
METSEPM5310R	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 31st harmonic, 256 kB, **RJ45 LVCT,** RS-485 Modbus, 2DI/2DO
METSEPM5320	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 31st harmonic, 256 kB, Ethernet, 2DI/2DO
METSEPM5320R	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 31st harmonic, 256 kB, **RJ45 LVCT,** Ethernet, 2DI/2DO
METSEPM5330	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 31st harmonic, 256 kB, RS-485 Modbus, 2DI/2DO, 2Relay
METSEPM5331	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 31st harmonic, 256 kB, RS-485 Modbus, 2DI/2DO, 2Relay, MID cert.
METSEPM5340	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 31st harmonic, 256 kB, Ethernet, 2DI/2DO, 2Relay
METSEPM5341	Power Meter range 72 mm depth, control power to 415 V AC, Cl 0.5S, 31st harmonic, 256 kB, Ethernet, 2DI/2DO, 2Relay, MID cert.
METSEPM5560	Power Meter range 77 mm depth, control power to 480 V AC, Cl 0.2S, 63rd harmonic, 1.1 MB, Modbus and Ethernet, 4DI/2DO
METSEPM5561	Power Meter range 77 mm depth, control power to 480 V AC, Cl 0.2S, 63rd harmonic, 1.1 MB, Modbus and Ethernet, MID cert.
METSEPM5562	Power Meter range 77 mm depth, control power to 480 V AC, Cl 0.2S, 63rd harmonic, 1.1 MB, RMICAN approved, HW lockable, 4DI/2DO
METSEPM5562MC	Power Meter range 77 mm depth, control power to 480 V AC, Cl 0.2S, 63rd harmonic, 1.1 MB, RMICAN approved, factory sealed, 4DI/2DO
METSEPM5563	Power Meter range 77 mm depth, control power to 480 V AC, Cl 0.2S, 63rd harmonic, 1.1 MB, DIN mount, no display, 4DI/2DO
METSEPM5563RD	Power Meter range 77 mm depth, control power to 480 V AC, Cl 0.2S, 63rd harmonic, 1.1 MB, DIN mount, remote display, 4DI/2DO
METSEPM5650	Power Meter range 77 mm depth, control power to 480 V AC, Cl 0.2S, 63rd harmonic, waveform capture and sag/swell, 1.1 MB, Modbus and Ethernet, 4DI/2DO

PM5xxR series commercial reference numbers

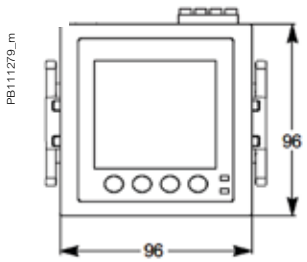
Comm. reference number	Description
0.333V 3-in-1 CTs with RJ45 for PM53x0R	
METSECTV25006	LVCT SolidC 3in1 RJ45 25mmCtr 60A:1/3V
METSECTV25010	LVCT SolidC 3in1 RJ45 25mmCtr 100A:1/3V
METSECTV25013	LVCT SolidC 3in1 RJ45 25mmCtr 125A:1/3V
METSECTV25016	LVCT SolidC 3in1 RJ45 25mmCtr 160A:1/3V
METSECTV35006	LVCT SolidC 3in1 RJ45 35mmCtr 60A:1/3V
METSECTV35010	LVCT SolidC 3in1 RJ45 35mmCtr 100A:1/3V
METSECTV35012	LVCT SolidC 3in1 RJ45 35mmCtr 120A:1/3V
METSECTV35013	LVCT SolidC 3in1 RJ45 35mmCtr 125A:1/3V
METSECTV35015	LVCT SolidC 3in1 RJ45 35mmCtr 150A:1/3V
METSECTV35016	LVCT SolidC 3in1 RJ45 35mmCtr 160A:1/3V
METSECTV35020	LVCT SolidC 3in1 RJ45 35mmCtr 200A:1/3V
METSECTV35025	LVCT SolidC 3in1 RJ45 35mmCtr 250A:1/3V
METSECTV45025	LVCT SolidC 3in1 RJ45 45mmCtr 250A:1/3V
METSECTV45030	LVCT SolidC 3in1 RJ45 45mmCtr 300A:1/3V
METSECTV45040	LVCT SolidC 3in1 RJ45 45mmCtr 400A:1/3V
METSECTV45050	LVCT SolidC 3in1 RJ45 45mmCtr 500A:1/3V
METSECTV45060	LVCT SolidC 3in1 RJ45 45mmCtr 600A:1/3V
METSECTV45063	LVCT SolidC 3in1 RJ45 45mmCtr 630A:1/3V
METSECTV29006	LVCT SolidC 3in1 RJ45 29mmCtr 60A:1/3V
METSECTV29010	LVCT SolidC 3in1 RJ45 29mmCtr 100A:1/3V
METSECTV29012	LVCT SolidC 3in1 RJ45 29mmCtr 120A:1/3V
METSECTV29013	LVCT SolidC 3in1 RJ45 29mmCtr 125A:1/3V
METSECTV29015	LVCT SolidC 3in1 RJ45 29mmCtr 150A:1/3V
METSECTV29016	LVCT SolidC 3in1 RJ45 29mmCtr 160A:1/3V
METSECTV29020	LVCT SolidC 3in1 RJ45 29mmCtr 200A:1/3V
METSECTV70080	LVCT SolidC 3in1 RJ45 70mmCtr 800A:1/3V
METSECTV70100	LVCT SolidC 3in1 RJ45 70mmCtr 1000A:1/3V
METSECTV70125	LVCT SolidC 3in1 RJ45 70mmCtr 1250A:1/3V
Cables	
DCEPCURJX5GYM	Category 5e, Patch Cord, UTP, 0.5 M, Grey
DCEPCURJ01GYM	Category 5e, Patch Cord, UTP, 1 M, Grey
DCEPCURJ02GYM	Category 5e, Patch Cord, UTP, 2 M, Grey
DCEPCURJ03GYM	Category 5e, Patch Cord, UTP, 3 M, Grey
DCEPCURJ05GYM	Category 5e, Patch Cord, UTP, 5 M, Grey
DCEPCURJ10GYM	Category 5e, Patch Cord, UTP, 10 M, Grey
Other related products	
METSEPM5RD	Remote display for PM5563
METSEPM51HK	Hardware kit for PM51xx
METSEPM53HK	Hardware kit for PM53xx
METSEPM51_3RSK	Revenue sealing kit for PM51XX & PM53XX
METSEPM55RSK	Revenue sealing kit for PM55XX
METSEPM55HK	Hardware kit for PM55xx
METSEPM5CAB3	Remote Display cable

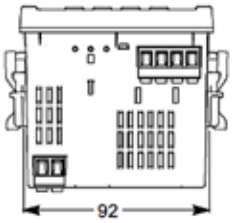
See your Schneider Electric representative for complete ordering information.

PM5000 Series meter flush mounting

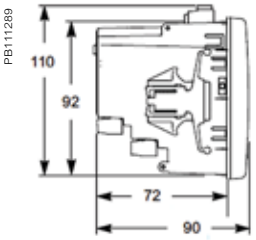


PM5000 series meter dimensions

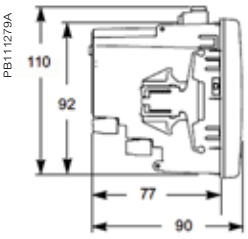




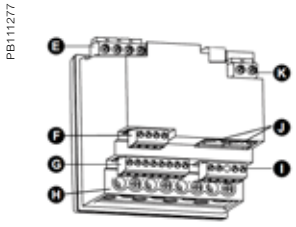
PM5000



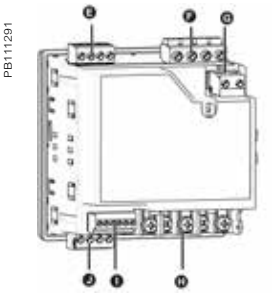
PM5100 / PM5300



PM5500 / PM5600



PM5500



PM5000 meter parts
- **A** Menu selection buttons
- **B** LED indicators
- **C** Navigation or menu selections
- **D** Maintenance and alarm notification area

PM5500 / PM5600 meter parts
- **E** Voltage inputs
- **F** RS-485 comms
- **G** Digital inputs
- **H** Current inputs
- **I** Digital outputs
- **J** Ethernet ports
- **K** Control power

PM5100 / PM5300 meter parts
- **E** Relay output (PM5300 only)
- **F** Voltage inputs
- **G** Control power
- **H** Current inputs
- **I** Status inputs/digital outputs
- **J** Communications port: Ethernet (PM5300 only) or RS-485)

*Please see the appropriate **I**nstallation Guide for accurate and complete information on the installation of this product.*

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