Electrical network management

PowerLogic

Energy management, revenue metering and power quality monitoring

Catalogue

Schneider Electric

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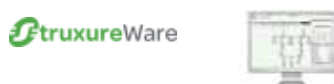
What is PowerLogic?

PowerLogic technology forms one part of your total energy management solution from Schneider Electric. As the global energy management specialist, we offer end-to-end power, building and process management solutions that help you optimise energy use and costs, improve performance, enhance comfort and safety, and deliver uninterrupted service while taking responsible care of our planet.

Our expert services can help you audit your energy use and build your energy action plan. From power factor correction systems, harmonic filtering and variable speed drives to HVAC and lighting controls, we offer a complete range of energy efficient technologies.

Schneider Electric believes every business can increase productivity while consuming less and achieving energy savings of 10% to 30%.

Saving energy reduces costs and pollution, but you need the tools to uncover all opportunities, avoid risks, track progress against goals, and verify success. Schneider Electric provides these tools via the world's most advanced energy intelligence technology: PowerLogic.

The PowerLogic range of meters and software help manage all energy assets, every second of the day. A PowerLogic system enables all stakeholders, from CEO to facility and engineering managers, to respond quickly to potential problems and manage energy in financial and environmental terms.

PowerLogic technology delivers the key performance indicators and analytics that you need to strategically balance emissions, efficiency, reliability and cost.

Applications for Supply and Demand

Cutting-edge technology to increase profitability

PowerLogic technology converts the complex dynamics governing the relationship between power generation and distribution on the utility side, and energy consumption, cost and reliability on the consumer side, into timely, easily understood information. Businesses can use this powerful to improve tactical actions and strategic decision making.

From a single facility to an entire enterprise, PowerLogic meters monitor key distribution points 24 hours a day. Whether from generators, substations, service entrances, mains, feeders, loads or 3rd party equipment and systems, PowerLogic technology tracks, records and reports all real-time conditions and historical performance data. Intuative web-based interfaces give stakeholders access to this data as well as advanced analytics, alarm annunciation and control capabilities. It supports comprehensive energy management programs by tracking performance and empowering you to make effective decisions.
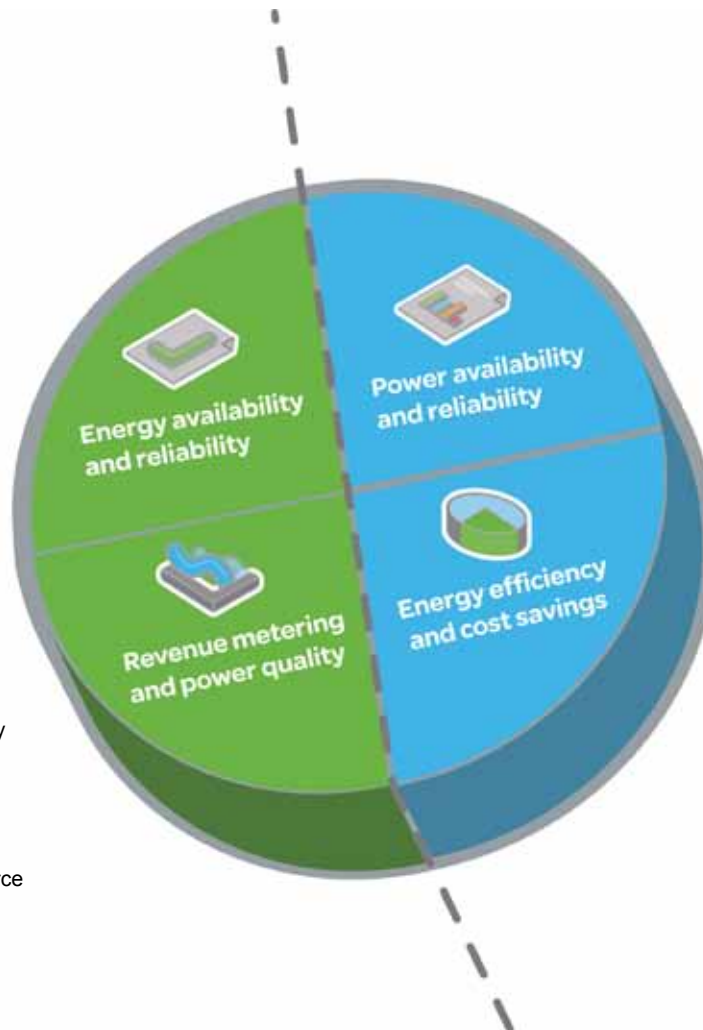
Applications

SUPPLY

Energy availability and reliability

- Improve T&D network reliability
- Enhance substation automation
- Maximise the use of your existing infrastructure

Revenue metering and power quality

- Maximise metering accuracy at all interchange points
- Verify compliance with new power quality standards
- Analyse and isolate the source of power quality problems

DEMAND

**Power availability and reliability**

- Validate that power quality complies with the energy contract
- Verify the reliable operation of power and mitigation equipment
- Improve response to power-related problems
- Leverage existing infrastructure capacity and avoid over-building
- Support proactive maintenance to prolong asset life

Energy efficiency and cost savings

- Measure efficiency, reveal opportunities and verify savings
- Manage green house gas emissions
- Allocate energy costs to departments or processes
- Reduce peak demand and power factor penalties
- Enable participation in load curtailment programs (e.g. demand response)
- Strengthen rate negotiation with energy suppliers
- Identify billing discrepancies
- Sub-bill tenants for energy costs

Your power monitoring system needs to be an integral part of your overall business strategy. PowerLogic fits in with your objectives and expands your network's capabilities with wide ranging, flexible deployment options to meet your needs.

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Market segments

Industry

From finance to engineering, PowerLogic technology gives industry professionals the energy intelligence and control they need to support strategic decisions and establish best energy practices. It will help you reduce operational costs and meet new emissions standards without compromising production schedules or product quality. Key points are monitored throughout your power distribution, building and backup systems. Enterprise-level software helps you maximise the use of your existing energy assets, increase energy efficiency and avoid demand or power factor penalties. Use it to uncover hidden power problems that can shorten equipment life or cause costly downtime.
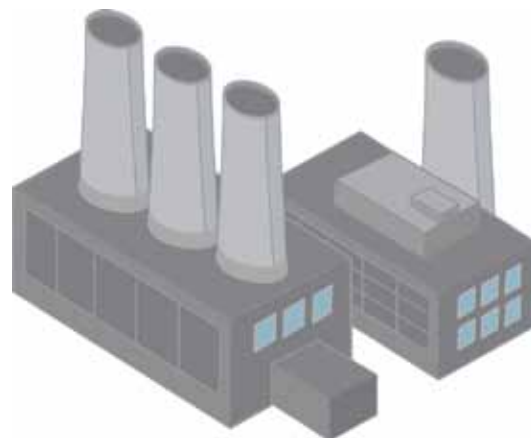
- cost allocation
- procurement optimisation
- power factor correction
- measurement and verification
- infrastructure optimisation
- power quality analysis
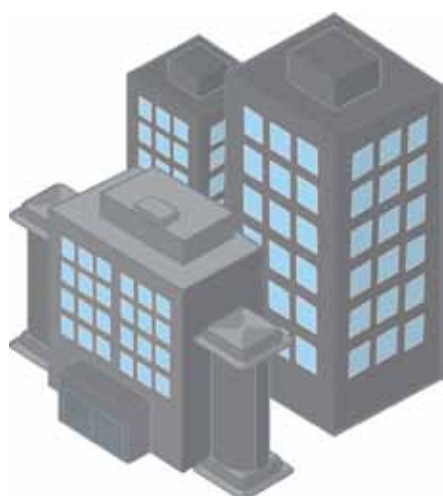
Buildings

Today, facility managers are pushed to the limit with demands on time, staff reductions, increasing responsibilities, complexity of systems, and capex and opex pressures. At the same time, critical business operations depends on your ability to maintain reliable operations, reduce energy costs, and get the most out of your electrical assets. PowerLogic offers cutting-edge flexibility let you extend your power management system at your own pace and within your own budget. It allows for integration with third-party devices and systems. Save thousands of engineering hours with ready-to-use device drivers and preconfigured reporting procedures.

- tenant sub-billing
- cost allocation
- energy efficiency / benchmarking
- procurement optimisation
- power availability
- demand response / load curtailment

30%

Monitoring and control systems can save you up to 30% on your annual energy bill

Market segments (cont.)

Critical infrastructure

PowerLogic technology helps keep your systems operating continuously and securely with an economical supply of energy. Whether you manage data, communication, transportation or environmental services, minimising the risk of power-related downtime and keeping costs under control is a priority. A PowerLogic solution monitors all power and cooling systems and accurately tracks their energy consumption. Enterprise-level software delivers insightful diagnostics and metrics to help verify the reliability of your backup systems and maximise the use of existing capacity to defer new capital investments. You can also reveal energy inefficiencies and strengthen energy procurement across multiple sites.
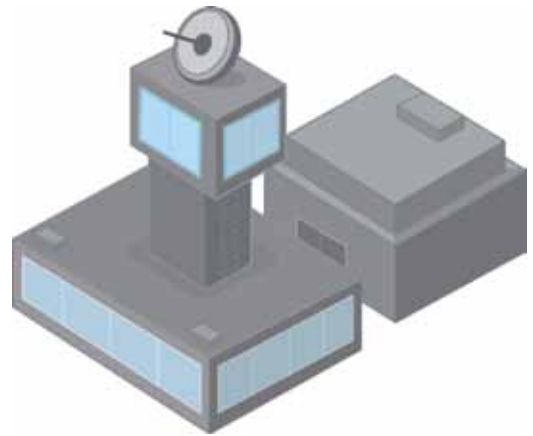
- infrastructure optimisation
- power quality analysis compliance
- alarming and event notification
- energy efficiency
- cost allocation
- procurement optimisation

Utilities

Today's energy market is more complex than ever before. Whether you generate, transmit or distribute electricity, more stakeholders need shared access to timely, accurate energy data from more exchange points and you need to maintain power availability and reduce price volatility in the face of rising demand and transmission congestion. A PowerLogic energy information system helps you meet all of these challenges by:

■ Metering all key interchange points with the highest possible accuracy

■ Improving the quality of power delivered to your customers

■ Essuring the reliability and efficiency of your network and equipment.

From advanced energy and power quality metering systems to enterprise-level analytic software, PowerLogic solutions deliver business-critical information that conventional metering, SCADA and billing systems cannot. It gives you the energy intelligence and control needed to track performance, stay informed of critical conditions and empower you to make strategic decisions. It will help you increase reliability, maximise the use of resources and improve service.

- revenue metering
- power availability and reliability

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Panorama of the PowerLogic range

Current transformers

CT
current transformer

Installation
- insulated cable, diameter 21 to 35 mm, through transformer
- busbar through transformer
- cable connections

Basic panel meters

Name	iAMP / iVLT	AMP / VLT	iFRE	iCH / iCI
Function	ammeter, voltmeter		frequency meter	hour counter pulse counter

Applications
Panel instrumentation

Panel instrumentation	I / U	I / U	F	hours /pulses

Energy efficiency and cost

Sub billing and cost allocation				
Demand and load management				
Billing analysis				

Power availability and reliability

Compliance monitoring				
Sag/swell, transient				
Harmonics				

Revenue metering

Revenue meter				

Characteristics

- transformation ratio: 40/5 A to 6000/5 A
- accuracy: class 0.5 to 3
- maximum rated operational voltage: 720 V AC
- tropicalised

Characteristics

	iAMP / iVLT	AMP / VLT	iFRE	iCH / iCI
Measurement accuracy	class 1.5	± 0.5 % ± 1 digit	class 1.5	± 0.5 % ± 1 digit	
Installation	DIN rail 4 x 18 mm modules	DIN rail 2 x 18 mm modules	flush mounted 72 x 72 mm 96 x 96 mm	DIN rail 2 x 18 mm modules	iCI, iCH: DIN rail 2 x 18 mm modules CH: flush mount
Voltage measurement	iVLT,: 500 V AC direct or external VT	iVLT: 600 V AC direct or external VT	VLT: 500 V AC direct or external VT	400 V AC direct	
Current measurement	iAMP: 30 A direct or external CT	iAMP: 10 A direct or external CT	AMP: external CT		
Communication ports					
Inputs / Outputs					
Memory capacity					

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Panorama of the PowerLogic range (cont.)

	Basic energy meters			Multi-circuit metering	
Name	iEM2000 / iEM2010 / iEM2000T	iME1 / iME1z / iME1zr	iEM3000 Series	BCPM	EM4800
Function	kilowatt-hour meters			branch circuit monitor IEC 61036 Class 1	multi-circuit energy meter Class 0.5 ANSI C12.1, C12.20 Class 0.5S IEC 62053-22

Applications

Panel instrumentation

Panel instrumentation	E		I, U, F, P, Q, S, PF, E (Power demand and current demand)	I, U, F, P, Q, S, PF, E (Power demand and current demand)	I, U, F, P, Q, S, PF, E (Power demand and current demand)

Energy efficiency and cost

Sub billing and cost allocation					
Demand and load management					
Billing analysis					

Power availability and reliability

Compliance monitoring					
Sag/swell, transient					
Harmonics					

Revenue metering

Revenue meter					

Characteristics

Measurement accuracy	Class 0.5S / Class 1			class 1 (mains active energy)	Class 0.5S
				Installed in panel or enclosure	Installed in panel or enclosure
Installation	DIN rail 1, 2, 5, or 7 x 18 mm modules			90 – 277 V Line to Neutral voltage Inputs	80 - 480 V AC L-L without PTs, Up to 999 kV with external PTs
				CT strips for branch circuits and external CTs for mains	Split- or solid-core CTs
Voltage measurement	400 V AC direct		50 V to 330 V (Ph-N) 80 V to 570 V (Ph-Ph) up to 1MV AC (ext VT)	1 for main	2
					2
Current measurement	40 to 125 A direct or external CT				
Communication ports					

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Panorama of the PowerLogic range (cont.)

Basic multi-function metering

Name	PM3000 Series	PM5350 / PM5350IB	PM5100 / PM5300 / PM5500
Function	metering & sub-metering Class 0.5S IEC 62053-22 Class 1 IEC 62053-21 Class 2 IEC 62053-23	Class 0.5S IEC 62053-22 Class IEC 61000-4-2 Class IEC 61000-3-3	metering & sub-metering Class 0.5S IEC 62053-22 Class 0.2S (PM55xx) IEC 62053-22 Class 1/2 IEC 62053-24

Applications

Panel instrumentation

Panel instrumentation	I, U, F, P, Q, S, PF, E (Power demand and current demand)	I, U, F, P, Q, S, PF, E (Power demand and current demand)	I, U, F, P, Q, S, PF, E (Power demand and current demand)

Energy efficiency and cost

Sub billing and cost allocation	■	■	■
Demand and load management			
Billing analysis			

Power availability & reliability

Harmonics			■
Dip/swell, transient			
Compliance monitoring			

Revenue metering

Revenue metering			

Characteristics

Measurement accuracy (active energy)	Class 0.5	Class 0.5	Class 0.2S (PM55xx) Class 0.5S
Installation	DIN rail	Flush mount 96 mm x 96 mm	Flush mount 96 mm x 96 mm
Voltage measurement	50V to 330V AC (Ph-N) 80V to 570V AC (Ph-Ph) up to 1MV AC (ext VT)	20-480 V AC (L-L) 20-277 V AC (L-N)	20 V L-N / 35 V L-L to 277 V L-N /480 V L-L /600 V L-L (PM55xx)
Current measurement	external CT	external CT	external CT
Communication ports	1	1	2
Inputs / Outputs	2 I/O		4 I/O 6 I/O (PM55xx)
Memory capacity			256 kb 1.1 MB (PM55xx)

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Panorama of the PowerLogic range (cont.)

Intermediate metering

Name	PM810	PM820 / PM850	PM870	PM8000
Function	energy and basic PQ power meter IEC 61557-12 PMD/SD/K70/0.5 PMD/SS/K70/0.5 ANSI 12.20 Class 0.2S real energy			energy and basic PQ meter IEC 61557-12 IEC 62053-22 IEC 61000-4-30 Class S IEC 62586 PQI-S ANSI C12.20 Class 0.2 PMD/Sx/K70/0.2

Applications

Panel instrumentation

Panel instrumentation	I, U, F, P, Q, S, PF, E, THD, Min/Max, harm, alarm, I/O (I, U unbalance, demand, clock/cal (PM810 w/PM810LOG)			I, U, F, P, Q, S, PF, E, THD, Min/Max, harm, alarm, I/O (I, U unbalance, demand, clock/cal

Energy efficiency and cost

Sub billing and cost allocation				
Demand and load management				
Billing analysis				

Power availability & reliability

Harmonics	w/PM810LOG			
Dip/swell, transient			dip/swell	
Compliance monitoring		PM850 only		

Revenue metering

Revenue metering				

Characteristics

Measurement accuracy (active energy)	ANSI 62053-22 Class 0.5S ANSI 12.20 Class 0.2S			IEC 61053-22 Class 0.2S ANSI 12.20 Class 0.2S
Installation	Flush & DIN rail mount 96 mm x 96 mm			Flush & DIN rail mount 96 mm x 96 mm
Voltage measurement	0-347 VAC L-N 3P (0-600 VAC L-L)			57-400 VAC L-N 3P (100-690 VAC L-L)
Current measurement	external CT	external CT	external CT	external CT
Communication ports	1 - 4 (option)	1 - 4 (optionw)	1 - 4 (options)	2
Inputs / Outputs	18 I/O	18 I/O	18 I/O	up to 27 DI, 9 DO up to 16 AI, 8 AO
Memory capacity	80 kb with PM810 LOG	80 / 800 kb	800 kb	512 MB

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Panorama of the PowerLogic range (cont.)

	Advanced metering			*Advanced utility metering*	
Name	**ION7550**	**ION7650**	**CM4000T**	**ION8650** **A B C**	**ION8800** **A B C**
Function	energy & power quality meter IEC 62052-11 IEC 62053-22/23 Class 0.2S IEC 61000-4-30 Class A		energy & power quality meter IEC 62053-22 ANSI 12.20 Class 0.2S real energy	energy & power quality meter IEC 62052-11 IEC 62053-22/23 Class 0.2S IEC 61000-4-30 Class A	energy & power quality meter IEC 62052-11 IEC 62053-22/23 Class 0.2S IEC 61000-4-30

Applications

Panel instrumentation

Panel instrumentation	**I, U, F, P, Q, S, PF, E (demand, minimum and maximum values)**			**I, U, F, P, Q, S, PF, E (demand, minimum and maximum values)**	

Energy efficiency & cost

Sub billing and cost allocation	■	■	■	■	■
Demand and load management	■	■	■	■	■
Billing analysis	■	■	■	■	■

Power availability & reliability

Harmonics	■	■	■	■	■
Dip/swell, transient	■	■	■	■	■
Compliance monitoring	■	■	■	■	■

Revenue metering

Revenue metering	■	■	■	■	■

Characteristics

Measurement accuracy (active energy)	Class 0.2S		Class 0.2S	Class 0.2S	Class 0.2S
Installation	DIN 192 standard cutout (186 x 186 mm)			ANSI socket mount 9S, 35S, 36S, 39S and 76S; FT21 switchboard case	DIN 43862 rack
Voltage measurement	57-347V L-N AC or 100-600V L-L AC		0 to 600 V AC 0 to 1200 kV AC (ext. VT)	57-277V L-N AC (9S, 36S); 120-480 V L-L AC (35S)	57-288V L-N AC or 99-500V L-L AC
Current measurement	external CT		external CT	external CT	external CT
Communication ports	5		3	5	5
Inputs / Outputs	up to 32 I/O		up to 25 I/O	up to 22 I/O	up to 16 I/O
Memory capacity	up to 10 MB		up to 32 MB	10 MB 4 MB 2 MB	up to 10 MB

Panorama of the PowerLogic range (cont.)

	Communications			*Power management software*
Name	Com'X 200 / 210 / 510	EGX100 / 300	ION7550 RTU	StruxureWare™ Power management software
Function	Ethernet GPRS data logger	Ethernet Integrate gateway server	Ethernet gateway-server + onboard I/O	Power management

Features

RS485 / Ethernet gateway				
Devices supported	EM3000 Series, iEM3000 Series, PM800 Series, ION7300, Acti 9 Smartlink Masterpact, PM5000 Series, Compact NSX, iEM1, iEM2000, iEM3000, PM3000 Series	Acti 9 Smartlink, BCPM Series, CM Series PM800 Series, CM4000 Series, DM6000, DM6300, iEM3000 Series, ION8800, ION7550/7650, PM200, PM300, PM5350, PM700, PM800, Sepam Series, Compact NSX, Vigilohm IM20/IM20-H PM5350, PM8000	ION8800, ION7550/7650, Modbus devices PM5350 PM5000 PM8000	
Web server with standard HTML pages	(Configuration only)	(Configuration only)		
Web server with custom HTML pages		EGX300 only		
Real time data		EGX300 only		
Historical data	Export to Internet database server	EGX300 only		
Automatic notification				
Alarm and event logs				
Waveform display				
Custom animated graphics				
Manual/automatic reports				
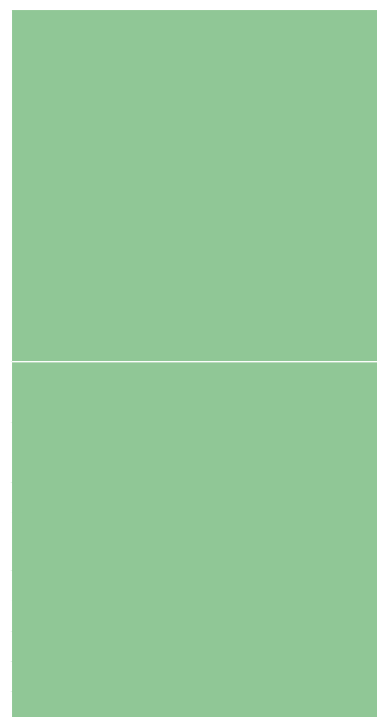
Characteristics

Ethernet ports Modbus TCP/IP protocol	2	10/100 Base TX port	10/100 Base TX port	StruxureWare™ is a suite of interoperable, and scalable supervisory software dedicated to power monitoring that enables you to maximize operational efficiency, optimize power distribution systems, and improve bottom-line performance.
RS485 (2-wire / 4-wire) ports Modbus protocol	1	1	1	
Number of devices connected directly	32 modbus devices 6 pulse meters (or dry contacts) – 2 analogue sensors	32	64	
RS232 configuration ports		1	1	
Miscellaneous	Connectivity: WiFi, GPRS,or Ethernet	Serial line to Ethernet connectivity	modem port I/O (24 I/30 O max)	
Installation	DIN rail	DIN rail	DIN 192 cutout (186 x 186 mm)	

Cat. no.	Description	Page
15100		
15125	iCMV voltmeter selector switch, DIN rail	30
15126	iCMA ammeter selector, DIN rail	30
15200		
15201	iVLT digital voltmeter, DIN rail	26
15202	iAMP direct reading digital ammeter, DIN rail	26
15208	iFRE digital frequency meter, DIN rail	26
15209	iAMP multi-rating digital ammeter, DIN rail	26
15400		
15440	iCH hour counter, DIN rail (230 V AC)	31
15443	iCI impulse counter, DIN rail	32
15600		
15607	CH hour counter, 48 x 48 (24 V AC)	31
15608	CH hour counter, 48 x 48 (230 V AC)	31
15609	CH hour counter, 48 x 48 (12 to 36 V DC)	31
16000		
16029	iAMP analogue ammeter for direct connection, DIN rail	25
16030	iAMP analogue ammeter for connection to TC (delivered without dial), DIN rail	25
16031	Dial, 0-5 A, for iAMP 16030	25
16032	Dial, 0-50 A, for iAMP 16030	25
16033	Dial, 0-75 A, for iAMP 16030	25
16034	Dial, 0-100 A, for iAMP 16030	25
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16036	Dial, 0-200 A, for iAMP 16030	25
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16038	Dial, 0-300 A, for iAMP 16030	25
16039	Dial, 0-400 A, for iAMP 16030	25
16040	Dial, 0-500 A, for iAMP 16030	25
16041	Dial, 0-600 A, for iAMP 16030	25
16042	Dial, 0-800 A, for iAMP 16030	25
16043	Dial, 0-1000 A, for iAMP 16030	25
16044	Dial, 0-1500 A, for iAMP 16030	25
16045	Dial, 0-2000 A, for iAMP 16030	25
16060	iVLT analogue voltmeter (0-300 V), DIN rail	25
16061	iVLT analogue voltmeter (0-500 V), DIN rail	25
16073	AMP analogue ammeter, 96 x 96, for motor feeder (delivered without dial)	25
16074	AMP analogue ammeter, 96 x 96, for standard feeder (delivered without dial)	25
16075	VLT analogue voltmeter, 96 x 96	28
16076	Dial, 0-30-90 A, for AMP 16073	28
16077	Dial, 0-75-225 A, for AMP 16073	28
16078	Dial, 0-200-600 A, for AMP 16073	28
16079	Dial, 0-50 A, for AMP 16074	28
16080	Dial, 0-100 A, for AMP 16074	28
16081	Dial, 0-200 A, for AMP 16074	28
16082	Dial, 0-400 A, for AMP 16074	28
16083	Dial, 0-600 A, for AMP 16074	28
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16086	Dial, 0-1500 A, for AMP 16074	28
16087	Dial, 0-2000 A, for AMP 16074	28
16088	Dial, 0-2500 A, for AMP 16074	28
16089	Dial, 0-3000 A, for AMP 16074	28
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16092	Dial, 0-6000 A, for AMP 16074	28
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16551	Adapter for DIN rails 56x84x60	19
16552	Lead-sealable cover for TC transformer	19
16553	Lead-sealable cover for TC transformer	19
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A9M17066	iME1z digital kilowatt-hour meter	35
A9M17067	iME1zr digital kilowatt-hour meter	35

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A9MEM2000	iME2000 single-phase kilowatt-hour meter	35
A9MEM2010	iME2010 single-phase kilowatt-hour meter	35
A9MEM3100	iEM3100 basic energy meter	42
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A9MEM3250	iEM3250 energy meter & electrical parameter plus RS485 comm port	42
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A9MEM3265	iEM3265 advanced multi-tariff energy meter & electrical parameter plus Modbus, BACnet MS/ TP comm port	42
A9MEM3275	iEM3275 advanced multi-tariff energy meter & electrical parameter plus LON TP/FT-10 comm port	42
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A9MEM3310	iEM3310 energy meter with pulse output	42
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CT current transformers
Ip/5 A ratio
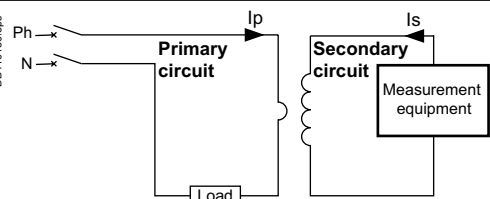
Application diagram of a CT.
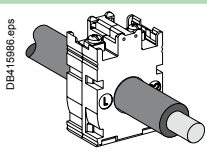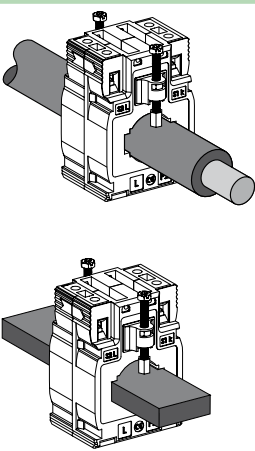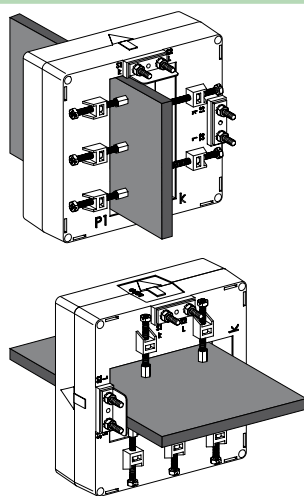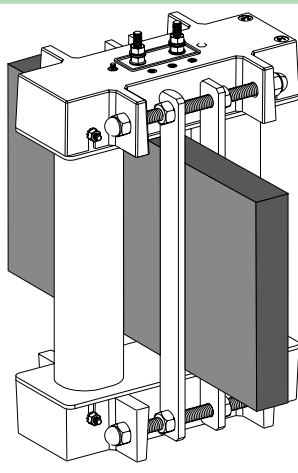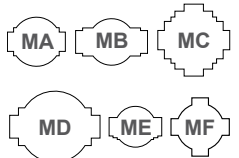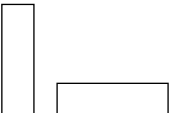
The Ip/5A ratio current transformer delivers at the secondary a current (Is) of 0 to 5 A that is proportional to the current measured at the primary (Ip).
This allows them to be used in combination with measurement equipment:

- Ammeters.
- Kilowatt-hour meters.
- Measurement units.
- Control relays.
- etc.

When the primary is energized, the measurement equipment nearly acts as a short circuit which keeps the secondary voltage very low. This voltage will increases significantly if the short circuit is removed.

CT selection - conductor rating aspects

The choice depends on the conductor profile and the maximum intensity of the primary circuit.

CT with let-through primary				
Conductor type	Cable	Mixed, bars or cables	Vertical or horizontal bars	Vertical bars
Suggested Current Transformer and mounting				
Ratings (A)	40 to 250	150 to 800	200 to 4000	500 to 600 / 5000 to 6000
CT internal profile	Type C	Type M	Type D [1]	Type V
		MA MB MC MD ME MF		VF VV

(1) Two secondary connectors (parallel internal wiring - only one secondary winding) for easier cable access. 1 lateral + 1 on one extremity. Warning: only one must be used at a time.

Specific mounting: use of cylinder

A cylindrical metallic spacer ensures a proper CT positioning when the conductor or the CT cannot be positioned perpendicular. Secured by bolt + nut.

CT with primary connection by screw and nut (example: use of cylinder with bar or cable)	
16550 (brass)	*METSECT5CYL1 (aluminium)*
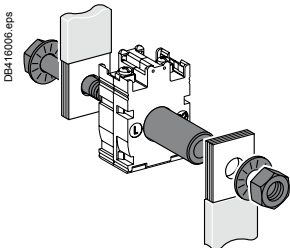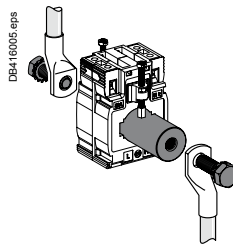
CT current transformers (cont.) Ip/5 A ratio

CT selection – Electrical aspect Ip/5 A

■ We recommend that you choose the ratio immediately higher than the maximum measured current (In).

Example:
In = 1103 A; ratio chosen = 1250/5.

■ For small ratings:
from 40/5 to 75/5 and for an application with digital devices, we recommend that you choose a higher rating, for example 100/5.

This is because small ratings are less accurate and the 40 A measurement, for example, will be more accurate with a 100/5 CT than with a 40/5 CT.

■ Specific case of the motor starter:
to measure motor starter current, you must choose a CT with primary current Ip = Id/2 (Id = motor starting current).

Validation of measurement solution according accuracy class

It consists in controlling the right adaptation of the CT on the assucary class aspect. The accuracy class is specified in the project. The total dissipated power of the measurement circuit (meter + cables) should not be superior to the specified limit of the CT. This limit is for different standard classes. If necessary, the choice of the cable section, the CT or meter should be modify to fit the requirement.

Copper cable cross-section (mm²)	Power per doubled meter at 20 °C (VA)
1	1
1.5	0.685
2.5	0.41
4	0.254
6	0.169
10	0.0975
16	0.062

Schneider Electric device	Consumption of the current input (VA)
Ammeter 72 x 72 / 96 x 96	1.1
Analogue ammeter	1.1
Digital ammeter	0.3
PM700, PM800	0.15
PM3000	0.3

For each temperature variation per 10 °C bracket, the power drawn up by the cables increases by 4 %.

Application example
Project specification: **200 A**, in **Ø27** mm cable, accuracy class 1.
Our choice is **METSECT5MA020**.

For this CT selected on the chart (next page), the max acceptable power is **7 VA** (for "Accuracy class 1" which is specified in the project).

Internal profile type	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.	0.5	1	3
					Max. power (VA)		
MA							
	Ø27	10 x 32	150	METSECT5MA015	3	4	-
		15 x 25	200	**METSECT5MA020**	4	7	-
			250	METSECT5MA025	6	8	-
			300	METSECT5MA030	8	10	-
			400	METSECT5MA040	10	12	-

Control of the conformity of the measurement chain:
■ PM3000 multi-meter: 0.3 VA.
■ 4 meters of 2.5 mm², doubled wires: 0.41 x 4 = 1.64 VA.

Total: *0.3 + 1.64 = 1.94 VA (< 7 VA)*

Conclusion: *this CT is well adapted as the accuracy class will be even better than 1.*

CT,
Ip/5 A ratio
Catalogue numbers

Presentation of catalogue numbers

MET SE CT R FF XXX

First digit = secondary rating,

Examples:
- METSECT5CC008 = 5 A secondary, Cables only, 75 A primary
- METSECT5MC080 = 5 A secondary, Mixed for cables and bars, 800 A primary.
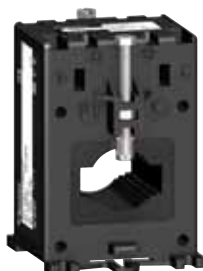
METSECT5CC●●●

METSECT5ME●●●

METSECT5MB●●●
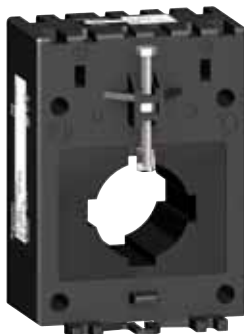
METSECT5MA●●●

METSECT5MC●●●

METSECT5MF●●●

METSECT5MD●●●

Type C - current transformer (cable profile)

Internal profile type	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.
CC				
	Ø21	-	40	METSECT5CC004
			50	METSECT5CC005
			60	METSECT5CC006
			75	METSECT5CC008
			100	METSECT5CC010
			125	METSECT5CC013
			150	METSECT5CC015
			200	METSECT5CC020
			250	METSECT5CC025

Type M - current transformers (mixed: cable/bar profile)

Internal profile type	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.
ME				
	Ø22	10 x 30	150	METSECT5ME015
		11 x 25	200	METSECT5ME020
		12 x 20	250	METSECT5ME025
			300	METSECT5ME030
			400	METSECT5ME040
			500	METSECT5ME050
			600	METSECT5ME060
MB				
	Ø26	12 x 40	250	METSECT5MB025
		15 x 32	300	METSECT5MB030
			400	METSECT5MB040
MA				
	Ø27	10 x 32	150	METSECT5MA015
		15 x 25	200	METSECT5MA020
			250	METSECT5MA025
			300	METSECT5MA030
			400	METSECT5MA040
MC				
	Ø32	10 x 40	250	METSECT5MC025
		20 x 32	300	METSECT5MC030
		25 x 25	400	METSECT5MC040
			500	METSECT5MC050
			600	METSECT5MC060
			800	METSECT5MC080
MF				
	Ø35	10 x 40	250	METSECT5MF025
			300	METSECT5MF030
			400	METSECT5MF040
			500	METSECT5MF050
MD				

CT,
Ip/5 A ratio
Catalogue numbers
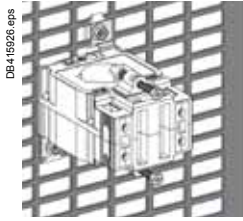
Mounting plate installation.
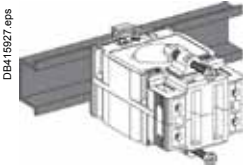
DIN rail mounting.

Common characteristics	
Secondary current Is (A)	5
Maximum voltage rating Ue (V)	720
Frequency (Hz)	50/60
Safety factor (sf)	■ 40 to 4000 A: sf ≤ 5 ■ 5000 to 6000 A: sf ≤ 10
Degree of protection	IP20
Operating temperature	■ tropicalised range ■ -25 °C to +60 °C [1] ■ relative humidity > 95 %
Compliance with standards	■ IEC 61869-2 ■ VDE 0414
Secondary connection (as per model)	■ by terminals for lug ■ by tunnel terminals ■ by screws

(1) Warning: some products are limited to +50 °C.

Accuracy class 0.5	1	3	Overall dimensions (refer to drawing pages for details) W x H x D (mm)	Fastening mode	Accessories Cylinder	Sealable cover
Max. power (VA)						
-	-	1	44 x 66 x 37	■ Adapter for DIN rails. ■ Mounting plate.	16550 METSECT5CYL1	Included
-	1.25	1.5				
-	1.25	2				
-	1.5	2.5				
2	2.5	3.5				
2.5	3.5	4				
3	4	5				
4	5.5	6				
5	6	7				
1.5	5.5	6.5	56 x 84 x 60	■ Adapter for DIN rails. ■ Mounting plate. ■ Insulated locking screw.	16551	16552
4	7	8.5				
6	9	11				
7.5	11	14				
10.5	15	18				
12	18	22				
14.5	21.5	26				
3	4	-	60 x 85 x 63	■ Adapter for DIN rails. ■ Mounting plate.	-	METSECT5COVER
4	6	-				
6	8	-				
3	4	-	56 x 80 x 63	■ Adapter for DIN rails. ■ Mounting plate.	METSECT5CYL2	METSECT5COVER
4	7	-				
6	8	-				
8	10	-				
10	12	-				
3	5	-	70 x 95 x 65	■ Adapter for DIN rails. ■ Mounting plate.	-	METSECT5COVER
5	8	-				
8	10	-				
10	12	-				
12	15	-				
10	12	-				
2.5	5	8	77 x 107 x 64	■ Adapter for DIN rails. ■ Mounting plate. ■ Insulated locking screw.	-	16553
4	8	12				
8	12	15				
10	12	15				

CT,
Ip/5 A ratio
Catalogue numbers

METSECT5VF●●●

METSECT5VV●●●

METSECT5DA●●●

METSECT5DB●●●

METSECT5DC●●●

METSECT5DD●●●

METSECT5DE●●●
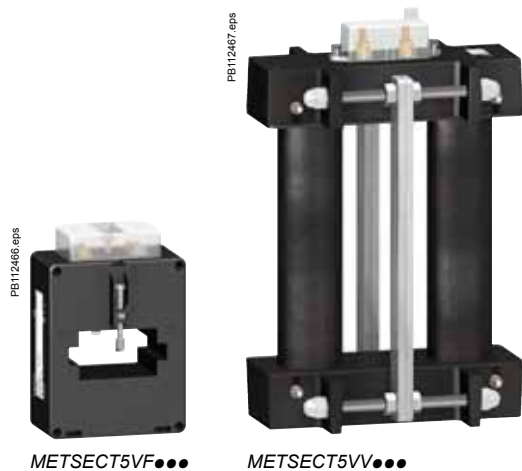
METSECT5DH●●●

Type V current transformers (vertical bar profile)

Internal profile type	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.
VF				
	-	11 x 64	500	METSECT5VF050
		31 x 51	600	METSECT5VF060
VV				
	-	55 x 165	5000	METSECT5VV500 ★
			6000	METSECT5VV600 ★

Type D - current transformers
(vertical or horizontal bar - dual secondary terminals)

	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.
DA				
	-	32 x 65	200	METSECT5DA020
			250	METSECT5DA025
			300	METSECT5DA030
			400	METSECT5DA040
			500	METSECT5DA050
			600	METSECT5DA060
			800	METSECT5DA080
			1000	METSECT5DA100
			1250	METSECT5DA125 ★
			1500	METSECT5DA150 ★
DB				
	-	38 x 127	1000	METSECT5DB100
			1250	METSECT5DB125 ★
			1500	METSECT5DB150 ★
			2000	METSECT5DB200 ★
			2500	METSECT5DB250 ★
			3000	METSECT5DB300 ★
DC				
	-	52 x 127	2000	METSECT5DC200 ★
			2500	METSECT5DC250 ★
			3000	METSECT5DC300 ★
			4000	METSECT5DC400 ★
DD				
	-	34 x 84	1000	METSECT5DD100
			1250	METSECT5DD125 ★
			1500	METSECT5DD150 ★
DE				
	-	54 x 102	1000	METSECT5DE100
			1250	METSECT5DE125 ★
			1500	METSECT5DE150 ★
			2000	METSECT5DE200 ★
DH				
	-	38 x 102	1250	METSECT5DH125 ★
			1500	METSECT5DH150 ★
			2000	METSECT5DH200 ★

★ *Operating temperature: -25 °C to +50 °C.*
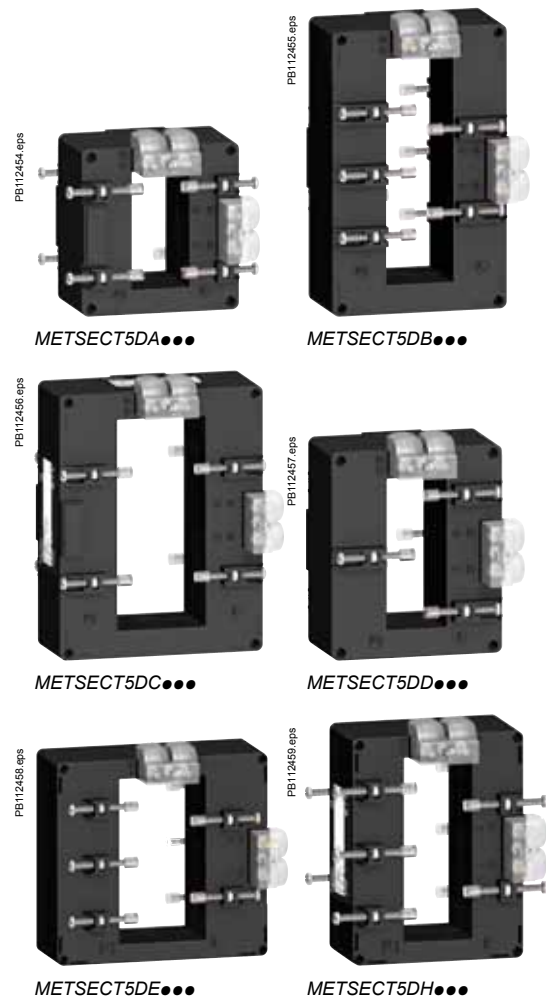
CT,
Ip/5 A ratio
Catalogue numbers

Accuracy class			Overall dimensions (refer to drawing pages for details) W x H x D (mm)	Fastening mode	Accessories Cylinder	Sealable cover
0.5 Max. power (VA)	1	3				
2	4	-	90 x 130 x 66	■ Mounting plate. ■ Insulated locking screw.	-	Included
4	6	-				
60	-	-	175 x 273.5 x 110	■ Insulated locking screw.	-	Included
70	-	-				
-	2	5	90 x 94 x 90	■ Insulated locking screw.	-	Included
1	4	-				
1.5	6	-				
4	8	-				
8	10	-				
8	12	-				
12	15	-				
15	20	-				
15	20	-				
20	25	-				
6	10	-	99 x 160 x 87	■ Insulated locking screw.	-	Included
8	12	-				
10	15	-				
15	20	-				
20	25	-				
25	30	-				
25	30	-	125 x 160 x 87	■ Insulated locking screw.	-	Included
30	50	-				
30	50	-				
30	50	-				
10	15	-	96 x 116 x 87	■ Insulated locking screw.	-	Included
12	15	-				
15	20	-				
12	15	-	135 x 129 x 85	■ Insulated locking screw.	-	Included
15	20	-				
20	25	-				
20	25	-				
12	15	-	98 x 129 x 75	■ Insulated locking screw.	-	Included
12	15	-				
20	25	-				

CT current transformers (cont.) Ip/5 A ratio

CT current transformers

CC internal profile type
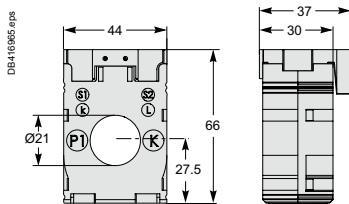
ME internal profile type
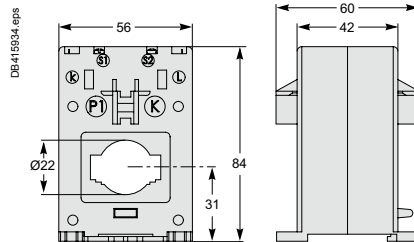
MB internal profile type
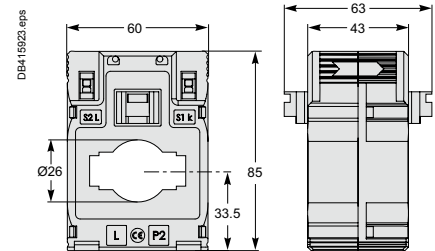
MA internal profile type
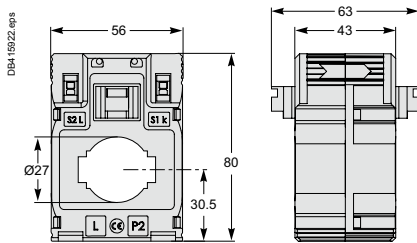
MC internal profile type
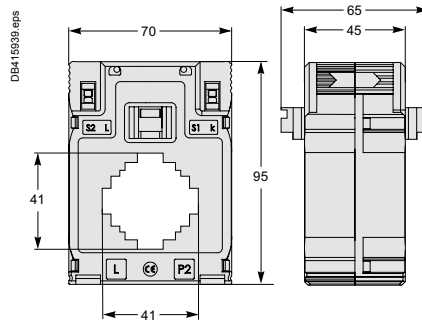
MF internal profile type
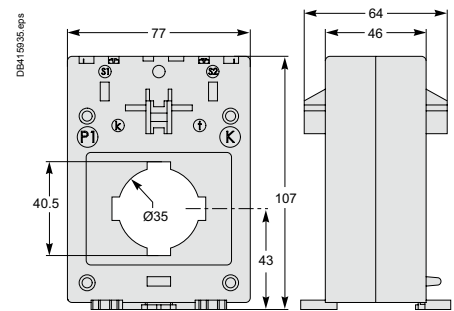
MD internal profile type
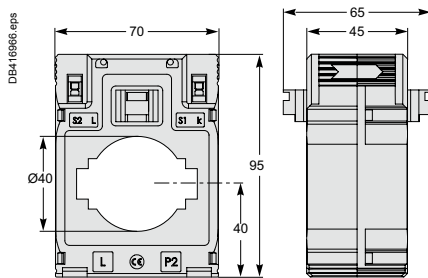
DA internal profile type
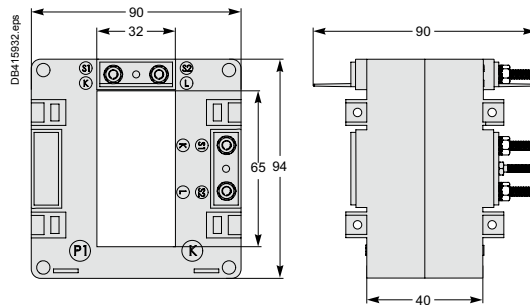
DB internal profile type
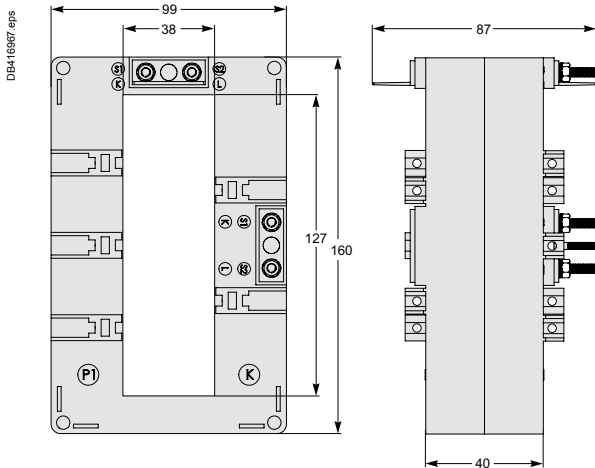
DC internal profile type

Schneider Electric
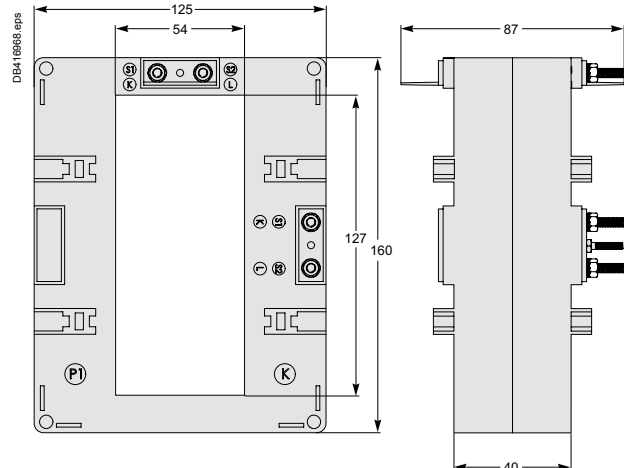
CT current transformers (cont.)
Ip/5 A ratio

CT current transformers

DD internal profile type
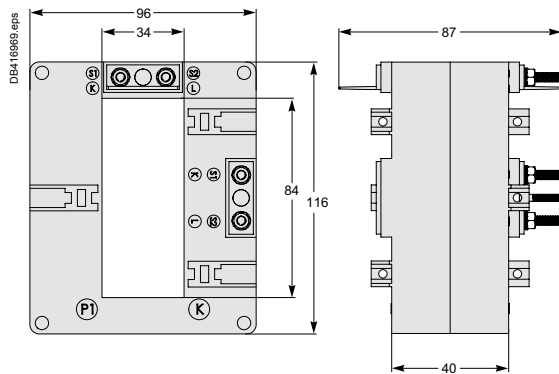
DE internal profile type
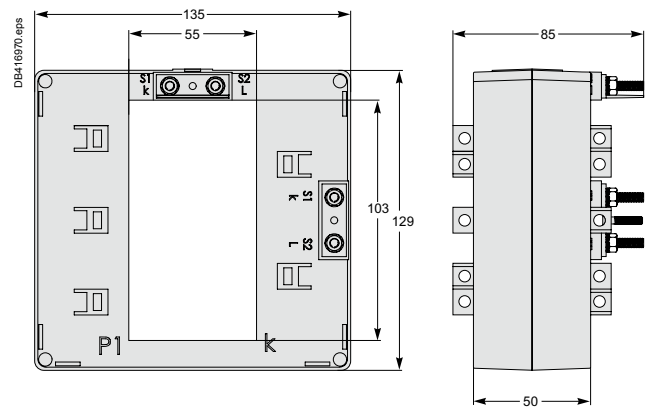
DH internal profile type
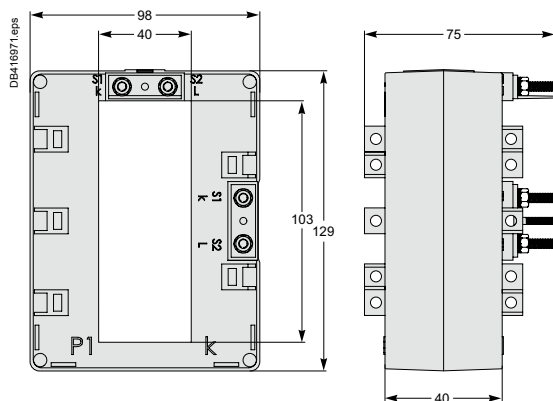
VV internal profile type

VF internal profile type

CT current transformers (cont.)
Ip/5 A ratio
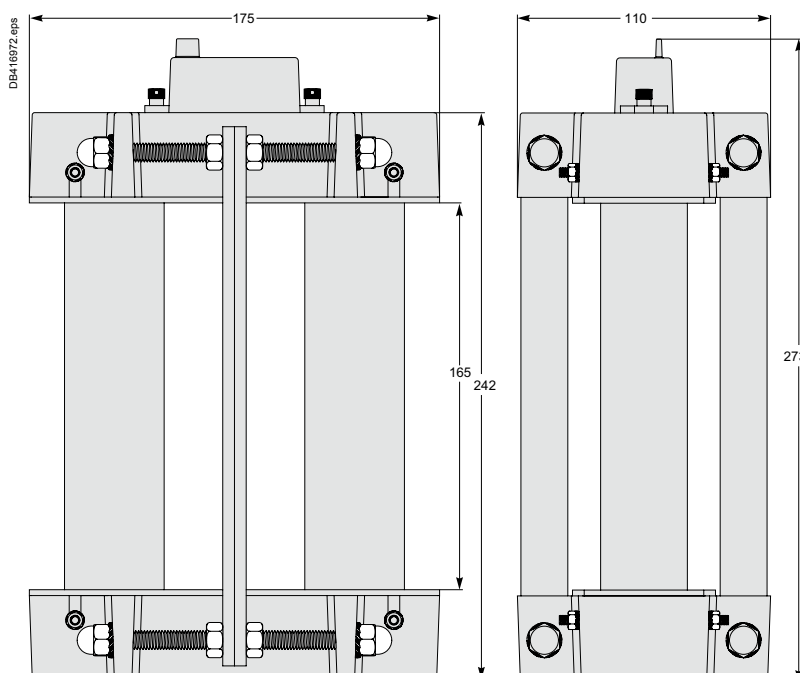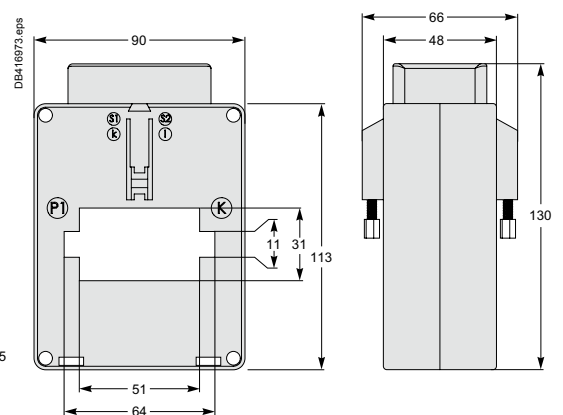
Cylinders

METSECT5CYL1

Ø 21.5
M8
32
21.5

Aluminium

METSECT5CYL2

Ø 26
M10
45
26.5

Aluminium

16550

Ø 22
Ø 8.5
32
22.5

Brass

16551

Ø 22.5
Ø 12.5
63
22.5

Brass

Covers

16552

82
58
31

16553

61
54.5
26

METSECT5COVER

60.5
23.5
22

Schneider Electric
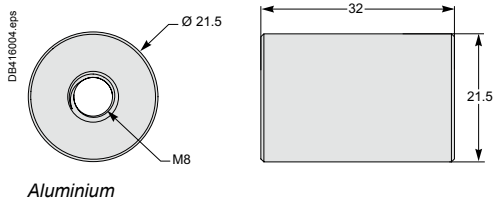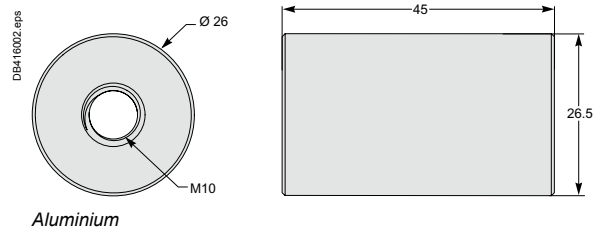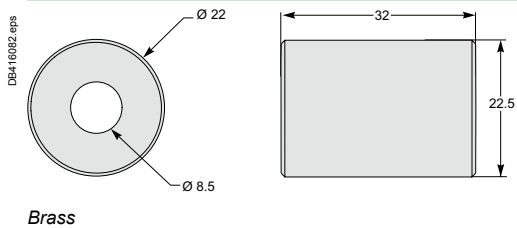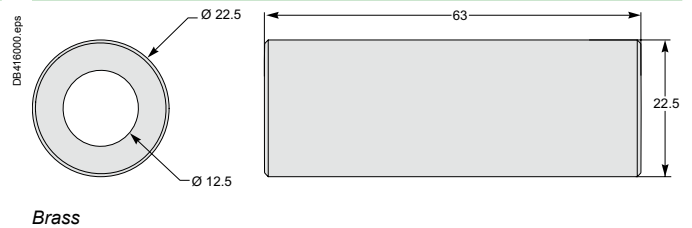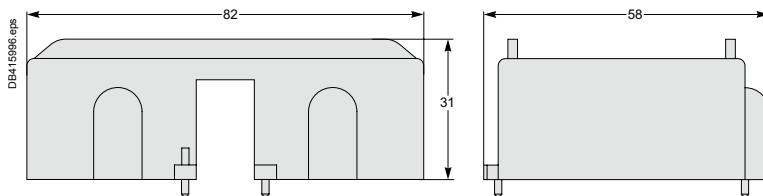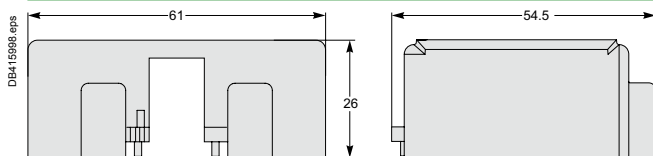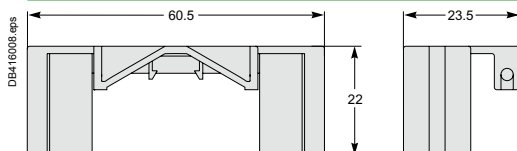
DIN rail analogue ammeters and voltmeters

Function

iAMP
Ammeters measure the current flowing through an electric circuit in amps.

iVLT
Voltmeters measure the potential (voltage) difference of an electric circuit in volts.

Common technical data

- Accuracy: class 1.5.
- Complies with standards IEC 60051-1, IEC 61010-1 and IEC 61000-4.
- Ferromagnetic device.
- Pseudo-linear scale over 90°.
- Ammeters (except catalogue number 16029):
  □ connection on CT, ratio In/5, to be ordered separately
  □ interchangeable dials.
- Temperature:
  □ operating temperature: -25 °C to +55 °C.
  □ reference temperature: 23 °C.
- Influence of temperature on accuracy: ±0.03 % / °C.
- Utilisation frequency: 50/60 Hz.
- Consumption:
  □ AMP: 1.1 VA
  □ VLT catalogue number 15060: 2.5 VA
  □ VLT catalogue number 16061: 3.5 VA.
- Permanent overload:
  □ AMP: 1.2 In
  □ VLT: 1.2 Un.
- Maximum overload for 5 s:
  □ AMP: 10 In
  □ VLT: 2 Un.
- Connection: tunnel terminals for 1.5 to 6 mm² rigid cables.

Catalogue numbers

Type	Scale	Connection with CT	Width in mod. of 9 mm	Cat. no.
iAMP with direct connection				
	0-30 A	no	8	**16029**
iAMP with connection on CT				
Basic device (delivered without dial)		X/5	8	**16030**
Dial	0-5 A			**16031**
	0-50 A	50/5		**16032**
	0-75 A	75/5		**16033**
	0-100 A	100/5		**16034**
	0-150 A	150/5		**16035**
	0-200 A	200/5		**16036**
	0-250 A	250/5		**16037**
	0-300 A	300/5		**16038**
	0-400 A	400/5		**16039**
	0-500 A	500/5		**16040**
	0-600 A	600/5		**16041**
	0-800 A	800/5		**16042**
	0-1000 A	1000/5		**16043**
	0-1500 A	1500/5		**16044**
	0-2000 A	2000/5		**16045**
iVLT				
	0-300 V		8	**16060**
	0-500 V		8	**16061**

iAMP.

iVLT.

Schneider Electric

DIN rail digital ammeters, voltmeter and frequency meter

iAMP.

iVLT.

iFRE.

Function

iAMP
Ammeters measure in amps the current flowing through an electric circuit.

iVLT
Voltmeters measure in volts the potential (voltage) difference of an electric circuit.

iFRE
The frequency meter measures in hertz the frequency of an electric circuit from 20 to 600 V AC.

Common technical data

- Supply voltage: 230 V.
- Operating frequency: 50/60 Hz.
- Display by red LED: 3 digits, h = 8 mm.
- Accuracy at full-scale : 0.5 % ±1 digit.
- Consumption: max. 5 VA or rated 2.5 VA.
- Degree of protection:
- □ IP40 on front face
- □ IP20 at terminal level.
- Connection: tunnel terminals for 2.5 mm^2 cables.

Specific data

10 A direct reading ammeter
- Minimum value measured: 4 % of rating.
- Measurement input consumption: 1 VA.

Multi-rating ammeter
- Ratings:
- □ in direct reading: 5 A
- □ by CT (not supplied) configurable on the front face of the ammeter: 10, 15, 20, 25, 40, 50, 60, 100, 150, 200, 250, 400, 500, 600, 800, 1000, 1500, 2000, 2500, 4000, 5000 A.
- Minimum value measured: 4% of rating.
- Measurement input consumption: 0.55 VA.

Voltmeter
- Direct measurement: 0...600 V.
- Input impedance: 2 MΩ.
- Minimum value measured: 4 % of rating.

Frequency meter
- Minimum value measured: 20 Hz.
- Maximum value measured: 100 Hz.
- Full-scale display: 99.9 Hz.

Compliance with standards
- Safety: IEC/EN 61010-1.
- EMC electromagnetic compatibility: IEC/EN 65081-1 and IEC/EN 65082-2.

Catalogue numbers

Type	Scale	Connection with CT	Width in mod. of 9 mm	Cat. no.
Direct reading iAMP				
	0-10 A	No	4	**15202**
Multi-rating iAMP				
	0-5000 A	As per rating	4	**15209**
iVLT				
	0-600 V		4	**15201**
iFRE				
	20-100 Hz		4	**15208**

72 x 72 analogue ammeters and voltmeter

AMP for standard feeder.

AMP for motor feeder.

VLT.

Function

The 72 x 72 measurement devices are designed for flush-mounted installation on doors, wicket doors and front plates of enclosures and cubicles.

AMP

The ammeters measure in amps the current flowing through an electrical circuit.

VLT

The voltmeter measure in volts the potential difference (voltage) of an electrical circuit.

Common technical data

- Accuracy: class 1.5.
- Compliance with standard IEC 60051-1, IEC 61010-1 and IEC 61000-4.
- Ferromagnetic device.
- Scale length: 62 mm over 90°.
- Mounting in enclosure or in cubicle.
- Degree of protection: IP52.
- Maximum operating position: 30° / vertical.
- Temperature:
- □ operation: -25 °C to +50 °C
- □ reference: 23 °C.
- Influence of temperature on accuracy: ±0.003 % / °C.
- Utilisation frequency: 50/60 Hz.

AMP specific technical data

- Needs a In/5 CT to be ordered separately.
- Interchangeable dials to be ordered separately.
- Consumption: 1.1 VA.
- Permanent overload: 1.2 In.
- Maximum overload for 5 s: 10 In.

VLT specific technical data

- Consumption: 3 VA.
- Permanent overload: 1.2 Un.
- Maximum overload for 5 s: 2 Un.

Catalogue numbers

Type	Scale	Connection on CT	Cat. no.
AMP for standard feeder			
Basic device (delivered without dial)		X/5	**16004**
1.3 In dial	0-50 A	50/5	**16009**
	0-100 A	100/5	**16010**
	0-200 A	200/5	**16011**
	0-400 A	400/5	**16012**
	0-600 A	600/5	**16013**
	0-1000 A	1000/5	**16014**
	0-1250 A	1250/5	**16015**
	0-1500 A	1500/5	**16016**
	0-2000 A	2000/5	**16019**
AMP for motor feeder			
Basic device (delivered without dial)		X/5	**16003**
3 In dial	0-30-90 A	30/5	**16006**
	0-75-225 A	75/5	**16007**
	0-200-600 A	200/5	**16008**
VLT			
	0-500 V		**16005**

Schneider Electric

96 x 96 analogue ammeters and voltmeter

AMP for standard feeder.

AMP for motor feeder.

VLT.

Function

The 96 x 96 measurement devices are designed for flush-mounted installation on doors, wicket doors and front plates of enclosures and cubicles.

AMP

The ammeters measure in amps the current flowing through an electrical circuit.

VLT

The voltmeter measure in volts the potential difference (voltage) of an electrical circuit.

Common technical data

- Accuracy: class 1.5.
- Compliance with standard IEC 60051-1, IEC 61010-1 and IEC 61000-4.
- Ferromagnetic device.
- Scale length: 80 mm over 90°.
- Mounting in enclosure or in cubicle.
- Degree of protection: IP52.
- Maximum operating position: 30° / vertical.
- Temperature:
- □ operation: -25 °C to +50 °C
- □ reference: 23 °C.
- Influence of temperature on accuracy: ±0.003 % / °C.
- Utilisation frequency: 50/60 Hz.

AMP specific technical data

- Needs a In/5 CT to be ordered separately.
- Interchangeable dials to be ordered separately.
- Consumption: 1.1 VA.
- Permanent overload: 1.2 In.
- Maximum overload for 5 s: 10 In.

VLT specific technical data

- Consumption: 3 VA.
- Permanent overload: 1.2 Un.
- Maximum overload for 5 s: 2 Un.

Catalogue numbers

Type	Scale	Connection on CT	Cat. no.
AMP for standard feeder			
Basic device (delivered without dial)		X/5	**16074**
1.3 In dial	0-50 A	50/5	**16079**
	0-100 A	100/5	**16080**
	0-200 A	200/5	**16081**
	0-400 A	400/5	**16082**
	0-600 A	600/5	**16083**
	0-1000 A	1000/5	**16084**
	0-1250 A	1250/5	**16085**
	0-1500 A	1500/5	**16086**
	0-2000 A	2000/5	**16087**
	0-2500 A	2500/5	**16088**
	0-3000 A	3000/5	**16089**
	0-4000 A	4000/5	**16090**
	0-5000 A	5000/5	**16091**
	0-6000 A	6000/5	**16092**
AMP for motor feeder			
Basic device (delivered without dial)		X/5	**16073**
3 In dial	0-30-90 A	30/5	**16076**
	0-75-225 A	75/5	**16077**
	0-200-600 A	200/5	**16078**
VLT			
	0-500 V		**16075**

48 x 48 CMA and CMV selector switches

CMA.

CMV.

Function

The 48 x 48 selector switches are designed for flush-mounted installation on doors, wicket doors and front plates of enclosures and cubicles.

CMA

The ammeter selector switch uses a single ammeter (by means of current transformers) for successive measurement of the currents of a three-phase circuit.

CMV

The voltmeter selector switch uses a single voltmeter for successive measurement of the voltages (phase-to-phase and phase-to-neutral) of a three-phase circuit.

Common technical data

■ Durability:
□ electrical: 100 000 operations
□ mechanical: 2 000 000 operations.
■ AgNi contact.
■ Operating temperature: -25 °C to +50 °C.
■ Compliance with standards IEC/EN 60947-3.
■ Degree of protection:
□ IP65 on front face
□ IP20 at terminal level.

Catalogue numbers

Type	Rating (A)	Voltage (V)	Number of positions	Cat. no.
CMA	20		4	**16017**
CMV		500	7	**16018**

Connection
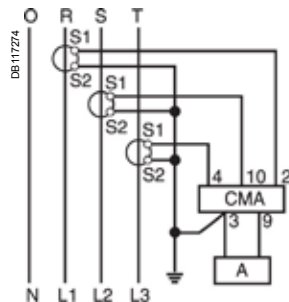
CMA.
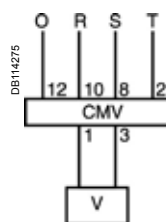
CMV.

Reading 3 phase-to-earth voltages + 3 phase-to-phase voltages.
Note: *when connecting do not remove the pre-cabling.*

DIN rail iCMA and iCMV selector switches

iCMA.

iCMV.

Function

iCMA
This 4-position ammeter selector switch uses a single ammeter (using current transformers) for successive measurement of the currents of a three-phase circuit.

iCMV
This 7-position voltmeter selector switch uses a single voltmeter for successive measurement of voltages (phase-to-phase and phase-to-neutral) of a three-phase circuit.

Common technical data
- Rotary handle.
- Maximum operating voltage: 440 V, 50/60 Hz.
- Nominal thermal current: 10 A.
- Operating temperature: -20°C to +55°C.
- Storage temperature: -25°C to +80°C.
- Mechanical durability (AC21A-3 x 440 V): 2 000 000 operations.
- Degree of protection:
- □ IP66 on front face
- □ IP20 at terminal level.
- Electrical durability: 1 000 000 operations.
- Connection: jumper terminals with captive screws, for cables up to 1.5 mm².
- Complies with standards: IEC/EN 60947-3.

Catalogue numbers

Type	Rating (A)	Voltage (V AC)	Width in mod. of 9 mm	Cat. no.
iCMA	10	415	4	15126
iCMV	10	415	4	15125

Connection

iCMA.

iCMV.

Schneider Electric

iCH hour counters
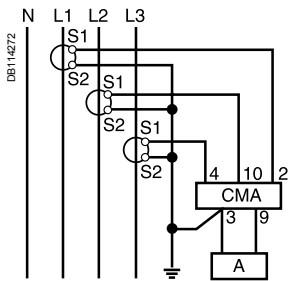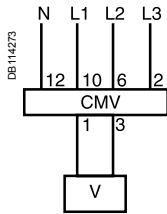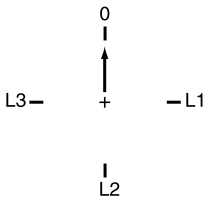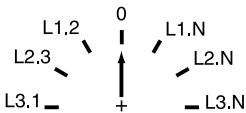
iCH "DIN".

CH "48 x 48".

Function

Electromechanical counter that counts the operating hours of a machine or piece of electrical equipment. Giving a precise indication of operating time, the counter is used to decide when to carry out preventive maintenance.

Common technical data

- Electromechanical display.
- Maximum display: 99999.99 hours.
- Display accuracy: 0.01 %.
- Without reset.
- Storage temperature: -25 °C to +85 °C.
- Connection: tunnel terminals for 2.5 mm² cable.

Specific technical data

iCH "DIN"
- Consumption: 0.15 VA.
- Operating temperature: -10 °C to +70 °C.
- Mounting on DIN rail.

CH "48 x 48"
- Consumption:
  □ 15607: 0.25 VA.
  □ 15608: 0.15 VA.
  □ 15609: 0.02 VA to 12 V and 0.3 VA to 36 V.
- Operating temperature: -20 °C to + 70 °C.
- Degree of protection: IP65 on front face.
- Mounting on front face of monitoring switchboards.

Catalogue numbers

Type	Voltage (V)	Width in mod. of 9 mm	Cat. no.
iCH "DIN"	230 V AC ± 10%/50 Hz	4	**15440**
CH "48 x 48"	24 V AC ± 10%/50 Hz		**15607**
	230 V AC ± 10%/50 Hz		**15608**
	12 to 36 V DC		**15609**

Connection

iCH "DIN".

CH "48 x 48".

iCI impulse counter

iCL.eps
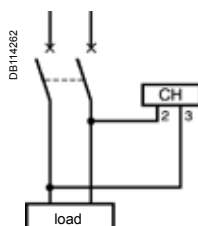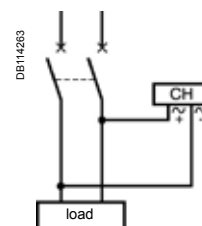
iCI impulse counter

Function

Electromechanical counter designed to count impulses emitted by: kilowatt hour meters, temperature overrun detectors, people meters, speed meters, etc.

Common technical data

■ Supply and metering voltage: 230 V AC ± 10%, 50/60 Hz.
■ Consumption: 0.15 VA.
■ Maximum display: 9 999 999 impulses.
■ Without reset.
■ Metering data:
□ minimum impulse time: 50 ms
□ minimum time between 2 impulses: 50 ms.
■ Storage temperature: -25 °C to +85 °C.
■ Operating temperature: -10 °C to +70 °C.
■ Connection: tunnel terminals for 2.5 mm² cable.

Catalogue number

Type	Width in mod. of 9 mm	Cat. no.
iCI	4	15443

Connection

DB114271

Schneider Electric
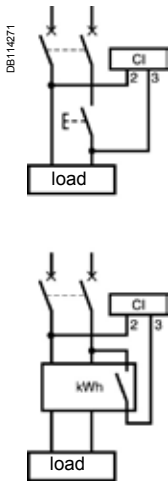
Dimensions

Ammeters, voltmeters, selector switches, impulse counter, hour counters

Analogue ammeters and voltmeters iAMP, iVLT
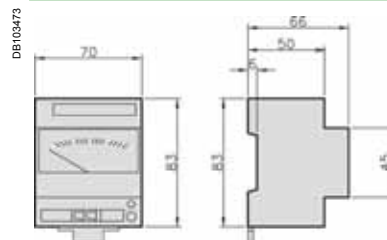
Digital ammeters, voltmeter and frequency meter iAMP, iVLT
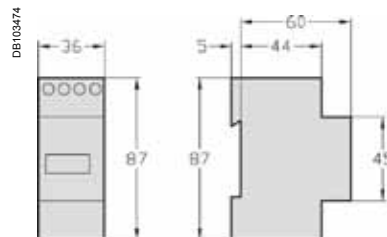
iCMA and iCMV selector switches

72 x 72 analogue ammeters and voltmeter
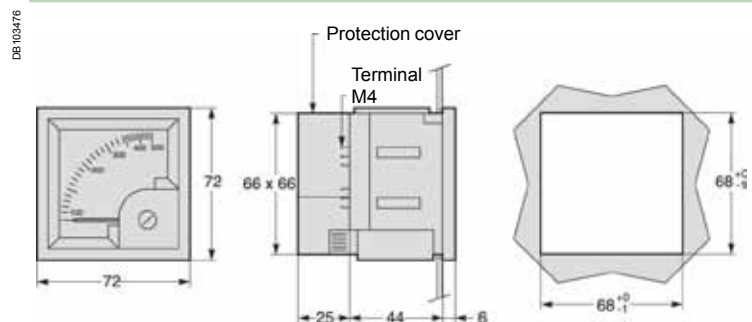
96 x 96 analogue ammeters and voltmeter
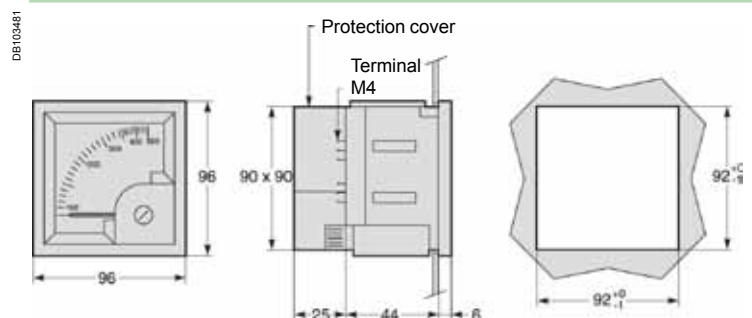
Dimensions (cont.)
Ammeters, voltmeters, selector switches, impulse counter, hour counters

48 x 48 CMA and CMV selector switches

DB103477

3

48

43

57

12

3.2 (or 4.8)

24.1 (or 33)

22.3 (or 30.5)

48

48

(with adapter)
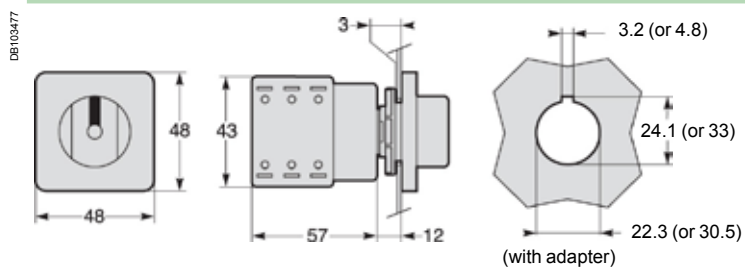
iCI impulse counter and iCH hour counter

DB103479

36

6

59

44

90

90

45

48 x 48 CH hour counters

DB109825

48

48

34

5

45

45.2 +0.3

45.2 +0.3

Schneider Electric
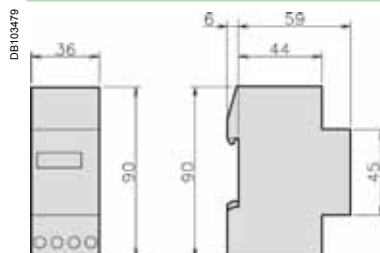
Kilowatt-hour meters
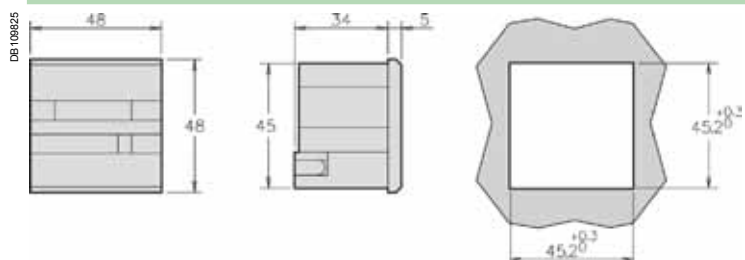
iEM2000T

iEM2000

iEM2010

iME1zr.

Function

Digital kilowatt-hour meters designed for sub-metering of active energy (rms) consumed by a single-phase or three-phase electric circuit with or without distributed neutral.

iEM2000T
40 A single-phase kilowatt-hour meter without display, with remote transfer of metering impulses (static output).

iEM2000
40 A single-phase kilowatt-hour meter.

iEM2010
40 A single-phase kilowatt-hour meter with remote transfer of metering impulses (static output).

iME1
Single-phase kilowatt-hour meter.

iME1z
Single-phase kilowatt-hour meter with partial meter.

iME1zr
Single-phase kilowatt-hour meter with partial meter and remote transfer of metering impulses (relay output).

Commercial reference numbers

Type	Rating (A)	Voltage (V AC)	Tolerance (V AC)	Width in mod. of 9 mm	Ref. no.
Single-phase circuit (1L + N)					
iEM2000	40	230	±20	2	**A9MEM2000**
iEM2010	40	230	±20	2	**A9MEM2010**
iEM2000T	40	230	±20	2	**A9MEM2000T**
iME1	63	230	±20	4	**A9M17065**
iME1z	63	230	±20	4	**A9M17066**
iME1zr	63	230	±20	4	**A9M17067**

Main technical data

	iEM2000T	iEM2000/iEM2010	iME
Accuracy class	1	1	1
Frequency	48/62 Hz	48/62 Hz	48/62 Hz
Consumption	<10VA	<10VA	2.5 VA
Operating temp	-10°C to +55°C	-10°C to +55°C	-25°C to +55°C
Connection by tunnel terminals	Top terminals: 4 mm²	Top terminals: 4 mm²	Top terminals: 6 mm²
	Bottom terminals: 10 mm²	Bottom terminals: 10 mm²	Bottom terminals: 16 mm²
Compliance with standard	IEC 61557-12 : - PMD/DD/K55/1	IEC 61557-12 : - PMD/DD/K55/1	IEC 61557-12 : - PMD/DD/K55/1
	IEC 62053-21 (accuracy)	IEC 62053-21 (accuracy)	IEC 62053-21 (accuracy)
Sealable screw shield	Yes	Yes	Yes
MID Compliance	No	Yes	No

Kilowatt-hour meters (cont.)
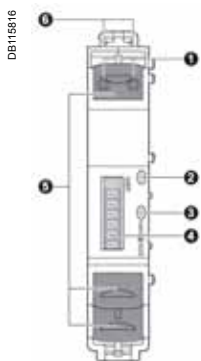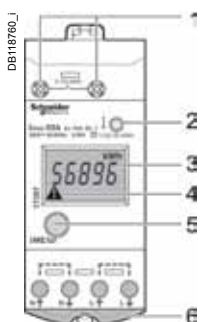
iEM2010

iME1zr.
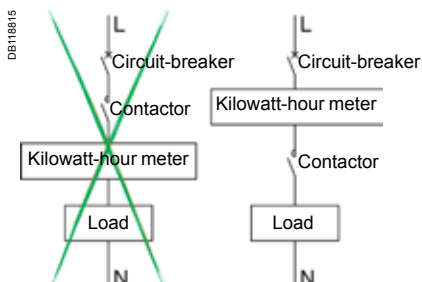
Example: meter on a load switching

Description

iEM2000, iEM2010, iEM2000T
1 Remote transfer pulse output (iEM2000T, iEM2010).
2 Green power-on indicator light.
3 Yellow metering indicator light (flashing).
4 Display unit (iEM2000, iEM2010).
5 Seal.
6 Allow the comb busbar to pass.

iME1, iME1z, iME1zr
1 Pulse output for remote transfer (iME1zr).
2 Flashing meter indicator.
3 Total or partial meter display (iME1z, iME1zr).
4 Wiring error indicator.
5 Push-button: total or partial meter display, reset partial meter (ME1z, ME1zr).
6 Sealing connection.

Installation

■ The front panel of the product is IP40 and its housing is IP20.
■ Its installation must be appropriate to the operating conditions.
■ The protection must not be less than IP65 for outdoor use.

Use with a contactor

A measurement instrument is normally continually supplied.
For a non-continuous supply (load switching), we recommend that you place the breaking device downstream from the measurement instrument to limit disturbances on the module inputs.
These disturbances, particularly on inductive loads, may result in early ageing of the device.
You must also place the measurement instrument at a distance from the breaking device to limit the risk of disturbance.

NOTE: See the appropriate product *Installation Guide* for complete instructions.

Kilowatt-hour meters (cont.)

Specific technical data

iEM2000, iEM2010, iEM2000T, iME1, iME1z and iME1zr specific technical data						
	iEM2000	iEM2010	iEM2000T	iME1	iME1z	iME1zr
Direct measurement	Up to 40 A			Up to 63 A		
Metering and activity indicator light (yellow)	3,200 flashes per kWh			1,000 flashes per kWh		
Wiring error indicator	Yes					
Total meter (max. capacity) on one phase	999 999.9 kWh			999.99 MWh		
Total meter display	In kWh with 7 significant digits (not for iEM2000T)			In kWh or MWh with 5 significant digits. No decimal point in kWh; 2 digits after the decimal point in MWh		
Partial meter (max. capacity) on one phase with RESET	-			-	99.99 MWh	
Partial meter display	-			-	In kWh or MWh with 4 significant digits. No decimal point in kWh; 2 digits after the decimal point in MWh	
Remote transfer	-	By static output: - ELV insulation voltage: 4 kV, 50 Hz - 20 mA/35 V DC max. - 100 impulses of 120 ms per kWh		-	-	By NO impulse contact: - ELV insulation voltage: 4 kV, 50 Hz - 18 mA/24 V DC, 100 mA/230 V AC - 1 impulse of 200 ms (contact closing) per kWh

Connection

Single-phase circuit

iEM2010

to impulse meter (iME1zr)
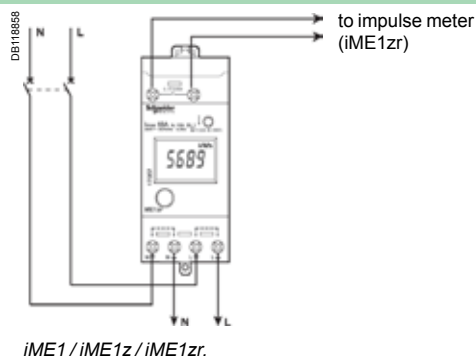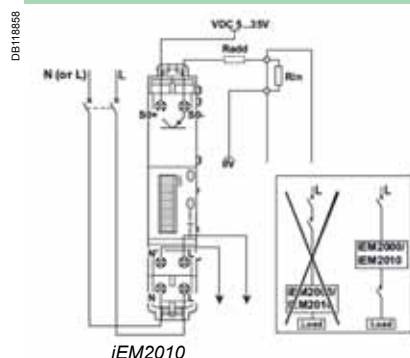
iME1 / iME1z / iME1zr.

NOTE: See the appropriate product *Installation Guide* for complete instructions.

iEM2000 series dimensions
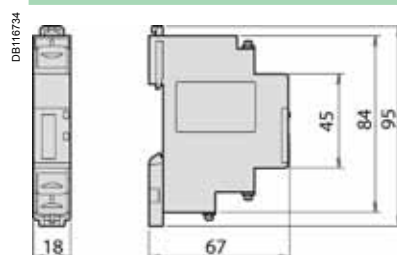
iME1, iME1z and iME1zr kilowatt-hour meters dimensions
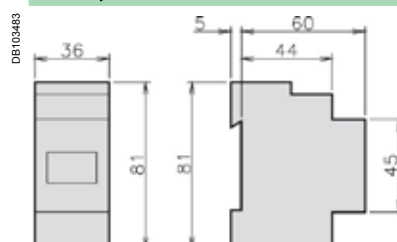
Acti 9 iEM3100/3200 energy meter

Acti 9 iEM3300 energy meter
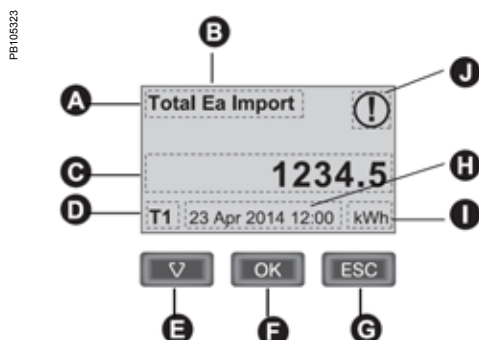
Front Panel Display and Buttons

A Measurement
B Ea /Er = active / reactive energy (if available)
C Value
D Active tariff (if applicable)
E Scroll through the available screens
F View more screens related to the measurement category (if available)
G Go back to previous screen
H Date and time (if applicable)
I Unit
J Icon indicating date / time not set

The Acti 9 iEM3000 Energy Meter Series offers a cost-attractive, competitive range of DIN rail-mounted energy meters ideal for sub-billing and cost allocation applications.

Combined with communication systems, like Smart Link, the Acti 9 iEM3000 Series makes it easy to integrate electrical distribution measurements into customer's facility management systems. It's the right energy meter at the right price for the right job.

Three versions are available: 63A direct measure (iEM3100 models), current transformers associated meter (iEM3200 models), and 125A direct measure (iEM3300 models). For each range, eight versions are available (seven for the iEM3300) to satisfy basic to advanced applications:

■ iEM3100/iEM3200/iEM3300: kWh meter with partial counter
■ iEM3110/iEM3210/iEM3310: kWh meter with partial counter and pulse output. MID certified.
■ iEM3115/iEM3215: multi-tariff meter controlled by digital input or internal clock, MID certified.
■ iEM3135/iEM3235/iEM3335: energy meter, four quadrant, multi-tariffs with partial counter and current, voltage, power measurement. M-Bus communication, digital I/O and MID certified.
■ iEM3150/iEM3250/iEM3350: kWh meter with partial counter and current, voltage, power measurement. Modbus communication.
■ iEM3155/iEM3255/iEM3355: energy meter, four quadrant, multi-tariffs with partial counter and current, voltage, power measurement. Modbus communication, digital I/O, MID certified.
■ iEM3165/iEM3265/iEM3365: energy meter, four quadrant, multi-tariffs with partial counter and current, voltage, power measurement. BACnet communication, digital I/O and MID certified.
■ iEM3175/iEM3275/iEM3375: energy meter, four quadrant, multi-tariffs with partial counter and current, voltage, power measurement. LON communication, digital input and MID certified.

Innovative design makes the meters smart and simple:
■ Easy to install for panel builders
■ Easy to commission for contractors and installers
■ Easy to operate for end users

Applications
Cost management applications
■ Bill verification
■ Sub-billing, including WAGES view (four user-defined tariffs)
■ Cost allocation, including WAGES view

Network management applications
■ Basic electrical parameters like current, voltage and power
■ Onboard overload alarm to avoid circuit overload and trip
■ Easy integration with PLC systems by input/output interface

■ Market segments
■ Buildings & Industry
■ Data centres and networks
■ Infrastructure (airports, road tunnels, telecom)

■ Characteristics
■ Self-powered meters
■ Chain measurement (meters + CTs) accuracy class 1
■ Compliance with IEC 61557-12, IEC 62053-21/22, IEC 62053-23, EN50470-3
■ Compact, 5 module width
■ Graphical display for easy viewing
■ Onboard Modbus, LON, M-Bus or BACnet communication
■ Easy wiring (without CTs) Acti 9 iEM3100 and iEM3300 models
■ Double fixation on DIN rail (horizontal or vertical)
■ Anti-tamper security features ensure the integrity of your data
■ MID compliant (selected models) providing certified accuracy and data security

Acti 9 iEM3000 Series Energy Meters
Functions and characteristics

Function guide	iEM3100 iEM3200 iEM3300	iEM3110 iEM3210 iEM3310	iEM3115 iEM3215	iEM3135 iEM3235 iEM3335	iEM3150 iEM3250 iEM3350	iEM3155 iEM3255 iEM3355	iEM3165 iEM3265 iEM3365	iEM3175 iEM3275 iEM3375
Width (18 mm module, DIN rail mounting)	5 / 5 / 8	5 / 5 / 8	5 / 5	5 / 5 / 8	5 / 5 / 8	5 / 5 / 8	5 / 5 / 8	5 / 5 / 8
Direct measurement (up to 63A or 125A)	63A / − / 125A	63A / − / 125A	63A / −	63A / − / 125A	63A / − / 125A	63A / − / 125A	63A / − / 125A	63A / − / 125A
Measurement inputs through CTs (1A, 5A)	− / ■ / −	− / ■ / −	− / ■	− / ■ / −	− / ■ / −	− / ■ / −	− / ■ / −	− / ■ / −
Measurement inputs through VTs				− / ■ / −	− / ■ / −	− / ■ / −	− / ■ / −	− / ■ / −
Active Energy measurements class (Total & partial kWh)	1 / 0.5S / 1	1 / 0.5S / 1	1 / 0.5S	1 / 0.5S / 1	1 / 0.5S / 1	1 / 0.5S / 1	1 / 0.5S / 1	1 / 0.5S / 1
Four Quadrant Energy measurements				■		■	■	■
Electrical measurements (I, V, P, ...)				■	■	■	■	■
Multi-tariff (internal clock)			4	4		4	4	4
Multi-tariff (external control)			4	2		2	2	2
Measurement display (number of lines)	3	3	3	3	3	3	3	3
Digital inputs — Programmable (Tariff control or WAGES input)				1		1	1	1
Digital inputs — Tariff control only			2					
Digital outputs — Programmable (kWh pulse or kW alarm)				1		1	1	
Digital outputs — kWh pulse only		1						
kW overload alarm				1		1	1	
M-Bus protocol				■				
Modbus protocol					■	■		
BACnet protocol							■	
LON								■
MID (legal metrology certification)		■	■	■		■	■	■

Acti 9 iEM3100 models direct connected (63 A) Direct connected up to 63 A

Acti 9 iEM3200 models (1 A / 5 A CT connected)

Connectivity advantages

Programmable digital input	External tariff control signal (4 tariffs) Remote Reset partial counter External status, e.g. breaker status Collect WAGES pulses
Programmable digital output	kWh overload alarm (iEM3135, iEM3155, iEM3165 iEM3235, iEM3255, iEM3265, EM3335, iEM3355, iEM3365) kWh pulses
Graphic LCD display	Scroll energies Current, voltage, power, frequency, power factor
Communication	Serial communication options are available with M-Bus, Modbus, BACnet or LON protocols

Standards

IEC standards	IEC 61557-12, IEC 61036, IEC 61010, UL61010-1, IEC 62053-21/22 Class 1 and Class 0.5S, IEC 62053-23

Multi-tariff capability
The Acti 9 iEM3000 Series allows arrangement of kWh consumption in four different registers. This can be controlled by:
■ Digital Inputs. Signal can be provided by PLC or utilities
■ Internal clock programmable by HMI
■ Through communication

This function allows users to:
■ Make tenant metering for dual source applications to differentiate backup source or utility source
■ Understand well the consumption during working time and non working time, and between working days and weekends
■ Follow up feeders consumption in line with utility tariff rates

Schneider Electric

Acti 9 iEM3000 Series Energy Meters
Functions and characteristics

Specification guide	iEM3100/iEM3300 Models							
	iEM3100 iEM3300	iEM3110 iEM3310	iEM3115	iEM3135 iEM3335	iEM3150 iEM3350	iEM3155 iEM3355	iEM3165 iEM3365	iEM3175 iEM3375
Current (max.) Direct connected (iEM31xx)	63A for iEM3100 models, 125A for iEM3300 models							
Meter constant LED	500/kWh							
Pulse output		Up to 1000p/kWh		Up to 1000p/kWh		Up to 1000p/kWh		
Multi-tariff			4 tariffs	4 tariffs		4 tariffs		
Communication				M-bus	Modbus	Modbus	BACnet	LON
DI/DO		0/1	2/0	1/1		1/1	1/1	1/0
MID (EN50470-3)	■			■		■	■	■
Network	1P+N, 3P, 3P+N							
Accuracy class	Class 1 (IEC 62053-21 and IEC61557-12) Class B (EN50470-3)							
Wiring capacity	16 mm² for iEM3100 models, 50 mm² for iEM3300 models							
Display max.	LCD 99999999.9kWh							
Voltage (L-L)	3 x 100/173 V AC to 3 x 277/480 V AC (50/60 Hz)							
IP protection	IP40 front panel and IP20 casing							
Temperature	-25°C to 55°C (K55)							
Product size	5 x 18 mm for iEM3100 models, 8 x 18 mm for iEM3300 models							
Overvoltage and measurement	Category III, Degree of pollution 2							
kWh	■	■	■	■	■	■	■	■
kVARh				■		■	■	■
Active power				■	■	■	■	■
Reactive power				■		■	■	■
Currents and voltages				■	■	■	■	■
Overload alarm				■		■	■	■
Hour counter				■		■	■	■

Specification guide	iEM3200 Models							
	iEM3200	iEM3210	iEM3215	iEM3235	iEM3250	iEM3255	iEM3265	iEM3275
1 A / 5 A CTs (max current)	6 A							
Meter constant LED	5000/kWh							
Pulse output frequency		Up to 500p/kWh		Up to 500p/kWh		Up to 500p/kWh		
Multi-tariff			4 tariff	4 tariffs		4 tariffs		
Communication				M-bus	Modbus	Modbus	BACnet	LON
DI/DO		0/1	2/0	1/1		1/1	1/1	1/0
MID (EN50470-3)		■	■	■		■	■	■
Network	1P+N, 3P, 3P+N support CTs			1P+N, 3P, 3P+N support CTs & VTs				
Accuracy class	Class 0.5S (IEC 62053-22 and IEC61557-12) Class C (EN50470-3)[1]							
Wiring capacity	6 mm² for currents and 4 mm² for voltages							
Display max.	LCD 99999999.9kWh or 99999999.9MWh							
Voltage (L-L)	3 x 100/173 V AC to 3 x 277/480 V AC (50/60 Hz)							
IP protection	IP40 front panel and IP20 casing							
Temperature	-25°C to 55°C (K55)							
Product size	5 steps of 18 mm							
Overvoltage & measurement	Category III, Degree of pollution 2							
kWh	■	■	■	■	■	■	■	■
kVARh				■		■	■	■
Active power				■	■	■	■	■
Reactive power				■		■	■	■
Currents and voltages				■	■	■	■	■
Overload alarm				■		■	■	■
Hour counter				■		■	■	■
(1) For 1 A CTs Class 1 (IEC6253-21 and IEC61557-12 Class B (EN50470-3)								
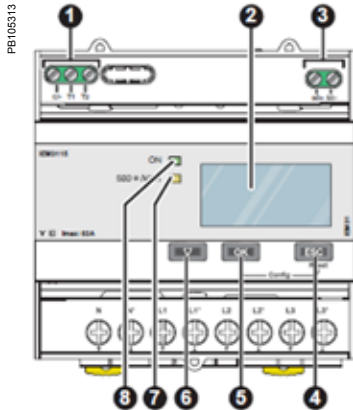
Schneider Electric

Acti 9 iEM3000 Series Energy Meters
Dimensions and connection

Acti 9 iEM3000 Series parts
1. Digital inputs for tariff control (iEM3115 / iEM3215)
2. Display for measurement and configuration
3. Pulse out for remote transfer (iEM3110 / iEM3210)
4. [ESC] Cancellation
5. [OK] Confirmation
6. [▽] Selection
7. Flashing yellow meter indicator to check accuracy
8. Green indicator: on/off, error
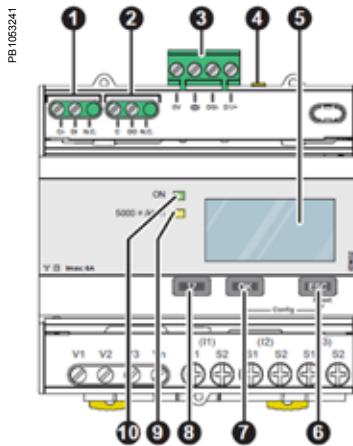
Acti 9 iEM3000 Series parts
1. Digital inputs for tariff control (iEM3115 / iEM3215)
2. Display for measurement and configuration
3. Pulse out for remote transfer (iEM3110 / iEM3210)
4. [ESC] Cancellation
5. [OK] Confirmation
6. [▽] Selection
7. Flashing yellow meter indicator to check accuracy
8. Green indicator: on/off, error

iEM3000/iEM3200 series dimensions

Ⓐ Without communications
Ⓑ With communications
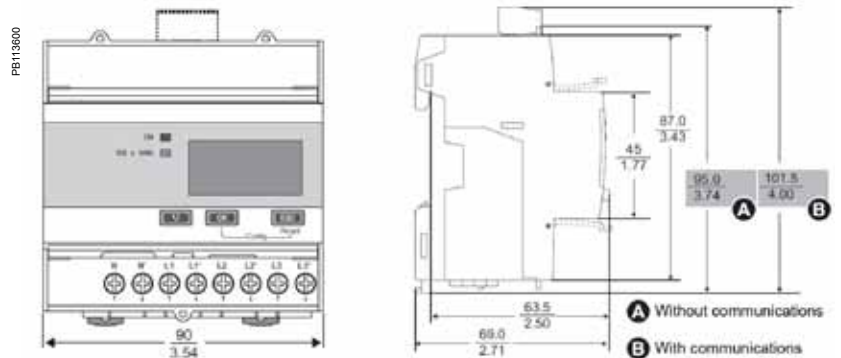
Acti 9 iEM3100/iEM3200 Series front flaps open and closed
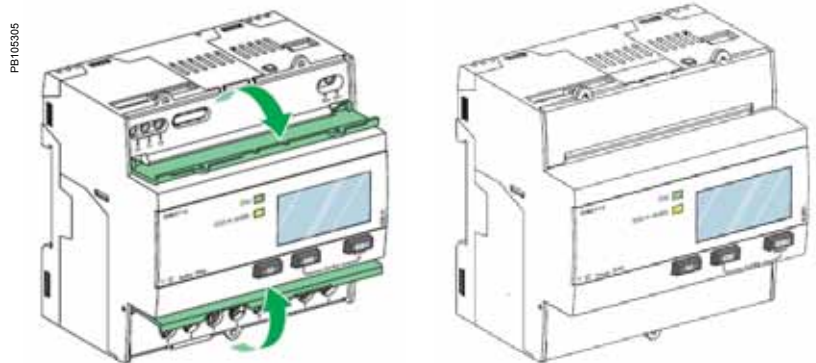
iEM3300 series dimensions
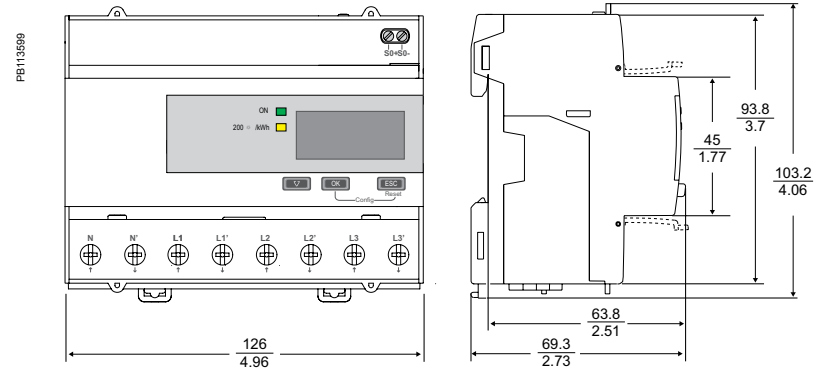
Acti 9 iEM3000 Series Energy Meters
Commercial reference numbers

Meter model and description	Current measurement	Ref. no.
iEM3100 basic energy meter	Direct connected 63 A	**A9MEM3100**
iEM3110 energy meter with pulse output	Direct connected 63 A	**A9MEM3110**
iEM3115 multi-tariff energy meter	Direct connected 63 A	**A9MEM3115**
iEM3135 advanced multi-tariff energy meter & electrical parameter plus M-Bus comm port	Direct connected 63 A	**A9MEM3135**
iEM3150 energy meter & electrical parameter plus Modbus RS485 comm port	Direct connected 63 A	**A9MEM3150**
iEM3155 advanced multi-tariff energy meter & electrical parameter plus Modbus RS485 comm port	Direct connected 63 A	**A9MEM3155**
iEM3165 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port	Direct connected 63 A	**A9MEM3165**
iEM3175 advanced multi-tariff energy meter & electrical parameter plus LON TP/FT-10 comm port	Direct connected 63 A	**A9MEM3175**
iEM3200 basic energy meter	Transformer connected 5 A	**A9MEM3200**
iEM3210 energy meter with pulse output	Transformer connected 5 A	**A9MEM3210**
iEM3215 multi-tariff energy meter	Transformer connected 5 A	**A9MEM3215**
iEM3235 advanced multi-tariff energy meter & electrical parameter plus M-Bus comm port	Transformer connected 5 A	**A9MEM3235**
iEM3250 energy meter & electrical parameter plus Modbus RS485 comm port	Transformer connected 5 A	**A9MEM3250**
iEM3255 advanced multi-tariff energy meter & electrical parameter plus Modbus RS485 comm port	Transformer connected 5 A	**A9MEM3255**
iEM3265 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port	Transformer connected 5 A	**A9MEM3265**
iEM3275 advanced multi-tariff energy meter & electrical parameter plus LON TP/FT-10 comm port	Transformer connected 5 A	**A9MEM3275**
iEM3300 basic energy meter	Direct connected 125 A	**A9MEM3300**
iEM3310 energy meter with pulse output	Direct connected 125 A	**A9MEM3310**
iEM3335 advanced multi-tariff energy meter & electrical parameter plus M-Bus comm port	Direct connected 125 A	**A9MEM3335**
iEM3350 energy meter & electrical parameter plus Modbus RS485 comm port	Direct connected 125 A	**A9MEM3350**
iEM3355 advanced multi-tariff energy meter & electrical parameter plus Modbus RS485 comm port	Direct connected 125 A	**A9MEM3355**
iEM3365 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port	Direct connected 125 A	**A9MEM3365**
iEM3375 advanced multi-tariff energy meter & electrical parameter plus LON TP/FT-10 comm port	Direct connected 125 A	**A9MEM3375**

See your Schneider Electric representative for complete ordering information.

PowerLogic BCPM
Functions and characteristics

PE86281

PowerLogic™ BCPM A/B/C main board

PB113644
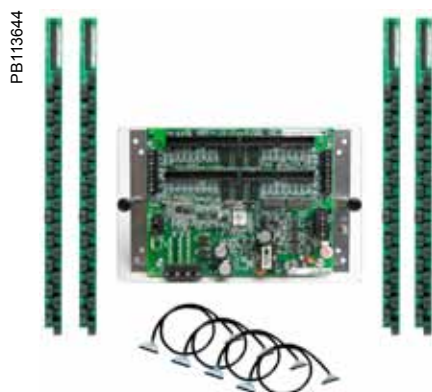
PowerLogic™ BCPME Measurement Unit"

PB113645

PB113646

PB113647

PB113648

PB113649
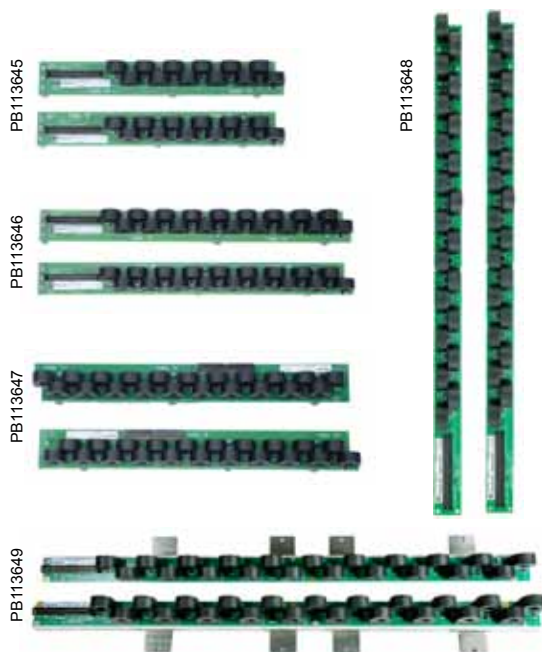
PowerLogic™ BCPM split core 12mm, 18mm, 21mm, .75 in and 1 in CTs strips

The ideal solution for data centre managers, energy or facility managers, engineers and operational executives who are responsible for delivering power to critical applications. In corporate and hosted data centre facilities, this technology helps you plan and optimise the critical power infrastructure to meet the demands of continuous availability.

The PowerLogic BCPM is a highly accurate, full-featured metering product designed for the unique, multi-circuit and minimal space requirements of a high performance power distribution unit (PDU) or remote power panel (RPP). It offers class 1 (1%) power and energy system accuracy (including 50A or 100A CTs) on all branch channels.

The BCPM monitors up to 84 branch circuits with a single device and also monitors the incoming power mains to provide information on a complete PDU. It also offers multi-phase measurement totals with flexible support for any configuration of multi-phase breakers. Full alarming capabilities ensure that potential issues are dealt with before they become problems.

Unlike products designed for specific hardware, the flexible BCPM will fit any PDU or RPP design and supports both new and retrofit installations. It has exceptional dynamic range and accuracy, and optional feature sets to meet the energy challenges of mission critical data centres.

Applications
Revenue Grade sub-billing.
Data Centre load monitoring and alarming
Comprehensive monitoring of lighting control panels
Maximise uptime and avoid outages.
Optimise existing infrastructure.
Effectively plan future infrastructure needs.
Improve power distribution efficiency.
Track usage and allocate energy costs.

Main characteristics

Monitor up to 84 branch circuits with a single BCPM.

Ideal for installation in both new PDUs and retrofit projects:
■ New installations: BCPM with solid core CTs monitors up to 84 branch circuits using 2 or 4 CT strips. Solid core CTs are rated to 100 A CTs and are mounted on strips to simplify installation. CT strips are available with 12, 8 or 21 CTs per strip on 18 mm spacings. 21 CT strips with 3/4" or 1" spacings are also available.
■ Retrofit projects: BCPMSC with split core CTs is ideal for retrofits. Any number of split core CTs, up to 84 maximum, can be installed with a single BCPM. Three sizes of CT are supported (50 A, 100 A, and 200 A) and all three CT sizes can be used on a single BCPM. Adapter boards with terminals for split-core CTs can be mounted using DIN-rail, Snaptrack or on a common mounting plate with the main board (42 ch Y63 models only).

Class 1.0 system accuracy for Revenue Grade measurements
Branch Power and Energy measurements fully meet ANSI and IEC class 1 accuracy requirements with 50 or 100 Amp CTs included. No need to de-rate meter branch accuracy to allow for CTs. Voltage and current measurement accuracy is 0.5% and currents are measured down to 50mA. Easily differentiate between the flow of low current and a trip where no current flows.

Designed to fit any PDU or RPP design
Lowers your total installation costs as well as the cost per meter point by supporting both new and retrofit installations.

New models with integrated Ethernet offer broad protocol support
All models integrate easily into existing networks using Modbus RTU communications over an RS-485 serial link. BCPME and BCPMSCE models offer integrated Ethernet and add support for Modbus TCP, BACnet IP, BACnet MS/TP and SNMP. An optional external gateway can be added to all other models to add the same capability.

Compatible with PowerLogic power monitoring software
Easily turn the large amount of data collected by the devices into useful decision-making information.

Flexible Configuration capability
Set the ordering and orientation of CT strips, assign individual CT size and phases, support for 1, 2, and 3-pole breakers in any configuration.

PE86167
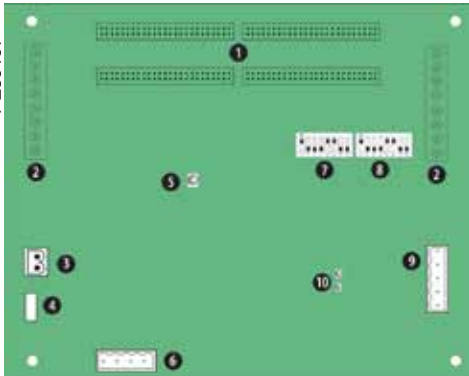
PowerLogic BCPM
1 50-pin ribbon cable connectors (data acquisition board).
2 Auxiliary inputs.
3 Control (mains) power connection.
4 Control power fuse.
5 Alive LED.
6 Voltage taps.
7 Communications address DIP switches.
8 Communications settings DIP switch.
9 RS-485 2 connection.
10 RS-485 LEDs.

Selection guide		BCPMA	BCPMB	BCPMC	BCPME
General					
Use on LV systems		■	■	■	■
Power and energy measurements					
Mains		■	■	-	■
Branch circuits		■	-	-	■
Instantaneous rms values					
Voltage, frequency		■	■	-	■
Current		■	■	■	■
Active power	Total and per phase	■	■ (mains only)	-	■
Power factor	Total and per phase	■	■ (mains only)	-	■
Energy values					
Active energy		■	■ (mains only)	-	■
Demand values					
Total active power	Present and max. values	■	■ (mains only)	-	■
Power quality measurements					
Detection of over-voltage/under-voltage		■	■	-	■
Alarming					
Alarms		■	■	■	■
Power supply					
AC version		90-277 V ac	90-277 V ac	90-277 V ac	100-277 V ac
Communication					
RS 485 port		■	■	■	■
Modbus protocol		■	■	■	■
Ethernet Port		1*	1*	1*	■
Modbus RTU protocol		1*	1*	1*	■
BACnet IP protocol		1*	1*	1*	■
BACnet MS/TP protocol		1*	1*	1*	■
SNMP protocol		1*	1*	1*	■

PowerLogic BCPM specifications		
Electrical characteristics		
Type of measurement		
Accuracy	Power/energy	1% system accuracy (including 50A or 100A branch CTs)
	Voltage	±0.5% of reading
	Current	±0.5% of reading
	Minimum "ON" current	50mA
Sampling rate Points per cycle		2560 Hz
Data update rate		1.8 seconds (Modbus), 14 seconds (BACnet) 20 sec (SNMP)
Input-voltage characteristics	Measured voltage	150 – 480 V ac L-L [1] 90 – 277 V ac L-N [1]
	Measurement range	150 – 480 V ac L-L [1] 90 – 277 V ac L-N [1]
Power supply	AC	100 – 277 V ac (50/60 Hz)
Auxiliary CT Current Input Range		0-0.333V; CTs must be rated for use with Class 1 voltage inputs
Mechanical characteristics		
Weight		1.5 kg
Dimensions	A/B/C model Circuit board	288 x 146 mm
	E model housing (w/ brackets on long sides)	253 mm W x 307 mm H x 71 mm D
	E model housing (w/ brackets on short ends)	210 mm W x 353 mm H x 71 mm D

*1 Add E8951 Gateway

PowerLogic BCPM
Functions and characteristics (cont.)

PowerLogic BCPM specifications (cont'd)	
Environmental conditions	
Operating temperature	0 to 60ºC
Storage temperature	-40ºC to 70ºC
Installation category	CAT III, pollution degree 2
Safety	
Europe	IEC 61010
U.S. and Canada	UL 508 Open type device
Communication	
RS 485 (A/B/C models)	Baud rate: DIP-switch selectable 9600, 19200, 38400 DIP-switch selectable 2-wire or 4-wire RS-485. Parity selectable: Even, Odd or None.
RS 485 (E Models)	Baud rate: configured via Web-server. Baud selectable: 9600, 19200, 38400. Parity selectable: Even, Odd or None. 2-wire RS-485.
Ethernet (E models)	10/100 Mbit Ethernet. RJ-45 connection. Static IP or DHCP.
Protocols	Modbus RTU on all models, BCPME models also support Modbus TCP, SNMP, BACnet IP & BACnet MS/TP
Firmware characteristics	
Detection of over-voltage/ under-voltage	User-defined alarm thresholds for over-voltage and under-voltage detection
Alarms	Four alarm levels: high-high, high, low and low-low (users define the setpoints for each). Each alarm has a latching status to alert the operator that an alarm has previously occurred. High and Low alarms have instantaneous status to let the operator know if the alarm state is still occurring.
Firmware update	Update via Modbus

(1) Feature sets 'A', 'B' and 'E only.

1/3 V low-voltage CT (LVCT) for Mains - specifications	
Electrical characteristics	
Accuracy	1% from 10% to 100% of rated current(LVCT0xxxx0S/1S/2S/3S/4S [split-core]) 0.5% from 5% to 100% of rated current (LVCT2xxxx0S/2S/3S [solid-core])
Frequency range	50/60 Hz
Leads	18 AWG, 600 V ac, 1.8m standard length
Max. voltage L-N sensed conductor	300 V ac (LVCT0xxxx0S) 600 V ac (LVCT0xxxx1S/2S/3S/4S, LVCT2xxxxxS)
Environmental conditions	
Operating temperature	0ºC to 70ºC (LVCT0xxxx0S/1S) -15ºC to 60ºC (LVCT0xxxx2S/3S/4S less than 2400A) -15ºC to 60ºC (LVCT02404S [2400A]) -40ºC to 85ºC (LVCT2xxxx0S/2S/3S [solid-core])
Storage temperature	-40ºC to 105ºC (LVCT0xxxx0S/1S) -40ºC to 70ºC (LVCT0xxxx2S/3S/4S) -50ºC to 105ºC (LVCT2xxxx0S/2S/3S [solid-core])
Humidity range	0 to 95% non-condensing

Schneider Electric

PE86168

Example BCPM with solid core CTs part number.

1 Model.
2 Feature set.
3 CT spacing (solid-core models only)
4 Number of circuits.
5 Brand.

The PowerLogic BCPM uses .333 VAC output split-core CTs for the auxiliary inputs. These CTs are ordered separately from the BCPM.

PB113664

PB113665

* Quantity and style of CT strips and cables included varies by model

BCPM part numbers
BCPM with solid core CTs

	Item	Code	Description
1	Model	BCPM	BCPM with solid core CTs. Highly accurate meter that monitors branch circuits and the incoming power mains and includes full alarming capabilities
2	Feature set	A	Advanced - Monitors power & energy per circuit & mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		B	Intermediate - Monitors current per circuit, power and energy per mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		C	Basic - Monitors current only per circuit & mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		E	Advanced, with Ethernet - Monitors power & energy per circuit & mains, Meter Main Board is enclosed in a metal housing
3	CT spacing	0	3/4" (19 mm) CT spacing
		1	1" (26 mm) CT spacing
		2	18 mm CT spacing
4	Number of circuits	24	24 circuits, (2) 18-CT strips (18 mm spacing only)
		36	36 circuits, (2) 18-CT strips (18 mm spacing only)
		42	42 circuits, (2) 21-CT strips
		48	48 circuits, (4) 18-CT strips (18 mm spacing only)
		72	72 circuits, (4) 18-CT strips (18 mm spacing only)
		84	84 circuits, (4) 21-CT strips
5	Brand	S	Schneider Electric

PowerLogic BCPM
Functions and characteristics (cont.)

PB113735

Example BCPMSC with split core CTs part number.

1 *Model.*
2 *Feature set.*
3 *Number of circuits.*
4 *Brand.*

The BCPMSC models with 1, 2 or Y63 as the number of circuits DO NOT INCLUDE ANY branch CTs or ribbon cables (they include only the Main board and adapater board assemblies) . These models are provided to allow users to order a specific combination of CT quantities, CT sizes, CT lead lengths and ribbon cable styles and lengths. The CTs and cables must be ordered separately.

Models with more than 2 as the number of circuits include 50A branch CTs with 2 meter leads and 1.8M round ribbon cables.

The PowerLogic BCPMSC uses .333 VAC output split-core CTs for the auxiliary inputs. These CTs are ordered separately from the BCPM.

PB113666

PB113730

BCPM with split core CTs			
	Model	BCPMSC	BCPM with split core CTs. Highly accurate meter that monitors branch circuits and the incoming power mains and includes full alarming capabilities
2	Feature set	A	Advanced - Monitors power and energy per circuit and mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		B	Intermediate - Monitors current per circuit, power and energy per mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		C	Basic - Monitors current only per circuit and mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		E	Advanced, with Ethernet - Monitors power & energy per circuit & mains, Meter Main Board is enclosed in a metal housing
4	Number of circuits	1	42 circuits (no branch CTs or ribbon cables, order separately)
		2	84 circuits (no branch CTs or ribbon cables, order separately)
		Y63	42 circuits – main and adapter boards on single mounting plate (no branch CTs or ribbon, order separately)
		30	30 split core CTs (50 A)
		42	42 split core CTs (50 A)
		60	60 split core CTs (50 A)
		84	84 split core CTs (50 A)
5	Brand	S	Schneider Electric

* Quantity of CT and cables included varies by model

PE86284

Flat ribbon cable

PB113650

Round ribbon cable

Cabling and connection

Flat ribbon cables are recommended for use when the BCPM printed circuit board will be mounted inside of the PDU that is being monitored. Round ribbon cables are the prefered choice when the ribbon cable will be threaded through conduit.

PB113651

BCPMSCxY63S 42-circuit split-core models come with the main board, (2) adapter boards and ribbon cables all mounted on a backplate, to simplify installation.

BCPM part numbers for solid and split core CTs (contd.)	
BCPM with split core CTs	
Part number	**Description**
BCPMA042S	42-circuit solid-core power & energy meter, 100A CTs (2 strips), ¾" spacing
BCPMA084S	84-circuit solid-core power & energy meter, 100A CTs (4 strips), ¾"spacing
BCPMA142S	42-circuit solid-core power & energy meter, 100A CTs (2 strips), 1" spacing
BCPMA184S	84-circuit solid-core power & energy meter, 100A CTs (4 strips), 1" mm spacing
BCPMA224S	24-circuit solid-core power & energy meter, 100A CTs (2 strips), 18mm spacing
BCPMA236S	36-circuit solid-core power & energy meter, 100A CTs (2 strips), 18mm spacing
BCPMA242S	42-circuit solid-core power & energy meter, 100A CTs (2 strips), 18mm spacing
BCPMA248S	48-circuit solid-core power & energy meter, 100A CTs (4 strips), 18mm spacing
BCPMA272S	72-circuit solid-core power & energy meter, 100A CTs (4 strips), 18mm spacing
BCPMA284S	84-circuit solid-core power & energy meter, 100A CTs (4 strips), 18mm spacing
BCPMB042S	42-circuit solid-core branch current, mains power meter, 100A CTs (2 strips), ¾" spacing
BCPMB084S	84-circuit solid-core branch current, mains power meter, 100A CTs (4 strips), ¾" spacing
BCPMB142S	42-circuit solid-core branch current, mains power meter, 100A CTs (2 strips), 1" spacing
BCPMB184S	84-circuit solid-core branch current, mains power meter, 100A CTs (4 strips), 1" spacing
BCPMB224S	24-circuit solid-core branch current, mains power meter, 100A CTs (2 strips), 18mm spacing
BCPMB236S	36-circuit solid-core branch current, mains power meter, 100A CTs (2 strips), 18mm spacing
BCPMB242S	42-circuit solid-core branch current, mains power meter, 100A CTs (2 strips), 18mm spacing
BCPMB248S	48-circuit solid-core branch current, mains power meter, 100A CTs (4 strips), 18mm spacing
BCPMB272S	72-circuit solid-core branch current, mains power meter, 100A CTs (4 strips), 18mm spacing
BCPMB284S	84-circuit solid-core branch current, mains power meter, 100A CTs (4 strips), 18mm spacing
BCPMC042S	42-circuit solid-core branch current meter, 100A CTs (2 strips), ¾" spacing
BCPMC084S	84-circuit solid-core branch current meter, 100A CTs (4 strips), ¾" spacing
BCPMC142S	42-circuit solid-core branch current meter, 100A CTs (2 strips), 1" spacing
BCPMC184S	84-circuit solid-core branch current meter, 100A CTs (4 strips), 1" spacing
BCPMC224S	24-circuit solid-core branch current meter, 100A CTs (2 strips), 18mm spacing
BCPMC236S	36-circuit solid-core branch current meter, 100A CTs (2 strips), 18mm spacing
BCPMC242S	42-circuit solid-core branch current meter, 100A CTs (2 strips), 18mm spacing
BCPMC248S	48-circuit solid-core branch current meter, 100A CTs (4 strips), 18mm spacing
BCPMC272S	72-circuit solid-core branch current meter, 100A CTs (4 strips), 18mm spacing
BCPMC284S	84-circuit solid-core branch current meter, 100A CTs (4 strips), 18mm spacing
BCPME042S	42-circuit solid-core power & energy meter w/Ethernet, 100A CTs (2 strips), ¾" spacing
BCPME084S	84-circuit solid-core power & energy meter w/Ethernet, 100A CTs (4 strips), ¾"spacing
BCPME142S	42-circuit solid-core power & energy meter w/Ethernet, 100A CTs (2 strips), 1" spacing
BCPME184S	84-circuit solid-core power & energy meter w/Ethernet, 100A CTs (4 strips), 1" mm spacing
BCPME224S	24-circuit solid-core power & energy meter w/Ethernet, 100A CTs (2 strips), 18mm spacing
BCPME236S	36-circuit solid-core power & energy meter w/Ethernet, 100A CTs (2 strips), 18mm spacing
BCPME242S	42-circuit solid-core power & energy meter w/Ethernet, 100A CTs (2 strips), 18mm spacing
BCPME248S	48-circuit solid-core power & energy meter w/Ethernet, 100A CTs (4 strips), 18mm spacing
BCPME272S	72-circuit solid-core power & energy meter w/Ethernet, 100A CTs (4 strips), 18mm spacing
BCPME284S	84-circuit solid-core power & energy meter w/Ethernet, 100A CTs (4 strips), 18mm spacing

PE86183

PowerLogic™ LVCT0xxxxS Split-core Low-voltage (1/3V) CTs for Aux inputs (Mains) are ideal for retrofit applications

PB113652

PB113657

PB113658

PowerLogic™ LVCT2xxxxS Low-voltage (1/3V) solid-core CTs for Aux inputs (Mains) are ideal for panel builders (small, medium, large)

BCPM with split core CTs (cont'd)	
BCPMSCA1S	42-circuit split-core power and energy meter, CTs and cables sold separately
BCPMSCA2S	84-circuit split-core power and energy meter, CTs and cables sold separately
BCPMSCA30S	30-circuit split-core power and energy meter, (30) 50A CTs & (2) 4' cables
BCPMSCA42S	42-circuit split-core power and energy meter, (42) 50A CTs & (2) 4' cables
BCPMSCA60S	60-circuit split-core power and energy meter, (60) 50A CTs & (4) 4' cables
BCPMSCAY63S	42-circuit split core power and energy meter, all boards on backplate, CTs and cables sold separately
BCPMSCA84S	84-circuit split-core power and energy meter, with (84) 50A CTs & (4) 4' cables
BCPMSCB1S	42-circuit split-core branch current, mains power meter, CTs and cables sold separately
BCPMSCB2S	84-circuit split-core branch current, mains power meter, CTs and cables sold separately
BCPMSCB30S	30-circuit split-core branch current, mains power meter, (30) 50A CTs & (2) 4' cables
BCPMSCB42S	42-circuit split-core branch current, mains power meter, (42) 50A CTs & (2) 4' cables
BCPMSCB60S	60-circuit split-core branch current, mains power meter, (60) 50A CTs & (4) 4' cables
BCPMSCBY63S	42-circuit split-core branch current, mains, all boards on backplate, CTs and cables sold separately
BCPMSCB84S	84-circuit split-core branch current, mains power meter, (84) 50A CTs & (4) 4' cables
BCPMSCC1S	42-circuit split-core current meter, CTs and cables sold separately
BCPMSCC2S	84-circuit split-core current meter, CTs and cables sold separately
BCPMSCC30S	30-circuit split-core current meter, (30) 50A CTs & (2) 4' cables
BCPMSCC42S	42 circuit split-core current meter, (42) 50A CTs & (2) 4' cables
BCPMSCC60S	60-circuit split-core current meter, (60) 50A CTs & (4) 4' cables
BCPMSCCY63S	42-circuit split-core current meter, all boards on backplate, CTs and cables sold separately
BCPMSCC84S	84-circuit split-core current meter, (84) 50A CTs & (4) 4' cables
BCPMSCE1S	42-circuit split-core power and energy meter w/Ethernet, CTs and cables sold separately
BCPMSCE2S	84-circuit split-core power and energy meter w/Ethernet, CTs and cables sold separately
BCPMSCE30S	30-circuit split-core power and energy meter w/Ethernet, (30) 50A CTs & (2) 4'
BCPMSCE42S	42-circuit split-core power and energy meter w/Ethernet, (42) 50A CTs & (2) 4' cables
BCPMSCE60S	60-circuit split-core power and energy meter w/Ethernet, (60) 50A CTs & (4) 4' cables
BCPMSCE84S	84-circuit split-core power and energy meter w/Ethernet, (84) 50A CTs & (4) 4' cables

The PowerLogic™ BCPM uses .333 VAC output split-core CTs for the auxiliary inputs. These CTs are ordered separately from the BCPM.

PowerLogic BCPM
Functions and characteristics (cont.)

BCPM split core branch CTs and adapter boards	
BCPMSCADPBS	BCPM adapter boards, quantity 2, for split core BCPM
BCPMSCCT0	BCPM 50A split core CTs, Quantity 6, 1.8 m lead lengths
BCPMSCCT0R20	BCPM 50A split core CTs, quantity 6, 6 m lead lengths
BCPMSCCT1	BCPM 100A split core CTs, Quantity 6, 1.8 m lead lengths
BCPMSCCT1R20	BCPM 100A split core CTs, Quantity 6, 6 m lead lengths
BCPMSCCT3	BCPM 200A split core CTs, Quantity 1, 1.8 m lead lengths
BCPMSCCT3R20	BCPM 200A split core CTs, Quantity 1, 6 m lead lengths
Additional accessories for use with BCPM products	
BCPMCOVERS	BCPM circuit board cover
BCPMREPAIR	CT repair kit for solid core BCPM (includes one CT)
H6803R-0100	Additional 100A split core CT for use with solid core repair kit
E8951	Modbus to BACnet protocol converter
CBL008	Flat Ribbon cable (quantity 1) for BCPM, length = 0.45 m
CBL016	Flat Ribbon cable (quantity 1) for BCPM, length = 1.2 m
CBL017	Flat Ribbon cable (quantity 1) for BCPM, length = 1.5 m
CBL018	Flat Ribbon cable (quantity 1) for BCPM, length = 1.8 m
CBL019	Flat Ribbon cable (quantity 1) for BCPM, length = 2.4 m
CBL020	Flat Ribbon cable (quantity 1) for BCPM, length = 3.0 m
CBL021	Flat Ribbon cable (quantity 1) for BCPM, length = 6.1 m
CBL022	Round Ribbon cable (quantity 1) for BCPM, length = 1.2 m
CBL023	Round Ribbon cable (quantity 1) for BCPM, length = 3 m
CBL024	Round Ribbon cable (quantity 1) for BCPM, length = 6.1 m
CBL031	Round Ribbon cable (quantity 1) for BCPM, length = 0.5 m
CBL033	Round Ribbon cable (quantity 1) for BCPM, length = 0.8 m

1/3 V low-voltage Split-Core CTs for Aux inputs (Mains)

Part number	Amperage rating	Inside dimensions
LVCT00050S	50A	10 mm x 11 mm
LVCT00101S	200A	16 mm x 20 mm
LVCT00202S	200A	32 mm x 32 mm
LVCT00102S	100A	30 mm x 31 mm
LVCT00202S	200A	30 mm x 31 mm
LVCT00302S	300A	30 mm x 31 mm
LVCT00403S	400A	62 mm x 73 mm
LVCT00603S	600A	62 mm x 73 mm
LVCT00803S	800A	62 mm x 73 mm
LVCT00804S	800A	62 mm x 139 mm
LVCT01004S	1000A	62 mm x 139 mm
LVCT01204S	1200A	62 mm x 139 mm
LVCT01604S	1600A	62 mm x 139 mm
LVCT02004S	2000A	62 mm x 139 mm
LVCT02404S	2400A	62 mm x 139 mm

1/3 V low-voltage Solid core CTs for Aux inputs (Mains)

Part number	Amperage rating	Inside dimensions
LVCT20050S	50A	10 mm
LVCT20100S	100A	10 mm
LVCT20202S	200A	25 mm
LVCT20403S	400A	31 mm

PowerLogic BCPM
Dimensions and connection

PowerLogic BCPM dimensions

1.0"
(26 mm)

1.0"
(26 mm)

2.75"
(70 mm)

4.6"
(117 mm)
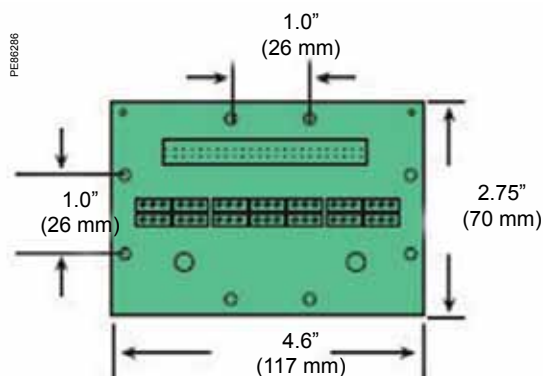
PowerLogic BCPM adapter board (one board per 21 split core branch CTs)

211 mm

146 mm

122 mm

184 mm

228 mm

3/4" option, 21 CTs

20.3" (516 mm)

1.3" (33 mm)

1.1" (28 mm)

slot: 0.25" x 0.5" (7 x 13mm)

2.0" (50 mm)

0.8" (20 mm)

0.4" (10 mm) opening

0.75" (19 mm) on center

1" option, 21 CTs

25.0" (635 mm)

1.2" (30 mm)

1.2" (31 mm)

slot: 0.25" x 0.5" (7 x 13mm)

2.0" (50 mm)

0.8" (20 mm)

0.4" (10 mm) opening

1.0" (26 mm) on center

18 mm option, 21 CTs

15.7" (399 mm)

2.0" (50 mm)

1.3" (32 mm)

0.9" (21.2mm)

0.4" (10 mm) opening

0.7" (18 mm) on center

18 mm option, 18 CTs

16.4" (417 mm)

1.7" (43 mm)

1.3" (32 mm)

0.9" (21.2mm)

0.4" (10 mm) opening

0.7" (18 mm) on center

18 mm option, 12 CTs

12.3" (312 mm)

1.7" (43 mm)

1.3" (32 mm)

0.9" (21.2mm)

0.4" (10 mm) opening

0.7" (18 mm) on center

12.1" (307 mm)

5.9" (150 mm)

12.8" (325 mm)

13.9" (353 mm)

8.9" (225 mm)

10.0" (253 mm)

8.2" (210 mm)

2.8" (71 mm)

Schneider Electric

PowerLogic BCPM
Dimensions and connection

50A-200A Split-Core CT dimensions

Split-Core CTs

These dimensions apply to both BCPMSCCTxx (branch CTs) and LVCT0xxxx0S/1S (for Mains) 50A-200A CT families.
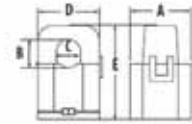
50 Amp
A = 1.0" (26 mm)
B = 0.5" (11 mm)
C = 0.4" (10 mm)
D = 0.9" (23 mm)
E = 1.6" (40 mm)
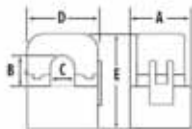
100 Amp
A = 1.2" (29 mm)
B = 0.8" (20 mm)
C = 0.7" (16 mm)
D = 1.6" (40 mm)
E = 2.1" (53 mm)
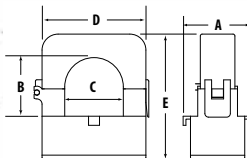
200 Amp
A = 1.5" (39 mm)
B = 1.25" (32 mm)
C = 1.25" (32 mm)
D = 2.5" (64 mm)
E = 2.8" (71 mm)

Solid core CT dimensions

E682r

0.250" ± 0.050"
(6.35 mm ± 1.27 mm)
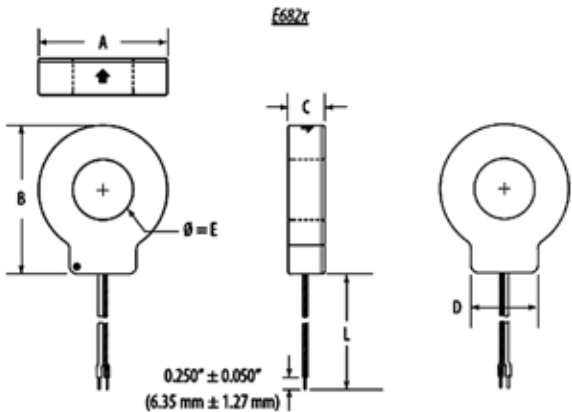
Model	L	A	B	C	D	E
LVCT20050S LVCT20100S	6' (1.8 m)	1.3" (33 mm)	1.5" (38 mm)	0.7" (18 mm)	0.8" (21 mm)	0.4" (10 mm)
LVCT20202S	6' (1.8 m)	2.3" (59 mm)	2.6" (66 mm)	0.7" (18 mm)	1.2" (31 mm)	1.0" (25 mm)
LVCT20403S	6' (1.8 m)	2.8" (70 mm)	3.2" (82 mm)	1.0" (25 mm)	1.4" (36 mm)	1.25" (31 mm)

1/3 V low-voltage CT form factor
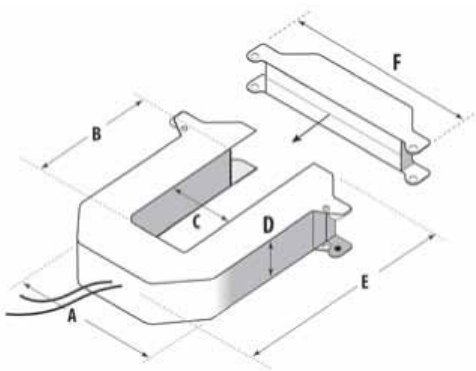
**Small form factor
100/200/300 Amp**
A = 96 mm
B = 30 mm
C = 31 mm
D = 30 mm
E = 100 mm
F = 121 mm

**Medium form factor
400/600/800 Amp**
A = 125 mm
B = 73 mm
C = 62 mm
D = 30 mm
E = 132 mm
F = 151 mm

**Large form factor
800/1000/1200/
1600/2000/2400 Amp**
A = 125 mm
B = 139 mm
C = 62 mm
D = 30 mm
E = 201 mm
F = 151 mm

Schneider Electric

PowerLogic BCPM
Dimensions and connection

PowerLogic BCPM with solid core CT strips installation details

PE86171

Circuit monitoring
4 CT strips monitor 84 circuits

Mains monitoring
(CTs ordered separately)

Transducers (1/3 Vac)

BCPM PCB
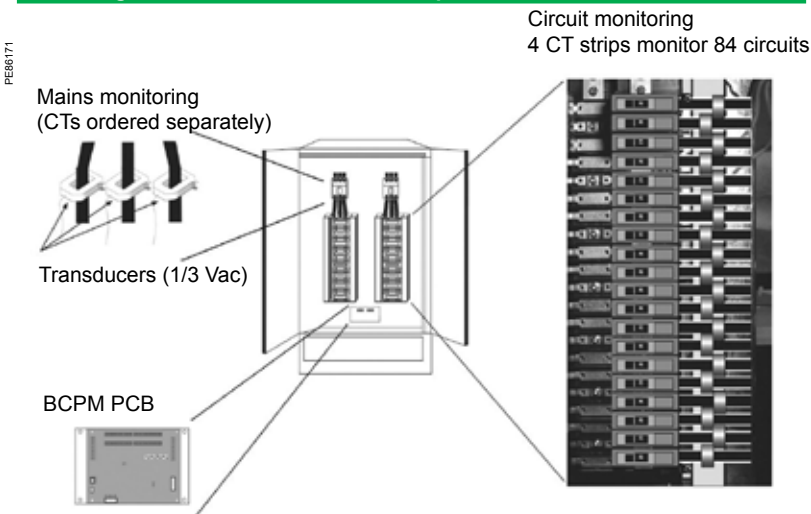
PowerLogic BCPM with split core CTs installation details

PE86287

1/3 VAC Output Mains
Monitoring Split-Core CT

50 A or 100 A Branch
Monitoring Split-Core CT

Monitored Panel:
42 Circuit Breaker
Version Shown

Printed Circuit Board

Ribbon Cable

Adapter Board

PowerLogic EM4300
Wireless metering system

Ethernet

Gateway,
data logger,
energy server

Modbus

Zigbee 2.4 GHz

Radio Frequency transmission

PowerLogic EM4300
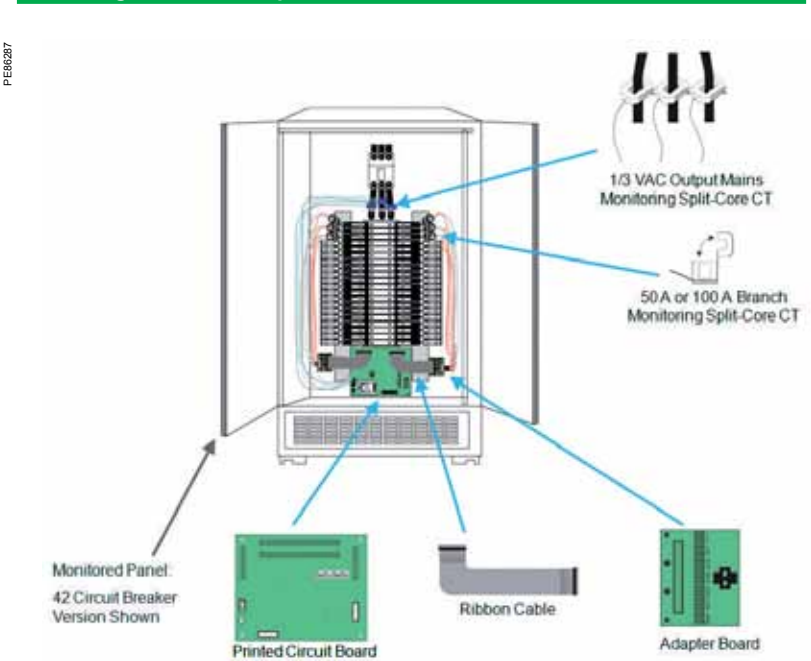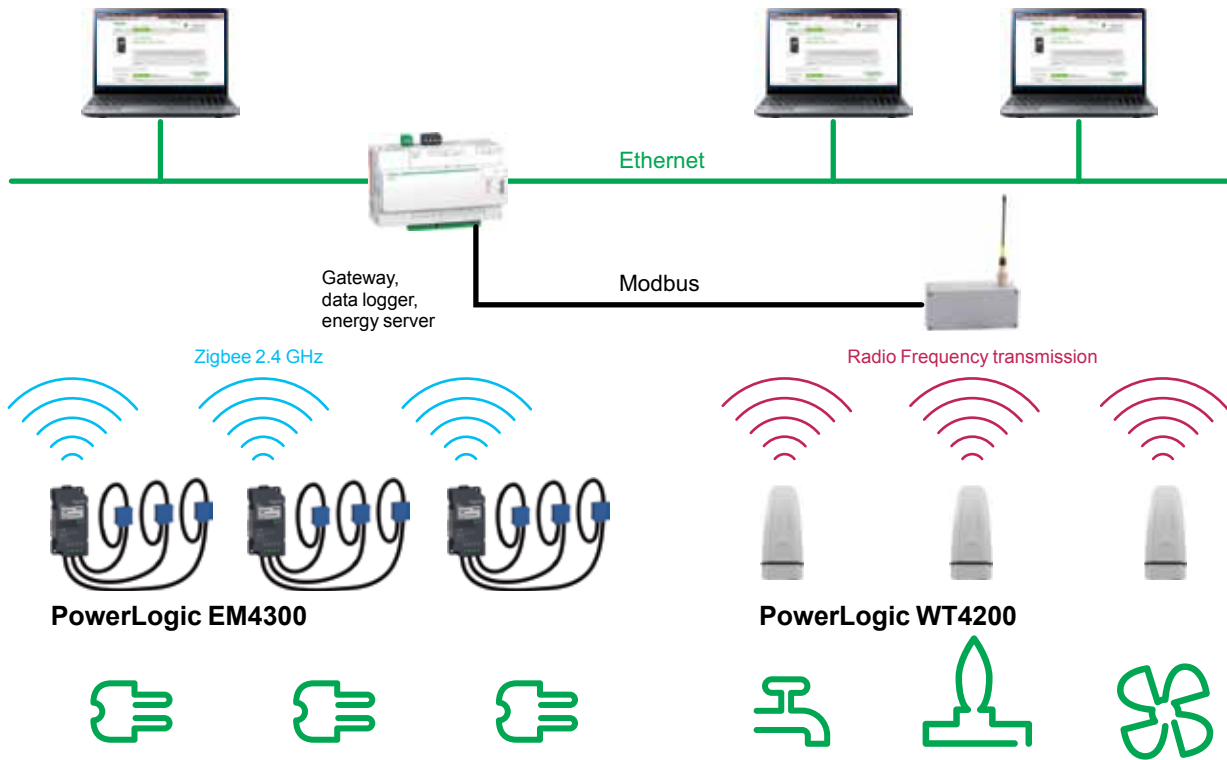
PowerLogic WT4200

PowerLogic wireless range is designed to retrofit existing switchboards, and enhance energy efficciency of buildings in operation for many years, by:
■ Monitoring energy consumption, to detect potential savings.
■ Monitoring operation of the electrical system, to optimize service to the building occupants.

■ PowerLogic EM4300 meters collect a broad scope of electrical data, from the distribution line they are fitted on.

■ PowerLogic WT 4200-transmitters collect data from various meters (water, air, gas, steam etc.) with pulse outputs.

Collected data from both these sources are transmitted to a data concentrator, which enables their reading by various energy management services and software.

For data concentrators of various types, see:
■ Com'X for Ethernet networks
http://www.schneider-electric.com/products/ww/en/82258-energy-and-power-digitization/82259-interfaces-and-gateways/62072-enerlinx-comx/
■ SmartStruXure Lite MPM managers for BACnet, EnOcean, CANbus nest works
http://www.schneider-electric.com/products/ww/en/1200-building-management-system/1210-building-management-systems/62191-smartstruxure-lite-solution/?BUSINESS=2

PowerLogic EM4300
Wireless metering system (cont.)

DB407247
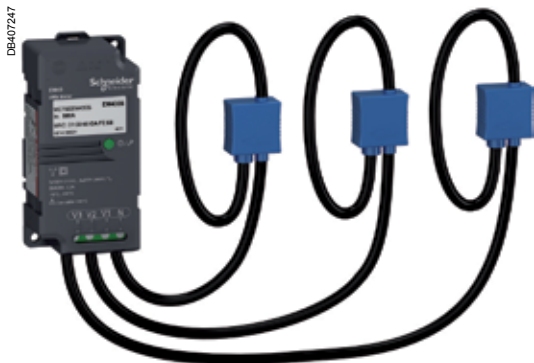
Functions
Electrical circuits and loads monitoring, through a combination of power and enerrgy metering with wireless communication.

Features and benetits
■ Installation time and therefore total cost of ownership is minimized thanks to:
□ wireless communication.
□ attached flexible current sensors, immediately fitted around any cable or bar without disconnection. Power-off time to fit several, meters in a switchboard is a matter of minutes.
■ Equipment can be scaled over time, according to savings fields identification, or other matters of interest.
■ Broad scope of collected data make PowerLogic EM4300 of high added-value for:
□ energy management.
□ energy cost allocations.
□ electrical network management and supervision.

Collected information
■ Energy: active, reactive, apparent, phase by phase and aggregated.
■ Active, reactive and apparent powers, power factor.
■ RMS Voltage and frequency.
■ Maximum RMS current and minimum RMS voltage over the last minutes (1 to 30).

Wireless data transmission
■ Zigbee Pro HA protocol.
■ 2.4 GHz radio frequency.
■ Maximum power: 10 mW (10 dBm).
■ Compatible with Com'X and MPM gateways, data loggers and energy servers.

RF Operating range
The recommended distances between the meter and the receiver are shown below:

DB407250

≤ 5 m (16 ft)

≤ 10 m (32 ft)
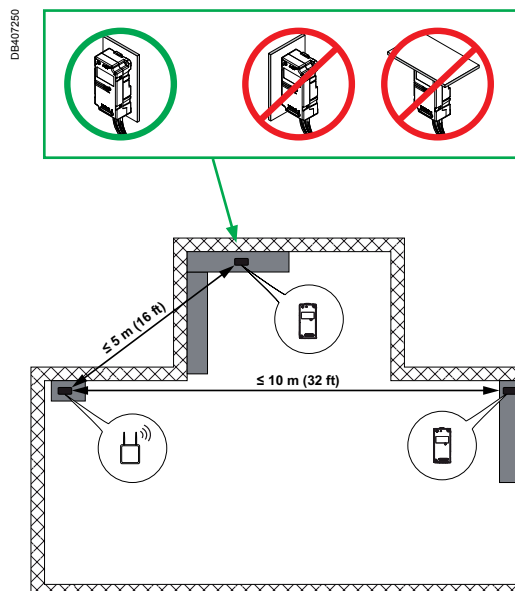
■ Wireless meters are inside electrical switchboards.
■ Wireless receivers are located in the technical room with up to 20 meters range.
■ Location of each element has to match distances as described on the picture.
■ All barriers, walls or pipes have to be considered during the installation. Moving an element by few centimers can increse or decrease the wireless transmission performance.
■ Checking the LQI (Link Quality Index) is recommended to build a robust network.

Note: Do not install the meter if there is a solid concrete wall between the meter and the gateway.

Certain installation locations or scenarios should be avoided.
■ Do not install the meter in front of or close to metallic parts, which may reduce the efficiency of the embedded antenna.
■ Do not install in a location that directly blocks the antenna on the meter.

PowerLogic EM4300
Wireless metering system (cont.)

Commercial reference numbers

Model	Current rating	Current sensor inner Ø	Ref. number
EM4302	200 A	55 mm (2.17 in)	**METSEEM4302**
EM4305	500 A	55 mm (2.17 in)	**METSEEM4305**
EM4310	1000 A	125 mm (4.92 in)	**METSEEM4310**
EM4320	2000 A	125 mm (4.92 in)	**METSEEM4320**

Technical characteristics

Control power	
Powered by L1-N measured input voltage	90 V to 300 V - 50/60 Hz
Maximum supply current	4 A
Maximum burden	2.0 W
Measurement characteristics	
Input voltage	90 V to 300 V
Frequency range	50/60 Hz
Current range	0 % to 120 % of rated value (200, 500, 1000 or 2000 A)
Current sensors	3 attached to the meter and calibrated as a single unit
Accuracy	1 % on active energy (3-phase with neutral)
Mechanical characteristics	
Degree of protection (for indoor use only, not suitable for wet locations)	IP20
	IK06
Insulation	Class II (IEC 61010-1 CAT III 300 V)
Environmental characteristics	
Operating temperature	-10°C to 55°C (14°F to 131°F)
Moisture withstand	5 % to 90 % relative humidity, non-condensing, maximum dewpoint 38°C (100°F)
Pollution degree	2
Voltage surges	Category III
Altitude	2000 m (6562 ft) above sea level
Standards compliance	
Safety	IEC/EN 61010-1 ed. 3, UL 61010-1 ed. 3
Electromagnetic compatibility	EN 61326-1:2013
Wireless communication	FCC CFR Part 15, subparts and C

PowerLogic EM4300
Wireless metering system (cont.)

Mounting
■ DIN-rail or flat surface.
■ Flexible current sensors around conductor to be monitored.
Max inner Ø 55 or 125 mm. For safe and correct mounting, refer to the installation guide.

Dimensions
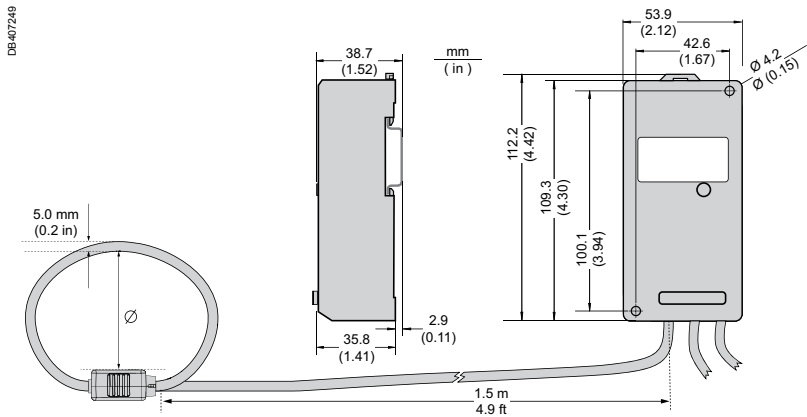
Model	I (A)	Ø (mm / in)	Weight
EM4302	200	55 / 2.17	*
EM4305	500	55 / 2.17	*
EM4310	1000	125 / 4.92	*
EM4320	2000	125 / 4.92	*

*Please consult your Schenider Electric representative.

EM4000 series
Functions and characteristics

EM4000 series multi-circuit energy meter

The compact PowerLogic EM4000 series multi-circuit energy meter from Schneider Electric enables reliable monitoring building electrical loads iwith a low installation cost-per-point by combining revenue-accurate electricity sub-metering with advanced communications technology.

The EM4000 is ideal for departmental metering applications and M&V within office towers, condominiums, apartment buildings, shopping centres and other multi-user environments, or small-footprint retail.

The PowerLogic EM4000 series meters monitor up to 24 meter points with a single device. Multiple meters can be combined to support an unlimited number of points.

Two meter models offer a choice of CTs and installation options:

- PowerLogic EM4033: 333 mV, split-core CTs
- PowerLogic EM4080: 80 mA solid -core CTs

Applications
- Energy management.
- Energy cost allocation.
- Utility bill verification.

Main characteristics

Compact, maintenance-free design
Requires no floor space

Hi-density, flexible connection
From single-pole to single- or three-phase metering -- supports up to 24 circuits.
Select the connection type using an intuitive configuration tool.

Direct connection
For 100 - 300 V ac L-N electrical distribution systems:
120/240 V, 120/208 V, 277/480 V

Multiple CT types
Support a variety of needs in both new and retrofit installations.
1/3 V output CT option does not require shorting blocks, making it the ideal choice for retrofit installations.

No rewiring required
Use existing wiring to connect to existing panels.

Integrated communications networks.
Onboard Ethernet or RS-485 allows for easy integration into existing communications networks.

Part numbers

Model	Description	Part number
EM4033	24 x 333 mV inputs, 120V control power 60 Hz	METSEEM403316
	24 x 333 mV inputs, 277V control power 60 Hz	METSEEM403336
EM4080	24 x 80 mA inputs, 120V control power 60 Hz	METSEEM408016
	24 x 80 mA inputs, 277V control power 60 Hz	METSEEM408036
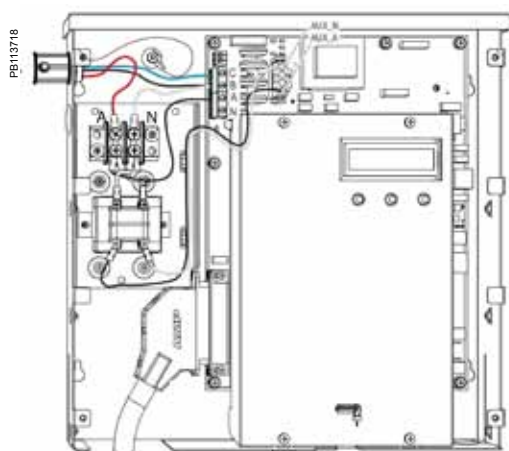
PowerLogic EM4000 meter 480Y/277V three-phase wye service connection

Selection guide		EM4033	EM4080
General			
Use on LV systems		■	■
Accuracy	+/- 0.5%	■	■
Accuracy compliance	ANSI C12.1 and C12.20 Class 0.5; IEC 62053-22, Class 0.5S	■	■
Maximum circuits: single-pole / single phase / three-phase	24 / 12 / 8	■	■
Instantaneous rms values			
Energy	real, kWh received/delivered	■	■
	reactive, kvarh received/delivered	■	■
	apparent, VAh	■	■
Voltage		■	■
Pulse counts		■	■
Voltage and current	V rms, I rms per phase	■	■
Power	real, reactive, apparent	■	■
Power factor		■	■
Measurements available for data logging			
Energy	real, kWh received/delivered	■	■
	reactive, kvarh received/delivered	■	■
	apparent, VAh	■	■
Voltage		■	■
Display			
Backlit LCD display	2 lines of 16 characters	■	■
Optional remote modular display available		■	■
Communication			
Ethernet port		■	■
MODBUS-RTU over RS-485		■	■
Pulse inputs	2	■	■
Protocols: Modbus TCP/IP, HTTP, BACnet/IP, FTP, and SNTP		■	■
Installation options			
0.333 V CTs		■	
80 mA CTs			■
Split core CT		■	
Solid core CT		■	■

Legend:
1 Cover screw location
2 Meter point input connector
3 Cable connector
4 Mounting keyhole
5 Ingress punch-outs
6 Earth stud
6 Sense voltage terminal block
8 Control voltage terminal block
9 Fuse
10 Control voltage jumper
11 RTU interface
12 Display
13 Remote display connector
14 Serial RS232
15 Ethernet port
16 Pulse in terminal blocks
17 Pulse out connector

PowerLogic EM4033 and PowerLogic EM4080 internal view.

EM4000 series
Functions and characteristics (cont.)

Electrical characteristics		
Input-voltage characteristics	Inputs	V1, V2, V3, Vn
	Measured voltage	80 - 480 V AC L-L without PTs Up to 999 kV with external PTs
	Frequency range	60 Hz
Mechanical characteristics		
Weight	EM4033/EM4080	approx. 4.0 kg
Dimensions	EM4033/EM4080	33.5 cm x 30.5 cm x 5.5 cm (13.125 in x 12 in x 2.125 in)
Environmental conditions		
Operating temperature		-40°C to +70°C (-40°F to +158°F)
Storage temperature		-40°C to +70°C (-40°F to +158°F)
Humidity rating		0% to 90 % RH non-condensing
Enclosure		Type 1 (indoor or enclosed outdoor use)
Altitude		3000 m (9843 ft)
Pollution degree		2
Safety and standards		
UL Certified to IEC/EA/CSA 61010-1		
CSA-C22.2 No 61010-1-04		
FCC Part 15 Class B		
ICES-003 EN55022, IEC 6100-4-5		
ANSI/TIA968-A: 2002		
Communication		
Ports		Ethernet
		MODBUS-RTU over RS-485
Pulse inputs		2
Protocols: Modbus TCP/IP, HTTP, BACnet/IP, FTP, and SNTP		
Display characteristics		
Integrated backlit LCD display		2 lines, 16 digits per line display; R / L arrow buttons select metering point; Display button cycles through measurements per point.

Schneider Electric

EM4000 series
Dimensions and connection

EM4X00, CT termination, PT module

PB113726

13.53 in.
(343.7 mm)

12.58 in.
(319.5 mm)

8.39 in.
(213.1 mm)

PT ENCLOSURE

MIN 3.50 in. (88.9 mm)

13.19 in.
(335.0 mm)

9.0 in.
(228.6 mm)

POWERHAWK
METER

2.25 in.
(5.4 mm)

7.59 in.
(189.8 mm)

SHORTING
OR
TERMINATION
ENCLOSURE

6.50 in.
(16.5mm)

No 8
SCREWS
TYPICAL

12.58 in.
(319.5mm)

EM4X00, CT termination, PT module

PB113719

EM4000 series
Accessories
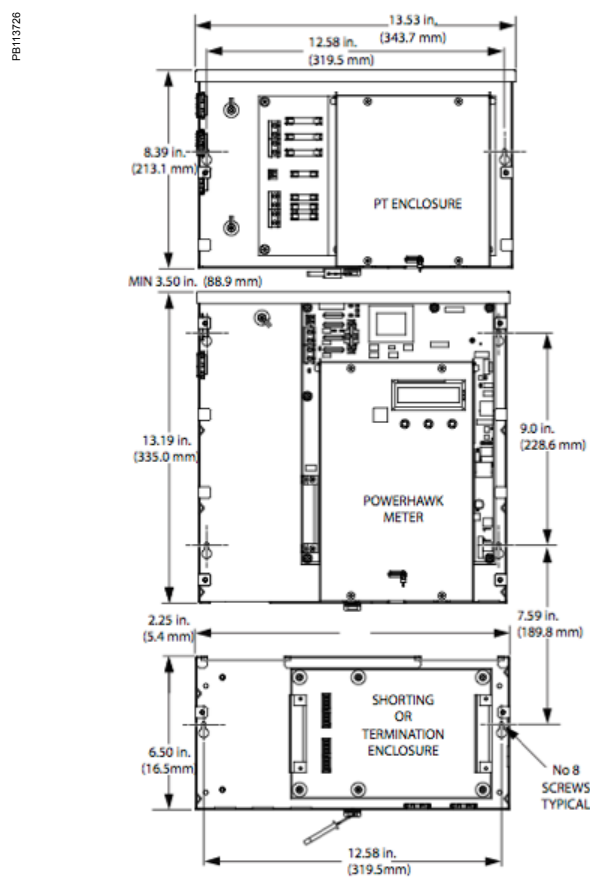
PT Module

The PT module provides step-down voltage connections to Schneider Electric PowerLogic meters for metering single-phase to three-phase voltages of 600V, 347V, or 400V, while meeting all regulatory electrical safety and ANSI 0.5 Accuracy Class standards. The PT module provides both the per-phase input metering voltages and the auxiliary input power required by Schneider Electric PowerLogic energy meters.

There are two variants of the PT module that support the following source voltages and wiring configurations:

347V Wye / 600V Delta variant supports:
- 347V, three-phase, 4-wire wye
- 600V, three-phase, 3-wire delta

480V Delta variant supports:
- 480V, three-phase, 3-wire delta

The 347V/600V PT module variant has three sense voltage potential transformers for metering. The configuration of the transformers (347V wye or 600V delta) is selected by using the jumper provided. The 480V PT module has two sense voltage potential transformers for metering. There is a separate auxiliary power transformer in both variants to operate the meter. All voltage inputs are fused.

PowerHawk PT module specifications			
Dimensions	Height	8.39 in. (21.31 cm)	
	Width	13.53 in. (34.37 cm)	
	Depth	2.125 in. (5.4 cm)	
	Weight	112.5 lb (5.67 kg)	
Fuse ratings	High voltage inputs	F1	T315 mA, 1000V
		F2	T315 mA, 1000V
		F3	T315 mA, 1000V
	Voltage inputs	F4	T250 mA, 250V
		F5	T250 mA, 250V
		F6	T250 mA, 250V
		F7	T250 mA, 250V
Transformer specifications	Input voltage	600V	Voltage tolerance: +/-10%
		480V	Voltage tolerance: +/-10%
		347V	Voltage tolerance: +/-10%
	Output voltage	120V	Accuracy: 0.3%
Environmental	Operating temperature	-40 to158°F (-40 to 70°C)	
	Operating humidity	5% to 90% non-condensing	
	Usage environment	Indoor or enclosed outdoor environment	
	Maximum altitude	9843 ft (3000 m)	
	Pollution degree	2	

Part number	Description
METSEPTMOD480	480 V PT Module for EM4X00 meter
METSEPTMOD347600	347 V/600 V PT Module for EM4X00 meter

EM4000 series
Accessories

PB113725

CT Module

PowerLogic 4080 meters have 2 shorting options that provide a seamless and sealable mechanical package. The CT Shorting Module provides CT connections via the color coded 25 pair cable routed into the breaker panel. All CTs are shorted at the same time for safe removal of the meter for maintenance when the electrical circuits are still live.

The CT Termination Module has the same shorting ability, but provides CT connections via 24 2 position screw down terminal blocks. Individual pairs are then routed from the CT Termination Module to 1 or more breaker panels via conduit knock outs provided on the module. Thus eliminating the need for a splitter box to route CT cables to multiple panels.

Part number	Description
METSECTTERM	CT Termination Module for EM4X00 meter
METSECTSHORT	CT Shorting Module for EM4X00 meter

Converter

The 5A:80mA converter is useful in applications where there are existing 5A CT's integrated into large motors or switch gear. The 5A:80mA converter matches the 5A secondary of the load to the 80mA input of the meter. In Billing Grade applications, the 5A:80mA converter is also used to connect regulatory grade large aperture, large amperage CT's with 5A secondaries to the 80mA of PowerLogic 4X80 meters.

Part number	Description
METSECONV580	5 A : 80 mA converter for EM4X00 meter

PB113729

The 5 A to 80 mA converter

PB111056
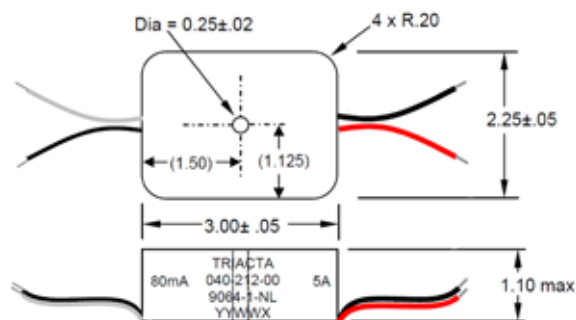
The 5 A to 80 mA converter dimensions

EM4000 series
Accessories and dimensions

PowerLogic EM4033 split-core 0.333V current transformer
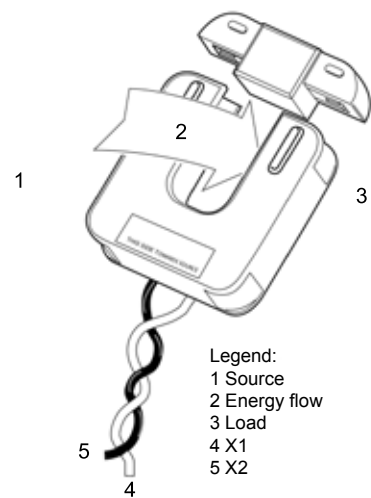
Legend:
1 Source
2 Energy flow
3 Load
4 X1
5 X2

CTs

■ Model 8 (80/100 mA Secondary)
■ Window Size: 3.25" Diameters
■ Application: Metering
■ Frequency: 50-400 Hz
■ Insulation Level: 600 Volts, 10Kv BIL Full Wave
■ Flexible leads available for all case configurations. Flexible leads are UL 1015 105˚C, C.S.A approved #16 AWG, 24" long standard length. Non-□standard lengths are available upon request.
■ Terminals are brass studs No. 8-32 UNC with one flat washer, one lock washer and one nut each. Terminals are only available on the square case configuration.
■ Mounting brackets kits for the Model 8SHT are available when required.
■ Approximate weight: 3 lbs. (1.36 kg)

Part number	Description
METSECT80200	CT, solid core, 200 A primary, 80 mA secondary, for use with EM4X80 multi-circuit meter
METSECT80400	CT, solid core, 400 A primary, 80 mA secondary, for use with EM4X80 multi-circuit meter
METSECT80600	CT, solid core, 600 A primary, 80 mA secondary, for use with EM4X80 multi-circuit meter
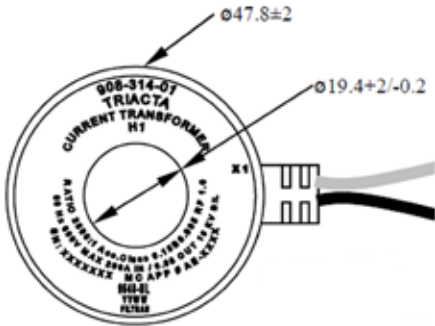
200 A CT

200 A CT dimensions
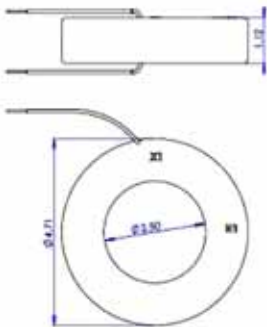
400 A CT

400 A CT dimensions

METSECT80600 600 A 80 mA CT
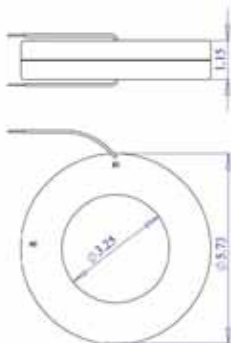
600 A 80 mA CT dimensions

EM4800 series
Functions and characteristics

EM4800 series multi-circuit energy meter front (above), installed in panel (below)

The compact PowerLogic EM4800 series multi-circuit energy meter from Schneider Electric enables reliable metering of individual tenants with a low installation cost-per-point by combining revenue-accurate electricity sub-metering with advanced communications technology.

The EM4800 is ideal for multi-tenant or departmental metering applications within office towers, condominiums, apartment buildings, shopping centres and other multi-user environments.

The PowerLogic EM4800 series meters monitor up to 24 tenants with a single device. Multiple meters can be combined to support an unlimited number of suites.

Three meter models offer a choice of CT secondary ratings and installation options:

PowerLogic EM4805: 5 A, split- or solid-core CTs
PowerLogic EM4880: 80 mA, solid-core CTs

Applications
Multi-tenant metering.
Energy management.
Energy cost allocation.
Utility bill verification.

Main characteristics

Compact, maintenance-free design
Requires no floor space.

Hi-density, flexible connection
From single-pole to single- or three-phase metering -- supports up to 24 circuits.
Select the connection type using an intuitive configuration tool.

Direct connection
For 100 - 300 V ac L-N electrical distribution systems:
120/240 V, 120/208 V, 230/240 V, 220/380 V, 240/415 V, 277/480 V

Multiple CT types
Support a variety of needs in both new and retrofit installations.
1/3 V output CT option does not require shorting blocks, making it the ideal choice for retrofit installations.

No rewiring required
Use existing wiring to connect to existing panels.

Integrated communications
Onboard Ethernet and modem allows for easy integration into existing communications networks.

Part numbers

Model	Description	Part number
EM4805	24 x 5 A inputs, 230/240 V control power, 50 Hz	**METSEEM480525**
	24 x 5 A inputs, 120 V control power, 60 Hz	**METSEEM480516**
EM4880	24 x 80 mA inputs, 230/240 V control power, 50 Hz	**METSEEM488025**
	24 x 80 mA inputs, 120 V control power, 60 Hz	**METSEEM488016**

EM4800 series
Functions and characteristics (cont.)
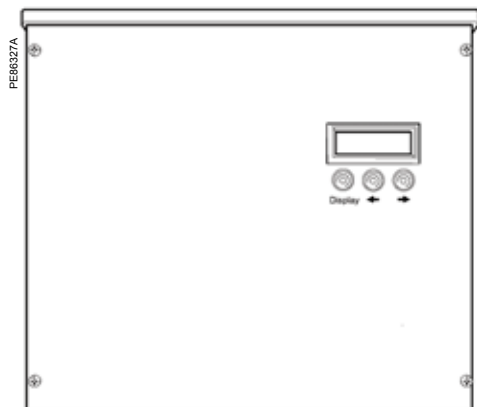
PowerLogic EM4800 series digital panel meter.

Selection guide		EM4805	EM4880
General			
Use on LV systems		■	■
Accuracy	+/- 0.5%	■	■
Accuracy compliance	ANSI C12.1 and C12.20 Class 0.5; IEC 62053-22, Class 0.5S	■	■
Maximum circuits: single-pole / single phase / three-phase	24 / 12 / 8	■	■
Instantaneous rms values			
Energy	real, kWh received/delivered	■	■
	reactive, kvarh received/delivered	■	■
	apparent, VAh	■	■
Voltage		■	■
Pulse counts		■	■
Voltage and current	V rms, I rms per phase	■	■
Power	real, reactive, apparent	■	■
Power factor		■	■
Measurements available for data logging			
Energy	real, kWh received/delivered	■	■
	reactive, kvarh received/delivered	■	■
	apparent, VAh	■	■
Voltage		■	■
Display			
Backlit LCD display	2 lines of 16 characters	■	■
Optional remote modular display available		■	■
Communication			
Ethernet port		■	■
V.90 modem port		■	■
Pulse inputs	2	■	■
Protocols: Modbus TCP/IP, HTTP, BACnet/IP, FTP, and SNTP		■	■
Installation options			
5 A CTs		■	
80 mA CTs			■
Split core CT		■	
Solid core CT		■	■
Remore modular display		■	■

Schneider Electric

EM4800 series
Functions and characteristics (cont.)

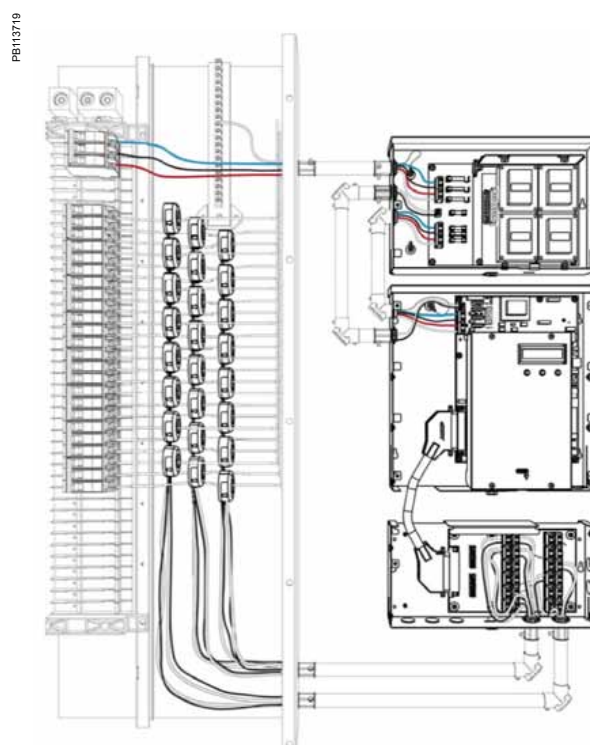| Electrical characteristics		
Input-voltage characteristics	Inputs	V1, V2, V3, Vn
	Measured voltage	80 - 480 V AC L-L without PTs Up to 999 kV with external PTs
	Frequency range	50/60 Hz
Mechanical characteristics		
Weight	EM4805	approx. 5.4 kg
	EM4833 / EM4880	approx. 4.0 kg
Dimensions	EM4805	33.5 cm x 44 cm x 5.5 cm (13.125 in x 17 in x 2.125 in)
	EM4833 / EM4880	33.5 cm x 30.5 cm x 5.5 cm (13.125 in x 12 in x 2.125 in)
Environmental conditions		
Operating temperature		-40°C to +70°C (-40°F to +158°F)
Storage temperature		-40°C to +70°C (-40°F to +158°F)
Humidity rating		0% to 90 % RH non-condensing
Enclosure		Type 1 (indoor or enclosed outdoor use)
Altitude		3000 m (9843 ft)
Pollution degree		2
Safety and standards		
UL Certified to IEC/EA/CSA 61010-1		
CSA-C22.2 No 61010-1-04		
FCC Part 15 Class B		
ICES-003 EN55022, IEC 6100-4-5		
ANSI/TIA968-A: 2002		
Communication		
Ports		Ethernet
		V.90 modem
Pulse inputs		2
Protocols: Modbus TCP/IP, HTTP, BACnet/IP, FTP, and SNTP		
Display characteristics		
Integrated backlit LCD display		2 ines, 16 digits per line display; R / L arrow buttons select metering point; Display button cycles through measurements per point.

Power Meter Series PM3200
Functions and characteristics

Power Meter Series PM3200

Power Meter Series PM3255

Front of meter parts
1 Control power
2 Display with white backlit
3 Flashing yellow meter indicator (to check accuracy)
4 Pulse output for remote transfer (PM3210)
5 ESC Cancellation
6 OK Confirmation
7 △ Up
8 ▽ Down

This PowerLogic Power meter offers basic to advanced measurement capabilities. With compact size and DIN rail mounting, the PM3200 allows mains and feeders monitoring in small electrical cabinets. Combined with current transformers and voltage transformers, these meters can monitor 2-, 3- and 4-wire systems. The graphic display has intuitive navigation to easily access important parameters.

Four versions are available offering basic to advanced applications:
■ PM3200
□ Electrical parameters I, In, U, V, PQS, E, PF, Hz
□ Power/current demand
□ Min/max.
■ PM3210
□ Electrical parameters I, In, U, V, PQS, E, PF, Hz, THD
□ Power/current demand, peak demand
□ Min/max.
□ 5 timestamped alarms
□ kWh pulse output
■ PM3250
□ Electrical parameters I, In, U, V, PQS, E, PF, Hz, THD
□ Power/current demand, peak demand
□ Min/max.
□ 5 timestamped alarms
□ LED to indicate communications
□ RS485 port for Modbus communication
■ PM3255
□ Electrical parameters I, In, U, V, PQS, E, PF, Hz, THD
□ Power/current demand and peak demand
□ Flexible power and energy data logging
□ Min/max. and 15 timestamped alarms
□ LED to indicate communications
□ Up to 4 tariffs management
□ 2 digital inputs, 2 digital outputs
□ Memory for load profile (demand 10mn to 60mn)
□ RS485 port for Modbus communication

■ Innovative design makes the meters smart and simple:
■ Easy to install for panel builders
■ Easy to commission for contractors and installers
■ Easy to operate for end users

Applications

Cost management applications
■ Bill checking
■ Sub-billing, including WAGES view
■ Cost allocation, including WAGES view

Network management applications
■ Panel instrumentation
■ Up to 15 onboard timestamped alarms to monitor events
■ Easy integration with PLC system by input/output interface

Market segments
■ Buildings
■ Industry
■ Data centres and networks
■ Infrastructure (airports, road tunnels, telecom)

Part numbers

Meter model and description	Performance	Part no.
PM3200 basic power meter	Basic power meter	**METSEPM3200**
PM3210 power meter with pulse output	Power, current, THD, peak demand	**METSEPM3210**
PM3250 power meter with RS485 port	Power, current, THD, peak demand	**METSEPM3250**
PM3255 power meter plus 2 digital inputs, 2 digital outputs with RS485 port	Power, current, THD, peak demand, memory for load profile	**METSEPM3255**

Power Meter Series PM3200
Functions and characteristics (cont.)

Function guide		PM3200 Range			
		PM3200	PM3210	PM3250	PM3255
Performance standard					
IEC61557-12 PMD/Sx/K55/0.5		■	■	■	■
General					
Use on LV and HV systems		■	■	■	■
Number of samples per cycle		32	32	32	32
CT input 1A/5A		■	■	■	■
VT input		■	■	■	■
Multi-tariff		4	4	4	4
Multi-lingual backlit display		■	■	■	■
Instantaneous rms values					
Current, voltage	Per phase and average	■	■	■	■
Active, reactive, apparent power	Total and per phase	■	■	■	■
Power factor	Total and per phase	■	■	■	■
Energy values					
Active, reactive and apparent energy; import and export		■	■	■	■
Demand value					
Current, power (active, reactive, apparent) demand; present		■	■	■	■
Current, power (active, reactive, apparent) demand; peak			■	■	■
Power quality measurements					
THD Current and voltage			■	■	■
Data recording					
Min/max of the instantaneous values		■	■	■	■
Power demand logs					■
Energy consumption log (day, week, month)					■
Alarms with time stamping			5	5	15
Digital inputs/digital outputs			0/1		2/2
Communication					
RS-485 port				■	■
Modbus protocol				■	■

Power Meter Series PM3210

Connectivity advantages	
Programmable digital input	External tariff control signal (4 tariffs) Remote Reset partial counter External status like breaker status Collect WAGES pulses
Programmable digital output	Alarm (PM3255) kWh pulses
Graphic LCD display	Backlit graphic display allows smart navigation in relevant information and in multi languages
Communication	Modbus RS485 with screw terminals allows connection to a daisy chain

Power Meter Series PM3200
Functions and characteristics (cont.)

Specifications	PM3200 Range
Type of measurement	True rms up to the 15th harmonic on three-phase (3P,3P+N) and single-phase AC systems. 32 samples per cycle
Measurement accuracy	
Current with x/5A CTs	0.3% from 0.5A to 6A
Current with x/1A CTs	0.5% from 0.1A to 1.2A
Voltage	0.3% from 50V to 330V (Ph-N), from 80V to 570V (Ph-Ph)
Power factor	±0.005 from 0.5A to 6A with x/5A CTs; from 0.1A to 1.2A with x/1A CTs and from 0.5L to 0.8C
Active/Apparent Power with x/5A CTs	Class 0.5
Active/Apparent Power with x/1A CTs	Class 1
Reactive power	Class 2
Frequency	0.05% from 45 to 65Hz
Active energy with x/5A CTs	IEC62053-22 Class 0.5s
Active energy with x/1A CTs	IEC62053-21 Class 1
Reactive energy	IEC62053-23 Class 2
Data update rate	
Update rate	1s
Input-voltage characteristics	
Measured voltage	50V to 330V AC (direct / VT secondary Ph-N) 80V to 570V AC (direct / VT secondary Ph-Ph) up to 1MV AC (with external VT)
Frequency range	45Hz to 65Hz
Input-current characteristics	
CT primary	Adjustable from 1A to 32767A
CT secondary	1A or 5A
Measurement input range with x/5A CTs	0.05A to 6A
Measurement input range with x/1A CTs	0.02A to 1.2A
Permissible overload	10A continuous, 20A for 10s/hour
Control Power	
AC	100/173 to 277/480V AC (+/-20%), 3W/5VA; 45Hz to 65Hz
DC	100 to 300V DC, 3W
Input	
Digital inputs (PM3255)	11 to 40V DC, 24V DC nominal, <=4mA maximum burden, 3.5kVrms insulation
Output	
Digital output (PM3210)	Optocoupler, polarity sensitive, 5 to 30V, 15mA max, 3.5kVrms insulation
Digital outputs (PM3255)	Solid state relay, polarity insensitive, 5 to 40V, 50mA max, 50Ω max, 3.5kVrms insulation

Schneider Electric

Power Meter Series PM3200
Functions and characteristics (cont.)

Specifications (continued)	PM3200 Range
Mechanical characteristics	
Weight	0.26kg
IP degree of protection (IEC60529)	IP40 front panel, IP20 meter body
Dimension	90 x 95 x 70mm
Environmental conditions	
Operating temperature	-25 ºC to +55 ºC
Storage temperature	-40 ºC to +85 ºC
Humidity rating	5 to 95% RH at 50ºC (non-condensing)
Pullution degree	2
Metering category	III, for distribution systems up to 277/480VAC
Dielectric withstand	As per IEC61010-1, Doubled insulated front panel display
Altitude	3000m max
Electromagnetic compatibility	
Electrostatic discharge	Level IV (IEC61000-4-2)
Immunity to radiated fields	Level III (IEC61000-4-3)
Immunity to fast transients	Level IV (IEC61000-4-4)
Immunity to surge	Level IV (IEC61000-4-5)
Conducted immunity	Level III (IEC61000-4-6)
Immunity to power frequency magnetic fields	0.5mT (IEC61000-4-8)
Conducted and radiated emissions	Class B (EN55022)
Safety	
	CE as per IEC61010-1 [1]
Communication	
RS485 port	Half duplex, from 9600 up to 38400 bauds, Modbus RTU (double insulation)
Display characteristics	
Dimensions (VA)	43mm x 34.6mm
Display resolution	128 x 96 dots
Standard compliance	
	IEC61557-12, EN61557-12 IEC61010-1, UL61010-1 IEC62052-11, IEC62053-21, IEC62053-22, IEC62053-23 EN50470-1, EN50470-3

(1) Protected throughout by double insulation

Power Meter Series PM3250

Multi-tariff capability

The PM3200 range allows arrangement of kWh consumption in four different registers. This can be controlled by:
■ Digital Inputs. Signal can be provided by PLC or utilities
■ Internal clock programmable by HMI
■ Through communication

This function allows users to:
■ Make tenant metering for dual source applications to differentiate backup source or utility source
■ Understand well the consumption during working time and non working time, and between working days and weekends
■ Follow up feeders consumption in line with utility tariff rates

Power Meter Series PM3200
Dimensions and connection
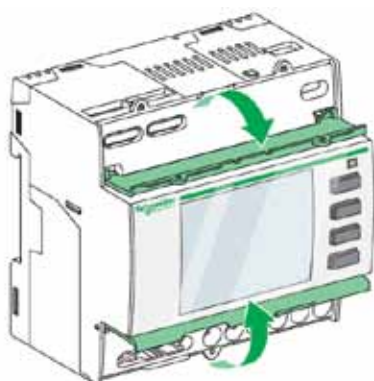
PM3200 top and lower flaps

PM3200 series dimensions
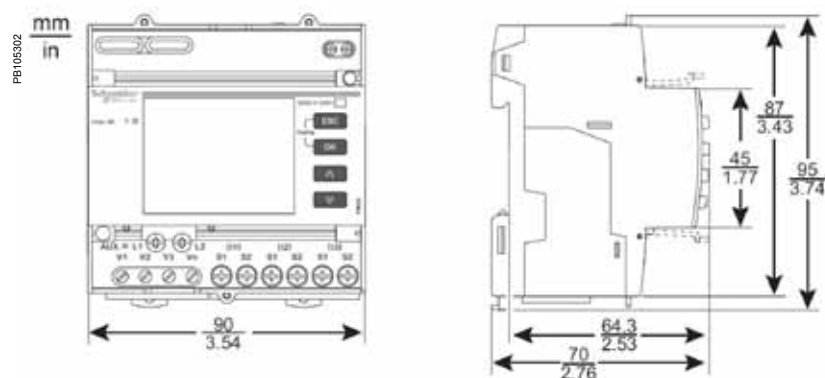
PM3200 series easy installation

PM5350
Functions and characteristics
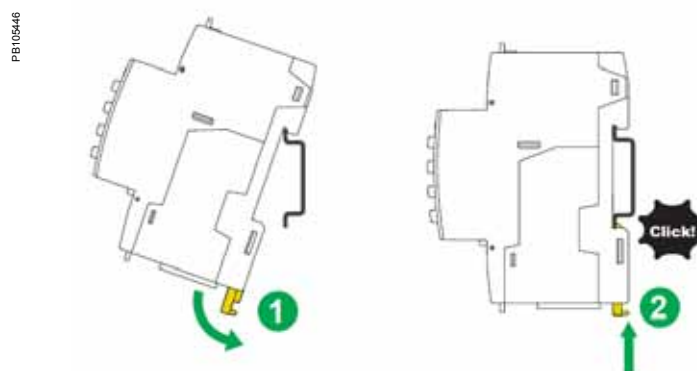
PowerLogic PM5350.

The PowerLogic PM5350 power meter offers all the measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit extending only 44 mm behind the mounting surface.

With its large display, all three phases and neutral can be monitored simultaneously. The bright, anti-glare display features large characters and powerful backlighting for easy reading even in extreme lighting conditions and viewing angles. The meter menus are understood by all, with the availability of three languages (English, Chinese, Spanish) included standard in the PM5350.

Its compact size and high performance make the PowerLogic PM5350 suitable for many applications.

Applications
Panel instrumentation.
Cost allocation or energy management.
Electrical installation remote monitoring.
Alarming with under/over, digital status, control power failure, meter reset, self diagnostic issue.
Circuit Breaker monitoring and control with relay outputs and whetted digital inputs.

Main characteristics

Easy to install
Mounts using two clips, no tools required. Ultra compact meter with 44mm depth connectable up to 480 VL-L without voltage transformers for installations compliant with category III, as per IEC 61010-1. See specification table for UL voltage limits.

Easy to operate
Intuitive navigation with self-guided, language selectable menus, six lines, four concurrent values. Two LEDs on the meter face help the user confirm normal operation (heartbeat/communications indicator LED: green and other LED orange, customizable either for alarms or energy pulse outputs).

Easy circuit breaker monitoring and control
The PM5350 provides two relay outputs (high performance) with capability to command most of the circuit breaker coils directly. In addition, monitored switches can be wired directly to the meter without external power supply.

System status at a glance
Bright, anti-glare, backlit display plus two LEDs; orange for energy pulse or alarm and green for heartbeat/communications indication.

IEC 62053-22 class 0.5S accuracy for active energy
Accurate energy measurement for cost allocation.

Power Quality analysis
The PM5350 offers THD and TDD measurements as standard. Total Demand Distortion is based on a point of common coupling (PCC), which is a common point that each user receives power from the power source. The TDD compares the contribution of harmonics versus the maximum demand load.

Load management
Peak demands with time stamping are provided. Predicted demand values can be used in basic load shedding applications.

Alarming with time stamping
Over 30 alarm conditions, such as under/over conditions, digital input changes, and phase unbalance inform you of events. A time-stamped log maintains a record of the last 40 alarm events.

Load timer
Load timer setpoint adjustable to monitor and advise maintenance requirements.

Performance Standard Meets IEC 61557-12 PMD/S/K70/0.5.

Part numbers

PowerLogic PM5350 meters	
PowerLogic PM5350	METSEPM5350

PM5350
Functions and characteristics (cont.)

General		
Use on LV and MV systems	■	
Basic metering with THD and min/max readings	■	

Instantaneous rms values		
Current	Total, Phases and neutral	■
Voltage	Total, Ph-Ph and Ph-N	■
Frequency		■
Real, reactive, and apparent power	Total and per phase	Signed
True Power Factor	Total and per phase	Signed, Four Quadrant
Displacement PF	Total and per phase	Signed, Four Quadrant
Unbalanced I, VL-N, VL-L		■

Energy values		Stored in non-volatile memory
Accumulated Active, Reactive and Apparent Energy	Received/Delivered; Net and absolute;	■

Demand values		
Current average	Present, Last, Predicted, Peak, & Peak Date Time	■
Active power	Present, Last, Predicted, Peak, & Peak Date Time	■
Reactive power	Present, Last, Predicted, Peak, & Peak Date Time	■
Apparent power	Present, Last, Predicted, Peak, & Peak Date Time	■
Peak demand with timestamping D/T for current & powers	■	■
Demand calculation	Sliding, fixed and rolling block, thermal	■	■
Synchronization of the measurement window	■	■

Other measurements		
I/O timer	■	■
Operating timer	■	■
Active load timer	■	■
Alarm counters	■	■

Power quality measurements		
THD, thd (Total Harmonic Distortion)	I,VLN, VLL	
TDD, thd (Total Demand Distortion)	■	

Data recording		
Min/max of instantaneous values, plus phase identification	■	■
Alarms with 1s timestamping	Standard 29; Unary 4; Digital 4	
Alarms stored in non-volatile memory	40 events	■

Inputs/Outputs		
Digital inputs	4 (DI1, DI2, DI3, DI4)	
Digital outputs	2 relay outputs (DO1, DO2)	

Display		
White backlit LCD display, 6 lines, 4 concurrent values	■	
IEC or IEEE visualization mode	■	

Communication		
Modbus RTU, Modbus ASCII, Jbus Protocol	■	
Firmware update via RS485 serial port (DLF3000 via the Schneider Electric website: www.schneider-electric.com)	■	

Schneider Electric

Front screen view of PM5350.

Electrical characteristics

Type of measurement		True rms up to the 15th harmonic on three-phase (3P, 3P + N) 32 samples per cycle, zero blind
Measurement accuracy	Current, Phase [1]	±0.30%
	Voltage, L-N [1]	±0.30%
	Power Factor [1]	±0.005
	Power, Phase	IEC 61557-12 Class 0.5; For 5 A nominal CT (for 1 A nominal CT when I > 0.15A) ±0.5% from 0.25 A to 9.0 A at COS φ = 1 ±0.6% from 0.50 A to 9.0 A at COS φ = 0.5 (ind or cap)
	Frequency [1]	±0.05%
	Real Energy	IEC 62053-22 Class 0.5S; IEC 61557-12 Class 0.5; For 5 A nominal CT (for 1 A nominal CT when I > 0.15A) ±0.5% from 0.25 A to 9.0 A at COS φ = 1 ±0.6% from 0.50 A to 9.0 A at COS φ = 0.5 (ind or cap) IEC 61557-12 Class 0.5
	Reactive Energy	IEC 62053-23 Class 3, IEC 61557-12 Class 2 For 5 A nominal CT (for 1 A nominal CT when I > 0.15A) ±2.0% from 0.25 A to 9.0 A at SIN φ = 1 ±2.5% from 0.50 A to 9.0 A at SIN φ = 0.5 (ind or cap)
Data update rate		1 second nominal (50/60 cycles)
Input-voltage	VT primary	1.0 MV AC max, starting voltage depends on VT ratio.
	U_{nom}	277 V L-N
	Measured voltage with overrange & Crest Factor	IEC: 20 to 480 V AC L-L; 20 to 277 V AC L-N, CAT III IEC: 20 to 690 V AC L-L; 20 to 400 V AC L-N, CAT II UL: 20 to 300 V AC L-L, CAT III
	Permanent overload	700 Vac L-L, 404 Vac L-N
	Impedance	10 M ωω
	Frequency range	45 to 70 Hz
Input-current	CT ratings	Primary	Adjustable 1 A to 32767 A
		Secondary	1A, 5 A nominal
	Measured voltage with overrange & Crest Factor		5 mA to 9 A
	Withstand		Continuous 20 A, 10 sec/hr 50 A, 1 sec/hr 500 A
	Impedance		< 0.3 mΩ
	Frequency range		45 to 70 Hz
	Burden		< 0.024 VA at 9 A
AC control power	Operating range	85 - 265 V AC
	Burden	4.1 VA / 1.5 W typical, 6.7 VA / 2.7 W max at 120 V AC 6.3 VA / 2.0 W typical, 8.6 VA / 2.9 W max at 230 V AC 9.6 VA / 3.5 W maximum at 265 V AC
	Frequency	45 to 65 Hz
	Ride-through time	100 mS typical at 120 V AC and maximum burden 400 mS typical at 230 V AC and maximum burden
DC control power	Operating range	100 to 300 V DC
	Burden	1.4 W typical, 2.6 W maximum at 125 V DC 1.8 W typical, 2.7 W maximum at 250 V DC 3.2 W maximum at 300 V DC
	Ride-through time	50 mS typical at 125 V DC and maximum burden
Real time clock	Ride-through time	30 seconds
Digital output	Number/Type	2 - Mechanical Relays
	Output frequency	0.5 Hz maximum (1 second ON / 1 second OFF - minimum times)
	Switching Current	250 V AC at 2.0 Amps, 200 k cycles, resistive 250 V AC at 8.0 Amps, 25 k cycles, resistive 250 V AC at 2.0 Amps, 100 k cycles, COSΦ=0.4 250 V AC at 6.0 Amps, 25 k cycles, COSΦ=0.4 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 kVrms
Status Digital Inputs	Voltage ratings	ON 18.5 to 36 V DC, OFF 0 to 4 V DC
	Input Resistance	110 k Ω
	Maximum Frequency	2 Hz (T ON min = T OFF min = 250 ms)
	Response Time	10 ms
	Isolation	2.5 kVrms
Whetting output	Nominal voltage	24 V DC
	Allowable load	4 mA
	Isolation	2.5 kVrms

(1) Measurements taken from 45 Hz to 65 Hz, 0.5 A to 9 A, 57 V to 347 V & 0.5 ind to 0.5 cap power factor with a sinusoidal wave.

PM5350
Functions and characteristics (cont.)

Mechanical characteristics

Weight		250 g
IP degree of protection (IEC 60529)		IP51 front display, IP30 meter body
Dimensions	W x H x D	96 x 96 x 44 mm (depth of meter from housing mounting flange)
		96 x 96 x 13 mm (protrusion of meter from housing flange)
Mounting position		Vertical
Panel thickness		6.35 mm maximum

Environmental characteristics

Operating temperature	Meter	-25 °C to 70 °C
	Display	-20 °C to +70 °C (Display functions to -25°C with reduced performance)
Storage temp.	Meter + display	-40 °C to +85 °C
Humidity rating		5 to 95 % RH at 50 °C (non-condensing)
Pollution degree		2
Altitude		3000 m max.

Electromagnetic compatibility

Electrostatic discharge	IEC 61000-4-2[1]
Immunity to radiated fields	IEC 61000-4-3[1]
Immunity to fast transients	IEC 61000-4-4[1]
Immunity to impulse waves	IEC 61000-4-5[1]
Conducted immunity	IEC 61000-4-6[1]
Immunity to magnetic fields	IEC 61000-4-8[1]
Immunity to voltage dips	IEC 61000-4-11[1]
Radiated emissions	FCC part 15 class A, EN 55011 Class A
Conducted emissions	FCC part 15 class A, EN 55011 Class A
Harmonics	IEC 61000-3-2[1]
Flicker emissions	IEC 61000-3-3[1]

Safety

Europe	CE, as per IEC 61010-1
U.S. and Canada	cULus as per UL61010-1, IEC 61010-1 (3rd Edition)
Measurement category (Voltage and current inputs)	Per IEC 61010-1: CAT III, 277 V L-N / 480 V L-L nominal; CAT II 400 V L-N / 690 V L-L nominal Per UL 61010-1 and CSA C22.2 No. 61010-1: CAT III, 300 V L-L
Overvoltage Category (Control power)	CAT III
Dielectric	As per IEC 61010-1 Double insulated front panel display
Protective Class	II

Communication

RS 485 port	2-Wire, 9600,19200 or 38400 baud, Parity - Even, Odd, None, 1 stop bit if parity Odd or Even, 2 stop bits if None; Modbus RTU, Modbus ASCII (7 or 8 bit), JBUS
Firmware and language file update	Update via comunication port using DLF3000 software
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 indication (configurable)

Type	Optical, amber LED
Wavelength	590 to 635 nm
Maximum pulse rate	2.5 kHz

(1) As per IEC 61557-12

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PM5350 Power Meter
Dimensions and connection

Rear of meter - open

PE86279

Rear view retainers - installation

PE86274
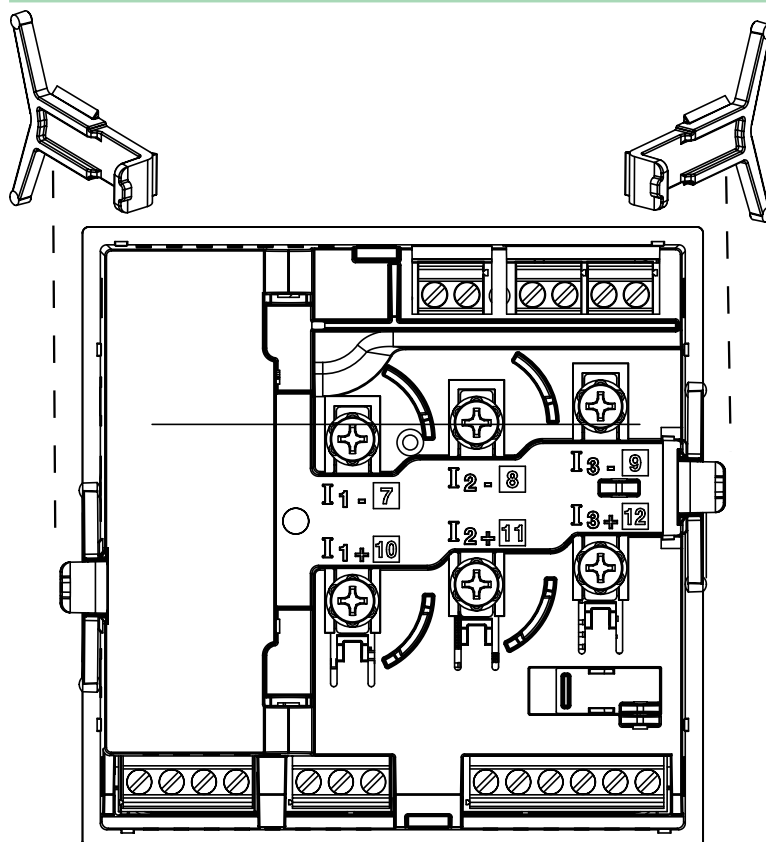
For detailed installation instructions see the product's Installation guide.

Schneider Electric

PM5350 Power Meter
Dimensions and connection (cont.)
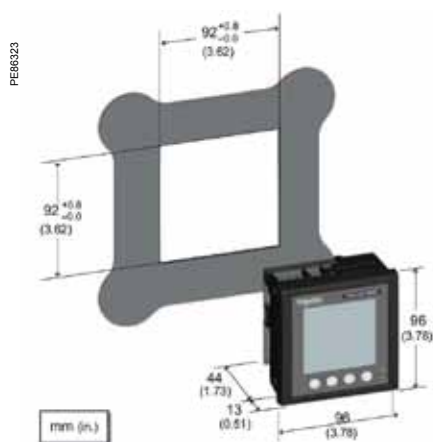
Rear view retainers - users
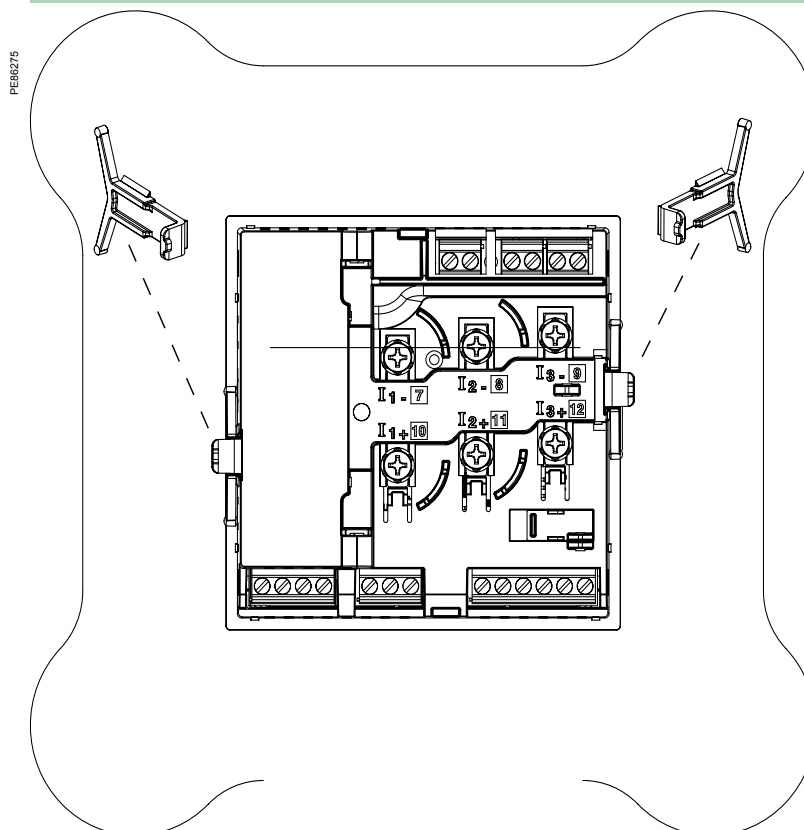
For detailed installation instructions see the product's Installation guide.
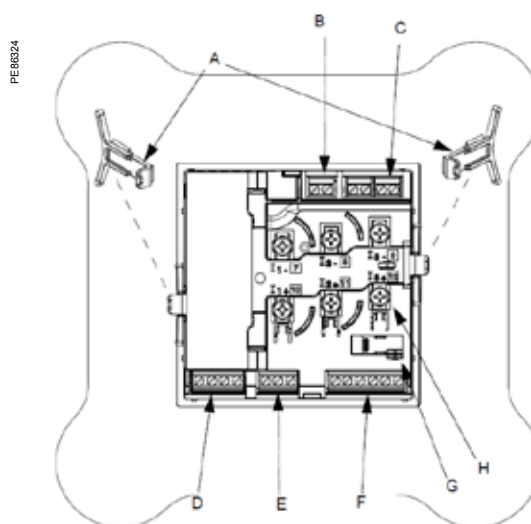
PM5350 meter parts

A Retainer clips.
B Control power supply connector.
C Voltage inputs.
D Digital outputs.
E Rs485 port (COM1).
F Digital outputs.
G Optical revenue switch.
H Current inputs.

PM5350IB / PM5350PB
Functions and characteristics

PE86278

PowerLogic PM5350IB

The PM5350IB and PM5350PB are compact multi-circuit power meters specially designed to monitor Busway power distribution systems. They provide consumption and alarm data by circuit, for up to three single phase circuits. It can also be installed in different electrical configurations, monitoring 1, 2 and 3 phase circuits. Ideal solution for cost management and sub-billing in datacenters.

With its large display, all individual circuits can be monitored simultaneously. The bright, anti-glare display features large characters and powerful backlighting for easy reading even in extreme lighting conditions and viewing angles.

Main characteristics

Easy to install
Mounts using two clips, no tools required. Ultra compact meter with 44mm depth connectable up to 480 V L-L without voltage transformers. See specification table for voltage inputs details.

Easy to operate
Intuitive navigation with self-guided, language selectable menus, six lines, four concurrent values.

System status at a glance
Bright, anti-glare, backlit display plus two LEDs; orange for energy pulse or alarm and green for heartbeat/communications indication.

IEC 62053-22 class 0.5S accuracy for active energy
Accurate energy measurement for cost allocation and sub-billing.*

Circuit breaker monitoring
Four digital inputs provide an easy way to monitor status, alarm and report on circuit breaker trips.

Multi-level alarming
Five different alarm levels (high, high-high, low, low-low, tripped) optimized network management and downtime prevention.

Performance Standard Meets IEC 61557-12 PMD/S/K70/0.5.

Part Numbers

PowerLogic PM5350IB/PB meters	
PowerLogic PM5350IB	METSEPM5350IB
PowerLogic PM5350PB	METSEPM5350PB

PM5350IB / PM5350PB
Functions and characteristics (cont.)

General		5350IB	5350PB
Use on LV and MV systems		■	
Basic metering with THD and min/max readings		■	
Instantaneous rms values			
Current	Total, Phases and neutral	■	
Voltage	Total, Ph-Ph and Ph-N	■	
Frequency		■	
Real, reactive, and apparent power	Total and per phase	Signed	
True Power Factor	Total and per phase	Signed, Four Quadrant	
Displacement PF	Total and per phase	Signed, Four Quadrant	
Unbalanced I, VL-N, VL-L		■	
Energy Total and per circuit			
Accumulated Active, Reactive and Apparent Energy*	Received/Delivered; Net and absolute	■	
Demand values			
Current average*	Present, Last, Predicted, Peak, & Peak Date Time	■	
Active power*	Present, Last, Predicted, Peak, & Peak Date Time	■	
Reactive power*	Present, Last, Predicted, Peak, & Peak Date Time		
Apparent power*	Present, Last, Predicted, Peak, & Peak Date Time	■	
Peak demand with timestamping*		■	
Power quality			
THD, thd (Total Harmonic Distortion)		I, VLN, VLL	
TDD, thd (Total Demand Distortion)		■	
Data recording Total and per circuit			
Min/max of instantaneous values, plus circuit identification*		■	
Alarms with 1s timestamping		Standard 29; Unary 4; Digital 4	
Alarms stored in non-volatile memory*		40 events	■
Inputs/Outputs			
Digital inputs		4 (DI1, DI2, DI3, DI4)	
Digital outputs		2 relay outputs (DO1, DO2)	
Display			
White backlit LCD display, 6 lines, 4 concurrent values		■	
IEC or IEEE visualization mode		■	
Communication			
Modbus RTU, Modbus ASCII, Jbus Protocol		■	
Firmware update via RS485 serial port (DLF3000 via the Schneider Electric website: www.schneider-electric.com)		■	

Stored in non-volatile memory

Schneider Electric

PM5350IB / PM5350PB
Functions and characteristics (cont.)

Front screen view of PM5350.

Electrical characteristics		5350IB	5350PB
Type of measurement		True rms up to the 15th harmonic 32 samples per cycle, zero blind	
Measurement accuracy	Current, Circuit [1]	±0.30%	
	Voltage, L-N [1]	±0.30%	
	Power Factor [1]	±0.005	
	Power, Circuit	IEC 61557-12 Class 0.5; For 5 A nominal CT (for 1 A nominal CT when I > 0.15A) ±0.5% from 0.25 A to 9.0 A at COS φ = 1 ±0.6% from 0.50 A to 9.0 A at COS φ = 0.5 (ind or cap)	
	Frequency [1]	±0.05%	
	Real Energy	IEC 62053-22 Class 0.5S; IEC 61557-12 Class 0.5; For 5 A nominal CT (for 1 A nominal CT when I > 0.15A) ±0.5% from 0.25 A to 9.0 A at COS φ = 1 ±0.6% from 0.50 A to 9.0 A at COS φ = 0.5 (ind or cap) IEC 61557-12 Class 0.5	
	Reactive Energy	IEC 62053-23 Class 3, IEC 61557-12 Class 2 For 5 A nominal CT (for 1 A nominal CT when I > 0.15A) ±2.0% from 0.25 A to 9.0 A at SIN φ = 1 ±2.5% from 0.50 A to 9.0 A at SIN φ = 0.5 (ind or cap)	
Data update rate		1 second nominal (50/60 cycles)	
Input-voltage	VT primary	1.0 MV AC max, starting voltage depends on VT ratio.	
	U nom	277 V L-N	
	Measured voltage with overrange & Crest Factor	UL: 20 to 300 V AC L-L; IEC: 20 to 690V V AC L-L; 20 to 400 V AC L-N	UL: 20 to 480 V AC L-L IEC: 20 to 690 V V AC L-L; 20 to 277 V AC L-N
	Permanent overload	700 V AC L-L, 404 Vac L-N	
	Impedance	10 M Ω	
	Frequency range	45 to 70 Hz	
Input-current	CT ratings	Primary	Adjustable 1 A to 32767 A
		Secondary	1A, 5 A nominal
	Measured voltage with overrange & Crest Factor	5 mA to 9 A	
	Withstand	Continuous 20 A, 10 sec/hr 50 A, 1 sec/hr 500 A	
	Impedance	< 0.3 mΩ	
	Frequency range	45 to 70 Hz	
	Burden	< 0.024 VA at 9 A	
AC control power	Operating range	85 - 277 V AC	
	Burden	4.1 VA / 1.5 W typical, 6.7 VA / 2.7 W max at 120 V AC 6.3 VA / 2.0 W typical, 8.6 VA / 2.9 W max at 230 V AC 9.6 VA / 3.5 W maximum at 265 V AC	
	Frequency	45 to 65 Hz	
	Ride-through time	100 mS typical at 120 V AC and maximum burden 400 mS typical at 230 V AC and maximum burden	
DC control power	Operating range	100 to 300 V DC	
	Burden	1.4 W typical, 2.6 W maximum at 125 V DC 1.8 W typical, 2.7 W maximum at 250 V DC 3.2 W maximum at 300 V DC	
	Ride-through time	50 mS typical at 125 V DC and maximum burden	
Real time clock	Ride-through time	30 seconds	
Digital output	Number/Type	2 - Mechanical Relays	
	Output frequency	0.5 Hz maximum (1 second ON / 1 second OFF - minimum times)	
	Switching Current	250 V AC at 2.0 Amps, 200 k cycles, resistive 250 V AC at 8.0 Amps, 25 k cycles, resistive 250 V AC at 2.0 Amps, 100 k cycles, COSΦ=0.4 250 V AC at 6.0 Amps, 25 k cycles, COSΦ=0.4 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 kVrms	
Status Digital Inputs	Voltage ratings	ON 18.5 to 36 V DC, OFF 0 to 4 V DC	
	Input Resistance	110 k Ω	
	Maximum Frequency	2 Hz (T ON min = T OFF min = 250 ms)	
	Response Time	10 ms	
	Isolation	2.5 kVrms	
Whetting output	Nominal voltage	24 V DC	
	Allowable load	4 mA	
	Isolation	2.5 kVrms	

(1) Measurements taken from 45 Hz to 65 Hz, 0.5 A to 9 A, 57 V to 347 V & 0.5 ind to 0.5 cap power factor with a sinusoidal wave.

PM5350IB / PM5350PB
Functions and characteristics (cont.)

Mechanical characteristics		5350IB	5350PB
Weight		250 g	
IP degree of protection (IEC 60529)		IP51 front display, IP30 meter body	
Dimensions	W x H x D	96 x 96 x 44 mm (depth of meter from housing mounting flange) 96 x 96 x 13 mm (protrusion of meter from housing flange)	
Mounting position		Vertical	
Panel thickness		6.35 mm maximum	
Environmental characteristics (for indoor use only)			
Operating temperature	Meter	-25 °C to 70 °C	
	Display	-20 °C to +70 °C (Display functions to -25°C with reduced performance)	
Storage temp.	Meter + display	-40 °C to +85 °C	
Humidity rating		5 to 95 % RH at 50 °C (non-condensing)	
Pollution degree		2	
Altitude		3000 m max.	
Electromagnetic compatibility (for indoor use only)			
Electrostatic discharge		IEC 61000-4-2[2]	
Immunity to radiated fields		IEC 61000-4-3[2]	
Immunity to fast transients		IEC 61000-4-4[2]	
Immunity to impulse waves		IEC 61000-4-5[2]	
Conducted immunity		IEC 61000-4-6[2]	
Immunity to magnetic fields		IEC 61000-4-8[2]	
Immunity to voltage dips		IEC 61000-4-11[2]	
Radiated emissions		FCC part 15 class A, EN 55011 Class A	
Conducted emissions		FCC part 15 class A, EN 55011 Class A	
Harmonics		IEC 61000-3-2[2]	
Flicker emissions		IEC 61000-3-3[2]	
Safety			
Europe		$C\epsilon$, as per IEC 61010-1	
U.S. and Canada		cULus as per UL61010-1, IEC 61010-1 (2nd Edition)	
Measurement category (Voltage and current inputs)		UL: 20 to 300 V AC L-L, CATIII IEC: 20 to 480V V AC L-L; 20 to 277 V AC L-N, CATIII 20 to 690V V AC L-L; 20 to 400 V AC L-N, CATII	UL: 20 to 480 V AC L-L (3rd Edition), CATIII IEC: 20 to 480V V AC L-L; 20 to 277 V AC L-N, CATIII 20 to 690V V AC L-L; 20 to 400 V AC L-N, CATII
Overvoltage Category (Control power)		CAT III	
Dielectric		As per IEC 61010-1 Double insulated front panel display	
Protective Class		II	
Communication			
RS 485 port		2-Wire, 9600, 19200 or 38400 baud, Parity - Even, Odd, None, 1 stop bit if parity Odd or Even, 2 stop bits if None; Modbus RTU, Modbus ASCII (7 or 8 bit), JBUS	
Firmware and language file update		Update via comunication port using DLF3000 software	
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 indication (configurable)			
Type		Optical, amber LED	
Wavelength		590 to 635 nm	
Maximum pulse rate		2.5 kHz	

(1) V L-L is limited to 700 V AC

Schneider Electric

PM5350 Power Meter
Dimensions and connection

Parts of PM5350IB and PM5350PB (rear panel door removed)
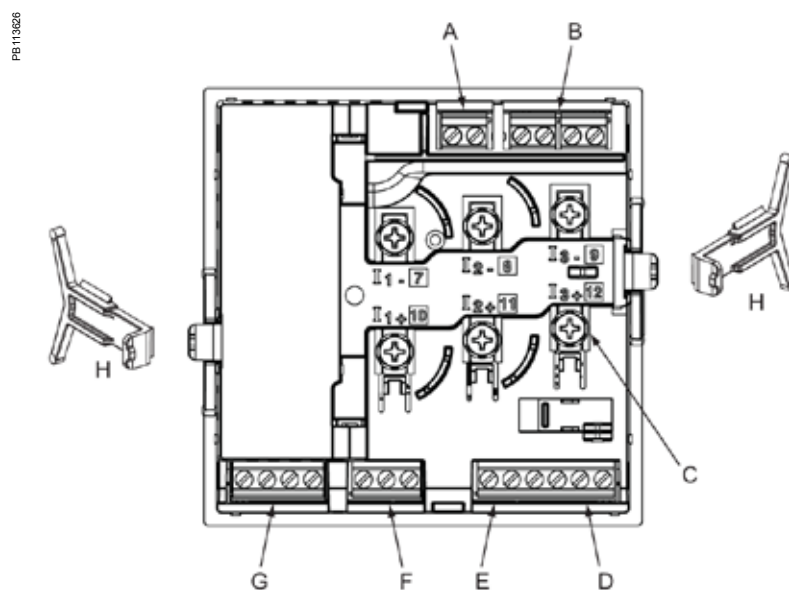
PM5350IB
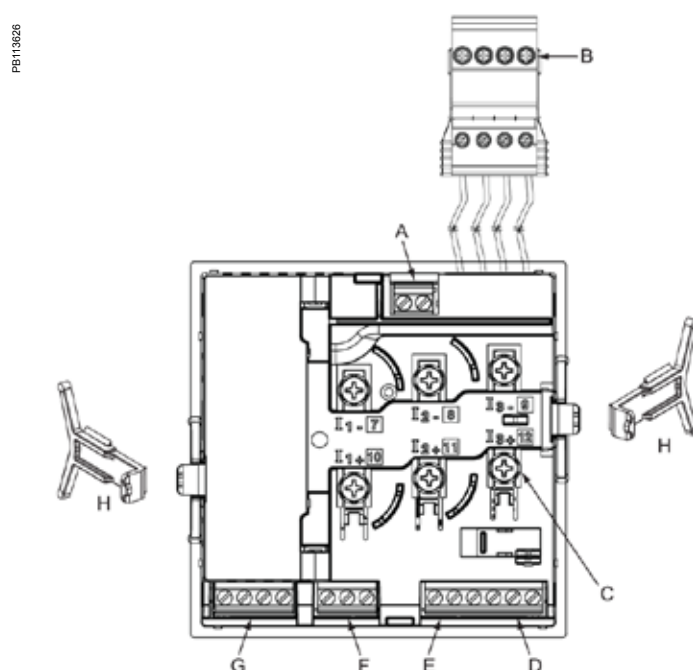
PM5350PB

A	Control power	E	Whetting voltage source (for digital inputs)
B	Voltage inputs	F	RS-485 communications
C	Current inputs	G	Digital outputs
D	Digital inputs	H	Retainer clips

For detailed installation instructions see the product's Installation guide.

PM5350IB / PM5350PB
Dimensions and connection (cont.)
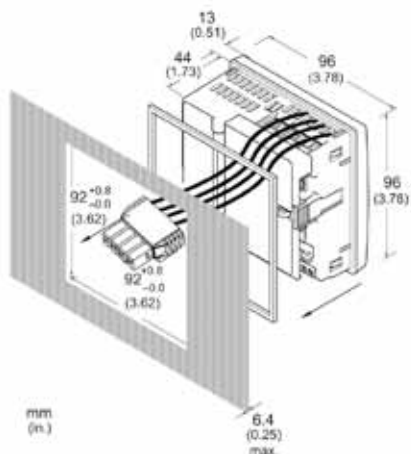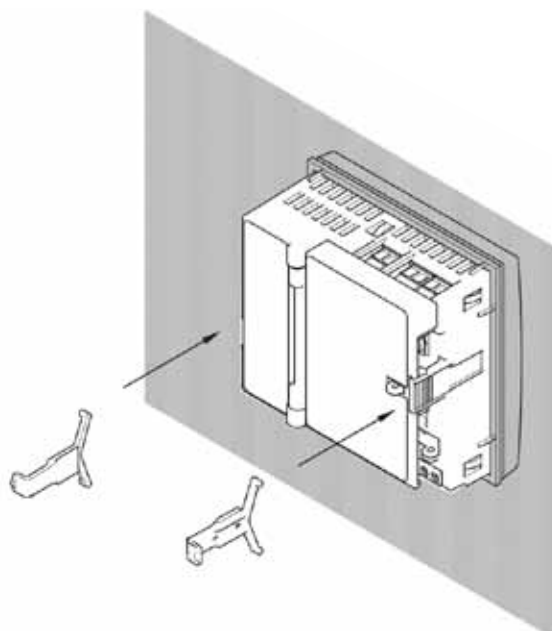
Dimensions PM5350IB
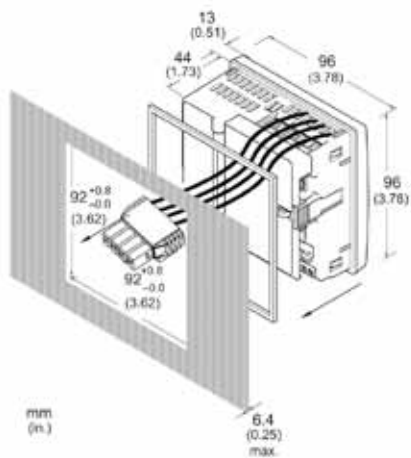
Dimensions PM5350PB

Installation

PM5350IB
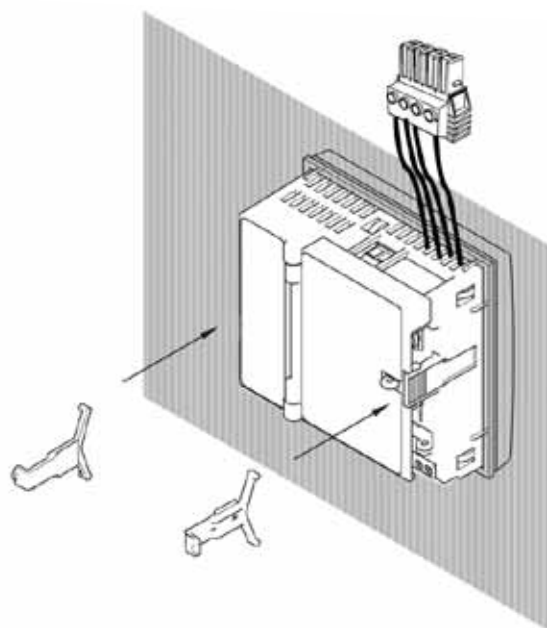
P

For detailed installation instructions see the product's Installation guide.

Schneider Electric

PM5000 Series
Functions and characteristics

PowerLogic™ PM5000 Series meter

PowerLogic™ PM5563 remote dispaly

Commercial reference numbers	
PM5100	METSEPM5100
PM5110	METSEPM5110
PM5111	METSEPM5111
PM5310	METSEPM5310
PM5320	METSEPM5320
PM5330	METSEPM5330
PM5331	METSEPM5331
PM5340	METSEPM5340
PM5341	METSEPM5341
PM5560	METSEPM5560
PM5561	METSEPM5561
PM5563	METSEPM5563
PM5563RD	METSEPM5563RD
PM5RD	METSEPM5RD
PM5563RD	METSEPM556RD

PowerLogic™ PM5100, PM5300 and PM5500 series

The PowerLogic™ PM5000 power meter is the ideal fit for cost management applications. It provides the measurement capabilities needed to allocate energy usage, perform tenant metering and sub-billing, pin-point energy savings, optimize equipment efficiency and utilization, and perform a high level assessment of the power quality of the electrical network.
In a single 96 x 96 mm unit, with a graphical display, (plus optional remote display) all three phases, neutral and ground can be monitored simultaneously.
The bright, anti-glare display features large characters and powerful backlighting for easy reading even in extreme lighting conditions and viewing angles. Easy to understand menus, text in 8 selectable languages, icons and graphics create a friendly environment to learn about your electrical network. Ethernet gateway and enhanced cyber security.
Highly accurate devices with global billing certifications.

Applications

Cost management: Cost saving opportunities become clear once you understand how and when your facility uses electricity. The PowerLogic™ PM5000 series meters are ideal for:
■ **Sub billing / tenant metering:** allows a landlord, property management firm, condominium association, homeowners association, or other multi-tenant property to bill tenants for individual measured utility (electricity) usage. MID approved meters for billing applications across Europe.
■ **Cost allocation:** allocate energy costs between different departments (HVAC, indoor and outdoor lighting, refrigeration, etc), different parts of an industrial process or different cost centres. Cost allocation systems can help you save money by making changes to your operation, better maintaining your equipment, taking advantage of pricing fluctuations, and managing your demand.

Network management: Improving reliability of the electrical network is key for success in any business. Monitoring values such as voltage levels, harmonic distortion and voltage unbalance will help you to ensure proper operation and maintenance of your electrical network and equipment. PowerLogic™ PM5000 series meters are the perfect tool for:
■ **Basic Power Quality monitoring:** power quality phenomena can cause undesirable effects such as heating in transformers, capacitors, motors, generators and misoperation of electronic equipment and protection devices.
■ **Min/ Max monitoring (with timestamp):** understanding when electrical parameters, such as voltage, current and power demand, reach maximum and minimum values will give you the insight to correctly maintain your electrical network and assure equipment will not be damaged.
■ **Alarming:** alarms help you to be aware of any abnormal behavior on the electrical network in the moment it happens.
■ **WAGES monitoring:** take advantage of the input metering on PM5000 meters to integrate measurements from 3rd party devices such as water, air, gas, electricity or steam, meters.

Main characteristics
Easy to install
Mounts using two clips, in standard cut out for DIN 96 x 96mm, no tools required. Compact meter with 72mm (77mm for PM5500) depth connectable up to 690 VL-L without voltage transformers for installations compliant with category III. Optional remote display (PM5563). Ethernet gateway functionality via RS-485 port.

Easy to operate
Intuitive navigation with self-guided, language selectable menus, six lines, four concurrent values. Two LEDs on the meter face help the user confirm normal operation with a green LED - heartbeat/communications indicator, and the amber LED - customizable either for alarms or energy pulse outputs. Onboard web pages (PM5500) show real-time and logged information, and verify communications.

Easy circuit breaker monitoring and control
The PM5300 provides two relay outputs (high performance Form A type) with capability to command most of the circuit breaker coils directly. For Digital Inputs, monitored switches can be wired directly to the meter without external power supply. PM5500 series have 4 status inputs (digital) and 2 digital output (solid state) to use for

Accurate energy measurement for precise cost allocation:

	PM5100	PM5300	PM5500
IEC 62053-22 (Active Energy)	Class 0.5S	Class 0.5S	Class 0.2S
IEC 62053-23 (Reactive Energy)	Class 2	Class 2	Class 1

PM5000 Series
Functions and characteristics (cont.)

PowerLogic™ PM5500 meter

PowerLogic™ PM5300 meter

PowerLogic™ PM5100 meter

MID Certified according to MID Directive, Annex "B" + Annex "D" for legal metrology relevant to active electrical energy meters (see Annex MI-003 of MID). Can be used for fiscal (legal) metrology.

Direct metering of neutral current
The PM5500 has a fourth CT for measuring neutral current. In demanding IT applications, where loads are non-linear (i.e. switching power supplies on computers/servers), measuring neutral current is essential to avoid overload and resulting outage. In addition, the PM5500 provides a calculated ground current value, not available in meters with 3 CTs.

Power Quality analysis
The PM5000 offers Total Harmonic Distortion (THD/thd), Total Demand Distortion (TDD) measurements and individual harmonics (odd) magnitudes and angles for voltage and current:

	PM5100	PM5300	PM5500
Individual Harmonics	magnitudes up to 15th	magnitudes up to 31st	magnitudes & angles up to 63rd

These types of power quality parameters help to identify the source of harmonics that can harm transformers, capacitors, generators, motors and electronic equipment.

Load management
Peak demands with time stamping are provided. Predicted demand values can be used in combination with alarms for basic load shedding applications.

Alarming with time stamping
A different combination of set point driven alarms and digital alarms with 1s time stamping are available in the PM5000 family:

	PM5100	PM5300	PM5500
Set point driven alarms	29	29	29
Unary	4	4	4
Digital	–	2	4
Boolean / Logic	–	–	10
Custom defined	–	–	5

Alarms can be visualized as Active (the ones that have picked up and did not drop out yet) or Historical (the ones that happened in the past). Alarms can be programmed and combined to trigger digital outputs and mechanical relays (PM5300).
The PM5000 series keeps an alarm log with the active and historical alarms with date and time stamping. SMTP protocol for receiving alarm conditions via email and text. SNTP protocol for date/time network synchronization.

Load timer
A load timer can be set to count load running hours based on a minimum current withdraw, adjustable to monitor and advise maintenance requirements on the load.

High Performance and accuracy
IEC 61557-12 Performance measuring and monitoring devices (PMD)
Defines the performance expectation based on classes. It defines the allowable error in the class for real and reactive power and energy, frequency, current, voltage, power factor, voltage unbalance, voltage and current harmonics (odds), voltage THD, current THD, as well as ratings for temperature, relative humidity, altitude, start-up current and safety. It makes compliant meters readings comparable - they will measure the same values when connected to the same load.

Meets IEC 61557-12 PMD/[SD|SS]/K70/0.5 for PM5100 and PM5300

Meets IEC 61557-12 PMD/[SD|SS]/K70/0.2 for PM5500

Legal billing compliance
MID compliance is compulsory for billing applications across Europe.
In addition to billing applications, for facility managers responsible for energy cost MID means same level of quality as a billing meter.

MID ready compliance, EN50470-1/3 – Class C

General		PM5100	PM5300	PM5500
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, VL-N, VL-L			■	
Direct monitoring of neutral current				■
Energy values*				
Accumulated Active, Reactive and Apparent Energy			Received/Delivered; Net and absolute; Time Counters	
Demand values*				
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 time stamping D/T for current and			■	
Demand calculation	Sliding, fixed and rolling block, thermal methods		■	
Synchronization 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 per phase			I,VLN, VLL	
TDD (Total Demand Distortion)			■	
Individual harmonics (odds)		15th	31st	63rd
Neutral Current metering with ground current calculation				■
Data recording				
Min/max of instantaneous values, plus phase identification*			■	
Alarms with 1s timestamping*			■	
Data logging			2 selectable parameters from kWh, kVAh, kVARh 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			■	■
Customizable data logs				■
Inputs / Outputs / Mechanical Relays				
Digital inputs			2	4
Digital outputs		1 (kWh only)	2 (configurable)	
Form A Relay outputs			2	
Timestamp resolution in seconds			1	
Whetting voltage			■	

Stored in non-volatile memory

PM5000 Series
Functions and characteristics (cont.)

Electrical characteristics		PM5100	PM5300	PM5500
Type of measurement: True rms on three-phase (3P, 3P + N), zero blind		64 samples per cycle		128 samples per cycle
Measurement accuracy	Active Energy	0.5%		0.2%
	Reactive Energy	2%		1%
	Active Power	0.5%		0.2%
	Apparent Power	0.5%		
	Current, Phase	0.5%		0.15%
	Voltage, L-N	0.5%		0.1%
	Frequency	0.05%		
Measurement accuracy compliance	Measurement accuracy	IEC 61557-12 PMD/[SD|SS]/K70/0.5		IEC 61557-12 PMD/[SD|SS]/K70/0.2
	Active energy accuracy	IEC 62053-22 Class 0.2 S ANSI C12.20 Class 0.5		IEC 62053-22 Class 0.2 S ANSI C12.20 Class 0.2
	Reactive energy accuracy	IEC 62053-23 Class 2		
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 M Ω		
	F nom	50 or 60 Hz ±2%		50 or 60 Hz ±10%
Input-current	I nom	1 A or 5 A		
	Measured Amps with over range and Crest Factor	Starting current: 5mA Operating range: 50mA to 8.5A		Starting current: 5m A Operating range: 50 mA to 10 A
	Withstand	Continuous 20A, 10s/hr 50A, 1s/hr 500A		
	Impedance	< 0.3 mΩ		
	F nom	50 or 60 Hz ±2%		50 or 60 Hz ±10%
	Burden	<0.026VA at 8.5A		< 0.024 VA at 10 A
AC control power	Operating range	100-415 VAC +/- 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	4W max at 125V DC		typical 3.1W at 125 V DC, max. 5W
	Ride-through time	50 mS typical at 125 V DC and maximum burden		
Outputs	Relay	Max output frequency		0.5 Hz maximum (1 second ON / 1 second OFF - minimum 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		1	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 k_h (Configurable for delivered or received or delivered+received energy for kWh or kVARh or kVAh)		
		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 micro seconds		
		Pulse frequency	50 Hz. max.		2.5 kHz. max
		Meter constant	from 1 to 9,999,999 pulses per kWh k_h (Configurable for delivered or received or delivered+received energy for kWh or kVARh or kVAh)		

Schneider Electric

Electrical characteristics (cont'd)		PM5100	PM5300	PM5500
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
	Whetting output		24 V DC/ 8mA max	
	Input Burden		2mA @24V DC	2 mA @ 24 V AC/DC
Mechanical characteristics				
Product weight		380 g	430 g	450 g
IP degree of protection (IEC 60529)		IP52 front display, IP20 meter body		
Dimensions W x H x D [protrusion from cabinet] *		96 x 96 x 72mm (77mm for PM5500) (depth of meter from housing mounting flange) [13mm]		
Mounting position *		Vertical		
Panel thickness		6 mm maximum		
Environmental characteristics				
Operating temperature	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 37 °C (non-condensing)		
Polution degree		2		
Altitude		2000 m CAT III / 3000 m CAT II		3000 m max. CAT III
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 150kHz to 80MHz		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		

* PM5563 is DIN mounted

** Tests are conducted as per IEC 61557-12 (IEC 61326-1), 62052-11 and EN50470

PM5000 Series
Functions and characteristics (cont.)

Safety	PM5100	PM5300	PM5500
Europe	CE, as per IEC 61010-1 Ed. 3, IEC 62052-11 & IEC61557-12		
U.S. and Canada	cULus as per UL61010-1 (3rd Edition)		
Measurement category (Voltage and 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		
Communication			
RS 485 port Modbus RTU, Modbus ASCII (7 or 8 bit), JBUS	2-Wire, 9600,19200 or 38400 baud, Parity - Even, Odd, None, 1 stop bit if parity Odd or Even, 2 stop bits if None; (Optional in PM51x and PM53x)		
Ethernet port: 10/100 Mbps; Modbus TCP/IP		1 Optional	2 (for daisy chain only, one IP address)
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 indication (configurable)	Optical, amber LED		
Wavelength	590 to 635 nm		
Maximum pulse rate	2.5 kHz		

Features and Options	PM5100		PM5300				PM5500	
	PM5100	PM5110	PM5310	PM5320	PM5330	PM5340	PM5560	PM5563
Installation								
Fast panel mount with integrated display	■	■	■	■	■	■	■	–
Remote display (optional)	–	–	–	–	–	–	–	■
Fast installation, DIN rail mountable	–	–	–	–	–	–	–	■
Accuracy	CI 0.5S	CI 0.5S	CI 0.5S	CI 0.5S	CI 0.5S	CI 0.5S	CI 0.2S	CI 0.2S
Display								
Backlit LCD, multilingual, bar graphs, 6 lines, 4 concurrent values	■	■	■	■	■	■	■	–
Power and energy metering								
3-phase voltage, current, power, demand, energy, frequency, power factor	■	■	■	■	■	■	■	■
Multi-tariff	–	–	4	4	4	4	8	8
Power quality analysis								
THD, thd, TDD	■	■	■	■	■	■	■	■
Harmonics, individual (odd) up to	15th	15th	31st	31st	31st	31st	63rd	63rd
I/Os and relays								
I/Os	1DO	1DO	2DI/2DO	2DI/2DO	2DI/2DO	2DI/2DO	4DI/2DO	4DI/2DO
Relays	0	0	0	0	2	2	0	0
Alarms and control								
Alarms	33	33	35	35	35	35	52	52
Set point response time, seconds	1	1	1	1	1	1	1	1
Single and multicondition alarms	–	–	■	■	■	■	■	■
Boolean alarm logic	–	–	–	–	–	–	■	■
Communications								
Serial ports with modbus protocol	–	1	1	–	1	–	1	1
Ethernet port with Modbus TCP protocol	–	–	–	1	–	1	2**	2**
Ethernet-to-serial gateway	–	–	–	–	–	–	■	■
Onboard web server with web pages	–	–	–	–	–	–	■	■
MID ready compliance, EN50470-1/3, Annex B and Annex D Class C		PM5111			PM5331	PM5341	PM5561	

** 2 Ethernet ports for daisy chain, one IP address.

PM5000 Series
Dimensions and connection

PM5000 Series meter flush mounting*

mm
(in)

92.0 +0.8 (3.62) +0.03

92.0 +0.8 (3.62) +0.03

< 6.4 (< 0.25)

A Remote display connector
B Connection cable (provided)
C DIN-mount meter connector
Display power provided by meter
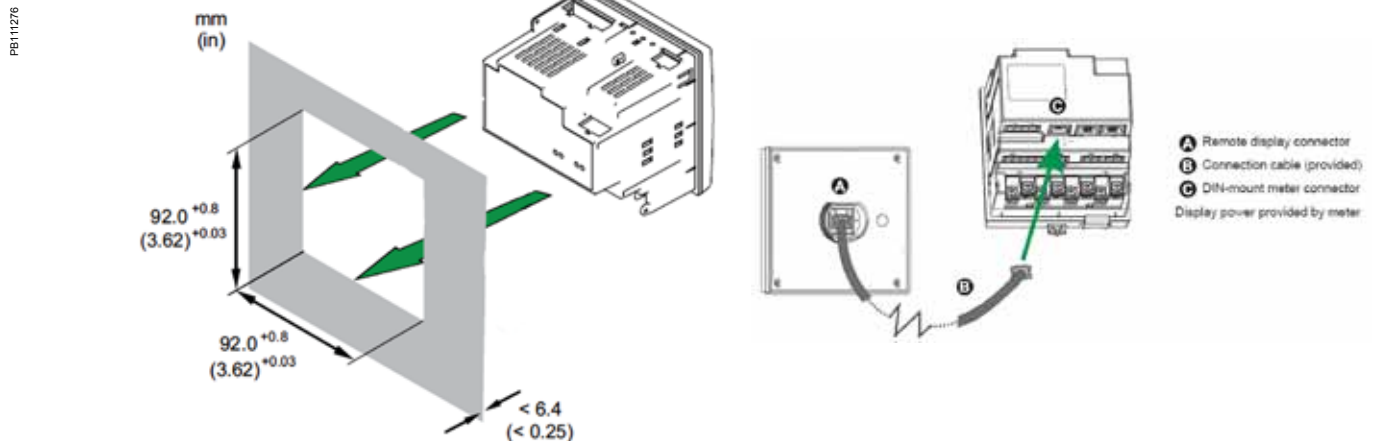
PM5000 Series meter dimensions

mm
(in)

96 (3.78)

96 (3.78)

92 (3.62)

110 (4.33) 92 3.62 72 (2.83) 90 (3.53)

PM5100 / PM5300

110 (4.33) 92 3.62 77 (3.03) 90 (3.53)

PM5500
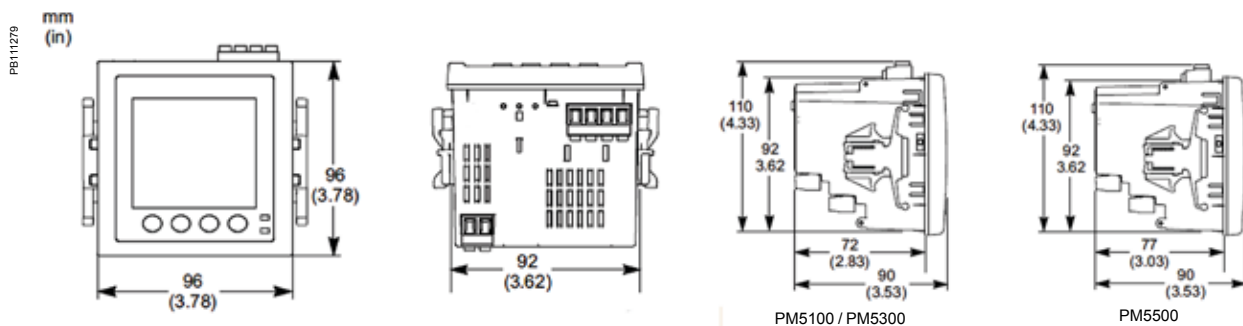
PM5000 Series remote display dimensions

96 (3.78)

96 (3.78)

27 (1.06)   48 (1.89)   30 (1.18)

48 (1.89)

Ø 3.5 (0.14)

Ø 29.8 (1.17)

28 (1.10)   21 (0.83)

Remote display dimensions

Remote display connection
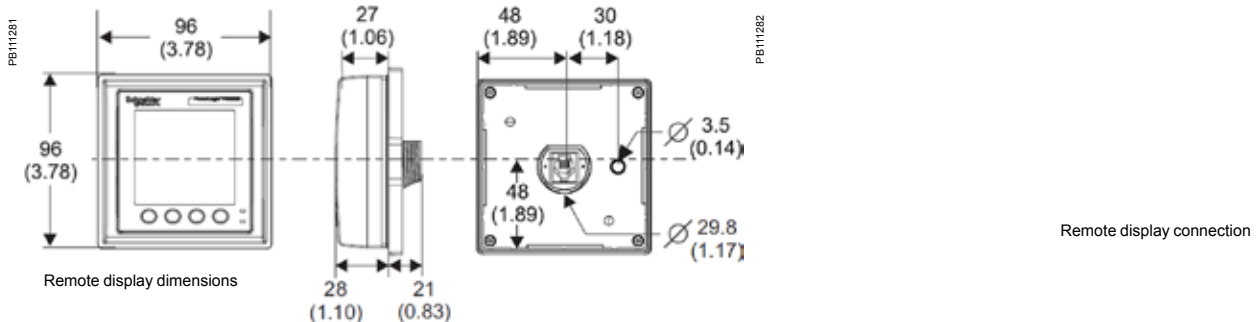
PM5000 Series meter parts

PM5500

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

PM5500 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)

** PM5563 is DIN mounted

PM800 series
Functions and characteristics

Front view of PowerLogic PM800 series meter with integrated display.

Rear view of PowerLogic PM800 series meter.
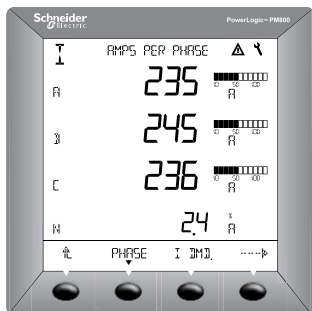
PowerLogic PM800 series meter display screen showing bar graphs.

The PowerLogic PM800 series meters offers many high-performance capabilities needed to meter and monitor an electrical installation in a compact 96 x 96 mm unit. All models include an easy-to-read display that presents measurements for all three phases and neutral at the same time, an RS-485 Modbus communication port, one digital input, one KY-type digital output, total harmonic distortion (THD) metering, and alarming on critical conditions. Four models offer an incremental choice of custom logging and power quality analysis capabilities. Expand any model with field-installable option modules that offer a choice of additional digital inputs and outputs, analogue inputs and outputs, and Ethernet port.

Applications
- Panel instrumentation
- Sub-billing, cost allocation and energy management
- Remote monitoring of an electrical installation
- Power quality analysis
- Utility bill verification, utility contract optimization and load preservation.

Characteristics

Easy to install
Mounts using two clips, with no tools required. Direct connect the voltage inputs, with no need for potential transformers (PTs) up to 600 VAC.

Easy to operate
Intuitive navigation with self-guided, language-selectable menus.

System status at a glance
Large, anti-glare display with back-light provides summary screens with multiple values. Bar charts graphically represent system loading and I/O.

Custom alarming with time stamping
Over 50 alarm conditions, including over or under conditions, digital input changes, phase unbalance and more. The models PM850 and PM870 offer boolean logic that can be used to combine up to four alarms.

Power quality analysis
The PM800 series offers an incremental range of features for troubleshooting and preventing power quality related problems. All models offer THD metering. The PM810 with PM810LOG option and PM820 offer individual current and voltage harmonics readings. The PM850 and PM870 offer waveform capture (PM870 is configurable) and power quality compliance evaluation to the international EN50160 -ITI(CBEMA)/SEMI F-47 standards. The PM870 offers voltage and current disturbance (sag/swell) detection.

Extensive on-board memory
All models offer billing (energy and demand), maintenance, alarm and customizable data logs, all stored in non-volatile memory (PM810 requires PM810LOG option).

ANSI 12.20 Class 0.2S and IEC 62053-22 Class 0.5S accuracy for active energy
Accurate energy measurement for sub-billing and cost allocation.

PMD-S IEC61557-12 performance standard
Meets PMD/SD/K70/0.5 and PMD/SS/K70/0.5 requirements for combined **P**erformance **M**easuring and monitoring **D**evices (PMD).

Trend curves and short-term forecasting
The models PM850 and PM870 offer trend logging and forecasting of energy and demand readings to help compare load characteristics and manage energy costs.

Expandable I/O capabilities
Use the on-board or optional digital inputs for pulse counting, status/position monitoring, demand synchronisation or control (gating) of the conditional energy metering. Use the on-board or optional digital outputs for equipment control or interfacing, controllable by internal alarms or externally through digital input status. Use the optional analogue inputs and outputs for equipment monitoring or interfacing.

Metering of other utilities (WAGES)
All models offer five channels for demand metering of water, air, gas, electricity or steam utilities (WAGES) through the pulse counting capabilities of the digital inputs. Pulses from multiple inputs can be summed through a single channel.

Modular and upgradeable
All models offer easy-to-install option modules (memory, I/O and communications) and downloadable firmware for enhanced meter capabilities.

Remote display
The optional remote display can be mounted as far as 10 m from the metering unit. The adapter includes an additional 2- or 4-wire RS-485/RS-232 communication port.

PowerLogic PM800 series meter without display.

PowerLogic PM800 series meter with integrated display.

PowerLogic PM800 series meter with remote display.

Remote display adapter with display and cable.

Remote display adaptor alone.

Part Numbers

Description	
Meter without display	
Use the base meter unit without display to comply with voltage limitations for local regulations when door mounting is not possible, or when meter voltage exceeds regulations, or when local display is not required. When the meter is used without a display, configuration of the communications port is limited to the default (address 1, 9600 baud, parity even). Requires software to read data.	
PM810 meter unit only, no display, basic instrumentation, THD, alarming, 80 kB logging (with PM810LOG)	**PM810UMG**
PM820 meter unit only, no display, basic instrumentation, THD, alarming, 80 kB logging	**PM820UMG**
PM850 meter unit only, no display, basic instrumentation, THD, alarming, 800 kB logging, waveform capture	**PM850UMG**
PM870 meter unit only, no display, basic instrumentation, THD, alarming, 800 kB logging, configurable waveform capture and disturbance detection.	**PM870UMG**
Meter with integrated display	
Use the meter with integrated display for panel mounting when door space is available and when voltage usage is within the local regulation limits.	
PM810 meter with integrated display	**PM810MG**
PM820 meter with integrated display	**PM820MG**
PM850 meter with integrated display	**PM850MG**
PM870 meter with integrated display	**PM870MG**
Meter with remote display	
Conveniently packaged kit consist of a base meter (810, 820, 850 or 870) with a remote display, remote display adapter, and remote display cable 3 m (9.ft 10 inches).	
PM810 meter with remote display	**PM810RDMG**
PM820 meter with remote display	**PM820RDMG**
PM850 meter with remote display	**PM850RDMG**
PM870 meter with remote display	**PM870RDMG**
Parts and accessories	
Remote display adapter with remote display and a 3 m (9 ft 10 inch) cable Use this combination of remote display, adapter, and 3 m cable to equip a base meter unit for use with a remote display. In addition, the display can be carried from meter to meter, enabling you to purchase one display for multiple meters. Each base unit meter must be equipped with a remote display adapter (PM8RDA).	**PM8RDMG**
Remote display adapter alone When added to the front of the base unit (PM8xxU), the adapter brings two additional communication ports: one for the remote display and one 4-wire/2-wire RS 485/RS 232.	**PM8RDA**

PM800 series
Functions and characteristics (cont.)

PowerLogic PM870 with ECC module (bottom view showing connectors and configuration switches).

ECC module (front view)

ECC module (side view showing LED indicators).

PowerLogic PM8M26 module.

PowerLogic PM800 with PM8M22 and PM8M26 modules.

Part Numbers - continued

Description	
Optional modules	
Ethernet communication module provides a 10/100BaseTx UTP port, an RS-485 Modbus serial master port, Ethernet-to-serial line gateway functionality, and an embedded web server that is fully compliant with Transparent Ready - Level 1 (TRe1) systems. The PM8ECC supports a private host PM8ECC MIB. Use of this MIB allows the reading of Basic Metering Data, Configuration and Status of I/Os and Configuration and Status of Alarms, plus SNMP Trap generation in response to any PM8 on-board alarms.	**PM8ECC**
2 relay outputs, 2 digital inputs	**PM8M22**
2 relay outputs, 6 digital inputs	**PM8M26**
2 relay outputs, 2 digital inputs, 2 analogue outputs, 2 analogue inputs	**PM8M2222**
PM810 optional logging module for on-board data recording, uses a non-volatile, battery-backed internal clock	**PM810LOG**
RJ11 Extender kit to mount RJ11 jack in panel door (for use with PM800, CM3000, and CM4000 series meters)	**RJ11EXT**
Cable for remote display adapter 1.25 m (4 ft)	**CAB4**
Cable for remote display adapter 3 m (9 ft 10 inch)	**CAB12**
Cable for remote display adapter 9.14 m (30 ft)	**CAB30**

PM800 series
Functions and characteristics (cont.)
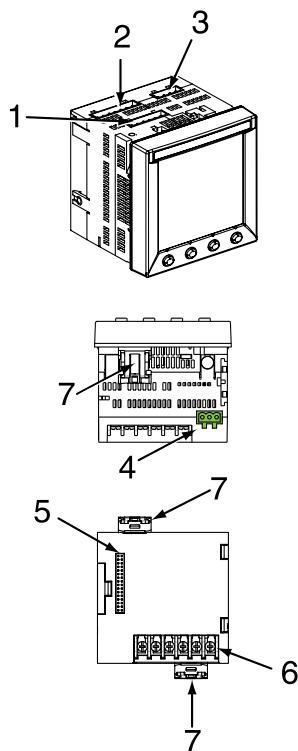
PowerLogic PM800 series connectors.
1. Control power.
2. Voltage inputs.
3. Digital input/output.
4. RS 485 port.
5. Option module connector.
6. Current inputs.
7. Mounting clips.
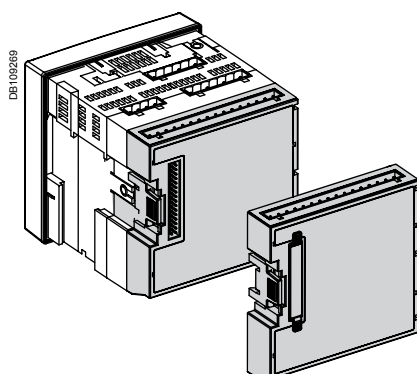
PowerLogic PM800 series meter with I/O module.

Selection guide		PM810	PM820	PM850	PM870
Performance standard					
ANSI 12.20 Class 0.2S		■	■	■	■
PMD-S IEC 61557-12 PMD/SD/K70/0.5 and PMD/SS/K70/0.5		■	■	■	■
General					
Use on LV and HV systems		■	■	■	■
Current and voltage accuracy		0.5 %/0.2%	0.5 %/0.2%	0.5 %/0.2%	0.2 %/0.2%
Active energy accuracy (5% to 200% of load)		0.2 %	0.2 %	0.2%	0.2%
Number of samples per cycle		128	128	128	128
Instantaneous rms values					
Current, voltage, frequency		■	■	■	■
Active, reactive, apparent power	Total & per phase	■	■	■	■
Power factor	Total & per phase	■	■	■	■
Energy values					
Active, reactive, apparent energy		■	■	■	■
Configurable accumulation mode		■	■	■	■
Demand values					
Current	Present & max.	■	■	■	■
Active, reactive, apparent power	Present & max.	■	■	■	■
Predicted active, reactive, apparent power		■	■	■	■
Synchronisation of the measurement window		■	■	■	■
Demand calculation mode Block, sliding, thermal		■	■	■	■
Other measurements					
Hour counter		■	■	■	■
Power quality measurements					
Harmonic distortion	Current & voltage	■	■	■	■
Individual harmonics	Current & voltage	31 [1]	31	63	63
Waveform capture		-	-	■	■ [2]
EN50160 - ITI(CBEMA)/SEMI F-47				■ [4]	■
Sag and swell detection		-	-	-	■
Data recording					
Min/max of instantaneous values		■	■	■	■
Data logs		2 [1]	2	4	4
Event logs		-	■	■	■
Trending / forecasting		-	-	■	■
GPS synchronisation		■ [1]	■	■	■
Alarms		■	■	■	■
Time stamping		■ [1]	■	■	■
Display and I/O					
White backlit LCD display		■	■	■	■
Multilingual		■	■	■	■
Digital input (standard/optional)		1/12	1/12	1/12	1/12
Digital output (standard/optional)		1 KY/4 RY	1 KY/4 RY	1 KY/4 RY	1 KY/4 RY
Analogue inputs (standard/optional)		0/4	0/4	0/4	0/4
Analogue outputs (standard/optional)		0/4	0/4	0/4	0/4
Input metering capability (number of channels)		5	5	5	5
Communication					
RS 485 port		2-wire	2-wire	2-wire	2-wire
Modbus protocol		■	■	■	■
RS 232/RS 485, 2- or 4-wire Modbus RTU/ASCII (with addition of PM8RDA module)		■	■	■	■
Ethernet 10/100Base Tx UTP port and RS485 Modbus serial master port with PM8ECC		■	■	■	■

Option modules selection guide

The PM800 can be fitted with 2 optional modules, unless otherwise indicated [3]

PM8ECC module

10/100BaseTx UTP port, RS-485 Modbus serial master port, Ethernet to serial line gateway, embedded web server

Input/Output modules	PM8M22	PM8M26*	PM8M2222
Relay outputs	2	2	2
Digital inputs	2	6	2
Analogue outputs 4-20 mA			2
Analogue inputs 0-5 Vdc or 4-20 mA			2

Includes a 24 Vdc Power Supply that can be used to power the digital inputs

(1) With PM810LOG, battery-backed internal clock and 80 kB memory. (2) Configurable. (3) Series 800 Power Meters supports up to two option modules. When PM8M2222 & PM8ECC are mounted together with control power>370 V AC temperature rating must be reduced to -25°C to 50°C. Same applies when using two PM8M2222. (4) PM850 does not include sag or swell detection.

PM800 series
Functions and characteristics (cont.)

Electrical characteristics

Type of measurement			63rd harmonic, 128 samples per cycle
Measurement accuracy standard PMD-S IEC 61557-12 compliant			
	Current		0.5% from 0.5 A to 10 A
	Voltage		0.2% 10 V - 277 V
	Power Factor		+/- 0.002 from 0.500 leading to 0.500 lagging
	Active Power		0.2%
	Frequency		+/- 0.01 Hz at 45 to 67 Hz +/- 0.01 Hz at 350 to 450 Hz
	Active Energy		IEC 62053-22 Class 0.5S and ANSI C12.20 Class 0.2S
	Reactive Energy		IEC 62053-23 Class 2
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) up to 3.2 MV AC (with external VT)
	Metering over-range		1.5 Un
	Impedance		5 MW
	Frequency measurement range		45 to 67 Hz and 350 to 450 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 10 A AC
	Permissible overload		15 A continuous 50 A for 10 seconds per hour 500 A for 1 second per hour
	Impedance		< 0.1 W
	Load		< 0.15 VA
Control Power	AC		115 to 415 ±10 % V AC, 15 VA with options at 45 to 67 Hz or 350 to 450 Hz
	DC		125 to 250 ±20 % V DC, 10 W with options
	Ride-through time		45 ms at 120 V AC or 125 V DC

Inputs/Outputs [2]

Standard (meter unit)	1 digital KY pulse output		6 to 220 V AC ± 10% or 3 to 250 V DC ± 10%, 100 mA max. at 25 °C, 1350 V rms isolation
	1 digital input		24 to 125 V AC/DC ±10 %, < 5 mA maximum burden, 1350 Vrms isolation
PM8M22 option	2 relay outputs [1]		6 to 240 V AC or 6 to 30 V DC 2 A rms, 5 A max. for 10 seconds per hour
	2 digital inputs		19 to 30 V DC, 5 mA max. at 24 V DC
PM8M26 option	2 relay outputs [1]		6 to 240 V AC, 6 to 30 V DC 2 A rms, 5 A max. for 10 seconds per hour
	6 digital inputs		20 to 150 V AC/DC, 2 mA max.
	24 V internal supply		20 - 34 V DC, 10 mA max. (feeds 6 digital inputs)
PM8M2222 option	2 relay outputs [1]		6 to 240 V AC, 6 to 30 V DC 2 A rms, 5 A max. for 10 seconds per hour
	2 digital inputs		20 to 150 V AC/DC, 2 mA max.
	2 analogue outputs		4 to 20 mA dc into 600 ohms maximum
	2 analogue inputs		Adjustable from 0 to 5 V DC or 4-20 mA
Switching frequency (digital I/O)	Standard	Input/output	25 Hz, 50 % duty cycle (20 ms ON/OFF)
	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 characteristics

Weight (meter with integrated display)		0.6 kg
IP degree of protection (IEC 60529)		IP52 integrated display. Type 12 compliant remote display (with gasket). IP30 meter body
Dimensions	Without options	96 x 96 x 70 mm (mounting surface)
	With 1 option	96 x 96 x 90 mm (mounting surface)

Environmental conditions

Operating temperature	Meter	-25 °C to +70 °C [2]
	Display	-10 °C to +50 °C
Storage temp.	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 EN 61010, UL508
Altitude		3000 m max.

(1) Mechanical endurance: 15 million operations, Electrical endurance:25000 commutations at 2 A / 250 V AC   (2) Series 800 Power Meters supports up to two option modules. When PM82222 & PM8ECC are mounted together with control

PM800 series
Functions and characteristics (cont.)

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 EN 55011
Harmonics emissions	IEC 61000-3-2
Flicker emissions	IEC 61000-3-3
Surge immunity	IEC 61000-4-12
Surge withstand capability (SWC)	ANSI C37.90.1.2002

Safety	
Europe	CE, as per IEC 61010-1 ▣ (1)
U.S. and Canada	cULus (UL508 and CAN/CSA C22.2 No. 14-M95, Industrial Control Equipment)

Onboard communications	
RS 485 port	2-wire, up to 38400 baud, Modbus

Model-dependent characteristics	
Data Logs	PM810 with PM810LOG, PM820, PM850 and PM870: - 1 billing log - 1 customisable log PM850 and PM870 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 and PM870 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
Hour counter	Load running time in days, hours and minutes
Energy per shift	Up to three user-defined intervals per day Available for all models (the PM810 requires the PM810LOG module)
Forecasting (PM850 and PM870 only)	Forecasting of the values for the trended parameters for the next four hours and next four days
PM850 waveform capture	Triggered manually or by alarm, 3-cycle, 128 samples/cycle on 6 user configurable channels
PM870 enhanced waveform capture	From 185 cycles on 1 channel at 16 samples per cycle up to 3 cycles on 6 channels at 128 samples per cycle
Alarms	Adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm Historical and active alarm screens with time stamping Response time: 1 second Boolean combination of four alarms is possible using the operators NAND, AND, OR, NOR and XOR on PM850 and PM870 Digital alarms: status change of digital inputs
Memory available for logging and waveform capture (2)	80 kbytes in PM810 with PM810LOG and PM820 800 kbytes in PM850 and PM870
Firmware update (all models)	Update via the communication ports File download available free from www.powerlogic.com
Bar graphs (all models)	Graphical representation of system performance

Display characteristics		
Languages	English, French, Spanish, German, Russian, Turkish and Portuguese.	
Display screen	Back-lit white LCD (6 lines total, 4 concurrent values)	
Dimensions	Display screen viewable area	73 x 69 mm
	Integrated display Overall	96 x 96 mm
	Depth meter + display	69.4 mm + 17.8 mm
	Remote display Overall	96 x 96 x 40 mm
Weight	Meter with remote display adapter	0.81 kg
	Remote display	0.23 kg

Schneider Electric

Power Meter Series 800
Dimensions and connection

Power meter with integrated display
Dimensions

mm
in

DB111765

96
3.78

96
3.78

DB111766

20
0.79

20
0.79

69,4
2.73

20
0.79

DB111767

90,5
3.56

109,4
4.31

89,4
3.52

69,4
2.73

96
3.78
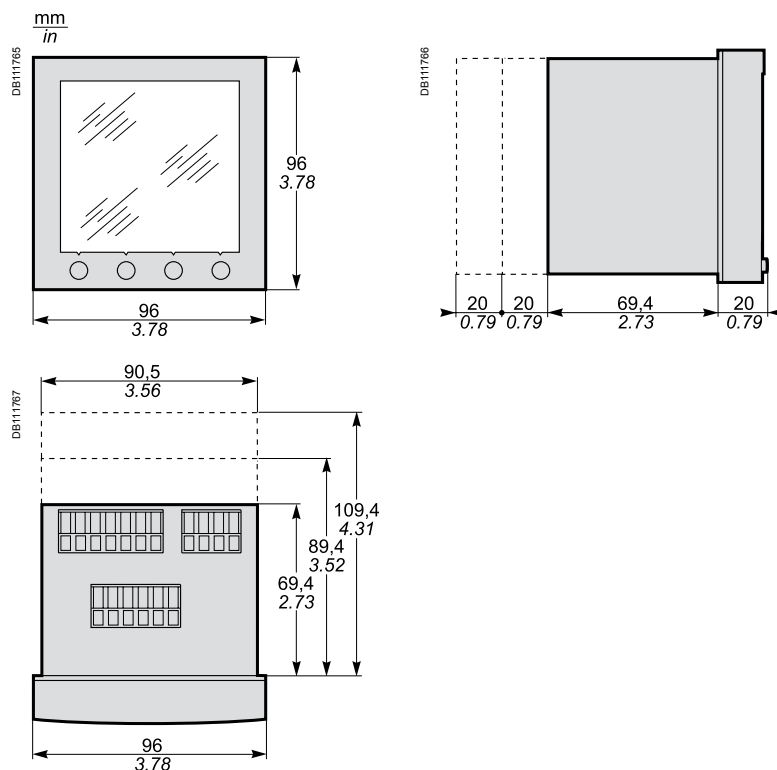
Front-panel mounting (meter with integrated display)

mm
in

DB111768

92
3.62

92
3.62

Spacing between units

mm
in

DB111769

10
0.39

DB111770

40
1.57

Schneider Electric
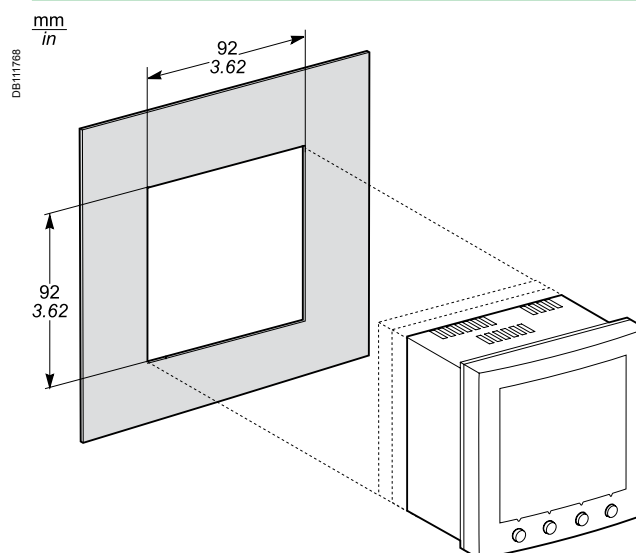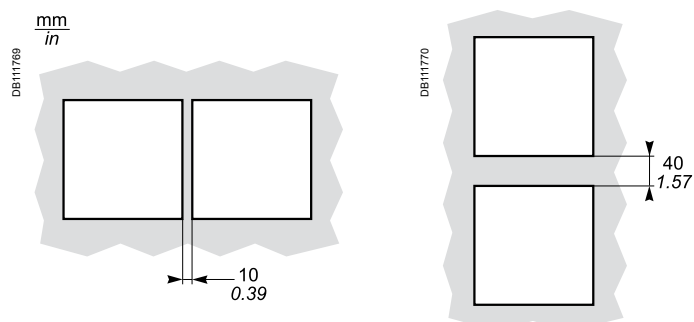
Power Meter Series 800
Dimensions and connection (cont.)

Remote display door mounting
Flush mounting

mm / *in*

DB 111792

21 / *0.839*

96 / *3.780*

19 / *0.751*

12 / *0.457*

92 / *3.622*

92 / *3.622*

Surface mount

mm / *in*

DB 111793

10 / *0.394*

96 / *3.780*

82 / *3.230*

31 / *1.220*

4 x Ø4 / *Ø0.157*

76 / *3.000*

Ø22 (Ø32 max) / *Ø0.880*

54 / *2.125*

13 / *0.500*

27 / *1.063*
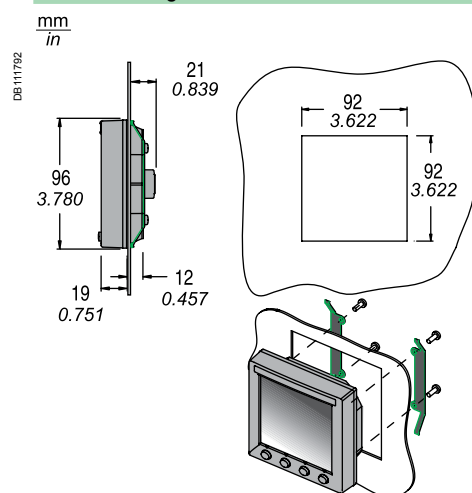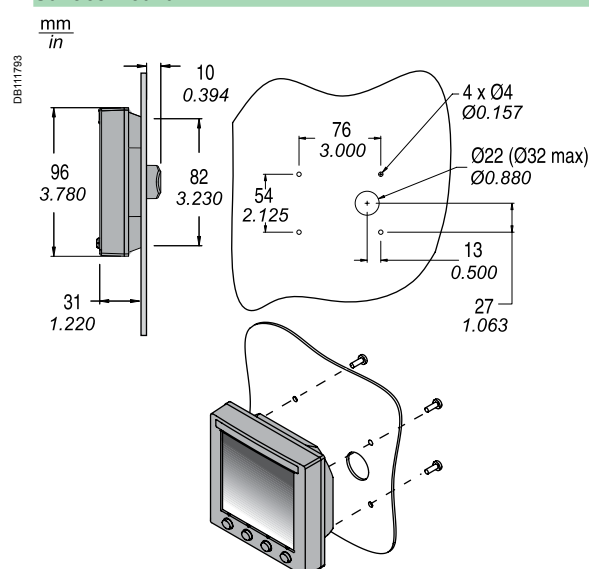
Mounting in a Ø102 cutout (replace analogue device: ammeter, voltmeter, etc.)

mm / *in*

DB 111794

21 / *0.839*

96 / *3.780*

82 / *3.230*

19 / *0.751*

12 / *0.457*

Ø102 / *Ø4.000*

4 x Ø4 / *Ø0.157*

86 / *3.376*

86 / *3.376*

A

PM8G
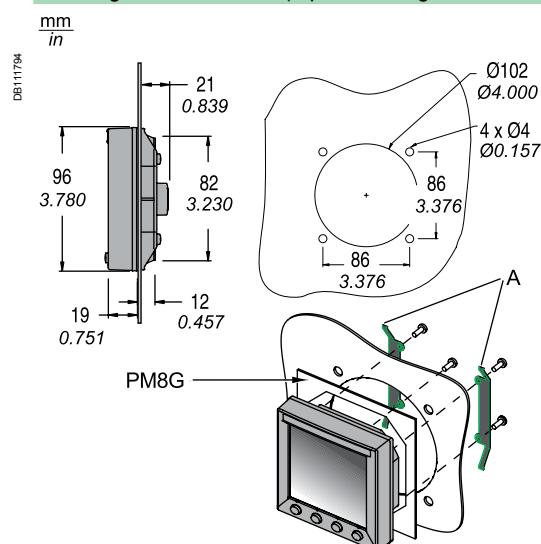
PM8000 series
Functions and characteristics

PowerLogic PM8000 series meter.

PowerLogic PM8000 series meter - rear view.

PowerLogic PM8000 DIN rail mounted meter.

The PowerLogic PM8000 series meter is a highly accurate, extremely reliable power and energy meter with unmatched flexibility and usability. The meter combines accurate 3-phase energy and power measurements with data logging, power quality analysis, alarming and I/O capabilities not typically available in such a compact meter.

The PM8000 series meters are compliant with stringent international standards that guarantee their metering accuracy and power quality measurements. Ideal for industrial and critical power installations that are responsible for maintaining the operation and profitability of a facility.

Applications and benefits
■ Maximize profits by providing the highest output possible with the least amount of risk to availability.
■ Optimize availability and reliability of electrical systems and equipment.
■ Monitor power quality (PQ) for compliance and to prevent problems.
■ Meters fully supported by StruxureWare Power Monitoring Expert and PowerSCADA Expert Software.

Main characteristics
■ Precision metering:
□ IEC 61557-12 PMD Sx K70 3000m 0.2 (performance measuring and monitoring functions).
□ Class 0.2S accuracy IEC 62053-22, ANSI C12.20 Class 0.2 (active energy).
□ Industry leading Class 0.5S* accuracy for reactive energy (IEC 62053-24).
□ Cycle-by-cycle RMS measurements updated every ½ cycle.
□ Full 'multi-utility' WAGES metering support.
□ Net metering.
□ Anti-tamper protection seals.

■ PQ compliance reporting and basic PQ analysis.
□ Monitors and logs parameters in support of international PQ standards,
  - IEC 61000-4-30 Class S
  - IEC 62586 PQI-S
  - EN 50160
□ Generates onboard PQ compliance reports accessible via onboard web pages:
  - Basic event summary and pass/fail reports, such as EN 50160 for power frequency, supply voltage magnitude, supply voltage dips, short and long interruptions, temporary over voltages, voltage unbalance and harmonic voltage.
  - ITIC (CBEMA) and SEMI curves, with alarm categorization to support further analyses.
  - NEMA Motor Derating curve.
  - Basic meter provides EN 50160 but can be configured to provide IEEE 519.
□ Harmonic analysis:
  - THD on voltage and current, per phase, min/max, custom alarming.
  - Individual harmonic magnitudes and angles on voltage and current, up to the 63rd harmonic.
□ High resolution waveform capture: triggered manually or by alarm, captured waveforms available directly from the meter via FTP in a COMTRADE format.
□ Disturbance detection and capture: sag/swell on any current and voltage channel, alarm on disturbance event, waveform capture with per-event information.
□ Patented disturbance direction detection: provides indication of the captured disturbance occurring upstream or downstream of the meter; timestamped results provided in the event log, with degree of certainty of disturbance direction.

■ Used with StruxureWare Power Monitoring Expert software, provides detailed PQ reporting across entire network:
□ EN 50160 report.
□ IEC 61000-4-30 report.
□ PQ compliance summary.
□ ISO 50001.
□ Display of waveforms and PQ data from all connected meters.
■ Onboard data and event logging.
□ 512MB of standard non-volatile memory. 10 MB of standard non-volatile memory dedicated to capture billing data, events, and waveforms.

*Certification pending

PM8000 series
Functions and characteristics (cont.)

PowerLogic remote display.

PowerLogic I/O module.

PowerLogic PM8000 series meter with remote display.

□ No data gaps due to network outages or server downtime.
□ Min/Max log for standard values.
□ 50 user-definable data logs, recording up to 16 parameters on a cycle-by-cycle or other user definable interval.
□ Continuous logging or 'snapshot' triggered by setpoint and stopped after defined duration.
□ Trend energy, demand and other measured parameters.
□ Forecasting via web pages: average, minimum and maximum for the next four hours and next four days.
□ Time-of-use in conjunction with StruxureWare software.
□ Event log: alarm conditions, metering configuration changes, and power outages, timestamped to 1 millisecond.

■ Alarming and control.
□ 50+ definable alarms to log critical event data, trigger waveform recording, or perform control function.
□ Trigger on any condition, with cycle-by-cycle and 1-second response time.
□ Combine alarms using Boolean logic and to create alarm levels.
□ Alarm notification via email text message.
□ In conjunction with StruxureWare Power Monitoring Expert, software alarms and alarm frequency are categorized and trended for easy evaluation of worsening/ improving conditions.

■ Excellent quality: ISO 9001 and ISO 14000 certified manufacturing.

Usability
■ Easy installation and setup.
□ Panel and DIN rail mounting options, remote display option.
□ Pluggable connectors.
□ Free setup application simplifies meter configuration.

■ Front panel.
□ Easy to read colour graphic display.
□ Simple, intuitive menu navigation with multi-language (8) support.

■ Flexible remote communications.
□ Multiple simultaneously operating communication ports and protocols allow interfacing with other automation systems; (e.g. waveforms, alarms, billing data, etc.) can be uploaded for viewing/analysis while other systems access real-time information.
□ Supports Modbus, ION, DNP3, IEC 61850.
□ Dual port Ethernet: 10/100base-TX; daisy-chaining capability removes need for additional switches.
□ Create redundant network loop using Rapid Spanning Tree Protocol (RSTP) and managed Ethernet switches.
□ Customize TCP/IP port numbers enable/disable individual ports.
□ RS-485 2-wire connection, up to 115200 baud, Modbus RTU and ION protocols, DNP3 is also supported via RS-485.
□ Ethernet to serial gateway with Modbus Master functionality, connecting to 31 downstream serial Modbus devices. Also supports Modbus Mastering over TCP/ IP (Ethernet) network.
□ Full function web server with factory and customizable pages to access real-time and PQ compliance data.
□ Push historical data via email.
□ Advanced security: Up to 16 configurable user accounts.

■ Time synchronization via:
□ GPS clock (RS485) or IRIG-B (digital input) to +/- 1 millisecond.
□ Also supports Network Time Protocol (NTP/SNTP) and time set function from StruxureWare software server.

Adaptability
■ ION™ frameworks allow customizable, scalable applications, object-oriented programming, compartmentalizes functions, and increases flexibility and adaptability.

PB113686

PowerLogic PM8000 series meter with I/O modules.

□ Applications include: access and aggregate data from Modbus devices on serial port or across the network (Modbus TCP/IP), logging and/or processing data by totalizing, unit conversion or other calculations, applying complex logic for alarming or control operations, data visualization via web pages.

Standard meter I/O
■ 3 digital status/counter inputs.
■ 1 KY (form A) energy pulse output for interfacing with other systems.

Modular I/O options
■ Optional expansion modules (up to 4 per meter) add digital/analogue I/O.

Option modules include:

■ Digital module
□ 6 digital status/counter inputs.
□ 2 Form C relay outputs, 250V, 8A.

■ Analogue module
□ 4 analogue inputs (4-20mA; 0-30V).
□ 2 analogue outputs (4-20mA; 0-10V) for interfacing with building management sensors and systems.

Reference numbers	
Meter	**Description**
METSEPM8240	DIN96 panel mount meter
METSEPM8243	DIN rail mount meter
METSEPM8244	DIN rail mount meter with remote display
Accessories	**Description**
METSEPM89RD96	Remote display, 3 metre cable, mounting hardware for 30mm hole (nut & centering pin), mounting hardware for DIN96 cutout (92x92mm) adapter plate
METSEPM8000SK	Terminal covers for utility sealing
METSEPMAK	Adapters for mounting meter and remote display back to back & ANSI 4", 0.3 metre (1 ft.) Ethernet cable
METSECAB10	Display Cable, 10 metres
METSEPM89M2600	Digital I/O module (6 digital inputs & 2 relay outputs)
METSEPM89M0024	Analogue I/O module (4 analogue inputs & 2 analogue outputs)

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PowerLogic™ PM8000 bottom view DIN mounting.

Features guide		PM8000
General		
Use on LV and MV systems		∎
Current accuracy (5A Nominal)		0.1 % reading
Voltage accuracy (57 V LN/100 V LL to 400 V LN/690 V LL)		0.1 % reading
Active energy accuracy		0.2 %
Number of samples/cycle or sample frequency		256
Instantaneous rms values		
Current, voltage, frequency		∎
Active, reactive, apparent power	Total and per phase	∎
Power factor	Total and per phase	∎
Current measurement range (autoranging)		0.05 - 10A
Energy values		
Active, reactive, apparent energy		∎
Settable accumulation modes		∎
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	Via front panel and web page	63
	Via StruxureWare software	127
Waveform capture		∎
Detection of voltage swells and sags		∎
Fast acquisition	1/2 cycle data	∎
EN 50160 compliance checking		∎
Customizable data outputs (using logic and math functions)		∎
Data recording		
Min/max of instantaneous values		∎
Data logs		∎
Event logs		∎
Trending/forecasting		∎
SER (Sequence of event recording)		∎
Time stamping		∎
GPS synchronisation (+/- 1 ms)		∎
Memory (in Mbytes)		512
Display and I/O		
Front panel display		∎
Wiring self-test		∎
Pulse output		1
Digital or analogue inputs(max)		27 digital 16 analogue
Digital or analogue outputs (max, including pulse output)		1 digital 8 relay 8 analogue
Communication		
RS 485 port		1
Ethernet port		2
Serial port (Modbus, ION, DNP3)		∎
Ethernet port (Modbus/TCP, ION TCP, DNP3 TCP, IEC 61850 [2])		∎
Ethernet gateway		∎
Alarm notification via email		∎
HTTP web server		∎
SNMP with custom MIB and traps for alarms		∎
SMTP email		∎
NTP time synchronization		∎
FTP file transfer		∎

PM8000 series
Functions and characteristics (cont.)

Electrical characteristics		PM8000
Type of measurement		True rms to 256 samples per cycle
Measurement accuracy	Current & voltage	Class 0.2 as per IEC 61557-12
	Active Power	Class 0.2 as per IEC 61557-12
	Power factor	Class 0.5 as per IEC 61557-12
	Frequency	Class 0.2 as per IEC 61557-12
	Active energy	Class 0.2S IEC 62053-22 (In=5A) Class 0.2 IEC 61557-12, ANSI C12.20 Class 0.2
	Reactive Energy	Class 0.5S IEC 62053-24*
Data update rate		1/2 cycle or 1 second
Input-voltage characteristics	Specified accuracy voltage	57 VLN/100 VLL to 400 VLN/690 VLL
	Impedance	5 MΩ per phase
	Specified accuracy frequency - Frequency	42 to 69Hz (50/60Hz nominal)
	Limit range of operation - frequency	20 to 450Hz
Input-current characteristics	Rated nominal current	1A (0.5S), 5A (0.2S) , 10A (0.2 ANSI)
	Specified accuracy current range	Starting Current: 5mA Accurate Range: 50mA - 10A
	Permissible overload	200 A rms for 0.5s, non-recurring
	Impedance	0.0003 Ω per phase
	Burden	0.024 VA at 10A
Power supply	AC	90-415 V AC ±10% (50/60Hz ± 10%)
	DC	120-300 V DC ±10%
	Ride-through time	100 ms (6 cycles at 60 Hz) min., any condition 200 ms (12 cycles at 60 Hz) typ., 120 V AC 500 ms (30 cycles at 60 Hz) typ., 415 V AC
	Burden	Meter Only: 18 VA max at 415V AC, 6W at 300V DC Fully optioned meter: 36 VA max at 415V AC, 17W at 300V DC.
Input/outputs	Meter Base Only	3 form A digital inputs (30V AC/60 V DC) 1 form A (KY) solid state digital output (30V AC/60 V DC, 75mA).
	Optional	Digital - 6 form A digital inputs (30V AC / 60V DC) wetted + 2 form C relay outputs (250VAC, 8A)
		Analogue - 4 analogue inputs (4-20mA, 0-30Vdc) + 2 analogue outputs (4-20mA, 0-10Vdc).
Mechanical characteristics		
Weight		Integrated Display Model 0.581 kg DIN rail mounted Model 0.528 kg IO modules 0.140 kg Remote display 0.300 kg
IP degree of protection		IP 54, UL type 12: Panel mount and Remote display, front. IP 30: Panel mount rear, DIN rail mount, I/O modules.
Dimensions	Panel mount model	96 x 96 x 77.5 mm
	DIN model	90.5 x 90.5 x 90.8 mm
	Remote display	96 x 96 x 27 mm
	IO modules	90.5 x 90.5 x 22 mm
Environmental conditions		
Operating temperature		-25ºC to +70ºC
Remote Display Unit		-25ºC to +60ºC
Storage temperature		-40ºC to +85ºC
Humidity rating		5% to 95% non-condensing
Installation category		III
Operating altitude (maximum)		3000m above sea level

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PM8000 series
Functions and characteristics (cont.)

Electromagnetic compatibility	
Product standards	IEC 62052-11 and IEC 61326-1
Immunity to electrostatic discharge	IEC 61000-4-2
Immunity to radiated fields	IEC 61000-4-3
Immunity to fast transients	IEC 61000-4-4
Immunity to surges	IEC 61000-4-5
Immunity to conducted disturbances	IEC 61000-4-6
Immunity to power frequency magnetic fields	IEC 61000-4-8
Immunity to conducted disturbances, 2-150kHz	CLC/TR 50579
Immunity to voltage dips & interruptions	IEC 61000-4-11
Immunity to ring waves	IEC 61000-4-12
Conducted and radiated emissions	EN 55022, EN 55011, FCC part 15, ICES-003
Surge withstand Capability (SWC)	IEEE C37.90.1

Safety	
Safety Construction	IEC/EN 61010-1 ed.3, CAT III, 400 VLN / 690 V LL UL 61010-1 ed.3 and CSA-C22.2 No. 61010-1 ed.3, CAT III, 347 V LN / 600 V LL IEC/EN 62052-11, protective class II

Communication [1]	
Ethernet to serial line gateway	Communicates directly with up to 32 unit load ION slave devices.
Web server	Customisable pages, new page creation capabilities, HTML/XML compatible.
Serial port RS 485	Baud rates of 2400 to 115200, pluggable screw terminal connector.
Ethernet port(s)	2x 10/100Base-TX, RJ45 connector (UTP).
Protocol	Modbus, ION, DNP3, IEC 61850, HTTP, FTP, SNMP, SMTP, DPWS, RSTP, NTP, SNTP, GPS protocols.

Firmware characteristics	
High-speed data recording	Down to 1/2 cycle interval burst recording, stores detailed characteristics of disturbances or outages. Trigger recording by a user-defined setpoint, or from external equipment.
Harmonic distortion	Up to 63rd harmonic (127th via StruxureWare software) for all voltage and current inputs.
Sag/swell detection	Analyse severity/potential impact of sags and swells: magnitude and duration data suitable for plotting on voltage tolerance curves per phase triggers for waveform recording, control.
Disturbance direction detection	Determine the location of a disturbance more quickly and accurately by determining the direction of the disturbance relative to the meter. Analysis results are captured in the event log, along with a timestamp and confidence level indicating level of certainty.
Instantaneous	High accuracy of standard speed (1s) and high-speed (1/2 cycle) measurements, including true rms per phase and total for: voltage, current, active power (kW), reactive power (kvar), apparent power (kVA), power factor, frequency, voltage and current unbalance, phase reversal.
Load profiling	Channel assignments (800 channels via 50 data recorders) configurable for any measurable parameter, including historical trend recording of energy, demand, voltage, current, power quality, or any measured parameter. Trigger recorders based on time interval, calendar schedule, alarm/event condition, or manually.
Trend curves	Historical trends and future forecasts to better manage demand, circuit loading, and other parameters. Provides average, min, max and standard deviation every hour for last 24 hours, every day for last month, every week for last 8 weeks and every month for last 12 months.
Waveform captures	Simultaneous capture of all voltage and current channels sub-cycle disturbance capture, maximum cycles is 100,000 (16 samples/cycle x 96 cycles, 10MBytes memory), max 256 samples/cycle.
Alarms	Threshold alarms: adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm, user-defined or automatic alarm threshold settings, user-defined priority levels (optional automatic alarm setting).

(1) All the communication ports may be used simultaneously.

PM8000 series
Functions and characteristics (cont.)

Firmware characteristics (cont.)	
Advanced security	Up to 16 users with unique access rights. Perform resets, time sync, or meter configurations based on user privileges.
Memory	512MB (10MB for programming and interval logging).
Firmware update	Update via the communication ports.
Display characteristics	
Integrated or Remote display	320x240 (1/4 VGA) Colour LCD, configurable screens , 5 buttons and 2 LED indicators (alarm and meter status).
Languages	English, French, Spanish, Russian, Portugese,German, Italian, Chinese.
Notations	IEC, IEEE.
The HMI menu includes	
Alarms	Active alarms, historic alarms.
Basic Reading	Voltage, current, frequency, power summary.
Power	Power summary, demand, power factor.
Energy	Energy total, delivered, received.
Events	Timestamped verbose event log.
Power Quality	EN 50160, harmonics, phasor diagrams.
Inputs/Outputs	Digital inputs, digital outputs, analogue inputs, analogue outputs.
Nameplate	Model, serial and FW version.
Custom Screens	Build your own metrics.
Setup Menu	Meter setup, communications setup, display setup, date/time/clock setup, alarm setup, language setup, time of use setup, resets, password setup.

Schneider Electric

ION7550 / ION7650
Functions and characteristics

PowerLogic™ ION7650

Used at key distribution points and sensitive loads, PowerLogic™ ION7550 and ION7650 meters offer unmatched functionality including advanced power quality analysis coupled with revenue accuracy, multiple communications options, web compatibility, and control capabilities. Customise metering or analysis functions at your work station, without hard wiring. Just link drag-and-drop icons or select default settings. Integrate the meters with StruxureWare Power Monitoring software or share data with SCADA systems via multiple communication channels and protocols.

Applications
Reduce energy costs.
Increase equipment utilisation.
Comply with environmental and regulatory requirements.
Improve power quality and reliability.
Improve customer satisfaction and retention.
Monitor and control equipment.
Integrated utility metering.
Allocate or sub-bill energy costs to departments, processes or tenants.

Main characteristics

Anticipate, diagnose and verify to increase efficiency
Reveal energy inefficiencies or waste and optimise equipment operation to increase efficiency. Isolate reliability risks, diagnose power-related equipment issues and verify reliable operation.

Summarise power quality, set targets, measure and verify results
Consolidate all the power quality characteristics into a single trendable index. Benchmark power quality and reliability and compare against standards, or compare facilities or processes.

Easy to use, multilingual, IEC/IEEE configureable display
Bright LCD display with adjustable contrast. Screen-based menu system to configure meter settings including IEC or IEEE notations. Multilingual support for English, French, Spanish and Russian. 12/24 hour clock support in multiple formats.

Modbus Master functionality
Read information from downstream Modbus devices and view it via the front panel or store in memory until you upload to the system level.

IEC 61850 protocol
Increase interoperability and decrease engineering time using standard protocol.

Gateway functionality
Access through the meter's Ethernet port (EtherGate) or telephone network (ModemGate) to Modbus communicating devices connected to meter serial ports.

Detect and capture transients as short as 20µs at 50Hz (17µs at 60 Hz)
Identify problems due to short disturbances, e.g. switching of capacitors, etc.

Power quality compliance monitoring
Monitor compliance with international quality-of-supply standards (IEC 61000-4-30 class A ed. 2[1], EN50160[1], IEC 61000-4-7[1], IEC 61000-4-15[1], IEEE 519, IEEE 1159, and CBEMA/ITIC). Evaluate flicker based on IEC 61000-4-15[1] and IEEE 1453[1].

Detect waveshape changes
Detection of phase switching phenomena (for example during the transfer of a high-speed static switch) not detected by classical threshold-based alarms.

Record ultra-fast electrical parameters every 100 ms or every cycle
Preventive maintenance: acquisition of a motor startup curve, etc.

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

Disturbance direction detection
Determine disturbance location and direction relative to the meter. Results captured in the event log, along with a timestamp and certainty level.

Alarm setpoint learning
The meter analyses the circuit and recommends alarm setpoints to minimise nuisance or missed alarms.

Notify alarms via email
High-priority alarms sent directly to the user's PC. Instant notification of power quality events by email.[1]
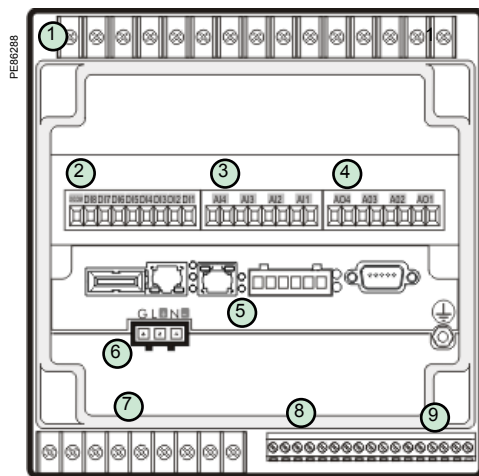
Part numbers

ION7550 / ION7650	
ION7550	**M7550**
ION7650	**M7650**
Remote display	**M765RD**
Remote display w/power supply	**M765RDPS**

(1) ION7650 only

PowerLogic™ ION7550 / ION7650 rear view.

1   *Current/voltage inputs*
2   *Digital inputs*
3   *Analogue inputs*
4   *Analogue outputs*
5   *Communications card*
6   *Power supply*
7   *Form C digital outputs*
8   *Digital inputs*
9   *Form A digital outputs*
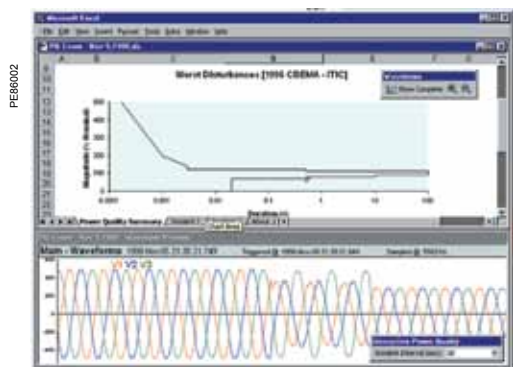
Disturbance waveform capture and power quality report

Selection guide		ION7550	ION7650
General			
Use on LV and HV systems		■	■
Current accuracy (1A to 5A)		0.1 % reading	0.1 % reading
Voltage accuracy (57V to 288V)		0.1 % reading	0.1 % reading
Energy accuracy		0.2 %	0.2 %
Nbr of samples/cycle or sample frequency		256	1024
Instantaneous rms values			
Current, voltage, frequency		■	■
Active, reactive, apparent power	Total and per phase	■	■
Power factor	Total and per phase	■	■
Current measurement range (autoranging)		0.01 - 20A	0.01 - 20A
Energy values			
Active, reactive, apparent energy		■	■
Settable accumulation modes		■	■
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	Via front panel	63	63
	Via ION Enterprise	127	511
Waveform capture		■	■
Detection of voltage swells and sags		■	■
Detection and capture of transients		-	20 µs[1]
EN50160 flicker		-	■
Fast acquisition of 100 ms or 20 ms data		■	■
EN50160 compliance checking		-	■
Programmable (logic and math functions)		■	■
Data recording			
Min/max of instantaneous values		■	■
Data logs		■	■
Event logs		■	■
Trending/forecasting		■	■
SER (Sequence of event recording)		■	■
Time stamping		■	■
GPS synchronisation (1 ms)		■	■
Memory (in Mbytes)		10	10
Display and I/O			
Front panel display		■	■
Optional colour touchscreen remote display		■	■
Wiring self-test		■	■
Pulse output		1	1
Digital or analogue inputs(max)		20	20
Digital or analogue outputs (max, including pulse output)		12	12
Communication			
RS 485 port		1	1
RS 485 / RS 232 port		1	1
Optical port		1	1
Modbus protocol		■	■
IEC 61850 protocol		■	■
Ethernet port (Modbus/TCP/IP protocol, IEC 61850 [2])		1	1
Ethernet gateway (EtherGate)		1	1
Alarms (optional automatic alarm setting		■	■
Alarm notification via email		■	■
HTML web page server (WebMeter)		■	■
Internal modem		1	1
Modem gateway (ModemGate)		■	■
DNP 3.0 through serial, modem, and I/R ports		■	■

(1) For 50 Hz line frequency; 17µs for 60 Hz line frequency.

PowerLogic ION7650

Electrical characteristics

Type of measurement		True rms to 1024 samples per cycle (ION7650)
Measurement accuracy	Current and voltage	±0.01% of reading + ±0.025% of full scale
	Power	±0.075% of reading + ±0.025% of full scale
	Frequency	±0.005Hz
	Power factor	±0.002 from 0.5 leading to 0.5 lagging
	Energy:	IEC62053-22 0,2S, 1A and 5A
Data update rate		1/2 cycle or 1 second
Input-voltage characteristics	Measurement range	Autoranging 57V through 347V LN / 600V LL
	Impedance	5 MΩ/phase (phase - Vref)
	Frequency measurement range	42 to 69Hz
Input-current characteristics	Rated nominal current	1A, 2A, 5A, 10A
	Measurement range	0.005 - 20 A autoranging (standard range) 0.001 - 10 A autoranging (optional range)
	Permissible overload	500 A rms for 1 s, non-recurring (5A) 50 A rms for 1s, non-recurring (1A)
	Impedance	0.002 Ω per phase (5A) 0.015 Ω per phase (1A)
	Burden	0.05 VA per phase (5 A) 0.015 VA per phase (1 A)
Power supply	AC	85-240 V AC ±10% (47-63 Hz)
	DC	110-300 V DC ±10%
	DC low voltage (optional)	20-60 V DC ±10%
	Ride-through time	100 ms (6 cycles at 60 Hz) min.
	Burden	Standard: typical 20 VA, max 45 VA Low voltage DC: typical 15 VA, max 20 VA
Power supply for remote display		24 VDC, burden 6.
Input/outputs[1] (includes Event Priority)	Standard	8 digital inputs (120 V DC) 3 relay outputs (250 V AC / 30 V DC) 4 digital outputs (solid state)
	Optional	8 additional digital inputs 4 analogue outputs, and/or 4 analogue inputs

Mechanical characteristics

Weight		1.9 kg
IP degree of protection (IEC 60529)		Integrated display, front: IP 50; back: IP 30 Transducer unit (no display): IP 30; remote display: IP65
Dimensions	Standard model	192 x 192 x 159 mm
	TRAN model	235.5 x 216.3 x 133.1 mm

Environmental conditions

Operating temperature	Standard power supply	-20 to +70 ºC
	Low voltage DC supply	-20 to +50 ºC
	Integral display range	-20 to +60 ºC
	Remote display range	0 to +50 ºC
Storage temperature	Display, TRAN	-40 to +85 ºC
	Remote display	-20 to +60 ºC
Humidity rating		5 - 95% non-condensing, remote display 0 - 85%
Installation category		III (2000m above sea level)
Dielectric withstand		As per EN 61010-1, IEC 62051-22A[2]

Electromagnetic compatibility

Electrostatic discharge	IEC 61000-4-2
Immunity to radiated fields	IEC 61000-4-3
Immunity to fast transients	IEC 61000-4-4
Immunity to surges	IEC 61000-4-5
Conducted and radiated emissions	CISPR 22

Safety

Europe	IEC 61010-1

Communication

RS 232/485 port [1]	Up to 115,200 bauds (57,600 bauds for RS 485), ION, DNP 3.0, Modbus, GPS, EtherGate, ModemGate, Modbus Master
RS 485 port [1]	Up to 57,600 bauds, ION, DNP 3.0, Modbus, GPS, EtherGate, ModemGate, Modbus Master
Infrared port[1]	ANSI type 2, up to 19,200 bauds, ION, Modbus, DNP 3.0
Ethernet port	10Base-T/100Base-TX, RJ45 connector, 100 m
Fibre-optic Ethernet link (8 simultaneous connections supported)	100 Base FX, SC duplex connector, 1300 nm, FO multimode with gradient index 62.5/125 µm or 50/125 µm, 2000 m link

(1) *Consult the ION7550 / ION7650 installation guide for complete specifications.*
(2) *IEC 62051-22B with serial ports only.*
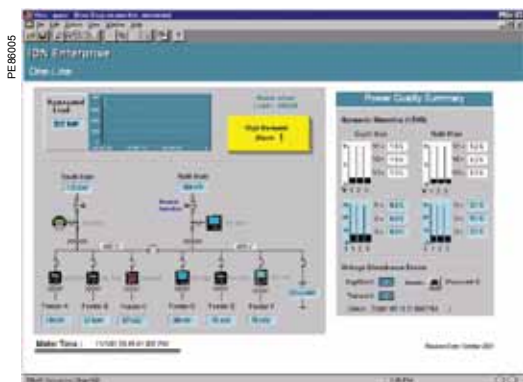
Example showing instantaneous values and alarm.

Communication (cont.)	
Protocol	ION, Modbus, TCP/IP, DNP 3.0, Telnet, IEC 61850[2]
EtherGate	Communicates directly with up to 62 slave devices via available serial ports
ModemGate	Communicates directly with up to 31 slave devices
Ethernet port	10Base-T/100Base-TX, RJ45 connector, 100 m link
Supported web protocols	SNMP, SMTP, FTP
WebMeter	5 customisable pages, new page creation capabilities, HTML/XML compatible

Firmware characteristics	
High-speed data recording	Down to 5ms interval burst recording, stores detailed characteristics of disturbances or outages. Trigger recording by a user-defined setpoint, or from external equipment.
Harmonic distortion	Up to 63rd harmonic (511th for ION7650 via ION Enterprise software) for all voltage and current inputs
Sag/swell detection	Analyse severity/potential impact of sags and swells: magnitude and duration data suitable for plotting on voltage tolerance curves per phase triggers for waveform recording, control
Disturbance direction detection	Determine the location of a disturbance more quickly and accurately by determining the direction of the disturbance relative to the meter. Analysis results are captured in the event log, along with a timestamp and confidence level indicating level of certainty.
Instantaneous	High accuracy (1s) or high-speed (1/2 cycle) measurements, including true rms per phase / total for: voltage and current active power (kW) and reactive power (kvar) apparent power (kVA) power factor and frequency voltage and current unbalance phase reversal
Load profiling	Channel assignments (800 channels via 50 data recorders) configurable for any measurable parameter, including historical trend recording of energy, demand, voltage, current, power quality, or any measured parameter. Trigger recorders based on time interval, calendar schedule, alarm/event condition, or manually.
Trend curves	Access historical data at the front panel. Display, trend and continuously update historical data with date and timestamps for up to four parameters simultaneously.
Waveform captures	Simultaneous capture of all voltage and current channels sub-cycle disturbance capture maximum cycles is 214,000 (16 samples/cycle x 96 cycles, 10Mbytes memory) 256 samples/cycle (ION7550) 512 samples/cycle standard, 1024 samples/cycle optional (ION7650) COMTRADE waveform format available direct from the meter (Ethernet port option only)
Alarms	Threshold alarms: adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm user-defined priority levels boolean combination of alarms is possible using the operators NAND, OR, NOR and XOR
Advanced security	Up to 16 users with unique access rights. Perform resets, time syncs, or meter configurations on user privileges
Transformer correction	Correct for phase / magnitude inaccuracies in current transformers (CTs), potential transformers (PTs)
Memory	5 to 10 Mbytes (specified at time of order)
Firmware update	Update via the communication ports

Display characteristics	
Integrated display	Back lit LCD, configurable screens
Remote display	Colour TFT, configurable screens
Integrated display languages	English, French, Spanish, Russian
Remote display languages	English, French, Spanish
Notations	IEC, IEEE

(1) All the communication ports may be used simultaneously.
(2) Only available with 5MB memory meters.

PE86020

		1		2		3	4	5	6	7		8	9	10	
M 7 6 5 0		**A 0**		**C**		**0**	**B**	**6**	**A 0**			**A**	**0**	**A**	

Example ION7650 product part number.

1 Model.
2 Form factor.
3 Current Inputs.
4 Voltage Inputs.
5 Power supply.
6 System frequency.
7 Communications.
8 Inputs/outputs.
9 Security.
10 Special order.

Part numbers			
	Item	**Code**	**Description**
1	Model		Advanced meter with wide-range voltage inputs (57-347V line-neutral or 100-600V line-line), transient detection, data and waveform recording, IEC 61000-4-30 Class A & EN50160. Supports ION, IEC 61850 (only for meters with 5MB memory and Ethernet comm card) Modbus-RTU, and DNP 3.0.
			Advanced meter with wide-range voltage inputs (57-347V line-neutral or 100-600V line-line), sag/swell detection, data and waveform recording. Supports ION, IEC 61850 (only for meters with 5MB memory and Ethernet comm card) Modbus-RTU, and DNP 3.0.
2	Form Factor	A0	Integrated display with front optical port, 5 MB logging memory, and 512 samples/cycle resolution (ION7650) or 256 samples/cycle (ION7550).
		A1	*ION7650 only.* Integrated display with front optical port, 5 MB logging memory, and 1024 samples/cycle resolution.
		B0	Integrated display with front optical port, 10 MB logging memory, and 512 samples/cycle resolution (ION7650) or 256 samples/cycle (ION7550).
		B1	*ION7650 only.* Integrated display with front optical port, 10 MB logging memory, and 1024 samples/cycle resolution.
		T0	Transducer (no display) version, with 5 MB logging memory, and 512 samples/cycle resolution (ION7650) or 256 samples/cycle (ION7550).
		T1	*ION7650 only.* Transducer (no display) version, with 5 MB logging memory, and 1024 samples/cycle resolution.
		U0	Transducer (no display) version, with 10 MB logging memory, and 512 samples/cycle resolution (ION7650) or 256 samples/cycle (ION7550).
		U1	*ION7650 only.* Transducer (no display) version, with 10 MB logging memory, and 1024 samples/cycle resolution.
3	Current Inputs	C	5 Amp nominal, 20 Amp full scale current input
		E	1 Amp nominal, 10 Amp full scale current input
		F	Current Probe Inputs (for 0-1 VAC current probes; sold
		G	Current Probe Inputs with three Universal Technic 10A clamp on CTs; meets IEC 1036 accuracy
4	Voltage Inputs	0	57 to 347 VAC line-to-neutral / 100 to 600 VAC line-to-line
5	Power Supply	B	Standard power supply (85-240 VAC, ±10%/47-63 Hz / 110-300 VDC, ±10%)
		C	Low voltage DC power supply (20-60 VDC)
6	System Frequency	5	Calibrated for 50 Hz systems
		6	Calibrated for 60 Hz systems
7	Communications	A0	Standard communications (1 RS-232/RS-485 port, 1 RS-485 port). Integrated display models include 1 ANSI Type 2 optical port.
		C1	Standard communications plus 10Base-T/100Base-TX Ethernet (RJ45), 56k universal internal modem (RJ11). Ethernet and modem gateway functions each use a serial communications
		D7	Standard communications plus 10Base-T/100Base-TX Ethernet (RJ45) and 100BaseFX Ethernet Fiber, 56k universal internal modem (RJ11). Ethernet/modem gateway uses serial port.
		E0	Standard communications plus 10Base-T/100Base-TX (RJ45). Ethernet gateway function uses a serial communications port.
		F1	Standard communications plus 10Base-T/100Base-TX Ethernet (RJ45) and 100Base-FX (SC male Fiber Optic connection). Ethernet gateway function uses a serial port.
		M1	Standard communications plus 56k universal internal modem (RJ11). Modem gateway function uses a serial port.
8	I/O	A	Standard I/O (8 digital ins, 3 Form C relays, 4 Form A solid-state
		E	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 20 mA analogue inputs)
		K	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 20 mA analogue outputs)
		N	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 20 mA analogue inputs and four 0 to 20 mA outputs)
		P	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 1 analogue inputs and four -1 to 1 mA analogue outputs)
9	Security	0	Password protected, no hardware lock
		1	Password protected, hardware lockable (enabled/disabled via jumper on comm card)
		6	Password protected with security lock enabled, terminal cover and UK OFGEM labels

ION7550 / ION7650
Functions and characteristics (cont.)
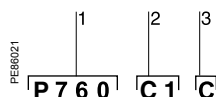
Part numbers (cont'd)

Item		Code	Description
10	Other options	A	None
		C	Tropicalisation treatment applied
		E	ION7650 only. EN50160 compliance monitoring, IEC61000-4-30 Class A measureme6nts
		F	ION7650 only. EN50160 compliance monitoring, with tropicalisation treatment, IEC61000-4-30 Class A measurements

Communications Card [1]

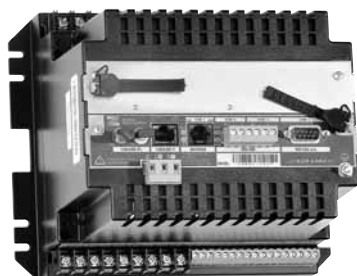| Item		Code	Description
1	Comm card	P765C	ION7550 / ION7650 communication card for field retrofit installations
2	Type	A0	Standard communications (1 RS-232/RS-485 port, 1 RS-485 port). Front optical port support for meters with integrated display.
		C1	Standard communications plus 10Base-T/100Base-TX Ethernet (RJ45), 56k universal internal modem (RJ11; the modem port is shared with the front optical port). Ethernet and modem gateway functions each use a serial communications port. IEC 61850 protocol (depending on firmware version).
		D7	Standard communications plus 10Base-T/100Base-TX Ethernet, 100BaseFX Ethernet Fiber, 56k universal internal modem (RJ11; the modem port is shared with the front optical port). Ethernet and modem gateway functions each use a serial communications port.IEC 61850 protocol (depending on firmware version).
		E0	Standard communications plus 10Base-T/100Base-TX Ethernet. Ethernet gateway function uses a serial communications port. IEC 61850 protocol (depending on firmware version).
		F1	Standard communications plus 10Base-T/100Base-TX Ethernet, 100BaseFX Ethernet Fiber (SC male Fiber Optic connection). Ethernet gateway function uses a serial communications port. IEC 61850 protocol (depending on firmware version).
		M1	Standard communications plus 56k universal internal modem (RJ11; the modem port is shared with the front optical port). Modem gateway function uses a serial communications port.
3	Special order	A	None
		C	Tropicalization treatment applied

Input/Output expansion card

Item	Code	Description
I/O card	P760A	Expansion I/O for field retrofit installations.
Type	D	Expansion I/O card with eight digital inputs, four 0 to 1 mA analogue inputs
	E	Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue inputs
	H	Expansion I/O card with eight digital inputs, four -1 to 1 mA analogue outputs
	K	Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue outputs
	N	Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue inputs & four 0 to 20 mA outputs
	P	Expansion I/O card with eight digital inputs, four 0 to 1 analogue inputs and four -1 to 1 mA analogue outputs
Special Order	A	None
	C	Tropicalization treatment applied

ION7550 / ION7650 related items

Code	Description
ADPT-37XX-7500	Adapter plate to fit meter into a 3710 or 3720 ACM panel cutout
TERMCVR-7500	Terminal strip cover for the ION7550 or ION7650
M1UB10A1V-10A	10 A / 1 VAC Universal Technic Clamp On Current Probe
M765RD	Colour touchscreen remote display
M765RDPS	Remote display kit, includes M765RD, 24 VDC power supply, 4 metre Ethernet cable
P32UEP813-1000A	1000 A / 1 VAC Universal Technic Clamp On Current Probe
P32UEP815-3000A	3000 A / 1 VAC Universal Technic Clamp On Current Probe
SCT0750-005-5A	5 A / 0.333 VAC Magnelabs Split Core Current Probe
SCT1250-300-300A	300 A / 0.333 VAC Magnelabs Split Core Current Probe

(1) Firmware version 350 or higher required.

PE86021

1	2	3

P 7 6 0   C 1   C

Example order code. Use this group of codes when ordering the PowerLogic™ ION7550/7650 communications or I/O cards.

1 Communications or I/O card.
2 Type
3 Special order.

PE86019

Schneider Electric

ION7550/ION7650 dimensions

PE86022

192

192

PE86023

184

159

15
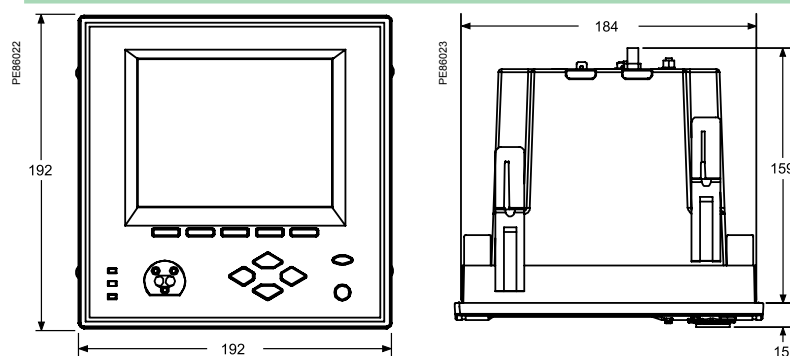
ION7550 / ION7650 TRAN dimensions

PE86024

5

102 135

200

PE86025

167

PE86026

216

184

Front-panel mounting
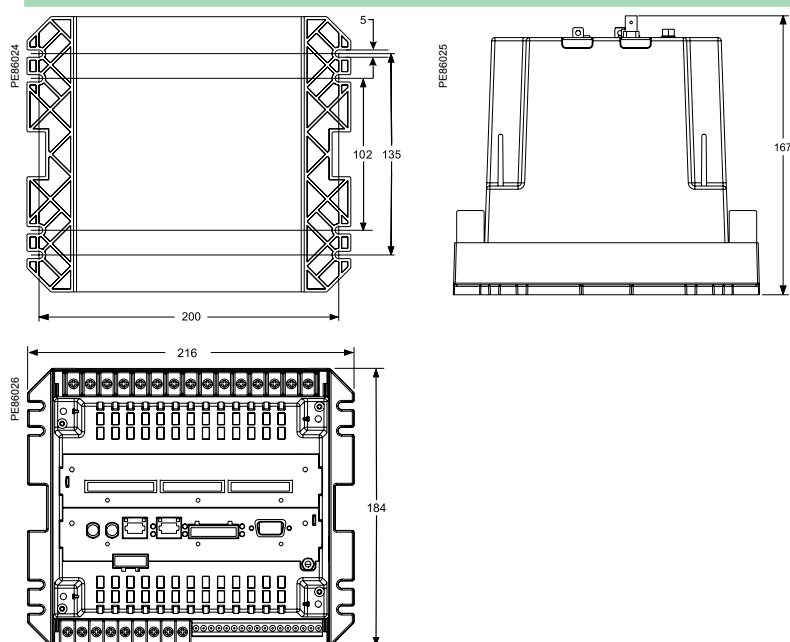
ION7550 and ION7650 meter can have integrated or remote display. The meter with integrated display is designed to fit DIN standard 192 cutout (186 mm by 186 mm) . The remote display is intalled through a circular cutout (22.5 mm diameter) at the panel door. It has a front and a back module, and communicates with the meter via serial (RS485) or Ethernet.

PE86027

186

186

Circuit Monitor Series 4000
Functions and characteristics

CM4000 + vacuum fluorescent display (VFD).

The PowerLogic Circuit Monitor Series 4000 offers high-performance digital instrumentation, data acquisition and control capabilities. The products can integrate easily in power monitoring and control systems due to their optional Ethernet connections and embedded web server. They are Transparent Ready.
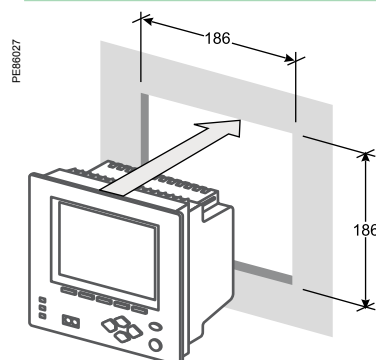These devices are designed for applications where power quality and availability are critical factors. They are generally used at service entrances and interconnection points or on circuits feeding sensitive equipment. Due to their very wide range of features, including transient detection (CM4000T only), it is possible to rapidly solve problems related to poor power quality. EN 50160 compliance checking capability makes these products ideal to meet new needs related to market deregulation.
The Circuit Monitor Series 4000 is available in two versions:
■ CM4250, with detection of voltage sags, swells and other power quality indices
■ CM4000T, with detection of voltage sags and swells together with transient detection and flicker measurements.

Applications

Panel instrumentation.
Sub-billing / cost allocation.
Remote monitoring of an electrical installation.
Extensive power-quality monitoring.
Contract and load curve optimisation.
EN 50160 electrical supply compliance checking.
Metering of other utilities.

Main characteristics

Disturbance direction detection
Indication of whether the source of a specific power quality event is upstream or downstream from the meter.

Power quality summary
Consolidation of all the power quality characteristics into a single trendable index.

Adaptive waveform capture
Capture of long-duration events.

Shift energy summary
Indication of energy usage per shift up to three shifts a day.

Detection and capture of voltage sags and swells
Fast identification of problems causing production shutdown.

**Detection and capture of short transients less than 1 µs
(optional, CM4000T only)**
Identification of problems due to short disturbances, e.g. switching of capacitors, etc.

Flicker evaluation based on IEC 61000-4-15 and IEEE 1453 (CM4000T only)
Measurement of rapid voltage variations.

Electrical quality checking in compliance with EN 50160
Fast standardised check on the quality of the electricity supplied.

Detection of major waveform changes
Detection of phase switching phenomena (for example during the transfer of a high-speed static switch) not detected by classical threshold-based alarms.

Ultra-fast recording of electrical parameters every 100 ms or every cycle
Preventive maintenance: acquisition of a motor startup curve, etc.

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

Automatic alarm setting
Alarm setpoint learning feature for optimum threshold settings.

Up to 32 Mbytes of memory (16 Mbytes standard)
For archiving of data and waveforms.

**Ethernet 10/100 Mbits/s card and server for HTML pages
(with optional Ethernet card)**
Rapid data transfers over an intranet or the internet, simply using a web browser.

Alarm notification via email
High-priority alarms sent directly to the user's PC.
Instant notification of power quality events by email.

**Up to 25 inputs/outputs to monitor the electrical installation
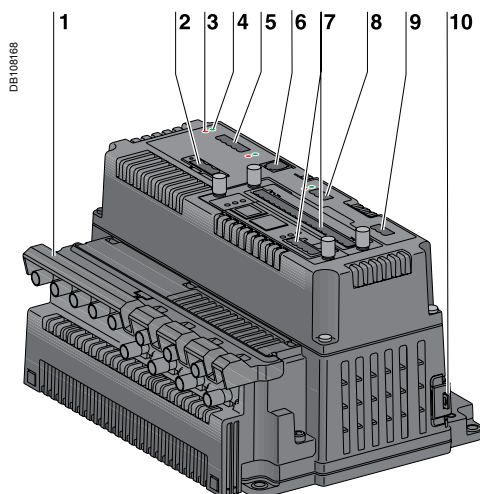(with optional I/O cards)**
Status of circuit breakers, as well as metering of other commodities, e.g. gas, water, etc.

IEC 62053-22 and ANSI C12.20 Class 0.2S for energy
Verification of consumption and load curves.

Circuit Monitor Series 4000
Functions and characteristics (cont.)

CM4000 series.

1 Current/voltage module.
2 Control power-supply connector.
3 Maintenance LED indicator.
4 Power LED indicator.
5 RS 485 port with transmit and receive LED indicators.
6 Display communication port.
7 Slots for optional cards.
8 RS 232 port with transmit and receive LED indicators.
9 KYZ pulse output.
10 Sealable access door.
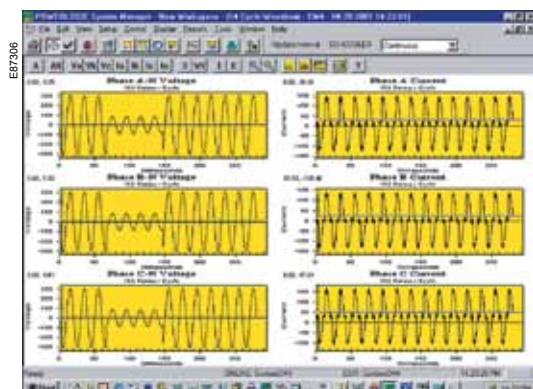
Disturbance waveform capture: detection of a voltage sag.

Part numbers

Circuit Monitor Series 4000	
Circuit Monitor CM4250	**CM4250**
Circuit Monitor CM4000T	**CM4000T**

Selection guide		CM4250	
General			
Use on LV and HV systems		■	■
Current and voltage accuracy		0.07 %	0.07 %
Energy and power accuracy		0.2 %	0.2 %
Nbr of samples/cycle or sample frequency		512	5 MHz
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 modes		■	■
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			
Interharmonics		■	-
Harmonic distortion	Current and voltage	■	■
Individual harmonics	Via monitor	63	63
	Via SMS	255	255
Waveform capture		■	■
Detection of voltage swells and sags		■	■
Adaptive waveform capture (up to 64 s)		■	■
Detection and capture of transients (< 1 μs)		-	■
Flicker		-	■
Fast acquisition of 100 ms or cycle by cycle data		■	■
EN 50160 compliance checking [1]		■	■
Programmable (logic and math functions)		■	■
Data recording			
Min/max of instantaneous values		■	■
Data logs		■	■
Event logs		■	■
Trending/forecasting		■	■
Alarms (optional automatic alarm setting)		■	■
Alarm notification via email		ECC21 option	
SER (Sequence of Event Recording)		■	■
Time stamping		■	■
GPS synchronisation (1 ms)		IOC44 option	
Memory expandable up to		32 Mbytes	32 Mbytes
Display and I/O			
Display		CMDLC or CMDVF option	
Multilingual: English, French, Spanish, German, Italian, Polish		■	■
Wiring self-test		■	■
Pulse output		■	■
Maximum number of I/Os		25	25
Input metering capability (number of channels)		10	10
Direct voltage connection		690 V	600 V
Communication			
RS 485 port		2/4 wires	2/4 wires
RS 232 port		■	■
Modbus protocol		■	■
Ethernet card (Modbus/TCP/IP protocol)		ECC21 option	
HTML-page web server		ECC21 option	
Ethernet gateway for third-party products		ECC21 option	

(1) Except for interharmonics, signalling voltages, flicker and transients.

Circuit Monitor Series 4000
Functions and characteristics (cont.)

The Circuit Monitor has two optional display units, an LCD display and a vacuum fluorescent display (VFD). They may be used for local circuit-monitor setup and operation.

CMDLC display

Back-lit LCD display with four lines and 20 characters per line. The display unit has four navigation buttons, a contrast button and a red alarm LED.
It connects to the Circuit Monitor via a CAB12 cable, 4.2 metres long, supplied with the display.

Part numbers

LCD display supplied with the CAB12 cable		**CMDLC**
Connection cables: Circuit Monitor <-> display	1.25 m (4 ft)	**CAB4**
	3.65 m (12 ft)	**CAB12**
	9.14 m (30 ft)	**CAB30**

CMDVF display

Vacuum fluorescent display (VFD) with four lines and 20 characters per line.
The display unit has four navigation buttons, a contrast button, a red alarm LED.
The display comes with a cable for connection to the Circuit Monitor (CAB12 cable, 4.2 m long).

Part numbers

VFD supplied with the CAB12 cable		**CMDVF**
Connection cables: Circuit Monitor <-> display	1.25 m (4 ft)	**CAB4**
	3.65 m (12 ft)	**CAB12**
	9.14 m (30 ft)	**CAB30**
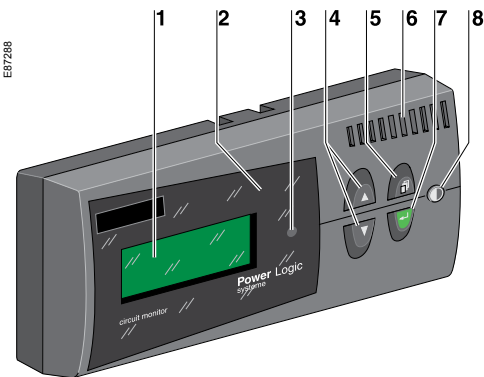
Display.

1 Display screen.
2 Alarm LED.
3 Arrow buttons.
4 Menu button.
5 Proximity sensor (VFD display only).
6 Enter button.
7 Contrast button.

CM4000 + options: ECC21, IOC44 and IOX2411.

Electrical characteristics

Type of measurement		True rms up to the 255th harmonic On three-phase AC system (3P, 3P + N) Up to 512 samples per cycle Up to 5 MHz for transient events (CM4000T only)
Measurement accuracy	Current and voltage	±0.04 % of reading + ±0.025 % of full scale
	Power	±0.075 % of reading + ±0.025 % of full scale
	Frequency	±0.01 Hz from 45 to 67 Hz ±0.1 Hz from 350 to 450 Hz
	Power factor	±0.002 from 0.5 leading to 0.5 lagging
	Energy: CM4250/CM4000T	IEC 62053-22 and ANSI C12.20 Class 0.2S
Data update rate		1 s in normal mode
Input-voltage characteristics	Measured voltage	0 to 600 V AC on CM4000T (direct) 0 to 690 V AC on CM4250 (direct) 0 to 1200 kV AC (with external VT)
	Measurement range	0 to 1.5 Un
	Impedance	> 2 MΩ
	Frequency measurement range	45 to 67 Hz and 350 to 450 Hz
Input-current characteristics	CT ratings	Adjustable from 5 A to 30 000 A
	Measurement range CM4250/CM4000T	5 mA 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
Power supply	AC	100 to 275 V AC (±10 %), 50 VA
	DC	125 to 250 V DC (±20 %), 30 W
	Ride-through time	100 ms at 120 V DC
Input/outputs	Pulse output	Static output (240 V AC max, 96 mA max)
	IOC44 card (optional)	4 digital inputs (20-138 V AC/DC), 3 relay outputs (5 A to 240 V AC) 1 static output (96 mA max to 240 V AC)
	IOX extender (optional)	Slots for 8 I/Os
	IOX08 (optional)	8 digital inputs 120 V AC
	IOX0404 (optional) [1]	4 dig. inputs 120 V AC, 4 analogue outputs 4-20 mA
	IOX2411 (optional) [1]	2 dig. outputs 120 V AC, 4 dig. inputs 32 V DC, 1 analogue input 0-5 V, 1 analogue output 4-20 mA

Mechanical characteristics

Weight		1.9 kg
IP degree of protection (IEC 60529)		IP52
Dimensions CM4250/CM4000T	Without IOX accessory	235.5 x 165.6 x 133.1 mm
	With IOX accessory	235.5 x 216.3 x 133.1 mm

Environmental conditions

Operating temperature	Circuit Monitor	-25 °C to +70 °C
	CMDLC display	-20 °C to +60 °C
	CMDVF display	-20 °C to +70 °C
Storage temperature	CM + displays	-40 °C to +85 °C
Humidity rating		5 to 95 % RH at 40 °C
Pollution degree		2
Installation category	CVM42	IV
	CVMT	II
Dielectric withstand		As per EN 61010, UL508, CSA C22.2-2-4-M1987

Electromagnetic compatibility

|	
Electrostatic discharge	Level 3 (IEC 61000-4-2)
Immunity to radiated fields	Level 3 (IEC 61000-4-3)
Immunity to fast transients	Level 3 (IEC 61000-4-4)
Immunity to impulse waves	Level 4 (IEC 61000-4-5)
Conducted and radiated emissions	CE industrial envir./FCC part 15 class A

Safety

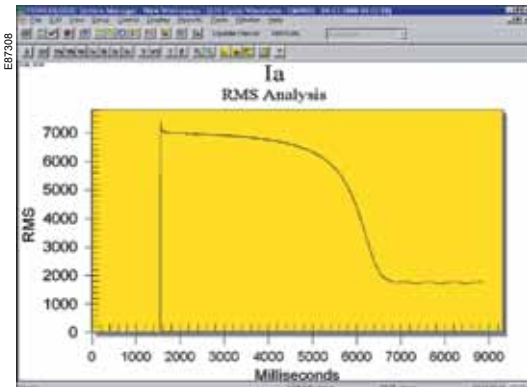|	
Europe	CE, as per CEI 61010
USA and Canada	UL508 and CSA C22.2-2-4-M1987

(1) Operating limits: 0° C to +60 °C. Storage limits: -25 °C to +85 °C.
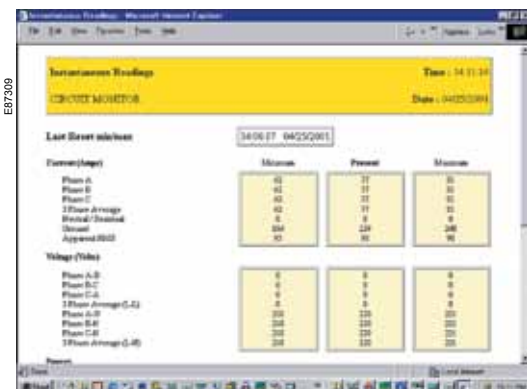
Circuit Monitor Series 4000
Functions and characteristics (cont.)
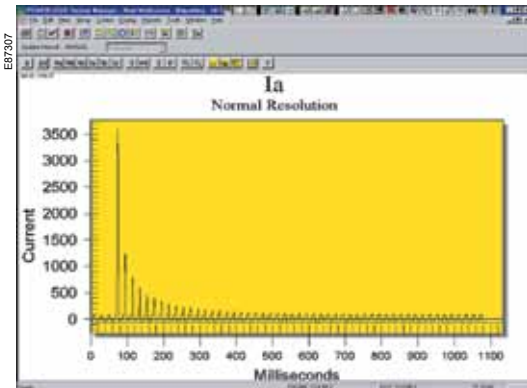
Adaptive waveform capture: transformer inrush current.

Adaptive waveform capture: motor start, rms value.

Example CM4250 HTML page showing instantaneous values.

Communication	
RS 485 port [1]	2/4 wires, up to 38400 bauds, Modbus
RS 232 port [1]	Up to 38400 bauds, Modbus, direct connection to a PC or modem
Ethernet ECC21 card with HTML server (optional) [1]	
Copper Ethernet link	10/100 BaseTX, RJ45 connector, 100 m link
Fiber-optic Ethernet link	100 Base FX, LC duplex connector, 1300 nm, FO multimode with gradient index 62.5/125 µm or 50/125 µm, 2000 m link
Protocol	Modbus/TCP/IP
Gateway function for products connected to the ECC21	Master Modbus port, 31 daisy-chained slaves, 63 with repeater, 2/4 wires, 1200 to 38400 bauds, also compatible with the PowerLogic protocol
HTML server	1 standard page, 5 customisable pages
Firmware characteristics	
14 data logs	Up to 96 different parameters, factory-set logs ready to use
One 100 ms data log	Parameters recorded every 100 ms for events
One 20 ms (50 Hz) or 16 ms (60 Hz) data log	Parameters recorded every 20 ms or 16 ms for events
One min/max log	-
One min/max/avg. log	Min/max/avg. values recorded for 23 parameters at regular intervals from 1 to 1440 minutes
One event log	Time stamping to 1 ms, synchro. 1 ms by GPS
Trend curves	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	Forecasting of the values for the eight parameters for the next four hours and next four days
Waveform captures	Standard: manual launch, 1 cycle, 512 samples, 255th harmonic Disturbance: manual launch or by alarm, adjustable from 512 samples/cycle over 28 cycles to 16 samples/cycle over 915 cycles, response time less than 0.5 cycle, number of cycles before alarm settable from 2 to 10 Adaptive: manual launch or by alarm, adjustable from 512 samples/cycle over 8 seconds to 16 samples/cycle over 264 seconds, capture takes place during a set duration or as long as an alarm is active (to save memory), number of cycles before alarm settable from 2 to 10 Transient: voltage sampling at 5 MHz (83 333 samples/cycle) over 2 ms to capture transient peaks < 1 µs
Alarms	Threshold alarms: - adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm - 4 priority levels - 4 response times: standard 1 s, fast 100 ms, disturbance < 1/2 cycle, transient < 1µs - boolean combination of four alarms is possible using the operators NAND, OR, NOR and XOR
	Automatic alarm setting: after a learning phase, the alarm thresholds are set automatically. The alarms will trip in the event of drift with respect to reference values determined during the learning period. Digital alarms: logic input transitions Waveform alarms: alarm tripping by a special algorithm when the current or voltage waveform is distorted beyond an adjustable level. Makes it possible to detect disturbances that cannot be detected by classical threshold alarms (e.g. phase switching).
Memory	8 Mbytes standard, expandable up to 32 Mbytes
Firmware update	Update via the communication ports
Display characteristics	
CMDLC (optional)	Back lit LCD
CMDVF (optional)	Vacuum fluorescent display (VFD) with IR port
Languages	English, French, Spanish, German, Italian, Polish

(1) All the communication ports may be used simultaneously.

Circuit Monitor Series 4000
Dimensions and connection

CM4250 / CM4000T dimensions

E94393

80,3

107,4
87,1

E94394

138,9
121,9

4,1

235,5

E94392

231,4

6,3

139,7

165,6

212,1

11,7

207,5

Mounting on a backplate

DB108169

4 Ø3,2

139,7

207,5
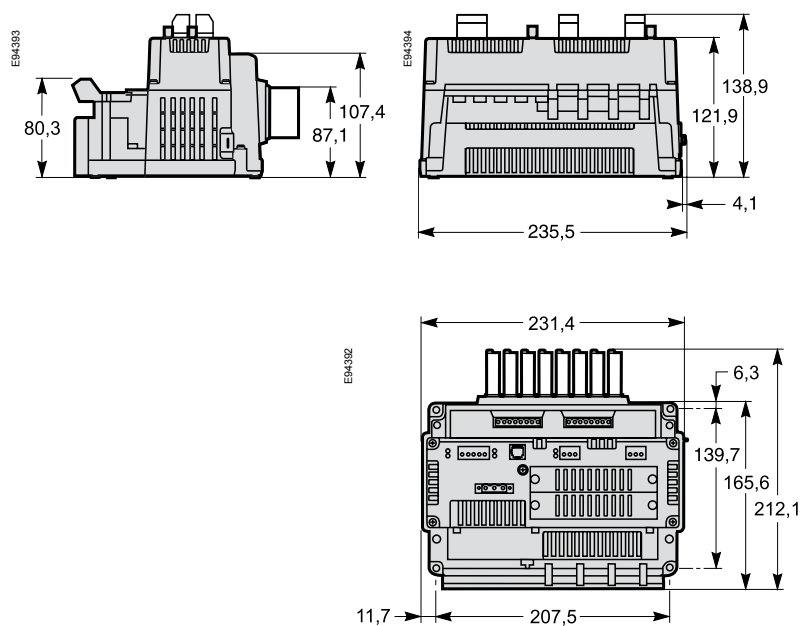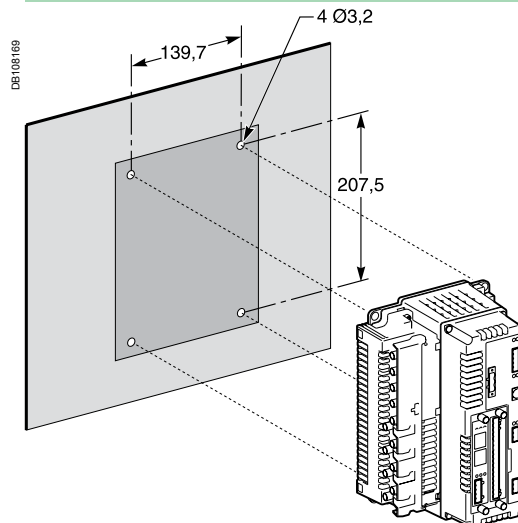
Circuit Monitor Series 4000
Dimensions and connection

Mounting possibilities
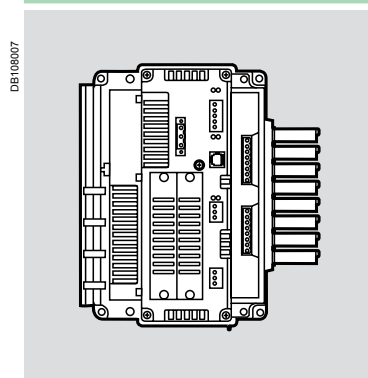
Vertical mounting.
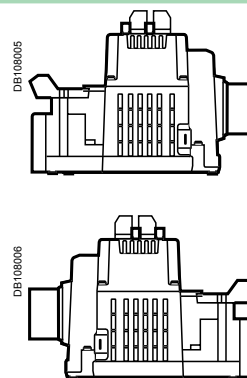
Horizontal mounting.

CMDLC/CMDVF dimensions
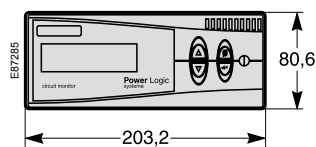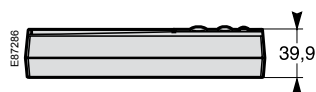
39,9

80,6

203,2

Mounting on a backplate

76,2

63,5

4 Ø4

13

54,1

27,05

13,25

19 ≤ Ø ≤ 32

ION8650
Functions and characteristics

Used to monitor electric energy provider networks, service entrances and substations, PowerLogic ION8650 meters are ideal for independent power producers and cogeneration applications that need to accurately measure energy bi-directionally in both generation and stand-by modes. These meters give utilities the tools to manage complex energy supply contracts that include commitments to power quality. Integrate them with our StruxureWare Power Monitoring (ION Enterpri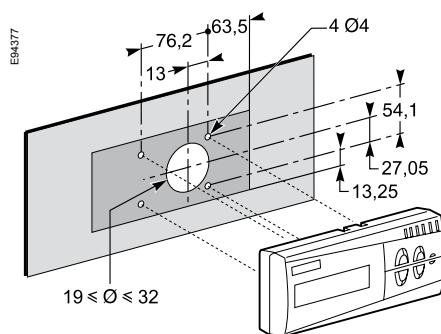se™) operations software or other energy management and SCADA systems through multiple communication channels and protocols, including Itron MV-90, Modbus, DNP, DLMS, IEC 61850 Ed. 2.

Applications
Revenue metering.
Co-generation and IPP monitoring.
Compliance monitoring.
Power quality analysis.
Demand and power factor control.
Load curtailment.
Equipment monitoring and control.
Energy pulsing and totalisation.
Instrument transformer correction.

Main characteristics

ANSI Class 0.2 and IEC 62053-22/23 Class 0,2S metering
For interconnection points on medium, high, and ultra-high voltage networks; twice as accurate as current IEC and ANSI Class 0.2 standards over all conditions and including single wide range current measurement.

Power quality compliance monitoring
Monitor compliance with international quality-of-supply standards (IEC 61000-4-30 Class A/S, EN 50160 Ed. 4, IEC 61000-4-7, IEC 61000-4-15, IEEE 1159, IEEE 519). Also detects disturbance direction.

Digital fault recording
Simultaneous capture of voltage and current channels for sub-cycle disturbance.

Complete communications
Multi-port, multi-protocol ports including serial, infrared, modem and ethernet. Simultaneously supports multiple industry standard protocols including: Itron MV-90, Modbus, Modbus Master, DLMS, DNP 3.0 and IEC 61850 Ed. 2.

Multiple tariffs and time-of-use
Apply tariffs, seasonal rate schedules to measure energy and demand values for time periods with specific billing requirements.

Multiple setpoints for alarm and functions
Use up to 65 setpoints for single/multi-condition alarms and I/O functions with response times down to 1/2 cycle.

Multiple setpoints for alarm and functions
Use up to 65 setpoints.

Instrument transformer correction
Save money and improve accuracy by correcting for less accurate transformers.

Alarm notification via email
High-priority alarms, data logs sent directly to the user's PC. Instant notification of power quality events by email.

Cyber security enhancements
Assign communication admin rights to selected user; prevention measures ensure no loss of security logs; support syslog for external security.

Part numbers

ION8650 meters	
ION8650A	**M8650A**
ION8650B	**M8650B**
ION8650C	**M8650C**

PowerLogic ION8650 socket meter

PB107500

ION8650
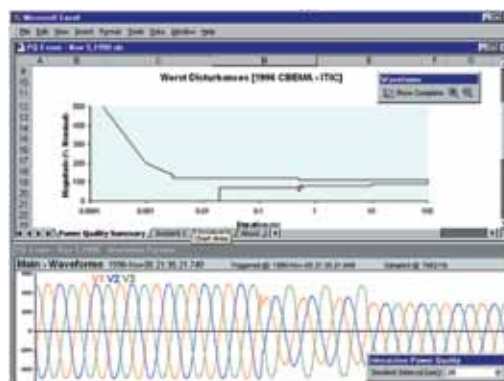## Functions and characteristics (cont.)

PowerLogic ION8650 socket meter.

1 Terminals
2 Optical port
3 Main display status bar
4 Watt LED
5 Navigation, ALT/Enter buttons
6 VAR LED
7 Nameplate label
8 Demand reset switch

Disturbance waveform capture and power quality report

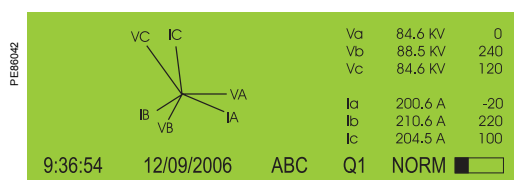| Selection guide		ION8650 A	ION8650 B	ION8650 C
General				
Use on LV, MV and HV systems		■	■	■
Current accuracy		0.1 %	0.1 %	0.1 %
Voltage accuracy		0.1 %	0.1 %	0.1 %
Power accuracy		0.1 %	0.1 %	0.1 %
Samples/cycle		1024	1024	1024
Instantaneous values				
Current, voltage, frequency		■	■	■
Active, reactive, apparent power	Total & per phase	■	■	■
Power factor	Total & per phase	■	■	■
Current measurement range		0 - 20A	0 - 20A	0 - 20A
Energy values				
Active, reactive, apparent energy		■	■	■
Settable accumulation modes		■	■	■
Demand values				
Current	Present & max. values	■	■	■
Active, reactive, apparent power	Present & max. values	■	■	■
Predicted active, reactive, apparent power		■	■	■
Synchronisation of the measurement window		■	■	■
Demand modes: Block (sliding), thermal (exponential)		■	■	■
Power quality measurements				
Harmonic distortion	Current & voltage	■	■	■
Individual harmonics	Via front panel	63	63	31
Waveform / transient capture		■ / ■	- / ■	- / -
Harmonics: magnitude, phase, and interharmonics		50	40	-
Detection of voltage sags and swells		■	■	■
IEC 61000-4-30 class A /S		A	S	-
IEC 61000-4-15 (Flicker)		■	■	-
High speed data recording (down to 10 ms)		■	■	-
EN50160 compliance reporting		■	■	-
Programmable (logic and math functions)		■	■	■
Data recording				
Onboard Memory (in Mbytes)		128	64	32
Revenue logs		■	■	■
Event logs		■	■	■
Historical logs		■	■	■
Harmonics logs		■	■	■
Sag/swell logs		■	■	■
Transient logs		■	-	-
Time stamping to 1 ms		■	■	■
GPS synchronisation (IRIG-B standard)		■	■	■
Display and I/O				
Front panel display		■	■	■
Wiring self-test (requires PowerLogic ION Setup)		■	■	■
Pulse output (front panel LED)		2	2	2
Digital or analogue inputs(1) (max)		11	11	11
Digital or analogue outputs(1) (max, including pulse output)		16	16	16
Communication				
Infrared port		1	1	1
RS 485 / RS 232 port		1	1	1(3)
RS 485 port		1	1	1(3)
Ethernet port (Modbus/TCP/IP protocol) with gateway		1	1	1(3)
Internal modem with gateway (ModemGate)		1	1	1(3)
HTML web page server		■	■	■
IRIG-B port (unmodulated IRIG B00x time format)		1	1	1
Modbus TCP Master / Slave (Ethernet port)		■ / ■	■ / ■	- / ■
Modbus RTU Master / Slave (Serial ports)		■ / ■	■ / ■	- / ■
DNP 3.0 through serial, modem, and I/R ports		■	■	■

(1) With optional I/O Expander.
(2) For 9S, and 36S only. For 35S system up to 480V line-to-line.
(3) C model limited to IR + 2 other ports at one time. Ports can be enabled/disabled by user.

Schneider Electric
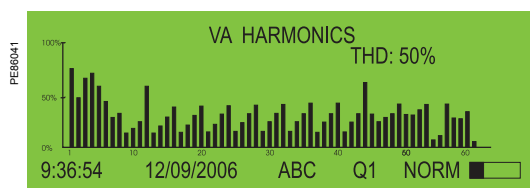
PowerLogic ION8650 front panel harmonic display.

ION8650 front panel phasor display and table.

Electrical characteristics

Type of measurement		True rms 1024 samples per cycle
Measurement accuracy	Current and voltage	0.1 % Reading
	Power	0.1%
	Frequency	±0.001 Hz
	Power factor	0.1%
	Energy	0.1%, twice as accurate as ANSI Class 0.2 and IEC 62053-22/23 (0,2S)
Data update rate		0.5 cycle or 1 second (depending on value)
Input-voltage characteristics (1)	Nominal voltage	57V to 277VLN rms 100V to 480VLL rms (35S)
	Maximum voltage	347 VLN rms, 600 VLL rms (9S)
	Impedance	5 MΩ /phase (phase-Vref/Ground)
	Inputs	V1, V2, V3, VREF
Input-current characteristics	Rated nominal/current class	1A, 2 A, 5 A and/or 10 A (Class 1/2/10/20)
	Accuracy range	0.01 - 20 A (standard range)
	Measurement range	0.001 - 24 A
	Permissible overload	500A rms for 1 second, non-recurring
	Burden per phase	Socket: Typical: 3 W, 8 VA/phase, 3-phase operation; Maximum: 4 W, 11 VA/phase, 3-phase operation Switchboard: 0.05VA at 1A (0.05 Ω max)
Power supply	Standard power supply, blade powered	120-277 VLN RMS (-15%/+20%) 47-63 Hz or 120-480 VLL RMS (-15%/+20%) 47-63 Hz (35S)
	Auxiliary powered low voltage	AC: 65-120 (+/- 15%) VLN RMS, 47-63 Hz DC: 80-160 (+/- 20%) VDC
	Auxiliary powered high voltage	AC: 160-277 (+/- 20%) VLN RMS, 47-63 Hz DC: 200-300 (+/- 20%) VDC
	Ride-through time, (Standard power supply)	Socket: min guaranteed: 6 cycles at nominal frequency (minimun 50 Hz), at 120 V L-N rms (208 V L-L rms) 3-phase operation Switchboard: min guaranteed: 6 cycles at nominal frequency (minimun 50 Hz), at 120 V L-N rms (208 V L-L rms) 3-phase operation
Input/outputs (2)	Digital outputs	4 (Form C) Solid state relays (130 V AC/ 200 V DC) 50 mA AC/DC, 1 (Form A) output
	Digital inputs	upto 3 Self-excited, dry contact sensing inputs

Mechanical characteristics

Weight		7.0 kg
IP degree of protection	Socket	Front IP65, back IP51
	Switchboard	Front IP50, back IP30
Dimensions	Socket	178 x 237 mm
	Switchboard	285 x 228 x 163 mm

Environmental conditions

Operating temperature	-40°C to +85°C
Display operating range	-40°C to +70°C
Storage temperature	-40°C to +85°C
Humidity rating	5 to 95 % RH non-condensing
Pollution degree	2
Installation category	Cat III
Dielectric withstand	2.5kV

Electromagnetic compatibility

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
Immunity conducted	IEC61000-4-6
Damped oscillatory waves immunity	IEC61000-4-12
Conducted and radiated emissions	CISPR 22 (class B)

Safety

Europe	As per IEC62052-11
North America	As per ANSI C12.1

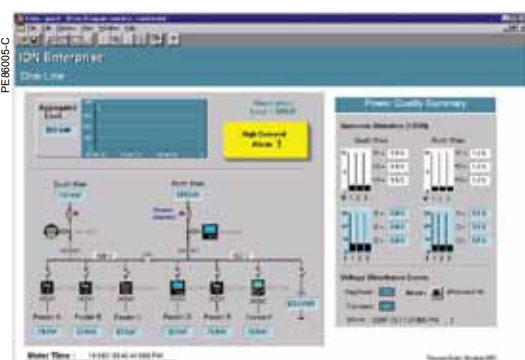*(1) Specifications are limited by the operating range of the power supply if a non-aux power supply is used.*

(2) More input and output selections available via optional I/O expander.

Example embedded webserver page (WebMeter) showing realtime values.

Communication	
RS 232 / RS 485 port (COM1)	User-selectable RS 232 or RS 485. 300 - 115,200 bauds (RS485 limited to 57,600 bps); protocols: ION, Modbus/RTU/Mastering, DLMS, DNP 3.0, GPSTRUETIME/DATUM.
Internal modem port (COM2)	300-57,600 bps
ANSI 12.18 Type II optical port (COM3)	Up to 57,600 bps
RS 485 port (COM4)	Up to 57,600 bauds, Modbus, direct connection to a PC or modem
Ethernet port	10/100 BaseT, RJ45 connector, protocols: DNP, ION, Modbus/TCP/Mastering, IEC 61850 Ed. 2 or 100BASE-FX multimode, male ST connectors
EtherGate	Up to 31 slave devices via serial ports
ModemGate	Up to 31 slave devices
Firmware characteristics	
High-speed data recording	Up to 1/2-cycle interval burst recording, stores detailed characteristics of disturbances or outages. Trigger recording by a user-defined setpoint, or from external equipment.
Harmonic distortion	Up to 63rd harmonic for all voltage and current inputs
Dip/swell detection	Analyse severity/potential impact of sags and swells: - magnitude and duration data suitable for plotting on voltage tolerance curves - per phase triggers for waveform recording or control operations
Instantaneous	High accuracy measurements with 1s or 1/2 cycle update rate for: - voltage and current - active power (kW) and reactive power (kVAR) - apparent power (kVA) - power factor and frequency - voltage and current unbalance - phase reversal
Load profiling	Channel assignments are user configurable: - 800 channels via 50 data recorders (feature set A), - 720 channels via 45 data recorders (feature set B), - 80 channels via 5 data recorders (feature set C). Configure for historical trend recording of energy, demand, voltage, current, power quality, other measured parameter. Recorders can trigger on time interval basis, calendar schedule, alarm/event condition, manually.
Waveform captures	Simultaneous capture of all voltage and current channels - sub-cycle disturbance capture (16 to 1024 samples/ cycle)
Alarms	Threshold alarms: - adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm - user-defined priority levels - boolean combination of alarms
Advanced security	Up to 50 users with unique access rights. Perform resets, time syncs, or meter configurations based on user priviledges.
Transformer correction	Correct for phase / magnitude inaccuracies in current transformers (CTs), potential transformers (PTs)
Memory	128 Mbytes (A), 64 Mbytes (B), 32 Mbytes (C)
Firmware update	Update via the communication ports
Display characteristics	
Type	FSTN transreflective LCD
Backlight	LED
Languages	English

ION8650
Functions and characteristics (cont.)

Example product part number.

1 Model.
2 Feature set.
3 Form factor.
4 Current Inputs.
5 Voltage inputs.
6 Power supply.
7 System frequency.
8 Communications.
9 Input/output options.
10 Security.
11 Special order options.

PowerLogic ION8650 meter with switchboard case

Part Numbers

Item		Code	Description
1	Model	M8650	Schneider Electric energy and power quality meter.
2	Feature Set	A	128MB Memory Class A power quality analysis, waveforms and transient capture with 1024 samples/cycle.
		B	64MB memory, energy meter Class S EN 50160 Ed. 4 power quality monitoring.
		C	32MB memory, basic tariff/energy metering (5 data recorders, 80 channels).
3	Form Factor (1)	0	Form 9S/29S/36S Base, 57-277 VLN (autoranging) 3-Element, 4-Wire / 2 1/2-Element, 4-Wire
		1	Form 35S Base - 120-480 VLL (autoranging) 2-Element, 3-Wire
		4	Form 9/29/35/36S FT21 Switchboard (meter + case) with break out panel
		7	Form 9/29/35/36S FT21 Switchboard (meter + case) with break out cable
4	Current Inputs	C	1, 2 or 5 Amp nominal, 20 Amp full scale (24 Amp fault capture, start at 0.001 A)
5	Voltage Inputs	0	Standard (see Form Factor above)
6	Power Supply	E	Form 9/29/35/36S, (socket) and Form 9, 36 (FT21 switchboard): 120-277 VAC. Form 35S (socket) and Form 35 (FT21 switchboard): 120-480 VAC. Powered from the meter's voltage connections.
		H	Auxiliary Power Pigtail: 65-120 VAC or 80-160 VDC (power from external source)
		J	Auxiliary Power Pigtail: 160-277 VAC or 200-300 VDC (power from external source)
7	System Frequency	5	Calibrated for 50 Hz systems.
		6	Calibrated for 60 Hz systems.
8	Communications	A 0	Infrared optical port, RS 232/RS 485 port, RS 485 port
		C 7	Infrared optical port, Ethernet (10/100Base-T), RS 232/485 port, RS 485 port (note: in addition to infrared optical port, Feature Set C can use any two ports (configurable)), 56k universal internal modem (RJ11)
		E 1	Infrared optical port, Ethernet (10/100Base-T), RS 232/485 port, RS 485 port (note: in addition to infrared optical port, Feature Set C can use any two ports (configurable))
		F 1	Infrared Optical port, Ethernet (100BASE-FX multi-mode) with male ST connectors (available on socket meters only, Forms 0 & 1 above. I/O card not available if this option is ordered.) RS-232/485 port, RS-485 port (Note: in addition to Infrared Optical port Feature Set C can use any two ports (configurable))
		M 1	Infrared optical port, RS 232/485 port, RS 485 port (note: in addition to infrared optical port, Feature Set C can use any two ports (configurable)), 56k universal internal modem (RJ11).
		S 0	Infrared optical port, Ethernet (10 BaseT), RS 232/485 port, RS 485 port (note: in addition to infrared optical port, Feature Set C can use any two ports (configurable)), Verizon cell modem.
9	Onboard I/O	A	None.
		B	4 Form C digital outputs, 3 Form A digital inputs.
		C	4 Form C digital outputs, 1 Form A digital output, 1 digital input.
10	Security	0	Password protected, no security lock
		1	Password protected with security lock enabled (requires removal of outer cover to configure billing parameters)
		3	RMICAN (Measurement Canada approved)
		4	RMICAN-SEAL (Measurement Canada approved, and factory sealed)**
11	Special Order	A	None

(1)Specifications are limited by the operating range of the power supply if a non-aux power supply is used.

ION8650
Functions and characteristics (cont.)

PE86044

| 1 | 2 | 3 |

P 8 5 0 E **A** **2**

Example order code. Use this group of codes when ordering the I/O Expander.

1 Digital / Analogue I/O.
2 I/O option.
3 Cable option.

PE86131

Part numbers (cont.)

I/O Expander		
Digital/Analogue I/O	**P850E**	Schneider Electric I/O Expander for ION8600 meters: Inputs and Outputs for energy pulsing, control, energy counting, status monitoring, and analogue interface to SCADA.
I/O option	**A**	External I/O box with 8 digital inputs and 8 digital outputs (4 Form A, 4 Form C)
	B	External I/O box with 8 digital inputs and 4 digital outputs (4 Form C) and 4 analogue outputs (0 to 20mA)
	C	External I/O box with 8 digital inputs and 4 digital outputs (4 Form C) and 4 analogue outputs (-1mA to 1mA)
	D	External I/O box with 8 digital inputs and 4 digital outputs (4 Form C) and 4 analogue outputs (two -1 to 1 mA, and two 0 to 20 mA outputs)
Cable option	**0**	No cable - cables for the I/O box are no ordered as a separate part number. Refer to part numbers: CBL-8X00IOE5FT, CBL-8X00IOE15FT and CBL-8XX0-BOP-IOBOX under Connector cables, below.

A-base adapters	
A-BASE-ADAPTER-9	Form 9S to Form 9A adapter
A-BASE-ADAPTER-35	Form 35S to Form 35A adapter

Optical communication interface	
OPTICAL-PROBE	Optical communication interface

| Connector cables	
CBL-8X00BRKOUT	5' extension cable, mates with 24-pin male Molex connector from the meter to the 24-pin Molex connector on the I/O expander box (not for use with breakout panel E8, F8 & G8 form factors)
CBL-8X00IOE5FT	15' extension cable, mates with 24-pin male Molex connector from the meter to the 24-pin Molex connector on the I/O expander box (not for use with breakout panel E8, F8 & G8 form factors)
CBL-8X00IOE15FT	15' extension cable, mates with 24-pin male Molex connector from the meter to the 24-pin female Molex connector on the I/O Expander box (not for use with breakout panel E8, F8 & G8 form factors)
CBL-8XX0-BOP-IOBOX	6' connector cable, 24-pin male to 14-pin male Molex connector for connecting an ION8000Series meter with breakout panel to an I/O Expander Box

Schneider Electric

ION8650
Dimensions and connections

ION8650 socket dimensions
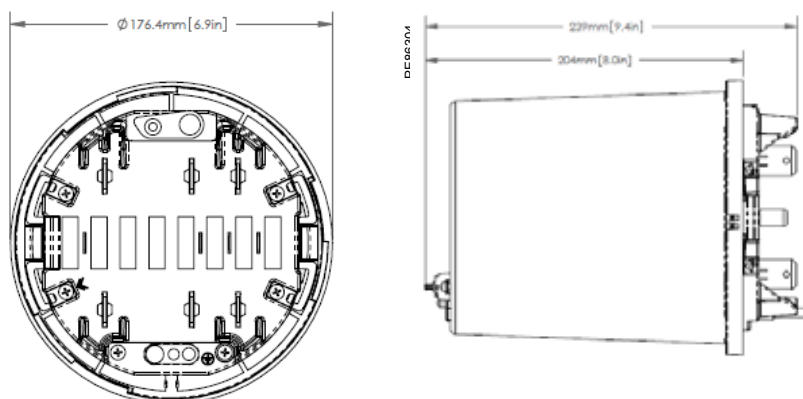
ION8650 switchboard dimensions
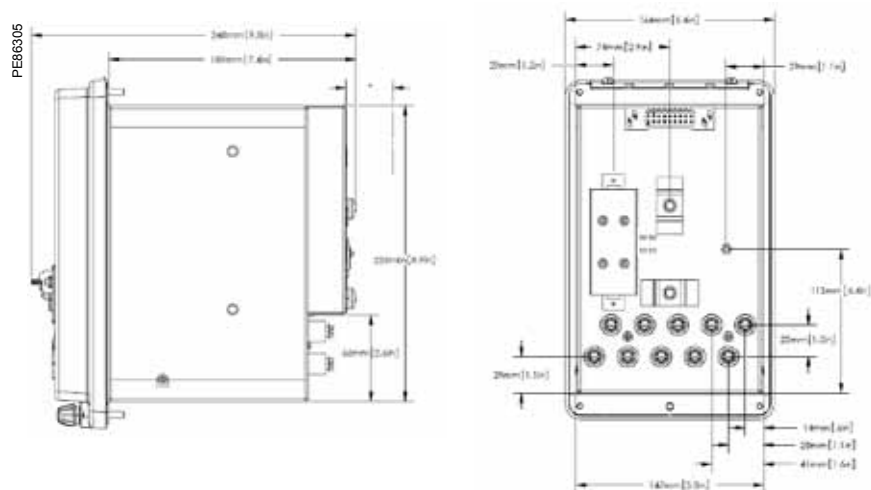
I/O Expander dimensions

ION8650
Dimensions and connections (cont.)
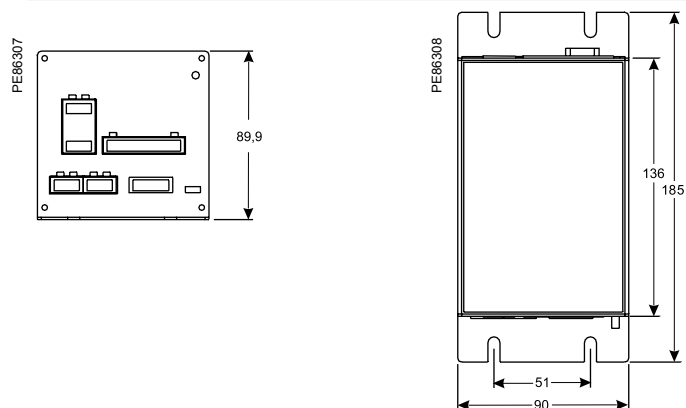
ION8650 suggested switchboard mounting dimensions

PE86052

149

141

246

230

ION8650 switchboard mounting

PE86309

Schneider Electric
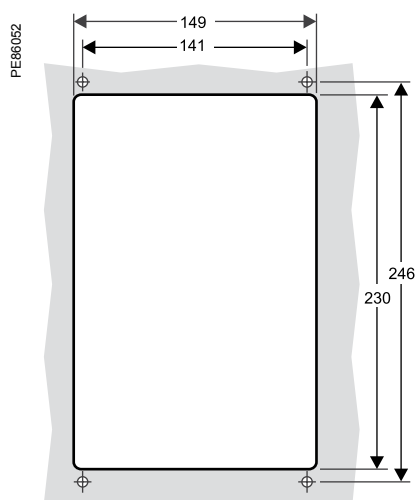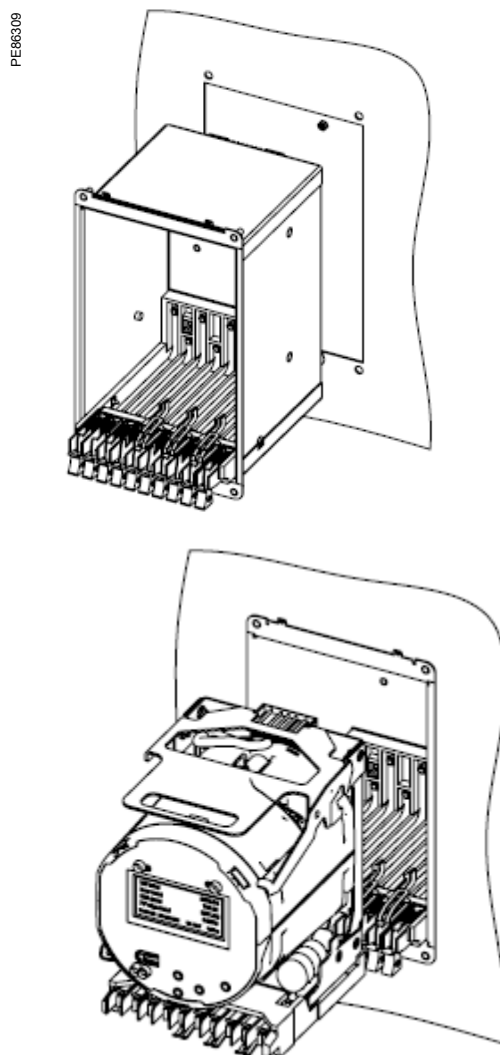
ION8800
Functions and characteristics

PE86176

PowerLogic™ ION8800 meter

Providing high accuracy and a wide range of features for transmission and distribution metering, the PowerLogic ION8800 advanced revenue and power quality meter has the flexibility to change along with your needs. The meter provides the tools necessary to:
■ manage energy procurement and supply contracts
■ perform network capacity planning and stability analysis'
■ monitor power quality compliance, supply agreements, and regulatory requirements.
Integrate the PowerLogic ION8800 meter with your existing wholesale settlement system, use StruxureWare Power Monitoring (PowerLogic ION Enterprise™) software, or share operations data with SCADA systems through multiple communication channels and protocols.

Applications
Transmission and distribution metering.
Settlements, customer billing, cost allocation.
Extensive power quality monitoring and analysis.
Contract optimisation and compliance verification.

Main characteristics

IEC 19-inch rack mount design to DIN 43862 standard
Use Essailec connectors with common measurement and energy pulsing pin-out to easily retrofit into existing systems.

Accurate metering
Interconnection points on medium, high, and ultra-high voltage networks are in compliance with IEC 62053-22/23 Class 0,2S.

Power quality compliance monitoring
Monitor compliance with international quality-of-supply standards (IEC 61000-4-30 Class A/S, EN50160, IEC 61000-4-7, IEC 61000-4-15, IEEE 1159, IEEE 519, IEC 61000-4-30 (edition 2) Class A/S).

Power quality summary
Consolidate power quality characteristics into easily viewable reports indices.

Digital fault recording
Capture voltage and current channels simultaneously for sub-cycle disturbances.

Complete communications
Use the IEC1107 optical port or the optional communications module that supports concurrent Ethernet, serial, and modem communications.

Multiple tariffs and time-of-use
Apply tariffs and seasonal rate schedules to measure energy and demand values for time periods with specific billing requirements.

Alarms and I/O functions
Use up to 65 setpoints for single/multi-condition alarms and I/O functions with response times down to 1/2 cycle.

Alarm notification via email
High-priority alarms, data logs sent directly to the user's PC. Instant notification of power quality events by email.

Software integration
Easily integrate the meter with StruxureWare Power Monitoring (ION Enterprise) or other utility software; MV-90, Pacis and third-party SCADA packages.

Transformer/line loss compensation
Compensate for system losses in real time directly in the meter.

Instrument transformer correction
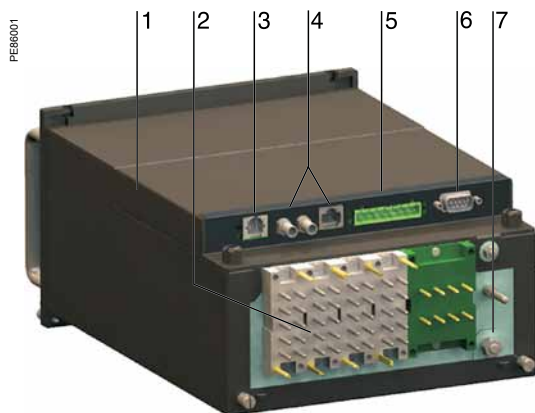Save money and improve accuracy by correcting for less accurate transformers.

Part numbers[1]

PowerLogic ION8800 meters	
PowerLogic ION8800A	**M8800A**
PowerLogic ION8800B	**M8800B**
PowerLogic ION8800C	**M8800C**

[1]Representative part numbers only. See page 9 for complete part number descriptions.

ION8800
Functions and characteristics (cont.)

PowerLogic ION8800 meter

1 Optional communications module.
2 Essailec connectors.
3 Internal modem.
4 Optional Ethernet communications.
5 Selectable RS 485 serial port.
6 Selectable RS 232 or RS 485 serial port.
7 Ground terminal.
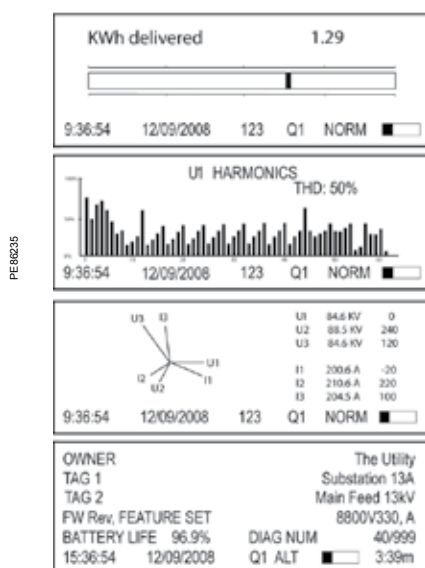
Display screen examples: KWh disk simulator, voltage harmonics histogram, phasor diagram, and name plate1.

Selection guide		ION8800A ION8800B	ION8800C
General			
Use on LV, MV and HV systems		■	■
Current accuracy		0.1 %	0.1 %
Voltage accuracy		0.1 %	0.1 %
Power accuracy		0.2 %	0.2 %
Samples/cycle		1024	1024
Instantaneous rms values			
Current, voltage, frequency (Class 0,2S)		■	■
Active, reactive, apparent power	Total and per phase	■	■
Power factor	Total and per phase	■	■
Current measurement range		0.001 - 10A	0.001 - 10A
Current measurement range		0.001 - 10A	0.001 - 10A
Energy values			
Active, reactive, apparent energy		■	■
Settable accumulation modes		■	■
Demand values			
Current		■	■
Active, reactive, apparent		■	■
Predicted active, reactive, apparent		■	■
Demand modes (block, sliding, thermal, predicted)		■	■
Power quality measurements			
Detection of voltage dips (sags) and swells		10 ms	10 ms
Symmetrical components: zero, positive, negative		■	-
Transient detection, microseconds (50 Hz)		20 [1]	20 [1]
Harmonics: individual, even, odd, total up to		63rd	63rd
Harmonics: magnitude, phase and inter-harmonics		50th	40th
EN 50160 compliance		■	
IEC 61000-4-30 class A		■	
IEC 61000-4-30 class S		■ [2]	
IEC 61000-4-15 (Flicker)		■	-
Configurable for IEEE 519 - 1992, IEEE1159-1995		■ [1]	-
Programmable (logic and math functions)		■	■
Data recording			
Min/max logging for any parameter		■	■
Historical logs	Maximum # of records	800 [1] 640 [2]	32
Waveform logs	Maximum # of records	96 [1]	-
Timestamp resolution in seconds		0.001	0.001
Setpoints, minimum response time		½ cycle	½ cycle
Number of setpoints		65	65
GPS time synchronisation (IRIG-B)		■	■
Could add transient logs. COMTRADE fault records.		■	■
User configurable log memory		10 Mbytes	10 Mbytes
Display and I/O			
Front panel display		■	■
Active/reactive energy pulser, LED and IEC 1107 style port		■	■
Digital pulse outputs, optional	Solid state Form A	8	8
Digital pulse outputs	Solid state Form C	4	4
Alarm relay output	Form C	1	1
Digital inputs (optional)		3	3
Communications			
RS 232/485 port		1	1
RS 485 port		1	1
Ethernet port		1	1
IEC 1107 optical port		1	1
Internal modem		1	1
3-port DNP 3.0 through serial, modem, Ethernet and I/R ports		■	■
Modbus RTU master / slave (serial, modem and I/R ports)		■ / ■	- / ■
Modbus TCP master / slave (via Ethernet port)		■ / ■	- / ■
Data transfer between Ethernet and RS 485 (EtherGate)		■	■
Data transfer between internal modem, RS 485 (ModemGate)		■	■
Alarms, single or multi-condition		■	■
Alarm notification & logged data via email		■	■
Embedded web server (WebMeter)		■	■

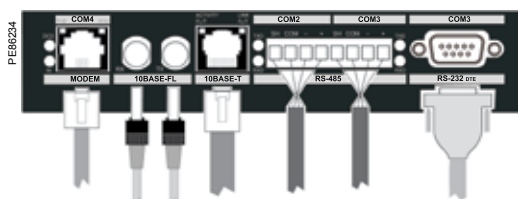(1) ION8800A only.
(2) ION8800B only.

PE86003

PowerLogic ION8800 with optional communications module.

Electrical characteristics

Type of measurement		True rms 1024 samples per cycle
Measurement accuracy	Current and voltage	0.1 %
	Power	0.2 %
	Frequency	±0.005 Hz
	Power factor	0.1%
	Energy	IEC 62053-22/23 Class 0.2 S
Data update rate		½ cycle or 1 second
Input-voltage characteristics	Inputs	U1, U2, U3, Uref
	Measurement range	57-288 LN VAC rms (99-500 LL VAC rms)
	Dielectic withstand	3320 VAC rms
	Impedance	5 MΩ /phase (phase-Uref/Ground)
Input-current characteristics	Rated nominals	5 A, 1 A, 2 A
	Permissible overload	200A rms for 0.5s, non-recurring (IEC 62053-22)
	Impedance	10 mΩ /phase
	Burden	0.01 VA per phase (1A), 0.25 VA per phase (5 A)
Power supply	AC	85 - 240 VAC (+/- 10%), 47-63 Hz
	DC	110 - 270 VDC (+/- 10%)
	Burden	Typical (without comm module): 13 VA, 8 W Typical (with comm module): 19 VA, 12 W Max (without comm module): 24 VA, 10 W Max (with comm module): 32 VA, 14 W
	Ride-through time	Typical: 0.5 s to 5 s depending on configuration Min: 120 ms (6 cycles @ 50 Hz)
	Dielectric withstand	2000 VAC
Input/outputs	Mechanical alarm relay	1 Form C digital output (250 V AC / 125 V DC, 1 A AC / 0.1 A DC max)
	Digital outputs (Form C)	4 Solid state relay outputs (210 V AC / 250 V DC) 100 mA AC/DC
	Digital outputs (Form A)	8 Solid state relay outputs (210 V AC / 250 V DC) 100 mA AC/DC
	Digital inputs	3 Solid state digital inputs (low-voltage inputs 15 to 75 V AC/DC; high-voltage inputs 75 to 280 V AC/DC; 3 mA max.)
	Pulse rate	20 Hz maximum

Mechanical characteristics

Weight	6.0 kg (6.5 kg with optional communications module)
IP degree of protection (IEC 60529)	IP51
Dimensions	202.1 x 261.51 x 132.2 mm

Environmental conditions

Mounting location	Indoor
Maximum altitude	2000 m above sea level
Limit range of operation	-25°C to +70°C
Specified operating temperature	-10°C to +45°C (as per 62052-11)
Display operating range	-10°C to +60°C
Storage temperature	-25°C to +70°C
Humidity rating	5 to 95 % RH non-condensing
Pollution degree	2
Installation category	**Power supply (II) Metering inputs (III)**

Electromagnetic compatibility

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 waves	IEC 61000-4-5
Conducted immunity	IEC 61000-4-6
Damped oscillatory waves immunity	IEC 61000-4-12
Conducted and radiated emissions	CISPR 22 (class B)

Safety

Europe	As per IEC 62052-11
International	As per IEC 60950

Utility approval

EGR, GOST, ESKOM, NMI
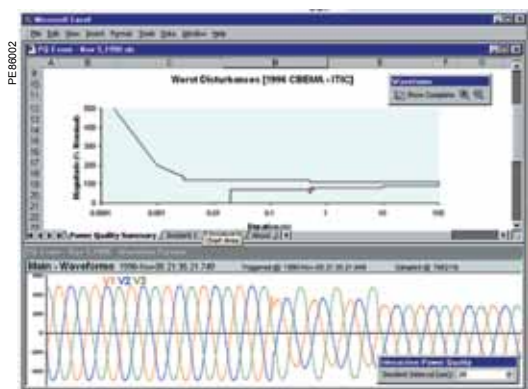
Ports on the optional communications module.

Example embedded webserver page (WebMeter) showing realtime values.

Sample power quality report.

Communication	
IEC 1107 optical port	2/4 wires, up to 19200 bauds
RS 485 port	Up to 57600 bauds, direct connection to a PC or modem, protocols: ION, Modbus RTU, Modbus Master, DNP 3.0, GPSTRUETIME/DATUM, DLMS
Communications module (optional)	
RS 232/485 port	300 - 115,200 bauds (RS 485 limited to 57,600 bauds); protocols: same as RS 485 port
Internal modem port	300 bauds - 56000 bauds, RJ11 connector
Ethernet port (supports up to 4 simultaneous connections)	10 BaseT, RJ45 connector, 100 m link; protocols: DNP TCP, ION, Modbus TCP, Modbus Master, IEC 61850 (in 5MB meters only) supports FTP + COMTRDE.
Fiber-optic Ethernet link	10 Base FL, ST connector, 1300 nm, FO multimode with gradient index 62.5/125 µm or 50/125 µm, 2000 m link; protocols: same as Ethernet port
EtherGate	Communicates directly with up to 62 slave devices via available serial ports
ModemGate	Communicates directly with up to 31 slave devices
Firmware characteristics	
High-speed data recording	Up to ½-cycle interval burst recording, stores detailed characteristics of disturbances or outages. Trigger recording by a user-defined setpoint, or from external equipment.
Harmonic distortion	Up to 63rd harmonic for all voltage and current inputs
Dip/swell detection	Analyse severity/potential impact of sags and swells: - magnitude and duration data suitable for plotting on voltage tolerance curves - per phase triggers for waveform recording or control operations
Instantaneous	High accuracy measurements with 1s or 1/2 cycle update rate for: - voltage and current - active power (kW) and reactive power (kvar) - apparent power (kVA) - power factor and frequency - voltage and current unbalance - phase reversal
Load profiling	Channel assignments (800 channels via 50 data recorders) are configurable for any measureable parameter, including historical trend recording of energy, demand, voltage, current, power quality, or any measured parameter. Trigger recorders based on time interval, calendar schedule, alarm/event condition, or manually.
Modbus Master	Master up to 32 slave devices per serial channel and store their data at programmable intervals. Use this data to aggregate and sum energy values and perform complex totalization.
Waveform captures	Simultaneous capture of all voltage and current channels - sub-cycle disturbance capture - maximum cycles is 214,000 (16 samples/cycle x 96 cycles, 10 Mbytes memory) - 1024 samples/cycle
Alarms	Threshold alarms: - adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm - user-defined priority levels - boolean combination of alarms possible
Advanced security	Up to 16 users with unique access rights. Perform resets, time syncs, or meter configurations based on user priviledges. Supports protocol lockout and meter access even logging.
Transformer correction	Correct for phase / magnitude inaccuracies in current transformers (CTs), potential transformers (PTs)
Memory	5 -10 Mbytes (specified at time of order)
Firmware update	Update via the communication ports
Display characteristics	
Type	FSTN transreflective LCD
Backlight	LED
Languages	English

Schneider Electric

Example product part number.

1 *Model.*
2 *Feature set.*
3 *Memory / form factor.*
4 *Current Inputs.*
5 *Voltage inputs.*
6 *Power supply.*
7 *System frequency.*
8 *Communications.*
9 *Onboard inputs/outputs.*
10 *Security.*
11 *Special order.*

Part Numbers

Item	Code	Description
1 Model	M8800	ION8800 IEC/DIN 43862 19" rack mount energy and power quality meter.
2 Feature Set	A	Class A power quality analysis, waveforms and transient capture with 1024 samples/cycle.
	B	Energy meter Class S EN50160 power quality monitoring.
	C	Basic tariff/energy revenue meter with sag/swell monitoring.
3 Memory/Form Factor	1	10 MB logging memory, Essailec connectors.
	2	5 MB logging memory, Essailec connectors, with IEC61850 protocol
4 Current Inputs	C	(I1-I3): Configured for 5 A nominal, 10 A full scale, 14 A fault capture, 0.001 A starting current.
	E	(I1-I3): Configured for 1 A nominal, 10 A full scale, 14 A fault capture, 0.001 A starting current.
5 Voltage Inputs	0	(V1-V3): Autoranging (57-288 VAC L-N or 99-500 VAC L-L)
6 Power Supply	B	Single phase power supply: 85-240 VAC ±10% (47-63 Hz) or 110-270 VDC.
7 System Frequency	5	Calibrated for 50 Hz systems.
	6	Calibrated for 60 Hz systems.
8 Communications module (field serviceable)	Z0	No communications module - meter includes Base Onboard I/O and comms (see below for details).
	A0	Standard communications: 1 RS 232/RS 485 port, 1 RS 485 port (COM2) [1].
	C1	Standard communications plus 10Base-T Ethernet (RJ45), 56 k universal internal modem (RJ11).
	D1	Standard communications plus 10Base-T Ethernet (RJ45) / 10Base-FL Ethernet Fiber, 56 k universal internal modem (RJ11).
	E0	Standard communications plus 10Base-T Ethernet (RJ45).
	F0	Standard communications plus 10Base-T Ethernet (RJ45) / 10Base-FL (ST male Fiber Optic connection).
	M1	Standard communications plus 56k universal internal modem (RJ11).
9 Onboard I/O and communications (not field serviceable, part of base unit)	A	Base option AND 8 Form A digital outputs [2], 1 RS-485 (COM2) port [1].
	B	Base Option AND 8 Form A digital outputs [2], 3 digital inputs (20-56 VDC/AC).
	C	Base Option AND 8 Form A digital outputs [2], 3 digital inputs (80-280 VDC/AC).
	D	Base Option AND 1 IRIG-B time sync port [2], 1 RS-485 port (COM2), 3 digital inputs (20-56 V DC/AC) [1].
	E	Base Option AND 1 IRIG-B time sync port [2], 1 RS-485 port (COM2), 3 digital inputs (80-280 V DC/AC) [1].
10 Security	0	Password protected, no security lock.
	1	Password protected with security lock enabled.
11 Special Order	A	None.
	C	Tropicalisation treatment applied.

Related products

RACK-8800-RAW	IEC/DIN 34862 19" Rack with female mating voltage/current and I/O blocks unassembled.
IEC-OPTICAL-PROBE	Optional IEC 1107 compliant Optical Probe for use with ION8800 meters.
BATT-REPLACE-8XXX	Replacement batteries for the ION8600 or ION8800, quantity 10.
ION-SETUP	Free configuration software for the ION8800. Ships on a CD.

(1) Channel COM2 is available on the port at the back of the meter OR on the Comm Module (if installed). You must select which connectors your communications wiring is connected to during meter setup.
(2) All Onboard I/O and Comms (Base Option) options include: 4 Form C solid-state digital outputs, 1 Form C mechanical relay output, one IEC 1107 optical communications port, two IEC 1107 style optical pulsing ports.

Optional ION8800 communications module.

Part Numbers (cont.)

ION8800 communications module for field retrofit installations

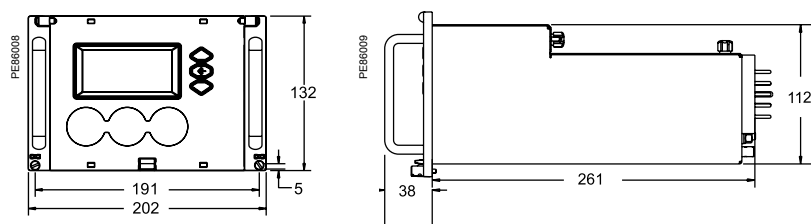| Item	Code	Description
P880C	A0	Standard communications: 1 RS-232/RS-485 port, 1 RS-485 port (COM2) [1].
	C1	Standard communications plus 10Base-T Ethernet (RJ45), 56k universal internal modem (RJ11).
	D1	Standard communications plus 10Base-T Ethernet (RJ45) / 10Base-FL Ethernet Fiber, 56k universal internal modem (RJ11).
	E0	Standard communications plus 10Base-T Ethernet (RJ45).
	F0	Standard communications plus 10Base-T Ethernet (RJ45) / 10Base-FL Ethernet Fiber (ST male Fiber optic connection).
	M1	Standard communications plus 56k universal internal modem (RJ11).
Special Order	A	None.
	C	Tropicalisation treatment applied.

(1) *Channel COM2 is available on the port at the back of the meter OR on the Comm Module (if installed). You must select which connectors your communications wiring is connected to during meter setup.*

Note: *The part number above should conform to the following format: P880C A0 A.*
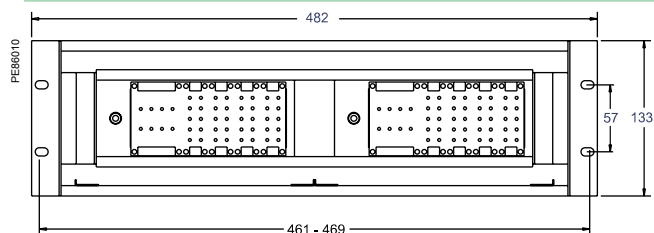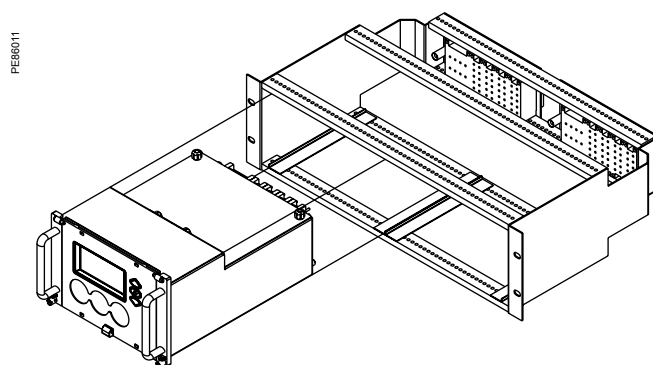
ION8800
Dimensions and connections

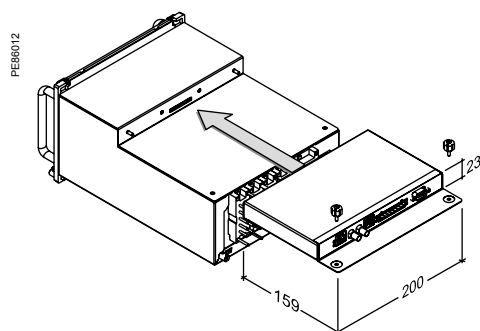### ION8800 dimensions

PE86008

PE86009

132

191
202
5

38
261
112

ION8800 Essailec rack dimensions

PE86010

482

57 | 133

461 - 469

Rack mounting the ION8800

PE86011

ION8800 communication module dimensions

PE86012

23

159

200

Switchboard-data acquisition and monitoring make it possible to anticipate events. In this way, they reduce customer costs in terms of operation, maintenance and investment.

Serial link

With communication technology, it is no longer necessary to be physically present at the site to access information. Data is transmitted by networks.
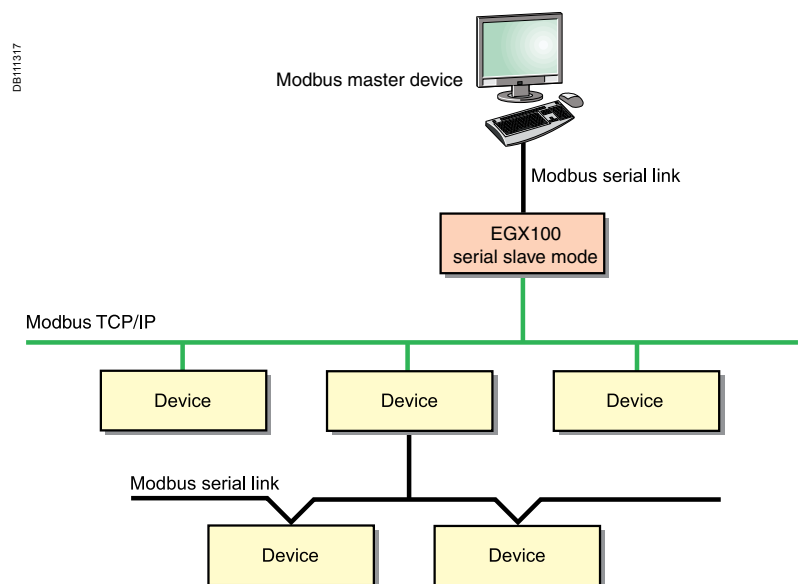
In all architectures, the communication interface serves as the link between the installation devices and the PC running the operating software. It provides the physical link and protocol adaptation. Adaptation is required because the communication systems used by the PC (Modbus via RS232 and/or Ethernet) are generally not those used by the installation devices (e.g. the Modbus protocol via RS485).

Dedicated application software prepares the information for analysis under the best possible conditions.

DB111316

RS232 – RS485 interface

Modbus serial link

Device   Device   Device
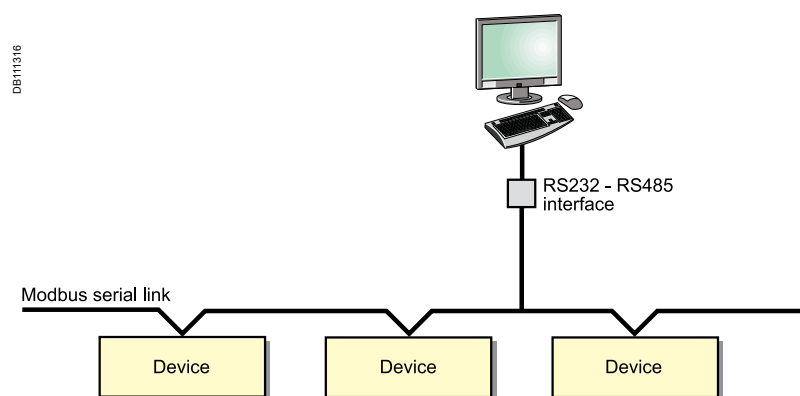
Modbus communication architecture.

In addition, an EGX100 in serial port slave mode allows a serial Modbus master device to access information from other devices across a Modbus TCP/IP network.


DB111317

Modbus master device

Modbus serial link

EGX100 serial slave mode

Modbus TCP/IP

Device   Device   Device

Modbus serial link

Device   Device

Modbus communication across Ethernet network

Ethernet link

Using modern Web technologies, the operator can access information from monitoring and protection devices using any PC connected to the network, with all the required security.

The Ethernet EGX100 gateway or the EGX300 integrated gateway-servers provide connectivity between Modbus RS485 and Ethernet Modbus TCP/IP.

Ethernet Modbus TCP/IP

EGX100

EGX300

Modbus serial link: 1 to 32 devices
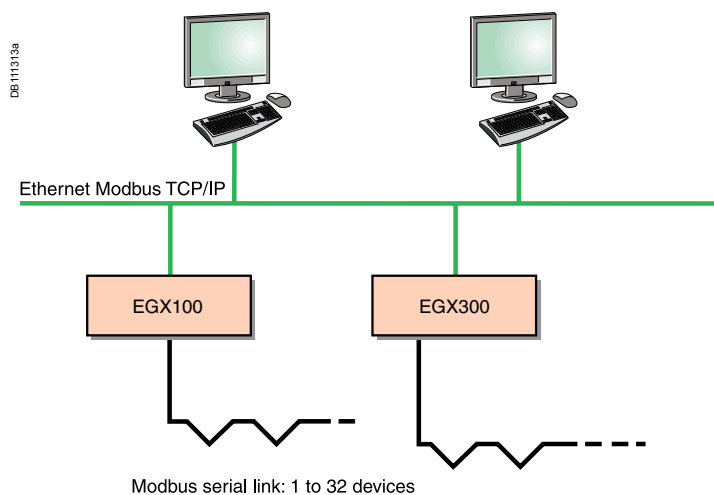
Ethernet communication architecture.

The services available with these technologies considerably simplify the creation, maintenance and operation of these supervision systems.

The application software is now standardised: the web interface into the system does not require custom web pages to be created. It is personalised by simply identifying the components in your installation and can be used as easily as any internet application.

The first step in this approach is the EGX300 integrated gateway-server with HTML pages. Power management software (StuxureWare Power Monitoring Expert and StruxureWare PowerSCADA Expert), running on a PC, provide broader coverage for more specific needs.
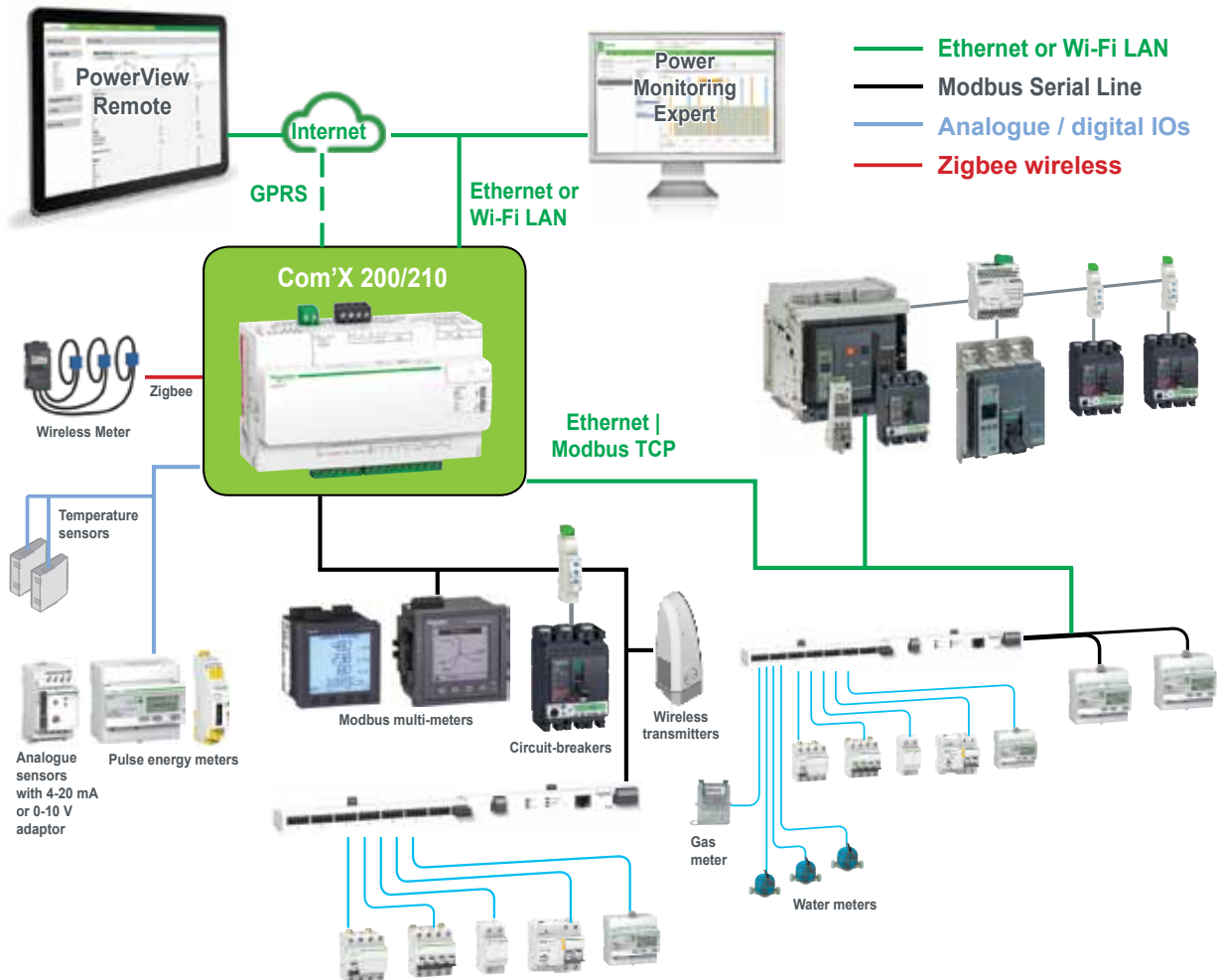
Com'X 200 / 210
Energy data loggers

Main functions

3. Save

2. Connect

1. Measure

PowerView Remote

Internet

GPRS

Ethernet or Wi-Fi LAN

Power Monitoring Expert

— **Ethernet or Wi-Fi LAN**
— **Modbus Serial Line**
— **Analogue / digital IOs**
— **Zigbee wireless**

Com'X 200/210

Zigbee

Wireless Meter

Temperature sensors

Analogue sensors with 4-20 mA or 0-10 V adaptor

Pulse energy meters

Modbus multi-meters

Circuit-breakers

Wireless transmitters

Gas meter

Water meters

Ethernet | Modbus TCP

Data collector
Collects and stores energy data from up to 64 field devices, connected to either:
■ Ethernet TCP/IP field network.
■ Modbus Serial line network (up to 32 devices).
■ Embedded digital and analogue inputs.

"Field devices" consist of :
■ PowerLogic devices for power and energy monitoring.
■ Masterpact or Compact circuit-breakers for protection and monitoring.
■ Acti 9 protection devices, meters, remote controlled switches, etc.
■ Water, Air, Gas, Electricity, and Steam consumption meters, from specialized manufacturers, delivering pulses as per standard (see table next page).
■ Environmental sensors such as temperatures, humidity, and CO2 levels in a building, providing analogue information.
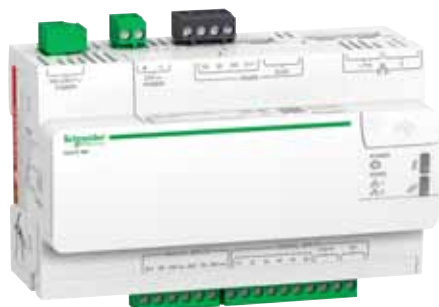
Data logging and storage capabilities include:
■ Configurable logging interval, from every minute to once a week.
■ Data storage duration of several weeks, depending on quanitity of of collected data.

Energy Server Com'X 200 data logger

Energy Server Com'X 210 data logger

Data publisher
Batches of collected data periodically transmitted to an Internet server, as:

■ XML files, for processing by StruxureWare™ web services, such as Energy Operation.
■ CSV files for viewing in Excel or transformed for upload into programs such as StruxureWare™ Power Monitoring Expert or any compatible software.

Data publishing function supports 4 transfer protocols over Ethernet or Wi-Fi:

■ HTTP.
■ HTTPS.
■ FTP.
■ SMTP.

Additional functions

Gateway
If selected by the user, the Com'X 200/210 can also make all data from connected devices available in real-time:

■ In Modbus TCP/IP format over Ethernet or Wi-Fi.
■ For requests by an energy management software.

Modbus packets can be sent from managing software to field devices through Modbus serial line or Modbus TCP/IP over Ethernet.

Com'X 200/210 Commercial reference numbers	
Com'X 200 data logger 24 V DC or 230 V AC power supplied	EBX200
Com'X 210 data logger 24 V DC power supplied UL rated	EBX210
Com'x Wi-Fi USB interface	EBXA-USB-WiFi
Com'X GPRS interface SIM card	EBXA-GPRS-SIM
Com'X GPRS interface	EBXA-GPRS
Com'x External GPRS antenna	EBXA-ANT-5M
Com'x Zigbee USB interface	EBXA-USB-Zigbee

Please see your Schneider Electric representative for complete ordering information.

Main functions
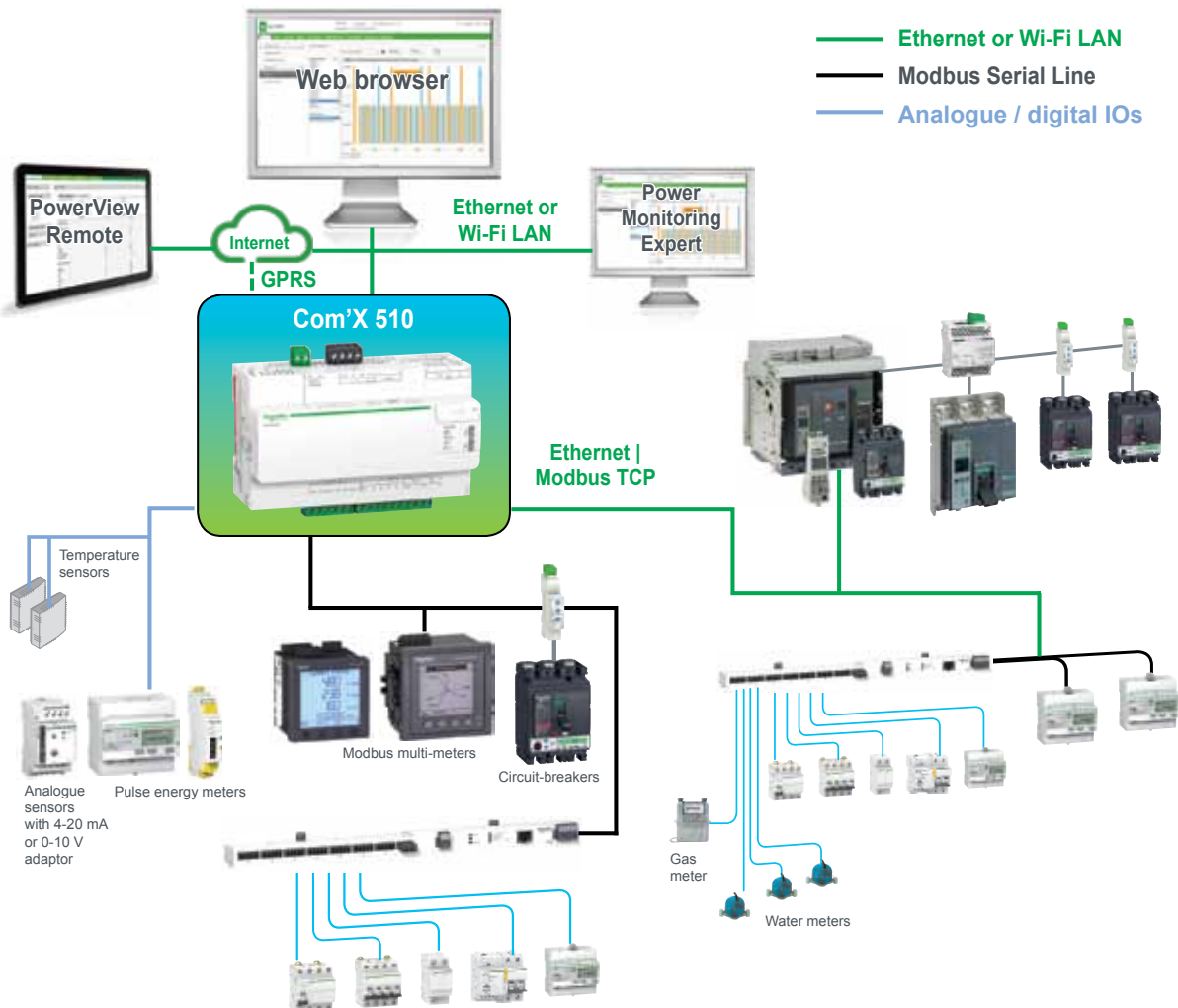

Legend:
- Ethernet or Wi-Fi LAN
- Modbus Serial Line
- Analogue / digital IOs

3. Save
- Web browser
- PowerView Remote
- Internet
- GPRS
- Ethernet or Wi-Fi LAN
- Power Monitoring Expert

2. Connect
- Com'X 510
- Temperature sensors
- Ethernet | Modbus TCP

1. Measure
- Analogue sensors with 4-20 mA or 0-10 V adaptor
- Pulse energy meters
- Modbus multi-meters
- Circuit-breakers
- Gas meter
- Water meters

Data collector
Collects and stores energy data from up to 64 field devices, connected to either:
- Ethernet TCP/IP field network.
- Modbus Serial line network (up to 32 devices).
- Embedded digital and analogue inputs.

"Field devices" consist of :
- PowerLogic meters for power and energy monitoring.
- Masterpact, Powerpact, or Compact circuit-breakers for protection and monitoring.
- Acti 9 protection devices, meters, remote controlled switches, etc.
- Water, Air, Gas, Electricity, and Steam consumption meters, from specialized manufacturers, delivering pulses as per standard (see table at end of this document).
- Environmental sensors such as temperatures, humidity, and CO2 levels in a building, providing analogue information.

Data logging and storage capabilities include:
- Data logging period: configurable from every minute to once a week.
- Data storage duration: up to 2 years, depending on quantity of collected data.
- Able to set time and send reset instructions to field devices.

Embedded energy management software
The Com'X provides the end-user with immediate visibility into energy consumption throughout the site. As soon as the Com'X is connected to the Local Area Network (LAN), several web pages are accessible via any standard web browser, (without plug-in or additional components).

These web pages display real-time data as it is collected, in easy to understand tabular and summary formats. In addition, users can get simple analysis of historical data in bar graph or trending formats.
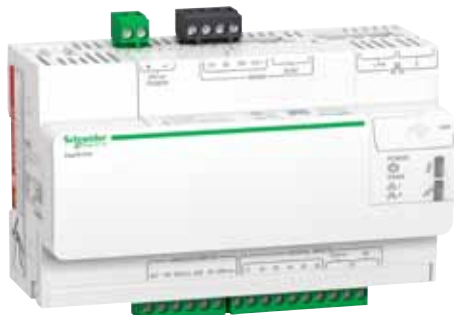

Energy dashboard comparing accumulated over time energy values (partial screen)

Com'X 510
Energy server

Energy Server Com'X 510 data logger

Raw data and measurements from one field device (partial screen)

Historical trending comparing multiple devices or multiple topics (partial screen)

Additional functions

Data publisher
Batches of collected data can also be periodically transmitted to an Internet server, as:
■ XML files, for processing by StruxureWare™ web services, such as Energy Operation.
■ CSV files for viewing in Excel or transformed or uploading to programs such as StruxureWare™ Power Monitoring Expert or any compatible software.

Data publishing function supports 4 transfer protocols over Ethernet or Wi-Fi:
■ HTTP.
■ HTTPS.
■ FTP.
■ SMTP.

Gateway
■ If selected by the user, the Com'X510 can make data from connected devices available in real time:
■ In Modbus TCP/IP format over Ethernet or Wi-Fi.
■ For requests by energy management software.

Modbus packets can be sent from managing software to field devices through Modbus serial line or Modbus TCP/IP over Ethernet.

| Com'X 510 Commercial reference numbers	
Com'X 510 energy server 24 V DC power supplied UL rated	EBX510
Com'x Wi-Fi USB interface	EBXA-USB-WiFi
Com'X GPRS interface SIM card	EBXA-GPRS-SIM
Com'X GPRS interface	EBXA-GPRS
Com'x External GPRS antenna	EBXA-ANT-5M
Com'x Zigbee USB interface	EBXA-USB-Zigbee

Please see your Schneider Electric representative for complete ordering information.

Com'X 200/210/510
Connectivity

Connection points
1 Terminal block
2 RJ45 cable
3 Ethernet port #1
4 Ethernet port #2
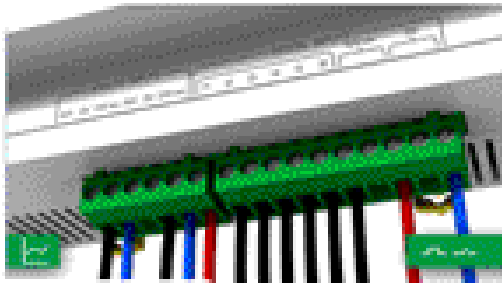
Connectivity

Modbus SL /RS485 connections to field devices
■ By cable with RJ45 connector.

2 Ethernet ports
■ Used to either separate upstream connection from field devices network or to daisy chain Ethernet devices.
■ RJ45 10/100 Base connectors.
■ Static IP address.

Ethernet port #1
■ Connection to Local Area Network (LAN).
■ PoE Class 3 (802.3af) can act as main/backup power supply for the Com'X.
■ DHCP client.

Ethernet port # 2
■ Connection to field devices.
■ DHCP cleint or server.

Power supply to analogue and digital outputs
Outputs to supply sensors and inputs when Com'X is supplied through 24 V DC input on top:
■ 12 V DC– 60 mA for digital inputs.
■ 24 V DC for analogue inputs.
Compliant with electrical switchboard environment (temperature, electromagnetic compatibilty).

Power supply to analogue and digital inputs

2 inputs for analogue sensors
■ PT100 or PT1000 temperature probes.
■ Various sensors (humidity, CO2, etc.) with 0-10 V output.
■ Various sensors with 4-20 mA output

6 inputs for dry contact sensors or pulse counters
■ Max 25 pulses per second (min duration 20 ms)
■ IEC 62053-31 Class A

Optional digital I/O extension module (available Sept 2015)

Wi-Fi USB stick
■ As an alternative to publication over Ethernet, connects Com'X to the site Wi-Fi router for regular data transmission.
■ Can also be used for Com'X 510 configuration through one-to-one connection with laptop or tablet.
■ Simply plugs into USB port 2 under front cover.

Wi-Fi USB stick

GPRS modem
■ For connection to the data processing server through cellular or user's APN network.
■ Also connect to Schneider Electric's Digital Service Platform.
■ Especially suitable for sites with no internet access.
■ Simply plugs into dedicated port under the front cover.

GPRS modem

GPRS antenna
■ Improves GPRS signal strength in case of poor transmission conditions.
■ Recommended for Com'X located inside metallic electrical panels.

Zigbee dongle (Com'X 200/210 only - not shown)
For connection to wireless digital enabled field devices such as PowerLogic EM4300 meters. Plugs into USB ports.

PowerLogic WT4200 wireless transmitters, connected to Modbus RS485, enables collecting data also from water, air, gas or steam meters.

GPRS antenna

Schneider Electric

Com'X 200/210/510
Setup and configuration

Device settings page (partial), as displayed after auto-discovery, enabling user to assign circuit identifications and select data for logging and publication.

Installation
- DIN rail fitting (Front face IP40, terminals IP20).
- Weight 450g.
- Dimensions (HxWxD) 91mm x 144mm x 65.8mm.

Setup and configuration

Connection to LAN
As soon as they are connected to the LAN, it can be detected and assigned an IP address by DHCP. Your operating system's DPWS feature allows your computer to automatically recognize the device as Com'X. Embedded web pages are then immediately accessible by clicking each Com'X device icon or by typing the assigned IP address into your web browser.

Field device auto-discovery
The user-activated device discovery function automatically identifies all field devices connected to Modbus SL, Ethernet port or Zigbee dongle.
- Schneider Electric devices display with the product image.
- Other devices appear as "unknown," allowing the user to manually assign a device type.
- User can assign their own device types.
Users can complete additional device identification fields, such as circuit ID or building zone.

Data selection for logging and publication
Web page configuration tabs allow you to configure, in just a few clicks, which connected field devices collect and publish data.

Advanced diagnostics and troubleshooting features
- Modbus serial and TCP/IP device statistics.
- Ethernet network statistics.
- Communications check wizard.
- Direct reading of register values from local and remote devices.

Additional features and benefits

- Cybersecurity - works well with your cyber security architecture.
- 2 Ethernet ports to separate upstream cloud connection, or to daisy chain with other Ethernet devices, from field device network.
- Data storage in case of communications failure.
- Local backup of configuration parameters - back up your system to a USB storage device and have it available for system restore or to duplicate the configuration on another box.

When associated with Schneider Electric Services:
- Remotely managed (configuration backup, troubleshooting, parameter setting).
- GPRS SIM contract management (with EBXA-GPRS-SIM).

Com'X 200/210/510 Environment	
Operating temperature	-25º to +60°C (-13º to 140°F) Com'X 200
	-25º to +70°C (-13º to 158°F) Com'X 210/510
Storage temperature	-40º to +85°C (-40º to +185°F)
GPRS dongle Operating temperature	-20º to +60°C (-4º to +140°F)
GPRS dongle Storage temperature	-40º to +85°C (-40º to +185°F)
Wif-Fi dongle Operating temperature	0º to +50°C (32º to +122°F)
Wi-Fi dongle Storage temperature	-20º to +80°C (-4º to +176°F)
Humidity	5 to 95% relative humidity (without condensation) at +55ºC
Pollution	Class III
Safety standards / regulation	
International (CB scheme)	IEC 60950
USA	UL 508
USA	UL 60950 (Com'X 210 and Com'X 510 only)
Canada	cUL 60950 (Com'X 210 and Com'X 510 only)
Canada	cULus 508
Europe	EN 60950
Quality Brands	
	CE, UL

Schneider Electric

PowerLogic EGX100
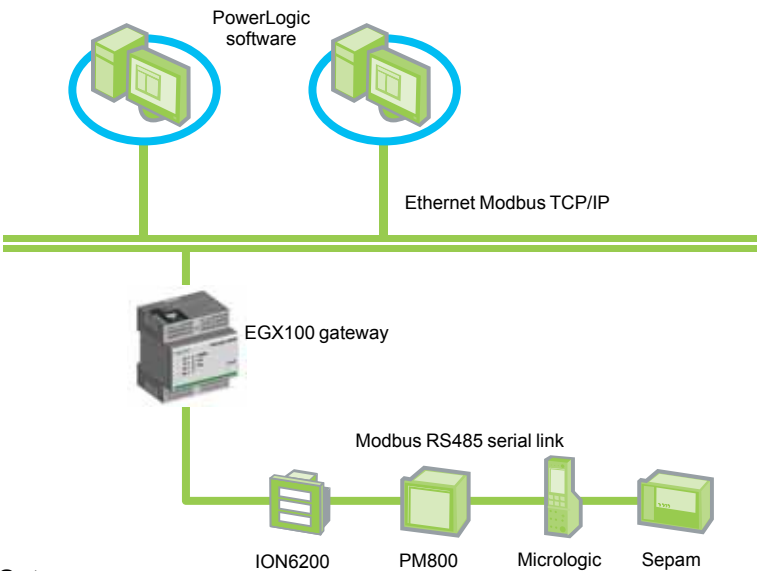## Ethernet gateway

PowerLogic EGX100

Function

The EGX100 serves as an Ethernet gateway for PowerLogic system devices and for any other communicating devices utilising the Modbus protocol. The EGX100 gateway offers complete access to status and measurement information provided by the connected devices via PowerLogic software installed on a PC.

PowerLogic software compatibility

PowerLogic software is recommeded as a user interface because they provide access to all status and measurement information. They also prepare summary reports. The EGX100 is compatible with:
- StruxureWare Power Monitoring Expert software
- StruxureWare PowerSCADA Expert.

Architecture

Setup

Setup via an Ethernet network

Once connected to an Ethernet network, the EGX100 gateway can be accessed by a standard internet browser via its IP address to:
- specify the IP address, subnet mask and gateway address of the EGX gateway
- configure the serial port parameters (baud rate, parity, protocol, mode, physical interface and timeout value)
- create user accounts
- create or update the list of the connected products with their Modbus or PowerLogic communication parameters
- configure IP filtering to control access to serial devices
- access Ethernet and serial port diagnostic data
- update the firmware
- specify the user language.

Setup via a serial connection

Serial setup is carried out using a PC connected to the EGX100 via an RS232 link. This setup:
- specifies the IP address, subnet mask and gateway address of the EGX gateway
- specifies the language used for the setup session.

Part numbers

Powerlogic EGX100	Schneider Electric
EGX100	**EGX100SD, EGX100MG**

PowerLogic EGX100

Characteristics

|	EGX100
Weight	170 g
Dimensions (HxWxD)	80.8 x 72 x 65.8 mm
Mounting	Din rail
Power-over-Ethernet (PoE)	Class 3
Power supply	24 V DC if not using PoE
Maximum burden	4 W
Operating temperature	-25 to 70ºC
Humidity rating	5 to 95 % relative humidity (without condensation) at +55ºC
Regulatory/standards compliance for electromagenetic interference	
Emissions (radiated and conducted)	EN55022/EN55011/FCC class A
Immunity for industrial environments:	
electrostatic discharge	EN 61000-6-2
radiated RF	EN 61000-4-2
electrical fast	EN 61000-4-3
surge	EN 61000-4-4
conducted RF	EN 61000-4-5
power frequency	EN 61000-4-6
magnetic field	EN 61000-4-8
Regulatory/standards compliance for safety	
International (CB scheme)	IEC 60950
USA	UL508/UL60950
Canada	cUL (complies with CSA C22.2, no. 60950)
Europe	EN 60950
Australia/New Zealand	AS/NZS25 60950
Serial ports	
Number of ports	1
Types of ports	RS232 or RS485 (2-wire or 4-wire), depending on
Protocol	Modbus RTU/ASCII, PowerLogic (SY/MAX), Jbus
Maximum baud rate	38400 or 57600 baud depending on settings
Maximum number of connected devices	32 (directly) 247 (indirectly)
Ethernet port	
Number of ports	1
Type of port	10/100 Base TX (802.3af) port
Protocol	HTTP, Modbus TCP/IP, FTP, SNMP (MIB II)

Installation

Din rail mounting

PowerLogic EGX300
Integrated gateway-server

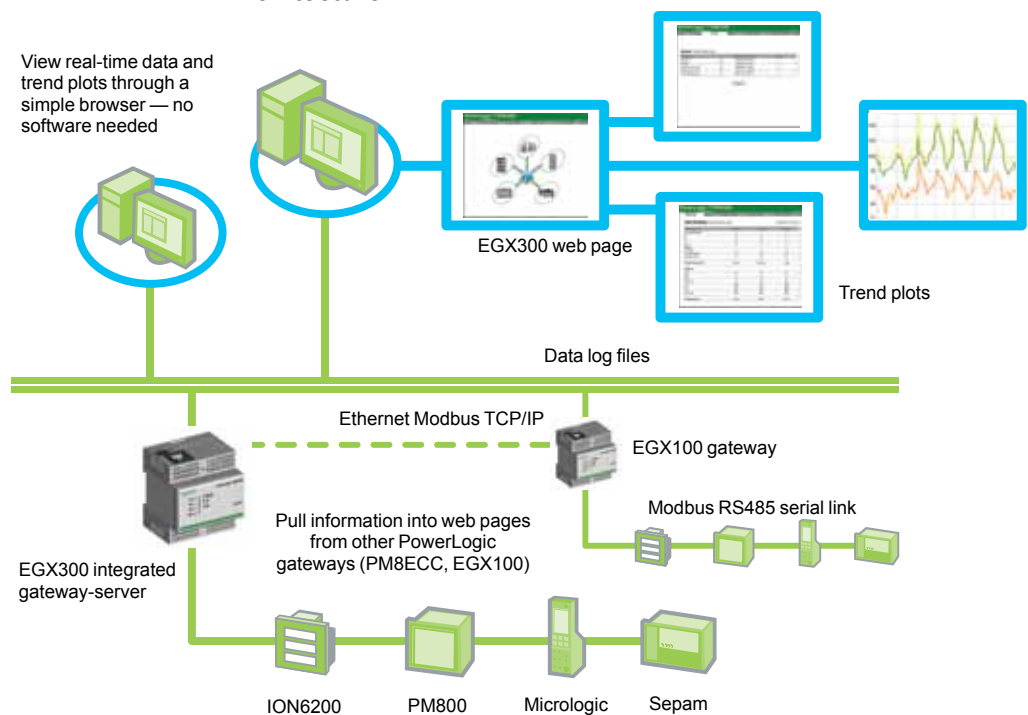PE86181
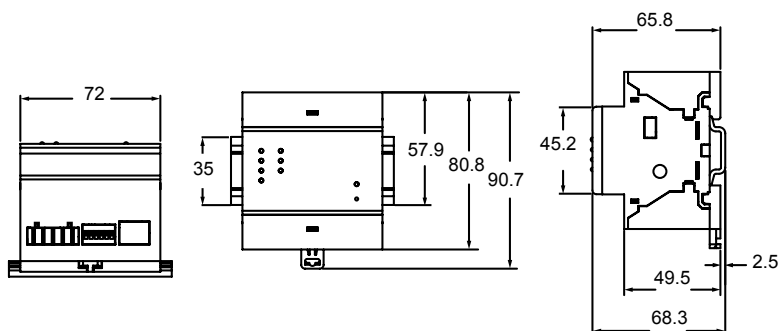
PowerLogic EGX300

Function

The EGX300 is an Ethernet-based device providing a simple transparent interface between Ethernet-based networks and field devices. These include meter, monitors, protective relays, trip units, motor controls and other devices that communicate using ModbusTCP/IP, Modbud, JBUS, or PowerLogic protocol.

The EGX300 can form a simple, scalable web-based monitoring solution providing real-time data views, on-board data logging/trending, and simple control for field devices. The EGX300 helps provide a system solution that can upgrade to include monitoring software for more advanced data collection, trending, alarm/event management, analysis and other functions. The EGX300 is compatible with:

- StruxureWare Power Monitoring Expert software
- StruxureWare PowerSCADA Expert.

Architecture

View real-time data and trend plots through a simple browser — no software needed

EGX300 web page

Trend plots

Data log files

Ethernet Modbus TCP/IP

EGX100 gateway

Modbus RS485 serial link

EGX300 integrated gateway-server

Pull information into web pages from other PowerLogic gateways (PM8ECC, EGX100)

ION6200   PM800   Micrologic   Sepam

Features

- View real-time and historical information and real-time trending from multiple locations via any standard web browser
- Automatically detect attached Modbus serial devices for easy setup
- Automatically email, FTP, or HTTP selected logged data to your PC for additional analysis
- Select the logging intervals and topics you want logged
- Ensures data and system security through password protection and controlled network access to individual/custom web pages
- Simplifies installation by receiving control power through the Ethernet cable utilising Power-over-Ethernet and offers the option to utilise 24 V DC control power
- Perform simple control reset commands for supported devices (e.g. min/max, accumulated energy, etc.)
- Log equipment maintenance activities via the EGX web interface

Part numbers

Powerlogic EGX300	Schneider Electric
EGX300	**EGX300**

Schneider Electric

PowerLogic EGX300
Integrated gateway-server (cont'd)

PE86181

PowerLogic EGX300

Characteristics

	EGX300
Weight	170 g
Dimensions (HxWxD)	80.8 x 72 x 65.8 mm
Mounting	Din rail
Power-over-Ethernet (PoE)	Class 3
Power supply	24 V DC if not using PoE
Maximum burden	4 W
Operating temperature	-25 to 70ºC
Humidity rating	5 to 95 % relative humidity (without condensation) at

Regulatory/standards compliance for electromagenetic interference

Emissions (radiated and	EN55022/EN55011/FCC class A
Immunity for industrial environments:	
electrostatic discharge	EN 61000-6-2
radiated RF	EN 61000-4-2
electrical fast transients	EN 61000-4-3
surge	EN 61000-4-4
conducted RF	EN 61000-4-5
power frequency	EN 61000-4-6
magnetic field	EN 61000-4-8

Regulatory/standards compliance for safety

International (CB scheme)	IEC 60950
USA	UL508/UL60950
Canada	cUL (complies with CSA C22.2, no. 60950)
Europe	EN 60950
Australia/New Zealand	AS/NZS 60950

Serial ports

|	
Number of ports	1
Types of ports	RS232 or RS485 (2-wire or 4-wire), depending on settings
Protocol	Modbus RTU/ASCII, PowerLogic (SY/MAX), Jbus
Maximum baud rate	38400 or 57600 baud depending on settings
Maximum number of connected devices	32 (directly) 64 (indirectly)

Ethernet port

Number of ports	1
Type of port	10/100 Base TX (802.3af) port
Protocol	HTTP, Modbus TCP/IP, FTP, SNMP (MIB II), BootP

Web server

Memory for logging, custom web pages and documentation	512 Mb

Installation

Din rail mounting

Schneider Electric
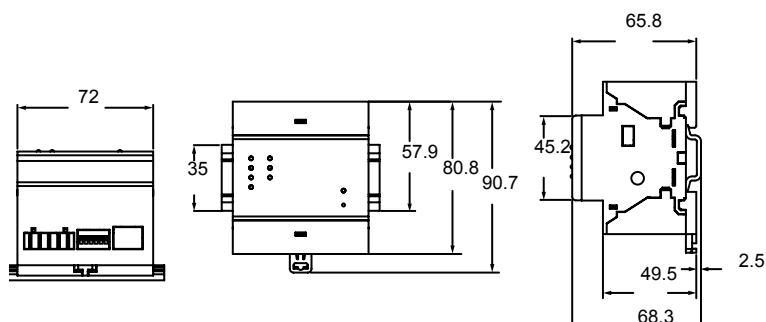
ION7550 RTU
Functions and characteristics

PowerLogic ION 7550 RTU.

The PowerLogic ION7550 RTU (remote terminal unit) is an intelligent web-enabled device ideal for combined utilities metering of water, air, gas, electricity and steam (WAGES). When combined with PowerLogic software, the ION7550 RTU offers a seamless, end-to-end WAGES metering solution. Featuring a large, high-visibility display and overall versatility of the PowerLogic system, the ION7550 RTU provides extensive analogue and digital I/O choices and is a cost-effective dedicated WAGES solution when compared to a traditional meter. The device automatically collects, scales and logs readings from a large number of connected meters or transducers and delivers information to one or more head-end systems through a unique combination of integrated Ethernet, modem or serial gateways. As part of a complete enterprise energy management solution, the ION7550 RTU can be integrated with PowerLogic ION Enterprise software, or other SCADA, information and automation systems.

Applications
WAGES metering.
Data concentration through multi-port, multi-protocol communications.
Equipment status monitoring and control.
Programmable setpoints for out-of-limit triggers or alarm conditions.
Integrated utility metering with advanced programmable math functions.

Main characteristics

Increase efficiency
Reduce waste and optimise equipment operation to increase efficiency.

Easy to operate
Screen-based menu system to configure meter settings. Bright LCD display with adjustable contrast.

Integrate with software
Easily integrated with PowerLogic or other energy management enterprises, including SCADA systems.

Transducer and equipment condition monitoring
Versatile communications, extensive I/O points, clock synchronization, event logging and sequence of events recording capabilities for transducer and equipment condition and status monitoring at utility substations.

Set automatic alarms
Alarm setpoint learning feature for optimum threshold settings.

Up to 10 Mbytes of memory
For archiving of data and waveforms.
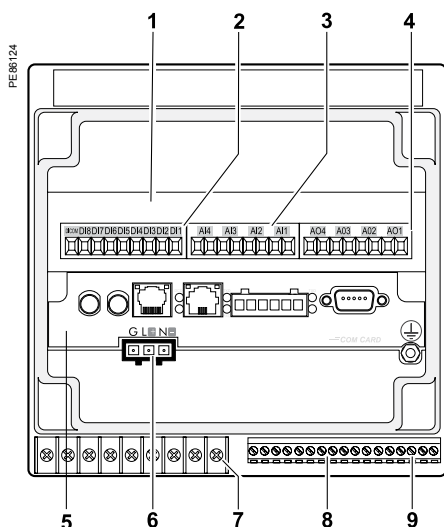
Notify alarms via email
High-priority alarms sent directly to the user's PC. Instant notification of power quality events by email.

Modbus Master functionality
Aggregate and store data from downstream Modbus devices using serial or Ethernet connections.

Part numbers

ION7550 RTU	
ION7550	M7550

ION7550 RTU
Functions and characteristics (cont.)

PowerLogic® ION7550 RTU.

1 *I/O expansion card.*
2 *Digital inputs.*
3 *Analogue inputs.*
4 *Analogue outputs.*
5 *Communications card.*
6 *Power supply.*
7 *Form C digital outputs.*
8 *Digital inputs.*
9 *Form A digital outputs.*

Selection guide	ION7550 RTU
Data recording	
Min/max of instantaneous values	■
Data logs	■
Event logs	■
Trending	■
SER (Sequence of event recording)	■
Time stamping	■
GPS synchronisation (1 ms)	■
Memory (in Mbytes)	10
Display and I/O	
Front panel display	■
Pulse output	1
Digital or analogue inputs(max)	24
Digital or analogue outputs (max, including pulse output)	30
Communication	
RS 485 port	1
RS 485 / RS 232 port	1
Optical port	1
Modbus TCP Master / Slave (Ethernet port)	
Modbus RTU Master / Slave (Serial port)	
Ethernet port (Modbus/TCP/IP protocol)	1
Ethernet gateway (EtherGate)	1
Alarms (optional automatic alarm setting	■
Alarm notification via email (Meterm@il)	■
HTML web page server (WebMeter)	■
Internal modem	1
Modem gateway (ModemGate)	■
DNP 3.0 through serial, modem, and I/R ports	■

PowerLogic ION7550 RTU.

PE86117

Electrical characteristics

Data update rate		1/2 cycle or 1 second
Power supply	AC	85-240 V AC ±10% (47-63 Hz)
	DC	110-300 V DC ±10%
	DC low voltage (optional)	20-60 V DC ±10%
	Ride-through time	100 ms (6 cycles at 60 Hz) min. at 120 V DC
	Burden	Standard: typical 15 VA, max 35 VA Low voltage DC: typical 12 VA, max 18 VA
Input/outputs[1]	Standard	8 digital inputs (120 V DC) 3 relay outputs (250 V AC / 30 V DC) 4 digital outputs (solid state)
	Optional	8 additional digital inputs 4 analogue outputs, and/or 4 analogue inputs

Mechanical characteristics

Weight		1.9 kg
IP degree of protection (IEC 60529)		IP52
Dimensions	Standard model	192 x 192 x 159 mm
	TRAN model	235.5 x 216.3 x 133.1 mm

Environmental conditions

Operating temperature	Standard power supply	-20 to +70ºC
	Low voltage DC supply	-20 to +50ºC
	Display operating range	-20 to +70ºC
Storage temperature	Display, TRAN	-40 to +85ºC
Humidity rating		5 to 95% non-condensing
Installation category		III (2000m above sea level)
Dielectric withstand		As per EN 61010-1, IEC 62051-22A[2]

Electromagnetic compatibility

Electrostatic discharge	IEC 61000-4-2
Immunity to radiated fields	IEC 61000-4-3
Immunity to fast transients	IEC 61000-4-4
Immunity to surges	IEC 61000-4-5
Conducted and radiated emissions	CISPR 22

Safety

Europe	IEC 61010-1

(1) Consult the ION7550 / ION7650 installation guide for complete specifications.
(2) IEC 62051-22B with serial ports only.

ION7550 RTU
Functions and characteristics (cont.)

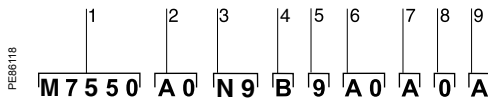| Communication	
RS 232/485 port [(1)]	Up to 115,200 bauds (57,600 bauds for RS 485), ION, DNP 3.0, Modbus, GPS, EtherGate, ModemGate, Modbus Master
RS 485 port [(1)]	Up to 115,200 bauds, ION, DNP 3.0, Modbus, GPS, EtherGate, ModemGate, Modbus Master
Infrared port[(1)]	ANSI type 2, up to 19,200 bauds, ION, Modbus, DNP 3.0
Ethernet port	10BaseT, 100BaseTX. RJ45 connector, 10/100 m link
Fibre-optic Ethernet link	100Base FX, SC duplex connector, 1300 nm, FO multimode with gradient index 62.5/125 μm or 50/125 μm, 2000 m link
Protocol	ION, Modbus, Modbus Master, TCP/IP, DNP 3.0, Telnet
EtherGate	Communicates directly with up to 62 slave devices via available serial ports
ModemGate	Communicates directly with up to 31 slave devices
WebMeter	5 customisable pages, new page creation capabilities, HTML/XML compatible
Firmware characteristics	
High-speed data recording	Down to 5ms interval burst recording, stores detailed characteristics of disturbances or outages. Trigger recording by a user-defined setpoint, or from external equipment.
Load profiling	Channel assignments (800 channels via 50 data recorders) are configurable for any measurable parameter. Trigger recorders based on time interval, calendar schedule, alarm/event condition, or manually.
Trend curves	Access historical data at the front panel. Display, trend and continuously update historical data with date and timestamps for up to four parameters simultaneously.
Alarms	Threshold alarms: adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm user-defined priority levels boolean combination of alarms is possible using the operators NAND, OR, NOR and XOR
Advanced security	Up to 16 users with unique access rights. Perform resets, time syncs, or meter configurations based on user privileges
Memory	5 to 10 Mbytes (specified at time of order)
Firmware update	Update via the communication ports
Display characteristics	
Integrated display	Back lit LCD, configurable screens
Languages	English

(1) All the communication ports may be used simultaneously.

ION7550 RTU
Functions and characteristics (cont.)

Sample ION7550 RTU part number.

Part numbers			
	Item	Code	Description
1	Model	7550	ION7550 device
2	Form Factor	A0	Integrated display with front optical port, 5 MB logging memory, and 512 samples/cycle resolution.
		B0	Integrated display with front optical port, 10 MB logging memory, and 512 samples/cycle resolution.
		T0	Transducer (no display) version, with 5 MB logging memory.
		U0	Transducer (no display) version, with 10 MB logging memory.
3	RTU option	N9	RTU option
4	Power Supply	B	Standard power supply (85-240 VAC, ±10%/47-63 Hz / 110-330 VDC, ±10%)
		C	Low voltage DC power supply (20-60 VDC)
5	Internal use	9	This field for internal use only
6	Communications	A0	Standard communications (1 RS-232/RS-485 port, 1 RS-485 port). Integrated display models also include 1 ANSI Type 2 optical communications port.
		C1	Standard communications plus 10BASE-T/100BASE-TX Ethernet (RJ-45), 56k universal internal modem (RJ-11). Ethernet, modem gateway functions each use a serial port.
		D7	Standard comms plus 10BASE-T/100BASE-TX Ethernet (RJ-45) and 100BASE-FX Ethernet Fiber, 56k universal internal modem (RJ-11). Ethernet and modem gateway functions each use a serial communications port.
		E0	Standard communications plus 10BASE-T/100BASE-TX Ethernet (RJ-45). Ethernet gateway function uses serial port.
		F1	Standard communications plus 10BASE-T/100BASE-TX Ethernet (RJ-45) and 100BASE-FX (SC fiber optic connection). Ethernet gateway uses a serial port.
		M1	Standard communications plus 56k universal internal modem (RJ-11). Modem gateway uses serial communications port.
7	I/O	A	Standard I/O (8 digital inputs, 3 Form C relays, 4 Form A solid-state outputs)
		D	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 1 mA analogue inputs)
		E	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 20 mA analogue inputs)
		H	Standard I/O plus Expansion I/O card (8 additional digital inputs & four -1 to 1 mA analogue outputs)
		K	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 20 mA analogue outputs)
		N	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 20 mA analogue inputs and four 0 to 20 mA outputs)
		P	Standard I/O plus Expansion I/O card (8 additional digital inputs & four 0 to 1 analogue inputs and four -1 to 1 mA analogue
8	Security	0	Password protected, no hardware lock
9	Special Order	A	None
		C	Tropicalisation treatment applied

P760 C1 C

PE86021

Example order code. Use this group of codes when ordering the PowerLogic ION7550 RTU communication or I/O card.

1 Communications or I/O card.
2 Type.
3 Special order.

Communications Card			
	Item	**Code**	**Description**
1	Comm card	P765C	ION7550 RTU communication card for field retrofit installations
2	Type	A0	Standard communications (1 RS-232/RS-485 port, 1 RS-485 port). Front optical port support for meters with integrated display.
		C1	Standard communications plus 10BASE-T/100BASE-TX Ethernet (RJ-45), 56k universal internal modem (RJ-11; the modem port is shared with the front optical port). Ethernet and modem gateway functions each use a serial communications port.
		D7	Standard communications plus 10BASE-T/100BASE-TX Ethernet, 100BASE-FX Ethernet Fiber, 56k universal internal modem (RJ-11; the modem port is shared with the front optical port). Ethernet and modem gateway functions each use a serial communications port.
		E0	Standard communications plus 10BASE-T/100BASE-TX Ethernet. Ethernet gateway function uses a serial communications port.
		F1	Standard communications plus 10BASE-T/100BASE-TX Ethernet, 100BASE-FX Ethernet Fiber (SC fiber optic connection). Ethernet gateway function uses a serial communications port.
		M1	Standard communications plus 56k universal internal modem (RJ-11; the modem port is shared with the front optical port). Modem gateway function uses a serial communications port.
3	Special order	A	None
		C	Tropicalization treatment applied

ION7550 RTU
Functions and characteristics (cont.)

Part numbers (cont'd)

Input/Output expansion card

Item	Code	Description
I/O card	P760A	Expansion I/O for field retrofit installations.
Type	D	Expansion I/O card with eight digital inputs, four 0 to 1 mA analogue inputs
	E	Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue inputs
	H	Expansion I/O card with eight digital inputs, four -1 to 1 mA analogue outputs
	K	Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue outputs
	N	Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue inputs & four 0 to 20 mA outputs
	P	Expansion I/O card with eight digital inputs, four 0 to 1 analogue inputs and four -1 to 1 mA analogue outputs
Special Order	A	None
	C	Tropicalization treatment applied

OpenDAC rack, controllers, power supply

70LRCK16-48	OpenDAC rack. Holds up to 8 OpenLine modules to provide up to 16 I/O points. Requires communications controller
72-MOD-4000	OpenDAC OpenDAC RS-485 serial module. Communications controller for use in a Modbus RTU network. Supports up to 2 70LRCK16-48 OpenDAC racks
72-ETH-T000	OpenDAC Ethernet network module for use on an Modbus/TCP Ethernet network. Supports up to 2 OpenDAC racks
PS-240-15W	85-264VAC/110-370VDC 15 Watt power supply. Required for applying power to the racks and controllers

OpenLine digital I/O modules

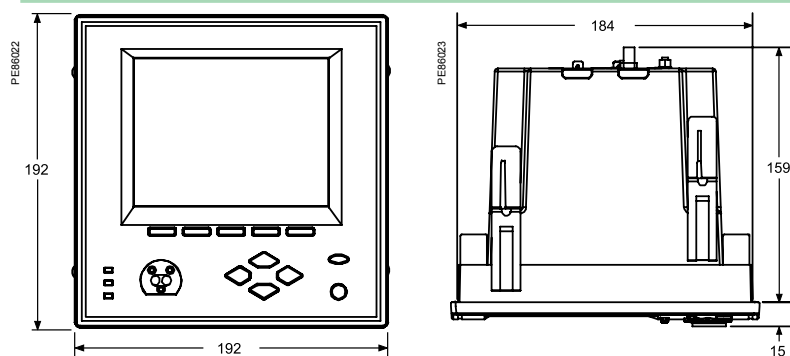|	
70L-IAC	digital input, 120VAC
70L-IACA	digital input, 220VAC
70L-IDC	digital input, 3-32VDC
70L-IDCB	digital input, fast switching
70L-IDCNP	digital input, 15-32VAC/10-32VDC
70L-IDC5S	dry contact closure-sensing DC input
70L-ISW	input test module
70L-OAC	digital output, 120VAC
70L-OACL	digital output, 120VAC inductive loads
70L-OACA	digital output, 220VAC
70L-OACAL	digital output, 220VAC inductive loads
70L-ODC	digital output, 3-60VDC fast
70L-ODCA	digital output, 4-200 VDC
70L-ODCB	digital output, fast switching
70L-ODC5R	digital output, dry contact

OpenLine analogue I/O modules

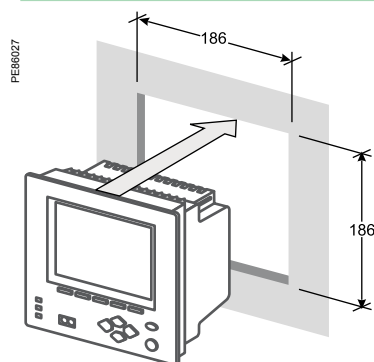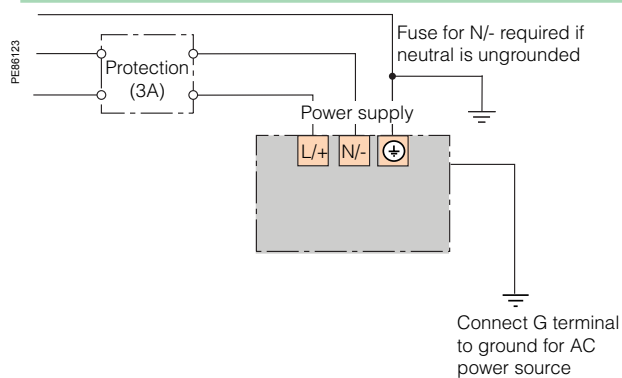|	
73L-II020	analogue input, current, 0-20mA
73L-II420	analogue input, current, 4-20mA
73L-ITCJ	analogue input, temperature, J-type TC
73L-ITCK	analogue input, temperature, K-type TC
73L-ITCT	analogue input, temperature, T-type TC
73L-ITR100	analogue input, temperature, RTD
73L-ITR3100	analogue input, temperature, 3wire RTD
73L-ITR4100	analogue input, temperature, 4wire RTD
73L-IV1	analogue input, voltage, 0-1VDC
73L-IV10	analogue input, voltage, 0-10VDC
73L-IV10B	analogue input, voltage, -10 to 10VDC
73L-IV100M	analogue input, voltage, 0-100VDC
73L-IV5	analogue input, voltage, 0-5VDC
73L-IV5B	analogue input, voltage, -5 to 5VDC
73L-IV50M	analogue input, voltage, 0-50mV
73L-OI020	analogue output, current, 0-20mA
73L-OI420	analogue output, current, 4-20mA
73L-OV10	analogue output, voltage, 0-10VDC
73L-OV10B	analogue output, voltage, -10 to 10VDC
73L-OV5	analogue output, voltage, 0-5VDC
73L-OV5B	analogue output, voltage, -5 to 5VDC

ION7550 RTU
Dimensions and connection

ION7550 RTU dimensions

PE86022

192

192

PE86023

184

159

15

Front-panel mounting

PE86027

186

186

Power supply

PE86123

Protection
(3A)

Power supply

L/+   N/-   ⊕

Fuse for N/- required if
neutral is ungrounded

Connect G terminal
to ground for AC
power source

Note: *the current and voltage terminal strip (I52, I51, I42, I41, I32, I31, I22, I21, I12, I11, V4, V3, V2, V1, Vref) is not present on the RTU.*

Schneider Electric

StruxureWare™
Power Management Software

StruxureWare Power Management software

Dashboard sample

A choice of powerful, effective solutions

StruxureWare™ power management software provides a complete power management supervisory interface that gives you give you access from anywhere to your entire electrical network. It helps you maximise energy efficiency and cut energy-related costs, avoid power-quality related equipment failures and downtime, and increase network-wide operational efficiency. It is ideal for all power critical facilities, including industrial operations, large commercial and institutional buildings, data centres, healthcare sites, and utilities.

The software converts energy-related data into timely, accurate information for you to act on. Track real-time power conditions, analyze power quality and reliability, and respond quickly to alarms to avoid critical situations. Our power management software provides extensive analysis and reporting tools, intuitive visualization and control interfaces, and flexible, scalable architectures that can meet your unique needs today and continue to do so well into the future. The depth of different offerings makes it easy to match a product to your goals, your business and your budget.

Extensive reach and flexibility

Software forms an important part of your overall energy efficiency and reliability solutions from Schneider Electric. Power management software can grow with your business, giving you the level of energy intelligence and control you need to reduce energy consumption and costs, minimise environmental impacts, prolong equipment life, and assure power availability, uptime and safety.

Each product collects energy-related data from a variety of sources, including PowerLogic or third-party meters and sensors. Some products offer integration with other Schneider Electric or third-party automation systems, and other energy-relevant information feeds.

Object-based, standard graphics and symbols provide operators with an interactive and user-friendly interface. Intuitive commands and controls increase efficiency of operators to interact with the system interface.

StruxureWare power management software controls your system with high reliability, performance and data integrity through the use of advanced architectures, such as hot/warm redundant I/O device configurations, self-healing ring communications, and primary and standby server configurations. Comprehensive user-based security is integrated into all interface elements, ensuring a secure control system.

■ Meet or exceed power reliability requirements within budget constraints.
■ Avoid or mitigate power quality issues to reduce duration or eliminate outages.
■ Enable proactive system maintenance to avoid equipment failures.
■ Comply with corporate or regulatory energy standards like ISO 50001.
■ Ensure the comfort and safety of staff and equipment.

System requirements

Whether you're building a new system or enhancing an existing operation, a Schneider Electric representative will advise you on complete system requirements and commissioning information for StruxureWare power management software.

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StruxureWare™
Power Management Software

Applications for power critical facilities

Category		Application
Energy efficiency & cost		Energy usage analysis
		Cost allocation
		Procurement optimisation
		Peak demand reduction
		Demand response and curtailment
		Power factor correction
Power availability & reliability		Electrical distribution (ED)
		Power quality analysis and compliance
		ED commissioning, monitoring, and troubleshooting
		ED alarming and events
Asset management		Capacity planning
		Generator monitoring
		Breaker aging management
		UPS battery monitoring

Typical applications
StruxureWare power management software has many applications:

- Monitor the facility electrical network and verify reliable operation.
- Improve response to power-related events and restore operations quickly.
- Analyze and isolate the source of power quality problems.
- Analyze energy use to identify waste and reduce cost.
- Estimate utility bills to verify accuracy and identify errors.
- Allocate energy costs to departments to drive accountability and awareness.
- Reduce peak demand surcharges and power factor penalties.
- Idenfity excess capacity in existing infrastructure and avoid over-building.
- Support proactive maintenance to prolong asset life.
- Network protection and control.
- Operate distribution network safely and reliably.
- Improve continuity of electrical service.
- Equipment monitoring and control.
- Energy availability and reliability.
- Verify the reliable operation of equipment.
- Support proactive maintenance to prolong asset life.

For electric utilities:

- Improve T&D network reliability.
- Enhance substation automation.
- Maximise the use of existing infrastructure.
- Verify compliance with new power quality standards.
- Analyse and isolate the source of power quality problems.
- Help customers manage reliability using operational and power quality data.

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Power Management Software
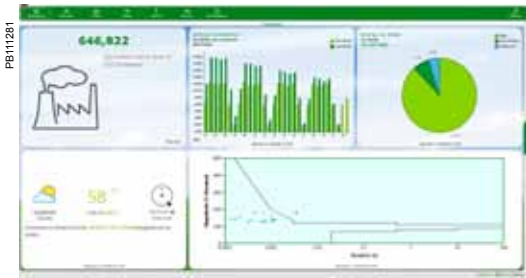
Dashboard - Energy Summary (sample)

Scalable, flexible architecture

Functional components

Provides operators with a rich environment to view and navigate real-time displays of measurements and status indicators; perform power quality and reliability analysis; historical trending; alarms; and manual control. This software offers secure, operator-dedicated, multi-user data and control access through a local server interface, full control client and also via web clients.

Web Clients

Access power monitoring system from anywhere on your network using a web browser. Day-to-day functionality including system status, alarm response, or viewing dashboards. Web client provides authenticated access to common functions:
- Diagrams – navigate network displays to check system status and analyze trends.
- Tables – quickly compare multiple devices in your network in real-time.
- Reports – generate or edit historical reports for energy cost, consumption, and power quality.
- Alarms – quickly identify alarm states in your system and investigate root causes.
- Dashboards – share information from your power monitoring system with any occupant.

Engineering Workstations

Client software gives engineers and power users access to administrative and configuration functions of the software, and real-time display, control, and historical analysis functions.
- Build and edit custom graphical displays to represent your facility. One-line diagrams, campus maps, equipment plan views and mimic diagrams are easily created using Vista graphical objects and imported graphic files.
- Use the designer interface to program ION devices and create system applications with ION Technology and Virtual ION ProcessorsReporter - generate or edit historical reporst for energy cost, consumption, and power quality.

Data acquisition and management
- Communicate with over 300 different powerlog and third-party meters.
- Scale from 1 to 1000s of devices.
- Perform advanced logic and arithmetic operations on real-time and historical data.
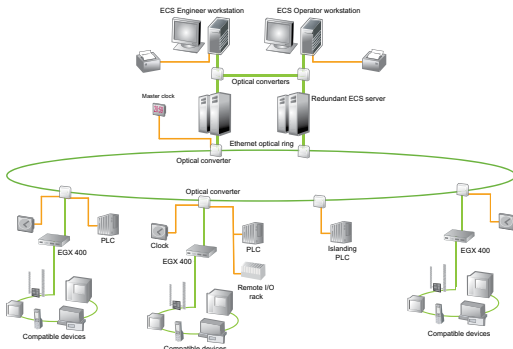- Use web services to interoperate and integrate with other software platforms.
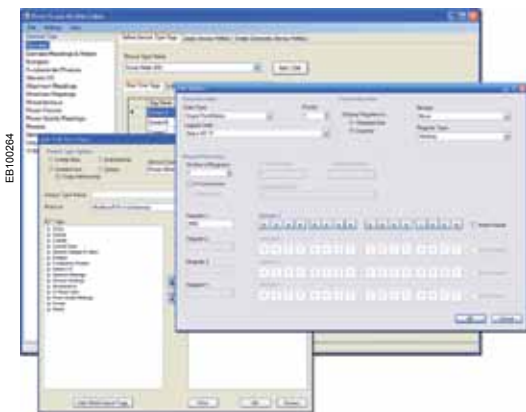
Easily edit pages to depict your entire system

Load profiles, comparisons, and energy allocation

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Consumption details by area and load type

Equipment Status example

Functions

StruxureWare power management software offers a wide range of functions:

■ Data acquisition and integration.
■ Real-time monitoring.
■ Trend analysis.
■ Power quality analysis.
■ Alarms and events.
■ Reporting.
■ Dashboards.
■ Manual and automated control.

Data acquisition and integration

Integrate WAGES (Water, Air, Gas, Electricity, Steam) metering. Native, out-of-the-box support for dozens of devices (See Supported Devices section for details).

■ Enables access to real-time and timestamped historical meter data, control of on-board relays and digital outputs, and server time synchronization. Communicate over Internet, Ethernet, wireless.
■ Interface with third-party meters, transducers, PLCs, RTUs and power distribution or mitigation equipment through Modbus or OPC.
■ Add and configure direct communications with remote devices over Modbus RTU or Modbus TCP protocols using easy-to-use device templates.

The scalable platform enables remote device and user client addition as needs grow while maintaining original investment. Integrate other energy management or automation systems (e.g. SCADA, BAC, DCS, ERP) through ODBC, XML, OPC, email, FTP, CSV and PQDIF compliance; integrate with web services through XML.

Real-time monitoring

View the status of your electrical network from any workstation:
■ See numeric values, status indicators, gauges, and trends, all with intuitive graphical navigation.
■ Extend comprehensive out-of-the-box displays and create custom graphical diagrams to represent your facility; one-line diagrams, campus maps, equipment plan views and mimic diagrams can be created using embedded graphical objects and imported graphic files.
■ Quickly compare multiple devices in your network in real-time in a tabular display.
■ Choose from a library of pre-built tables, or create your own. Save your favorites for quick access later.
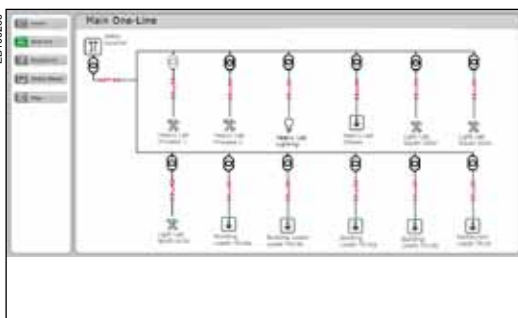
Trend analysis

■ Trend parameters to reveal demand peaks and track system-wide energy costs.
■ Graph any combination of measured parameters.
■ Plot time-series or scatter charts.
■ Perform calculations, obtain statistics, and display historical data.
■ Identify dangerous trends and redistribute loads.
■ Optimise network capacity and avoid over-building.
■ View operating parameters and determine when maintenance is required.
■ Avoid peak demand surcharges and power factor penalties.

StruxureWare™
Power Management Software

Applications allow users to easily create trend plots and analyze historical data.

Users can view and analyze waveforms captured by devices.

Load profile dashboard (sample)

Power quality analysis

StruxureWare power management software allows continuous, wide-area monitoring and data capture for power quality and reliability conditions.

■ Power quality events automatically detected by PQ-capable metering devices are uploded to the system automatically. Analyze waveforms to determine source and cause of issue.

■ Determine if power quality events are upstream or downstream (using PowerLogic meters with Disturbance Direction Detection feature).

■ IEC 61000-4-30 and EN50160 compliance reporting verifies power quality performance to international standards and allows you to quickly review power quality indices as numeric charts or graphic profiles (using PowerLogic meters to support compliance monitoring).

■ Display harmonic histograms, odd/even harmonics, THD, K-factor, crest factor, phasor diagrams, and symmetrical components.

■ Plot waveforms of up to many seconds in duration, with overlays that correlate phase-to-phase relationships between voltages, currents, and cascading failures.

■ Plot sags, swells, short duration transients and other disturbance events on industry-standard voltage tolerance curves, including ITIC (CBEMA) and SEMI.

■ Display for any event a list of associated time-stamped incidents, then click on any incident to see more detailed information.

Alarms and events

Receive alerts to outages or impending problems that could lead to equipment stress, failures, or downtime.

■ Quickly filter on active or unacknowledged alarms.
■ Acknowledge alarms from anywhere in your facility.
■ Trigger on complex conditions.
■ Log all relevant data sequence of events for diagnosis.
■ Flag and avert potential problems.
■ Alert key personnel 24/7.
■ Optimise maintenance scheduling.
■ Easily discriminate between alarm criticality levels.
■ High speed alarm response.
■ Organise, filter and print by any alarm property. Configure specific alarm occurrences to change symbol color or flash an icon on a page.
■ View the five most recent alarms from every page, providing detailed information in easy-to-understand formats.
■ Event log for all PC-based and on-board field events, alarms.
■ Easily configure to annunciate based on alarm type.
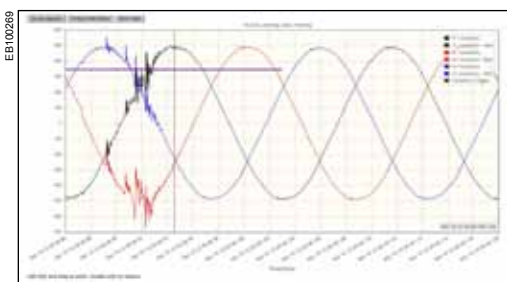
Dashboards

Create engaging dashboard displays of your power monitoring system information and easily share information with anyone in your facility.
■ Make power monitoring information visible and engaging.
■ Promote education and drive behaviour.
■ Display as an interactive kiosk on corporate intranet or on wall-mounted display.
■ Replace hard to maintain home-grown portals and dashboards.
■ Chart or trend any quantity in your power monitoring database.
■ Simply convert into other units (e.g. dollars, emissions, normalizations, etc.).
■ Compare multiple time-ranges.
■ Show impact of temperature, occupancy, or production values on energy usage.
■ Create eye-catching backgrounds to enhance presentation value.
■ User authentication for configuration, and both authenticated and unauthenticated modes available for display.

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StruxureWare™
Power Management Software
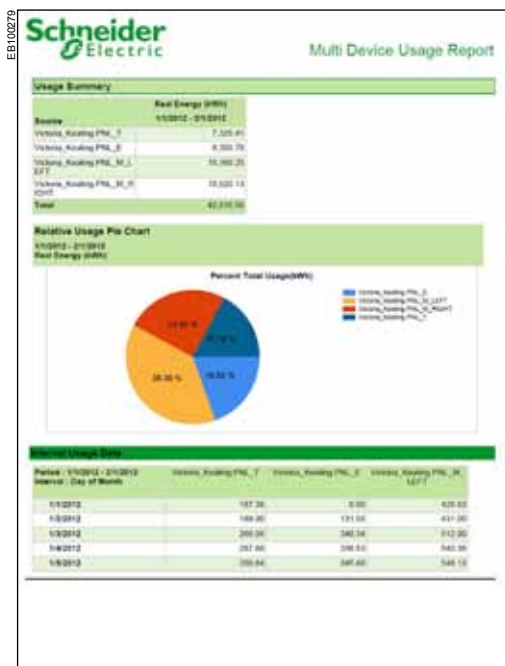
StruxureWare provides many different report templates to allow users to easily display and deliver the information they need .

Power Quality Summary Report example

Reporting

Reports - generate or edit historical reports for energy cost, consumption, and power quality (requires Microsoft SQL Server Standard Edition).

■ Powerful, intuitive reporting options let users see critical information exactly how, where, and when they need it.
■ Reports can be generated manually and saved as Excel, HTML and other formats or scheduled to automatically distribute to a printer or via email.

Configuration tools

Our power management software is supplied with a package of configuration tools designed to make set up uniquely easy and quick.
■ Designed to help make project set up and network configuration fast and easy.
■ Provides standard device types and their associated profiles and allows engineers to easily customise the profiles of the devices specific to the project.
■ Standardized tags per device profile (configurable), XML file.
■ Standard interface for quick database generation:
□ Instantiation of devices, on a per object basis.
□ Creates tags, trends, alarms and events when devices are added to system.
□ Batch editing supported by automation interface.

Manual and automated control

■ Perform fast, manual control operations by clicking on-screen trigger buttons, and operate remote breakers, relays, and other power distribution and mitigation equipment.
■ Perform manual or setpoint-triggered functions.
■ Coordinate control of multiple loads, generators, relays, etc.
■ Support energy-saving applications.
■ Manage distributed energy assets.
■ Automate substations & reduce service time.

Interoperability

■ Integrate all energy management and automation systems (SCADA, BAC, DCS, ERP, etc.)
■ Share data with third-party SCADA, automation, and accounting systems.
■ Comply with ODBC, OPC, and PQDIF standards.

Patented ION technology

StruxureWare power management software and a variety of PowerLogic ION metering products feature the unique ION architecture. This modular, flexible architecture offers extensive customisation of functionality using a simple building block approach. The technology uniquely addresses advanced monitoring and control applications and adapts to changing needs, avoiding obsolescence.

Global solutions

Software is available in many languages - English, French, Spanish, German, and Chinese. Contact your Schneider Electric representative.
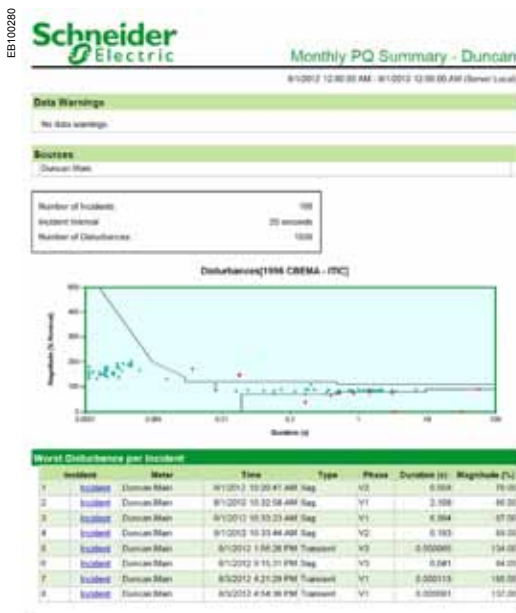
As standards, specifications and designs develop from time to time, please ask for confirmation of the information given in this document.

Design: Schneider Electric
Photos: Schneider Electric

PowerLogic Catalogue
PLSED309005EN

04-2015