Electrical network management

# Schneider Electric

Energy management, revenue metering and power quality monitoring & gateways

## Catalogue

Schneider Electric

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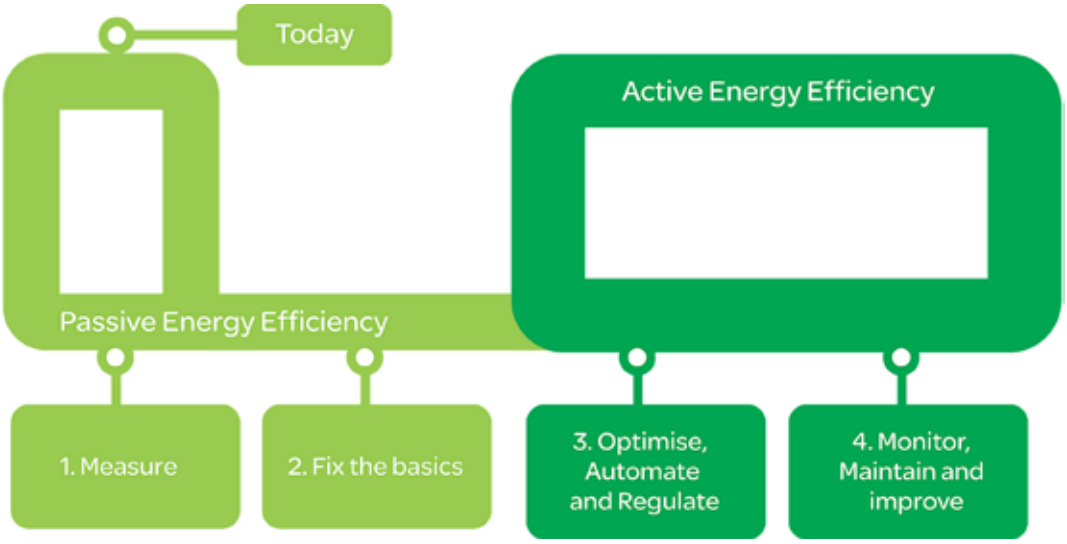
# PowerLogic System is…

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.

A PowerLogic system of meters, software and power quality solutions 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.

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.

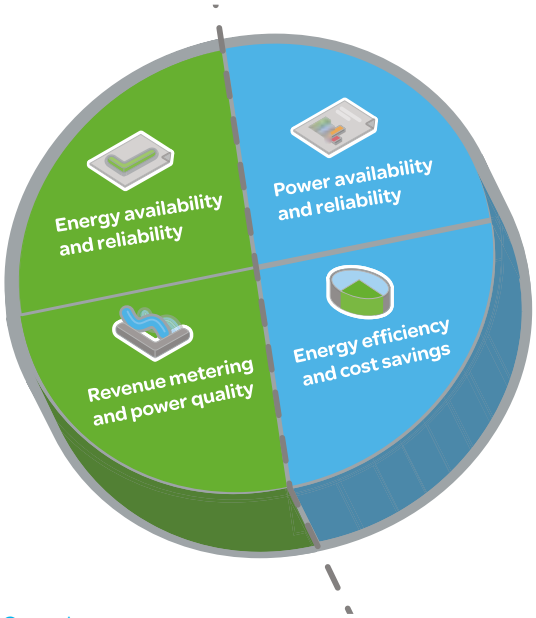
Our expert services can help you audit your energy use and build your energy action plan. From power factor correction systems, harmonic filtering and variable speed drives to HVAC and lighting controls, we offer a complete range of energy efficient technologies.

# Gain energy insight and control with PowerLogic™ systems

## 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. Intuitive 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.




### 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
- Identify power quality issues and fix them quickly with reliable mitigation solutions
- 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 loadcurtailment programs (e.g. demand response)
- Strengthen rate negotiation with energy suppliers
- Identify billing discrepancies
- Sub-bill tenants for energy costs

# 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 and solve hidden power problems that can shorten equipment life or cause costly downtime.

- cost allocation
- procurement optimisation
- power factor correction

## Buildings

Building managers through operations staff can cut energy and maintenance costs without effecting the comfort or productivity of their tenants, employees, students, patients or customers. A PowerLogic system will track all utilities and equipment conditions, and enterprise-level software will help you analyse and improve electrical reliability.

You can forecast energy requirements, optimise multi-site contracts and accurately allocate or sub-bill costs. Key performance indicators help you find and sustain energy savings, reduce emissions and meet “green” building standards in order to increase asset value and attract or retain tenants..

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

## 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 and power quality mitigation solutions, PowerLogic systems 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 quality monitoring
- power availability and reliability

## 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 system monitors all power and cooling systems, accurately tracks their energy consumption, and allows you to identify and fix power quality issues as soon as they arise. 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

# Panorama of the PowerLogic range

*Current transformers*

*Panel Instruments*

| CTs<br>Ip / 5 A | Name | iAMP/iVLT | AMP/VLT | iFRE | iCH/iCI |
|---|---|---|---|---|---|
| current transformer | **Function** | ammeter, voltmeter | | frequency meter | hour counter<br>pulse counter |

**Installation**

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

**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**

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



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|---|---|---|---|---|---|
| Link to: | -- | Datasheet | Datasheet | Datasheet | Datasheet |

# Panorama of the PowerLogic range (cont.)

| | *Basic energy metering* | | *Basic multi-function metering* | | |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| **Name** | **iEM2000/iEM2010/ iEM2000T/iEM2100** | **iEM3000 Series** | **PM3000 Series** | **PM5350/PM5350IB/ PM5350PB** | **PM5100/PM5300/ PM5500** |
| **Function** | kilowatt-hour meters | | metering & sub-metering<br>Class 0.5S IEC 62053-22<br>Class 1 IEC 62053-21<br>Class 2IEC 62053-23 | Class 0.5S IEC 62053-22<br>Class IEC 61000-4-2<br>Class IEC 61000-3-3 | metering & sub-metering<br>Class 0.5S IEC 62053-22<br>Class 0.2S (PM55xx)<br>IEC 62053-22<br>Class 1/2 IEC 62053-24 |
| **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)** | **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 0.5 | Class 0.5 | Class 0.2S (PM55xx)<br>Class 0.5S |
| Installation | DIN rail<br>1, 2, 5, or 7 x 18 mm modules | | DIN rail | Flush mount<br>96 mm x 96 mm | Flush mount<br>96 mm x 96 mm |
| Voltage measurement | 400 V AC direct | 50 V to 330 V (Ph-N)<br>80 V to 570 V (Ph-Ph)<br>up to 1MV AC (ext VT) | 50 V to 330 V AC (Ph-N)<br>80 V to 570 V AC (Ph-Ph)<br>up to 1M V AC (ext VT) | 20-480 V AC (L-L)<br>20-277 V AC (L-N) | 20 V L-N / 35 V L-L to 277 V L-N /480 V L-L<br>/600 V L-L (PM55xx) |
| Current measurement | 40 to 125 A direct<br>or external CT | | external CT | external CT | external CT |
| Communication ports | | | 1 | 1 | 2 |
| Inputs / Outputs | | | 2 I/O | | 4 I/O<br>6 I/O (PM55xx) |
| Memory capacity | | | | | 256 kb<br>1.1 MB (PM55xx) |
| **Link to:** | **page 32**<br>**Datasheet** | **page 35**<br>**Datasheet** | **page 42**<br>**Datasheet** | **page 47**<br>**Datasheet** | **page 59**<br>**Datasheet** |

# Panorama of the PowerLogic range (cont.)

*Advanced metering*

| Name | PM8000 | ION7550/ION7650 | CM4000T |
|---|---|---|---|
| **Function** | energy and basic PQ meter<br>IEC 61557-12<br>IEC 62053-22<br>IEC 61000-4-30 Class S<br>IEC 62586<br>ANSI C12.20 Class 0.2<br>PMD/Sx/K70/0.2 | energy & power quality meter<br>IEC 62052-11<br>IEC 62053-22/23<br>Class 0.2S IEC 61000-4-30 Class A | energy & power quality meter<br>Class 0.5S IEC 62053-22<br>ANSI 12.20 Class 0.2S real energy<br>impulsive transient detection |
| **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 | I, U, F, P, Q, S, PF, E (demand, minimum and maximum values) | |
| **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) | IEC 61053-22 Class 0.2S<br>ANSI 12.20 Class 0.2S | Class 0.2S | Class 0.2S |
| Installation | Flush & DIN rail mount<br>96 mm x 96 mm | DIN 192<br>standard cutout (186 x 186 mm) | Panel mounted |
| Voltage measurement | 57-400 V AC L-N 3P<br>(100-690 V AC L-L) | 57-347 V L-N AC or<br>100-600 V L-L AC | Mounting pan<br>0 to 600 V AC |
| Current measurement | external CT | external CT | external CT |
| Communication ports | 3 | 5 | 3 |
| Inputs / Outputs | up to 27 DI, 9 DO<br>up to 16 AI, 8 AO | up to 32 I/O | up to 25 I/O |
| Memory capacity | 512 MB | up to 10 MB | up to 32 MB |
| | page 67 | page 74 | page 81 |
| **Link to:** | Datasheet | Datasheet | Datasheet |

# Panorama of the PowerLogic range (cont.)

***Advanced utility metering***

| Name | ION7400 | ION8650 A | ION8650 B | ION8650 C | ION8800 A | ION8800 B | ION8800 C |
|---|---|---|---|---|---|---|---|
| **Function** | energy and basic PQ meter<br>IEC 61557-12<br>IEC 62053-22<br>IEC 61000-4-30 Class S<br>IEC 62586<br>ANSI C12.20 Class 0.2<br>PMD/Sx/K70/0.2 | energy & power quality meter<br>IEC 62052-11<br>IEC 62053-22/23<br>Class 0.2S<br>IEC 61000-4-30 Class A | | | energy & power quality meter<br>IEC 62052-11<br>IEC 62053-22/23<br>Class 0.2S<br>IEC 61000-4-30 | | |
| **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 | 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 | dips/swell | ■ | ■ | ■ | ■ | ■ | ■ |
| Compliance monitoring | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| **Revenue metering** | | | | | | | |
| Revenue metering | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| **Characteristics** | | | | | | | |
| Measurement accuracy (active energy) | IEC 61053-22 Class 0.2S<br>ANSI 12.20 Class 0.2S | Class 0.2S | | | Class 0.2S | | |
| Installation | Flush & DIN rail mount<br>96 mm x 96 mm | ANSI socket mount 9S, 35S, 36S, 39S and 76S; FT21 switchboard case | | | DIN 43862 rack | | |
| Voltage measurement | 57-400 V AC L-N 3P<br>(100-690 V AC L-L) | 57-277 V L-N AC<br>(9S, 36S);<br>120-480 V L-L AC (35S) | | | 57-288 V L-N AC or<br>99-500 V L-L AC | | |
| Current measurement | external CT | external CT | | | external CT | | |
| Communication ports | 2 | 5 | | | 5 | | |
| Inputs / Outputs | up to 27 DI, 9 DO<br>up to 16 AI, 8 AO | up to 22 I/O | | | up to 16 I/O | | |
| Memory capacity | 512 MB | 10 MB | 4 MB | 2 MB | up to 10 MB | | |
| | page 88 | page 96 | | | page 104 | | |
| **Link to:** | **Datasheet** | **Datasheet** | | | **Datasheet** | | |

# Panorama of the PowerLogic range (cont.)

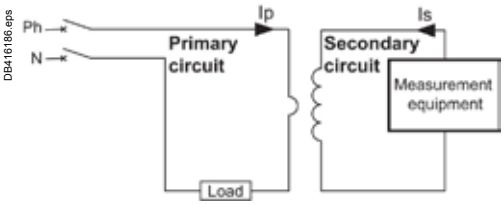
*Multi-circuit & wireless metering*

| Name | BCPM | EM4200 | EM4300 | WT4100/4200 | EM4000 | EM4800 |
|---|---|---|---|---|---|---|
| **Function** | branch circuit monitor<br>IEC 61036<br>Class 1 | power and energy meter<br>ANSI C12.20 0.2%<br>IEC 62053-22<br>Class 0.2S | wireless power and energy meter using Zigbee<br>IEEE 802.15.4 | Long-range RF wireless metering devices<br>169 MHz for EEC<br>153 MHz for USA & Canada | multi-circuit energy meter<br>Class 0.5 ANSI C12.1, C12.20<br>Class 0.5S IEC 62053-22 | multi-circuit energy meter<br>Class 0.5 ANSI C12.1, C12.20<br>Class 0.5S IEC 62053-22 |
| **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) | 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 1 (mains active energy) | ANSI C12.20 Class 0.2S<br>IEC 62053-22 Class 0.2S | Class 1 (active energy) | Class 1 (active energy) | Class 0.5S | Class 0.5S |
| Installation | Panel or enclosure | DIN or screw, clip-on or hook | DIN rail or flat surface | DIN rail or flat surface | Panel or enclosure | Panel or enclosure |
| Voltage measurement | 90 – 277 V Line to Neutral voltage Inputs | 890 - 480 V AC L-L | 90 V to 300 V | | 80 - 480 V AC L-L without PTs, Up to 999 kV with external PTs | 80 - 480 V AC L-L without PTs, Up to 999 kV with external PTs |
| Current measurement | CT strips for branch circuits and external CTs for mains | 5 A to 5000 A | 200 A to 2000 A | | Split- or solid-core CTs | Split- or solid-core CTs |
| Communication ports | 1 for main | 2 | 2 wireless data transmission (Zigbee Pro HA) | wireless repeater, receiver | 2 | 2 |
| Inputs / Outputs | | | | | 2 | 2 |
| Memory capacity | | | | | | |
| **Link to:** | page 111<br>Datasheet | page 122 | page 126<br>Datasheet | page 130<br>Datasheet | page 134 | page 141<br>Datasheet |

# Panorama of the PowerLogic range (cont.)

| | *Communications & gateways* | | | *Monitoring software* |
|---|---|---|---|---|
| |  |  |  |  |
| **Name** | **Link150** | **Com'X 200<br>Com'X 210<br>Com'X 510** | **ION7550 RTU** | **StruxureWare™ Power management software** |
| **Function** | Modbus Serial to Modbus TCP/IP protocol gateway | Modbus gateway plus Energy Server and Cloud connector | Ethernet gateway-server + onboard I/O | Power management, network protection and control |
| **Features** | | | | |
| RS-485 / Ethernet gateway | Ethernet Gateway | Ethernet Gateway | | |
| Devices supported | All Modbus devices | 100+ known Schneider Electric devices and the ability to create custom Modbus models.<br>EM3000 Series,<br>iEM3000 Series,<br>Acti 9 Smartlink<br>Masterpact,<br>PM5000 Series, Compact NSX, iEM1,<br>iEM2000 series,<br>PM3000 Series, PM5350,<br>PM5000, PM8000,<br>ION7550/7650, CM4000 | ION8800, ION7550/7650,<br>Modbus devices<br>PM5350<br>PM5000<br>PM8000 | 100+ Schneider Electric devices |
| Web server with standard HTML pages | Configuration only | Com'X 510 - full support<br>Com'X 200/210 - configuration only | | |
| Web server with custom HTML pages | | Custom web page support | | |
| Real time data | | Real time data available **on Com'X 510** | | |
| Historical data | | Com'X 510 onboard storage<br>Com'X 200/210 - publish to database server | | |
| Automatic notification | | Event Notification to FI | | |
| Alarm and event logs | | | | |
| Waveform display | | | RTU includes alarm and event logs | |
| Custom animated graphics | | | | |
| Manual/automatic reports | | | | |
| **Characteristics** | | | | |
| Ethernet ports<br>Modbus TCP/IP protocol | 2 (switch mode only) | 2 | 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. |
| RS-485 (2-wire / 4-wire) ports<br>Modbus protocol | 2w/4w - 1 (rj45) | 1 | 3 | |
| Number of devices connected directly | 32 | 64 devices/32 max Modbus, 2 analogue sensors | 64 | |
| RS-232 configuration ports | 1 | | 1 | |
| Miscellaneous | Serial line to Ethernet connectivity - serial or Ethernet master | Connectivity: WiFi, Ethernet, Zigbee, GPRS, + 3G | modem port<br>I/O (20 I/ 12 O) | |
| Installation | 9 DIN rail | DIN rail | DIN 192 cutout<br>186 x 186 mm | |
| **Link to:** | **page 146**<br>**Datasheet** | **page 150**<br>**Datasheet** | **page 157**<br>**Datasheet** | **page 163**<br>**Datasheet** |

# CT current transformers Ip/5 A ratio




*Application diagram of a CT.*

The Ip/5 A 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:

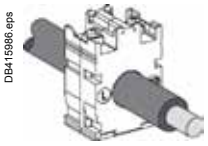
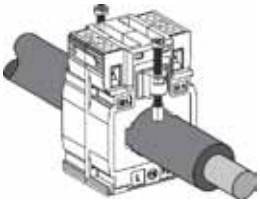
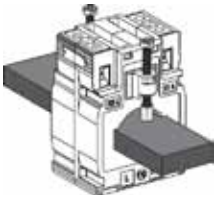
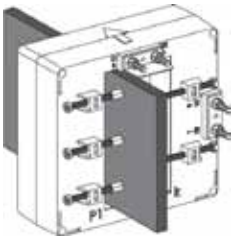
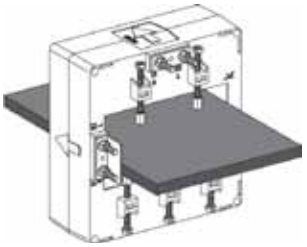
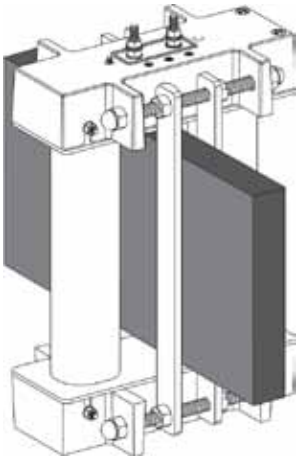
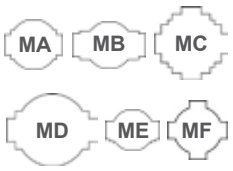
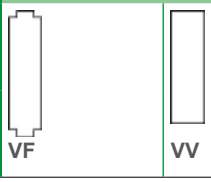
- Ammeters.
- Kilowatt-hour meters.
- Measurement units.
- Control relays.
- etc.

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**

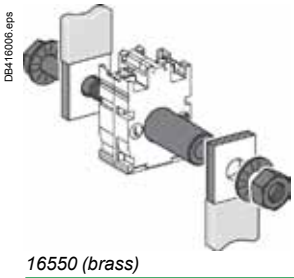
| Conductor type | Cable | Mixed, bars or cables | Vertical or horizontal bars | Vertical bars | |
|---|---|---|---|---|---|
| Suggested Current Transformer and mounting |  |   |   |  | |
| Ratings (A) | 40 to 250 | 150 to 800 | 200 to 4000 | 500 to 600 | 5000 to 6000 |
| **CT internal profile** | **Type C** | **Type M** | **Type D (1)** | **Type V** | |
| |  |   |  |   | |

***(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.*

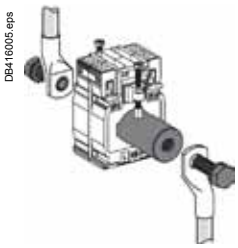
## Specific mounting: use of cylinder

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 ($mm^2$) | 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** |

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

| 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** |
| PM8000 | **0.15** |
| PM3000 | **0.3** |

**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) | Commercial reference number | Accuracy class 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 $mm^2$, 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 commercial reference numbers

MET SE CT R FF XXX

- R: First digit = secondary rating, R = 5 Amps
- FF: 2 letters = Form Factor
- XXX: Last 3 digits = primary rating/10

**Examples:**

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

PB112446.eps

*METSECT5CC●●●*

PB112464.eps

*METSECT5ME●●●*

PB112461.eps

*METSECT5MB●●●*

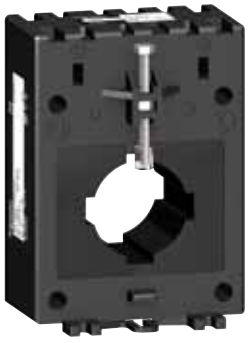
PB112460.eps

*METSECT5MA●●●*

PB112462.eps

*METSECT5MC●●●*

PB112465.eps



*METSECT5MF●●●*

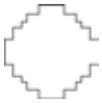
PB112463.eps

*METSECT5MD●●●*

### Type C - current transformer (cable profile)

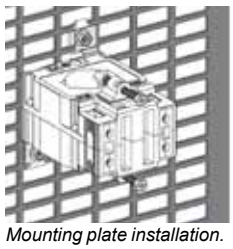
| Internal profile type | Cables (mm) | Bars (mm) | Rating Ip/5 A (A) | Commercial reference number |
|---|---|---|---|---|
| **CC** | | | | |
|  | **Ø21** | **-** | 40 | **METSECT5CC004** |
| | | | 50 | **METSECT5CC005** |
| | | | 60 | **METSECT5CC006** |
| | | | 75 | **METSECT5CC008** |
| | | | 100 | **METSECT5CC010** |
| | | | 125 | **METSECT5CC013** |
| | | | 150 | **METSECT5CC015** |
| | | | 200 | **METSECT5CC020** |
| | | | 250 | **METSECT5CC025** |

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

| | | | | |
|---|---|---|---|---|
| **ME** | | | | |
|  | **Ø22** | **10 x 30**<br>**11 x 25**<br>**12 x 20** | 150 | **METSECT5ME015** |
| | | | 200 | **METSECT5ME020** |
| | | | 250 | **METSECT5ME025** |
| | | | 300 | **METSECT5ME030** |
| | | | 400 | **METSECT5ME040** |
| | | | 500 | **METSECT5ME050** |
| | | | 600 | **METSECT5ME060** |
| **MB** | | | | |
|  | **Ø26** | **12 x 40**<br>**15 x 32** | 250 | **METSECT5MB025** |
| | | | 300 | **METSECT5MB030** |
| | | | 400 | **METSECT5MB040** |
| **MA** | | | | |
|  | **Ø27** | **10 x 32**<br>**15 x 25** | 150 | **METSECT5MA015** |
| | | | 200 | **METSECT5MA020** |
| | | | 250 | **METSECT5MA025** |
| | | | 300 | **METSECT5MA030** |
| | | | 400 | **METSECT5MA040** |
| **MC** | | | | |
|  | **Ø32** | **10 x 40**<br>**20 x 32**<br>**25 x 25** | 250 | **METSECT5MC025** |
| | | | 300 | **METSECT5MC030** |
| | | | 400 | **METSECT5MC040** |
| | | | 500 | **METSECT5MC050** |
| | | | 600 | **METSECT5MC060** |
| | | | 800 | **METSECT5MC080** |
| **MF** | | | | |
|  | **Ø35** | **10 x 40** | 250 | **METSECT5MF025** |
| | | | 300 | **METSECT5MF030** |
| | | | 400 | **METSECT5MF040** |
| | | | 500 | **METSECT5MF050** |
| **MD** | | | | |
|  | **Ø40** | **12 x 50**<br>**20 x 40** | 500 | **METSECT5MD050** |
| | | | 600 | **METSECT5MD060** |
| | | | 800 | **METSECT5MD080** |

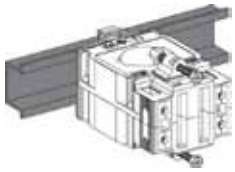
# CT, Ip/5 A ratio
## Catalogue numbers

DB415926.eps



*Mounting plate installation.*

DB415927.eps



*DIN rail mounting.*

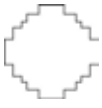
## Common characteristics

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

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

## Type C - current transformer (cable profile)

| Internal profile type | Accuracy class 0.5 | 1 | 3 | Max. power (VA) | Overall dimensions (refer to drawing pages for details) W x H x D (mm) | Fastening mode | Accessories Cylinder  | Sealable cover  |
|---|---|---|---|---|---|---|---|---|
| **CC** | | | | | | | | |
|  | - | - | 1 | | **44 x 66 x 37** | ■ Adapter for DIN rails.<br>■ Mounting plate. | **16550**<br>**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 | | | | | |

| Type M - current transformers (mixed: cable/bar profile) | | | | | | | Comm. ref. no. | |
|---|---|---|---|---|---|---|---|---|
|  | 1.5 | 5.5 | 6.5 | | **56 x 84 x 60** | ■ Adapter for DIN rails.<br>■ Mounting plate.<br>■ 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 | | | | | |
| **MB** | | | | | | | | |
|  | 3 | 4 | - | | **60 x 85 x 63** | ■ Adapter for DIN rails.<br>■ Mounting plate. | - | **METSECT5COVER** |
| | 4 | 6 | - | | | | | |
| | 6 | 8 | - | | | | | |
| **MA** | | | | | | | | |
|  | 3 | 4 | - | | **56 x 80 x 63** | ■ Adapter for DIN rails.<br>■ Mounting plate. | **METSECT5CYL2** | **METSECT5COVER** |
| | 4 | 7 | - | | | | | |
| | 6 | 8 | - | | | | | |
| | 8 | 10 | - | | | | | |
| | 10 | 12 | - | | | | | |
| **MC** | | | | | | | | |
|  | 3 | 5 | - | | **70 x 95 x 65** | ■ Adapter for DIN rails.<br>■ Mounting plate. | - | **METSECT5COVER** |
| | 5 | 8 | - | | | | | |
| | 8 | 10 | - | | | | | |
| | 10 | 12 | - | | | | | |
| | 12 | 15 | - | | | | | |
| | 10 | 12 | - | | | | | |
| **MF** | | | | | | | | |
|  | 2.5 | 5 | 8 | | **77 x 107 x 64** | ■ Adapter for DIN rails.<br>■ Mounting plate.<br>■ Insulated locking screw. | - | **16553** |
| | 4 | 8 | 12 | | | | | |
| | 8 | 12 | 15 | | | | | |
| | 10 | 12 | 15 | | | | | |
| **MD** | | | | | | | | |
|  | 4 | 6 | - | | **70 x 95 x 65** | ■ Adapter for DIN rails.<br>■ Mounting plate. | - | **METSECT5COVER** |
| | 6 | 8 | - | | | | | |
| | 8 | 12 | - | | | | | |

# CT, Ip/5 A ratio
## Catalogue numbers

*METSECT5VF●●●*

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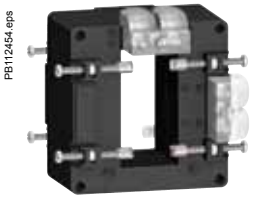
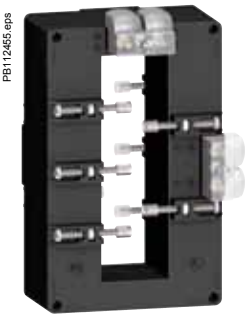
*METSECT5VV●●●*



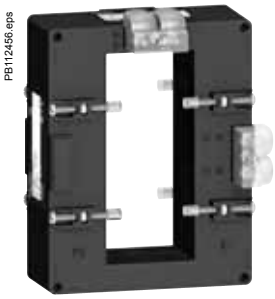
PB112454.eps

*METSECT5DA●●●*



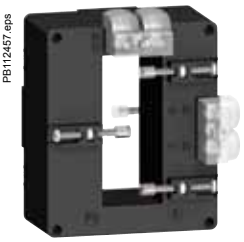
PB112455.eps

*METSECT5DB●●●*



PB112456.eps

*METSECT5DC●●●*

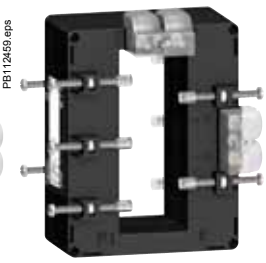


PB112457.eps

*METSECT5DD●●●*

PB112458.eps

*METSECT5DE●●●*



PB112459.eps

*METSECT5DH●●●*

### Type V current transformers (vertical bar profile)

| Internal profile type | Cables (mm) | Bars (mm) | Rating Ip/5 A (A) | Commercial reference number |
|---|---|---|---|---|
| **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)

| | | | | |
|---|---|---|---|---|
| **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

### Type V current transformers (vertical bar profile)

| Internal profile type | Accuracy class 0.5 | 1 | 3 — Max. power (VA) | Overall dimensions (refer to drawing pages for details) W x H x D (mm) | Fastening mode | Accessories: Cylinder | Accessories: Sealable cover |
|---|---|---|---|---|---|---|---|
| **VF** | | | | | | | |
|  | 2 | 4 | - | **90 x 130 x 66** | ■ Mounting plate.<br>■ Insulated locking screw. | - | **Included** |
| | 4 | 6 | - | | | | |
| **VV** | | | | | | | |
|  | 60 | - | - | **175 x 273.5 x 110** | ■ Insulated locking screw. | - | **Included** |
| | 70 | - | - | | | | |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **DA** | | | | | | | |
| | - | 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 | - | | | | |
| **DB** | | | | | | | |
| | 6 | 10 | - | **99 x 160 x 87** | ■ Insulated locking screw. | - | **Included** |
| | 8 | 12 | - | | | | |
| | 10 | 15 | - | | | | |
| | 15 | 20 | - | | | | |
| | 20 | 25 | - | | | | |
| | 25 | 30 | - | | | | |
| **DC** | | | | | | | |
| | 25 | 30 | - | **125 x 160 x 87** | ■ Insulated locking screw. | - | **Included** |
| | 30 | 50 | - | | | | |
| | 30 | 50 | - | | | | |
| | 30 | 50 | - | | | | |
| **DD** | | | | | | | |
| | 10 | 15 | - | **96 x 116 x 87** | ■ Insulated locking screw. | - | **Included** |
| | 12 | 15 | - | | | | |
| | 15 | 20 | - | | | | |
| **DE** | | | | | | | |
| | 12 | 15 | - | **135 x 129 x 85** | ■ Insulated locking screw. | - | **Included** |
| | 15 | 20 | - | | | | |
| | 20 | 25 | - | | | | |
| | 20 | 25 | - | | | | |
| **DH** | | | | | | | |
| | 12 | 15 | - | **98 x 129 x 75** | ■ Insulated locking screw. | - | **Included** |
| | 12 | 15 | - | | | | |
| | 20 | 25 | - | | | | |

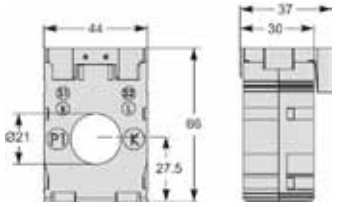
★ *Operating temperature: -25 °C to 50 °C*

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

## CT current transformers

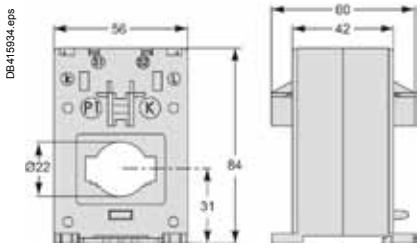
### CC internal profile type

DB416965.eps



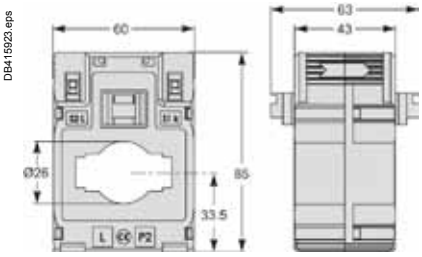

### ME internal profile type

DB415934.eps



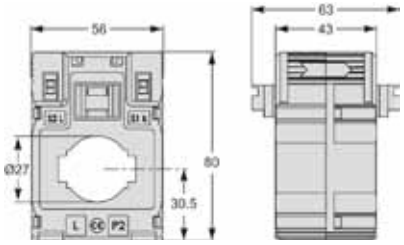

### MB internal profile type

DB415923.eps



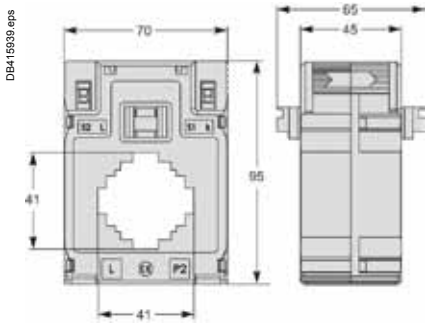

### MA internal profile type

DB415922.eps



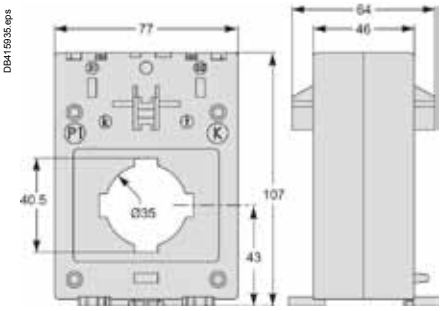

### MC internal profile type

DB415939.eps

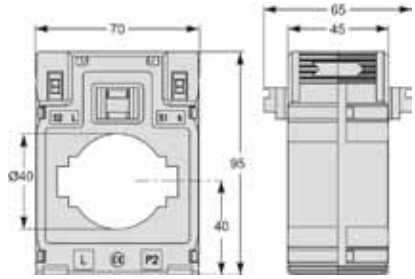



### MF internal profile type

DB415935.eps

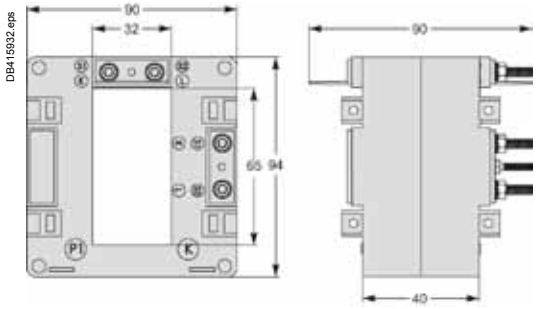



### MD internal profile type



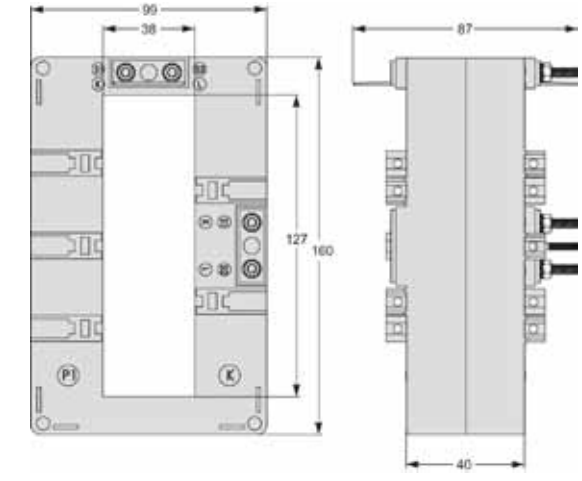

### DA internal profile type

DB415932.eps



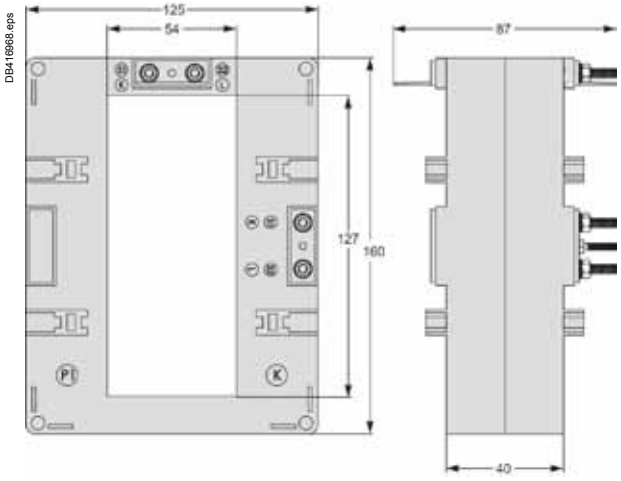

### DB internal profile type

DB416967.eps




### DC internal profile type

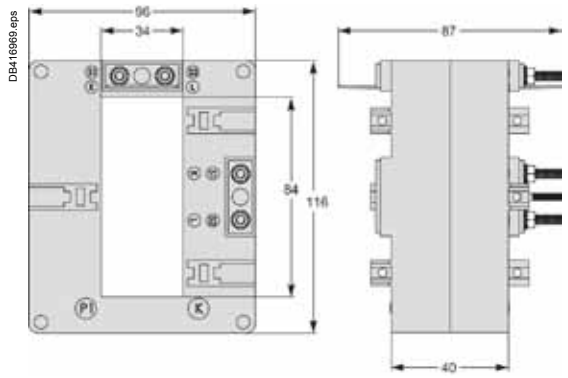
DB416968.eps



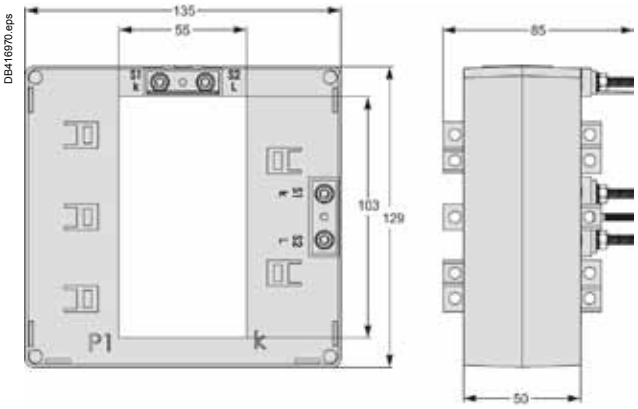
# CT current transformers (cont.)
# Ip/5 A ratio

## CT current transformers

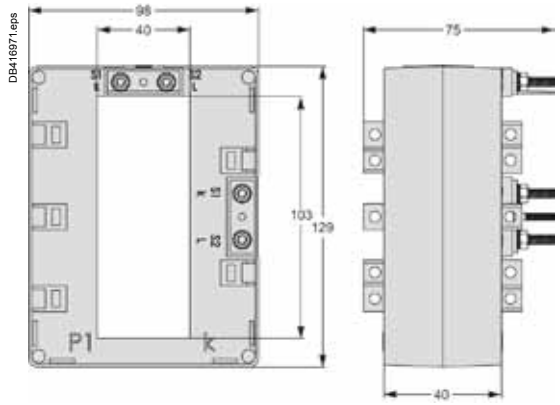
### DD internal profile type



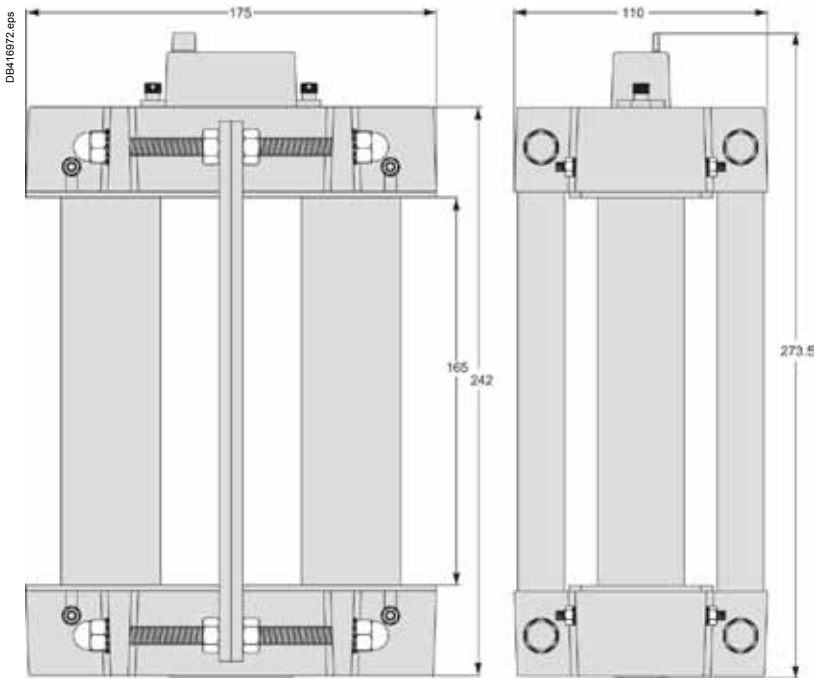

### DE internal profile type



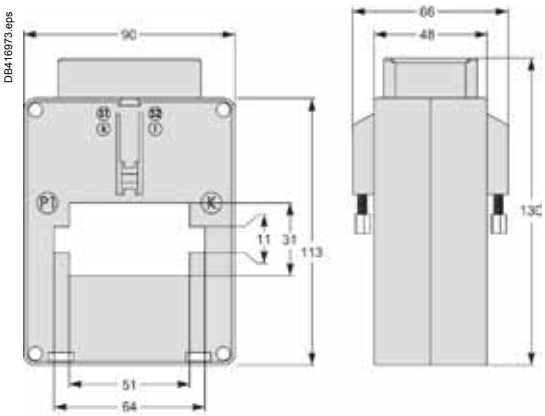

### DH internal profile type




### VV internal profile type



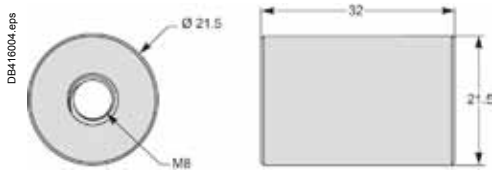

### VF internal profile type



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

## Cylinders

### METSECT5CYL1

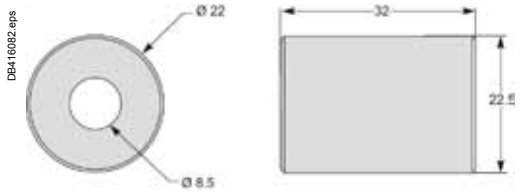



*Aluminium*

### METSECT5CYL2


*Aluminium*

### 16550



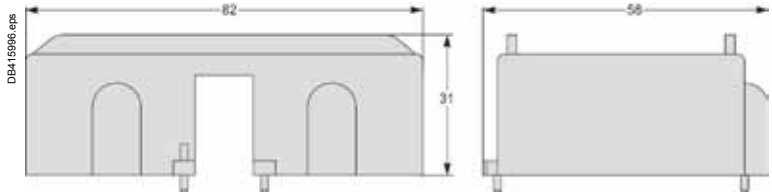

*Brass*

### 16551

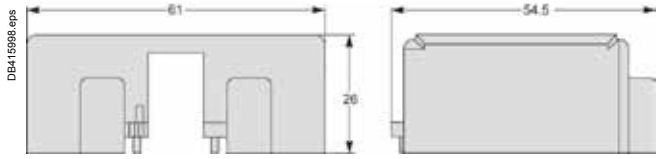

*Brass*

## Covers

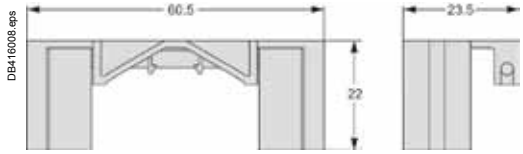
### 16552




### 16553




### METSECT5COVER



# DIN rail analogue ammeters and voltmeters

DB119006

*iAMP.*

DB119005

*iVLT.*

## 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 Hz to 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 $mm^2$ rigid cables.

## Commercial reference numbers

| Type | Scale | Connection with CT | Width in mod. of 9 mm | Comm. ref. 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** |

# DIN rail digital ammeters, voltmeter and frequency meter

PB112024

*iAMP.*

PB112023

*iVLT.*

PB112025

*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 Hz to 60 Hz.
- Display by red LED: 3 digits, h = 8 mm (0.31 in).
- 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.

## Commercial reference numbers

| Type | Scale | Connection with CT | Width in mod. of 9 mm | Comm. ref. 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 Hz to 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.

## Commercial reference numbers

| Type | Scale | Connection on CT | Comm. ref. 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** |

# 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 Hz to 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 5S: 10 In.

## VLT specific technical data

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

## Commercial reference numbers

| Type | Scale | Connection on CT | Comm. ref. 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.

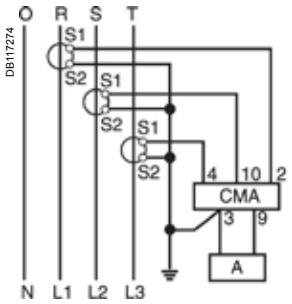
## Common technical data

- ■ 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.

## Commercial reference numbers

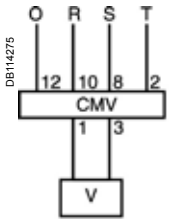
| Type | Rating (A) | Voltage (V) | Number of positions | Comm. ref. no. |
|---|---|---|---|---|
| **CMA** | 20 | | 4 | **16017** |
| **CMV** | | 500 | 7 | **16018** |

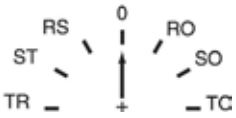
## Connection





*CMA.*




*CMV.*

Reading 3 phase-to-earth voltages + 3 phase-to-phase voltages.

***Note**: when connecting do not remove the pre-cabling.*

*See appropriate Install Guide for this product.*

# DIN rail iCMA and iCMV selector switches

PB107119

*iCMA.*

PB107118

*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.

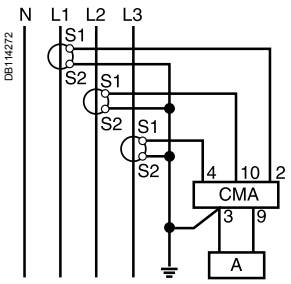
## Common technical data

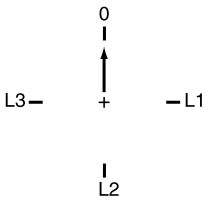
- Rotary handle.
- Maximum operating voltage: 440 V, 50/60 Hz.
- Nominal thermal current: 10 A.
- Operating temperature: -20 °C to 55 °C.
- Storage temperature: -25°C to 80°C.
- Mechanical durability (AC21A-3 x 440 V): 2,000,000 operations.
- Degree of protection:
  - IP66 on front face.
  - IP20 at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

## Commercial reference numbers

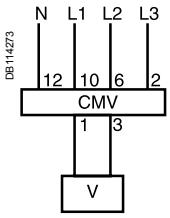
| Type | Rating (A) | Voltage (V AC) | Width in mod. of 9 mm | Comm. ref. no. |
|---|---|---|---|---|
| **iCMA** | 10 | 415 | 4 | **15126** |
| **iCMV** | 10 | 415 | 4 | **15125** |

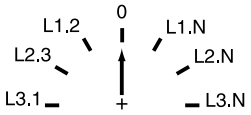
## Connection




*iCMA.*




*iCMV.*

*See appropriate Install Guide for this product.*

# iCH hour counters

PB112026

*iCH "DIN".*

DB119003

*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 $mm^2$ 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"**

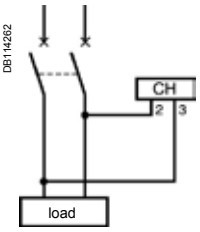
- Consumption:
  - 15607: 0.25 VA
  - 15608: 0.15 VA
  - 15609: 0.02 VA to 12 V and 0.3 VA to 36 V.
- Operating temperature: -20 °C to 70 °C.
- Degree of protection: IP65 on front face.
- Mounting on front face of monitoring switchboards.

## Commercial reference numbers

| Type | Voltage (V) | Width in mod. of 9 mm | Comm. ref. 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** |

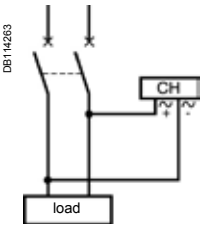
## Connection

DB114262




*iCH "DIN".*

DB114263




*CH "48 x 48".*

*See appropriate Install Guide for this product.*

# 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

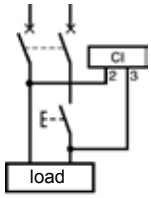
- Supply and metering voltage: 230 V AC ± 10 %, 50/60 Hz.
- Consumption: 0.15 VA.
- Maximum display: 9 999 999 impulses.
- Without reset.
- Metering data:
  - minimum impulse time: 50 ms
  - minimum time between 2 impulses: 50 ms.
- Storage temperature: -25 °C to 85 °C.
- Operating temperature: -10 °C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

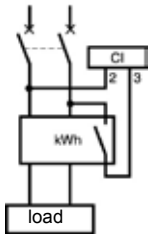
## Commecial reference numbers

| Type | Width in mod. of 9 mm | Comm. ref. no. |
|---|---|---|
| **iCI** | 4 | **15443** |

## Connection

DB114271



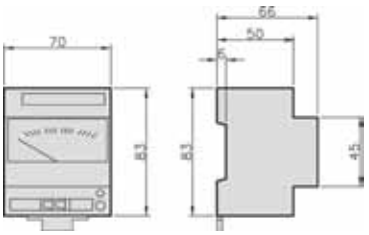

*See appropriate Install Guide for this product.*

# Dimensions

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

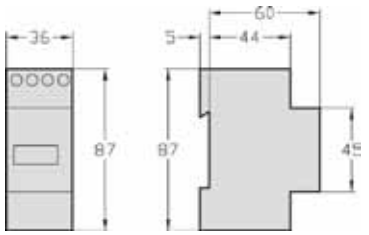
### Analogue ammeters and voltmeters iAMP, iVLT

DB103473



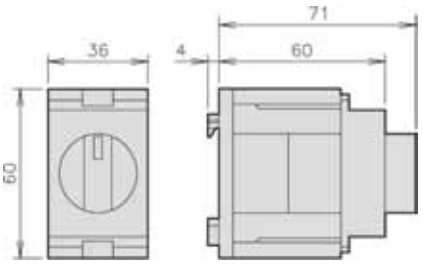

### Digital ammeters, voltmeter and frequency meter iAMP, iVLT

DB103474



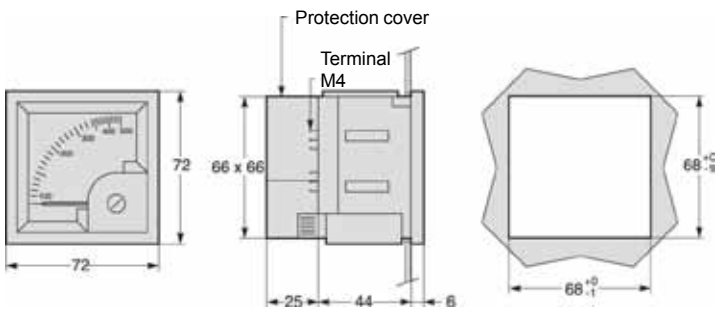

### iCMA and iCMV selector switches

DB103475



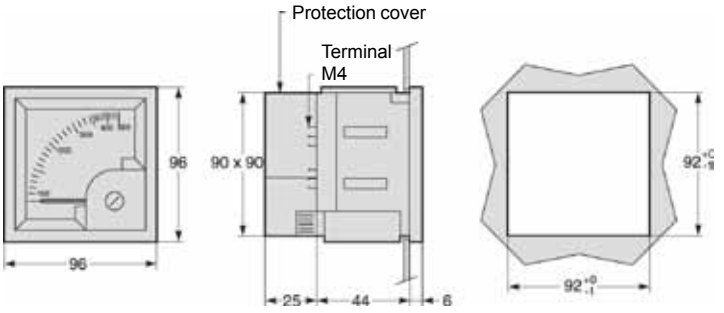

### 72 x 72 analogue ammeters and voltmeter

DB103476




### 96 x 96 analogue ammeters and voltmeter

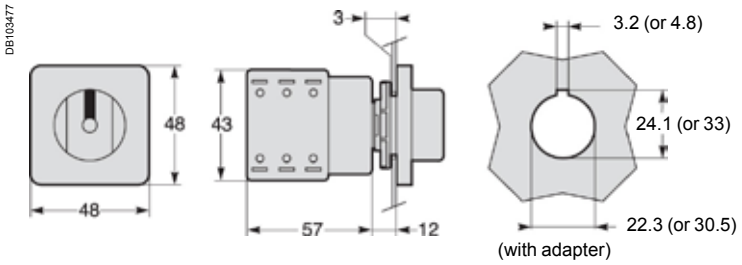
DB103481



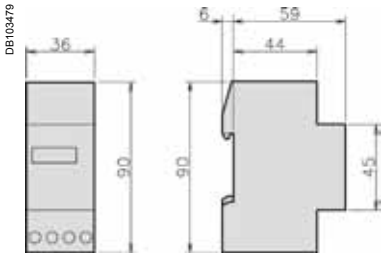
# Dimensions (cont.)

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

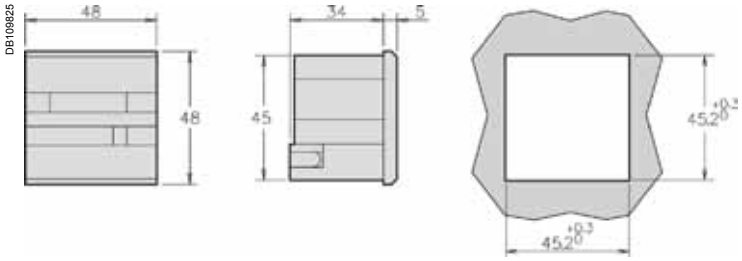
### 48 x 48 CMA and CMV selector switches




### iCI impulse counter and iCH hour counter




### 48 x 48 CH hour counters



# Acti 9 iEM2000 Series Energy Meters


PB110836

*iEM2000T*


PB108401

*iEM2010*


PB115002

*iEM2105*


PB115001

*iEM2155*

The Acti 9 iEM2000 and iEM2100 Series Energy Meters offer a cost-attractive, competitive range of single-phase DIN rail-mounted energy meters ideal for sub-billing and cost allocation applications.

Combined with communication systems, like Smart Link, the Acti 9 iEM2000 Series makes it easy to integrate electrical distribution measurements into customer's energy management systems. It's the right energy meter at the right price for the right job.

Two versions are available: 40 A direct measure (iEM2000 models), and 63 A direct measure (iEM2100 models). Within each set of models, there are different versions to match the specific application, from basic to more advanced:

- iEM2000T single-phase kilowatt-hour meter without display, with kWh pulse output.
- iEM2000 single-phase kilowatt-hour meter, MID certified.
- iEM2100 single-phase kilowatt-hour meter.
- iEM2105 single-phase kilowatt-hour meter, with partial counter, kWh pulse output.
- iEM2010 single-phase kilowatt-hour meter, kWh pulse output, MID certified.
- iEM2110 single-phase kilowatt-hour meter, multi-tariffs with partial counter and current, voltage, power measurement, pulse outputs, MID certified.
- iEM2135 single-phase kilowatt-hour meter, multi-tariffs with partial counter and current, voltage, power measurement. M-Bus communication, MID certified.
- iEM2150 single-phase kilowatt-hour meter with partial counter and current, voltage, power measurement. Modbus communication.
- iEM2155 single-phase kilowatt-hour meter, multi-tariffs with partial counter and current and voltage, power measurement. Modbus communication, 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 and cost allocation, including two tariffs.

**Network management applications.**
- Basic electrical parameters like current, voltage and power.

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

**Characteristics**
- Self-powered meters.
- Compliance with IEC 62053-21, IEC 62053-23, EN 50470-3.
- Compact, 1 or 2 module width.
- Onboard Modbus or M-Bus communication.
- Anti-tamper security features ensure the integrity of your data.
- Single phase circuit plus neutral.
- IP40 front panel and IP20 casing.
- Operating frequency 50/60 Hz.
- MID compliant (selected models) providing certified accuracy and data security.

| Meter model and description | Current measurement | Comm. ref. no. |
|---|---|---|
| iEM2000T basic energy meter, without display | Direct connected to 40 A | **A9MEM2000T** |
| iEM2000 basic energy meter, MID certified | Direct connected to 40 A | **A9MEM2000** |
| iEM2010 energy meter, kWh pulse output, MID certified | Direct connected to 40 A | **A9MEM2010** |
| iEM2100 basic energy meter | Direct connected to 63 A | **A9MEM2100** |
| iEM2105 energy meter, kWh pulse output with partial meter | Direct connected to 63 A | **A9MEM2105** |
| iEM2110 energy meter, kWh and kvarh pulse outputs with two tariffs, four quadrant energy measurement, MID certified | Direct connected to 63 A | **A9MEM2110** |
| iEM2135 energy meter, M-Bus communication, four quadrant energy measurement, two tariffs, MID certified | Direct connected to 63 A | **A9MEM2135** |
| iEM2150 energy meter, Modbus communication, four quadrant energy measurement | Direct connected to 63 A | **A9MEM2150** |
| iEM2155 energy meter, Modbus communication, four quadrant energy measurement, two tariffs, MID certified | Direct connected to 63 A | **A9MEM2155** |

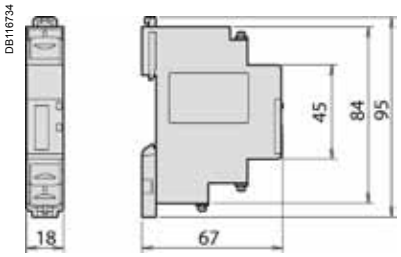
# Acti 9 iEM2000 Series Energy Meters

## iEM2000 & iEM2100 technical specifications

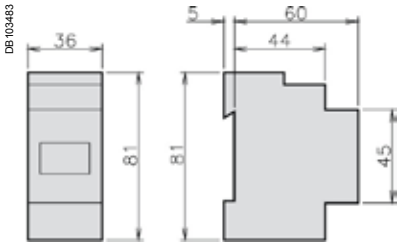
| FUNCTION GUIDE | iEM2000T | iEM2000 | iEM2010 | iEM2100 | iEM2105 | iEM2110 | iEM2135 | iEM2150 | iEM2155 |
|---|---|---|---|---|---|---|---|---|---|
| Direct connection | Up to 40 A | | | Up to 63 A | | | | | |
| Width | 1 x 18 mm module (18 mm) | | | 2 x 18 mm modules (36 mm) | | | | | |
| MID compliance | | ■ | ■ | | | ■ | ■ | | ■ |
| Multi-tariff | | | | | | 2 tariffs | 2 tariffs | | 2 tariffs |
| Four quadrant energy measurement | | | | | | ■ | ■ | ■ | ■ |
| Communication | | | | | | | M-Bus | Modbus | |
| Digital input (tariff switching) | | | | | | 1 | 1 | | 1 |
| Pulse output for kWh/ kvarh | 1 | | 1 | | 1 | 2 | | | |
| Pulse output operation | 100 pulses / kWh (120 ms long) | | | | 1 pulse / kWh (200 ms long) | 1 to 1000 pulses / kWh or kvarh (30 to 100 ms long) | | | |
| Accuracy class: Active Energy | Class 1 IEC 62053-21 | Class 1 IEC 62053-21 Class B EN50470-3 | Class 1 IEC 62053-21 Class B EN50470-3 | Class 1 IEC 62053-21 | Class 1 IEC 62053-21 | Class 1 IEC 62053-21 Class B EN50470-3 | Class 1 IEC 62053-21 Class B EN50470-3 | Class 1 IEC 62053-21 | Class 1 IEC 62053-21 Class B EN50470-3 |
| Accuracy class: Reactive Energy | | | | | | Class 2 (according to IEC62053-23) | | | |
| Display capacity | | 999999.9 kWh | | 99999 kWh or 999.99 MWh | | 999999.99 kWh | | | |
| Voltage range (L-N) | 184 to 276 V AC | | | 184 to 276 V AC | | 92 to 276 V AC | | | |
| Meter constant LED | 3200 flashes per kWh | | | 1000 flashes per kWh | | | | | |
| Wiring capacity (Top) | 4 $mm^2$ | | | 6 $mm^2$ | | 4 $mm^2$ | | | |
| Wiring capacity (Bottom) | 10 $mm^2$ | | | 16 $mm^2$ | | 32 $mm^2$ | | | |
| Consumption | <10 VA | | | 2.5 VA | | 3 VA | | | |
| Temperature | -10°C to 55°C | | | -25°C to 55°C | | | | | |
| kWh | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| kVARh | | | | | | ■ | ■ | ■ | ■ |
| Active power | | | | | | ■ | ■ | ■ | ■ |
| Reactive power | | | | | | ■ | ■ | ■ | ■ |
| Power Factor | | | | | | ■ | ■ | ■ | ■ |
| Current and voltage | | | | | | ■ | ■ | ■ | ■ |
| Frequency | | | | | | ■ | ■ | ■ | ■ |

# Acti 9 iEM2000 Series Energy Meters

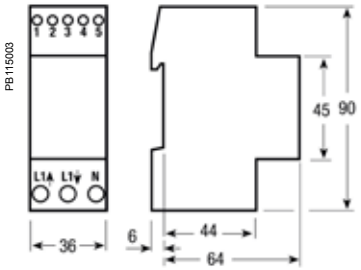
## iEM2000 dimensions




## iEM2100/iEM2105 dimensions




## iEM2110/iEM2135/iEM2150/iEM2155 dimensions




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

# Acti 9 iEM3000 Series Energy Meters
## Functions and characteristics

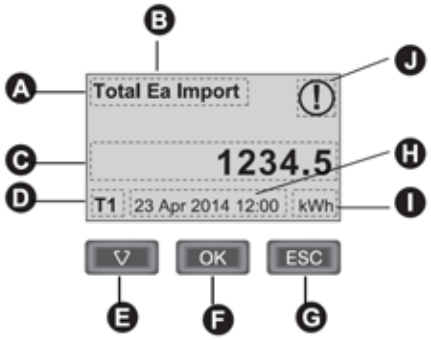
PB108410


*Acti 9 iEM3100/3200 energy meter*

PB113590


*Acti 9 iEM3300 energy meter*

PB105323




**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.

Several versions are available: 63 A direct measure (iEM3100 models), current transformers associated meter (iEM3200 models), and 125 A direct measure (iEM3300 models). low voltage current transformers (iEM3400 models), and Rogowski coils (iEM3500 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/iEM3455/iEM3555: energy meter, four quadrant, multi-tariffs with partial counter and current, voltage, power measurement. Modbus communication, digital I/O, MID certified (iEM3155, iEM3255, iEM3355 only).
- iEM3165/iEM3265/iEM3365/iEM3465/iEM3565: energy meter, four quadrant, multi-tariffs with partial counter and current, voltage, power measurement. BACnet communication, digital I/O and MID certified (iEM3165, iEM3265, iEM3365 only).
- 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 (LVCT safer to install).
- 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 (selected models).
- 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.
- LVCT support (iEM3455 and iEM3465).
- Rogowski support (iEM3555 and iEM3565).

# 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 iEM3455 iEM3555 | iEM3165 iEM3265 iEM3365 iEM3465 iEM3565 | iEM3175 iEM3275 iEM3375 |
|---|---|---|---|---|---|---|---|---|---|
| Width (18 mm module, DIN rail mounting) | | 5 / 5 / 7 | 5 / 5 / 7 | 5 / 5 | 5 / 5 / 7 | 5 / 5 / 7 | 5 / 5 / 7 / 5 / 5 | 5 / 5 / 7 / 5 / 5 | 5 / 5 / 7 |
| Direct measurement (up to 63 A or 125 A) | | 63 A / – / 125 A | 63 A / – / 125 A | 63 A / – | 63 A / – / 125 A | 63 A / – / 125 A | 63 A / – / 125 A / LVCT / Rog. | 63 A / – / 125 A / LVCT / Rog. | 63 A / – / 125 A |
| Measurement inputs through CTs (1 A, 5 A) | | – / ■ / – | – / ■ / – | – / ■ | – / ■ / – | – / ■ / – | – / ■ / – / LVCT / Rog. | – / ■ / – / LVCT / Rog. | – / ■ / – |
| 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 / 0.5S / 0.5S | 1 / 0.5S / 1 / 0.5S / 0.5S | 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 |
| | Tariff control only | | | 2 | | | | | |
| Digital ouputs | Programmable (kWh pulse or kW alarm) | | | | 1 | | 1 | 1 | |
| | kWh pulse only | | 1 | | | | | | |
| kW overload alarm | | | | | 1 | | 1 | 1 | |
| M-Bus protocol | | | | | ■ | | | | |
| Modbus protocol | | | | | | ■ | ■ | | |
| BACnet protocol | | | | | | | | ■ | |
| LON | | | | | | | | | ■ |
| MID (legal metrology certification) | | | ■ | ■ | ■ | | 3155 / 3255 / 3355 | 3165 / 3265 / 3365 | ■ |

PB108423

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

PB108424

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

## Connectivity advantages

| | |
|---|---|
| Programmable digital input | External tariff control signal (4 tariffs)<br>Remote Reset partial counter<br>External status, e.g. breaker status<br>Collect WAGES pulses |
| Programmable digital output | kWh overload alarm (iEM3135, iEM3155, iEM3165 iEM3235, iEM3255, iEM3265, EM3335, iEM3355, iEM3365, iEM3455, iEM3465, iEM3555, iEM3565)<br>kWh pulses |
| Graphic LCD display | Scroll energies<br>Current, voltage, power, frequency, power factor |
| Communication | Serial communication options are available with M-Bus, Modbus, BACnet or LON protocols |

## Standards

| | |
|---|---|
| Industry standards | IEC 61557-12, IEC 61036, IEC 61010, UL61010-1, IEC 62053-21/22 Class 1 and Class 0.5S, IEC 62053-23 ANSI C12.20 0.5 % |

**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.

# 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) | 63 A for iEM3100 models, 125 A 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 IEC 61557-12) 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 (EN 50470-3) | | ■ | ■ | ■ | | ■ | ■ | ■ |
| 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 IEC 61557-12) 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 (IEC 6253-21 and IEC 61557-12 Class B (EN 50470-3)*

# Acti 9 iEM3000 Series Energy Meters
## Functions and characteristics

PB115417

*Split core LVCT00101S 100 A*

PB115418

*Split core LVCT00102S 100 A*

PB115419

*Split core LVCT00201S 200 A*

PB115421

*Split core LVCT01004S 400 A*

PB115422

*Ropestyle*

| Specification guide | iEM3400/iEM3500 Models | | | |
|---|---|---|---|---|
| | iEM3455 | iEM3465 | iEM3555 | iEM3565 |
| Max current | 0.333V-1.0V LVCTs | 0.333V-1.0V LVCTs | Rogowski coils | Rogowski coils |
| Meter constant LED | 5000/kWh | | | |
| Pulse output frequency | Up to 500p/kWh | | | |
| Multi-tariff | 4 tariffs | | | |
| Communication | Modbus | BACnet | Modbus | BACnet |
| DI/DO | 1/1 | | | |
| Network | 1P+N, 3P, 3P+N support LVCTs, Rogowski coils, and VTs | | | |
| 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 70°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 | ■ | | | |

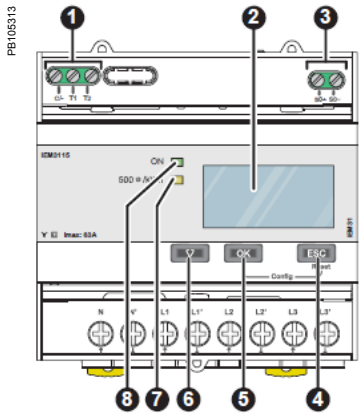
PB115488

*iEM3455*

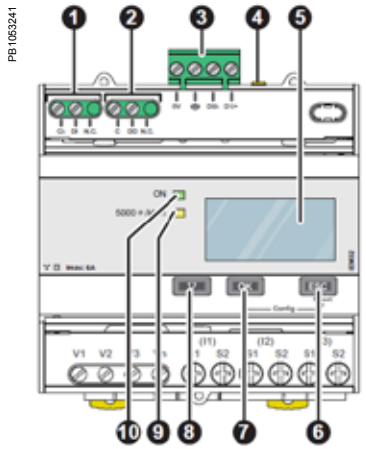
PB115487

*iEM3455 with sealing covers open LVCT00201S 200 A*

# Acti 9 iEM3000 Series Energy Meters
## Dimensions

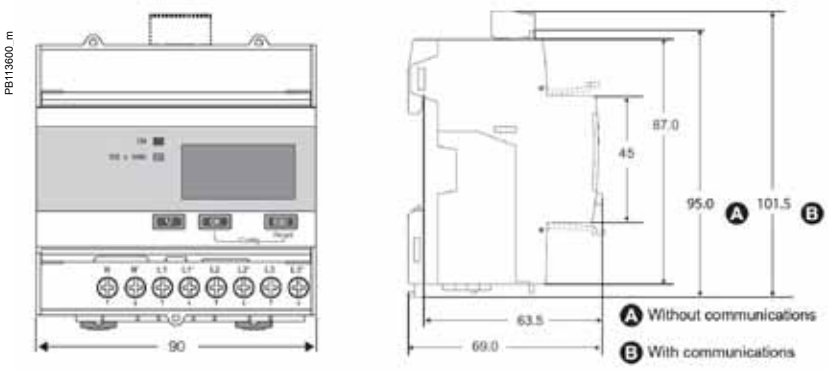



**Acti 9 iEM3000 Series parts**
1. Digital inputs for tariff control (iEM3115 / iEM3215)
2. Display for measurement and configuration
3. Pulse out for remote transfer (iEM3110 / iEM3210)
4. ESC Cancellation
5. OK Confirmation
6. Selection
7. Flashing yellow meter indicator to check accuracy
8. Green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

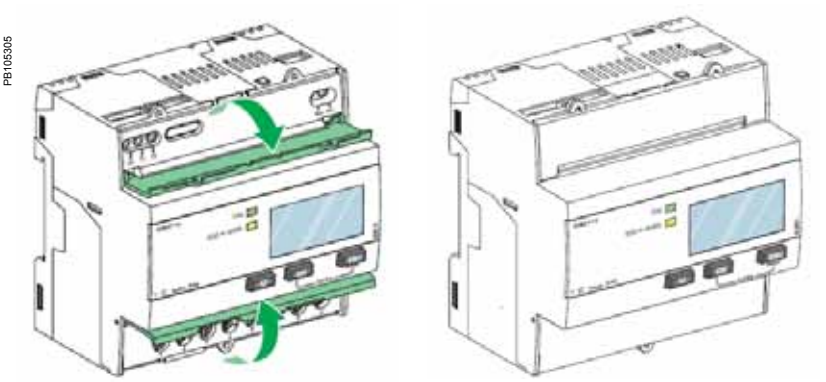



**Acti 9 iEM3000 Series parts**
1. Digital inputs for tariff control (iEM3155 / iEM3255)
2. Digital output (iEM3155 / iEM3255)
3. Communication port
4. Yellow indicator for communication diagnosis
5. Display for measurement and configuration
6. ESC Cancellation
7. OK Confirmation
8. Selection
9. Flashing yellow meter indicator to check accuracy
10. Green indicator: on/off, error

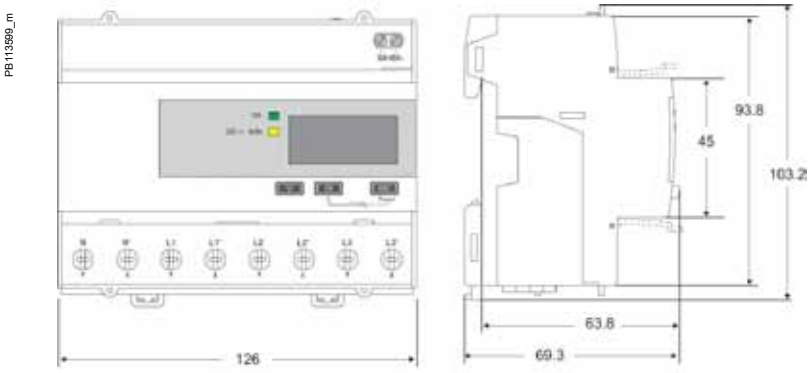
### iEM3200/iEM3400/iEM3500 series dimensions




### iEM3100/iEM3200/iEM3400/iEM3500 Series front sealing covers open and closed




### iEM3300 series dimensions




*See appropriate product Install Guide for further details.*

# Acti 9 iEM3000 Series Energy Meters
## Commercial reference numbers

| iEM31xx / iEM32xx / iEM33xx Meter model and description | Current measurement | Commercial 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** |

| iEM34xx / iEM35xx | Current measurement | Commercial ref. no. |
|---|---|---|
| iEM3455 advanced multi-tariff energy meter & electrical parameter plus Modbus MS/TP comm port | LVCT | **A9MEM3455** |
| iEM3465 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port | LVCT | **A9MEM3465** |
| iEM3555 advanced multi-tariff energy meter & electrical parameter plus Modbus MS/TP comm port | Rogowski coil | **A9MEM3555** |
| iEM3565 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port | Rogowski coil | **A9MEM3565** |

| LVCTs* | Commercial ref. no. |
|---|---|
| CT, split-core, Size 0, 50 A to 0.333 V | **LVCT00050S** |
| CT, split-core, Size 1, 100 A to 0.333 V | **LVCT00101S** |
| CT, split-core, Size 1, 200 A to 0.333 V | **LVCT00201S** |
| CT, split-core, Size 2, 100 A to 0.333 V | **LVCT00102S** |
| CT, split-core, Size 2, 200 A to 0.333 V | **LVCT00202S** |
| CT, split-core, Size 2, 300 A to 0.333 V | **LVCT00302S** |
| CT, split-core, Size 3, 400 A to 0.333 V | **LVCT00403S** |
| CT, split-core, Size 3, 600 A to 0.333 V | **LVCT00603S** |
| CT, split-core, Size 3, 800 A to 0.333 V | **LVCT00803S** |
| CT, split-core, Size 4, 800 A to 0.333 V | **LVCT00804S** |
| CT, split-core, Size 4, 1000 A to 0.333 V | **LVCT01004S** |
| CT, split-core, Size 4, 1200 A to 0.333 V | **LVCT01204S** |
| CT, split-core, Size 4, 1600 A to 0.333 V | **LVCT01604S** |
| CT, split-core, Size 4, 2000 A to 0.333 V | **LVCT02004S** |
| CT, split-core, Size 4, 2400 A to 0.333 V | **LVCT02404S** |

*See your Schneider Electric representative for complete ordering information.*

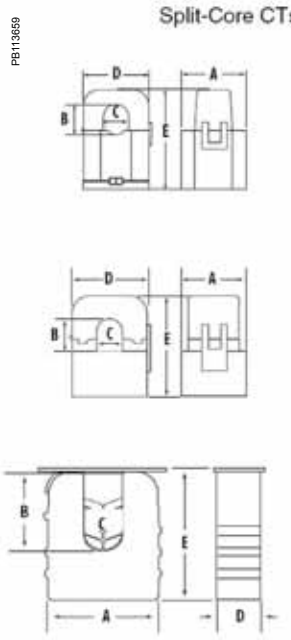
# Acti 9 iEM3000 Series Energy Meters
## Commercial reference numbers

| Rogowski coils for iEM3555 and iEM3565 meters | Commercial ref. no. |
|---|---|
| ROGCOIL 12 in (0.30 m) 8 ft (2.40 m) 5000 A | **U018-0001** |
| ROGCOIL 18 in (0.45 m) 8 ft (2.40 m) 5000 A | **U018-0002** |
| ROGCOIL 24 in (0.60 m) 8 ft (2.40 m) 5000 A | **U018-0003** |
| ROGCOIL 36 in (0.90 m) 8 ft (2.40 m) 5000 A | **U018-0004** |

** Available in select countries (as used for BCPM accessories).*
*See your Schneider Electric representative for complete ordering information.*

### LVCT Split-core dimensions

These dimensions apply to both BCPMSCCTxx (branch CTs) and LVCT0xxxx0S/1S (for Mains) 50 A-200 A CT families.




**50 Amp**
A = 26 mm
B = 11 mm
C = 10 mm
D = 23 mm
E = 40 mm

**100 Amp**
A = 29 mm
B = 20 mm
C = 16 mm
D = 40 mm
E = 53 mm

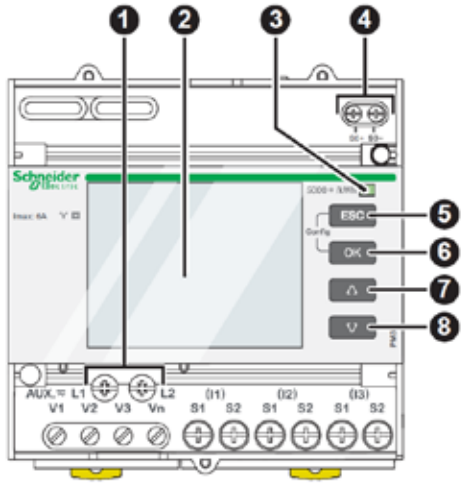
**200 Amp**
A = 66 mm
B = 28 mm
C = 19 mm
D = 74 mm
E = 90 mm

*See appropriate product Install Guide for further information*

# 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
□ RS-485 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).
□ Memory for Energy (kWh, kVARh, kVAh) logging at 10, 15, 20, 30 or 60 minutes.
□ RS-485 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)

### Commecial Reference numbers

| Meter model and description | Performance | Comm. ref. 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 RS-485 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 1 A/5 A | | ■ | ■ | ■ | ■ |
| 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 | | | | ■ | ■ |

PB108434


*Power Meter Series PM3210*

| Connectivity advantages | |
|---|---|
| Programmable digital input | External tariff control signal (4 tariffs).<br>Remote Reset partial counter.<br>External status like breaker status.<br>Collect WAGES pulses. |
| Programmable digital output | Alarm (PM3255)<br>kWh pulses |
| Graphic LCD display | Backlit graphic display allows smart navigation in relevant information and in multi languages |
| Communication | Modbus RS-485 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/5 A CTs | 0.3 % from 0.5 A to 6 A |
| Current with x/1 A CTs | 0.5 % from 0.1 A to 1.2 A |
| Voltage | 0.3 % from 50 V to 330 V (Ph-N), from 80 V to 570 V (Ph-Ph) |
| Power factor | ±0.005 from 0.5 A to 6 A with x/5 A CTs; from 0.1 A to 1.2 A with x/1 A CTs and from 0.5 L to 0.8 C |
| Active/Apparent Power with x/5 A CTs | Class 0.5 |
| Active/Apparent Power with x/1 A CTs | Class 1 |
| Reactive power | Class 2 |
| Frequency | 0.05 % from 45 to 65 Hz |
| Active energy with x/5 A CTs | IEC 62053-22 Class 0.5S |
| Active energy with x/1 A CTs | IEC 62053-21 Class 1 |
| Reactive energy | IEC 62053-23 Class 2 |
| **Data update rate** | |
| Update rate | 1s |
| **Input-voltage characteristics** | |
| Measured voltage | 50 V to 330 V AC (direct / VT secondary Ph-N)<br>80 V to 570 V AC (direct / VT secondary Ph-Ph)<br>up to 1 M V AC (with external VT) |
| Frequency range | 45 Hz to 65 Hz |
| **Input-current characteristics** | |
| CT primary | Adjustable from 1 A to 32767 A |
| CT secondary | 1 A or 5 A |
| Measurement input range with x/5A CTs | 0.05 A to 6 A |
| Measurement input range with x/1A CTs | 0.02 A to 1.2 A |
| Permissible overload | 10 A continuous, 20 A for 10s/hour |
| **Control Power** | |
| AC | 100/173 to 277/480 V AC (+/-20 %), 3W/5 VA; 45 Hz to 65 Hz |
| DC | 100 to 300 V DC, 3 W |
| **Input** | |
| Digital inputs (PM3255) | 11 to 40 V DC, 24 V DC nominal, <=4 mA maximum burden, 3.5 kVrms insulation |
| **Output** | |
| Digital output (PM3210) | Optocoupler, polarity sensitive, 5 to 30 V, 15 mA max, 3.5 kVrms insulation |
| Digital outputs (PM3255) | Solid state relay, polarity insensitive, 5 to 40 V, 50 mA max, 50 Ω max, 3.5 kVrms insulation |

# Power Meter Series PM3200
## Functions and characteristics (cont.)

| Specifications (continued) | PM3200 Range |
|---|---|
| **Mechanical characteristics** | |
| Weight | 0.26 kg |
| IP degree of protection (IEC60529) | IP40 front panel, IP20 meter body |
| Dimension | 90 x 95 x 70 mm |
| **Environmental conditions** | |
| Operating temperature | -25 °C to 55 °C |
| Storage temperature | -40 °C to 85 °C |
| Humidity rating | 5 to 95 % RH at 50 °C (non-condensing) |
| Pullution degree | 2 |
| Metering category | III, for distribution systems up to 277/480 V AC |
| Dielectric withstand | As per IEC61010-1, Doubled insulated front panel display |
| Altitude | 3000m (984 ft) 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 ★ |
| **Communication** | |
| RS-485 port | Half duplex, from 9600 up to 38400 bauds, Modbus RTU (double insulation) |
| **Display characteristics** | |
| Dimensions (VA) | 43 x 34.6 mm |
| Display resolution | 128 x 96 dots |
| **Standard compliance** | |
| | IEC 61557-12, EN 61557-12<br>IEC 61010-1, UL 61010-1<br>IEC 62052-11, IEC 62053-21, IEC 62053-22, IEC 62053-23<br>EN 50470-1, EN 50470-3 |

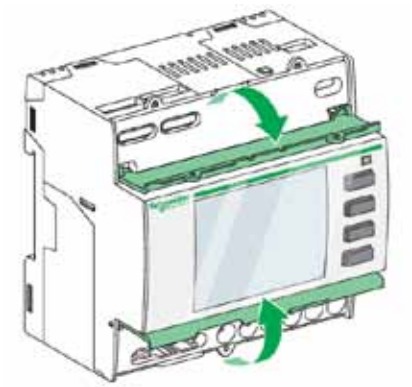
★ *Protected throughout by double insulation*

*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.

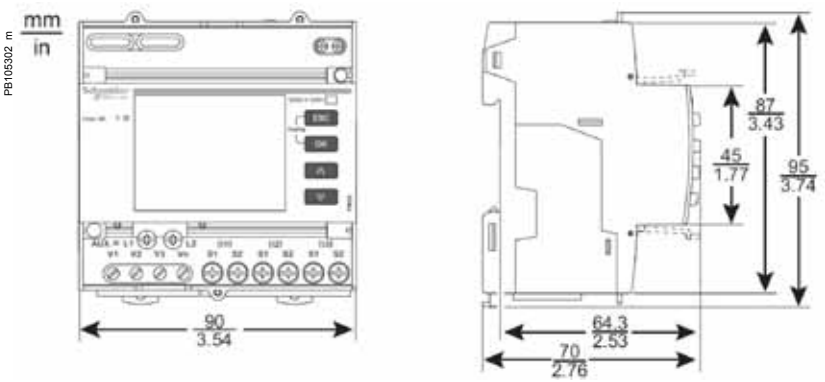
This function allows users to:
- Make tenant metering for dual source applications to differentiate backup source or utility source.
- Understand well the consumption during working time and non working time, and between working days and weekends.
- Follow up feeders consumption in line with utility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

# Power Meter Series PM3200
## Dimensions and connection

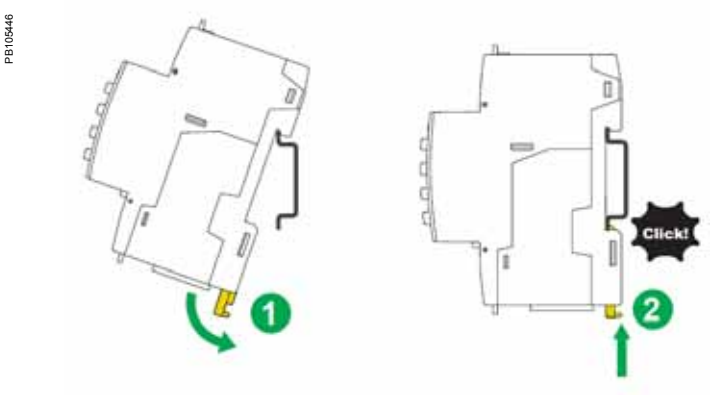


PM3200 top and lower flaps

### PM3200 series dimensions




### PM3200 series easy installation




*See appropriate product Install Guide for further information.*

# PM5350
## Functions and characteristics

PE86278


*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 two languages (English/ Chinese) 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 44 mm depth connectable up to 480 V L-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.

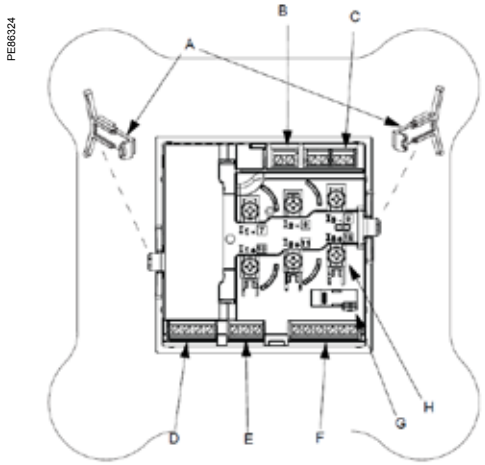
**Alarming with time stamping**
Over 30 alarm conditions, such as under/over conditions, digital input changes, and phase unbalance inform you of events. A time-stamped log maintains a record of the last 40 alarm events.

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

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

| Description | Comm. ref. no. |
|---|---|
| PM5310 Cl 0.5, RS-485 Modbus, 2DI/2DO | **METSEPM5310** |
| PM5330 Cl 0.5, RS-485 Modbus, 2DI/2DO, Relay | **METSEPM5330** |
| PM5331 Power & Energy meter | **METSEPM5331** |
| PM5320 Power & Energy meter | **METSEPM5320** |
| PM5340 Power & Energy meter | **METSEPM5340** |
| PM5341 Power & Energy meter | **METSEPM5341** |
| PM5360 Power & Energy meter | **METSEPM5360** |
| PM5561 Power & Energy meter | **METSEPM5561** |
| PM5563 Power & Energy meter | **METSEPM5563** |
| PM5563 DIN Mount Remote Display Meter | **METSEPM5563RD** |

# PM5350
## Functions and characteristics (cont.)


**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.

| | | | |
|---|---|---|---|
| **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, V L-N, V L-L | |
| 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 RS-485 serial port (DLF3000 via the Schneider Electric website: www.schneider-electric.com) | | ■ | |

# PM5350
## Functions and characteristics (cont.)

PE86292


*Front screen view of PM5350.*

| Electrical characteristics | | | |
|---|---|---|---|
| Type of measurement | | | True rms up to the 15th harmonic on three-phase (3P, 3P + N)<br>32 samples per cycle, zero blind |
| Measurement accuracy | Current, Phase ★ | | ±0.30 % |
| | Voltage, L-N ★ | | ±0.30 % |
| | Power Factor ★ | | ±0.005 |
| | Power, Phase | | IEC 61557-12 Class 0.5; For 5 A nominal CT (for 1 A nominal CT when I > 0.15 A)<br>±0.5 % from 0.25 A to 9.0 A at COS φ = 1<br>±0.6 % from 0.50 A to 9.0 A at COS φ = 0.5 (ind or cap) |
| | Frequency ★ | | ±0.05 % |
| | Real Energy | | IEC 62053-22 Class 0.5 S; IEC 61557-12 Class 0.5;<br>For 5 A nominal CT (for 1 A nominal CT when I > 0.15 A)<br>±0.5% from 0.25 A to 9.0 A at COS φ = 1<br>±0.6% from 0.50 A to 9.0 A at COS φ = 0.5 (ind or cap)<br>IEC 61557-12 Class 0.5 |
| | Reactive Energy | | IEC 62053-23 Class 3, IEC 61557-12 Class 2<br>For 5 A nominal CT (for 1 A nominal CT when I > 0.15 A)<br>±2.0 % from 0.25 A to 9.0 A at SIN φ = 1<br>±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<br>IEC: 20 to 690 V AC L-L; 20 to 400 V AC L-N, CAT II<br>UL: 20 to 300 V AC L-L, CAT III |
| | Permanent overload | | 700 V AC L-L, 404 V AC 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 - 265 V AC |
| | Burden | | 4.1 VA / 1.5 W typical, 6.7 VA / 2.7 W max at 120 V AC<br>6.3 VA / 2.0 W typical, 8.6 VA / 2.9 W max at 230 V AC<br>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<br>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<br>1.8 W typical, 2.7 W maximum at 250 V DC<br>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<br>250 V AC at 8.0 Amps, 25 k cycles, resistive<br>250 V AC at 2.0 Amps, 100 k cycles, COSΦ=0.4<br>250 V AC at 6.0 Amps, 25 k cycles, COSΦ=0.4<br>30 V DC at 2.0 Amps, 75 k cycles, resistive<br>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 |

★ *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)<br>96 x 96 x 13 mm (protrusion of meter from housing flange) |
| Mounting position | | Vertical |
| Panel thickness | | 6.35 mm max |
| **Environmental characteristics** | | |
| Operating temperature | Meter | -25 °C to 70 °C |
| | Display | -20 °C to 70 °C<br>(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 (9842 ft) max |
| **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 impulse waves | | IEC 61000-4-5★ |
| Conducted immunity | | 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 class A, EN 55011 Class A |
| Conducted emissions | | FCC part 15 class A, EN 55011 Class A |
| Harmonics | | IEC 61000-3-2★ |
| Flicker emissions | | IEC 61000-3-3★ |
| **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:<br>CAT III, 277 V L-N / 480 V L-L nominal;<br>CAT II 400 V L-N / 690 V L-L nominal<br>Per UL 61010-1 and CSA C22.2 No. 61010-1:<br>CAT III, 300 V L-L |
| Overvoltage Category (Control power) | | CAT III |
| Dielectric | | As per IEC 61010-1<br>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 communication 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 |

★ As per IEC 61557-12

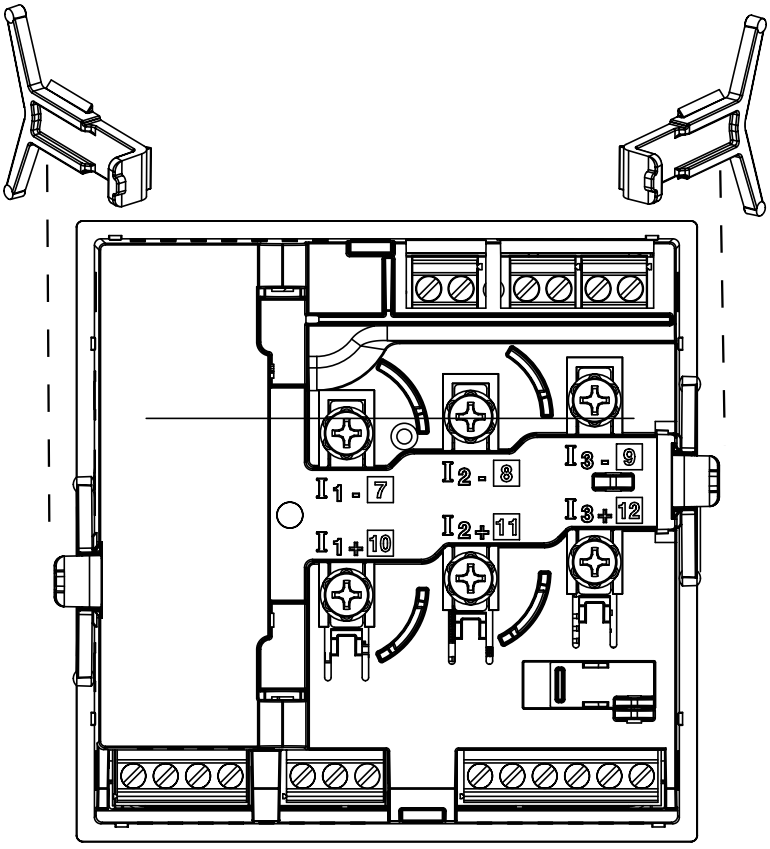
# PM5350 Power Meter
## Dimensions and connection

### Rear of meter - open

PE86279

### Rear view retainers - installation

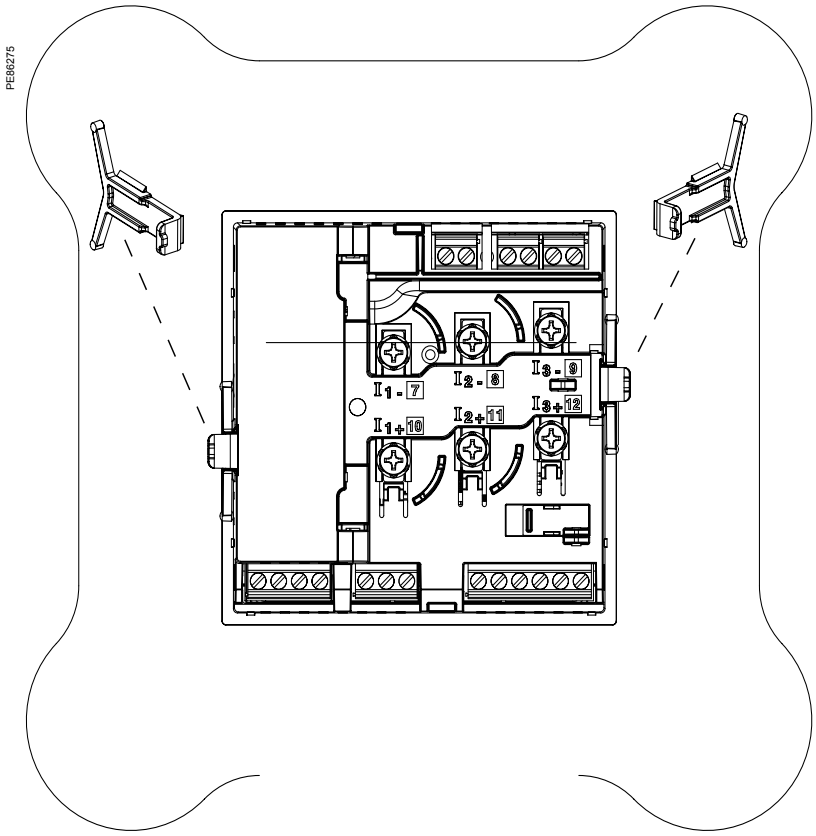
PE86274




*For detailed installation instructions see the product's Installation Guide.*

# PM5350 Power Meter
## Dimensions and connection (cont.)

### Rear view retainers - users




*For detailed installation instructions see the product's Installation Guide.*

# 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 datacentres.

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 44 mm 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.**

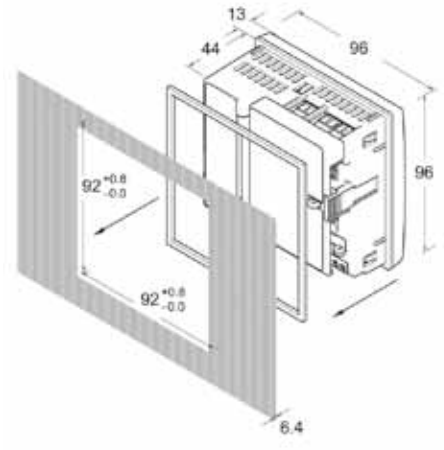
**Commercial reference numbers**

| PowerLogic PM5350IB/PB meters | Commercial Ref. No. |
|---|---|
| PowerLogic PM5350IB | **METSEPM5350IB** |
| PowerLogic PM5350PB | **METSEPM5350PB** |

★Sub-billing might be subject to local regulation.

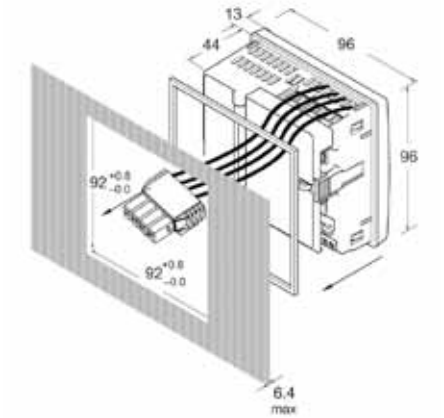
# PM5350IB / PM5350PB
## Functions and characteristics (cont.)

PB113624_m




*Dimensions PM5350IB*

PB113625_m




*Dimensions PM5350PB*

| 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, V L-N, V L-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, V L-N, V L-L | |
| 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 RS-485 serial port (DLF3000 via the Schneider Electric website: www.schneider-electric.com) | | ■ | |

★*Stored in non-volatile memory*

# PM5350IB / PM5350PB
## Functions and characteristics (cont.)

PE86292


*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 ★ | | ±0.30 % | |
| | Voltage, L-N ★ | | ±0.30 % | |
| | Power Factor ★ | | ±0.005 | |
| | Power, Circuit | | IEC 61557-12 Class 0.5; For 5 A nominal CT (for 1 A nominal CT when I > 0.15A)<br>±0.5 % from 0.25 A to 9.0 A at COS φ = 1<br>±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 0.5 S; IEC 61557-12 Class 0.5; For 5 A nominal CT (for 1 A nominal CT when I > 0.15A)<br>±0.5 % from 0.25 A to 9.0 A at COS φ = 1<br>±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<br>For 5 A nominal CT (for 1 A nominal CT when I > 0.15A)<br>±2.0 % from 0.25 A to 9.0 A at SIN φ = 1<br>±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<br>IEC: 20 to 690 V V AC L-L; 20 to 400 V AC L-N | UL: 20 to 480 V AC L-L<br>IEC: 20 to 690 V V AC L-L; 20 to 277 V AC L-N |
| | Permanent overload | | 700 V AC L-L, 404 V AC 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 to 277 V AC | |
| | Burden | | 4.1 VA / 1.5 W typical, 6.7 VA / 2.7 W max at 120 V AC<br>6.3 VA / 2.0 W typical, 8.6 VA / 2.9 W max at 230 V AC<br>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<br>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<br>1.8 W typical, 2.7 W maximum at 250 V DC<br>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<br>250 V AC at 8.0 Amps, 25 k cycles, resistive<br>250 V AC at 2.0 Amps, 100 k cycles, COSΦ=0.4<br>250 V AC at 6.0 Amps, 25 k cycles, COSΦ=0.4<br>30 V DC at 2.0 Amps, 75 k cycles, resistive<br>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 | |

★ *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.)

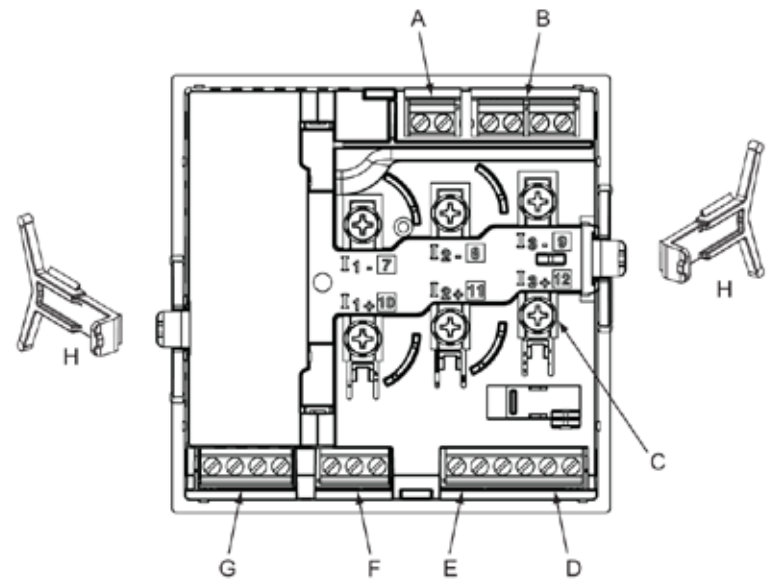
| Mechanical characteristics | | 5350IB | 5350PB |
|---|---|---|---|
| Weight | | 250 g | |
| IP degree of protection (IEC 60529) | | IP51 front display, IP30 meter body | |
| Dimensions | W x H x D | 96 x 96 x 44 mm (depth of meter from housing mounting flange)<br>96 x 96 x 13 mm (protrusion of meter from housing flange) | |
| Mounting position | | Vertical | |
| Panel thickness | | 6.35 mm max | |
| **Environmental characteristics (for indoor use only)** | | | |
| Operating temperature | Meter | -25 °C to 70 °C | |
| | Display | -20 °C to 70 °C<br>(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★ | |
| Immunity to radiated fields | | IEC 61000-4-3★ | |
| Immunity to fast transients | | IEC 61000-4-4★ | |
| Immunity to impulse waves | | IEC 61000-4-5★ | |
| Conducted immunity | | 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 class A, EN 55011 Class A | |
| Conducted emissions | | FCC part 15 class A, EN 55011 Class A | |
| Harmonics | | IEC 61000-3-2★ | |
| Flicker emissions | | IEC 61000-3-3★ | |
| **Safety** | | | |
| Europe | | CE, 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<br>IEC: 20 to 480V V AC L-L; 20 to 277 V AC L-N, CATIII<br>20 to 690V V AC L-L; 20 to 400 V AC L-N, CATII | UL: 20 to 480 V AC L-L, CATIII<br>IEC: 20 to 480V V AC L-L; 20 to 277 V AC L-N, CATIII<br>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<br>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 | |

★ *V L-L is limited to 700 V AC*

# PM5350 Power Meter
## Dimensions and connection

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

PB113626




*PM5350IB*

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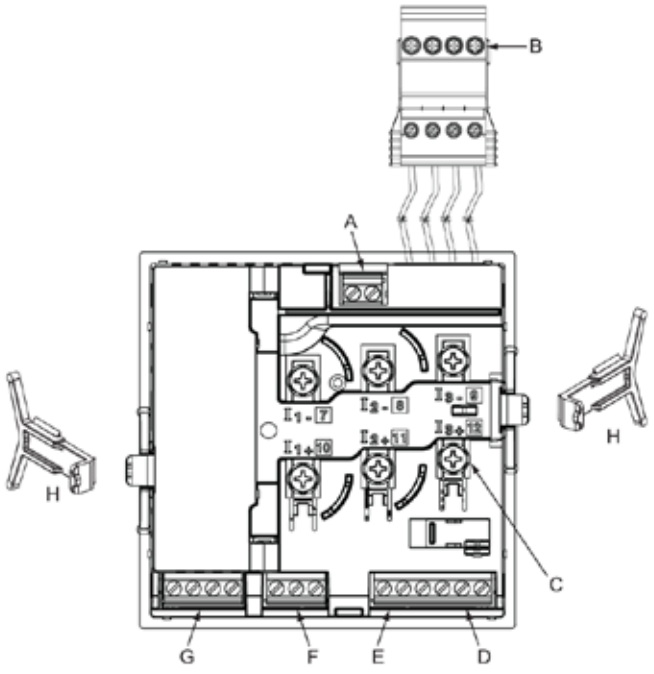


*PM5350PB*

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

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

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

### Installation

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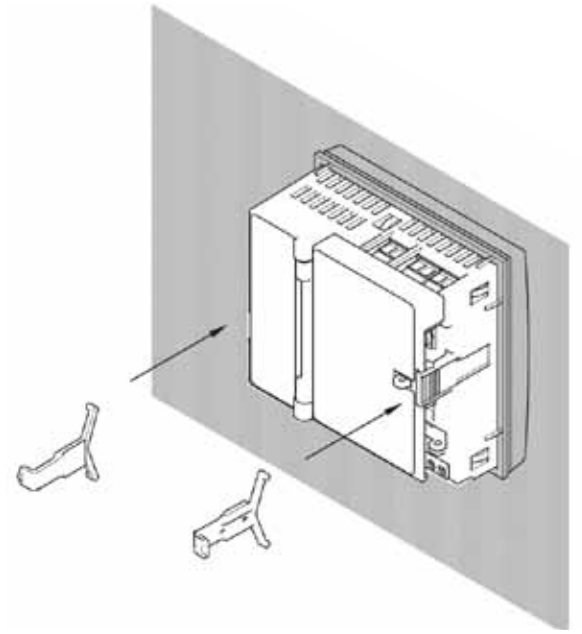

*PM5350IB*

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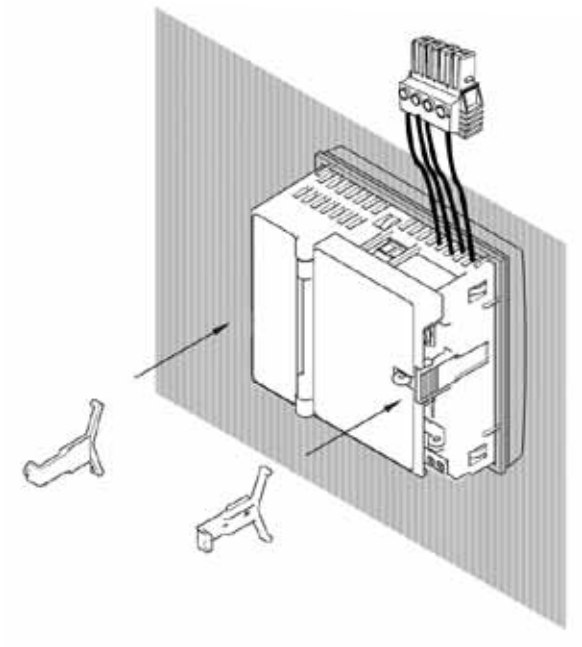


*PM5350PB*

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

# PM5000 Series
## Functions and characteristics

PB111777


PowerLogic™ PM5000 Series meter

PB111784


PowerLogic™ PM5563 remote dispaly

**PowerLogic™ PM5100, PM5300 and PM5500 series**

The PowerLogic™ PM5000 power meter is the ideal fit for cost management applications. Designed for use in both energy management systems and building management systems, 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. These are 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 behaviour on the electrical network in the moment it happens.
- **WAGES monitoring:** take advantage of the input metering on PM5000 meters to integrate measurements from third 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 96 mm, no tools required. Compact meter with 72 mm (77 mm for PM5500) depth connectable up to 690 V L-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 WAGES monitoring, control and alarm annunciation.

**Accurate energy measurement for precise cost allocation:**

| | PM5100 | PM5300 | PM5500 |
|---|---|---|---|
| IEC 62053-22 (Active Energy) | Class 0.5S | Class 0.5S | Class 0.2S |

# PM5000 Series
## Functions and characteristics (cont.)

PB111777


PowerLogic™ PM5500 meter

PB111772


PowerLogic™ PM5300 meter

PB111768


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.

**MID ready compliance, EN 50470-1/3 – Class C**

**Native multi-protocol support**

The PM5500 is now easier than ever to integrate into new and existing BMS systems. With native BACnet/IP protocol support, meters can simultaneously communicate via BACnet and Modbus in applications where multiple software systems are used (building management and energy management systems).

The PM5500 series has been tested and certified in accordance with BACnet Testing Laboratories (BTL) requirements.

**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.

# PM5000 Series
## Functions and characteristics (cont.)

| 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, V L-N, V L-L | | ■ | |
| Direct monitoring of neutral current | | | ■ |
| **Energy values★** | | | |
| Accumulated Active, Reactive and Apparent Energy | | Received/Delivered; Net and absolute; Time Counters | |
| **Demand 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 powers | | ■ | |
| 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, V L-N, V L-L per phase | | I,V L-N, V L-L | |
| 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: 5 mA Operating range: 50 mA to 8.5 A | | Starting current: 5 mA Operating range: 50 mA to 10 A |
| | Withstand | | Continuous 20 A, 10s/hr 50 A, 1s/hr 500 A | | |
| | Impedance | | < 0.3 mΩ | | |
| | F nom | | 50 or 60 Hz ±2 % | | 50 or 60 Hz ±10 % |
| | Burden | | <0.026 VA at 8.5 A | | < 0.024 VA at 10 A |
| AC control power | Operating range | | 100-415 V AC +/- 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 415 V L-L | | <5W/16.0 VA at 480 V AC |
| | Frequency | | 45 to 65 Hz | | |
| | Ride-through time | | 80 mS typical at 120 V AC and maximum burden 100 mS typical at 230 V AC and maximum burden 100 mS typical at 415 V AC and maximum burden | | 35 ms typical at 120 V L-N and maximum burden 129 ms typical at 230 V L-N and maximum burden |
| DC control power | Operating range | | 125-250 V DC ±20 % | | |
| | Burden | | 4 W max at 125 V DC | | typical 3.1 W at 125 V DC, max. 5 W |
| | 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) | | |

# PM5000 Series
## Functions and characteristics (cont.)

| 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/ 8 mA max | |
| | Input Burden | | 2 mA @ 24 V 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 72 mm (77 mm for PM5500) (depth of meter from housing mounting flange) [13 mm] | | |
| Mounting position ★ | | Vertical | | |
| Panel thickness | | 6 mm maximum | | |
| **Environmental characteristics** | | | | |
| 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 EN 50470

# PM5000 Series
## Functions and characteristics (cont.)

| Safety | PM5100 | PM5300 | PM5500 |
|---|---|---|---|
| Europe | CE, as per IEC 61010-1 Ed. 3, IEC 62052-11 & IEC 61557-12 | | |
| 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); BACnet/IP |
| 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 | | |

| | PM5100 | | PM5300 | | | | PM5500 | |
|---|---|---|---|---|---|---|---|---|
| **Features and Options** | **PM5100** | **PM5110** | **PM5310** | **PM5320** | **PM5330** | **PM5340** | **PM5560** | **PM5563** |
| **Installation** | | | | | | | | |
| Fast panel mount with integrated display | ■ | ■ | ■ | ■ | ■ | ■ | ■ | – |
| Remote display (optional) | – | – | – | – | – | – | – | ■ |
| Fast installation, DIN rail mountable | – | – | – | – | – | – | – | ■ |
| **Accuracy** | **Cl 0.5S** | **Cl 0.5S** | **Cl 0.5S** | **Cl 0.5S** | **Cl 0.5S** | **Cl 0.5S** | **Cl 0.2S** | **Cl 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 port with BACnet/IP protocol★ | – | – | – | – | | – | 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** | |

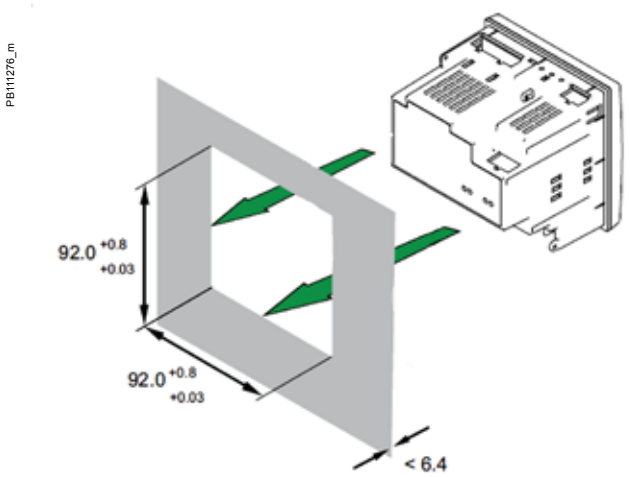
★PM5300 series models with BACnet/IP coming soon. Ability to simultaneously communicate via Modbus TCP/IP and BACnet/IP.
★★ 2 Ethernet ports for daisy chain, one IP address. One IP address. Ability to simultaneously communicate via Modbus TCP/IP and BACnet/IP.

# PM5000 Series
## Dimensions and connection

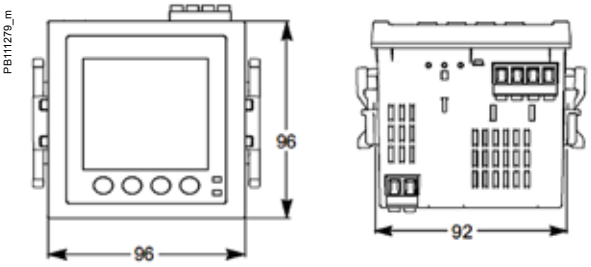
| Commercial reference numbers | |
|---|---|
| **Part description** | **Commercial ref. no.** |
| PM5100 power meter, pulse out | **METSEPM5100** |
| PM5100 power meter, pulse + serial out | **METSEPM5110** |
| PM5100 power meter, pulse + serial out, MID | **METSEPM5111** |
| PM5300 power meter, serial + 2DI-2DO out | **METSEPM5310** |
| PM5300 power meter, ETH + 2DI-2DO out | **METSEPM5320** |
| PM5300 power meter, serial + 2DI-2DO-2relay out | **METSEPM5330** |
| PM5300 power meter, serial + 2DI-2DO-2relay out, MID | **METSEPM5331** |
| PM5300 power meter, ETH + 2DI-2DO-2relay out | **METSEPM5340** |
| PM5300 power meter, ETH + 2DI-2DO-2relay out, MID | **METSEPM5341** |
| PM5560 power meter, ETH-serial + 4DI-2DO out | **METSEPM5560** |
| PM5561 power meter, ETH-serial + 4DI-2DO out, MID | **METSEPM5561** |
| PM5563 power meter, ETH-serial + 4DI-2DO out, no disp | **METSEPM5563** |
| PM5500 power meter, ETH-serial + 4DI-2DO out, remote display | **METSEPM5563RD** |
| Remote display for PM5563 power meter | **METSEPM5RD** |
| Hardware kit for PM51XX (voltage, current, comms & IO connectors + moulding clips) | **METSEPM51HK** |
| Hardware kit for PM53XX (voltage, current, comms & IO connectors + moulding clips) | **METSEPM53HK** |
| Revenue sealing kit for PM51XX & PM53XX (sealing covers for voltage & current connectors) | **METSEPM51-3RSK** |
| Hardware kit for PM55XX (voltage, current, comms & IO connectors & moulding clips) | **METSEPM55HK** |
| Revenue sealing kit for PM55XX (sealing covers for voltage & current connectors) | **METSEPM55RSK** |

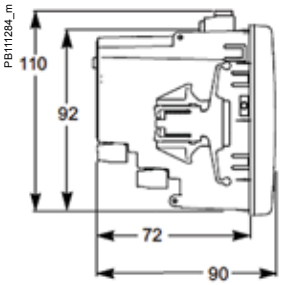
# PM5000 Series
## Functions and characteristics (cont.)

### PM5000 Series meter flush mounting*

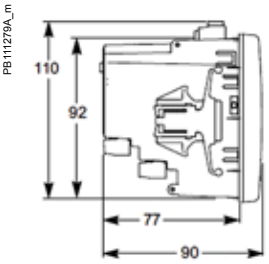



### PM5000 Series meter dimensions



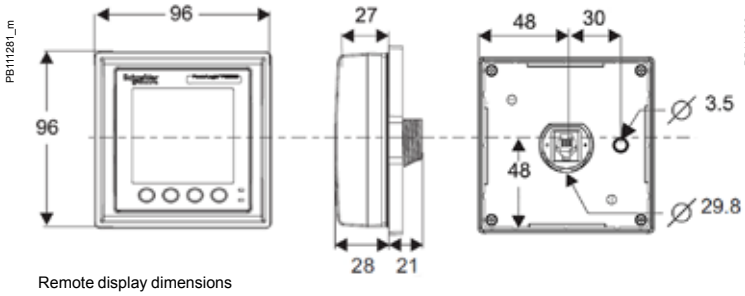




PM5100 / PM5300

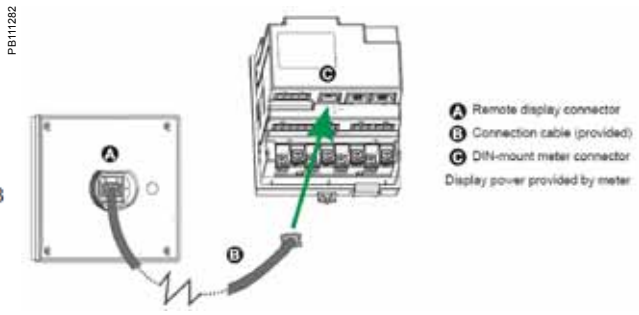



PM5500

### PM5000 Series remote display dimensions

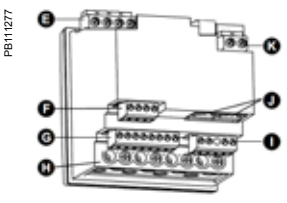



Remote display dimensions



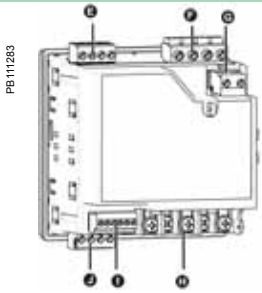

### PM5000 Series meter parts


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




PM5500

**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)

# PM8000 series
## Functions and characteristics

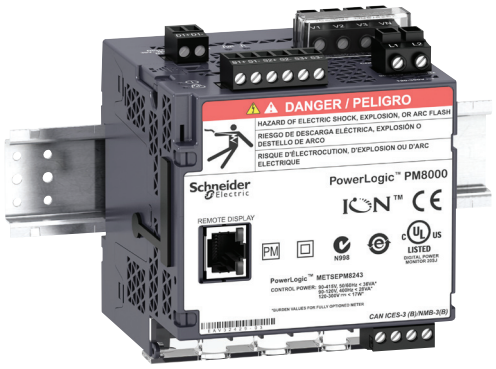
PB113688


PowerLogic PM8000 series meter

PB113691


PowerLogic PM8000 series meter - rear view

PB113692




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
  - 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.
- □ 512 MB 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.)

PB113670

**PowerLogic remote display.**

PB113671

**PowerLogic I/O module.**

PB113669

**PowerLogic PM8000 series meter with remote**

- □ 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.

**Ease of use**

- ■ 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 (RS-485) 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.
- □ 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.

# PM8000 series
## Functions and characteristics (cont.)

PB113686

PowerLogic PM8000 series meter with I/O modules.

**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, 250 V AC / 30 V DC, max current 8 A at 250 V AC or 5 A at 24 V DC, 20 k cycles (resistive).

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

| Commercial Reference numbers | |
|---|---|
| **Meter description** | **Commercial ref. no.** |
| DIN96 panel mount meter | **METSEPM8240** |
| DIN rail mount meter | **METSEPM8243** |
| DIN rail mount meter with remote display | **METSEPM8244** |
| **Accessories description** | **Commercial ref. no.** |
| Remote display, 3 m cable, mounting hardware for 30 mm hole (nut & centering pin), mounting hardware for DIN96 cutout (92 x 92 mm) adapter plate | **METSEPM89RD96** |
| Terminal covers for utility sealing | **METSEPM8000SK** |
| Adapters for mounting meter and remote display back to back & ANSI 102 mm, 300 mm Ethernet cable | **METSEPMAK** |
| Display cable, 1 metre | **METSECAB1** |
| Display cable, 3 metres | **METSECAB3** |
| Display Cable, 10 metres | **METSECAB10** |
| Digital I/O module (6 digital inputs & 2 relay outputs) | **METSEPM89M2600** |
| Analogue I/O module (4 analogue inputs & 2 analogue outputs) | **METSEPM89M0024** |
| PM8000 hardware kit | **METSEPM8HWK** |
| PM8000 remote display hardware kit | **METSEPM8RDHWK** |

# PM8000 series
## Functions and characteristics (cont.)

PB113696

**PowerLogic™ PM8000 bottom view DIN mounting.**

| Features guide | | PM8000 |
|---|---|---|
| **General** | | |
| Use on LV and MV systems | | ■ |
| Current accuracy (5 A Nominal) | | 0.1 % reading |
| Voltage accuracy (57 V L-N/100 V L-L to 400 V L-N/690 V L-L) | | 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 A to 10 A |
| **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 | 63 |
| 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<br>16 analogue |
| Digital or analogue outputs (max, including pulse output) | | 1 digital<br>8 relay<br>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=5 A)<br>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 V L-N/100 V L-L to 400 V L-N/690 V L-L |
| | Impedance | 5 M per phase |
| | Specified accuracy frequency<br>- Frequency | 42 Hz to 69 Hz<br>(50/60 Hz nominal) |
| | Limit range of operation<br>- frequency | 20 Hz to 450Hz |
| Input-current characteristics | Rated nominal current | 1 A (0.5S), 5 A (0.2S) , 10 A (0.2 ANSI) |
| | Specified accuracy current range | Starting Current: 5 mA<br>Accurate Range: 50 mA - 10 A |
| | Permissible overload | 200 A rms for 0.5S, non-recurring |
| | Impedance | 0.0003 per phase |
| | Burden | 0.024 VA at 10 A |
| Power supply | AC | 90-415 V AC ±10 % (50/60 Hz ± 10 %) |
| | DC | 120-300 V DC ±10 % |
| | Ride-through time | 100 ms (6 cycles at 60 Hz) min., any condition<br>200 ms (12 cycles at 60 Hz) typ., 120 V AC<br>500 ms (30 cycles at 60 Hz) typ., 415 V AC |
| | Burden | Meter Only: 18 VA max at 415 V AC, 6 W at 300 V DC<br>Fully optioned meter: 36 VA max at 415 V AC, 17 W at 300 V DC. |
| Input/outputs | Meter Base Only | 3 form A digital inputs (30 V AC/60 V DC)<br>1 form A (KY) solid state digital output (30V AC/60 V DC, 75 mA). |
| | Optional | Digital - 6 form A digital inputs (30 V AC / 60 V DC) wetted + 2 form C relay outputs (250 V AC / 30 V DC, 8 A at 250 V AC or 5 A at 24 V DC) |
| | | Analogue - 4 analogue inputs (4-20 mA, 0-30 V DC) + 2 analogue outputs (4-20 mA, 0-10 V DC). |
| **Mechanical characteristics** | | |
| Weight | | Integrated Display Model 0.581 kg<br>DIN rail mounted Model 0.528 kg<br>IO modules 0.140 kg<br>Remote display 0.300 kg |
| IP degree of protection | | IP 54, UL type 12: Panel mount and Remote display, front.<br>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 | | -25 °C to 70 °C |
| Remote Display Unit | | -25 °C to 60 °C |
| Storage temperature | | -40 °C to 85 °C |
| Humidity rating | | 5 % to 95 % non-condensing |
| Installation category | | III |
| Operating altitude (maximum) | | 3000 m above sea level |

# PM8000 series
## Functions and characteristics (cont.)

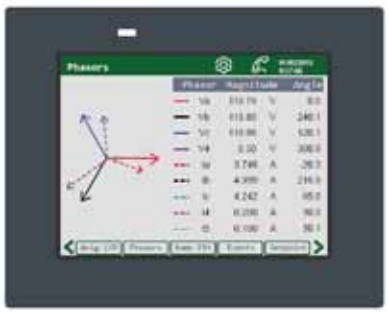
| Electromagnetic compatibility | |
|---|---|
| Product standards | IEC 62052-11 and IEC 61326-1 |
| Immunity to electrostatic discharge | IEC 61000-4-2 |
| Immunity to radiated fields | IEC 61000-4-3 |
| Immunity to fast transients | IEC 61000-4-4 |
| Immunity to surges | IEC 61000-4-5 |
| Immunity to conducted disturbances | IEC 61000-4-6 |
| Immunity to power frequency magnetic fields | IEC 61000-4-8 |
| Immunity to conducted disturbances, 2-150 kHz | 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 V L-N / 690 V L-L<br>UL 61010-1 ed.3 and CSA-C22.2 No. 61010-1 ed.3, CAT III, 347 V L-N / 600 V L-L<br>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) | 2 x 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 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:<br>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, 10 MB 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). |

# 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 | 512 MB (10 MB for programming and interval logging). |
| Firmware update | Update via the communication ports. |
| **Display characteristics** | |
| Integrated or Remote display | 320 x 240 (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. |

# ION7550 / ION7650
## Functions and characteristics

PB115457



*ION7550 remote display*

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, mounted integrally, or remote mounted color, touchscreen display. Screen-based menu system to configure meter settings including IEC or IEEE notations. Multilingual support for English, French and Spanish.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*, EN50160*, IEC 61000-4-7*, IEC 61000-4-15(1), IEEE 519, IEEE 1159, and CBEMA/ITIC). Evaluate flicker based on IEC 61000-4-15(1) and IEEE 1453*.

**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 direction relative to the meter (upstream or downstream of the meter). Results captured in the event log, along with a timestamp and certainty level.

**Setpoint learning**
The meter analyses the circuit and recommends voltage disturbance and alarm setpoints to minimise nuisance or missed disturbance events and alarms.

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

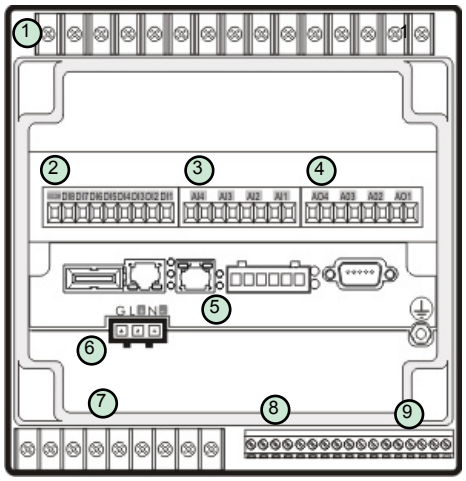
**Commercial reference numbers**

| ION7550 / ION7650 | Commercial ref. no. |
|---|---|
| ION7550 | **M7550** |
| ION7650 | **M7650** |
| Remote display | **M765RD** |
| Remote display w/power supply | **M765RDPS** |

* *ION7650 only*

# ION7550 / ION7650
## Functions and characteristics (cont.)

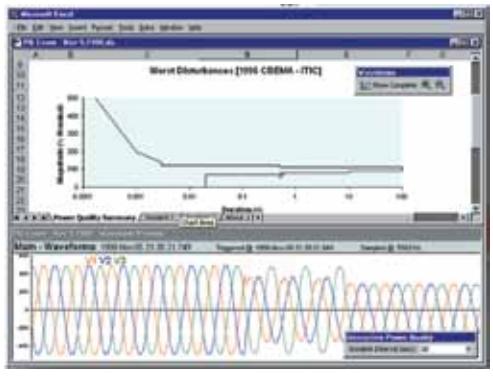
PE86288




*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*

PE86002



*Disturbance waveform capture and power quality report*

| Selection guide | | ION7550 | ION7650 |
|---|---|---|---|
| **General** | | | |
| Use on LV and HV systems | | ■ | ■ |
| Current accuracy (1 A to 5 A) | | 0.1 % reading | 0.1 % reading |
| Voltage accuracy (57 V to 288 V) | | 0.1 % reading | 0.1 % reading |
| Energy accuracy | | 0.2 % | 0.2 % |
| Number 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 A to 20 A | 0.01 A to 20 A |
| **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 StruxureWare | 127 | 511 |
| Waveform capture | | ■ | ■ |
| Detection of voltage swells and sags | | ■ | ■ |
| Detection and capture of transients | | - | 20 µs* |
| Flicker | | - | ■ |
| Fast acquisition of 100 ms or 20 ms data | | ■ | ■ |
| EN 50160 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 | | 10 MB | 10 MB |
| **Display and I/O** | | | |
| Front panel 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) | | 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 | | ■ | ■ |

* *For 50 Hz line frequency; 17µs for 60 Hz line frequency.*

# ION7550 / ION7650
## Functions and characteristics (cont.)

PE86126

*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 | ±0.005 Hz |
| | Power factor | ±0.002 from 0.5 leading to 0.5 lagging |
| | Energy: | IEC 62053-22 0.2S, 1 A and 5 A |
| Data update rate | | 1/2 cycle or 1 second |
| Input-voltage characteristics | Measurement range | Autoranging 57 V through 347 V L-N / 600 V L-L |
| | Impedance | 5 M/phase (phase - Vref) |
| | Frequency measurement range | 42 Hz to 69 Hz |
| Input-current characteristics | Rated nominal current | 1 A, 2 A, 5 A, 10 A |
| | Measurement range | 0.005 - 20 A autoranging (standard range)<br>0.001 - 10 A autoranging (optional range) |
| | Permissible overload | 500 A rms for 1 s, non-recurring (5 A)<br>50 A rms for 1 s, non-recurring (1 A) |
| | Impedance | 0.002 per phase (5 A)<br>0.015 per phase (1 A) |
| | Burden | 0.05 VA per phase (5 A)<br>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<br>Low voltage DC: typical 15 VA, max 20 VA |
| Input/outputs★ | Standard | 8 digital inputs (120 V DC)<br>3 relay outputs (250 V AC / 30 V DC)<br>4 digital outputs (solid state) |
| | Optional | 8 additional digital inputs<br>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<br>Transducer unit (no display): IP 30 |
| 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 °C |
| | Low voltage DC supply | -20 to 50 °C |
| | Display operating range | -20 to 60 °C |
| Storage temperature | Display, TRAN | -40 to 85 °C |
| Humidity rating | | 5 % to 95 % non-condensing |
| Installation category | | III 2000 m above sea level |
| Dielectric withstand | | As per EN 61010-1, IEC 62051-22A★★ |
| **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/RS-485 port ★ | | 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 (328 ft) link |
| Fibre-optic Ethernet link | | 100 BASE-FX, SC duplex connector, 1300 nm, FO multimode with gradient index 62.5/125 µm or 50/125 µm, 2000 m link |

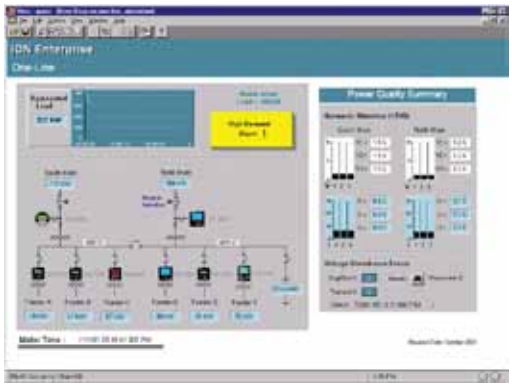
★ *Consult the ION7550 / ION7650 Installation Guide for complete specifications.*

★★ *IEC 62051-22B with serial ports only.*

# ION7550 / ION7650
## Functions and characteristics (cont.)

PE86004

PE86005

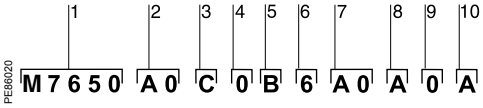


*Example showing instantaneous values and alarm.*

| | |
|---|---|
| **Communication* (cont.)** | |
| Protocol | ION, Modbus, TCP/IP, DNP 3.0, Telnet, IEC 61850 |
| 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 |
| WebMeter | 5 customisable pages, new page creation capabilities, HTML/XML compatible |
| **Firmware characteristics** | |
| High-speed data recording | Down to 5 ms 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 |
| Sag/swell detection | Analyse severity/potential impact of sags and swells:<br>- magnitude and duration data suitable for plotting on voltage tolerance curves<br>- 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:<br>- voltage and current<br>- active power (kW) and reactive power (kvar)<br>- apparent power (kVA)<br>- power factor and frequency<br>- voltage and current unbalance<br>- 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<br>- sub-cycle disturbance capture<br>- maximum cycles is 214,000 (16 samples/cycle x 96 cycles, 10 MB memory)<br>- 256 samples/cycle (ION7550)<br>- 512 samples/cycle standard, 1024 samples/cycle optional (ION7650)<br>COMTRADE waveform format available direct from the meter (Ethernet port option only) |
| Alarms | Threshold alarms:<br>- adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm<br>- user-defined priority levels<br>- 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 MB to 10 MB (specified at time of order) |
| Firmware update | Update via the communication ports |
| **Display characteristics** | |
| Integrated display | Backlit LCD, configurable screens |
| Remote display | Colour touchscreen LCD, configurable screens |
| Languages | English, French, Spanish |
| Notations | IEC, IEEE |

* *All the communication ports may be used simultaneously.*

# ION7550 / ION7650
## Functions and characteristics (cont.)




*Example ION7650 product part number.*

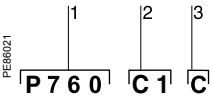
***1*** *Model.*
***2*** *Form factor.*
***3*** *Current Inputs.*
***4*** *Voltage Inputs.*
***5*** *Power supply.*
***6*** *System frequency.*
***7*** *Communications.*
***8*** *Inputs/outputs.*
***9*** *Security.*
***10*** *Special order.*

**Part numbers**

| | Item | Code | Description |
|---|---|---|---|
| 1 | Model | M7650 | Advanced meter with wide-range voltage inputs (57-347 V L-N or 100-600 V L-L), transient detection, data and waveform recording, IEC 61000-4-30 Class A & EN 50160.Supports ION, IEC 61850 (only for meters with Ethernet comm card) Modbus-RTU, and DNP 3.0. |
| | | M7550 | Advanced meter with wide-range voltage inputs (57-347 V L-N or 100-600 V L-L), sag/swell detection, data and waveform recording. Supports ION, IEC 61850 (only with 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 A nominal, 20 A full scale current input |
| | | E | 1 A nominal, 10 A full scale current input |
| | | F | Current Probe Inputs (for 0-1 V AC current probes; sold separately) |
| | | G | Current Probe Inputs with three Universal Technic 10 A clamp on CTs; meets IEC 1036 accuracy |
| 4 | Voltage Inputs | 0 | 57 to 347 V AC L-N / 100 to 600 V AC L-L |
| 5 | Power Supply | B | Standard power supply (85-240 V AC, ±10 %/47-63 Hz / 110-300 V DC, ±10 %) |
| | | C | Low voltage DC power supply (20-60 V DC) |
| 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), 56 k universal internal modem (RJ11). Ethernet and modem gateway functions each use a serial communications port. |
| | | D7 | Standard communications plus 10BASE-T/100BASE-TX Ethernet (RJ45) and 100BASE-FX Ethernet Fiber, 56 k 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 56 k 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 out) |
| | | 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 |

# ION7650 / ION7550
## Functions and characteristics (cont.)

PE86021




*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.*

**Part numbers (cont'd)**

| | Item | Code | Description |
|---|---|---|---|
| 10 | Other options | A | None |
| | | C | Tropicalisation treatment applied |
| | | E | ION7650 only. EN 50160 compliance monitoring, IEC 61000-4-30 Class A measurements |
| | | F | ION7650 only. EN 50160 compliance monitoring, with tropicalisation treatment, IEC 61000-4-30 Class A measurements |

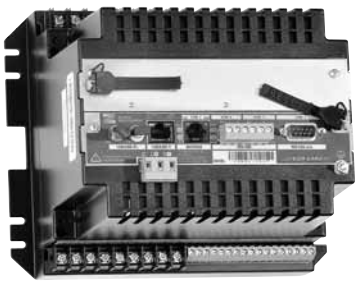
**Communications Card** *

| | 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, 100BASE-FX 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 110BASE-T/100BASE-TX Ethernet. Ethernet gateway function uses a serial communications port. IEC 61850 protocol (depending on |
| | | F1 | Standard communications plus 10BASE-T/100BASE-TX Ethernet, 100BASE-FX 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 56 k 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. |
| | E | Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue inputs |
| | 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 |

PE86019



*PowerLogic™ ION7550 TRAN*

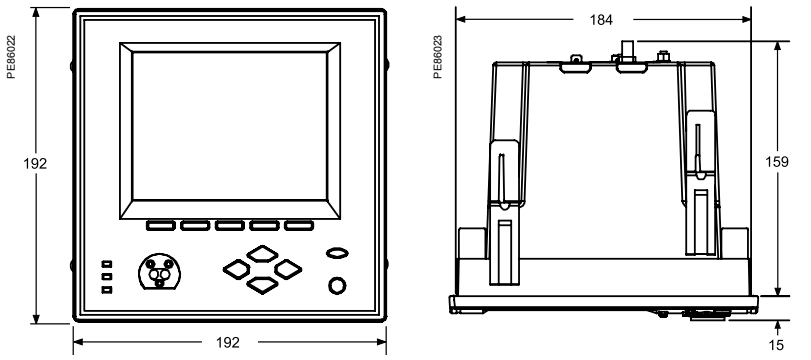
**ION7550 / ION7650 related items**

| Description | Commercial ref. no. |
|---|---|
| Adapter plate to fit meter into a 3710 or 3720 ACM panel cutout | **ADPT-37XX-7500** |
| Terminal strip cover for the ION7550 or ION7650 | **TERMCVR-7500** |
| 10 A / 1 V AC Universal Technic Clamp On Current Probe | **M1UB10A1V-10A** |
| 1000 A / 1 V AC Universal Technic Clamp On Current Probe | **P32UEP813-1000A** |
| 3000 A / 1 V AC Universal Technic Clamp On Current Probe | **P32UEP815-3000A** |
| 5 A / 0.333 V AC Magnelabs Split Core Current Probe | **SCT0750-005-5A** |
| 300 A / 0.333 V AC Magnelabs Split Core Current Probe | **SCT1250-300-300A** |

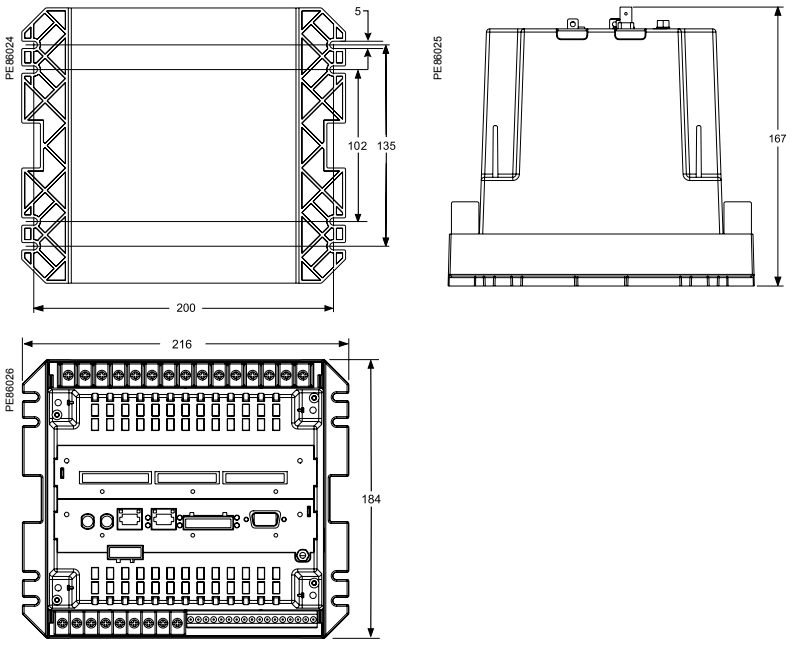
* *Firmware version 350 or higher required.*

# ION7550 / ION7650
## Dimensions and connection

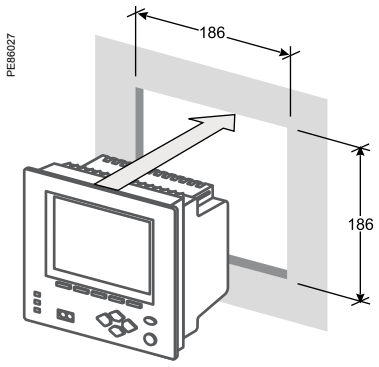
### ION7550/ION7650 dimensions




### ION7550 / ION7650 TRAN dimensions




### 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 and it has a front and a back module that is connected to the meter mounted in a DIN rail at the back.*

*See appropriate Install Guide for this product.*

# Circuit Monitor Series 4000
## Functions and characteristics

PE86140

*CM4000 + vacuum fluorescent display (VFD).*

The PowerLogic CM4000T Circuit Monitor offers high-performance digital instrumentation, data acquisition and control capabilities. It can integrate easily in power monitoring and control systems due to its 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, it is possible to rapidly solve problems related to poor power quality. EN 50160 compliance checking capability makes these products ideal to meet the needs related to market deregulation.
The Circuit Monitor CM4000T is available 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**
Identification of problems due to short disturbances, e.g. switching of capacitors, etc.

**Flicker evaluation based on IEC 61000-4-15 and IEEE 1453**
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.

**32 MB of memory**
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.

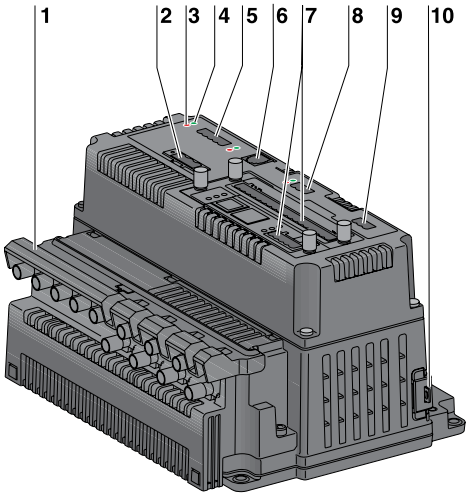
**Alarm notification via email**
High-priority alarms sent directly to the user's PC.
Instant notification of power quality events by email.

**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.)

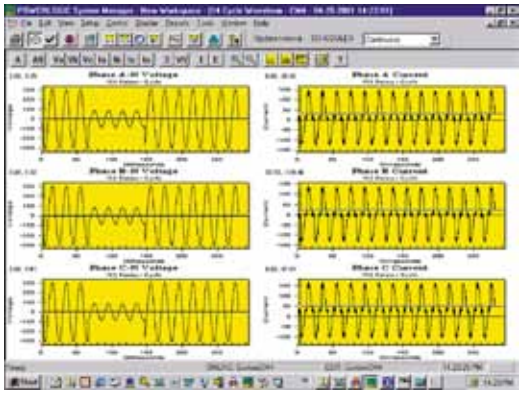
DB108168




*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.*

E87306



*Disturbance waveform capture: detection of a voltage sag.*

## Commercial reference numbers

| Circuit Monitor Series 4000 | Commercial ref. no. |
|---|---|
| Circuit Monitor CM4000T | **CM4000T** |

| Selection guide | | CM4000T |
|---|---|---|
| **General** | | |
| Use on LV and HV systems | | ■ |
| Current and voltage accuracy | | 0.07 % |
| Energy and power accuracy | | 0.2 % |
| Number of samples/cycle or sample frequency | | 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 |
| | Via SMS | 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 * | | ■ |
| 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 MB |
| **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 |
| Input metering capability (number of channels) | | 10 |
| Direct voltage connection | | 600 V |
| **Communication** | | |
| RS-485 port | | 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 |

**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.

PE86143

## 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.

### Commercial reference numbers

| | | Commercial ref. no. |
|---|---|---|
| LCD display supplied with the CAB12 cable | | **CMDLC** |
| Connection cables: Circuit Monitor <-> display | 1.25 m | **CAB4** |
| | 3.65 m | **CAB12** |
| | 9.14 m | **CAB30** |

PE86142

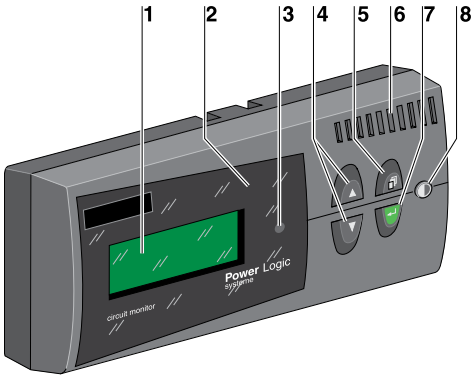
## CMDVF display

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).

### Commercial reference numbers

| | | Commercial ref. no. |
|---|---|---|
| VFD supplied with the CAB12 cable | | **CMDVF** |
| Connection cables: Circuit Monitor <-> display | 1.25 m | **CAB4** |
| | 3.65 m | **CAB12** |
| | 9.14 m | **CAB30** |

E87288




*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.*

# Circuit Monitor Series 4000
## Functions and characteristics (cont.)

PE86141

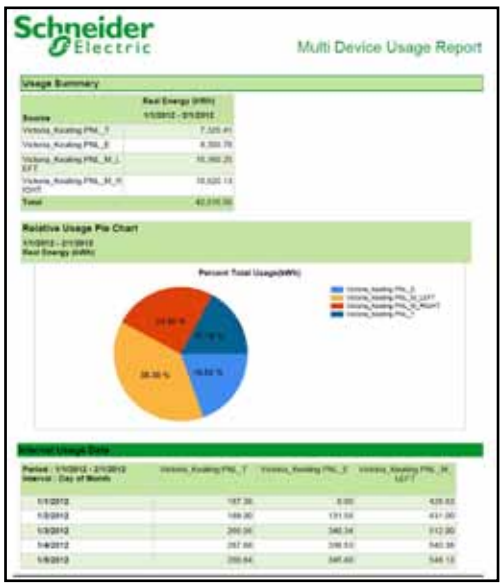
*CM4000 + options: ECC21, IOC44 and IOX2411.*

| | | |
|---|---|---|
| **Electrical characteristics** | | |
| Type of measurement | | True rms up to the 255th harmonic<br>On three-phase AC system (3P, 3P + N)<br>Up to 512 samples per cycle<br>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<br>±0.1 Hz from 350 to 450 Hz |
| | Power factor | ±0.002 from 0.5 leading to 0.5 lagging |
| | Energy | 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)<br>0 to 1200 kV AC (with external VT) |
| | Measurement range | 0 to 1.5 Un |
| | Impedance | > 2 M |
| | Frequency measurement range | 45 Hz to 67 Hz and 350 Hz to 450 Hz |
| Input-current characteristics | CT ratings | Adjustable from 5 A to 30,000 A |
| | Measurement range | 5 mA to 10 A |
| | Permissible overload | 15 A continuous<br>50 A for 10 seconds per hour<br>500 A for 1 second per hour |
| | Impedance | < 0.1 |
| | 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),<br>3 relay outputs (5 A to 240 V AC)<br>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) ★ | 4 digital inputs 120 V AC,<br>4 analogue outputs 4-20 mA |
| | IOX2411 (optional) ★ | 2 digital outputs 120 V AC, 4 digital inputs 32 V DC,<br>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** | | |
| USA and Canada | | UL508 and CSA C22.2-2-4-M1987 |

★ *Operating limits: 0° C to +60 °C.*
*Storage limits: -25 °C to +85 °C.*

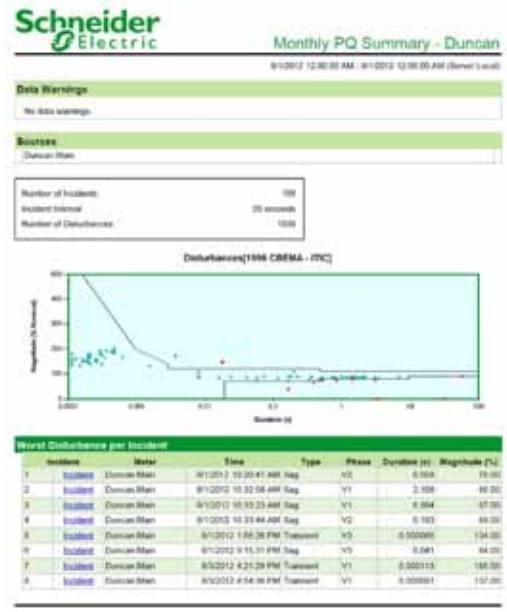
# Circuit Monitor Series 4000
## Functions and characteristics (cont.)

E100279




*StruxureWare provides many different report templates to allow users to easily display and deliver the information they need .*

E100280




*Power Quality Summary Report example*

E87309

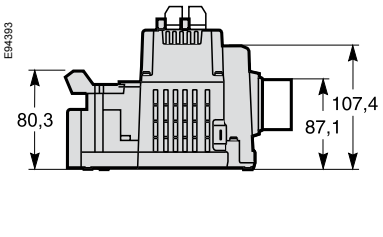
*Example CM4250 HTML page showing instantaneous values.*

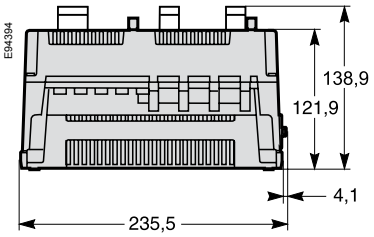
| | |
|---|---|
| **Communication** | |
| RS-485 port * | 2/4 wires, up to 38400 baud, Modbus |
| RS-232 port * | Up to 38400 baud, Modbus, direct connection to a PC or modem |
| **Ethernet ECC21 card with HTML server (optional)** (1) | |
| Copper Ethernet link | 10/100 BASE-TX, RJ45 connector, 100 m link |
| Fiber-optic Ethernet link | 100BASE-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 baud, 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:<br>- every second for one minute for the 1-minute curve<br>- every minute for one hour for the 1-hour curve<br>- every hour for one day for the 1-day curve<br>- 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<br>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<br>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<br>Transient: voltage sampling at 5 MHz (83 333 samples/cycle) over 2 ms to capture transient peaks < 1 µs |
| Alarms | Threshold alarms:<br>- adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm<br>- 4 priority levels<br>- 4 response times: standard 1 s, fast 100 ms, disturbance < 1/2-cycle, transient < 1µs<br>- Boolean combination of four alarms is possible using the operators NAND, OR, NOR and XOR<br>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.<br>Digital alarms: logic input transitions<br>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 MB standard, expandable up to 32 MB |
| 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 |

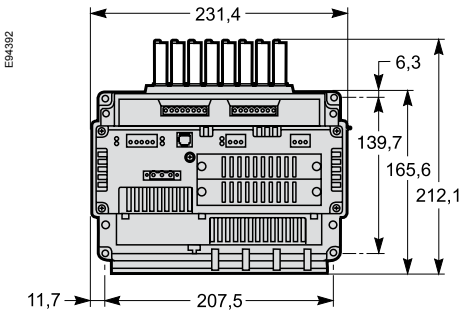
* *All the communication ports may be used simultaneously.*

# Circuit Monitor Series 4000
## Dimensions and connection

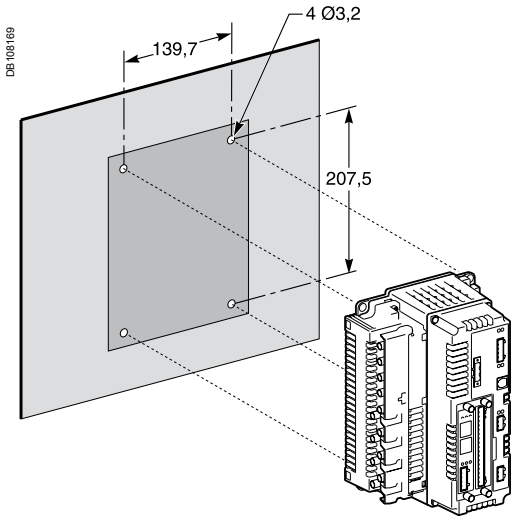
### CM4000T dimensions



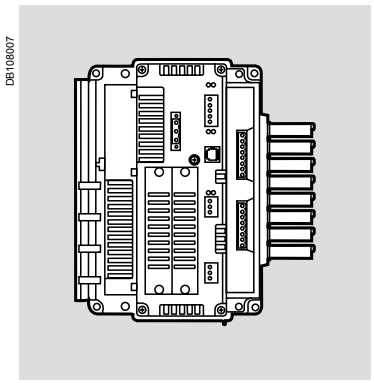




### Mounting on a backplate

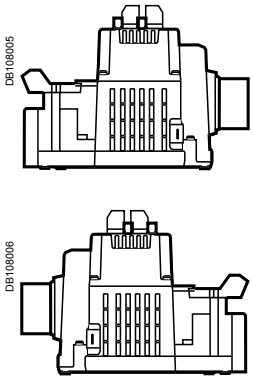


# Circuit Monitor Series 4000
## Dimensions and connection

### Mounting possibilities

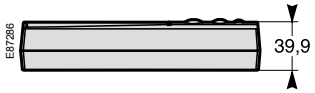


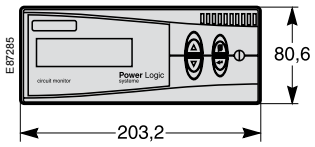

*Vertical mounting.*



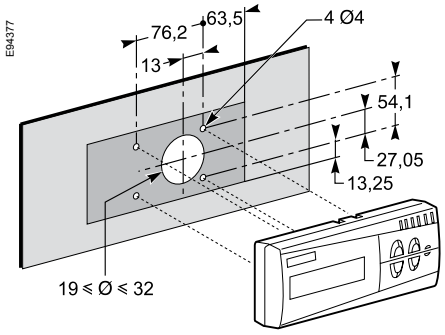

*Horizontal mounting.*

### CMDLC/CMDVF dimensions




### Mounting on a backplate



# ION7400 Utility Feeder Meter
## Functions and characteristics

PB115152


PowerLogic ION7400 meter showing active alarms.

ION7400Rear


PowerLogic ION7400 meter - rear view.

ION7400_DIN_Rear


PowerLogic ION7403 DIN rail mounted meter.

The PowerLogic ION7400 utility feeder 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 panel or DIN mounted ION7400 meter is flexible enough to fit into a utility's existing billing or SCADA system, providing industry leading cost management (Class 0.2) and network management (Class S PQ) data. It is compliant with stringent international standards that guarantee their metering accuracy and power quality measurements. Ideal for 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.
  - Test mode.

- PQ compliance reporting and basic PQ analysis.
  - Monitors and logs parameters in support of international PQ standards,
    - IEC 61000-4-30 Class S
    - IEC 61000-4-15 Flicker
    - IEC 62586
    - 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.
    - 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.

# ION7400 Utility Feeder Meter
## Functions and characteristics (cont.)

PB115153

**PowerLogic ION7400 with Harmonics display.**

ION7400_Remote_Display

**PowerLogic remote display.**

PB113671

**PowerLogic I/O module.**

**PowerLogic ION7400 meter with remote display.**

- ■ Onboard data and event logging.
- □ 512 MB of standard non-volatile memory. 10 MB of standard non-volatile memory dedicated to capture billing data, events, and waveforms.
- □ 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.
- □ Optical port
- □ 2 energy pulsing LEDs.
- □ Alt/Norm screens.

- ■ 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 (RS-485) or IRIG-B (digital input) to +/- 1 millisecond.
- □ Also supports Network Time Protocol (NTP/SNTP) and time set function from StruxureWare software server.

# ION7400 Utility Feeder Meter
## Functions and characteristics (cont.)

PB115159


PowerLogic ION7400 series meter with phasor display.

**Adaptability**
- ■ ION™ frameworks allow customizable, scalable applications, object-oriented programming, compartmentalizes functions, and increases flexibility and adaptability.
- ■ 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, 250 V, 8 A.
- ■ Analogue module.
  - □ 4 analogue inputs (4-20 mA; 0-30 V).
  - □ 2 analogue outputs (4-20 mA; 0-10 V) for interfacing with building management sensors and systems.

**Standards**
- ■ IEC 61000-4-30
- ■ IEC 61000-4-7
- ■ IEC 61000-4-15
- ■ IEC 61326-1
- ■ ANSI C12.20
- ■ IEC 62052-11
- ■ IEC 62053-22
- ■ CLC/TR50579

**Languages supported**

English, French, Spanish, Chinese, Italian, German, Russian, Portuguese.

| Commercial Reference numbers | |
|---|---|
| **Meter description** | **Commercial ref. no.** |
| ION7400 Panel mount meter (integrated display with optical port and 2 energy pulse LEDs) | **METSEION7400** |
| DIN rail mount - utility meter base | **METSEION7403** |
| **Accessories description** | **Commercial ref. no.** |
| Remote display, 3 metre cable, mounting hardware for 30mm hole (nut & centering pin), mounting hardware for DIN96 cutout (92 x 92 mm) adapter plate | **METSEPM89RD96** |
| Digital I/O module (6 digital inputs & 2 relay outputs) | **METSEPM89M2600** |
| Analogue I/O module (4 analogue inputs & 2 analogue outputs) | **METSEPM89M0024** |
| Display Cable, 10 m | **METSECAB10** |
| Sealing kit | **METSEPM8000SK** |

# ION7400 Utility Feeder Meter
## Functions and characteristics (cont.)

PB113696

PowerLogic™ ION7400 bottom view DIN mounting.

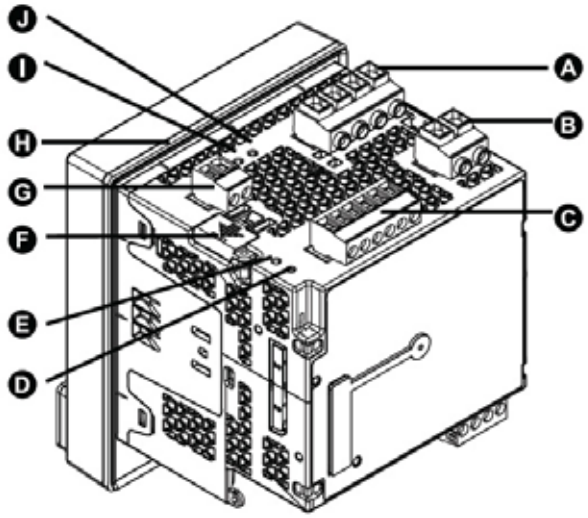
| Features guide | | ION7400 |
|---|---|---|
| **General** | | |
| Use on LV and MV systems | | ■ |
| Current accuracy (5 A Nominal) | | 0.1 % reading |
| Voltage accuracy (90-690 V AC L-L, 50, 60, 400 Hz) | | 0.1 % reading |
| Active energy accuracy | | 0.2 % |
| Number of samples/cycle or sample frequency | | 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 A - 10 A |
| **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 | 31 |
| | Via StruxureWare software | 63 |
| Waveform capture | | ■ |
| Detection of voltage swells and sags | | ■ |
| Flicker | | ■ |
| 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 (10 MB for Frameworks) |
| **Display and I/O** | | |
| Front panel display 89 mm TFT | | ■ |
| Wiring self-test | | ■ |
| Pulse output | | 1 |
| Digital<br>Analogue | | 6 In / 2 Out<br>4 In / 2 Out |
| Digital or analogue outputs (max, including pulse output) | | 1 digital<br>8 relay<br>8 analogue |
| **Communication** | | |
| RS-485 port | | 1 |
| 10/100BASE-TX | | 2 |
| Serial port (Modbus, ION, DNP3) | | ■ |
| Ethernet port (Modbus/TCP, ION TCP, DNP3 TCP, IEC 61850) | | ■ |
| USB port (mini type B) | | ■ |
| ANSI C12.19 Optical port | | ■ |

*All the communications ports may be used simultaneously*

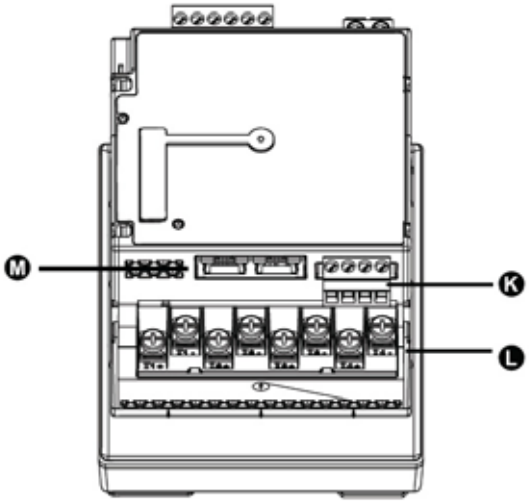
# ION7400 Utility Feeder Meter
## Functions and characteristics (cont.)

### ION7400 meter parts descriptions

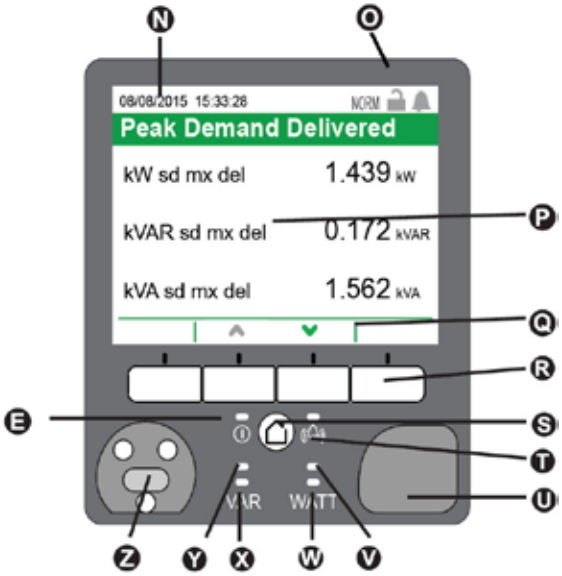
PB115154




PB115155




PB115156




**A** Voltage inputs

**B** Control power

**C** Digital inputs

**D** Revenue lock LED

**E** Status LED (2)

**F** Revenue lock switch

**G** Digital output

**H** Sealing gasket

**I** Infrared energy pulsing LED

**J** Energy pulsing LED

**K** RS-485

**L** Current inputs

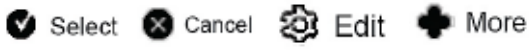
**M** Ethernet (2)

**N** Date/time

**O** Indicator icons


**P** Display

**Q** Navigation icons




**R** Navigation buttons

**S** Home button

**T** Alarm LED

**U** USB ports cover

**V** Watt energy pulsing LED

**W** Watt infrared energy pulsing LED

**X** VAR infrared energy pulsing LED

**Y** VAR energy pulsing LED

**Z** Optical port

# ION7400 Utility Feeder Meter
## Functions and characteristics (cont.)

| Electrical characteristics | | ION7400 |
|---|---|---|
| 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)<br>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 V L-N/100 V L-L to 400 V L-N/690 V L-L |
| | Impedance | 5 MΩ per phase |
| | Specified accuracy frequency<br>- Frequency | 42 to 69 Hz<br>(50/60 Hz nominal) |
| | Limit range of operation<br>- frequency | 20 Hz to 450 Hz |
| Input-current characteristics | Rated nominal current | 1 A (0.5S), 5 A (0.2S) , 10 A (0.2 ANSI) |
| | Specified accuracy current range | Starting Current: 5 mA<br>Accurate Range: 50 mA - 10 A |
| | Permissible overload | 200 A rms for 0.5s, non-recurring |
| | Impedance | 0.0003 Ω per phase |
| | Burden | 0.024 VA at 10 A |
| Power supply | AC | 90-415 V AC ±10% (50/60 Hz ± 10%) |
| | DC | 120-300 V DC ±10% |
| | Ride-through time | 100 ms (6 cycles at 60 Hz) min., any condition<br>200 ms (12 cycles at 60 Hz) typ., 120 V AC<br>500 ms (30 cycles at 60 Hz) typ., 415 V AC |
| | Burden | Meter Only: 18 VA max at 415 V AC, 6W at 300 V DC<br>Fully optioned meter: 36 VA max at 415 V AC, 17 W at 300 V DC. |
| Input/outputs | Meter Base Only | 3 form A digital inputs (30 V AC/60 V DC)<br>1 form A (KY) solid state digital output (30 V AC/60 V DC, 75 mA). |
| | Optional | Digital - 6 form A digital inputs (30 V AC / 60 V DC) wetted + 2 form C relay outputs (250 V AC / 30 V DC, 8 A at 250 V AC or 5 A at 24 V DC) |
| | | Analogue - 4 analogue inputs (4-20mA, 0-30 V DC) + 2 analogue outputs (4-20 mA, 0-10 V DC). |
| **Mechanical characteristics** | | |
| Weight | | Integrated Display Model 0.706 kg<br>DIN rail mounted Model 0.528 kg<br>IO modules 0.140 kg<br>Remote display 0.300 kg |
| IP degree of protection | | IP 54, UL type 12: Panel mount and Remote display, front.<br>IP 30: Panel mount rear, DIN rail mount, I/O modules. |
| Dimensions | Panel mount model | 98 x 112 x 78.5 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 | | -25 ºC to 70 ºC |
| Remote Display Unit | | -25 ºC to 60 ºC |
| Storage temperature | | -40 ºC to 85 ºC |
| Humidity rating | | 5 % to 95 % non-condensing |
| Installation category | | III |
| Operating altitude (maximum) | | 3000 m above sea level |

# ION7400 Utility Feeder Meter
## Functions and characteristics (cont.)

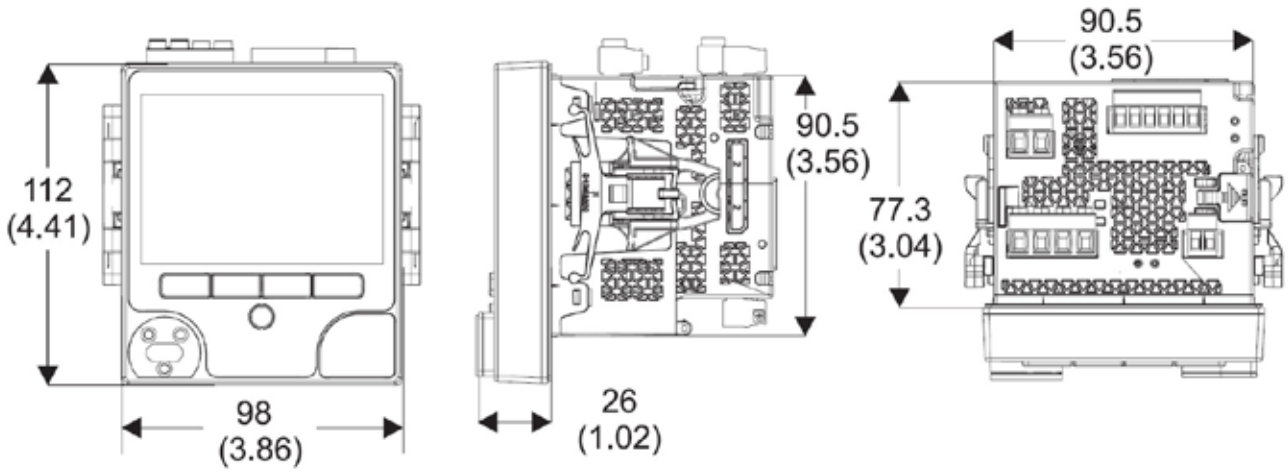
| Electromagnetic compatibility | |
|---|---|
| Product standards | IEC 62052-11 and IEC 61326-1 |
| Immunity to electrostatic discharge | IEC 61000-4-2 |
| Immunity to radiated fields | IEC 61000-4-3 |
| Immunity to fast transients | IEC 61000-4-4 |
| Immunity to surges | IEC 61000-4-5 |
| Immunity 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 V L-N / 690 V L-L<br>UL 61010-1 ed.3 and CSA-C22.2 No. 61010-1 ed.3, CAT III, 347 V L-N / 600 V L-L<br>IEC/EN 62052-11, protective class II |
| **Communication** | |
| 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) | 2 x 10/100BASE-TX, RJ45 connector (UTP). |
| USB port | Virtual serial port supports USB 3.0, 2.0, 1.1 using ION protocol. |
| 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:<br>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, 10 MB 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). |

*All the communication ports may be used simultaneously.*

# ION7400 Utility Feeder Meter
## Dimensions and connection

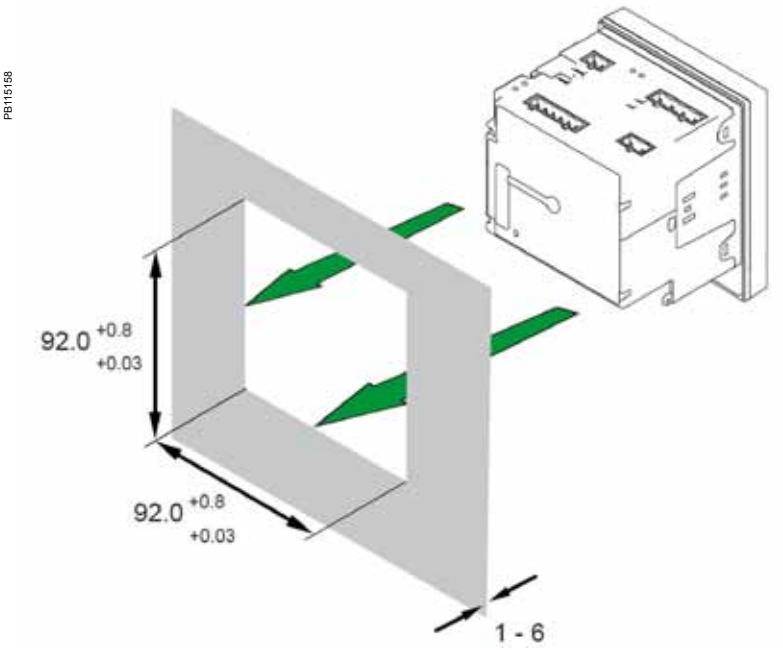
### ION7400 meter dimensions

PB115157




### ION7400 panel cutout dimensions

PB115158




*For further details please see appropriate Schneider Electric Install Guide for this product.*

# ION8650
## Functions and characteristics

PB107500

*PowerLogic ION8650 socket meter*

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 Enterprise™) 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 0.2 S 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.

### Commercial reference numbers

| ION8650 meters | Commercial ref. no. |
|---|---|
| ION8650A | **M8650A** |
| ION8650B | **M8650B** |
| ION8650C | **M8650C** |

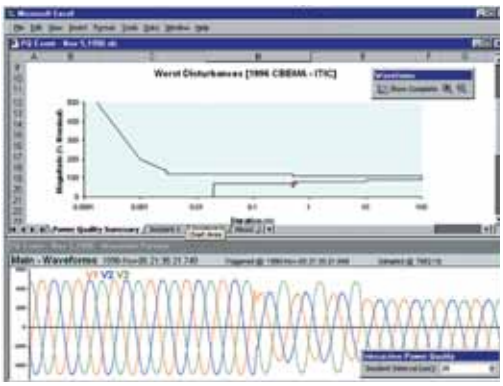
# ION8650
## Functions and characteristics (cont.)

PE86302-95


*PowerLogic ION8650 switchboard 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*

PE86002



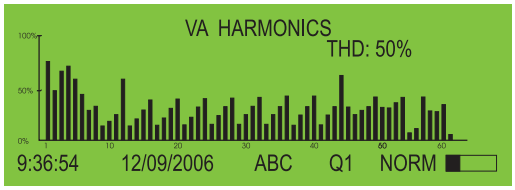
*Disturbance waveform capture and power quality report*

| 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 A- 20 A | 0 A- 20 A | 0 A- 20 A |
| **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) | | ■ | ■ | - |
| EN 50160 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* (max) | | 11 | 11 | 11 |
| Digital or analogue outputs* (max, including pulse output) | | 16 | 16 | 16 |
| **Communication** | | | | |
| Infrared port | | 1 | 1 | 1 |
| RS-485 / RS-232 port | | 1 | 1 | 1*** |
| RS-485 port | | 1 | 1 | 1*** |
| Ethernet port (Modbus/TCP/IP protocol) with gateway | | 1 | 1 | 1*** |
| Internal modem with gateway (ModemGate) | | 1 | 1 | 1*** |
| 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 | | ■ | ■ | ■ |

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

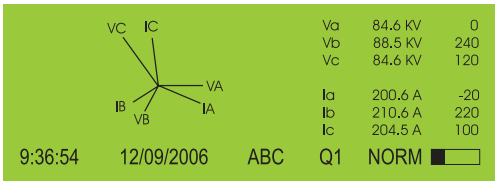
# ION8650
## Functions and characteristics (cont.)

PE86041




*PowerLogic ION8650 front panel harmonic display.*

PE86042




*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* | Nominal voltage | 57 V to 277 V L-N rms<br>100 V to 480 V L-L rms (35S) |
| | Maximum voltage | 347 V L-N rms, 600 V L-L 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 | 500 A 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<br>Switchboard: 0.05 V A at 1 A (0.05 Ω max) |
| Power supply | Standard power supply, blade powered | 120-277 V L-N RMS (-15 %/+20 %) 47-63 Hz or 120-480 V L-L RMS (-15 %/+20 %) 47-63 Hz (35S) |
| | Auxiliary powered low voltage | AC: 65-120 (+/- 15 %) VLN RMS, 47-63 Hz<br>DC: 80-160 (+/- 20 %) VDC |
| | Auxiliary powered high voltage | AC: 160-277 (+/- 20 %) V L-N RMS, 47-63 Hz<br>DC: 200-300 (+/- 20 %) V DC |
| | 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<br>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** | 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 | | 2.5 kV |
| **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 | | 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 |
| North America | | As per ANSI C12.1 |

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

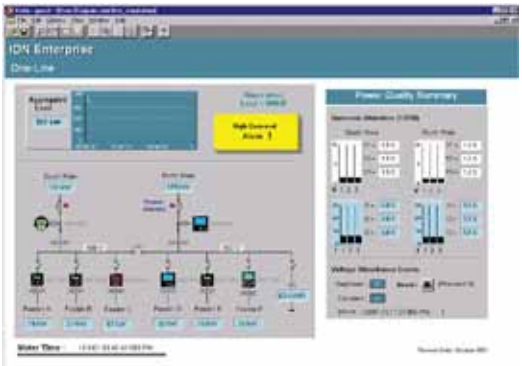
** *More input and output selections available via optional I/O expander.*

# ION8650
## Functions and characteristics (cont.)

Webserver


*Example embedded webserver page (WebMeter) showing realtime values.*

PE86005-C




| | |
|---|---|
| **Communication** | |
| RS-232 / RS-485 port (COM1) | User-selectable RS-232 or RS-485.<br>300 - 115,200 bauds (RS-485 limited to 57,600 bps);<br>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 | 10/100BASE-T, RJ45 connector, protocols:<br>DNP, ION, Modbus/TCP/Mastering, IEC 61850 Ed. 2<br>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:<br>- magnitude and duration data suitable for plotting on voltage tolerance curves<br>- per phase triggers for waveform recording or control operations |
| Instantaneous | High accuracy measurements with 1s or 1/2 cycle update rate for:<br>- voltage and current<br>- active power (kW) and reactive power (kVAR)<br>- apparent power (kVA)<br>- power factor and frequency<br>- voltage and current unbalance<br>- phase reversal |
| Load profiling | Channel assignments are user configurable:<br>- 800 channels via 50 data recorders (feature set A),<br>- 720 channels via 45 data recorders (feature set B),<br>- 80 channels via 5 data recorders (feature set C).<br>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<br>- sub-cycle disturbance capture (16 to 1024 samples/cycle) |
| Alarms | Threshold alarms:<br>- adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm<br>- user-defined priority levels<br>- 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 MB (A), 64 MB (B), 32 MB (C) |
| Firmware update | Update via the communication ports |
| **Display characteristics** | |
| Type | FSTN transreflective LCD |
| Backlight | LED |
| Languages | English |

# ION8650
## Functions and characteristics (cont.)

PE86043-C

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| M8650 | A | 1 | C | 0 | E | 5 | C1 | A | 0 | A |

*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.*

PB107507

*PowerLogic ION8650 meter with switchboard case*

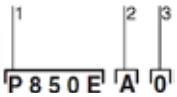
### Commercial reference numbers

| Item | | Code | Description |
|---|---|---|---|
| 1 | Model | M8650 | Schneider Electric energy and power quality meter. |
| 2 | Feature Set | A | 128 MB Memory Class A power quality analysis, waveforms and transient capture with 1024 samples/cycle. |
| | | B | 64 MB memory, energy meter Class S EN 50160 Ed. 4 power quality monitoring. |
| | | C | 32 MB memory, basic tariff/energy metering (5 data recorders, 80 channels). |
| 3 | Form Factor (1) | 0 | Form 9S/29S/36S Base, 57-277 V L-N (autoranging) 3-Element, 4-Wire / 2 1/2-Element, 4-Wire |
| | | 1 | Form 35S Base - 120-480 V L-L (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 A nominal, 20 A full scale (24 A 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 V AC. Form 35S (socket) and Form 35 (FT21 switchboard): 120-480 V AC. Powered from the meter's voltage connections. |
| | | H | Auxiliary Power Pigtail: 65-120 V AC or 80-160 V DC (power from external source) |
| | | J | Auxiliary Power Pigtail: 160-277 V AC or 200-300 V DC (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)), 56 k 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)), 56 k universal internal modem (RJ11). |
| | | S 0 | Infrared optical port, Ethernet (10 BASE-T), 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 | 1 | Password protected no security lock. |
| | | 2 | Password protected with security lock enabled |
| | | 3 | RMICAN (Measurement Canada approved) |
| | | 4 | RMICAN-SEAL (Measurement Canada approved, and factory sealed) |
| | | 7 | Password protected, no security lock(US only) |
| | | 8 | Password protected with security lock enabled (US only) |
| 11 | Special Order | A | None |

**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




*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

## Commercial reference numbers (cont.)

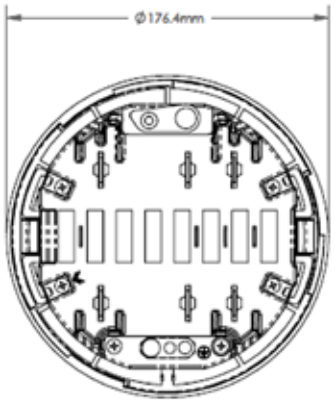
| I/O Expander | | |
|---|---|---|
| Digital/Analogue I/O | **P850E** | Schneider Electric I/O Expander for ION8600 meters: Inputs and Outputs for energy pulsing, control, energy counting, status monitoring, and analogue interface to SCADA. |
| I/O option | **A** | External I/O box with 8 digital inputs 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 commercial reference numbers: **CBL-8X00IOE5FT, CBL-8X00IOE15FT and CBL-8XX0-BOP-IOBOX** under Connector cables, below. |

| A-base adapters | Comm. ref. no. |
|---|---|
| Form 9S to Form 9A adapter | **A-BASE-ADAPTER-9** |
| Form 35S to Form 35A adapter | **A-BASE-ADAPTER-35** |
| **Optical communication interface** | |
| Optical communication interface | **OPTICAL-PROBE** |
| **Connector cables** | |
| 1.5 m 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-8X00BRKOUT** |
| 44.57 m 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** |
| 44.57 m 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-8X00IOE15FT** |
| 1.8 m connector cable, 24-pin male to 14-pin male Molex connector for connecting an ION8000 Series meter with breakout panel to an I/O Expander Box | **CBL-8XX0-BOP-IOBOX** |

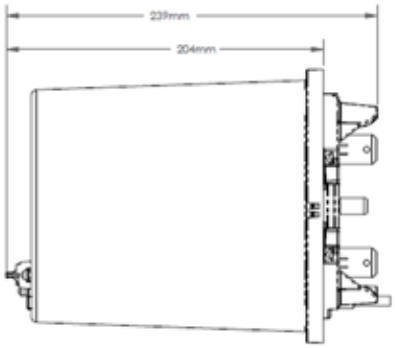
# ION8650
## Dimensions and connections

### ION8650 socket dimensions

PE86303_m

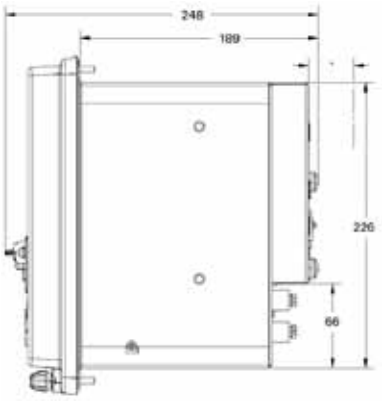



PE86304_m

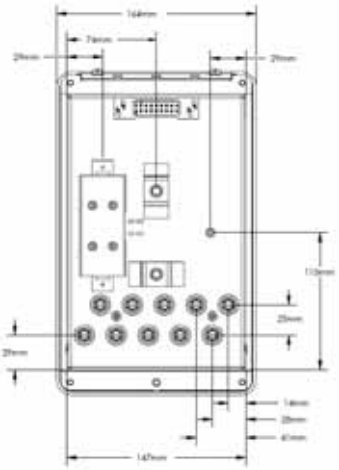



### ION8650 switchboard dimensions

PE86305

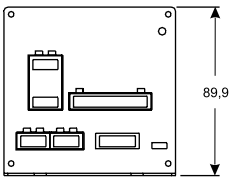



PE86306_m

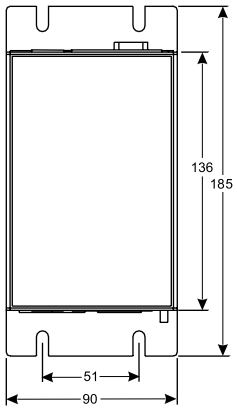


### I/O Expander dimensions

PE86307

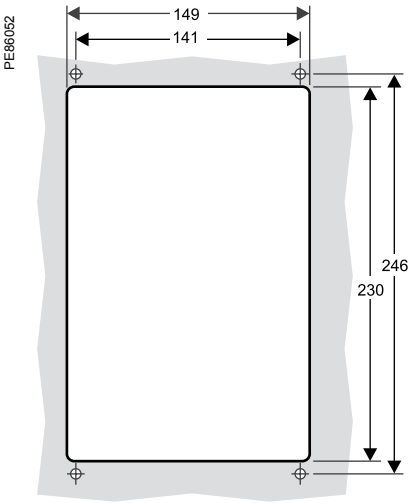



PE86308

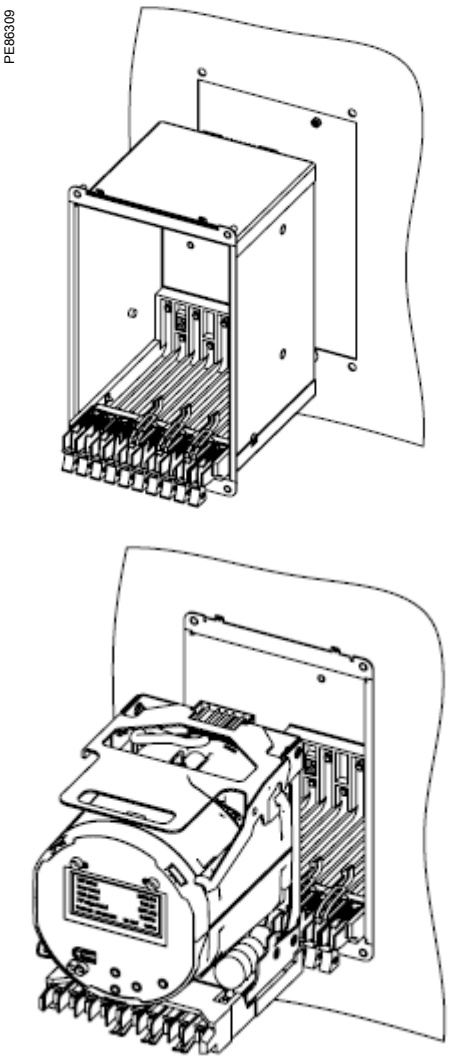


# ION8650
## Dimensions and connections (cont.)

### ION8650 suggested switchboard mounting dimensions




### ION8650 switchboard mounting




*Please see appropriate Schneider Electric Install Guide for these products for further details.*

# 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 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 0.2 S.

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

**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 IEC 1107 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 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.

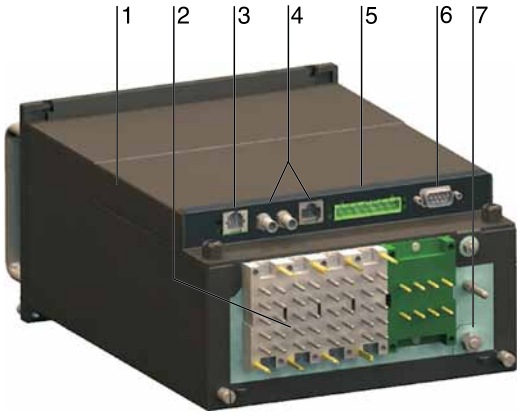
### Commercial reference numbers *

| PowerLogic ION8800 meters | Commercial ref. no. |
|---|---|
| PowerLogic ION8800A | **M8800A** |
| PowerLogic ION8800B | **M8800B** |
| PowerLogic ION8800C | **M8800C** |

* *Representative part numbers only.*

# ION8800
## Functions and characteristics (cont.)

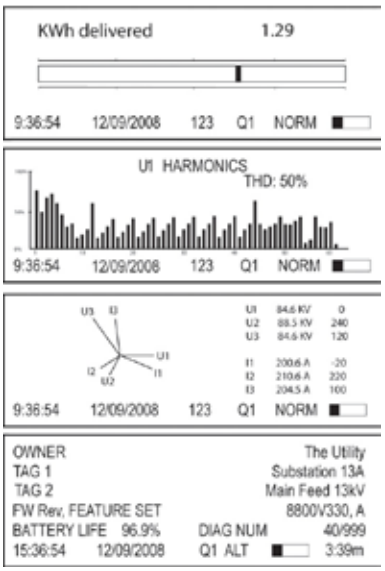
PE86001




*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.*

PE86235




*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 A - 10 A | 0.001 A - 10 A |
| Current measurement range | | 0.001 A - 10 A | 0.001 A - 10 A |
| **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 * | 20 * |
| 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 | | ■ ** | |
| IEC 61000-4-15 (Flicker) | | ■ | - |
| Configurable for IEEE 519 - 1992, IEEE 1159-1995 | | ■* | - |
| Programmable (logic and math functions) | | ■ | ■ |
| **Data recording** | | | |
| Min/max logging for any parameter | | ■ | ■ |
| Historical logs | Maximum # of records | 800* 640** | 32 |
| Waveform logs | Maximum # of records | 96 * | - |
| 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 MB | 10 MB |
| **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) | | ■ | ■ |

* *ION8800A only.*
** *ION8800B only.*

# ION8800
## Functions and characteristics (cont.)

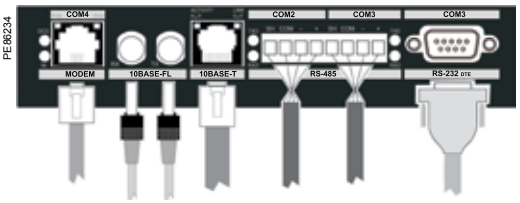
PE86003

*PowerLogic ION8800 with optional communications module.*

| | | |
|---|---|---|
| **Electrical characteristics** | | |
| Type of measurement | | True rms<br>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 0.2S |
| Data update rate | | ½ cycle or 1 second |
| Input-voltage characteristics | Inputs | U1, U2, U3, Uref |
| | Measurement range | 57-288 L-N V AC rms (99-500 L-L V AC rms) |
| | Dielectic withstand | 3320 V AC rms |
| | Impedance | 5 MΩ /phase (phase-Uref/Ground) |
| Input-current characteristics | Rated nominals | 5 A, 1 A, 2 A |
| | Permissible overload | 200 A rms for 0.5S, non-recurring (IEC 62053-22) |
| | Impedance | 10 mΩ /phase |
| | Burden | 0.01 VA per phase (1 A), 0.25 VA per phase (5 A) |
| Power supply | AC | 85 - 240 V AC (+/- 10 %), 47-63 Hz |
| | DC | 110 - 270 V DC (+/- 10 %) |
| | Burden | Typical (without comm module): 13 VA, 8 W<br>Typical (with comm module): 19 VA, 12 W<br>Max (without comm module): 24 VA, 10 W<br>Max (with comm module): 32 VA, 14 W |
| | Ride-through time | Typical: 0.5 s to 5 s depending on configuration<br>Min: 120 ms (6 cycles @ 50 Hz) |
| | Dielectric withstand | 2000 V AC |
| 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<br>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 IEC 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 | | |

# ION8800
## Functions and characteristics (cont.)

PE86234

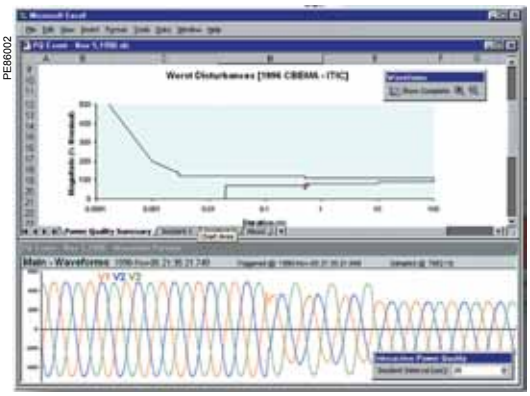



*Ports on the optional communications module.*

PE86233


*Example embedded webserver page (WebMeter) showing realtime values.*

PE86002

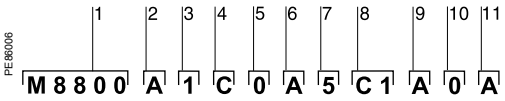


*Sample power quality report.*

| | |
|---|---|
| **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 | 10 BASE-T, RJ45 connector, 100 m link; protocols: DNP TCP, ION, Modbus TCP, Modbus Master, IEC 61850 |
| 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.<br>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:<br>- magnitude and duration data suitable for plotting on voltage tolerance curves<br>- per phase triggers for waveform recording or control operations |
| Instantaneous | High accuracy measurements with 1s or 1/2 cycle update rate for:<br>- voltage and current<br>- active power (kW) and reactive power (kvar)<br>- apparent power (kVA)<br>- power factor and frequency<br>- voltage and current unbalance<br>- 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<br>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<br>- sub-cycle disturbance capture<br>- maximum cycles is 214,000<br>(16 samples/cycle x 96 cycles, 10 MB memory)<br>- 1024 samples/cycle |
| Alarms | Threshold alarms:<br>- adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm<br>- user-defined priority levels<br>- 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. |
| Transformer correction | Correct for phase / magnitude inaccuracies in current transformers (CTs), potential transformers (PTs) |
| Memory | 5 -10 MB (specified at time of order) |
| Firmware update | Update via the communication ports |
| **Display characteristics** | |
| Type | FSTN transreflective LCD |
| Backlight | LED |
| Languages | English |

# ION8800

## Functions and characteristics (cont.)




*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.*

## Commercial reference 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 EN 50160 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 IEC 61850 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 V AC L-N or 99-500 V AC L-L) |
| 6 Power Supply | B | Single phase power supply: 85-240 V AC ±10 % (47-63 Hz) or 110-270 V DC. |
| 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) * |
| | 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 **, 1 RS-485 (COM2) port (1). |
| | B | Base Option AND 8 Form A digital outputs **, 3 digital inputs (20-56 V DC/AC). |
| | C | Base Option AND 8 Form A digital outputs **, 3 digital inputs (80-280 V DC/AC). |
| | D | Base Option AND 1 IRIG-B time sync port **, 1 RS-485 port (COM2), 3 digital inputs (20-56 V DC/AC) * |
| | E | Base Option AND 1 IRIG-B time sync port **, 1 RS-485 port (COM2), 3 digital inputs (80-280 V DC/AC) *. |
| 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

| | |
|---|---|
| IEC/DIN 34862 482.6 mm (19") Rack with female mating voltage/ current and I/O blocks unassembled. | **RACK-8800-RAW** |
| Optional IEC 1107 compliant Optical Probe for use with ION8800 meters. | **IEC-OPTICAL-PROBE** |
| Replacement batteries for the ION8600 or ION8800, quantity 10. | **BATT-REPLACE-8XXX** |
| Free configuration software for the ION8800. Ships on a CD. | **ION-SETUP** |

**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.*

*** 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.*

# ION8800
## Functions and characteristics (cont.)

PE86007

*Optional ION8800 communications module.*

### Commercial reference numbers (cont.)

**ION8800 communications module for field retrofit installations**

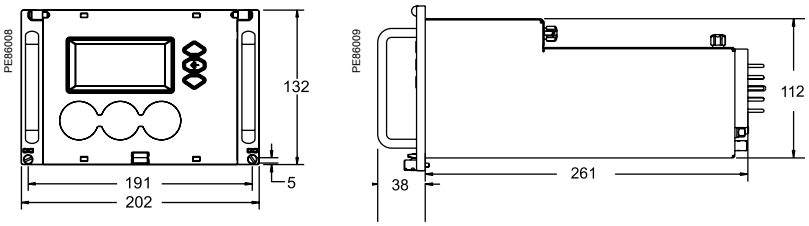
| Item | Code | Description |
|---|---|---|
| P880C | A0 | Standard communications: 1 RS-232/RS-485 port, 1 RS-485 port (COM2) *. |
| | C1 | Standard communications plus 10BASE-T Ethernet (RJ45), 56 k universal internal modem (RJ11). |
| | D1 | Standard communications plus 10BASE-T Ethernet (RJ45) /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

**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.*

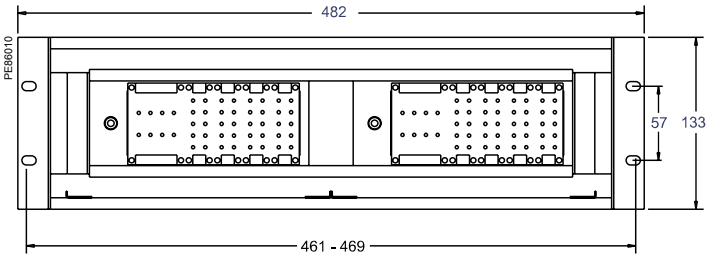
***Note:** The part number above should follow this format:* **P880C A0 A**.

# ION8800
## Dimensions and connections

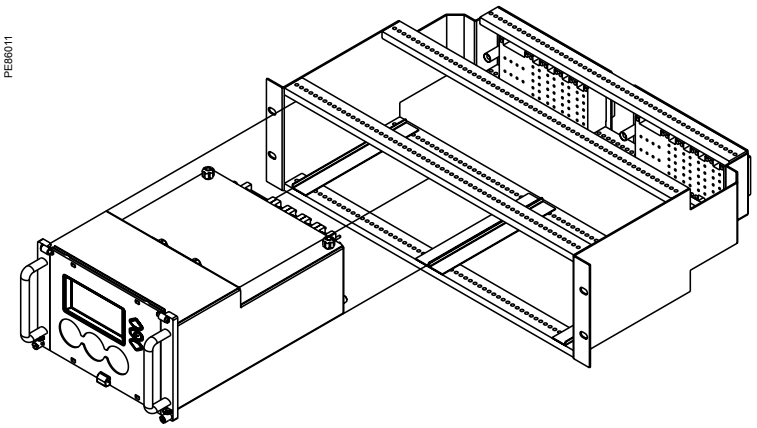
### ION8800 dimensions



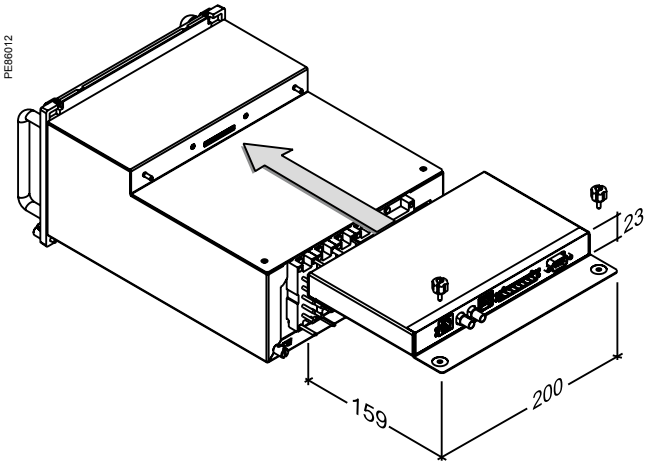

### ION8800 Essailec rack dimensions




### Rack mounting the ION8800




### ION8800 communication module dimensions




*See the appropriate Install Guide for this product.*

# PowerLogic BCPM
## Functions and characteristics

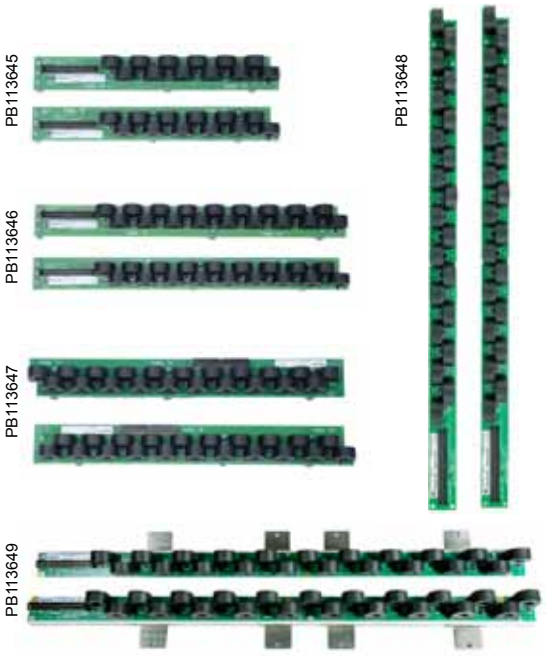
PE86281

*PowerLogic™ BCPM A/B/C main board*

PB113644

*PowerLogic™ BCPME Measurement Unit"*

PB113645
PB113646
PB113647
PB113649
PB113648



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

The ideal solution for datacentre 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 50 A or 100 A 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 19 mm or 25 mm 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 A or 100 A 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 50 mA. 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.

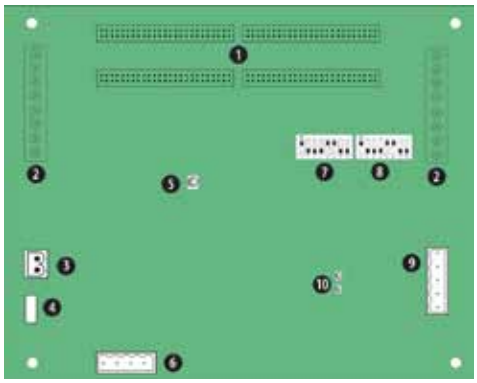
**New models with integrated Ethernet offer broad protocol support**
All models integrate easily into existing networks using Modbus RTU communications over an RS-485 serial link. BCPME and BCPMSCE models offer integrated Ethernet and add support for Modbus TCP, BACnet IP, BACnet MS/TP and SNMP. An optional 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.

# PowerLogic BCPM
## Functions and characteristics (cont.)

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 | 50 mA |
| 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 ★★<br>90 – 277 V AC L-N ★★ |
| | Measurement range | 150 – 480 V AC L-L ★★<br>90 – 277 V AC L-N ★★ |
| 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
★★ Feature sets A, B and E only.

# PowerLogic BCPM
## Functions and characteristics (cont.)

| PowerLogic BCPM specifications (cont'd) | |
|---|---|
| **Environmental conditions** | |
| Operating temperature | 0 to 60 °C |
| Storage temperature | -40 °C to 70 °C |
| 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 |

| 1/3 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])<br>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, 1.8 m standard length |
| Max. voltage L-N sensed conductor | 300 V AC (LVCT0xxxx0S)<br>600 V AC (LVCT0xxxx1S/2S/3S/4S, LVCT2xxxxxS) |
| **Environmental conditions** | |
| Operating temperature | 0 °C to 70 °C (LVCT0xxxx0S/1S)<br>-15 °C to 60 °C (LVCT0xxxx2S/3S/4S less than 2400A)<br>-15 °C to 60 °C (LVCT02404S [2400A])<br>-40 °C to 85 °C (LVCT2xxxx0S/2S/3S [solid-core]) |
| Storage temperature | -40 °C to 105 °C (LVCT0xxxx0S/1S)<br>-40 °C to 70 °C (LVCT0xxxx2S/3S/4S)<br>-50 °C to 105 °C (LVCT2xxxx0S/2S/3S [solid-core]) |
| Humidity range | 0 % to 95 % non-condensing |

# PowerLogic BCPM
## Functions and characteristics (cont.)

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 V AC 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 | 19 mm CT spacing |
| | | 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 50 A branch CTs with 2 meter leads and 1.8 M round ribbon cables.

The PowerLogic BCPMSC uses .333 V AC 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 |

# PowerLogic BCPM
## Functions and characteristics (cont.)

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 Commercial reference numbers for solid and split-core CTs (contd.)**

**BCPM with split-core CTs**

| Description | Commercial ref. no. |
|---|---|
| 42-circuit solid-core power & energy meter, 100 A CTs (2 strips), 19 mm spacing | **BCPMA042S** |
| 84-circuit solid-core power & energy meter, 100 A CTs (4 strips), 19 mm spacing | **BCPMA084S** |
| 42-circuit solid-core power & energy meter, 100 A CTs (2 strips), 25 mm spacing | **BCPMA142S** |
| 84-circuit solid-core power & energy meter, 100 A CTs (4 strips), 25 mm spacing | **BCPMA184S** |
| 24-circuit solid-core power & energy meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMA224S** |
| 36-circuit solid-core power & energy meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMA236S** |
| 42-circuit solid-core power & energy meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMA242S** |
| 48-circuit solid-core power & energy meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMA248S** |
| 72-circuit solid-core power & energy meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMA272S** |
| 84-circuit solid-core power & energy meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMA284S** |
| 42-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 19 mm spacing | **BCPMB042S** |
| 84-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 19 mm spacing | **BCPMB084S** |
| 42-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 25 mm spacing | **BCPMB142S** |
| 84-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 25 mm spacing | **BCPMB184S** |
| 24-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMB224S** |
| 36-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMB236S** |
| 42-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMB242S** |
| 48-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMB248S** |
| 72-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMB272S** |
| 84-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMB284S** |
| 42-circuit solid-core branch current meter, 100 A CTs (2 strips), 19 mm spacing | **BCPMC042S** |
| 84-circuit solid-core branch current meter, 100 A CTs (4 strips), 19 mm spacing | **BCPMC084S** |
| 42-circuit solid-core branch current meter, 100 A CTs (2 strips), 25 mm spacing | **BCPMC142S** |
| 84-circuit solid-core branch current meter, 100 A CTs (4 strips), 25 mm spacing | **BCPMC184S** |
| 24-circuit solid-core branch current meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMC224S** |
| 36-circuit solid-core branch current meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMC236S** |
| 42-circuit solid-core branch current meter, 100 A CTs (2 strips), 18 mm spacing | **BCPMC242S** |
| 48-circuit solid-core branch current meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMC248S** |
| 72-circuit solid-core branch current meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMC272S** |
| 84-circuit solid-core branch current meter, 100 A CTs (4 strips), 18 mm spacing | **BCPMC284S** |
| 42-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (2 strips), 19 mm spacing | **BCPME042S** |
| 84-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (4 strips), 19 mm spacing | **BCPME084S** |
| 42-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (2 strips), 25 mm spacing | **BCPME142S** |
| 84-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (4 strips), 25 mm spacing | **BCPME184S** |
| 24-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (2 strips), 18 mm spacing | **BCPME224S** |
| 36-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (2 strips), 18 mm spacing | **BCPME236S** |
| 42-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (2 strips), 18 mm spacing | **BCPME242S** |
| 48-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (4 strips), 18 mm spacing | **BCPME248S** |
| 72-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (4 strips), 18 mm spacing | **BCPME272S** |
| 84-circuit solid-core power & energy meter w/Ethernet, 100 A CTs (4 strips), 18 mm spacing | **BCPME284S** |

# PowerLogic BCPM
## Functions and characteristics (cont.)

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)*

The PowerLogic™ BCPM uses 0.333 V AC output split-core CTs for the auxiliary inputs. These CTs are ordered separately from the BCPM.

| BCPM with split-core CTs (cont'd) | Commercial ref. no. |
|---|---|
| 42-circuit split-core power and energy meter, CTs and cables sold separately | **BCPMSCA1S** |
| 84-circuit split-core power and energy meter, CTs and cables sold separately | **BCPMSCA2S** |
| 30-circuit split-core power and energy meter, (30) 50 A CTs & (2) 4' cables | **BCPMSCA30S** |
| 42-circuit split-core power and energy meter, (42) 50 A CTs & (2) 4' cables | **BCPMSCA42S** |
| 60-circuit split-core power and energy meter, (60) 50 A CTs & (4) 4' cables | **BCPMSCA60S** |
| 42-circuit split-core power and energy meter, all boards on backplate, CTs and cables sold separately | **BCPMSCAY63S** |
| 84-circuit split-core power and energy meter, with (84) 50 A CTs & (4) 4' cables | **BCPMSCA84S** |
| 42-circuit split-core branch current, mains power meter, CTs and cables sold separately | **BCPMSCB1S** |
| 84-circuit split-core branch current, mains power meter, CTs and cables sold separately | **BCPMSCB2S** |
| 30-circuit split-core branch current, mains power meter, (30) 50 A CTs & (2) 4' cables | **BCPMSCB30S** |
| 42-circuit split-core branch current, mains power meter, (42) 50 A CTs & (2) 4' cables | **BCPMSCB42S** |
| 60-circuit split-core branch current, mains power meter, (60) 50 A CTs & (4) 4' cables | **BCPMSCB60S** |
| 42-circuit split-core branch current, mains, all boards on backplate, CTs and cables sold separately | **BCPMSCBY63S** |
| 84-circuit split-core branch current, mains power meter, (84) 50 A CTs & (4) 4' cables | **BCPMSCB84S** |
| 42-circuit split-core current meter, CTs and cables sold separately | **BCPMSCC1S** |
| 84-circuit split-core current meter, CTs and cables sold separately | **BCPMSCC2S** |
| 30-circuit split-core current meter, (30) 50 A CTs & (2) 4' cables | **BCPMSCC30S** |
| 42 circuit split-core current meter, (42) 50 A CTs & (2) 4' cables | **BCPMSCC42S** |
| 60-circuit split-core current meter, (60) 50 A CTs & (4) 4' cables | **BCPMSCC60S** |
| 42-circuit split-core current meter, all boards on backplate, CTs and cables sold separately | **BCPMSCCY63S** |
| 84-circuit split-core current meter, (84) 50A CTs & (4) 4' cables | **BCPMSCC84S** |
| 42-circuit split-core power and energy meter w/Ethernet, CTs and cables sold separately | **BCPMSCE1S** |
| 84-circuit split-core power and energy meter w/Ethernet, CTs and cables sold separately | **BCPMSCE2S** |
| 30-circuit split-core power and energy meter w/Ethernet, (30) 50A CTs & (2) 1.21 m cables | **BCPMSCE30S** |
| 42-circuit split-core power and energy meter w/Ethernet, (42) 50A CTs & (2) 1.21 m cables | **BCPMSCE42S** |
| 60-circuit split-core power and energy meter w/Ethernet, (60) 50A CTs & (4) 1.21 m cables | **BCPMSCE60S** |
| 84-circuit split-core power and energy meter w/Ethernet, (84) 50A CTs & (4) 1.21 m cables | **BCPMSCE84S** |

# PowerLogic BCPM
## Functions and characteristics (cont.)

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

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

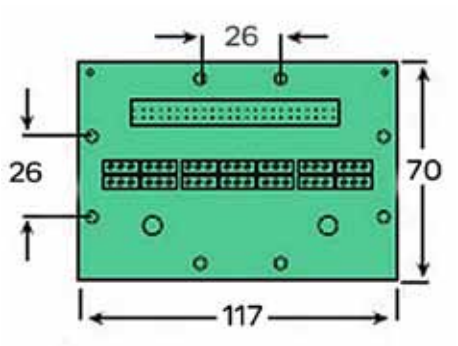
| Amperage rating | Inside dimensions | Commercial ref. no. |
|---|---|---|
| 50 A | 10 mm x 11 mm | **LVCT00050S** |
| 200 A | 16 mm x 20 mm | **LVCT00101S** |
| 200 A | 32 mm x 32 mm | **LVCT00202S** |
| 100 A | 30 mm x 31 mm | **LVCT00102S** |
| 200 A | 30 mm x 31 mm | **LVCT00202S** |
| 300 A | 30 mm x 31 mm | **LVCT00302S** |
| 400 A | 62 mm x 73 mm | **LVCT00403S** |
| 600 A | 62 mm x 73 mm | **LVCT00603S** |
| 800 A | 62 mm x 73 mm | **LVCT00803S** |
| 800 A | 62 mm x 139 mm | **LVCT00804S** |
| 1000 A | 62 mm x 139 mm | **LVCT01004S** |
| 1200 A | 62 mm x 139 mm | **LVCT01204S** |
| 1600 A | 62 mm x 139 mm | **LVCT01604S** |
| 2000 A | 62 mm x 139 mm | **LVCT02004S** |
| 2400 A | 62 mm x 139 mm | **LVCT02404S** |

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

| Amperage rating | Inside dimensions | Commercial ref. no. |
|---|---|---|
| 50 A | 10 mm | **LVCT20050S** |
| 100 A | 10 mm | **LVCT20100S** |
| 200 A | 25 mm | **LVCT20202S** |
| 400 A | 31 mm | **LVCT20403S** |

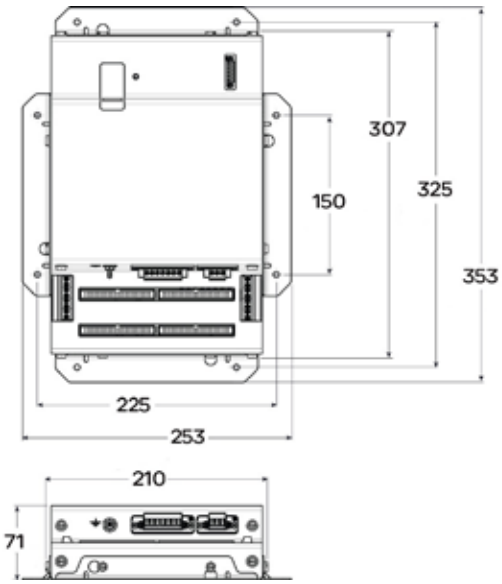
# PowerLogic BCPM
## Dimensions and connection

PE86286



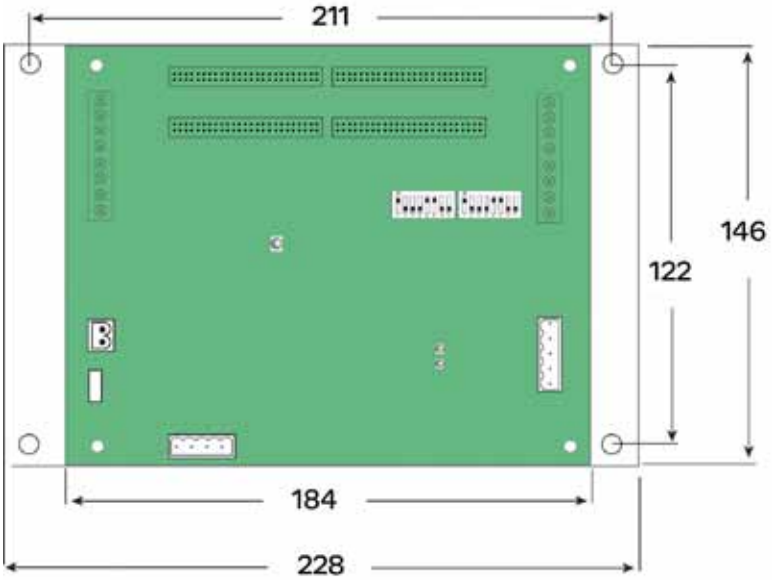

**PowerLogic BCPM adapter board (one board per 21 split-core branch CTs)**

PB113662

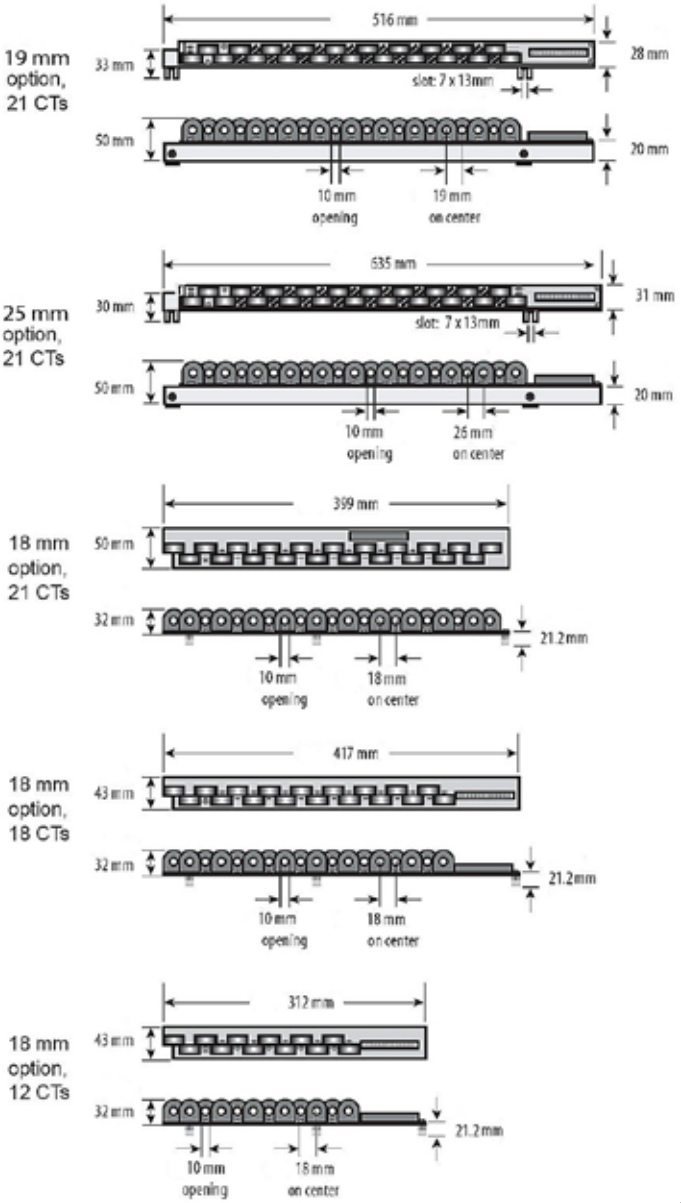



## PowerLogic BCPM dimensions

PE86169




PB113661

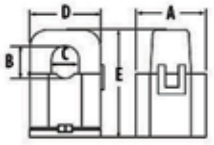


# PowerLogic BCPM
## Dimensions and connection

### 50A-200A Split-core CT dimensions

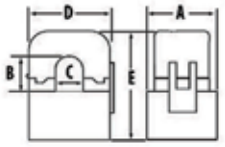
PB113659_m

These dimensions apply to both BCPMSCCTxx (branch CTs) and LVCT0xxxx0S/1S (for Mains) 50 A-200 A CT families.



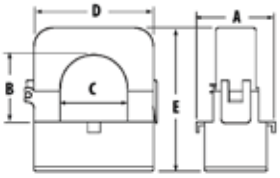

**50 Amp**

A - 26 mm
B - 11 mm
C - 10 mm
D - 23 mm
E - 40 mm




**100 Amp**

A - 29 mm
B - 20 mm
C - 16 mm
D - 40 mm
E - 53 mm

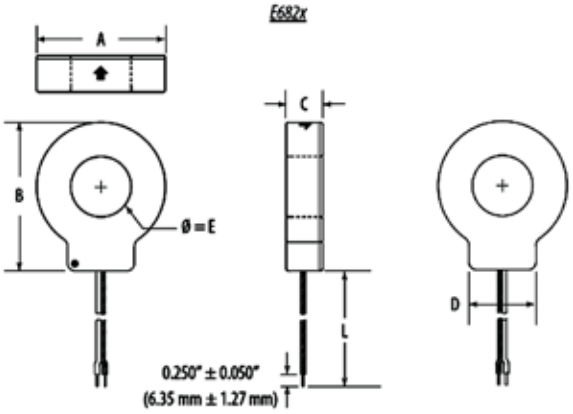



**200 Amp**

A - 39 mm
B - 32 mm
C - 32 mm
D - 64 mm
E - 71 mm

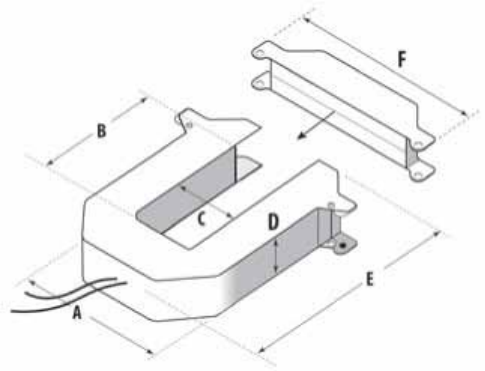
### Solid-core CT dimensions

PB113660




| Model | L | .A | B | C | D | E |
|---|---|---|---|---|---|---|
| **LVCT200505** | 1.8 m | 33 mm | 38 mm | 18 mm | 21 mm | 10 mm |
| **LVCT201005** | | | | | | |
| **LVCT202025** | 1.8 m | 59 mm | 66 mm | 18 mm | 31 mm | 25 mm |
| **LVCT204035** | 1.8 m | 70 mm | 82 mm | 25 mm | 36 mm | 31 mm |

PB113663

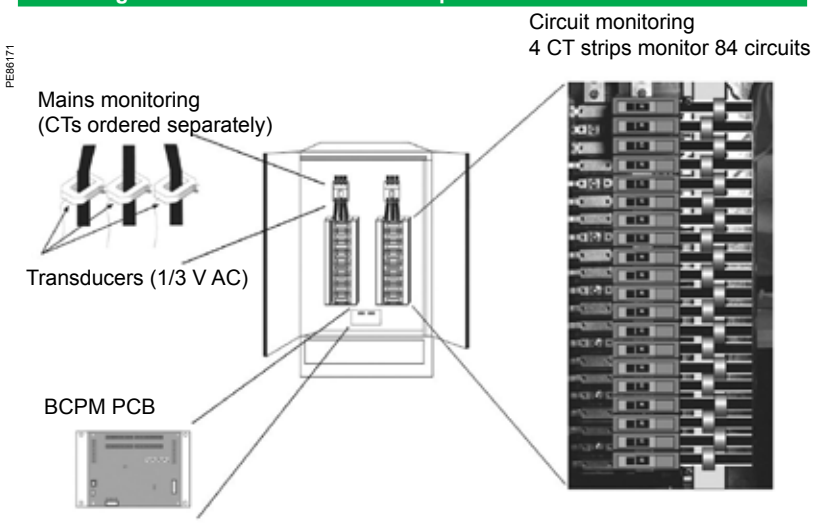



### 1/3 V low-voltage CT form factor

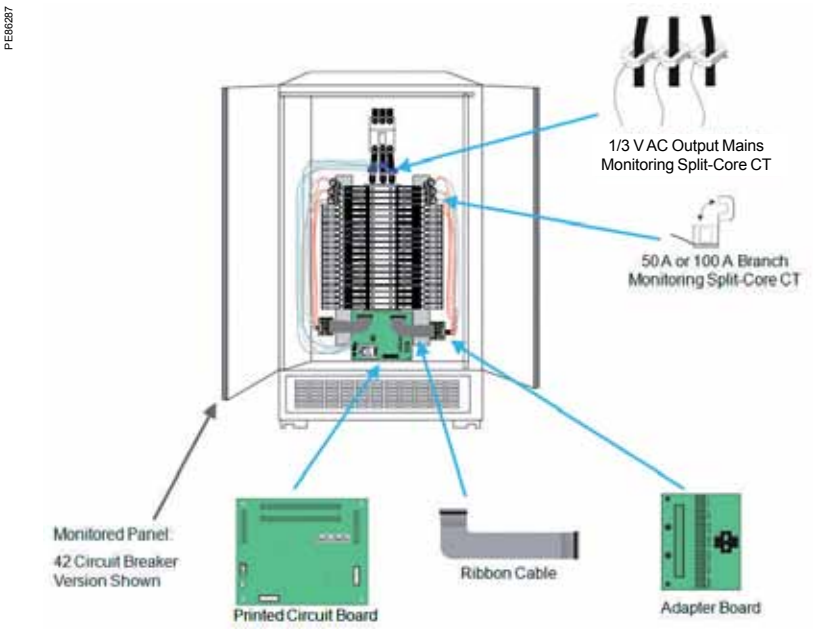
| Small form factor 100/200/300 A | Medium form factor 400/600/800 A | Large form factor 800/1000/1200/ 1600/2000/2400 A |
|---|---|---|
| A = 96 mm | A = 125 mm | A = 125 mm |
| B = 30 mm | B = 73 mm | B = 139 mm |
| C = 31 mm | C = 62 mm | C = 62 mm |
| D = 30 mm | D = 30 mm | D = 30 mm |
| E = 100 mm | E = 132 mm | E = 201 mm |
| F = 121 mm | F = 151 mm | F = 151 mm |

# PowerLogic BCPM
## Dimensions and connection

### PowerLogic BCPM with solid-core CT strips installation details




### PowerLogic BCPM with split-core CTs installation details




*See appropriate Install Guide for this product.*

# EM4200 series
## Functions and characteristics

PB115451


EM4200 Series Enercept power and energy meters provide a unique solution for measuring energy data. Designed with the user in mind, the EM4200 Series offers maximum application flexibility for retrofit applications.

The EM4200 Series is compatible with split-core, solid-core and U018 Series rope-style Rogowski current transducers (CT) from five to 5000 amperes, often allowing installers to utilize existing CTs with the meter. Adding to its versatility, the EM4200 has a wide input range of 90 to 480 V AC, alleviating the need to keep multiple models in stock.

The meter's small form factor enables installation in existing panels with limited space, and does not require external mounting or the expense of extra enclosures or conduit runs. Communicating models support auto detection of baud rate, parity, and protocol for Modbus® RTU and BACnet® MS/TP.

With 75 percent of the buildings that will be occupied in 2050 having already been built and a large number of those not meeting today's strict energy codes and standards, a metering solution that can be easily installed and integrated into existing buildings is imperative. The EM4200 Series Enercept brings industry leading flexibility to power and energy monitoring, making it the ideal meter for retrofit applications.

## Features

- High reliability with ANSI C12.20 0.2% accuracy, IEC 62053-22 Class 0.2S 1/3 Volt Current Input Mode. ANSI C12.20 0.5% accuracy, IEC 62053-22 Class 0.5S Rogowski Current Input Mode.
- Modbus and BACnet protocols along with uni-directional and bi-directional feature sets in one unit simplifies ordering and stocking options.
- Compatible with CTs from 5 to 5000 A offers a wide range of service types.
- 90 to 480 V AC application versatility with fewer models to stock.
- DIN rail or screw-mount options, including mounting bracket, for easy installation.
- Native Modbus RTU and BACnet MS/TP support (no gateway) with serial rates up to 115.2 kbaud.
- Seamless integration with StruxureWare™ Power Monitoring Expert (PME), StruxureWare Building Operation (SBO) and StruxureWare Building Expert (SBE).

## Main characteristics

**Compact, maintenance-free design**
Easy in-panel mounting

**Flexible connection**
The EM4200 is configurable with or without power.

**Easy communications connection**
Auto protocol, baud rate, and unidirectional or bi-directional detection.

**System integration**
Incorporates easily into existing systems without redesigning networks or wiring.

**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.

## Commercial reference numbers

| Model | Description | Comm. ref. no. |
|---|---|---|
| EM4235 | Enercept, Class 0.2S meter, Modbus/BACnet communication, Uni-Directional/Bi-Directional, RS-485, IEC wire code, single circuit, Modbus/BACnet | **METSEEM4235** |
| EM4236 | Enercept, Class 0.2S meter, Modbus/BACnet communication, Uni-Directional/Bi-Directional, RS-485, ANSI wire code, single circuit, Modbus/BACnet | **METSEEM4236** |

# EM4200 series
## Functions and characteristics (cont.)

| Selection guide | | EM4235 | EM4236 |
|---|---|---|---|
| **General** | | | |
| Use on LV systems | | ■ | ■ |
| Accuracy | +/- 0.2% | ■ | ■ |
| Accuracy compliance | ANSI C12.20 0.2% accuracy, IEC 62053-22 Class 0.2S 1/3 Volt Current Input Mode. ANSI C12.20 0.5% accuracy, IEC 62053-22 Class 0.5S Rogowski Current Input Mode | ■ | ■ |
| Maximum circuits: single-pole / single phase / three-phase | 1, 2, or 3ph (A-B-C-N) | ■ | ■ |
| **Instantaneous rms values** | | | |
| Energy | real, kWh received/delivered | ■ | ■ |
| | reactive, kvarh received/delivered | ■ | ■ |
| | apparent, VAh | ■ | ■ |
| Voltage L-L, L-N (3-phase Average and per Phase) | | ■ | ■ |
| Voltage and current | V rms, I rms per phase | ■ | ■ |
| Power | real, reactive, apparent | ■ | ■ |
| Power factor 3-phase Average and per Phase | | ■ | ■ |
| **Measurements available for data logging** | | | |
| Energy | real, kWh received/delivered | ■ | ■ |
| | reactive, kvarh received/delivered | ■ | ■ |
| | apparent, VAh | ■ | ■ |
| Voltage | | ■ | ■ |
| **Communication** | | | |
| Modbus RTU & BACnet MS/TP over RS-485 | | ■ | ■ |
| **Installation options** | | | |
| Screws | | ■ | ■ |
| Clip-on | | ■ | ■ |
| Hook | | ■ | ■ |
| DIN rail enclosure | | ■ | ■ |

PB115455


### EM4200 parts descriptions and advantages

The EM4200 Series Enercept was carefully designed for ease of installation, configuration, and operation.

**1 Versatile mounting** - DIN or screw mount.

**2 Phase status** - Visual indication of meter performance, tri-coloured LEDs simplify troubleshooting.

**3 Meter status** - Quick troubleshooting.

**4 Settings override** - Change the phase or direction through system software with exclusive Swizzle feature.

**5 CT amperage rotary** - Needed flexibility with CT support from 5 A to 5000 A.

**6 Rotary dial setup** - Configure with or without power, saving both time and labour costs.

**7 Essential protocol support** - Modbus, BACnet, and Uni-directional and Bi-directional measurement.

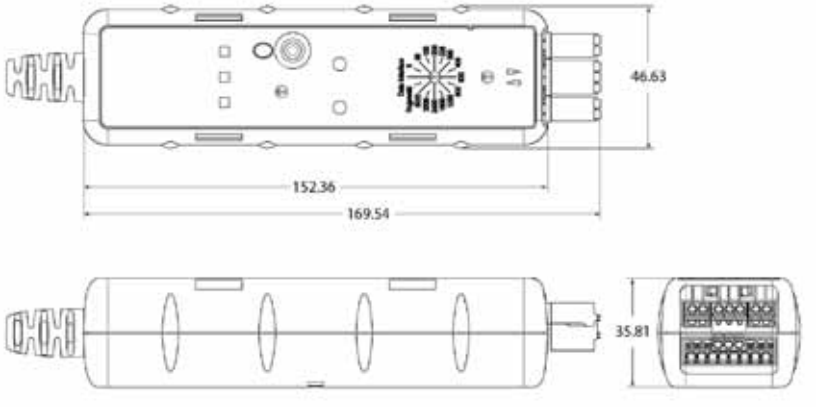
# EM4200 series
## Functions and characteristics (cont.)

| | | |
|---|---|---|
| **Electrical characteristics** | | |
| Input-voltage characteristics | Inputs | V1, V2, V3, Vn |
| | Measured voltage | 80 - 480 V AC L-L without PTs<br>Up to 999 kV with external PTs |
| | Frequency range | 60 Hz |
| **Mechanical characteristics** | | |
| Weight | | approx. 4.0 kg |
| Dimensions | | 46.63 x 35.81 x 152.36 mm |
| **Environmental conditions** | | |
| Operating temperature | | -30 °C to 70 °C |
| Storage temperature | | -40 °C to 85 °C |
| Humidity rating | | 0% to 95 % RH non-condensing |
| Enclosure | | Type 1 (indoor or enclosed outdoor use) |
| Altitude | | 3000 m |
| Pollution degree | | 2 |
| Electromagnetic compatibility | | immunity to radiated fields, conforming to EN 61326-1 |
| | | immunity to radiated fields, conforming to EN 61000-6-2 |
| | | immunity to conducted disturbances, conforming to EN 61326-1 |
| | | immunity to conducted disturbances, conforming to EN 61000-6-2 |
| | | conducted and radiated emissions, conforming to EN 61326 + A1 |
| | | conducted and radiated emissions, conforming to EN 61000-6-4 |
| Pollution degree | | conducted and radiated emissions, conforming to FCC part 15 class A |
| **Safety and standards** | | |
| Certified to IEC/BTL | | |
| CULus conforming to UL 61010-1 | | |
| CE conforming to EN 61010-1 | | |
| **Communication** | | |
| Ports | | Modbus RTU & BACnet MS/TP over RS-485 |
| Port protocols | | BACnet MS/TP : 9600 baud to115200 baud (automatic detection);<br>Modbus RTU : 9600 baud to 115200 baud (automatic detection) |

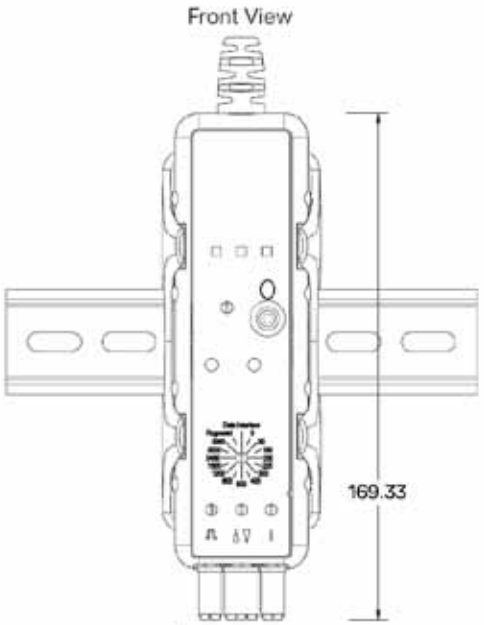
# EM4200 series
## Dimensions

### EM4200 dimensions

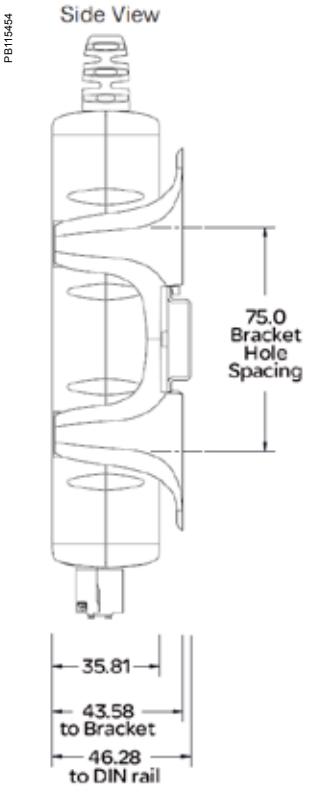
PB115452




PB115453

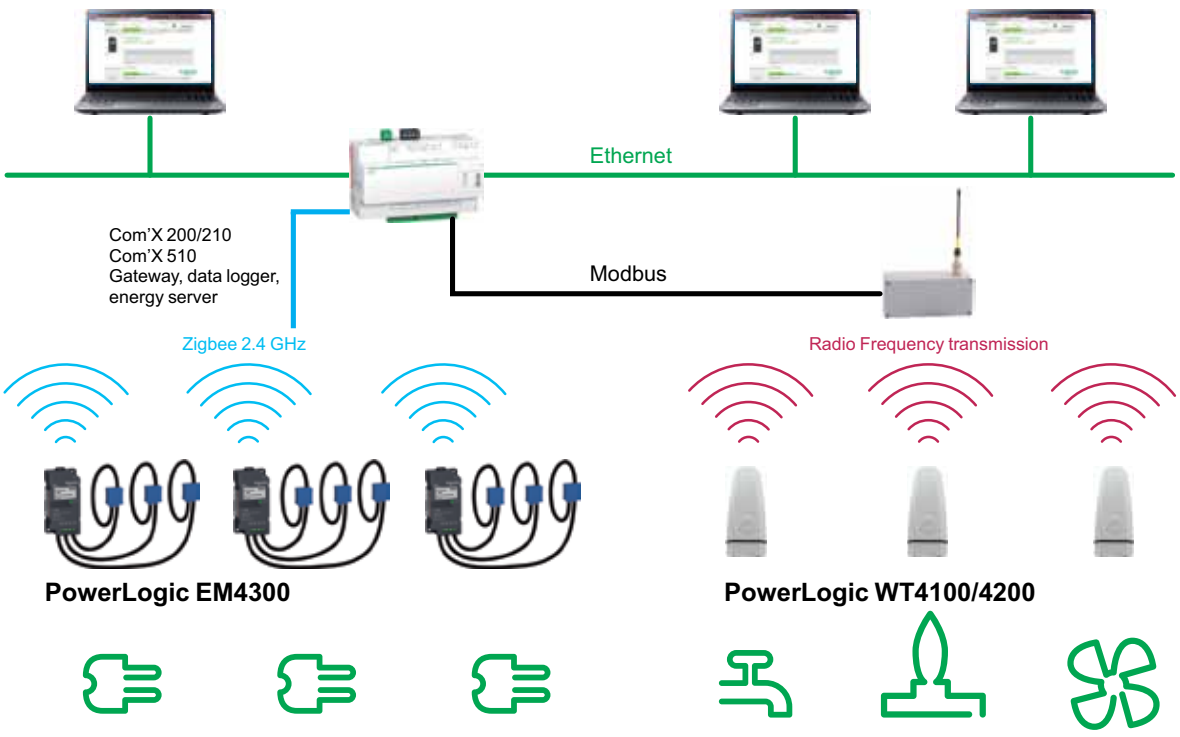



PB115454



# PowerLogic EM4300
## Wireless metering system

DB407246




PowerLogic wireless range is designed to retrofit existing switchboards, and enhance energy efficiency 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.

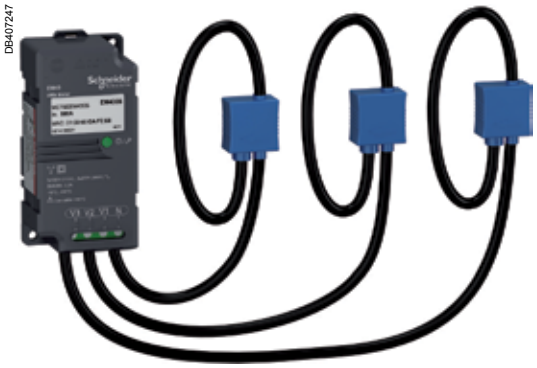
- PowerLogic WT4100/4200 transmitters collect data from various meters (water, air, gas, steam etc.) with pulse outputs.

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/en/product-range/62072-enerlin-x-com-x/?parent-category-id=82258*
- SmartStruXure Lite MPM managers for BACnet, EnOcean, CANbus nest works
*http://www.schneider-electric.com/en/product-range/62191-smartstruxure-lite-solution/?parent-category-id=1200*

# PowerLogic EM4300
## Wireless metering system (cont.)

DB407247



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

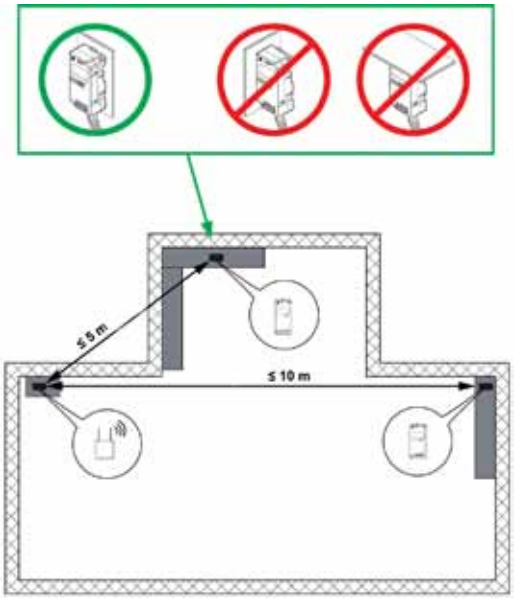
### Features and benefits
■ Installation time and therefore total cost of ownership is minimized thanks to:
□ wireless communication.
□ attached flexible current sensors, immediately fitted around any cable or bar without disconnection. Power-off time to fit several, meters in a switchboard is a matter 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 200/210 Data loggers, Com'X 510 Energy Servers, and MPM gateways.

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

DB407250




■ Wireless meters are inside electrical switchboards.
■ Wireless receivers are located in the technical room with up to 20 metres 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 centimetres 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. See appropriate Install Guide for this product.*

Certain installation locations or equipment situations 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 | Commercial ref. no. |
|---|---|---|---|
| EM4302 | 200 A | 55 mm | **METSEEM4302** |
| EM4305 | 500 A | 55 mm | **METSEEM4305** |
| EM4310 | 1000 A | 125 mm | **METSEEM4310** |
| EM4320 | 2000 A | 125 mm | **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 Hz to 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 |
| Moisture withstand | 5 % to 90 % relative humidity, non-condensing, maximum dewpoint 38 °C |
| Pollution degree | 2 |
| Voltage surges | Category III |
| Altitude | 2000 m 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.)

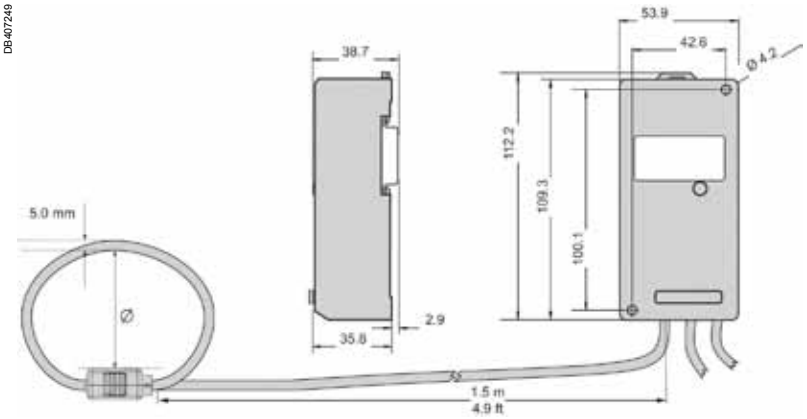
DB407248

### 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

DB407249




| Model | I (A) | Ø (mm) | Weight |
|---|---|---|---|
| EM4302 | 200 | 55 | ★ |
| EM4305 | 500 | 55 | ★ |
| EM4310 | 1000 | 125 | ★ |
| EM4320 | 2000 | 125 | ★ |

★*Please consult your Schneider Electric representative.*

# WT4100 / WT4200 series
## Functions and characteristics

PB1155139

*Transmitter pulse counter (1 or 2 channel)*

PB115141


*Water pit pulse counter (1 channel)*

PB115142

*ATEX-rated pulse counter (1 channel)*

WAGES (Water, Air, Gas, Electricity, Steam) energy monitoring can be challenging, especially if the monitoring devices are installed in hazardous conditions or remote locations with rough or difficult-to-access terrain. The WT4100/WT4200 series devices help provide an easy and reliable solution.

This long-range radio frequency (RF) wireless solution consists of transmitters and a receiver. Typically, repeaters are also installed and located between the transmitter and receiver to boost the transmission signal when the line-of-sight distance between the transmitter and receiver is greater than the transmitter's range.

Physical obstructions, such as buildings, reduce the effective transmission range of a transmitter, so repeaters are also installed in these situations. The wireless devices are grouped according to model numbers, and these identify a device's RF transmission frequency. It is common for countries to limit RF transmission to a specific radio frequency.

- WT4200 series, WR4200 series, WA4200 series, 169 MHz for Europe
- WT4100 series, WR4100 series, WA4100 series, 153 MHz for USA and Canada

(Before installing and operating the wireless devices, check the rules and restrictions on RF transmission for your country and make sure your devices' transmission frequency matches the allowed radio frequency.)

### Main components

**Transmitter Pulse counters** - This Modbus device pulse counter transmitter detects and counts pulses from a meter's pulse output. It can count pulses with a 0.1 to 10 Hz frequency and the value is transmitted once every 15 minutes.

**Water pit pulse counter** - Designed for use with a water flowmeter and is easily installed by magnetic force to cast-iron covers.

**ATEX-rated pulse counter** - Designed for use with devices such as a gas meter, compliant with ATEX II 3G and Ex ic IIA T3 for use in hazardous or explosive environments.

**Receiver** - The gateway between sensors (transmitters) and the Modbus network. Data can be accessed via Modbus using a Com'X or EGX gateway device.

**Wireless repeater** - this device extends the operating range between transmitters and receivers.

| Product name | Description | Commercial ref. no. |
|---|---|---|
| | **For Europe** | |
| WT4211 | Single Pulse counting 169 MHz | **METSEWT4211** |
| WT4216 | Single Pulse counting Water Pit 169 MHz | **METSEWT4216** |
| WT4214 | Single Pulse counting Atex 169 MHz | **METSEWT4214** |
| WT4212 | Dual Pulse counting 169 MHz | **METSEWT4212** |
| WT4232 | Alarm Status Dual 169 MHz | **METSEWT4232** |
| WT4222 | Analogue 0-10 V Dual 169 MHz | **METSEWT4222** |
| WT4241 | Temperature Single Internal 169 MHz | **METSEWT4241** |
| WT4200 | Modbus Receiver 169 MHz | **METSEWT4200** |
| WT4290 | Repeater 169 MHz | **METSEWT4290** |
| WT4275 | Dipole Antenna 169 MHz | **METSEWT4275** |
| WT4277 | Whip Antenna 169 MHz | **METSEWT4277** |
| | **For USA and Canada** | |
| WT4111 | Single Pulse counting 153 MHz | **METSEWT4214** |
| WT4112 | Dual Pulse counting 153 MHz | **METSEWT4290** |
| WT4132 | Alarm Status Dual 153 MHz | **METSEWR4100** |
| WT4122 | Analogue 0-10 V Dual 153 MHz | **METSEWR4190** |
| WT4141 | Temperature Single Internal 153 MHz | **METSEWR4290** |
| WT4100 | Modbus Receiver 153 MHz | **METSEWA4175** |
| WT4190 | Repeater 153 MHz | **METSEWA4275** |
| WT4175 | Dipole Antenna 153 MHz | **METSEWA4177** |
| WT4177 | Whip Antenna 153 MHz | **METSEWA4277** |
| | **Common accessories** | |
| WA4282 | 5 m antenna extension cable 169 MHz | **METSEWA4182** |
| WA4284 | 10 m antenna extension cable 169 MHz | **METSEWA4282** |

*Contact your Schneider Electric representative for complete ordering information*

# WT4100 / WT4200 series
## Functions and characteristics (cont.)

PB115144

*Repeater*

PB115541

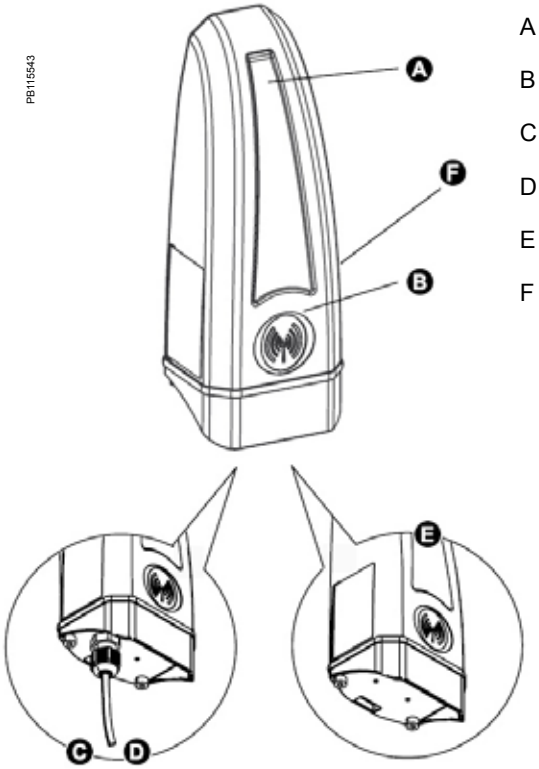
*Dipole antenna (left) and whip antenna (right)*

PB115147

*Extension cable*

### Pulse counter parts

PB115543




A Antenna location

B Reed switch location

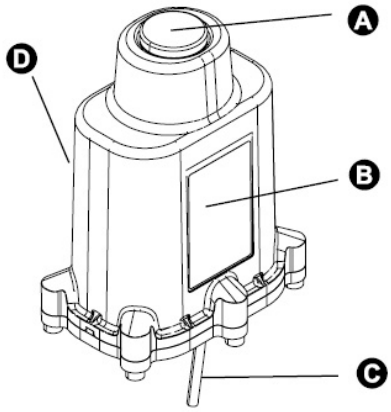
C Single channel (2 wire)

D Dual channel (4 wire)

E Internal temperature sensor

F Serial # (transmitter ID)

PB115544



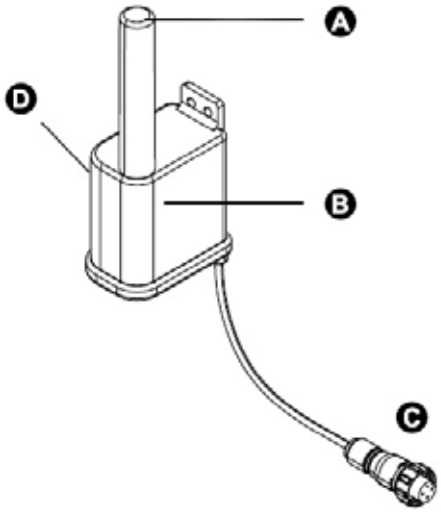

A Mounting magnet

B Reed switch location

C Input wiring

D Serial # (transmitter ID)

PB115545




A Antenna

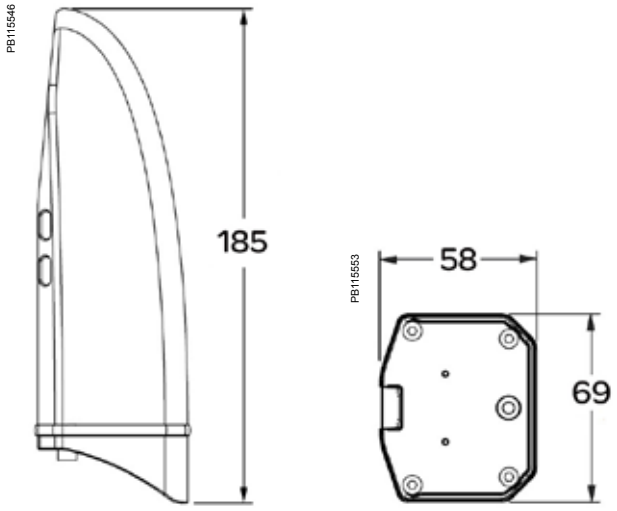
B Reed switch location

C Input wiring connector

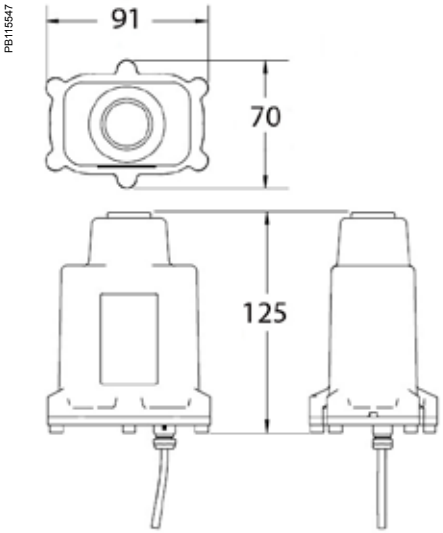
D Serial # (transmitter ID)

# WT4100 / WT4200 series
## Dimensions and connection

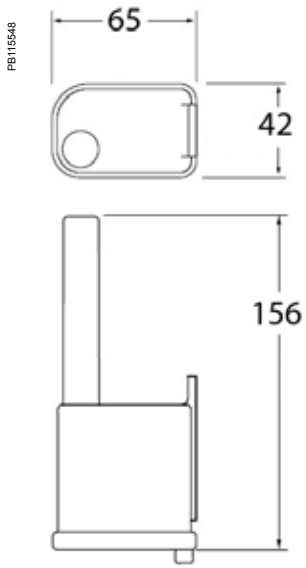
### Pulse counter




### Single pulse, water pit



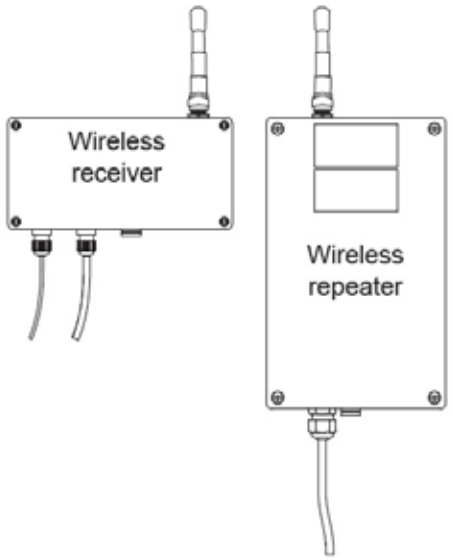

### Single pulse, Atex



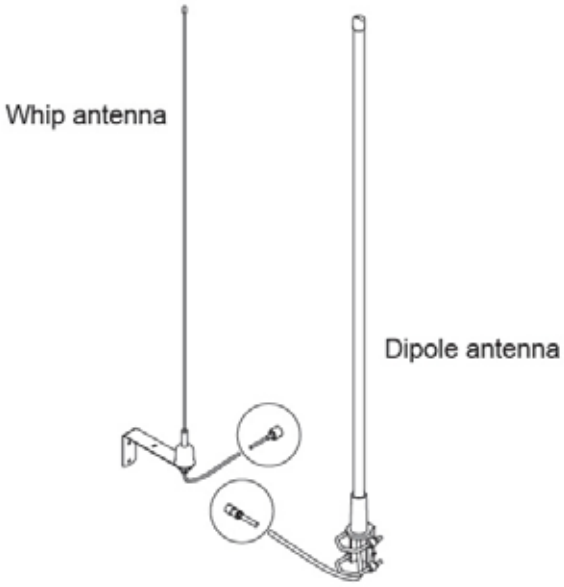
# WT4100 / WT4200 series
## Dimensions and connection

### Receiver, repeater, and antenna options

PB115549



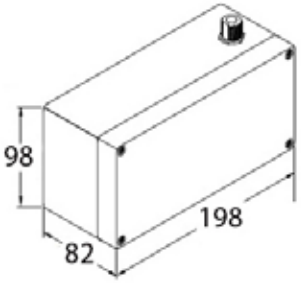

PB115550



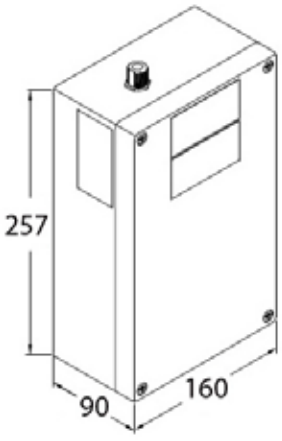

### Receiver, repeater, and antenna dimensions

PB115551

WR4100 / WR4200

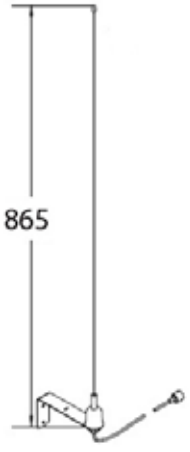



WR4190 / WR4290




PB115552

WA4177 / WA4277




WA4175 / WA4275

# EM4000 series
## Functions and characteristics

PB113714


*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.

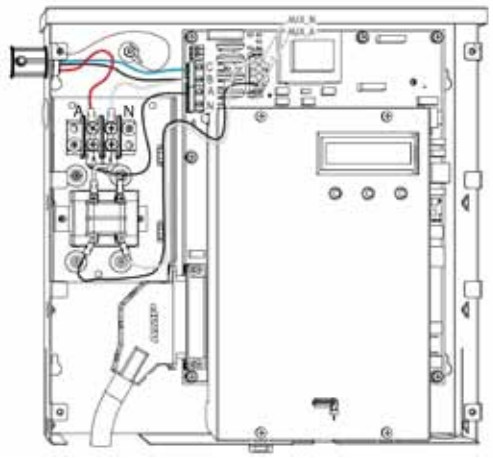
**Integrated communications networks.**
Onboard Ethernet or RS-485 allows for easy integration into existing communications networks.

### Part numbers

| Model | Description | Commercial ref. no. |
|---|---|---|
| EM4033 | 24 x 333 mV inputs, 120 V control power 60 Hz | **METSEEM403316** |
| | 24 x 333 mV inputs, 277 V control power 60 Hz | **METSEEM403336** |
| EM4080 | 24 x 80 mA inputs, 120 V control power 60 Hz | **METSEEM408016** |
| | 24 x 80 mA inputs, 277 V control power 60 Hz | **METSEEM408036** |

# EM4000 series
## Functions and characteristics (cont.)

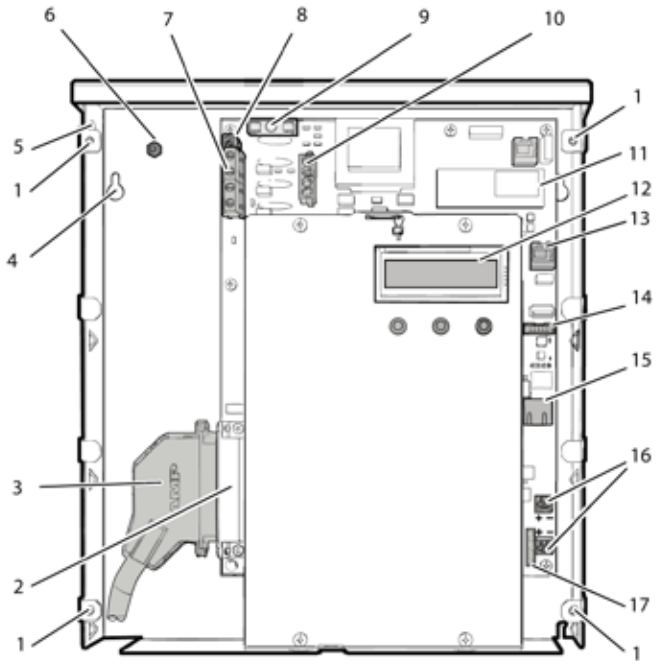
PB113718



*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 | | ■ | ■ |

PB113716




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 RS-232
15 Ethernet port
16 Pulse in terminal blocks
17 Pulse out connector

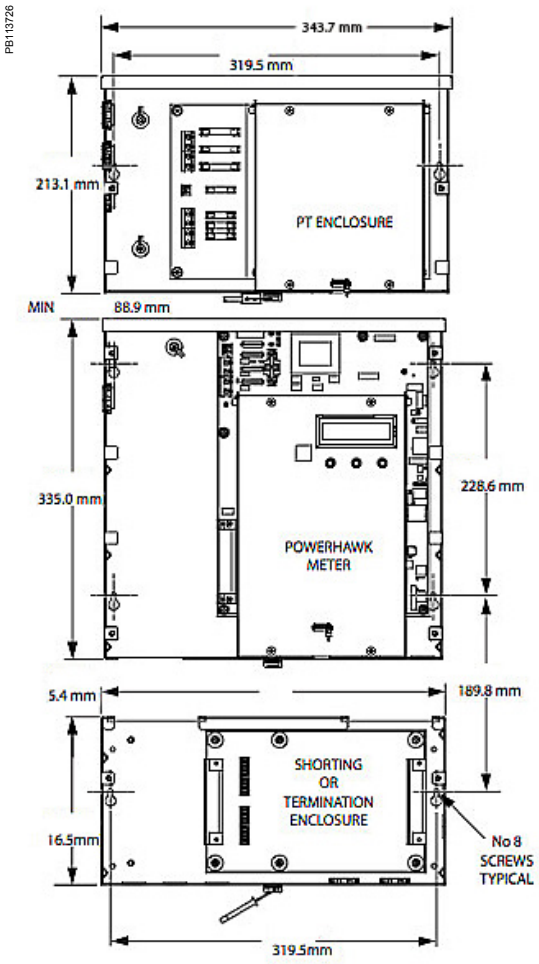
*PowerLogic EM4033 and PowerLogic EM4080 internal view.*

# EM4000 series
## Functions and characteristics (cont.)

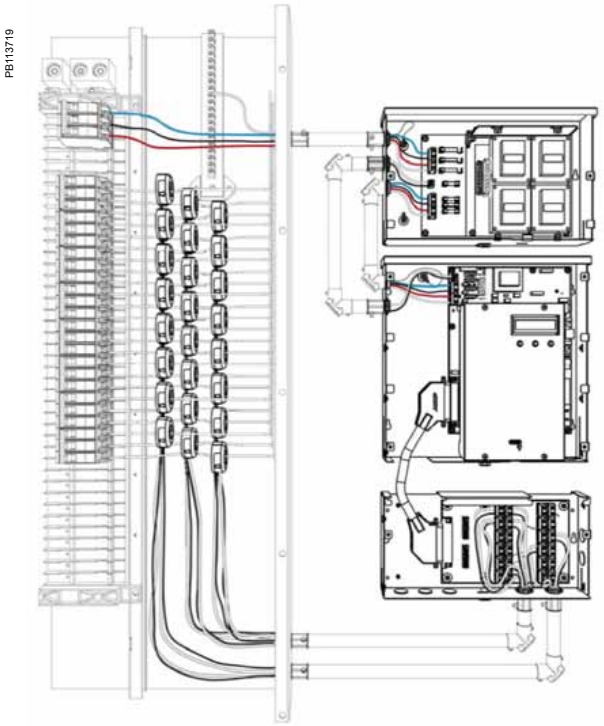
| | | |
|---|---|---|
| **Electrical characteristics** | | |
| Input-voltage characteristics | Inputs | V1, V2, V3, Vn |
| | Measured voltage | 80 - 480 V AC L-L without PTs<br>Up to 999 kV with external PTs |
| | Frequency range | 60 Hz |
| **Mechanical characteristics** | | |
| Weight | EM4033/EM4080 | approx. 4.0 kg |
| Dimensions | EM4033/EM4080 | 335 x 305 x 55 mm |
| **Environmental conditions** | | |
| Operating temperature | | -40 °C to 70 °C |
| Storage temperature | | -40 °C to 70 °C |
| Humidity rating | | 0 % to 90 % RH non-condensing |
| Enclosure | | Type 1 (indoor or enclosed outdoor use) |
| Altitude | | 3000 m |
| 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 EN 55022, 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;<br>R / L arrow buttons select metering point;<br>Display button cycles through measurements per point. |

# EM4000 series
## Dimensions and connection

### EM4X00, CT termination, PT module




### EM4X00, CT termination, PT module




*See appropriate Install Guide for this product.*

# EM4000 series
## Accessories

PB113724

**PT Module**
The PT module provides step-down voltage connections to Schneider Electric PowerLogic meters for metering single-phase to three-phase voltages of 600 V, 347 V, or 400 V, 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:

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

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

The 347 V/600 V PT module variant has three sense voltage potential transformers for metering. The configuration of the transformers (347 V wye or 600 V 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 | 213.1 mm | |
| | Width | 54 mm | |
| | Depth | 54 mm | |
| | Weight | 5.67 kg | |
| Fuse ratings | High voltage inputs | F1 | T315 mA, 1000 V |
| | | F2 | T315 mA, 1000 V |
| | | F3 | T315 mA, 1000 V |
| | Voltage inputs | F4 | T250 mA, 250 V |
| | | F5 | T250 mA, 250 V |
| | | F6 | T250 mA, 250 V |
| | | F7 | T250 mA, 250 V |
| Transformer specifications | Input voltage | 600 V | Voltage tolerance: +/-10 % |
| | | 480 V | Voltage tolerance: +/-10 % |
| | | 347 V | Voltage tolerance: +/-10 % |
| | Output voltage | 120 V | Accuracy: 0.3 % |
| Environmental | Operating temperature | -40 °C to 70 °C | |
| | Operating humidity | 5 % to 90 % non-condensing | |
| | Usage environment | Indoor or enclosed outdoor environment | |
| | Maximum altitude | 3000 m | |
| | Pollution degree | 2 | |

| Description | Commercial ref. no. |
|---|---|
| 480 V PT Module for EM4X00 meter | **METSEPTMOD480** |
| 347 V/600 V PT Module for EM4X00 meter | **METSEPTMOD347600** |

# EM4000 series
## Accessories

PB113725

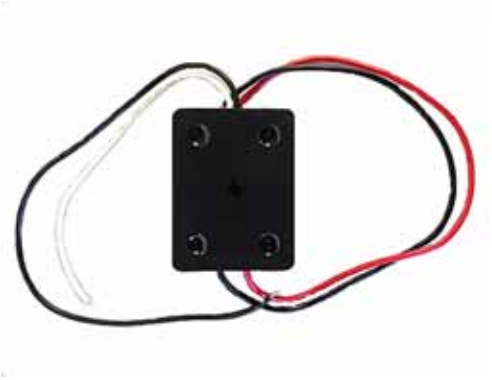

### CT Module

PowerLogic 4080 meters have two 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.

| Description | Commercial ref. no. |
|---|---|
| CT Termination Module for EM4X00 meter | **METSECTTERM** |
| CT Shorting Module for EM4X00 meter | **METSECTSHORT** |

PB113729

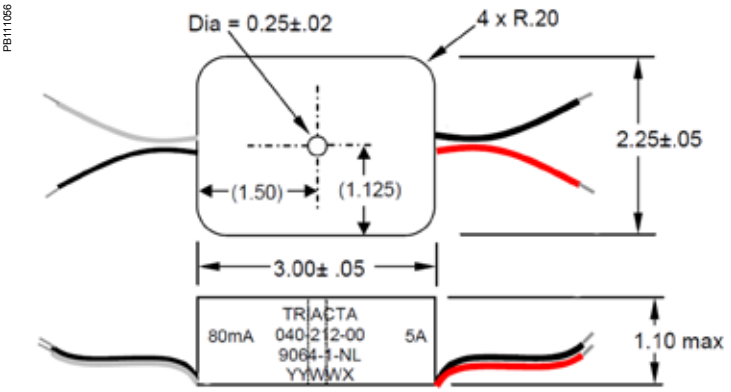


### Converter

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

| Description | Commercial ref. no. |
|---|---|
| 5 A : 80 mA converter for EM4X00 meter | **METSECONV580** |

PB111056

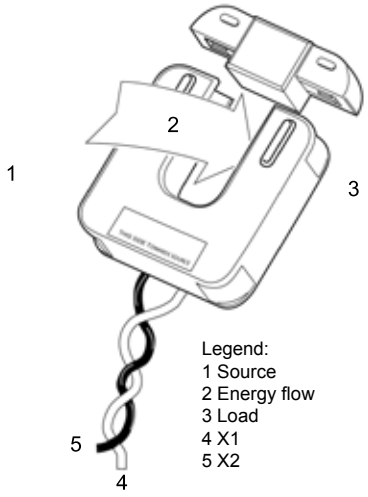



*The 5 A to 80 mA converter dimensions*

*See appropriate Install Guide for this product.*

# EM4000 series
## Accessories and dimensions

PB111061




*PowerLogic EM4033 split-core 0.333V current transformer*

**CTs**

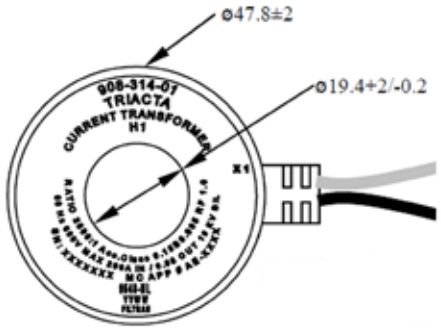
- Model 8 (80/100 mA Secondary)
- Window Size: 82.5 mm Diameters
- Application: Metering
- Frequency: 50-400 Hz
- Insulation Level: 600 Volts, 10 Kv BIL Full Wave
- Flexible leads available for all case configurations. Flexible leads are UL 1015 105 ˚C, CSA approved #16 AWG, 609.6 mm long standard length. 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: 1.36 kg

| Description | Commercial ref. no. |
|---|---|
| CT, solid-core, 200 A primary, 80 mA secondary, for use with EM4X80 multi-circuit meter | **METSECT80200** |
| CT, solid-core, 400 A primary, 80 mA secondary, for use with EM4X80 multi-circuit meter | **METSECT80400** |
| CT, solid-core, 600 A primary, 80 mA secondary, for use with EM4X80 multi-circuit meter | **METSECT80600** |

PB111059

*200 A CT*

PB111060

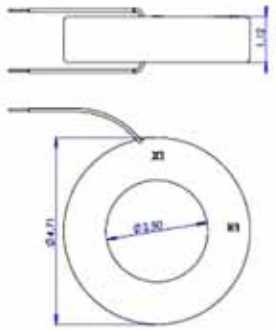



*200 A CT dimensions*

PB113971

*400 A CT*

PB113972

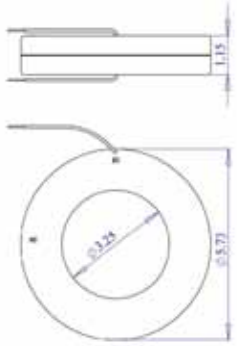


*400 A CT dimensions*

PB111057

*METSECT80600 600 A 80 mA CT*

PB111058



*600 A 80 mA CT dimensions*

# EM4800 series
## Functions and characteristics

PE86325


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

DE84795

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 EM4833: 0.333 V, 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.

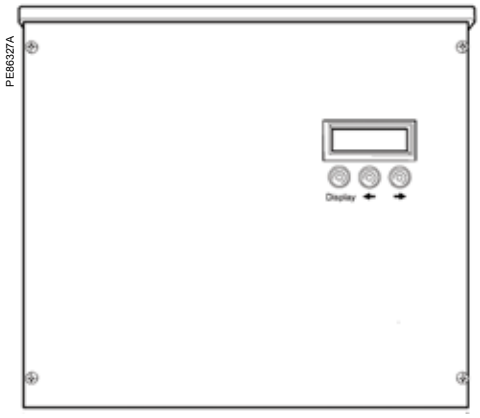
**No rewiring required**
Use existing wiring to connect to existing panels.

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

## Commercial reference numbers

| Model | Description | Commercial ref. no. |
|---|---|---|
| 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** |
| EM4833 | 24 x 333 mV inputs, 230/240 V control power, 50 Hz | **METSEEM483325** |
| | 24 x 333 mV inputs, 120 V control power, 60 Hz | **METSEEM483316** |
| EM4880 | 24 x 80 mA inputs, 120 V control power, 60 Hz | **METSEEM488016** |
| | 24 x 80 mA inputs, 230/240 V control power, 50 Hz | **METSEEM488025** |

# EM4800 series
## Functions and characteristics (cont.)




*PowerLogic EM4800 series digital panel meter.*

| Selection guide | | EM4805 | EM4833 | 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 | | ■ | | |
| 0.333 V CTs | | | ■ | |
| 80 mA CTs | | | | ■ |
| Split-core CT | | ■ | ■ | |
| Solid-core CT | | ■ | ■ | ■ |
| Remote modular display | | ■ | ■ | ■ |

# 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<br>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 | 335 x 44 x 55 mm |
| | EM4833 / EM4880 | 335 x 305 x 55 mm |
| **Environmental conditions** | | |
| Operating temperature | | -40 °C to 70 °C |
| Storage temperature | | -40 °C to 70 °C |
| Humidity rating | | 0 % to 90 % RH non-condensing |
| Enclosure | | Type 1 (indoor or enclosed outdoor use) |
| Altitude | | 3000 m |
| 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;<br>R / L arrow buttons select metering point;<br>Display button cycles through measurements per point. |

# Communication interfaces and associated services

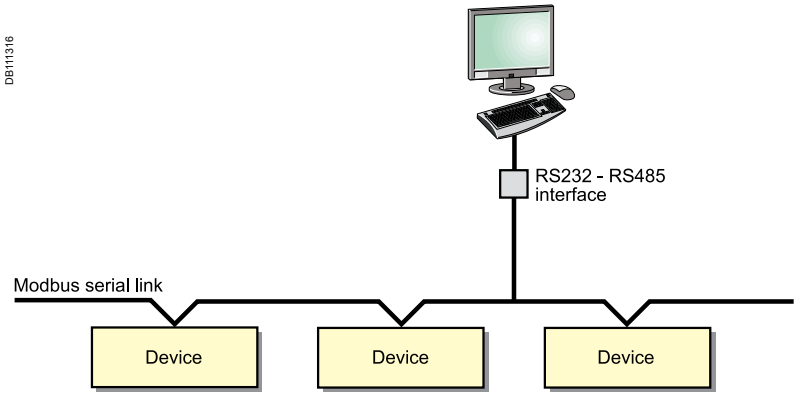
Switchboard-data acquisition and monitoring make it possible to anticipate events. In this way, they reduce customer costs in terms of operation, maintenance and investment.

## 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, sometimes by wireless connections.

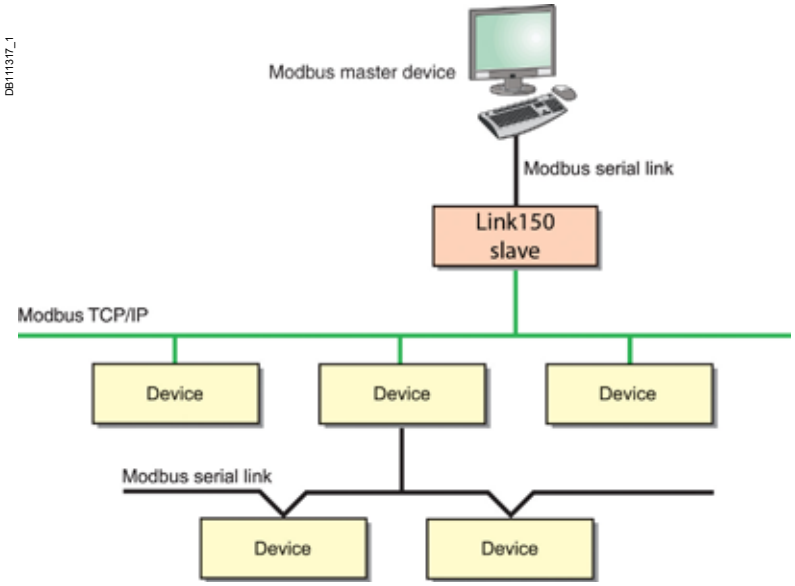
In all architectures, the communication interface serves as the link between the installation devices and the PC running the operating software. It provides the physical link and protocol adaptation. Adaptation is required because the communication systems used by the PC (Modbus via RS-232 and/or Ethernet) are generally not those used by the installation devices (e.g. the Modbus protocol via RS-485).

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




Modbus communication architecture.

In addition, a Link150 serial port slave mode allows a serial Modbus master device to access information from other devices across a Modbus TCP/IP network.



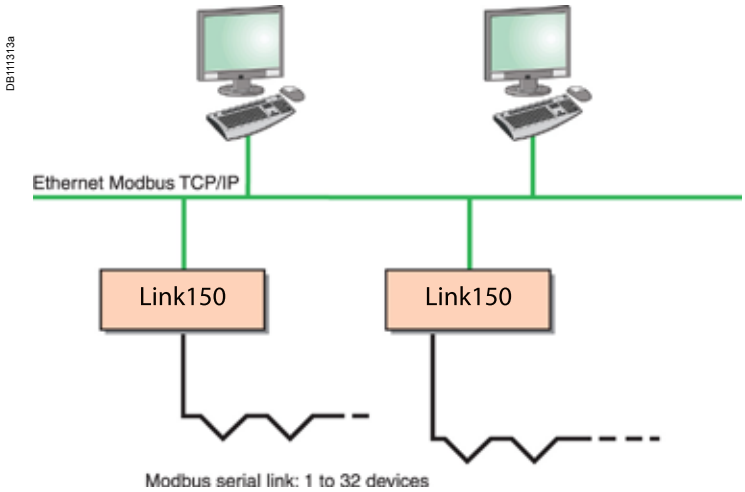

Modbus communication across Ethernet network

# Communication interfaces and associated services (cont.)

## 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 Link150 Ethernet gateway provides reliable connectivity between Modbus RS-485 and Ethernet Modbus TCP/IP.




Typical 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.

Power management software (StuxureWare Power Monitoring Expert and StruxureWare PowerSCADA Expert), running on a PC, provide broader coverage for more specific needs.

# Link150
# Ethernet gateway

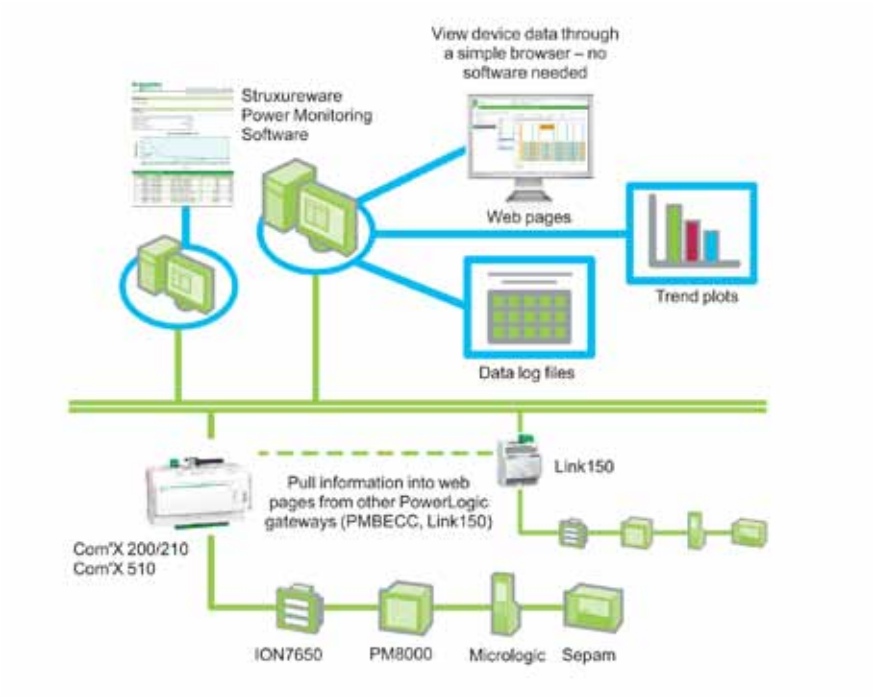
PB115131


*The Link150*

The Link150 gateway provides fast, reliable Ethernet connectivity in the most demanding applications, from a single building to a multi-site enterprise.
This gateway supports meters, monitors, protective relays, trip units, motor controls and other devices that need to communicate data quickly and efficiently.
It is your simple, cost-effective serial line to full Ethernet connectivity.

## Applications

- Energy management.
- Power distribution.
- Building automation.
- Factory automation.




## Security

- Secure user interface including user's name and password for login.
- Advanced security features to allow users to specify which Modbus TCP/IP master devices may access attached serial slave devices.
  - Modbus TCP/IP filtering feature.
  - Allows user to specify the level of access for each master device as Read-only or Full access.
- Web pages provide easy configuration and setup.

## Advantages

- Easy to install and setup.
- Easy to maintain.
- Compatible with Schneider Electric software offerings (StruxureWare Power Monitoring Expert, StruxureWare PowerSCADA Expert, etc.).
- Compatible with Com'X 200/210 and Com'X 510 Energy Servers.
- Reliable Modbus to Ethernet protocol conversion.

## Commercial reference numbers

| Powerlogic Link150 | Commercial ref. no. |
|---|---|
| Link150 | **EGX150** |
| Modbus 3M cable RJ45 to free wires | **VW3A8306D30** |

*Contact your Schneider Electric representative for complete ordering information.*

# Link150
# Ethernet gateway

PB115132

*Link150 front view*

## Characteristics

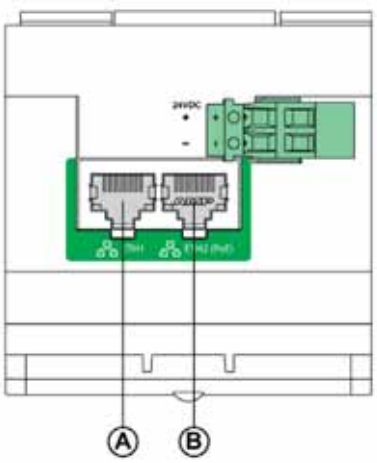
| | Link150 |
|---|---|
| Weight | 175 g without packing |
| Dimensions (HxWxD) | 72 x 105 x 71 mm |
| Mounting | DIN rail |
| Power-over-Ethernet (PoE) | Class 3 |
| Power supply | 24 V DC (-20/+10 %) or Power over Ethernet (PoE Class 3 IEEE 802.3 af) at 15 W |
| Consumption (typical) | 24 V DC, 130 mA at 20 °C<br>PoE 48 V DC, 65 mA at 20 °C |
| Ambient operating temperature | -25 °C to 70 °C |
| Ambient storage temperature | -40 °C to 85 °C |
| Humidity rating | 5 % to 95 % relative humidity (without condensation) at +55 °C |
| Pollution Degree | Level 2 |
| IP Ratings | On the front panel (wall-mounted enclosure): IP4x<br>Connectors: IP20<br>Other parts: IP30 |
| **Regulatory/standards compliance for electromagenetic interference** | |
| Emissions (radiated and conducted) | EN 55022/EN 55011/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** | |
| Safety - IEC | IEC 60950 |
| Safety - UL* | UL 60950<br>UL 61010-2-201 |
| EMC | IEC 6100-6-2 |
| Australia | C-tick - RCM |
| Sustainability | Green Premium |
| **Serial ports** | |
| Number of ports | 2 (1 available at a time) |
| Types of ports | RS-232 or RS-485 (2-wire or 4-wire), depending on settings |
| Protocol | Modbus, Serial |
| Baud rates | 19200 bps (factory setting), 2400 bps, 4800 bps, 9600 bps, 38400 bps, 56000 bps**, 57600 bps** |
| Maximum number of connected devices | 32 (directly)<br>247 (indirectly) |
| **Ethernet ports (used as a switch)** | |
| Number of ports | 2 |
| Type of port | 10/100BASE-TX (802.3af) port |
| Protocol | HTTP, Modbus TCP/IP, FTP, SNMP (MIB II) |

* Dual listed for US and Canada
** Only available when Physical Interface is set to RS-232 and Transmission Mode is set to Modbus ASCII

# Link150
# Ethernet gateway

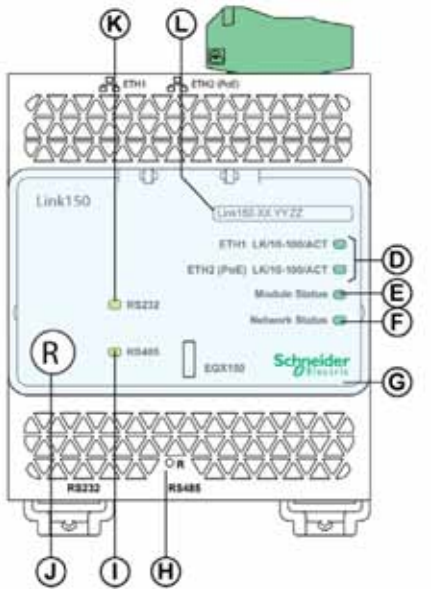
## Parts

PB115431



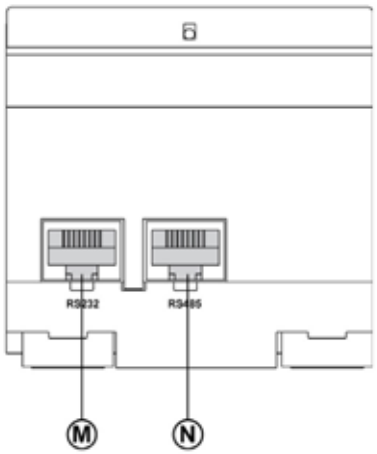

Ⓐ Ethernet 1 communication port
Ⓑ Ethernet 2 (PoE) communication port

PB115432




Ⓓ Ethernet communication LEDs
Ⓔ Module status LED
Ⓕ Network status LED
Ⓖ Sealable transparent cover
Ⓗ IP reset pin
Ⓘ RS-485 traffic status LED
Ⓙ Device soft restart button (Accesible through closed cover)
Ⓚ RS-232 traffic status LED
Ⓛ Device name label

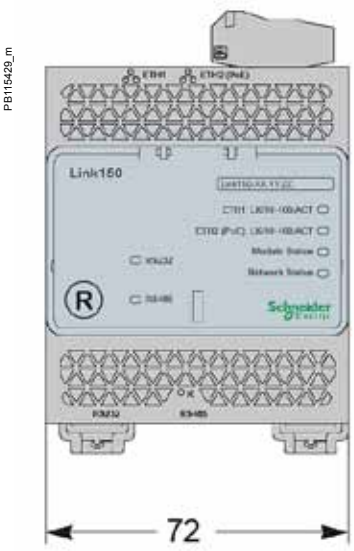
PB115433

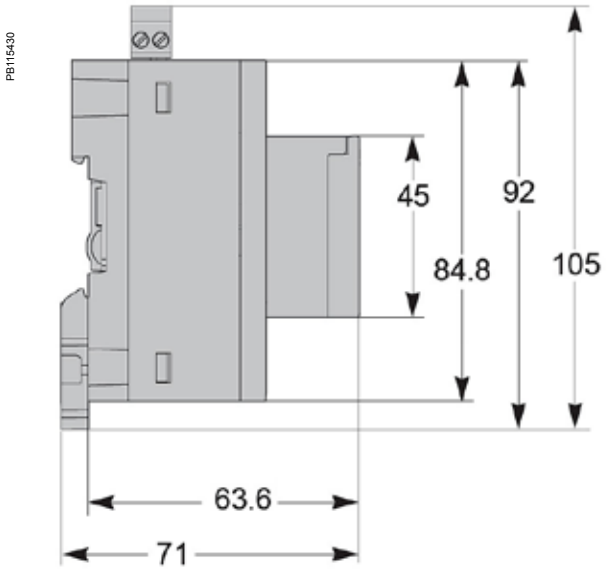



Ⓜ RS-232 port
Ⓝ RS-485 port

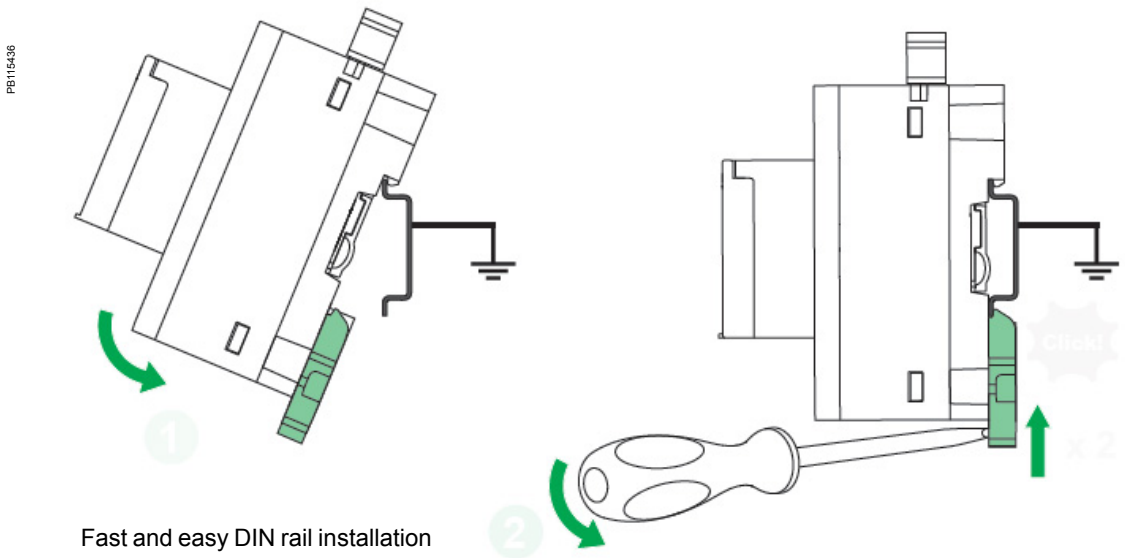
# Link150
# Ethernet gateway

## Dimensions




## DIN rail mounting



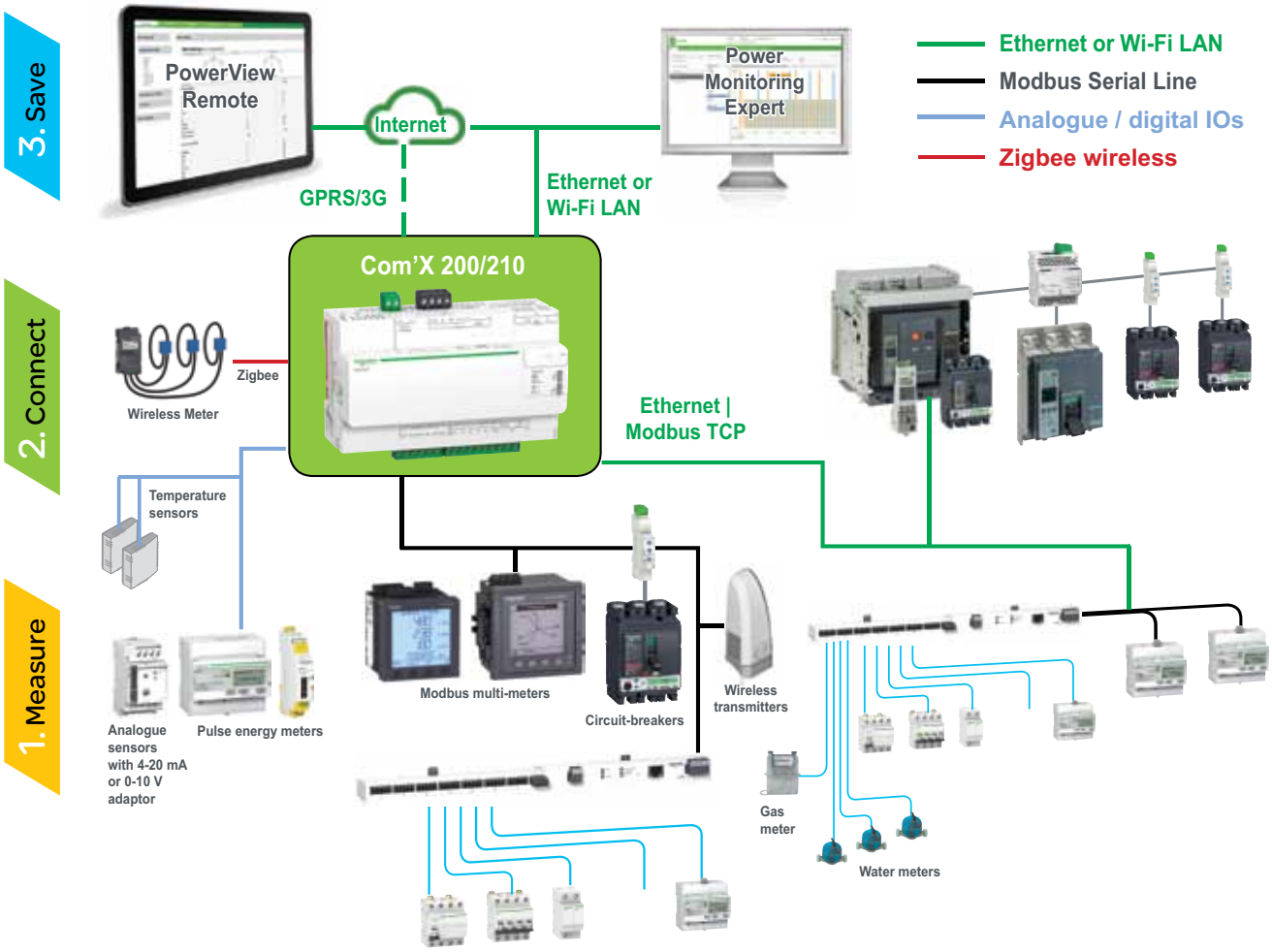

Fast and easy DIN rail installation

*See appropriate Install Guide for this product.*

# Com'X 200 / 210
## Energy data loggers

## Main functions

PB114855



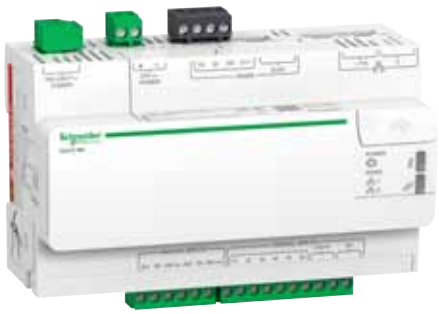

**Data collector**
Collects and stores energy data from up to 64 field devices, connected to either:
- Ethernet TCP/IP field network.
- Modbus Serial line network (up to 32 devices).
- Embedded digital and analogue inputs.

"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 $CO^2$ 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.

# Com'X 200/210
## Functions and characteristics

PB112041



*Energy Server Com'X 200 data logger*

PB114328

*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 Facility Insights.
- CSV files for viewing in Excel or transformed for upload into programs such as StruxureWare™ Power Monitoring Expert or any compatible software.
- Support for Weather Sentry™.

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.
- Gateway to Zigbee device data by external Modbus TCP/IP clients.

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

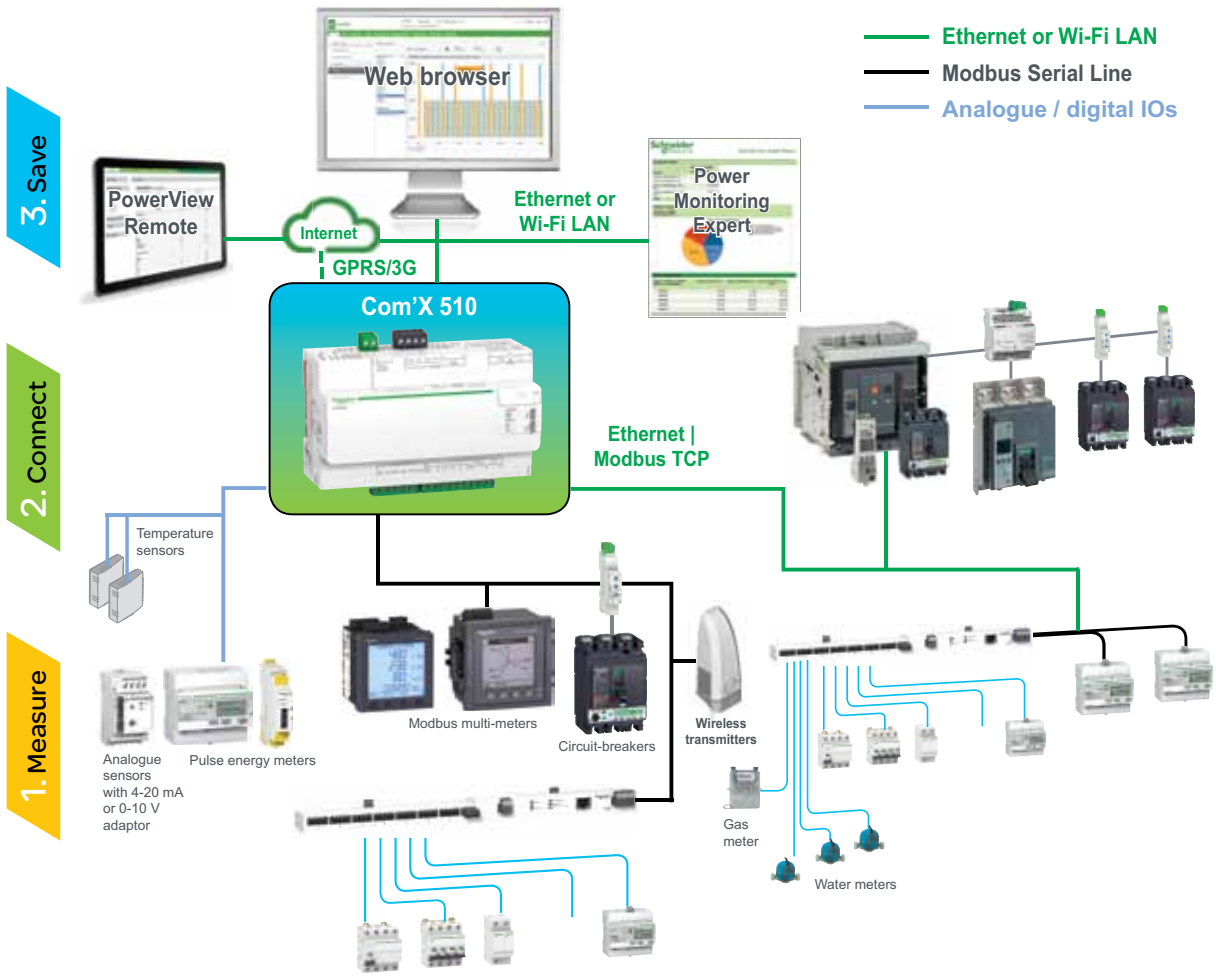
| Com'X 200/210 Commercial reference numbers | |
|---|---|
| Com'X 200 data logger 24 V DC or 230 V AC power supplied | **EBX200** |
| Com'X 210 data logger 24 V DC power supplied UL rated | **EBX210** |
| Com'X Wi-Fi USB interface | **EBXA-USB-WiFi** |
| Com'X GPRS interface with SIM card for RSP only | **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 510
## Energy server

### Main functions

PB114856




PB114852

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

**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 $CO^2$ 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 quanitity 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.

# Com'X 510
## Energy server

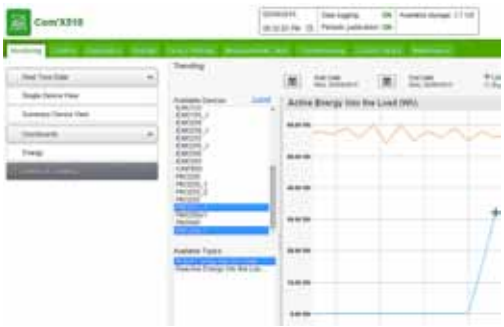
PB114327

*Energy Server Com'X 510 data logger*

PB114854

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

PB114853



*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 Facility Insights.
- 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.
- Gateway to Zigbee device data by external Modbus TCP/IP clients.

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

- Real-time Trending.
- Custom Web Page Support.

| 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

PB112047

**Connection points**

**1** Terminal block
**2** RJ45 cable
**3** Ethernet port #1
**4** Ethernet port #2

PB114859

*Power supply to analogue and digital inputs*

## Connectivity

**Modbus SL /RS-485 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 10/100BASE 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).

**2 inputs for analogue sensors**
- PT100 or PT1000 temperature probes.
- Various sensors (humidity, $CO^2$, 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

PB112044

*Wi-Fi USB stick*

**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.

PB112042

*GPRS modem*

**GPRS/3G 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.

PB112045

*GPRS antenna*

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

**Zigbee dongle** (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 RS-485, enables collecting data also from water, air, gas or steam meters.

# Com'X 200/210/510
## Setup and configuration

PB114857

*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 450 g
- Dimensions (H x W x D) 91 x 144 x 65.8 mm

## 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.
- Known 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.

**Custom Library available for unknown field devices**
- Ability to create your own custom model based upon Modbus RTU/TCP, Pulse, sensor, etc.
- Log data from the custom model
- Export / Import the custom model into other Com'X devices.

**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 cybersecurity 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
## Specifications

| Com'X 200/210/510 Environment | |
|---|---|
| Operating temperature | -25 °C to 60 °C Com'X 200<br>-25 °C to 70 °C Com'X 210/510 |
| Storage temperature | -40 °C to 85 °C |
| GPRS dongle Operating temperature | -20 °C to 60 °C |
| GPRS dongle Storage temperature | -40 °C to 85 °C |
| Wif-Fi dongle Operating temperature | 0 °C to 50 °C |
| Wi-Fi dongle Storage temperature | -20 °C to 80 °C |
| Humidity | 5 % to 95 % relative humidity (without condensation) at 55 °C |
| 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 |

| Power Supply | | Com'X 200 | Com'X 210 | Com'X 510 |
|---|---|---|---|---|
| AC | 100 to 230 V (+/- 15 %) (50-60 Hz) | ■ | | |
| DC | 24 V (+/- 10 %) | ■ | ■ | ■ |
| Power over Ethernet | 15.4 W DC | ■ | ■ | ■ |
| Max power | 26 W max | ■ | ■ | ■ |
| **Mechanical** | | | | |
| IP | Front face IP40, terminals IP20 | ■ | ■ | ■ |
| Dimensions (HxWxD) | 91 x 144 x 65.8 mm | ■ | ■ | ■ |
| Weight | 450 g | ■ | ■ | ■ |

# ION7550 RTU
## Functions and characteristics

PE86117


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 StruxureWare software, or other SCADA, information and automation systems.

### Applications

- WAGES (water, air, gas, electricity and steam) 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 MB 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.

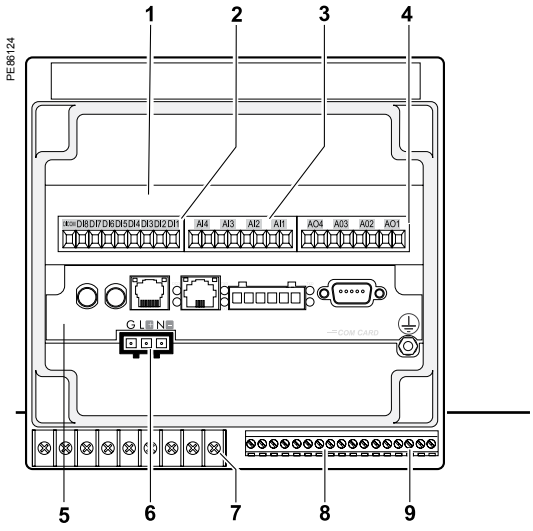
**Modbus Master functionality**
Aggregate and store data from downstream Modbus devices using serial or Ethernet connections.

### Commercial reference number

| ION7550 RTU | Comm. ref. no. |
|---|---|
| ION7550 | **M7550** |

# ION7550 RTU

## Functions and characteristics (cont.)




| 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 Megabytes) | | 10 MB |
| **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 |
| **Electrical characteristics** | | |
| Data update rate | | 1/2 cycle or 1 second |
| Power supply | AC | 85 to 240 V AC ±10 % (47-63 Hz) |
| | DC | 110 to 300 V DC ±10 % |
| | DC low voltage (optional) | 20 to 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<br>Low voltage DC: typical 12 VA, max 18 VA |
| Input/outputs* | Standard | 8 digital inputs (120 V DC)<br>3 relay outputs (250 V AC / 30 V DC)<br>4 digital outputs (solid state) |
| | Optional | 8 additional digital inputs<br>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 °C to 70 °C |
| | Low voltage DC supply | -20 °C to 50 °C |
| | Display operating range | -20 °C to 70 °C |
| Storage temperature | Display, TRAN | -40 °C to 85 °C |
| Humidity rating | | 5 % to 95 % non-condensing |
| Installation category | | III 2000m above sea level |
| Dielectric withstand | | As per EN 61010-1, IEC 62051-22A** |
| **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 |

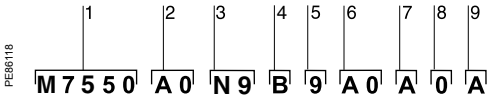
* Consult the ION7550 / ION7650 installation guide for complete specifications.
** IEC 62051-22B with serial ports only.

# ION7550 RTU
## Functions and characteristics (cont.)

| | |
|---|---|
| **Communication** | |
| RS-232/RS-485 port * | Up to 115,200 baud (57,600 baud for RS-485), ION, DNP 3.0, Modbus, GPS, EtherGate, ModemGate, Modbus Master |
| RS-485 port * | Up to 115,200 baud, ION, DNP 3.0, Modbus, GPS, EtherGate, ModemGate, Modbus Master |
| Infrared port* | ANSI type 2, up to 19,200 baud, ION, Modbus, DNP 3.0 |
| Ethernet port | 10BASE-T, 100BASE-TX. 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 | Internal modem, 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:<br>adjustable pickup and dropout setpoints and time delays, numerous activation levels possible for a given type of alarm<br>user-defined priority levels<br>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 MB to 10 MB (specified at time of order) |
| Firmware update | Update via the communication ports |
| **Display characteristics** | |
| Integrated display | Back lit LCD, configurable screens |
| Languages | English |

* All the communication ports may be used simultaneously.

# ION7550 RTU
## Functions and characteristics (cont.)




*Sample ION7550 RTU part number.*

### Commercial reference 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 V AC, ±10 %/47-63 Hz / 110-330 V DC, ±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, 56 k 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 56 k 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) |
| | | 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 |
| 8 | Security | 0 | Password protected, no hardware lock |
| 9 | Special Order | A | None |
| | | C | Tropicalisation treatment applied |


*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), 56 k 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 56 k 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.)

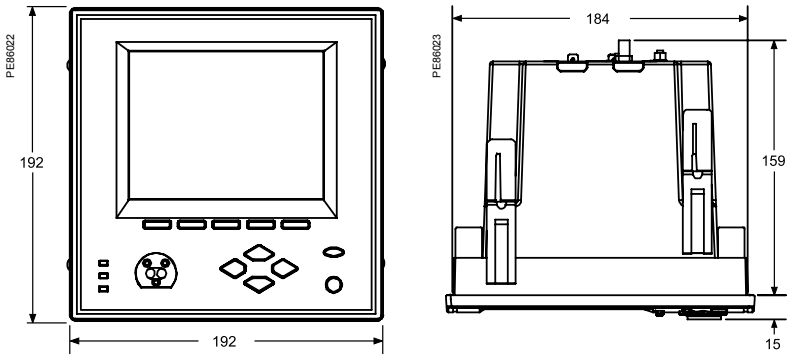
**Commercial reference numbers (cont'd)**

**Input/Output expansion card**

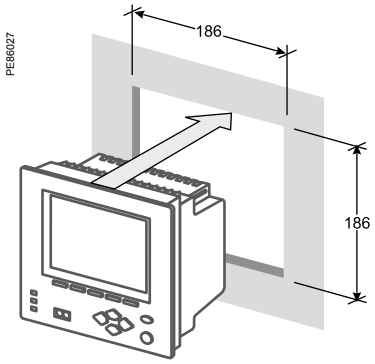
| Item | Code | Description |
|---|---|---|
| I/O card | P760A | Expansion I/O for field retrofit installations. |
| | E | Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue inputs |
| | K | Expansion I/O card with eight digital inputs, four 0 to 20 mA analogue outputs |
| | N | Expansion 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 RTU
## Dimensions and connection

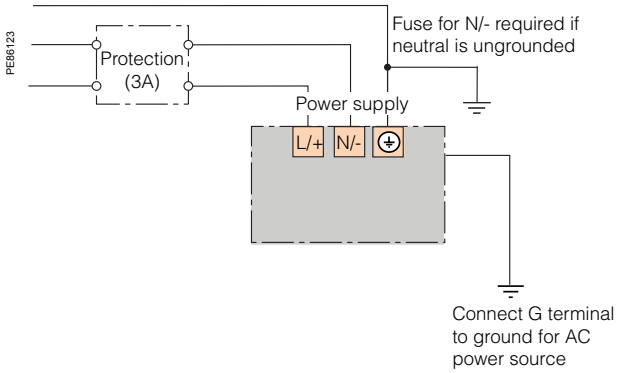
### ION7550 RTU dimensions




### Front-panel mounting




### Power supply




***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.*

*See appropriate Install Guide for this product.*

# StruxureWare™
# Power Management Software

PB111286

*StruxureWare Power Management software*

EB100263

*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.

# 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:

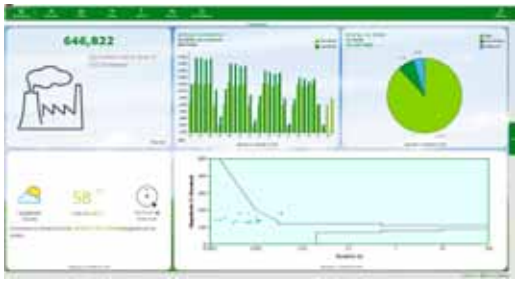
- Monitor the facility electrical network and verify reliable operation.
- Improve response to power-related events and restore operations quickly.
- Analyze and isolate the source of power quality problems.
- Analyze energy use to identify waste and reduce cost.
- Estimate utility bills to verify accuracy 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.

# StruxureWare™
# Power Management Software

PB111281



*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

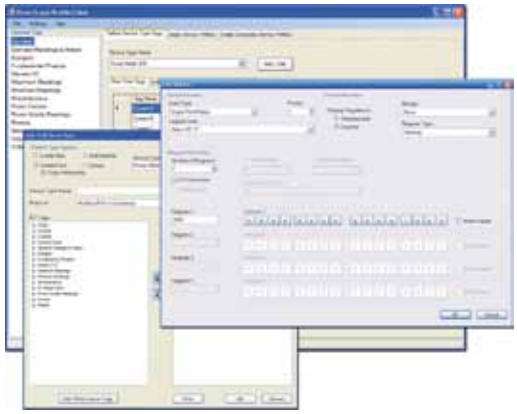
- Access power monitoring system from anywhere on your network using a web browser. Day-to-day functionality including system status, alarm response, or viewing dashboards. Web client provides authenticated access to common functions:
- Diagrams – navigate network displays to check system status and 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 reports for energy cost, consumption, and power quality.

EB100264



*Easily edit pages to depict your entire system*

### Data acquisition and management

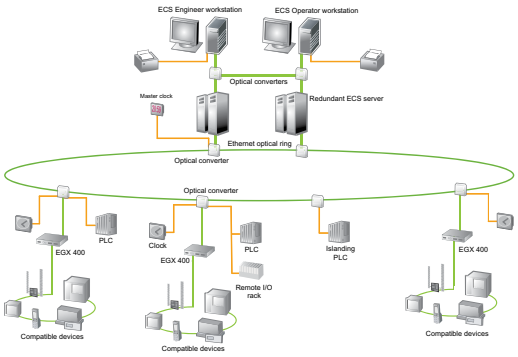
- Communicate with over 300 different powerlog and third-party meters.
- Scale from 1 to 1000s of devices.
- Perform advanced logic and arithmetic operations on real-time and historical data.
- Use web services to interoperate and integrate with other software platforms.

PB111282

*Load profiles, comparisons, and energy allocation*

# StruxureWare™
# Power Management Software

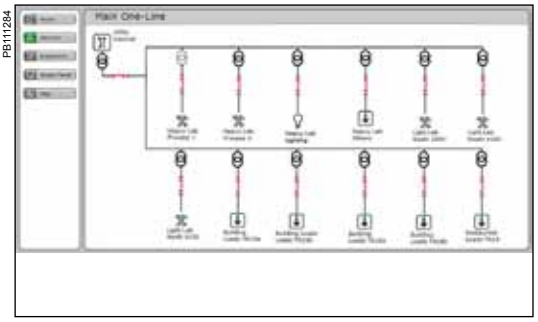
PE86178




PB111283

*Consumption details by area and load type*

PB111284



*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**

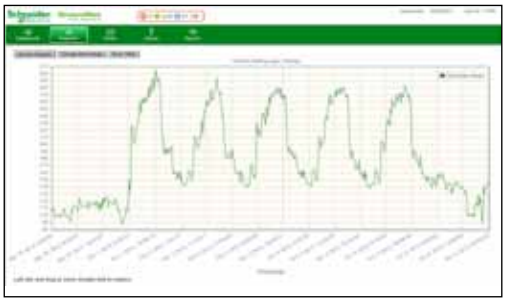
- View the status of your electrical network from any workstation:
- See numeric values, status indicators, gauges, and trends, all with intuitive graphical navigation.
- Extend comprehensive out-of-the-box displays and create custom graphical diagrams to represent your facility; one-line diagrams, campus 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.

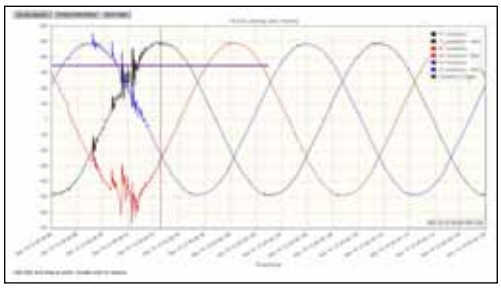
# StruxureWare™
# Power Management Software

EB100268



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

EB100269



*Users can view and analyze waveforms captured by devices.*

PB111285

*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 EN 50160 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.

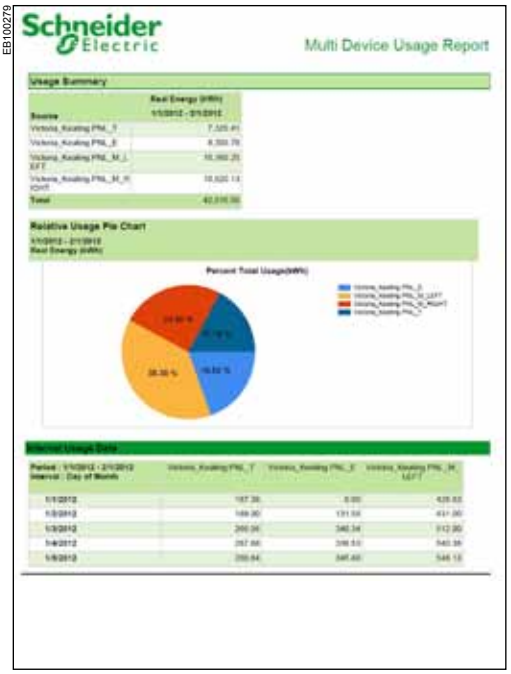
■ Quickly filter on active or unacknowledged alarms.
■ Acknowledge alarms from anywhere in your facility.
■ Trigger on complex conditions.
■ Log all relevant data sequence of events for diagnosis.
■ Flag and avert potential problems.
■ Alert key personnel 24/7.
■ Optimise maintenance scheduling.
■ Easily 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. money value, 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.

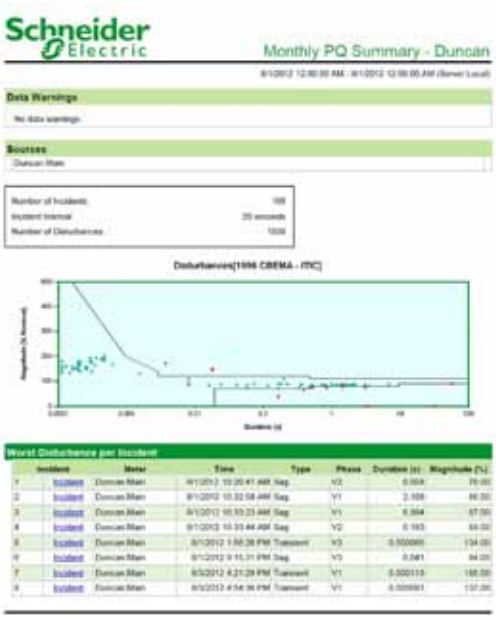
# StruxureWare™
# Power Management Software

EB100279




*StruxureWare provides many different report templates to allow users to easily display and deliver the information they need .*

EB100280




*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.

| Comm. Ref. No. | Description | Page |
|---|---|---|
| | **CURRENT TRANSFORMERS** | |
| | **CT Ip/5 A ratio** | **13** |
| **16550** | 44 x 66 x 37 Adapter for DIN rails Mounting plate | 13 |
| **16551** | 56 x 84 x 60 Adapter for DIN rails Mounting plate Insulated locking screw | 13 |
| **16552** | 56 x 84 x 60 Adapter for DIN rails Mounting plate Insulated locking screw sealable cover | 13 |
| **16553** | 77 x 107 x 64 Adapter for DIN rails Mounting plate Insulated locking screw | 13 |
| **METSECT5CC004** | CC 40 A | 15 |
| **METSECT5CC005** | CC 50 A | 15 |
| **METSECT5CC006** | CC 60 A | 15 |
| **METSECT5CC008** | CC 75 A | 15 |
| **METSECT5CC010** | CC 100 A | 15 |
| **METSECT5CC013** | CC 125 A | 15 |
| **METSECT5CC015** | CC 150 A | 15 |
| **METSECT5CC020** | CC 200 A | 15 |
| **METSECT5CC025** | CC 250 A | 15 |
| **METSECT5ME015** | ME 150 A | 15 |
| **METSECT5ME020** | ME 200 A | 15 |
| **METSECT5ME025** | ME 250 A | 15 |
| **METSECT5ME030** | ME 300 A | 15 |
| **METSECT5ME040** | ME 400 A | 15 |
| **METSECT5ME050** | ME 500 A | 15 |
| **METSECT5ME060** | ME 600 A | 15 |
| **METSECT5MB025** | MB 250 A | 15 |
| **METSECT5MB030** | MB 300 A | 15 |
| **METSECT5MB040** | MB 400 A | 15 |
| **METSECT5MA015** | MA 150 A | 15 |
| **METSECT5MA020** | MA 200 A | 15 |
| **METSECT5MA025** | MA 250 A | 15 |
| **METSECT5MA030** | MA 300 A | 15 |
| **METSECT5MA040** | MA 400 A | 15 |
| **METSECT5MC025** | MC 250 A | 15 |
| **METSECT5MC030** | MC 300 A | 13 |
| **METSECT5MC040** | MC 400 A | 15 |
| **METSECT5MC050** | MC 500 A | 15 |
| **METSECT5MC060** | MC 600 A | 15 |
| **METSECT5MC080** | MC 800 A | 15 |
| **METSECT5MF025** | MF 250 A | 15 |
| **METSECT5MF030** | MF 300 A | 15 |
| **METSECT5MF040** | MF 400 A | 15 |
| **METSECT5MF050** | MF 500 A | 15 |
| **METSECT5MD050** | MD 500 A | 15 |
| **METSECT5MD060** | MD 600 A | 15 |
| **METSECT5MD080** | MD 800 A | 15 |
| **METSECT5CYL1** | Cylinder 8.5 mm dia. | 16 |
| **METSECT5CYL2** | Cylinder 10.5 mm dia. | 16 |
| **METSECT5COVER** | sealable cover 60.5 x 22 x 23.5 mm for current transformer TI | 16 |
| **METSECT5VF050** | CT tropi. 500 5 bars 11x64 or 31x51 | 17 |
| **METSECT5VF060** | CT tropi. 600 5 bars 11x64 or 31x51 | 17 |
| **METSECT5VV500** | CT tropi. 5000 5 bars 55x165 | 17 |
| **METSECT5VV600** | CT tropi. 6000 5 bars 55x165 | 17 |
| **METSECT5DA020** | CT tropi. 200 5 dual out. bars 32x65 | 17 |
| **METSECT5DA025** | CT tropi. 250 5 dual out. bars 32x65 | 17 |
| **METSECT5DA030** | CT tropi. 300 5 dual out. bars 32x65 | 17 |
| **METSECT5DA040** | CT tropi. 400 5 dual out. bars 32x65 | 17 |
| **METSECT5DA050** | CT tropi. 500 5 dual out. bars 32x65 | 17 |
| **METSECT5DA060** | CT tropi. 600 5 dual out. bars 32x65 | 17 |
| **METSECT5DA080** | CT tropi. 800 5 dual out. bars 32x65 | 17 |
| **METSECT5DA100** | CT tropi. 1000 5 dual out. bars 32x65 | 17 |
| **METSECT5DA125** | CT tropi. 1250 5 dual out. bars 32x65 | 17 |
| **METSECT5DA150** | CT tropi. 1500 5 dual out. bars 32x65 | 17 |
| **METSECT5DB100** | CT tropi. 1000 5 dual out. bars 38x127 | 17 |
| **METSECT5DB125** | CT tropi. 1250 5 dual out. bars 38x127 | 17 |
| **METSECT5DB150** | CT tropi. 1500 5 dual out. bars 38x127 | 17 |
| **METSECT5DB200** | CT tropi. 2000 5 dual out. bars 38x127 | 17 |
| **METSECT5DB250** | CT tropi. 2500 5 dual out. bars 38x127 | 17 |
| **METSECT5DB300** | CT tropi. 3000 5 dual out. bars 38x127 | 17 |
| **METSECT5DC200** | CT tropi. 2000 5 dual out. bars 52x127 | 17 |
| **METSECT5DC250** | CT tropi. 2500 5 dual out. bars 52x127 | 17 |
| **METSECT5DC300** | CT tropi. 3000 5 dual out. bars 52x127 | 17 |
| **METSECT5DC400** | CT tropi. 4000 5 dual out. bars 52x127 | 17 |
| **METSECT5DD100** | CT tropi. 1000 5 dual out. bars 34x84 | 17 |
| **METSECT5DD125** | CT tropi. 1250 5 dual out. bars 34x84 | 17 |
| **METSECT5DD150** | CT tropi. 1500 5 dual out. bars 34x84 | 17 |
| **METSECT5DE100** | CT tropi. 1000 5 dual out. bars 54x102 | 17 |
| **METSECT5DE125** | CT tropi. 1250 5 dual out. bars 54x102 | 17 |
| **METSECT5DE150** | CT tropi. 1500 5 dual out. bars 54x102 | 17 |
| **METSECT5DE200** | CT tropi. 2000 5 dual out. bars 54x102 | 17 |
| **METSECT5DH125** | CT tropi. 1250 5 dual out. bars 38x102 | 17 |
| **METSECT5DH150** | CT tropi. 1500 5 dual out. bars 38x102 | 17 |
| **METSECT5DH200** | CT tropi. 2000 5 dual out. bars 38x102 | 17 |
| | **PANEL INSTRUMENTS** | |
| | **AMP meters and VLT** | **22** |
| **16003** | AMP for motor feeder | 22 |
| **16004** | AMP for standard feeder | 22 |
| **16005** | VLT 0-500 V | 22 |
| **16006** | AMP for motor feeder | 22 |
| **16007** | AMP for motor feeder | 22 |
| **16008** | AMP for motor feeder | 22 |
| **16009** | AMP for standard feeder | 22 |
| **16010** | AMP for standard feeder | 22 |
| **16011** | AMP for standard feeder | 22 |
| **16012** | AMP for standard feeder | 22 |
| **16013** | AMP for standard feeder | 22 |
| **16014** | AMP for standard feeder | 22 |
| **16015** | AMP for standard feeder | 22 |
| **16016** | AMP for standard feeder | 22 |
| **16017** | CMA 20 4 | 22 |
| **16018** | CMV 500 7 | 22 |
| **16019** | AMP for standard feeder | 22 |
| | **DIN rail analogue ammeters, voltmeters** | **22** |
| **16029** | 0-30 A no 8 | 22 |
| **16030** | X/5 8 | 22 |
| **16031** | 0-5 A | 22 |
| **16032** | 0-50 A 50/5 | 22 |
| **16033** | 0-75 A 75/5 | 22 |
| **16034** | 0-100 A 100/5 | 22 |
| **16035** | 0-150 A 150/5 | 22 |
| **16036** | 0-200 A 200/5 | 22 |
| **16037** | 0-250 A 250/5 | 22 |
| **16038** | 0-300 A 300/5 | 22 |
| **16039** | 0-400 A 400/5 | 22 |
| **16040** | 0-500 A 500/5 | 22 |
| **16041** | 0-600 A 600/5 | 22 |
| **16042** | 0-800 A 800/5 | 22 |
| **16043** | 0-1000 A 1000/5 | 22 |
| **16044** | 0-1500 A 1500/5 | 22 |
| **16045** | 0-2000 A 2000/5 | 22 |
| **16060** | 0-300 V 8 | 22 |
| **16061** | 0-500 V 8 | 22 |
| | **DIN rail digital ammeters, voltmeter, freq meter** | **23** |
| **15202** | Direct reading iAMP 0-10 A No 4 | 23 |
| **15209** | Multi-rating iAMP 0-5000 A As per rating 4 | 23 |
| **15201** | iVLT 0-600 V 4 | 23 |
| **15208** | iFRE 20-100 Hz 4 | 23 |

# Commercial reference numbers (cont.)

| Comm. Ref. No. | Description | Page |
|---|---|---|
| | **72x72 analogue ammeter, voltmeter** | **24** |
| **16004** | AMP for standard feeder X/5 | 24 |
| **16009** | AMP for standard feeder 0-50 A 50/5 | 24 |
| **16010** | AMP for standard feeder 0-100 A 100/5 | 24 |
| **16011** | AMP for standard feeder 0-200 A 200/5 | 24 |
| **16012** | AMP for standard feeder 0-400 A 400/5 | 24 |
| **16013** | AMP for standard feeder 0-600 A 600/5 | 24 |
| **16014** | AMP for standard feeder 0-1000 A 1000/5 | 24 |
| **16015** | AMP for standard feeder 0-1250 A 1250/5 | 24 |
| **16016** | AMP for standard feeder 0-1500 A 1500/5 | 24 |
| **16019** | AMP for standard feeder 0-2000 A 2000/5 | 24 |
| **16003** | AMP for motor feeder X/5 | 24 |
| **16006** | AMP for motor feeder 0-30-90 A 30/5 | 24 |
| **16007** | AMP for motor feeder 0-75-225 A 75/5 | 24 |
| **16008** | AMP for motor feeder 0-200-600 A 200/5 | 24 |
| **16005** | VLT 0-500 V | 24 |
| | **96x96 analogue ammeter, voltmeter** | **25** |
| **16074** | AMP for standard feeder X/5 | 25 |
| **16079** | AMP for standard feeder 0-50 A 50/5 | 25 |
| **16080** | AMP for standard feeder 0-100 A 100/5 | 25 |
| **16081** | AMP for standard feeder 0-200 A 200/5 | 25 |
| **16082** | AMP for standard feeder 0-400 A 400/5 | 25 |
| **16083** | AMP for standard feeder 0-600 A 600/5 | 25 |
| **16084** | AMP for standard feeder 0-1000 A 1000/5 | 25 |
| **16085** | AMP for standard feeder 0-1250 A 1250/5 | 25 |
| **16086** | AMP for standard feeder 0-1500 A 1500/5 | 25 |
| **16087** | AMP for standard feeder 0-2000 A 2000/5 | 25 |
| **16088** | AMP for standard feeder 0-2500 A 2500/5 | 25 |
| **16089** | AMP for standard feeder 0-3000 A 3000/5 | 25 |
| **16090** | AMP for standard feeder 0-4000 A 4000/5 | 25 |
| **16091** | AMP for standard feeder 0-5000 A 5000/5 | 25 |
| **16092** | AMP for standard feeder 0-6000 A 6000/5 | 25 |
| **16073** | AMP for motor feeder X/5 | 25 |
| **16076** | AMP for motor feeder 0-30-90 A 30/5 | 25 |
| **16077** | AMP for motor feeder 0-75-225 A 75/5 | 25 |
| **16078** | AMP for motor feeder 0-200-600 A 200/5 | 25 |
| **16075** | VLT 0-500 V | 25 |
| | **48x48 CMA, CMV selector switches** | **26** |
| **16017** | CMA 20 4 | 26 |
| **16018** | CMV 500 7 | 26 |
| | **DIN rail iCMA, iCMV selector switches** | **27** |
| **15126** | iCMA 10 415 4 | 27 |
| **15125** | iCMV 10 415 4 | 27 |
| | **iCH hour counter** | **28** |
| **15440** | iCH "DIN" 230 V AC ± 10 %/50 Hz 4mm | 28 |
| **15607** | CH "48 x 48" 24 V AC ± 10 %/50 Hz | 28 |
| **15608** | CH "48 x 48" 230 V AC ± 10 %/50 Hz | 28 |
| **15609** | CH "48 x 48" 12 to 36 V DC | 28 |
| | **iCI impulse counter** | **29** |
| **15443** | iCI 4mm impulse counter DIN | 29 |
| | **BASIC ENERGY METERING** | |
| | **iEM2000** | **32** |
| **A9MEM2000T** | iEM2000T basic energy meter, without display | 32 |
| **A9MEM2000** | iEM2000 basic energy meter | 32 |
| **A9MEM2010** | iEM2010 energy meter, kWh pulse output | 32 |
| **A9MEM2100** | iEM2100 basic energy meter | 32 |
| **A9MEM2105** | iEM2105 energy meter, kWh pulse output with partial meter | 32 |
| **A9MEM2110** | iEM2110 energy meter, kWh and kvarh pulse outputs with two tariffs, four quadrant energy measurement, MID certified | 32 |
| **A9MEM2135** | iEM2135 energy meter, M-Bus communication, four quadrant energy measurement, two tariffs, MID certified | 32 |
| **A9MEM2150** | iEM2150 energy meter, Modbus communication, four quadrant energy measurement | 32 |
| **A9MEM2155** | iEM2155 energy meter, Modbus communication, four quadrant energy measurement, two tariffs, MID certified | 32 |

| Comm. Ref. No. | Description | Page |
|---|---|---|
| | **iEM3000** | **35** |
| **A9MEM3100** | iEM3100 basic energy meter | 35 |
| **A9MEM3110** | iEM3110 energy meter with pulse output | 35 |
| **A9MEM3115** | iEM3115 multi-tariff energy meter | 35 |
| **A9MEM3135** | iEM3135 advanced multi-tariff energy meter & electrical parameter plus M-Bus comm port | 35 |
| **A9MEM3150** | iEM3150 energy meter & electrical parameter plus Modbus RS-485 comm port | 35 |
| **A9MEM3155** | iEM3155 advanced multi-tariff energy meter & electrical parameter plus Modbus RS-485 comm port | 35 |
| **A9MEM3165** | iEM3165 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port | 35 |
| **A9MEM3175** | iEM3175 advanced multi-tariff energy meter & electrical parameter plus LON TP/FT-10 comm port | 35 |
| **A9MEM3200** | iEM3200 basic energy meter | |
| **A9MEM3210** | iEM3210 energy meter with pulse output | 35 |
| **A9MEM3215** | iEM3215 multi-tariff energy meter | |
| **A9MEM3235** | iEM3235 advanced multi-tariff energy meter & electrical parameter plus M-Bus comm port | 35 |
| **A9MEM3250** | iEM3250 energy meter & electrical parameter plus Modbus RS-485 comm port | 35 |
| **A9MEM3255** | iEM3255 advanced multi-tariff energy meter & electrical parameter plus Modbus RS485 comm port | 35 |
| **A9MEM3265** | iEM3265 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port | 35 |
| **A9MEM3275** | iEM3275 advanced multi-tariff energy meter & electrical parameter plus LON TP/FT-10 comm port | 35 |
| **A9MEM3300** | iEM3300 basic energy meter | 35 |
| **A9MEM3310** | iEM3310 energy meter with pulse output | |
| **A9MEM3335** | iEM3335 advanced multi-tariff energy meter & electrical parameter plus M-Bus comm port | 35 |
| **A9MEM3350** | iEM3350 energy meter & electrical parameter plus Modbus RS-485 comm port | 35 |
| **A9MEM3355** | iEM3355 advanced multi-tariff energy meter & electrical parameter plus Modbus RS485 comm port | 35 |
| **A9MEM3365** | iEM3365 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port | 35 |
| **A9MEM3375** | iEM3375 advanced multi-tariff energy meter & electrical parameter plus LON TP/FT-10 comm port | 35 |
| **A9MEM3455** | iEM3455 advanced multi-tariff energy meter & electrical parameter plus Modbus MS/TP comm port | 35 |
| **A9MEM3465** | iEM3465 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port | 35 |
| **A9MEM3555** | iEM3555 advanced multi-tariff energy meter & electrical parameter plus Modbus MS/TP comm port | 35 |
| **A9MEM3565** | iEM3565 advanced multi-tariff energy meter & electrical parameter plus BACnet MS/TP comm port | 35 |
| | **LVCTs** | **40** |
| **LVCT00050S** | CT, split-core, Size 0, 50 A to 0.333 V | 40 |
| **LVCT00101S** | CT, split-core, Size 1, 100 A to 0.333 V | 40 |
| **LVCT00201S** | CT, split-core, Size 1, 200 A to 0.333 V | 40 |
| **LVCT00102S** | CT, split-core, Size 2, 100 A to 0.333 V | 40 |
| **LVCT00202S** | CT, split-core, Size 2, 200 A to 0.333 V | 40 |
| **LVCT00302S** | CT, split-core, Size 2, 300 A to 0.333 V | 40 |
| **LVCT00403S** | CT, split-core, Size 3, 400 A to 0.333 V | 40 |
| **LVCT00603S** | CT, split-core, Size 3, 600 A to 0.333 V | 40 |
| **LVCT00803S** | CT, split-core, Size 3, 800 A to 0.333 V | 40 |
| **LVCT00804S** | CT, split-core, Size 4, 800 A to 0.333 V | 40 |
| **LVCT01004S** | CT, split-core, Size 4, 1000 A to 0.333 V | 40 |
| **LVCT01204S** | CT, split-core, Size 4, 1200 A to 0.333 V | 40 |
| **LVCT01604S** | CT, split-core, Size 4, 1600 A to 0.333 V | 40 |
| **LVCT02004S** | CT, split-core, Size 4, 2000 A to 0.333 V | 40 |
| **LVCT02404S** | CT, split-core, Size 4, 2400 A to 0.333 V | |

# Commercial reference numbers (cont.)

| Comm. Ref. No. | Description | Page |
|---|---|---|
| | **Rogowski coils** | **41** |
| U018-0001 | ROGCOIL 12 in (0.30 m) length, 3.8 in (0.10 m) diameter, 8 ft (2.44 m) lead | 41 |
| U018-0002 | ROGCOIL 18 in (0.46 m) length, 5.7 in (0.14 m) diameter, 8 ft (2.44 m) lead | 41 |
| U018-0003 | ROGCOIL 24 in (0.61 m) length, 7.6 in (0.19 m) diameter, 8 ft (2.44 m) lead | 41 |
| U018-0004 | ROGCOIL 36 in (0.91 m) length, 11.5 in (0.29 m) diameter, 8 ft (2.44 m) lead | 41 |
| | **BASIC MULTI-FUNCTION METERING** | |
| | **PM3000** | **42** |
| METSEPM3200 | PM3200 basic power meter | 42 |
| METSEPM3210 | PM3210 power meter with pulse output | 42 |
| METSEPM3250 | PM3250 power meter with RS485 port | 42 |
| METSEPM3255 | PM3255 power meter plus 2 digital inputs, 2 digital outputs with RS-485 port | 42 |
| | **PM5350** | **47** |
| METSEPM5350 | PM5350 meter | 47 |
| METSEPM5350IB | PM5350IB meter | 47 |
| METSEPM5350PB | PM5350PB meter | 47 |
| | **PM5000** | **59** |
| METSEPM5100 | PM5100 power meter, pulse out | 59 |
| METSEPM5110 | PM5100 power meter, pulse + serial out | 59 |
| METSEPM5111 | PM5100 power meter, pulse + serial out, MID | 59 |
| METSEPM5310 | PM5300 power meter, serial + 2DI-2DO out | 59 |
| METSEPM5330 | PM5300 power meter, serial + 2DI-2DO-2relay out | 59 |
| METSEPM5331 | PM5300 power meter, serial + 2DI-2DO-2relay out, MID | 59 |
| METSEPM5320 | PM5300 power meter, ETH + 2DI-2DO out | 59 |
| METSEPM5340 | PM5300 power meter, ETH + 2DI-2DO-2relay out | 59 |
| METSEPM5341 | PM5300 power meter, ETH + 2DI-2DO-2relay out, MID | 59 |
| METSEPM5560 | PM5560 power meter, ETH-serial + 4DI-2DO out | 59 |
| METSEPM5561 | PM5561 power meter, ETH-serial + 4DI-2DO out, MID | 59 |
| METSEPM5563 | PM5563 power meter, ETH-serial + 4DI-2DO out, no disp | 59 |
| METSEPM5563RD | PM5500 power meter, ETH-serial + 4DI-2DO out, remote display | 59 |
| METSEPM5RD | Remote display for PM5563 power meter | 59 |
| METSEPM51HK | Hardware kit for PM51XX (voltage, current, comms & IO connectors + moulding clips) | 59 |
| METSEPM53HK | Hardware kit for PM53XX (voltage, current, comms & IO connectors + moulding clips) | 59 |
| METSEPM51-3RSK | Revenue sealing kit for PM51XX & PM53XX (sealing covers for voltage & current connectors) | 59 |
| METSEPM55HK | Hardware kit for PM55XX (voltage, current, comms & IO connectors & moulding clips) | 59 |
| METSEPM55RSK | Revenue sealing kit for PM55XX (sealing covers for voltage & current connectors) | 59 |
| | **PM8000** | **67** |
| METSEPM8240 | DIN96 panel mount meter | 67 |
| METSEPM8243 | DIN rail mount meter | 67 |
| METSEPM8244 | DIN rail mount meter with remote display | 67 |
| METSEPM89RD96 | Remote display, 3 metre cable, mounting hardware for 30mm hole (nut & centering pin), mounting hardware for DIN96 cutout (92x92mm) adapter plate | 67 |
| METSEPM8000SK | Terminal covers for utility sealing | 67 |
| METSEPMAK | Adapters for mounting meter and remote display back to back & ANSI 4ĩ, 0.3 metre (1 ft.) Ethernet cable | 67 |
| METSECAB1 | Display Cable, 1 metre | 67 |
| METSECAB3 | Display Cable, 3 metres | 67 |
| METSECAB10 | Display Cable, 10 metres | 67 |
| METSEPM8HWK | PM8000 hardware kit | 67 |
| METSEPM8RDHWK | PM8000 remote display hardware kit | 67 |
| METSEPM89M2600 | Digital I/O module (6 digital inputs & 2 relay outputs) | 67 |
| METSEPM89M0024 | Analogue I/O module (4 analogue inputs & 2 analogue outputs) | 67 |

| Comm. Ref. No. | Description | Page |
|---|---|---|
| | **ION7550/7650** | **74** |
| M7550 | ION7550 meter | 74 |
| M7650 | ION7650 meter | 74 |
| M765RD | SE remote display | 74 |
| M765RDS | SE remote display with power supply | 74 |
| OPTICAL-PROBE | Optical probe with DB9 connector | 74 |
| OPTICAL-PROBE-USB | Optical probe with USB connector | 74 |
| ADPT-37XX-7500 | Adapter plate to fit meter into a 3710 or 3720 ACM panel cutout | 74 |
| TERMCVR-7500 | Terminal strip cover for the ION7550 or ION7650 | 74 |
| M1UB10A1V-10A | 10 A / 1 V AC Universal Technic Clamp On Current Probe | 74 |
| P32UEP813-1000A | 1000 A / 1 V AC Universal Technic Clamp On Current Probe | 74 |
| P32UEP815-3000A | 3000 A / 1 V AC Universal Technic Clamp On Current Probe | 74 |
| SCT0750-005-5A | 5 A / 0.333 V AC Magnelabs Split Core Current Probe | 74 |
| SCT1250-300-300A | 300 A / 0.333 V AC Magnelabs Split Core Current Probe | 74 |
| | **CM4000** | **81** |
| CM4000T | Circuit monitor CM4000T | 81 |
| CMDLC | LCD display with CAB12 cable | 81 |
| CAB4 | 1.25 m display connection cable | 81 |
| CAB12 | 3.65 m display connection cable | 81 |
| CAB30 | 9.14 m display connection cable | 81 |
| CMDVF | VFD with CAB12 cable | 81 |
| MCT2W | RS-485 Terminator for 2-wire daisy chain | 81 |
| ECC21 | CM4 Ethernet card | 81 |
| | **ION7400** | **88** |
| METSEION7400 | ION7400 Panel mount meter (integrated display with optical port and 2 energy pulse LEDs) | 88 |
| METSEION7403 | DIN rail mount - utility meter base | 88 |
| METSEPM89RD96 | Remote display, 3 m cable, mounting hardware for 30 mm hole and DIN96 cutout (92 x 92 mm) adapter plate | 88 |
| METSEPM89M2600 | Digital I/O module (6 digital inputs (wetted) & 2 relay outputs) | 88 |
| METSEPM89M0024 | Analogue I/O module (4 analogue inputs & 2 analogue outputs) | 88 |
| METSEPM8000SK | Revenue sealing kit | 88 |
| METSECAB10 | Display Cable, 10 m | 88 |
| | **ION8650** | **96** |
| M8650A | ION8650A meter | 96 |
| M8650B | ION8650B meter | 96 |
| M8650C | ION8650C meter | 96 |
| A-BASE-ADAPTER-9 | Form 9S to Form 9A adapter | 96 |
| A-BASE-ADAPTER-35 | Form 35S to Form 35A adapter | 96 |
| CBL-8X00BRKOUT | Break out cable 1.5 m | 96 |
| CBL-8X00IOE5FT | Cable para I/O expander 1.5 m | 96 |
| CBL-8X00IOE15FT | I/O extension cable 4.6 m | 96 |
| CBL-8XX0-BOP-IOBOX | Cat.3 25PR UTP cable 205 m reel | 96 |
| | **ION8800** | **104** |
| M8800A | ION8800A meter | 104 |
| M8800B | ION8800B meter | 104 |
| M8800C | ION8800C meter | 104 |
| OPTICAL-PROBE | ION8800 optical probe with DB9 connector | 104 |
| OPTICAL-PROBE-USB | ION8800 optical probe with USB connector | 104 |
| | **MULTI-CIRCUIT AND WIRELESS METERING** | |
| | **BCPM (Branch Circuit Power Meter)** | **111** |
| BCPMA084S | 84-circuit solid-core power & energy meter, 100A CTs (4 strips), 19.05 mm spacing | 111 |
| BCPMA184S | 84-circuit solid-core power & energy meter, 100A CTs (4 strips), 25.4 mm spacing | 111 |
| BCPMA042S | 42-circuit solid-core power & energy meter, 100A CTs (2 strips), 19.05 mm spacing | 111 |
| BCPMA142S | 42-circuit solid-core power & energy meter, 100A CTs (2 strips), 25.4 mm spacing | 111 |
| BCPMA224S | 24-circuit solid-core power & energy meter, 100A CTs (2 strips), 18 mm spacing | 111 |
| BCPMA236S | 36-circuit solid-core power & energy meter, 100A CTs (2 strips), 18 mm spacing | 111 |

# Commercial reference numbers (cont.)

| Comm. Ref. No. | Description | Page |
|---|---|---|
| **BCPMA242S** | 42-circuit solid-iEM2000core power & energy meter, 100 A CTs (2 strips), 18 mm spacing | 111 |
| **BCPMA248S** | 48-circuit solid-core power & energy meter, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPMA272S** | 72-circuit solid-core power & energy meter, 100 A CTs (4 strips), 18 mm spacing | |
| **BCPMA284S** | 84-circuit solid-core power & energy meter, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPMB084S** | 84-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 19.05 mm spacing | 111 |
| **BCPMB184S** | 84-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 25.4 mm spacing | 111 |
| **BCPMB042S** | 42-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 19.05 mm spacing | 111 |
| **BCPMB142S** | 42-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 25.4 mm spacing | 111 |
| **BCPMB224S** | 24-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 18 mm spacing | 111 |
| **BCPMB236S** | 36-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 18 mm spacing | 111 |
| **BCPMB242S** | 42-circuit solid-core branch current, mains power meter, 100 A CTs (2 strips), 18 mm spacing | 111 |
| **BCPMB248S** | 48-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPMB272S** | 72-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPMB284S** | 84-circuit solid-core branch current, mains power meter, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPMC084S** | 84-circuit solid-core branch current meter, 100 A CTs (4 strips), 19.05 mm spacing | 111 |
| **BCPMC184S** | 84-circuit solid-core branch current meter, 100 A CTs (4 strips), 25.4 mm spacing | 111 |
| **BCPMC042S** | 42-circuit solid-core branch current meter, 100 A CTs (2 strips), 19.05 mm spacing | 111 |
| **BCPMC142S** | 42-circuit solid-core branch current meter, 100 A CTs (2 strips), 25.4 mm spacing | 111 |
| **BCPMC224S** | 24-circuit solid-core branch current meter, 100 A CTs (2 strips), 18 mm spacing | 111 |
| **BCPMC236S** | 36-circuit solid-core branch current meter, 100 A CTs (2 strips), 18 mm spacing | 111 |
| **BCPMC242S** | 42-circuit solid-core branch current meter, 100 A CTs (2 strips), 18 mm spacing | 111 |
| **BCPMC248S** | 48-circuit solid-core branch current meter, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPMC272S** | 72-circuit solid-core branch current meter, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPMC284S** | 84-circuit solid-core branch current meter, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPME042S** | 42-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (2 strips), 19.05 mm spacing | 111 |
| **BCPME084S** | 84-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (4 strips), 19.05 mm spacing | 111 |
| **BCPME142S** | 42-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (2 strips), 25.4 mm spacing | 111 |
| **BCPME184S** | 84-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (4 strips), 25.4 mm spacing | 111 |
| **BCPME224S** | 24-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (2 strips), 18 mm spacing | |
| **BCPME236S** | 36-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (2 strips), 18 mm spacing | 111 |
| **BCPME242S** | 42-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (2 strips), 18 mm spacing | |
| **BCPME248S** | 48-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPME272S** | 72-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (4 strips), 18 mm spacing | |
| **BCPME284S** | 84-circuit solid-core power & energy meter w/ Ethernet, 100 A CTs (4 strips), 18 mm spacing | 111 |
| **BCPMSCA1S** | 42-circuit split-core power and energy meter, CTs and cables sold separately | 111 |
| **BCPMSCA2S** | 84-circuit split-core power and energy meter, CTs and cables sold separately | 111 |
| **BCPMSCA30S** | 30-circuit split-core power and energy meter, (30) 50 A CTs & (2) 1.21 m cables | 111 |
| **BCPMSCA42S** | 42-circuit split-core power and energy meter, (42) 50 A CTs & (2) 1.21 m cables | 111 |
| **BCPMSCA60S** | 60-circuit split-core power and energy meter, (60) 50 A CTs & (4) 1.21 m cables | 111 |
| **BCPMSCA84S** | 84-circuit split-core power and energy meter, with (84) 50 A CTs & (4) 1.21 m cables | 111 |

| Comm. Ref. No. | Description | Page |
|---|---|---|
| **BCPMSCB1S** | 42-circuit split-core branch current, mains power meter, CTs and cables sold separately | 111 |
| **BCPMSCB2S** | 84-circuit split-core branch current, mains power meter, CTs and cables sold separately | 111 |
| **BCPMSCB30S** | 30-circuit split-core branch current, mains power meter, (30) 50 A CTs & (2) 1.21 m cables | 111 |
| **BCPMSCB42S** | 42-circuit split-core branch current, mains power meter, (42) 50 A CTs & (2) 1.21 m cables | 111 |
| **BCPMSCB60S** | 60-circuit split-core branch current, mains power meter, (60) 50 A CTs & (4) 1.21 m cables | 111 |
| **BCPMSCBY63S** | 42-circuit split-core branch current, mains, all boards on backplate, CTs and cables sold separately | 111 |
| **BCPMSCB84S** | 84-circuit split-core branch current, mains power meter, (84) 50 A CTs & (4) 1.21 m cables | 111 |
| **BCPMSCC1S** | 42-circuit split-core current meter, CTs and cables sold separately | 111 |
| **BCPMSCC2S** | 84-circuit split-core current meter, CTs and cables sold separately | 111 |
| **BCPMSCC30S** | 30-circuit split-core current meter, (30) 50 A CTs & (2) 1.21 m cables | 111 |
| **BCPMSCC42S** | 42 circuit split-core current meter, (42) 50 A CTs & (2) 1.21 m cables | 111 |
| **BCPMSCC60S** | 60-circuit split-core current meter, (60) 50 A CTs & (4) 1.21 m cables | 111 |
| **BCPMSCCY63S** | 42-circuit split-core current meter, all boards on backplate, CTs and cables sold separately | 111 |
| **BCPMSCC84S** | 84-circuit split-core current meter, (84) 50 A CTs & (4) 1.21 m cables | 111 |
| **BCPMSCE1S** | 42-circuit split-core power and energy meter w/ Ethernet, CTs and cables sold separately | 111 |
| **BCPMSCE2S** | 84-circuit split-core power and energy meter w/ Ethernet, CTs and cables sold separately | 111 |
| **BCPMSCE30S** | 30-circuit split-core power and energy meter w/ Ethernet, (30) 50A CTs & (2) 1.21 m cables | 111 |
| **BCPMSCE42S** | 42-circuit split-core power and energy meter w/ Ethernet, (42) 50 A CTs & (2) 1.21 m cables | 111 |
| **BCPMSCE60S** | 60-circuit split-core power and energy meter w/ Ethernet, (60) 50 A CTs & (4) 1.21 m cables | 111 |
| **BCPMSCE84S** | 84-circuit split-core power and energy meter w/ Ethernet, (84) 50 A CTs & (4) 1.21 m cables | 111 |
| **BCPMSCADPBS** | BCPM adapter boards, quantity 2, for split core BCPM | 111 |
| **BCPMSCCT0** | BCPM 50 A split core CTs, Quantity 6, 1.8 m lead lengths | 111 |
| **BCPMSCCT0R20** | BCPM 50 A split core CTs, quantity 6, 6 m lead lengths | 111 |
| **BCPMSCCT1** | BCPM 100 A split core CTs, Quantity 6, 1.8 m lead lengths | 111 |
| **BCPMSCCT1R20** | BCPM 100 A split core CTs, Quantity 6, 6 m lead lengths | 111 |
| **BCPMSCCT3** | BCPM 200 A split core CTs, Quantity 1, 1.8 m lead lengths | 111 |
| **BCPMSCCT3R20** | BCPM 200 A split core CTs, Quantity 1, 6 m lead lengths | 111 |
| **BCPMCOVERS** | BCPM circuit board cover | 111 |
| **BCPMREPAIR** | CT repair kit for solid core BCPM (includes one CT) | 111 |
| **H6803R-0100** | H6803R-0100 Additional 100A split core CT for use with solid core repair kit | 111 |
| **E8951** | Modbus to BACnet protocol converter | 111 |
| **CBL008** | Flat Ribbon cable (quantity 1) for BCPM, length = 0.45 m | 111 |
| **CBL016** | Flat Ribbon cable (quantity 1) for BCPM, length = 1.2 m | 111 |
| **CBL017** | Flat Ribbon cable (quantity 1) for BCPM, length = 1.5 m | 111 |
| **CBL018** | Flat Ribbon cable (quantity 1) for BCPM, length = 1.8 m | 111 |
| **CBL019** | Flat Ribbon cable (quantity 1) for BCPM, length = 2.4 m | 111 |
| **CBL020** | Flat Ribbon cable (quantity 1) for BCPM, length = 3.0 m | 111 |
| **CBL021** | Flat Ribbon cable (quantity 1) for BCPM, length = 6.1 m | 111 |
| **CBL022** | Round Ribbon cable (quantity 1) for BCPM, length = 1.2 m | 111 |
| **CBL023** | Round Ribbon cable (quantity 1) for BCPM, length = 3 m | 111 |

# Commercial reference numbers (cont.)

| Comm. Ref. No. | Description | Page |
|---|---|---|
| CBL024 | Round Ribbon cable (quantity 1) for BCPM, length = 6.1 m | 111 |
| CBL031 | Round Ribbon cable (quantity 1) for BCPM, length = 0.5 m | 111 |
| CBL033 | Round Ribbon cable (quantity 1) for BCPM, length = 0.8 m | 111 |
| LVCT00050S | 50 A 10 mm x 11 mm | 111 |
| LVCT00101S | 200 A 16 mm x 20 mm | 111 |
| LVCT00102S | 100 A 30 mm x 31 mm | 111 |
| LVCT00202S | 200 A 30 mm x 31 mm | 111 |
| LVCT00302S | 300 A 30 mm x 31 mm | 111 |
| LVCT00403S | 400 A 62 mm x 73 mm | 111 |
| LVCT00603S | 600 A 62 mm x 73 mm | 111 |
| LVCT00803S | 800 A 62 mm x 73 mm | 111 |
| LVCT00804S | 800 A 62 mm x 139 mm | 111 |
| LVCT01004S | 1000 A 62 mm x 139 mm | 111 |
| LVCT01204S | 1200 A 62 mm x 139 mm | 111 |
| LVCT01604S | 1600 A 62 mm x 139 mm | 111 |
| LVCT02004S | 2000 A 62 mm x 139 mm | 111 |
| LVCT02404S | 2400 A 62 mm x 139 mm | 111 |
| LVCT20050S | 50 A 10 mm | 111 |
| LVCT20100S | 100 A 10 mm | 111 |
| LVCT20202S | 200 A 25 mm | 111 |
| | **EM4200** | **122** |
| METSEEM4235 | Enercept, Class 0.2S meter, Modbus/BACnet communication, Uni-Directional/Bi-Directional, RS-485, IEC wire code, single circuit, Modbus/BACnet | 122 |
| METSEEM4236 | Enercept, Class 0.2S meter, Modbus/BACnet communication, Uni-Directional/Bi-Directional, RS-485, ANSI wire code, single circuit, Modbus/BACnet | 122 |
| | **EM4300** | **126** |
| METSEEM4302 | EM4302 200 A 55 mm | 126 |
| METSEEM4305 | EM4305 500 A 55 mm | 126 |
| METSEEM4310 | EM4310 1000 A 125 mm | 126 |
| METSEEM4320 | EM4320 2000 A 125 mm | 126 |
| | **WT4100/4200** | **130** |
| METSEWT4211 | WT4211 Single Pulse 169 MHz | 130 |
| METSEWT4216 | WT4216 Single Pulse Water Pit 169 MHz | 130 |
| METSEWT4214 | WT4214 Single Pulse Atex 169 MHz | 130 |
| METSEWT4212 | WT4212 Dual Pulse 169 MHz | 130 |
| METSEWT4232 | WT4232 Alarm Status Dual 169 MHz | 130 |
| METSEWT4222 | WT4222 Analogue 0-10 V Dual 169 MHz | 130 |
| METSEWT4241 | WT4241 Temperature Single Internal 169 MHz | 130 |
| METSEWR4200 | WR4200 Modbus Receiver 169 MHz | 130 |
| METSEWR4290 | WR4290 Repeater 169 MHz | 130 |
| METSEWA4275 | WA4275 Dipole Antenna 169 MHz | 130 |
| METSEWA4277 | WA4277 Whip Antenna 169 MHz | 130 |
| METSEWT4111 | WT4111 Single Pulse 153 MHz | 130 |
| METSEWT4112 | WT4112 Dual Pulse 153 MHz | 130 |
| METSEWT4132 | WT4132 Alarm Status Dual 153 MHz | 130 |
| METSEWT4122 | WT4122 Analogue 0-10 V Dual 153 MHz | 130 |
| METSEWT4141 | WT4141 Temperature Single Internal 153 MHz | 130 |
| METSEWR4100 | WR4100 Modbus Receiver 153 MHz | 130 |
| METSEWR4190 | WR4190 Repeater 153 MHz | 130 |
| METSEWA4175 | WA4175 Dipole Antenna 153 MHz | 130 |
| METSEWA4177 | WA4177 Whip Antenna 153 MHz | 130 |
| METSEWA4X82 | WA4X82 5 m antenna extension cable 169 MHz | 130 |
| METSEWA4X84 | WA4X84 10 m antenna extension cable 169 MHz | 130 |
| | **EM4000** | **134** |
| METSEEM403316 | 24 x 333 mV inputs, 120V control power 60 Hz | 134 |
| METSEEM403336 | 24 x 333 mV inputs, 277V control power 60 Hz | 134 |
| METSEEM408016 | 24 x 80 mA inputs, 120V control power 60 Hz | 134 |
| METSEEM408036 | 24 x 80 mA inputs, 277V control power 60 Hz | 134 |
| METSECONV580 | EM4000 5 A : 80 mA converter | 134 |
| METSEPTMOD480 | 480 V PT Module for EM4X00 meter | 134 |
| METSEPTMOD347600 | 347 V/600 V PT Module for EM4X00 meter | 134 |
| METSECTTERM | EM4000 CT termination module | 134 |
| METSECTSHORT | EM4000 CT shorting module | 134 |

| Comm. Ref. No. | Description | Page |
|---|---|---|
| METSECT80200 | EM4000 solid-core CT 200 A / 80 mA secondary | 134 |
| METSECT80400 | EM4000 solid-core CT 400 A / 80 mA secondary | 134 |
| METSECT80600 | EM4000 solid-core CT 600 A / 80 mA secondary | 134 |
| | **EM4800** | **141** |
| METSEEM480525 | 24 x 5 A inputs, 230/240 V control power, 50 Hz | 141 |
| METSEEM480516 | 24 x 5 A inputs, 120 V control power, 60 Hz | 141 |
| METSEEM483325 | 24 x 333 mV inputs, 230/240 V control power, 50 Hz | 141 |
| METSEEM483316 | 24 x 333 mV inputs, 120 V control power, 60 Hz | 141 |
| METSEEM488016 | 24 x 80 mA inputs, 120 V control power, 60 Hz | 141 |
| METSEEM488026 | 24 x 80 mA inputs, 230/240 V control power, 50 Hz | 141 |
| METSECONV580 | EM4000 5 A : 80 mA converter | 141 |
| METSEPTMOD480 | 480 V PT Module for EM4X00 meter | 141 |
| METSEPTMOD347600 | 347 V/600 V PT Module for EM4X00 meter | 141 |
| METSECTTERM | EM4000 CT termination module | 141 |
| METSECTSHORT | EM4000 CT shorting module | 141 |
| METSECT80200 | EM4000 solid-core CT 200 A / 80 mA secondary | 141 |
| METSECT80400 | EM4000 solid-core CT 400 A / 80 mA secondary | 141 |
| METSECT80600 | EM4000 solid-core CT 600 A / 80 mA secondary | 141 |
| | **COMMUNICATIONS & GATEWAYS** | |
| | **Link150 Ethernet gateway** | **144** |
| EGX150 | Link150 Ethernet gateway | 144 |
| | **Com'X200/210/510** | **146** |
| EBX200 | Com'X 200 data logger 24 V DC or 230 V AC power supplied | 146 |
| EBX210 | Com'X 210 data logger 24 V DC power supplied UL rated | 146 |
| EBX510 | Com'X 510 energy server 24 V DC power supplied UL rated | 146 |
| EBXA-USB-WiFi | Com'X Wi-Fi USB interface | 146 |
| EBXA-GPRS-SIM | Com'X GPRS interface SIM card | 146 |
| EBXA-GPRS | Com'X GPRS interface | 146 |
| EBXA-ANT-5M | Com'X External GPRS antenna | 146 |
| EBXA-USB-Zigbee | Com'X Zigbee USB interface | 146 |
| | **ION7550 RTU** | **144** |
| M7550 | ION7550 RTU | 144 |
| M7550A0N9B9A0A0A | 7550-I/5M/512S-RTU-P240-SCOM PML 7550 PO | 144 |
| M7550A0N9B9E0A0A | SE-7550-I/5M/512S-RTU-P240-ETH PML 7550 | 144 |
| M7550A0N9B9E0E0A | SE-7550-I/5M/512S-RTU-P240-ETH-20MAI PML | 144 |
| | **MONITORING SOFTWARE** | |
| | **StruxureWare Power Monitoring** | **163** |

*Please see your Schneider Electric Representative for complete ordering information.*

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**PLSED309005EN**

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