Communication interfaces and associated services

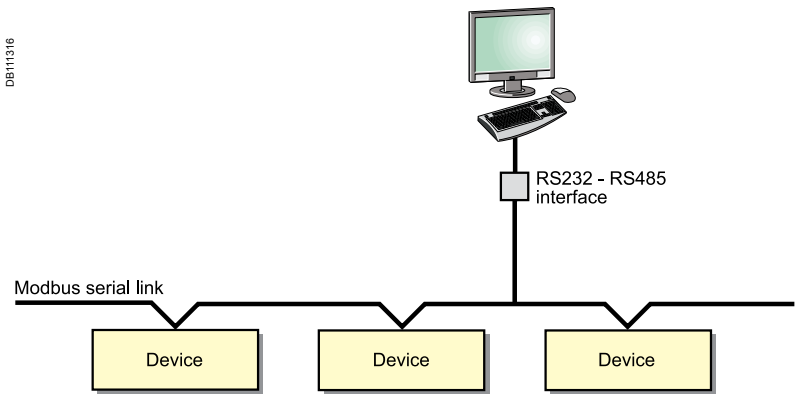
Switchboard-data acquisition and monitoring make it possible to anticipate events. In this way, they reduce customer costs in terms of operation, maintenance and investment.

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.

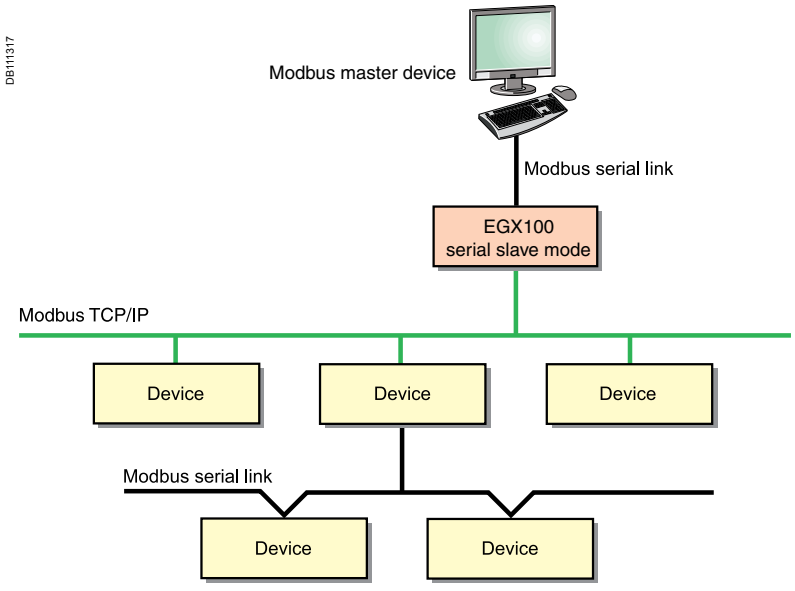
In all architectures, the communication interface serves as the link between the installation devices and the PC running the operating software. It provides the physical link and protocol adaptation. Adaptation is required because the communication systems used by the PC (Modbus via RS232 and/or Ethernet) are generally not those used by the installation devices (e.g. the Modbus protocol via RS485).

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



Modbus communication architecture.

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



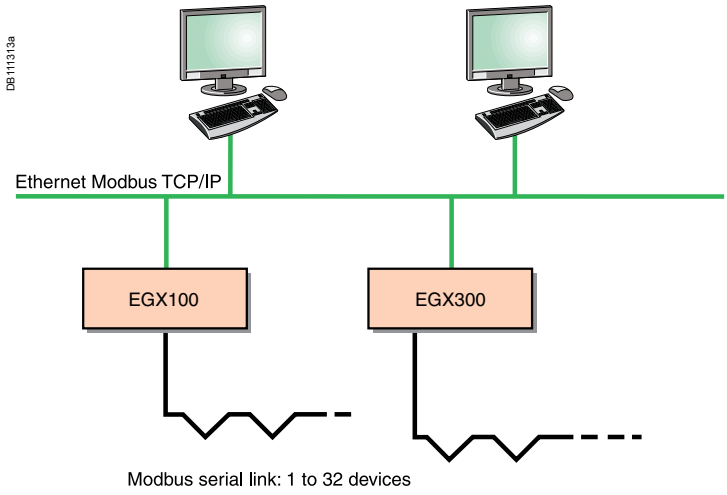
Modbus communication across Ethernet network

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



Ethernet communication architecture.

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

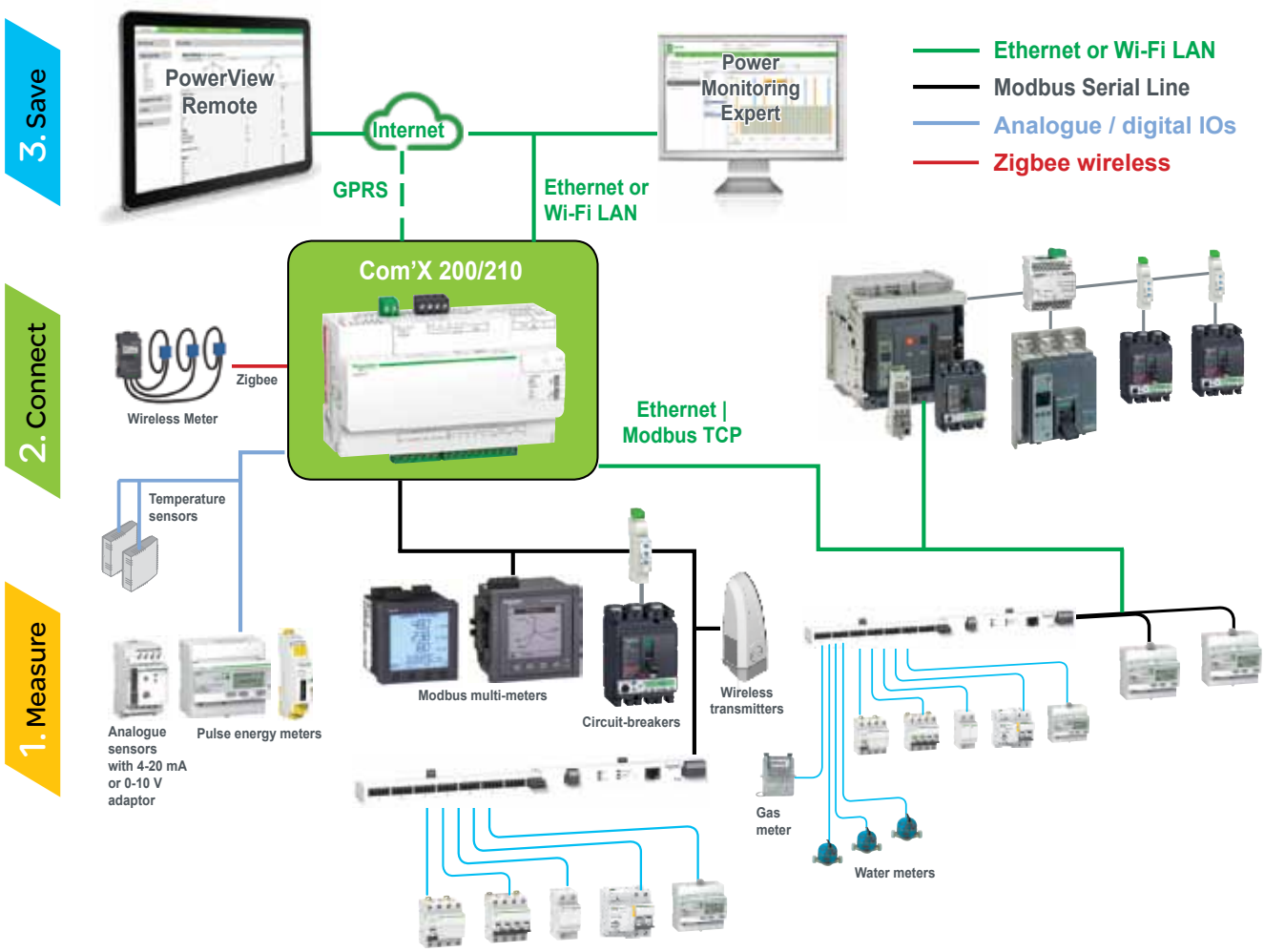
The application software is now standardised: the web interface into the system does not require custom web pages to be created. It is personalised by simply identifying the components in your installation and can be used as easily as any internet application.

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

Com'X 200 / 210
Energy data loggers

Main functions

PB114855



Data collector

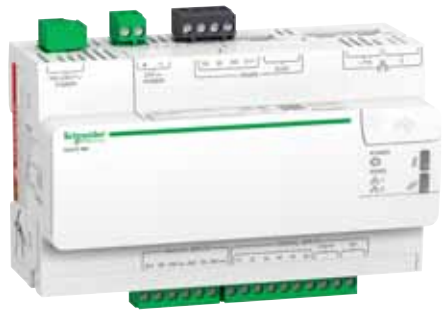
Collects and stores energy data from up to 64 field devices, connected to either:
- Ethernet TCP/IP field network.
- Modbus Serial line network (up to 32 devices).
- Embedded digital and analogue inputs.

"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 CO2 levels in a building, providing analogue information.

Data logging and storage capabilities include:
- Configurable logging interval, from every minute to once a week.
- Data storage duration of several weeks, depending on quanitity of of collected data.

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 Energy Operation.
- CSV files for viewing in Excel or transformed for upload into programs such as StruxureWare™ Power Monitoring Expert or any compatible software.

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

- HTTP.
- HTTPS.
- FTP.
- SMTP.

Additional functions

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

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

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

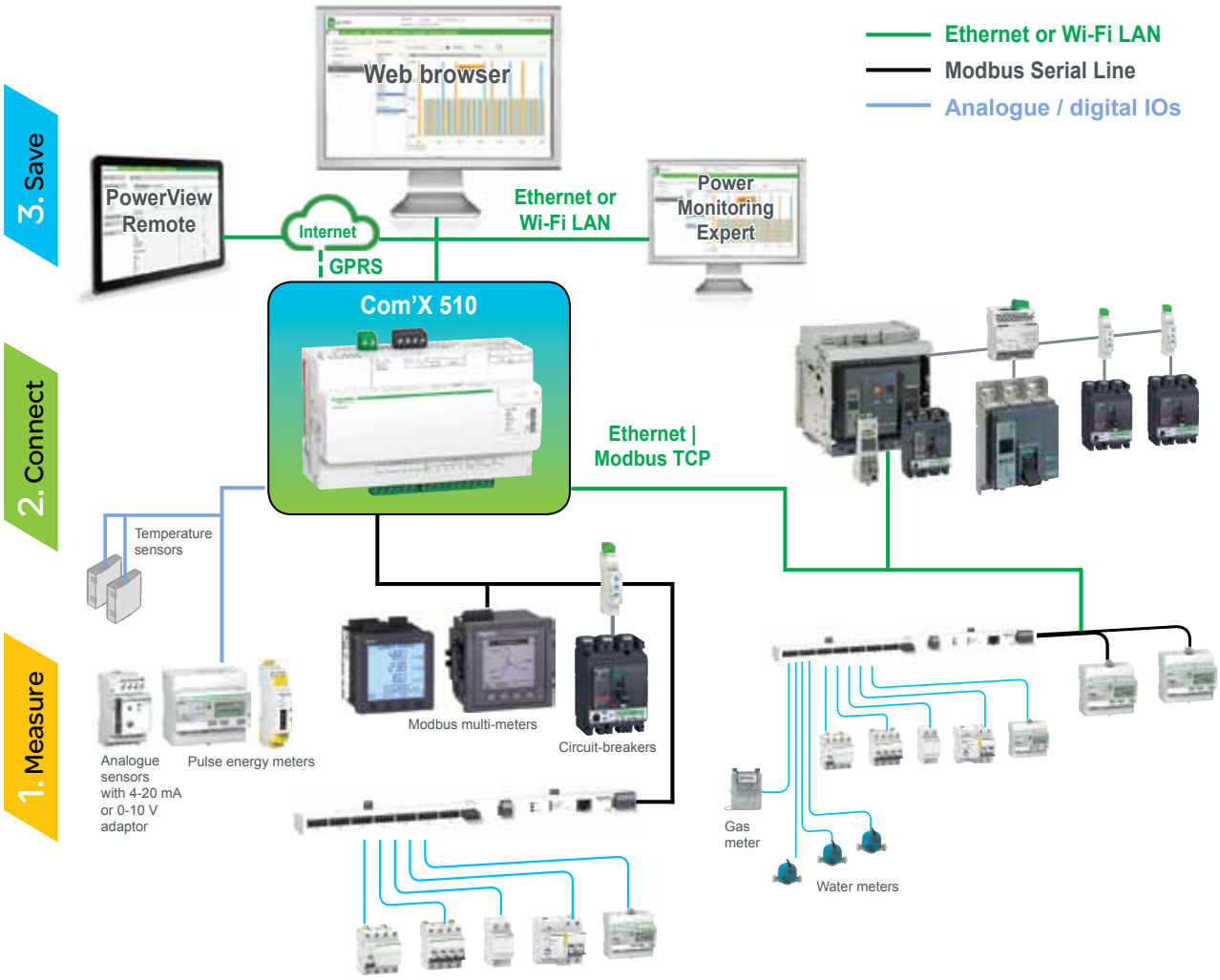
Com'X 200/210 Commercial reference numbers	
Com'X 200 data logger 24 V DC or 230 V AC power supplied	EBX200
Com'X 210 data logger 24 V DC power supplied UL rated	EBX210
Com'x Wi-Fi USB interface	EBXA-USB-WiFi
Com'X GPRS interface SIM card	EBXA-GPRS-SIM
Com'X GPRS interface	EBXA-GPRS
Com'x External GPRS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

Please see your Schneider Electric representative for complete ordering information.

Com'X 510
Energy server

Main functions

PB114856



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

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

Data logging and storage capabilities include:
- Data logging period: configurable from every minute to once a week.
- Data storage duration: up to 2 years, depending on 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.

PB114852

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

Com'X 510
Energy server

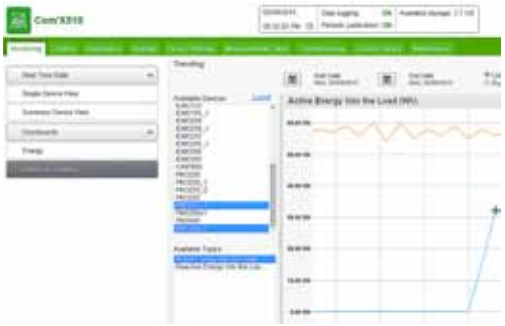
PB114327

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 Energy Operation.
- CSV files for viewing in Excel or transformed or uploading to programs such as StruxureWare™ Power Monitoring Expert or any compatible software.

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

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

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

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

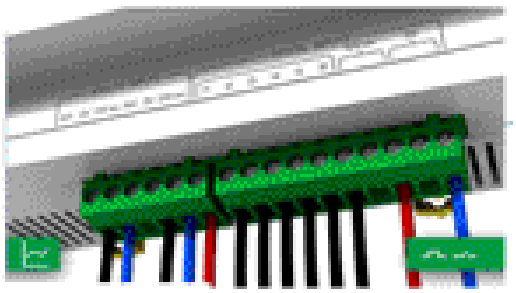
Please see your Schneider Electric representative for complete ordering information.

Com'X 200/210/510
Connectivity

PB112047

Connection points

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



Power supply to analogue and digital inputs

PB112044

Wi-Fi USB stick

PB112042

GPRS modem

PB112045

GPRS antenna

Connectivity

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

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

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

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

Power supply to analogue and digital outputs
Outputs to supply sensors and inputs when Com'X is supplied through 24 V DC input on top:
- 12 V DC– 60 mA for digital inputs.
- 24 V DC for analogue inputs.

Compliant with electrical switchboard environment (temperature, electromagnetic compatibilty).

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

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

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

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

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

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

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

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

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 450g.
- Dimensions (HxWxD) 91mm x 144mm x 65.8mm.

Setup and configuration

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

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

Users can complete additional device identification fields, such as circuit ID or building zone.

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

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

Additional features and benefits

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

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

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

PowerLogic EGX100
Ethernet gateway

PE86138

PowerLogic EGX100

Function

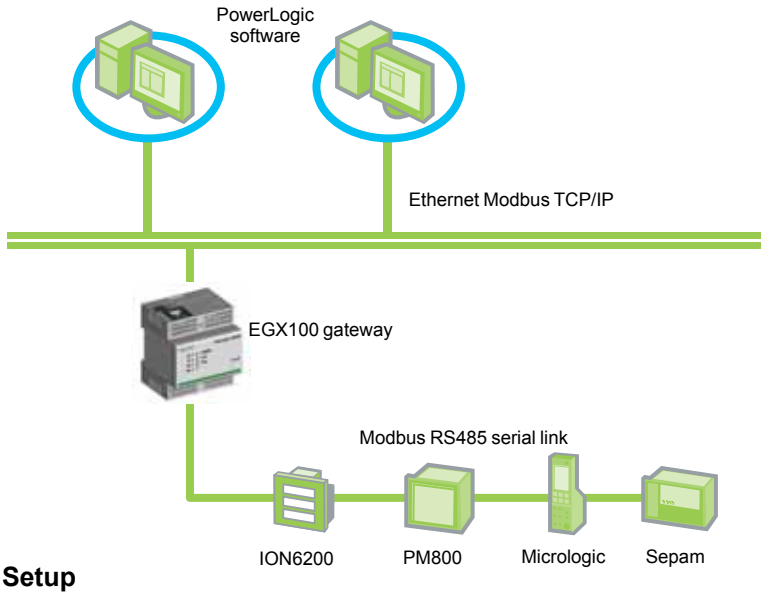
The EGX100 serves as an Ethernet gateway for PowerLogic system devices and for any other communicating devices utilising the Modbus protocol. The EGX100 gateway offers complete access to status and measurement information provided by the connected devices via PowerLogic software installed on a PC.

PowerLogic software compatibility

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

- StruxureWare Power Monitoring Expert software
- StruxureWare PowerSCADA Expert.

Architecture



Setup

Setup via an Ethernet network

Once connected to an Ethernet network, the EGX100 gateway can be accessed by a standard internet browser via its IP address to:

- specify the IP address, subnet mask and gateway address of the EGX gateway
- configure the serial port parameters (baud rate, parity, protocol, mode, physical interface and timeout value)
- create user accounts
- create or update the list of the connected products with their Modbus or PowerLogic communication parameters
- configure IP filtering to control access to serial devices
- access Ethernet and serial port diagnostic data
- update the firmware
- specify the user language.

Setup via a serial connection

Serial setup is carried out using a PC connected to the EGX100 via an RS232 link. This setup:

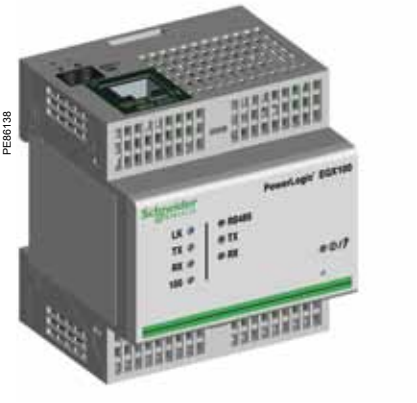
- specifies the IP address, subnet mask and gateway address of the EGX gateway
- specifies the language used for the setup session.

Part numbers

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

PowerLogic EGX100
Ethernet gateway (cont'd)

PE86138



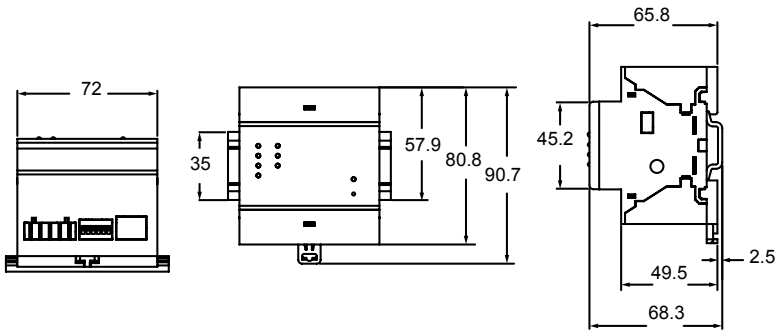
PowerLogic EGX100

Characteristics

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

Installation

Din rail mounting



PowerLogic EGX300
Integrated gateway-server

PE86181

PowerLogic EGX300

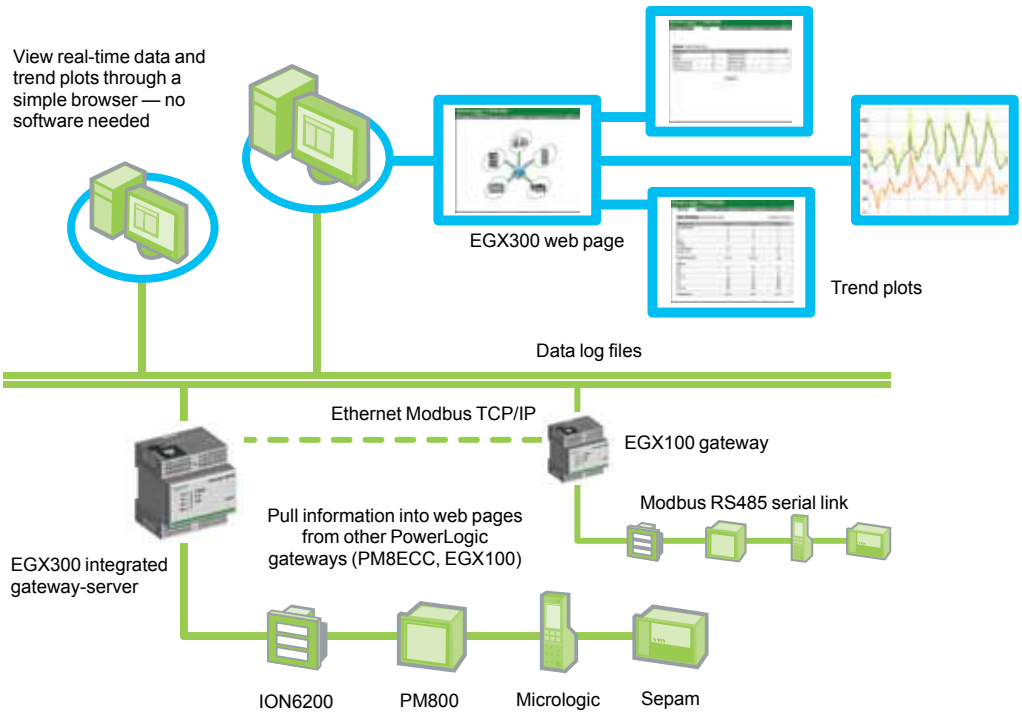
Function

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

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

- StruxureWare Power Monitoring Expert software
- StruxureWare PowerSCADA Expert.

Architecture



Features

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

Part numbers

Powerlogic EGX300	Schneider Electric
EGX300	**EGX300**

PowerLogic EGX300
Integrated gateway-server (cont'd)

PE86181

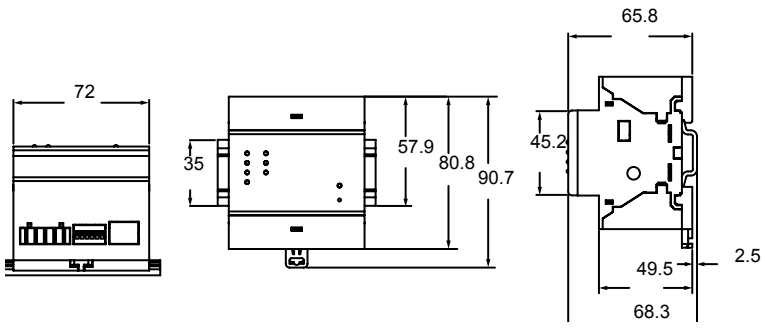
PowerLogic EGX300

Characteristics

	EGX300
Weight	170 g
Dimensions (HxWxD)	80.8 x 72 x 65.8 mm
Mounting	Din rail
Power-over-Ethernet (PoE)	Class 3
Power supply	24 V DC if not using PoE
Maximum burden	4 W
Operating temperature	-25 to 70°C
Humidity rating	5 to 95 % relative humidity (without condensation) at
Regulatory/standards compliance for electromagenetic interference	
Emissions (radiated and	EN55022/EN55011/FCC class A
Immunity for industrial environments:	
electrostatic discharge	EN 61000-6-2
radiated RF	EN 61000-4-2
electrical fast transients	EN 61000-4-3
surge	EN 61000-4-4
conducted RF	EN 61000-4-5
power frequency	EN 61000-4-6
magnetic field	EN 61000-4-8
Regulatory/standards compliance for safety	
International (CB scheme)	IEC 60950
USA	UL508/UL60950
Canada	cUL (complies with CSA C22.2, no. 60950)
Europe	EN 60950
Australia/New Zealand	AS/NZS 60950
Serial ports	
Number of ports	1
Types of ports	RS232 or RS485 (2-wire or 4-wire), depending on settings
Protocol	Modbus RTU/ASCII, PowerLogic (SY/MAX), Jbus
Maximum baud rate	38400 or 57600 baud depending on settings
Maximum number of connected devices	32 (directly) 64 (indirectly)
Ethernet port	
Number of ports	1
Type of port	10/100 Base TX (802.3af) port
Protocol	HTTP, Modbus TCP/IP, FTP, SNMP (MIB II), BootP
Web server	
Memory for logging, custom web pages and documentation	512 Mb

Installation

Din rail mounting



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 PowerLogic ION Enterprise software, or other SCADA, information and automation systems.

Applications

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

Main characteristics

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

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

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

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

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

Up to 10 Mbytes of memory
For archiving of data and waveforms.

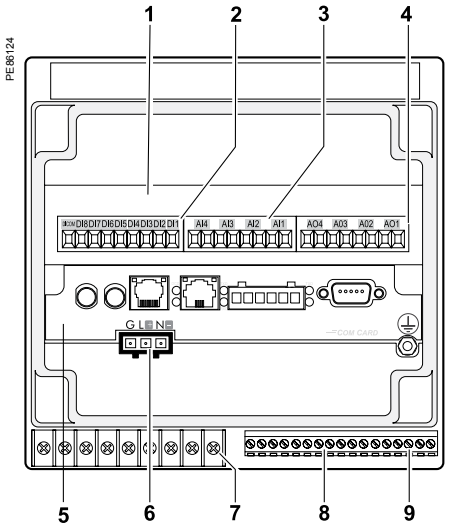
Notify alarms via email
High-priority alarms sent directly to the user's PC. Instant notification of power quality events by email.

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

Part numbers

ION7550 RTU	
ION7550	**M7550**

ION7550 RTU
Functions and characteristics (cont.)



PowerLogic® ION7550 RTU.

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

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

ION7550 RTU
Functions and characteristics (cont.)

PE86117

PowerLogic ION7550 RTU.

Electrical characteristics		
Data update rate		1/2 cycle or 1 second
Power supply	AC	85-240 V AC ±10% (47-63 Hz)
	DC	110-300 V DC ±10%
	DC low voltage (optional)	20-60 V DC ±10%
	Ride-through time	100 ms (6 cycles at 60 Hz) min. at 120 V DC
	Burden	Standard: typical 15 VA, max 35 VA Low voltage DC: typical 12 VA, max 18 VA
Input/outputs(1)	Standard	8 digital inputs (120 V DC) 3 relay outputs (250 V AC / 30 V DC) 4 digital outputs (solid state)
	Optional	8 additional digital inputs 4 analogue outputs, and/or 4 analogue inputs
Mechanical characteristics		
Weight		1.9 kg
IP degree of protection (IEC 60529)		IP52
Dimensions	Standard model	192 x 192 x 159 mm
	TRAN model	235.5 x 216.3 x 133.1 mm
Environmental conditions		
Operating temperature	Standard power supply	-20 to +70ºC
	Low voltage DC supply	-20 to +50ºC
	Display operating range	-20 to +70ºC
Storage temperature	Display, TRAN	-40 to +85ºC
Humidity rating		5 to 95% non-condensing
Installation category		III (2000m above sea level)
Dielectric withstand		As per EN 61010-1, IEC 62051-22A(2)
Electromagnetic compatibility		
Electrostatic discharge		IEC 61000-4-2
Immunity to radiated fields		IEC 61000-4-3
Immunity to fast transients		IEC 61000-4-4
Immunity to surges		IEC 61000-4-5
Conducted and radiated emissions		CISPR 22
Safety		
Europe		IEC 61010-1

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

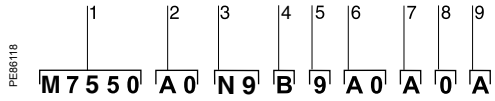
ION7550 RTU
Functions and characteristics (cont.)

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

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

ION7550 RTU

Functions and characteristics (cont.)

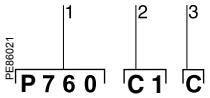


Sample ION7550 RTU part number.

Part numbers

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

ION7550 RTU
Functions and characteristics (cont.)



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

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

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

ION7550 RTU
Functions and characteristics (cont.)

Part numbers (cont'd)

Input/Output expansion card

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

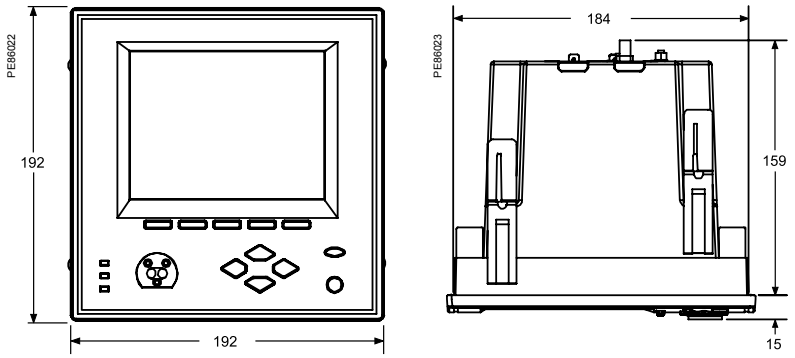
OpenDAC rack, controllers, power supply	
70LRCK16-48	OpenDAC rack. Holds up to 8 OpenLine modules to provide up to 16 I/O points. Requires communications controller
72-MOD-4000	OpenDAC OpenDAC RS-485 serial module. Communications controller for use in a Modbus RTU network. Supports up to 2 70LRCK16-48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

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

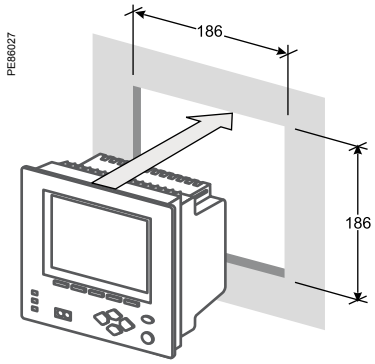
OpenLine analogue I/O modules	
73L-II020	analogue input, current, 0-20mA
73L-II420	analogue input, current, 4-20mA
73L-ITCJ	analogue input, temperature, J-type TC
73L-ITCK	analogue input, temperature, K-type TC
73L-ITCT	analogue input, temperature, T-type TC
73L-ITR100	analogue input, temperature, RTD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

ION7550 RTU
Dimensions and connection

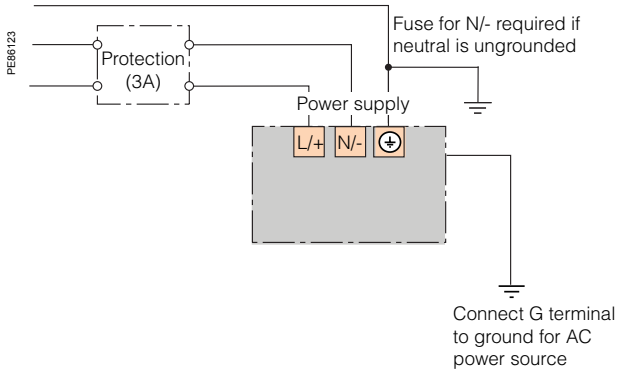
ION7550 RTU dimensions



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.*