

Energy & Power Management Edge Control Platforms

EcoStruxure Energy and Power management systems are especially designed to answer the needs of facilities where power is a critical resource, and where without power, lives or millions of dollars are at risk.

These systems provide facility managers with precise energy consumption data to drive energy accountability, sustainability, and savings. Your engineering manager will see power conditions at every critical point, and your maintenance personnel will use real-time status information to optimize equipment performance. And C-level executives will see the increase in productivity, profits, and ROI.

- EcoStruxure™ Power Monitoring Expert



PME



PSO

EcoStruxure™ Power Monitoring Expert

Award-winning EcoStruxure™ Power Monitoring Expert (PME) is purpose built to help power-critical and energy-intensive facilities maximize uptime and operational efficiency. As a key element of EcoStruxure Power, PME is the window to your digitized power network, taking advantage of IoT connectivity and distributed intelligence.

Applications

EcoStruxure Energy and Power Management systems provide three main elements that fit together perfectly.

Electrical Network Management

- Electrical network monitoring
- Power quality monitoring
- Electrical network alarming
- Power event analysis

Cost Management

- Energy Monitoring
- Cost allocation
- Utility bill verification
- Energy usage analysis
- Energy targetting & forecasting

Asset Management

- Breaker performance
- Capacity management
- Generator performance & compliance
- UPS performance

System architecture overview

EcoStruxure Power Monitoring Expert Natively communicates over Ethernet (IPv4 and IPv6) with a vast range of Schneider Electric devices and third-party products.

Data and analytics provided by EcoStruxure Power Monitoring Expert for centralized display, analysis, logging, alarming, event recording, and other processes can be accessed via web browser on a personal computer.



The solution for

Markets that can benefit from a solution that includes EcoStruxure™ Power Monitoring Expert:

- Healthcare
- Data Centers
- Large buildings
- Industry
- Infrastructure
- Utilities

Benefits

- Avoid outages, prevent equipment damage, optimize electrical system performance, and quickly assess power quality impacts.
- Improve energy efficiency to reduce operating cost, allocate energy cost to drive accountability and prevent unnecessary utility charges.
- Track and analyze equipment conditions, manage electrical capacity to ensure flexibility and get advanced warnings, wherever you are.

Competitive advantages

The best combination of scalability, flexibility and ease-of-use to deliver rich power and energy management applications. Including these unique and valuable features:

- Use Disturbance Direction Detection to quickly find the cause of faults.
- Power Quality KPIs help all stakeholders track progress in mitigation programs.
- Monitor breaker aging to avoid downtime due to aging equipment.
- Forecast energy expenses, validate energy efficiency investments and benchmark asset performance with modelling module.

Power management solutions

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

Conformity of standards

- ISO 50001/50002
- EN 50160
- IEC 61000-4-30
- IEC 62443
- IEEE 519
- ITIC/CBEMA/SEMI-F47

Cybersecurity

Complies with common IT practices (password management, whitelisting, preferred browser) and aligns with cybersecurity best practices, such as IEC 62443 SL1.



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Features	
Real-time Monitoring	
Diagrams	
	<ul style="list-style-type: none"> Graphical monitoring and analysis application including electrical one-line diagrams, facility maps, plan views, floor layouts, equipment representations, and mimic displays. Comprehensive out of the box set of graphical device specific diagrams showing all relevant.
Trends	
	<ul style="list-style-type: none"> Graphical charts for real-time trending of power usage (kW, Volt, Amp, and kWh) or any measurement supported by metered equipment such as generators and MV/LV switchgear.
Tables	
	<ul style="list-style-type: none"> Interactive side-by-side visualization of real-time measurements in a tabular format.
Alarm Management	
Smart Alarm Viewer	
	<ul style="list-style-type: none"> Highly customizable alarm view for sequence of events and root cause analysis. Ability to filter on multiple parameters and save customized views for easy access to critical information.
Alarm Annunciator	
	<ul style="list-style-type: none"> Alarm annunciator provides a quick summary of the active alarms in the system. Breakdown of how many of alarms are high priority, medium priority, and low priority.
Alarm Notification	
	<ul style="list-style-type: none"> Ensure that appropriate staff members are notified of power system events. The system collects data, evaluate alarm conditions, and annunciate the alarms to specified users through email or SMS text messages.
Incident Timeline Analysis Viewer	
Data Analytics & Visualization	
Dashboards	
	<ul style="list-style-type: none"> Interactive auto-updating dashboard views that may contain water, air, gas, electric, and steam (WAGES) energy summary data, historical data trends, images, and content from any accessible URL addresses. Users can create, modify, view, and share their dashboards.
Reports	
	<ul style="list-style-type: none"> Web-enabled reporting tool to view historical data in pre-formatted or user-defined report templates. The system supports reporting on all supported physical devices and virtual (or calculated) meters as defined in the device hierarchy. Users can to create, modify, view and share their reports in the web reports interface.
Calculation & Logic Engine	
	<ul style="list-style-type: none"> Graphical, object-oriented programming interface for creating system-wide, logical programs with arithmetic, data import, alarming and logging capabilities. Includes a comprehensive set of functions to create custom applications programs such as weather or real-time price import, KPI calculations, energy units conversion, data aggregation, data normalization, data comparison, power loss calculations, power factor control, load shedding, etc.
Optional Software Modules	
Electrical Network Management	
	<ul style="list-style-type: none"> Power Quality Performance Module. Power Capacity Module. Event Notification Module.
Cost Management	
	<ul style="list-style-type: none"> Energy Billing Module. Energy Analysis Module. Power Efficiency Module.
Asset Management	
	<ul style="list-style-type: none"> Breaker Performance Module. Generator Performance/EPSS Module. UPS Performances Module.

EcoStruxure™ Power Monitoring Expert

Types of supported devices

EcoStruxure Power Monitoring Expert natively supports more than 80 Schneider Electric devices, including:

Power and energy meters:

- ION9000 Series
- ION8800 Series, ION8650 Series
- ION7400, ION7650/7550, ION7550 RTU
- PM5000 Series
- PM3000 Series (PM3250, PM3255)
- PM800 Series (PM810, PM820, PM850, PM870)
- iEM2000 Series (iEM2000, iEM2000T, iEM2010, iEM2050, iEM2055, iEM2105, iEM2110, iEM2135, iEM2150, iEM2155)
- iEM3000 Series (iEM3150, iEM3155, iEM3250, iEM3255, iEM3350, iEM3355, iEM3455, iEM3555)
- EM4200 (EM4235 EM4236)
- MTZ with ML X
- PowerTag and PowerTag NSX
- Switchgear Monitoring Device (for Continuous Thermal Monitoring)

PowerLogic branch circuit power meters:

- BCPM (A, B, C models)
- EM4900
- Enersure BCPM

Circuit breaker trip units:

- Micrologic X, A, E, P and H devices
- Micrologic Compact NSX Type A and Type E
- Smartlink

Protective relays:

- Sepam Series 10, 20, 40, 60, 80

Insulation monitors:

- Vigilohm IM20/20H

In addition, a library of more than 200 third-party device drivers is available. Ask your Schneider Electric representative for details.

Supported languages

English, Spanish, French, German, Chinese, Simplified Chinese, Polish, Czech, Italian, Swedish, Portuguese, and Russian (Other languages may be available - contact your Schneider Electric representative.)

Communication protocols and data exchange

EcoStruxure Power Monitoring Expert is designed to be easily integrated with third-party devices and systems:

- Modbus TCP and RTU
- ION Protocol
- OPC DA (Client and Server)
- SOAP based Web Services

Other data exchange technologies supported are:

- XML and CSV files
- OLEDB and ODBC
- ETL (Extract Transform Load)
- PQDIF and COMTRADE (Export only)



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EcoStruxure™ Power Monitoring Expert dashboard
(Hero page sample)



EcoStruxure™ Power Monitoring Expert dashboard
(Energy Production sample)

EcoStruxure™ Power Monitoring Expert



EcoStruxure™ Power Monitoring Expert dashboard (PQ Performance sample)



EcoStruxure™ Power Monitoring Expert dashboard (Trends sample)



Software compatibility

Operating systems:

- Windows 10 Professional/Enterprise
- Windows Server 2012 Standard/Enterprise
- Windows Server 2012 R2 Standard
- Windows Server 2016 Standard

SQL server:

- SQL Server 2012 Express/Standard/Enterprise/Business Intelligence, SP3
- SQL Server 2014 Express/Standard/Enterprise/Business Intelligence, SP1 SP2
- SQL Server 2016 Express/Standard/Enterprise/Business Intelligence, SP1
- SQL Server 2017 Express/Standard/Enterprise/Business Intelligence, SP1

Browsers supported:

- Microsoft Internet Explorer versions 10 and 11
- Microsoft Edge
- Google Chrome version 42 and later
- Mozilla Firefox version 35 and later
- Apple Safari versions 7 or 8 and later versions, respectively, on Mac computers

ISO 50001 Certified

EcoStruxure Power Monitoring Expert support compliance with the requirements of the standards ISO 50001 and ISO 50002.



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Commercial reference numbers

Commercial ref. no.	EcoStruxure™ Power Monitoring Expert Software
Server & Options	
PSWSANCZZSPEZZ	PME Standard Edition BASE licence (includes 1 Engineering Client)
PSWSONCZZSPEZZ	OPC DA Server for PME software
PSWSQL2016L	SQL Server Standard Edition Licence - 2 Core pack
PSWVMNCZZSPEZZ	Event Notification modul for PME software
Client Licences (System users)	
PSWCENCZZNPEZZ	Engineering Client for Power Monitoring Expert software
PSWCWNCZZNPEZZ	Web Client for PME software
PSWCZNCZZSPEZZ	Unlimited Engineering and Web Clients for PME software
Device Licences (Connected devices)	
PSWDENCZZNPEZZ	Entry-Range Device for PME software
PSWDMNCZZNPEZZ	Mid-Range Device for PME software
PSWDSNCZZNPEZZ	High-End Device for PME software
PSWDZNCZZSPEZZ	Unlimited Devices for PME software
Device Licences (Connected devices) US, India, & Canada	
PSWDANCZZNPEZZ	5 Device Pack for PME software
PSWDBNCZZNPEZZ	25 Device Pack for PME software
PSWDCNCZZNPEZZ	50 Device Pack for PME software
PSWDDNCZZNPEZZ	100 Device Pack for PME software
PSWDFNCZZNPEZZ	200 Device Pack for PME software
PSWDZNCZZSPEZZ	Unlimited Device Pack for PME software
Optional Software Modules	
PSWMBNCZZSPEZZ	Billing Module for PME software
PSWMXNCZZSPEZZ	Breaker Performance Module for PME software
PSWMZNCZZSPEZZ	Energy Analysis Module for PME software
PSWMENCZZSPEZZ	EPSS Module for PME software
PSWMPNPAZSPEZZ	Generator Performance Module PME software
PSWMNPAZSPEZZ	IT Billing Module for PME software
PSWMPNCZZSPEZZ	Power Capacity Module for PME software
PSWMNNCZZSPEZZ	Power Efficiency Module for PME software
PSWMUNCZZSPEZZ	UPS Performance Module for PME software

Contact your Schneider Electric representative for complete ordering information.



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EcoStruxure™ Power SCADA Operation

The power of a SCADA uniquely designed for critical power management.

Perfect for even the most demanding facility. Its intuitive, interactive, and customizable interface provides practical information: detailed alarming, real-time monitoring and control, and power-related visualization tools. It integrates seamlessly with your electrical systems and easily scales to evolve with your needs.

Applications

An excellent fit for virtually every industry and application, EcoStruxure™ Power SCADA Operation delivers exceptional scalability so that it can grow to meet your multiple, changing business requirements while driving down the total cost of ownership.

Key Applications delivered using Power SCADA + Advanced Reporting

PB118048

SAFE Protect People & Assets	RELIABLE Optimize Business Continuity	EFFICIENT Maximize Operational & Deployment Efficiency	COMPLIANT Simplify Regulatory Compliance
Thermal Monitoring	Electrical Distribution Monitoring & Alarming	Commissioning Productivity	Energy Efficiency Compliance
	Power Event Analysis	Energy Performance Analysis	Power Quality Compliance
	Power Quality Monitoring	Energy Usage Analysis	Backup Power Compliance (HC)
	Source / Network Control	Utility Bill Verification	Cyber Security



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The solution for

Markets that can benefit from a solution that includes EcoStruxure™ Power SCADA Operation:

- Healthcare
- Data Centers
- Large Buildings
- Industry
- Infrastructure
- Utilities

Benefits

- Maximize power availability via real-time monitoring and control of critical loads.
- Maximize availability of edge control platform via native software redundancy capabilities.
- Extensive communication and data exchange protocols providing an open platform to connect with a wide variety of third-party devices.
- Highly flexible platform offering customized end-user screens and experience.

Competitive advantages

- Designed for power systems providing a lower total cost of ownership versus process automation SCADA systems.
- High performance alarming and mobile notification to manage your complex power system.
- Reporting and dashboards module with comprehensive energy and power templates to deliver powerful analytics.
- Capability to perform sequence of events analysis for power systems using real-time stamp data and electrical waveforms captured directly from connected electrical devices.

Power management solutions

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

Conformity of standards

- ISO 50001
- IEC 62443

Conformity of standards when using Advanced Reporting and Dashboards

- EN 50160
- IEC 61000-4-30
- IEEE 519
- ITIC/CBEMA

Cybersecurity technology highlights

- IEC 62443
- Robust user management
- Password policies
- Auto logoff timers
- Multi-factor authentication
- Role-based access control (RBAC)
- Object level security
- Active Directory integration
- Audit logs
- Application Whitelisting



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EcoStruxure™ Power SCADA Operation



EcoStruxure™ Power SCADA Operation dashboard

EcoStruxure™ Power SCADA Operation is a reliable, flexible and high performance monitoring and control solution designed to reduce outages and increase power efficiency. It is built to handle user requirements from the smallest to the most demanding enterprises, while still providing high time performance and reliability. Easy-to-use configuration tools and powerful features enable faster development and deployment of any size of application.

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. EcoStruxure™ Power SCADA Operation 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 cyber resilient control system.

- Typical applications

- EcoStruxure™ Power SCADA Operation software has the following applications:
 1. Power Monitoring and Control - Notify in real time when deviations from normal operating conditions occur and control electrical equipment safely and reliably in response to these conditions.
 2. Power Availability – Improve continuity of electrical system by identifying root causes of problems to quickly recover power and avoid future outages.
 3. Energy Monitoring – Establish baseline energy usage, set reduction targets, adjust operations for continuous improvements.



Waveform viewer dashboard (sample)

- System architecture

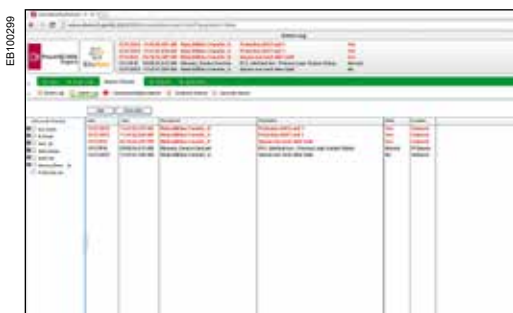
- Human machine interface (HMI)
 - EcoStruxure™ Power SCADA Operation offers secure, operator-dedicated, multi-user data and control access through a local server interface, full control client and also through web clients.

- Main components

- SCADA software
 - Drivers, libraries and communication tools.
 - Use these components to configure your SCADA network, including communication paths, devices and logical groups.

- Functional components of EcoStruxure™ Power SCADA Operation

- Includes gateways, PLCs, RTUs, switches, etc.
- Redundant, self-healing ring, double-ring technology.
- Design reference guide.
- Design of architectures to achieve time performance & reliability.
- Schneider Services.
 - Pro-active assistance to facility maintenance team for sensitive electrical distribution maintenance operations.



Alarm Viewer (sample)

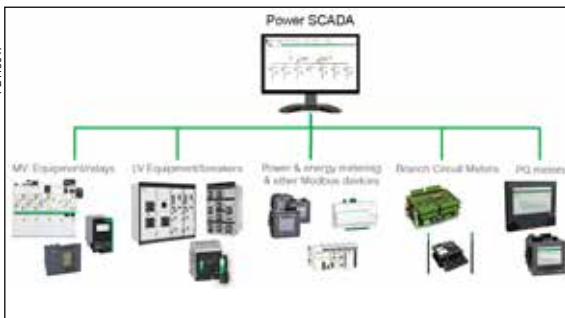
- Data acquisition and management

- Redundant I/O server
- Hot/warm standby: data acquisition is never interrupted even if one server fails.
- Distributed, multiple server architecture with corresponding configuration tools.
- IEC61850 compliant databases.
- Designed for interoperable exchange of data for distributed substation automation systems and third-party devices.
- Supports data import/export with compliant devices and systems.



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EcoStruxure™ Power SCADA Operation



Typical EcoStruxure™ Power SCADA Operation architecture

- Data acquisition and integration
 - Integrate electrical distribution devices with PLCs, RTUs, Controllers and other intelligent energy devices. Native, out-of-the-box support for all Sepam Series 20, 40, 80, and Sepam 2000 (S36), PowerPact, Compact NSX, Masterpact NT/NW, Masterpact MTZ with communicating Micrologic Trip/Base Units,
 - ION7650, PM8000, PM5000 series and BCPM . Enables access to meter data, digital outputs and remote configuration. Interface with PLCs, RTUs and power distribution equipment. Quickly add and configure devices with easy-to-use I/O Device Wizard and Profile Editor. Scalable platform enables remote devices and user clients to be added as needs grow while maintaining your original investment. Integrate with other energy management or automation systems through Modbus TCP/IP.
- Alarms and events
 - EcoStruxure™ Power SCADA Operation software allows you to receive alerts to outages or impending problems that could lead to equipment stress, failures, or downtime. Configure alarms to trigger on events, power thresholds, or equipment conditions. The software logs complete information on an event, including related coincident conditions, all with accurate 1ms timestamping.
 - Eight different alarm levels with customized colouring and customized audible sounds to easily segregate alarms.
 - High speed alarm response. Capture and log every single alarm or event.
 - Organise, filter and print by any alarm property, such as time, severity, equipment, state, priority, etc. 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.
- Standards supported
 - IEC 61850 (Edition 1 and 2)
 - DNP3
 - ION
 - Modbus
 - IEC 60870-5-104
 - BACnet/IP
 - SNMP
- Electrical distribution control
 - Perform fast, manual control operations by clicking on-screen buttons to operate remote breakers, protection relays, and other power distribution equipment.
- Real-time monitoring
 - View all distribution points across your network. Secure display of real-time power and energy measurements, historical trends and data logs, alarm conditions, equipment status (on/off, temperature, pressure, etc.), control triggers, and analysis tools.
 - One line diagrams with real-time monitoring and control of devices, objects and distribution points. Point-and-click navigation reveals deeper layers of detail.
 - IEC and ANSI-standard symbols and templates that are fully animated and interactive, to blend control and display functionality.
 - Dynamic colouring is easily configured using the default set or user-defined colours and voltage levels.
 - True color, easy-to-use human machine interface (HMI) that provides operators with intuitive and consistent screens



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EcoStruxure™ Power SCADA Operation



Power SCADA Operation sample Trends display

- Analysis
 - Trend and analyse on any measured parameter, allowing operators to recognise patterns that may lead to disturbances. Display millisecond-accurate historical alarms and trends to help determine the sequence of events or root cause analysis. Unite trend and alarm data for sophisticated disturbance views and analysis.

User-defined colour coding and overlays clearly highlight data series, time ranges, thresholds and limits. View COMTRADE waveforms, record, save or export trends to archives. Supported protocols include: Schneider Electric devices with WFC capabilities via Modbus and ION and 3rd party devices via IEC-61850 with compliant COMTRADE WFC capabilities.
- Configuration tools
 - EcoStruxure™ Power SCADA Operation 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.
 - Profile Editor provides standard device types and their associated profiles and allows engineers to easily customise the profiles of the devices specific to the project. New export/import capability allows easier sharing of profiles.
 - Standardized tags per device profile (configurable), XML file
 - Creates, adds, edits device types, tags and profiles.
 - I/O Device Manager provides a standard interface for quick SCADA data base 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.
- Minimum system requirements

(Consult your local Schneider Electric representative for complete system requirements and commissioning information for EcoStruxure™ Power SCADA Operation). The following are minimum support requirements with factory default settings.

 - Runs on standard PCs or servers, and supports the following operating systems: Windows Server 2016, Windows 10, Windows Server 2012 R2, Windows 8.1, Windows Server 2012, Windows 8, Windows 2008 R2 and Windows 7
- Open data exchange protocol support
 - OPC UA 1.01 client
 - OPC DA 2.0 server and client
 - OPC AE 1.0 server



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EcoStruxure™ Power SCADA Expert

Commercial reference numbers

Commercial ref. no.	EcoStruxure™ Power SCADA Expert Software
Server Licences	
PSA101112	Power SCADA Server, 500 Points
PSA101113	Power SCADA Server, 1500 Points
PSA101114	Power SCADA Server, 5000 Points
PSA101115	Power SCADA Server, 15000 Points
PSA101199	Power SCADA Server, Unlimited Points
Control Clients	
PSA102012	Power SCADA Control Client, 500 Points
PSA102013	Power SCADA Control Client, 1500 Points
PSA102014	Power SCADA Control Client, 5000 Points
PSA102015	Power SCADA Control Client, 15000 Points
PSA102099	Power SCADA Control Client, Unlimited Points
PSA102099P5	Power SCADA Control Client, Unlimited Points, 5 Pack
PSA102099P10	Power SCADA Control Client, Unlimited Points, 10 Pack
PSA102099P25	Power SCADA Control Client, Unlimited Points, 25 Pack
PSA102088	Power SCADA Control Client, Redundant licence
Device Licences (Connected devices)	
PSWDENCZZNPEZZ	Entry-Range Device for PME software
PSWDMNCZZNPEZZ	Mid-Range Device for PME software
PSWDSNCZZNPEZZ	High-End Device for PME software
PSWDZNCZZSPEZZ	Unlimited Devices for PME software
View-only Clients	
PSA103099	Power SCADA View-only Client, Unlimited Points
PSA103088	Power SCADA View-only Client, Redundant licence
HTML5 Client Licensing	
PSA105100	Power SCADA Anywhere, 5 User Pack
Modules (Advanced Reporting, Software Modules and ENM)	
PSA104112	Advanced Reporting and Dashboards Module
PSA104113	Event Notification Module
PSA104114	Energy Billing Module
PSA104115	Breaker Performance Module
PSA104116	Energy Analysis Reports Module
PSA104121	Capacity Management Module
PSA104124	Power Quality Performance Module
PSA104125	Insulation Monitoring Module
PSA104126	Backup Power Module
PSA104127	Energy Analysis Dashboards Module
CyberSecurity	
PSA200100	McAfee Whitelisting (Embedded Control)
Internal Schneider Electric Licences (For internal and EcoXpert use only, not available to customers)	
PSA109502	Power SCADA Development Licence

Contact your Schneider Electric representative for complete ordering information.