Smart Panels Digitized switchboards

Selection and configuration guide







Important information

People responsible for the application, implementation and use of this document must make sure that all necessary design considerations have been taken into account and that all laws, safety and performance requirements, regulations, codes, and applicable standards have been obeyed to their full extent.

Schneider Electric provides the resources specified in this document. These resources can be used to minimize engineering efforts, but the use, integration, configuration, and validation of the system is the user's sole responsibility. Said user must ensure the safety of the system as a whole, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

Notice

This document is not comprehensive for any systems using the given architecture and does not absolve users of their duty to uphold the safety requirements for the equipment used in their systems, or compliance with both national or international safety laws and regulations. Readers are considered to already know how to use the products described in this document. This document does not replace any specific product documentation.

The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Failure to follow these instructions will result in death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

▲ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can** result in minor or moderate injury.

Failure to follow these instructions can result in injury or equipment damage.

CAUTION

CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result in** equipment damage. **Failure to follow these instructions can result in injury or equipment damage**.

NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. A qualified person is one who has skills and knowledge related to the construction, operation and installation of electrical equipment, and has received safety training to recognize and avoid the hazards involved.

Before you Begin

This electrical monitoring and control equipment and related software is used to connect a variety of electrical switchboards. The type or model of electrical monitoring and control equipment suitable for each application will vary depending on factors such as the system dependability level, unusual conditions and government regulations etc.

Only the user can be aware of all the conditions and factors present during setup, operation and maintenance of the solution. Therefore only the user can determine the electrical monitoring and control equipment and the related safeties and interlocks which can be properly used. When selecting electrical monitoring and control equipment and related software for a particular application, the user should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual also provides much useful information.

Ensure that appropriate safeties and mechanical/electrical interlocks protection have been installed and are operational before placing the equipment into service. All mechanical/electrical interlocks and safeties protection must be coordinated with the related automation equipment and software programming.

NOTE

Coordination of safeties and mechanical/electrical interlocks protection is outside the scope of this document.

START UP AND TEST

Following installation but before using electrical control and automation equipment for regular operation, the system should be given a start up test by qualified personnel to verify the correct operation of the equipment. It is important that arrangements for such a check be made and that enough time is allowed to perform complete and satisfactory testing.

EQUIPEMENT OPERATION HAZARD

Follow all start up tests as recommended in the equipment documentation. Store all equipment documentation for future reference.

WARNING

Software testing must be done in both simulated and real environments. Failure to follow these instructions can result in death, serious injury, or equipment damage.

Verify that the completed system is free from all short circuits and grounds, except those grounds installed according to local regulations (according to the National Electrical Code in the USA, for example). If high-potential voltage testing is necessary, follow recommendations in the equipment documentation to prevent accidental equipment damage. Before energizing equipment:

- remove tools, meters, and debris from equipment
- close the equipment enclosure door
- remove ground from incoming power lines
- perform all start-up tests recommended by the manufacturer.

OPERATION AND ADJUSTMENTS

The following precautions are from NEMA Standards Publication ICS 7.1-1995 (English version prevails):

Regardless of the care exercised in the design and manufacture of equipment or in the selection and rating of components; there are hazards that can be encountered if such equipment is improperly operated.

It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.

Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

WARNING

UNEXPECTED EQUIPMENT OPERATION

Only use software tools approved by Schneider Electric for use with this equipment.

• Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

INTENTION

This document is intended to provide a quick introduction to the described system. It is not intended to replace any specific product documentation, nor any of your own design documentation. On the contrary, it offers information additional to the product documentation on installation, configuration and implementing the system.

The architecture described in this document is not a specific product in the normal commercial sense. It describes an example of how Schneider Electric and third-party components may be integrated to fulfill an industrial or classic application.

A detailed functional description or the specifications for a specific user application is not part of this document. Nevertheless, the document outlines some typical applications where the system might be implemented.

The architecture described in this document has been fully tested in our laboratories using all the specific references you will find in the component list near the end of this document. Of course, your specific application requirements may be different and will require additional and/or different components. In this case, you will have to adapt the information provided in this document to your particular needs. To do so, you will need to consult the specific product documentation of the components that you are substituting in this architecture. Pay particular attention in conforming to any safety information, different electrical requirements and normative standards that would apply to your adaptation.

It should be noted that there are some major components in the architecture described in this document that cannot be substituted without completely invalidating the architecture, descriptions, instructions, wiring diagrams and compatibility between the various software and hardware components specified herein. You must be aware of the consequences of component substitution in the architecture described in this document as substitutions may impair the compatibility and interoperability of software and hardware.

▲ CAUTION

EQUIPMENT INCOMPATIBILITY OR INOPERABLE EQUIPMENT

Read and thoroughly understand all hardware and software documentation before attempting any component substitutions.

Failure to follow these instructions can result in injury or equipment damage.

This document is intended to describe how to select and configure the Smart Panel system.

DANGER

HAZARD OF ELECTRIC SHOCK, BURN OR EXPLOSION

Only qualified personnel familiar with low and medium voltage equipment are to perform work described in this set of instructions. Workers must understand the hazards involved in working with or near low and medium voltage circuits.

Perform such work only after reading and understanding all of the instructions contained in this bulletin.

Turn off all power before working on or inside equipment.

Use a properly rated voltage sensing device to confirm that the power is off.
 Before performing visual inspections, tests, or maintenance on the equipment,

Before performing visual inspections, tests, or maintenance on the equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, grounded, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of back feeding.

■ Handle this equipment carefully and install, operate, and maintain it correctly in order for it to function properly. Neglecting fundamental installation and maintenance requirements may lead to personal injury, as well as damage to electrical equipment or other property.

Beware of potential hazards, wear personal protective equipment and take adequate safety precautions.

■ Do not make any modifications to the equipment or operate the system with the interlocks removed. Contact your local field sales representative for additional instruction if the equipment does not function as described in this manual.

Carefully inspect your work area and remove any tools and objects left inside the equipment.

Replace all devices, doors and covers before turning on power to this equipment.

All instructions in this manual are written with the assumption that the customer

has taken these measures before performing maintenance or testing. Failure to follow these instructions will result in death or serious injury.

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Introduction

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Introduction

Electrical substations use modern communication tools to share information within their electrical monitoring and control equipments and with external interfaces. Enerlin'X communication devices offer a simple and reliable link to local displays and to hosted Energy Management services.

1.1 Purpose

The purpose of this guide is to provide basic knowledge on Enerlin'X system and how to use it to design Smart Panels, electrical distribution switchboards featuring full digital connectivity. This is achieved by providing reference architectures, which have been tested validated and documented (TVDA) in Schneider Electric laboratories, showing how to select, build and configure Smart Panels.

1.2 Prerequisites

Familiarity with LV electrical distribution components is required to understand and benefit from this guide.

1.3 Glossary

This section explains some words or acronyms which might be unclear to a reader who does not know the system or the environment.

Term	Description			
Acti9	Modular system for final LV distribution			
Acti9 Smart Test	Configuration and test software for Smartlink – modular interface			
BMS	Building Management System			
DHCP	Dynamic Host Configuration Protocol			
DPWS	Devices Profile for Web Services			
EMC	Electromagnetic Compatibility			
EMS	Energy Management System			
IT service	Information Technology service, manage the computers and network			
LV	Low Voltage			
Modbus	Serial line protocol, also known as Modbus RTU			
Prisma	Range offer of prefabricated LV cubicle			
RSU/RSU-A	Configuration software for LV circuit breaker (Masterpact – Compact NS – Compact NSX)			
SMTP	Simple Mail Transfer Protocol			
SNTP	Simple Network Time Protocol			
TCP/IP	Ethernet protocol			
Ti24 connector	Prefabricate connector in Acti9 system			
TVDA	Tested Validated Documented Architecture			
WAGES	Water Air Gas Electricity Steam			

Introduction

1.4 Smart Panel overview

Smart Panels are key components for energy management in buildings. You can only manage what you measure and see. Therefore, Schneider Electric Smart Panels are the basis of a simple solution to understand how a building functions in terms of its energy consumption and technical performance. Smart Panels are your first step to start an energy management strategy. Combined with Schneider Electric Energy Management Services, they form a complete solution for real energy savings.

Smart Panels are based on Ethernet network. Ethernet is widely used in domestic and industrial applications, allowing easy transparent access to electrical devices from any location.

1.5 Scope of Smart Panels

The first release of this guide deals with LV switchboards for non-critical, medium and small buildings:

- > School
- > Gymnasium
- > Small Hotel
- > Bank
- > Office
- > Hotel ***
- > Supermarket
- > Retail...

Only new buildings are considered in this document. For revamping projects, verify the compatibility of existing devices with the new Enerlin'X system, using RSU configuration tool or with the help of your local Schneider Electric support.

1.6 Local or on-line Energy Management

Energy Management can be performed on-line, using either of Schneider Electric's dedicated services, or locally through dedicated software (BMS or EMS), through Enerlin'X device embedded web pages or using a switchboard display.

With on-line Energy Management Services, Schneider Electric handles transmission, storage, processing and availability of your energy data. By deploying best-in-class practices for physical security, data security, and network reliability, Schneider Electric ensures your data is protected and available when you need it.

- > Easily access your data from anywhere through the Internet.
- > Only usual web browser required, no need for additional hardware of software.
- > Outsource data storage, backup, and management.
- > Take advantage of top level energy management expertise
- > Make budget forecasting easier with a service contract.

The different possible connections of Smart Panels are summarized on the schemes below:

- 1) On-line Energy Management Services using Schneider Electric's cloud.
- 2) Enerlin'X local display to monitor and control the switchboard.

3) Standard computer or workstation to easily access Enerlin'X devices web pages or run a local Energy Management application.



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This chapter gives a detailed description of the Tessted Validated Documented reference architectures for Smart Panels, selected for this guide.

2.1 Small Buildings

2.1.1 Single Line Diagram

The electrical architecture associated with a small building is represented below:



The installation electrical drawing is provided in the reference document. > *Please refer to chapter 5.3.*

2.1 Small Buildings

2.1.2 Switchboard architecture

The reference architecture for Smart Panels in a small building is represented below:

On-line Energy Management:



Local Energy Management:



2.1 Small Buildings

2.1.3 Enclosure

A switchboard made of Prisma G system is used as typical example for the architecture:



2.1.4 General Design

This section describes the choice of hardware, circuit breakers, meters and digital interfaces for the small building reference architecture. It focuses on the digital architecture. So the user needs to understand that the general design is applicable for many other electrical single line diagrams. For more detail, > please refer to the user manual referenced in section 5.3.

The key driver for this selection is to add just enough digital devices to the electrical switchboard in order to offer remote monitoring and control. The selected architecture is represented through 3 functional units:

- > Incomer (status monitoring only)
- > Distribution (monitoring and control)
- > Data server (in case of on-line Energy Management only).

For final distribution, Acti 9 Smartlink digital interfaces are associated mainly with iOF/SD module for protection monitoring, Reflex iC60 for load control iEMT2010 for energy metering.

An FDM128 local display is not proposed in this solution. However, it can be added to obtain quick and easy access to electrical data of the Smart Panels. This requires adding an Ethernet switch (reference is provided in the Appendix).

2.1 Small Buildings

2.1.5 Incomer

The power input of the Smart Panel is protected by a Compact NSX circuit breaker. In this example, we will use a non communicating version. The trip unit is thermal-magnetic and does not provide communication capabilities. However, OF (Open / Close) status and SDE (Electrical Fault Trip) from the incomer circuit breaker are hardwired to Acti9 Smartlink, Ethernet:

Incomer functional unit



Main component of the incomer functional unit are:

1 Compact NSX (Incomer), equipped with OF and SDE contacts.

2 Acti9 Smartlink Ethernet.

Ti24 pre fabricated connector.



2.1.6 Distribution

The digital architecture of the distribution is detailed below:

Distribution functional unit



Main component are:

- 2 Acti9 Smartlink Ethernet
- 3 Acti9 Smartlink Modbus
- 4 Energy Meter Acti9 iEM3150.

Acti9 Smartlink Ethernet version acts as Modbus-SL master and aggregates data from :

- > Energy Meter (Modbus energy meter is or an IEM or a PM).
- > All Modbus versions of Acti9 Smartlink.

Web pages, embedded in Ethernet version of Acti9 Smartlink enable monitoring of electrical values, of device status, and control of Reflex iC60 circuit breakers.

Final distribution is summarized below:

2.1 Small Buildings



Acti9 Smartlink devices transfer data from Acti9 final distribution devices to a monitoring system via the digital network. Prefabricated cables (Ti24 interface) allow an easy connection of Acti9 devices:

- > iOF + SD: position and trip indication of circuit breaker
- > Reflex iC60: remote controlled circuit breaker
- > iEMT: energy meter (2 iEMT can be connected to the same Smartlink channel).

2.1.7 Energy Server (for on-line Energy Management Services)

Com'X 200 Energy Server enables WAGES data to be collected and sent to a platform providing on-line energy management services.

Main components of the functional unit are:

4 24 V DC Power Supply

5 Com'X 200 energy server.

Com'X 200 collects data from final distribution through Acti9 Smartlink (Ethernet version) and sends it to an energy management service platform, hosted in the Schneider-Electric cloud.

This functional unit supplies the whole with 24 V DC power required for digital devices. This auxiliary power supply is protected by a dedicated circuit breaker.

In this TVD architecture, Com'X 200 gathers electrical values and temperature monitoring from the Smart Panel to publish data to hosted platform via Ethernet.

Com'X 200 energy server can collect data from:

- > Meters with pulse signal outputs, directly connected to its digital inputs
- > Devices connected to Modbus RS485 network
- > Devices connected to Ethernet TCP/IP network
- > Sensors (temperature, humidity) directly connected to its analog inputs.

Com'X 200 logs data at intervals ranging from 1 to 60 minutes. The data can be sent to Schneider Electric on-line energy management platform via:

- > Ethernet media, Internet (ADSL, WIFI...)
- > GPRS, for isolated sites, or sites where IT administrators do not allow use of the network infrastructure.

Energy server functional unit



2.2 Medium Buildings

2.2.1 Single Line Diagram

The electrical architecture associated to a medium building is represented below:



The electrical drawing of this installation is provided in reference document. > *Please refer to chapter 5.3.*

2.2 Medium Buildings

2.2.2 Switchboard architecture

The Smart Panels reference architecture for main low voltage electrical switchboard in a medium building is represented below:

On-line Energy Management Services:



02-LVTVDAENLX_selection

2.2 Medium Buildings



2.2 Medium Buildings



Local energy management:

2.2 Medium Buildings



2.2 Medium Buildings

2.2.3 Enclosures

A switchboard made of Prisma P system is used as example, in addition to the Prisma G switchboard seen in the small building architecture.

Final Distribution

Main Switchboard





2.2 Medium Buildings

2.2.4 General Design

This section describes the choice of hardware, network and software for the medium building reference architecture. It focuses on digital architecture. So the user needs to understand that the design is applicable for many other electrical single line diagrams.

For more detail, > please refer to the Enerlin'X user manuals referenced in section 5.3.

The key driver for this selection is to add just enough digital devices to the electrical switchboard so as to offer remote monitoring and control. The selected architecture is represented through 6 functional units: > Main Switchboard: Main Incomer (monitoring only)

- > Main Switchboard: LV Feeders (monitoring only)
- > Main Switchboard: Distribution (monitoring and control)
- > Main Switchboard: local display (monitoring and control) + energy server (for on-line energy management)
- > Final Distribution: Incomer (status monitoring only)
- > Final Distribution: Distribution (monitoring and control).

Both panels have Ethernet connectivity. Local web pages are available through IFE for the main switchboard and through Acti9 Smartlink Ethernet for the final distribution switchboard. When connecting to the on-line services platform, only one Com'X 200 is required for the entire application.

Both distributions are identical and are based on Acti9 system: Smartlink digital interfaces are associated mainly with iOF/SD module for protection monitoring, Reflex iC60 for load control and pulse meter iEMT2010.

2.2.5 Main Incomer

The power input of the Smart Panel is protected by a Compact NS circuit breaker. For this architecture, we chose an incomer with manual operation only (no remote controls):



Incomer Functional Unit

Main components of the Incomer functional unit are:

Compact NS Withdrawable circuit breaker

2 Enerlin'X I/O interface (Cradle status)

3 Enerlin'X IFE interface (Ethernet / ULP system).

 $24\,\mathrm{V}\,\mathrm{DC}$ power is disbributed within this functional unit thanks to ULP system.

Status and measures of the Incomer functional unit are available through web pages embedded in Enerlin'X IFE. Third party system can also request data using IFE as an Ethernet gateway.

The circuit breaker local display is supported with a FDM128. For a dedicated circuit breaker local display, FDM121 can be added in the ULP system.

2.2 Medium Buildings

This circuit breaker is equipped with an electronic trip unit (Micrologic E) that offers communication from the BCM ULP.

Connection of IFE and I/O interfaces to a Draw out Compact NS circuit breaker and BCM ULP



- A: Enerlin'X IFE Ethernet interface for LV circuit breaker
- B: ULP cable
- C: Circuit breaker ULP cord
- D: Circuit breaker disconnected position contact (CD)
- E: Circuit breaker cradle
- F: BCM ULP circuit breaker communication module
- G: Drawout circuit breaker
- H: Micrologic Trip Unit
- I: Drawout terminal block
- J: Circuit breaker connected position contact (CE)
- **K:** Circuit breaker test position contact (CT)
- L: Enerlin'X I/O input/output interface for LV circuit breaker

2.2.6 Power feeders

The main distribution circuits are protected by Compact NSX circuit breakers. One of them is dedicated to supply the final distribution switchboard. The TVD architecture uses a feeder with manual operation (no remote control):

Main components of the feeder functional units are:

- 3 Enerlin'X IFE gateway (Ethernet / Modbus)
- 4 Compact NSX circuit breaker (Main loads)
- 5 Compact NSX circuit breakers (Feeder Distribution)
- 6 Enerlin'X IFM gateway (Modbus / ULP)

24 VDC power is disbributed within this functional unit thanks to ULP system.

Status and measures of all the device of the functional unit are available from web pages embedded in Enerlin'X. A third party system can also request data using IFE as an Ethernet gateway.

Feeders Functional Unit



2.2 Medium Buildings

These circuit breakers are equipped with an electronic trip unit (Micrologic E) and a BSCM that features digital communication:

Connection of the IFE to the BSCM and to the Micrologic Trip Unit



- A: Enerlin'X IFE, Ethernet interface for LV circuit breaker
- B: Compact NSX cord
- **C:** BSCM: Compact circuit breaker status and control module **D:** Micrologic trip unit

In this application Enerlin'X IFE is used both as an interface (Incomer FU) and as a gateway (Feeder FU). It will also supply all devices with 24 V DC. The picture below shows the stacking principle between Enerlin'X IFE (Modbus master) and Enerlin'X IFM (Modbus slave). The Modbus addresses need to be set for each IFM using its rotary switches, and then the Modbus serial line parameters are automatically tuned.

IFE+ is used in this example

Note:

Two references are available for Enerlin'X IFE:

Enerlin'X IFE+ : Ethernet interface & Gateway Ref: LV434011 for Modbus to Ethernet

Enerlin'X IFE : Ethernet interface Ref: LV434010 for circuit breakers



2.2 Medium Buildings

Distribution functional unit

2.2.7 Distribution

The digital architecture of medium size building final distribution is different upon whether energy management is performed local or on-line.

For local energy management, Ethernet network will feature one IP connection point for each of the Smart Panels.

2.2.7.1 On-line energy management

The communication architecture of the Acti9 part is detailed below:



Main components of the distribution functional unit are:

7 Acti9 Smartlink Ethernet

8 Acti9 Smartlink Modbus.

Energy meter Acti9 iEM3150.

Acti9 Smartlink Ethernet version acts as Modbus-SL master and aggregates data from :

- > Energy Meter (Modbus energy meter is or an IEM or a PM)
- > All Modbus versions of Acti9 Smartlink.

Web pages, embedded in Ethernet version of Acti9 Smartlink enable monitoring of electrical values, of device status, and control of Reflex iC60 circuit breakers.

Final distribution architecture is summarized below:



2.2 Medium Buildings

2.2.7.2 Local energy management

The communication architecture of the Acti9 part is detailed below:

Main components of the distribution functional unit are:

8 Acti9 Smartlink Modbus.

Energy meter (Acti9 iEM3150)

Acti9 Smartlink Modbus and energy meter are connected directly to the Modbus serial line input of Enerlin'X IFE. Enerlin'X IFE web pages enable electrical value monitoring and circuit breaker control.

Final distribution is synthesized below:

2 SmartLink MB IEM 3150 C60 4P Vigi 300mA **iPRD** 63 A D 4P 50 63A 1 SmartLink MB 2 3 4 5 9 10 11 iC60 2p Reflex iC60 iC60 2p 16 A iC60 2p iC60 2p Reflex iC60 IOF SD 24 IOF SD 24 IOF SD 24 IOF SD 24 IEMT 2010 IEMT 2010 16 A 16 A 16 A 2p 10 A 2p 25 A Ti24VDC Ti24VDC 2 3 SmartLink MB 9 11 Reflex iC60 Reflex iC60 Reflex iC60 ModBus serial iEMT 2010 iEMT 2010 iEMT 2010 2p 25 A 2p 25 A 2p 25 A Ti24 interface Ti24VDC Ti24VDC Ti24VDC



2.2 Medium Buildings

2.2.8 Local Display, and Energy Server (for on-line energy management)

In case of on-line energy management, Com'X 200 energy server enables WAGES data to be collected and sent to a platform providing energy management services.

Main components of this functional unit are:

- 9 Com'X 200 energy server
- 10 24 V DC Power Supply
- 11 Ethernet Switch

12 FDM128 local display.

Com'X 200 collects data from final distribution through Acti9 Smartlink (Ethernet version) and sends it to an energy management service platform, hosted in the Schneider Electric cloud.

This functional unit supplies the whole with 24 V DC power required for digital devices. This auxiliary power supply is protected by a dedicated circuit breaker.

In this TVD architecture, Com'X 200 is used to gather electrical values and temperature monitoring from the Smart Panels to publish data to a hosted platform via Ethernet.

FDM128 is a color LCD touch screen integrated in the main switchboard. It provides local monitoring and control of the distribution network. Com'X 200 can collect data from:

- > Meters with pulse signal outputs, directly connected to its digital inputs
- > Devices connected to Modbus RS485 network
- > Devices connected to Ethernet TCP/IP network
- > Sensors (temperature, humidity...) directly connected to its analog inputs.

Com'X 200 logs data at intervals ranging from 1 to 60 minutes.

The data can be sent to Schneider Electric on-line energy management platform via:

- > Ethernet media to access Internet (ADSL, WIFI...)
- > GPRS media, for isolated sites, or sites where IT administrators do not allow use of the network infrastructure.

This picture shows the physical implementation in the cubicle:





Data Server and Display Functional Unit



Configuration

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Configuration

In this chapter we show how to configure hardware and software in Smart Panels to provide either local or on-line energy management.

The configuration and test are conducted with configuration software tools or through Enerlin'X devices embedded web pages. Smart Panels manufacture and Enerlin'X devices fitting recommendations are not detailed here. You will find a chapter summarizing installation best practices in the appendix. Further recommendations are available in "**Smart Panels digitized switchboards assembly guide**", provided in reference document.

> Please refer to chapter 5.3.

Smart Panels digital system can be configured with the following:

- > Software configuration tools (Acti9 Smartlink test tool, RSU)
- > Enerlin'X device embedded web pages.

Enerlin'X devices have web pages to easily configure the system. However, additional configuration tools would be useful for configuring advanced settings (e.g. protection setting, automatic test report...).

Note: in this chapter, it is assumed that all devices are configured with their respective factory settings.

Note: the electrical protection configuration settings are not described because these parameters are project specific.

3.1 Ethernet connected devices detection

Enerlin'X devices connected to Ethernet network are automatically detected and identified, thanks to DPWS (device profile for web services) embedded in Microsoft Windows Vista, Windows 7 and Windows 8. This feature has been tested and validated with Windows 7, as hereunder described.

Connect your computer to the Smart Panels network or an Enerlin'X device. Open Windows Explorer:

G v ♥ ► Network						
Organize 🔻	Network and Sharing Center	Add a printer	Add a wireless device			
쓝 Favorites						
阔 Libraries						
👰 Computer						
👽 Network						

Click on network to automatically display connected devices:

DB 417230.eps	• • Network				
Organize	 Network and Sha 	aring Center Add a printer	Add a wireless de	evice	
쑦 Favo	rites 🔺 Ot	her Devices (4)			
🥽 Libra	ries	Data_Server_2		Smartlink_IP2	
J <mark>토 Com</mark>	puter	Smartlink_IP1		IFE-1	
👊 Netv	vork				

Double click a device to access its web pages.

Note: connection via routers is not compatible with the DPWS feature.
3.2 Acti9 Smartlink

In this section we configure the communication and cabling association on Acti9 Smartlink channels.

3.2.1 Hardware configuration

Modbus version:

Ti24 connector

- 11 input/output
- channels
- > Pin 1:0 V
- > Pin 2: 11 Input 1
- > Pin 3: I2 Input 2
- > Pin 4: Q Output > Pin 5: +24 V DC

- Modbus slave cabling RS485 Modbus
- > Pin 1: D1 Modbus
- > Pin 2: D0 Modbus
- > Pin 3: shielding
- > Pin 4: common/0 V

Modbus slave

addressing with rotary switch (Modbus address must be unique).



Ethernet version :

Ti24 connector 7 input/output channels

- > Pin 1:0 V
- > Pin 2: 11 Input 1 > Pin 3: I2 Input 2
- > Pin 4: Q Output
- > Pin 5: +24 V DC

Ethernet Cabling 100 base T - 1* RJ45

Modbus master cabling RS485 Modbus

- > Pin 1: D1 Modbus
- > Pin 2: D0 Modbus
- > Pin 3: shielding
- > Pin 4: common/0 V



3.2 Acti9 Smartlink

3.2.2 Software Configuration

Acti9 Smartlink can be configured and tested can be executed through dedicated software or via web pages embedded in Ethernet version. Smartlink devices must be correctly connected with correct addressing to work effectively.

3.2.2.1 Acti9 Smartlink test software

Launch Acti9 Smart Test and create a project:

	Project Property	Network Configuration	Acti 9 Smart Test	Reports	
ſ					
				_	0
				Project name	Smart Panel TVDA
				Company name	Schneider Electric
				Final customer name	Customer name
				Engineering office	Schneider Electric
				Panel name	Main Switchboard
				Network type	Smartlink Eth *
					Provide the second seco

This TVDA selected a "Smartlink Eth" Network type.

Network configuration

Go to "Online" mode and click the Q icon to discover Smartlink Ethernet devices (Ethernet DPWS feature).

Project Property	Network Configuration Acti 9 Smart Test	Reports				
System View		You must correct the error or incomplete data in order to configure smartlink	est correct the error or incomplete data in order to configure smartlink			
	⊘ ▲ ×	Name Label IP Address Slave Quantity TCP port	Q IP Address is required			

Acti9 Smartlink devices, Ethernet version, will appear automatically when configured correctly. Identify the master and each slave that must be declared:

> Ethernet versions (Modbus master): IP address, label, number of slaves

- > Modbus versions (Slave): Modbus address, label
- > Other Modbus (Slave): Modbus address, label: iEM3150 in our case.

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3.2 Acti9 Smartlink

The following illustration shows the expected configuration:

2	Project Property	Network Configuration	Acti 9 Smart Test	Reports			
DB417	System View			Ethernet device			
	PC PC			Name	SmartLink_ETH		
				Label	SLIP		
	Sm	nartLinkETH		IP Address	10.195.155.125	Q	
			V	Slave Quantity	3 •		
	a	Smartlink1	\checkmark	TCP port	502		
		0		Smartlink Modbus Device			
		Smartlink2		Modbus address	Name		Label
	a	IEM3150	💎 x	1 1	Smartlink1		SLMB1
				2 2 -	Smartlink2		SLMB2
				3 3 🕞	IEM3150		EM1

Acti9 devices association

Associate the Acti9 connected devices to the corresponding channel using the Acti9 Smart Test software. Use the drag and drop feature to associate corresponding devices to each channel. Repeat the Drag and Drop operation until each Acti9 device have a corresponding channel.



Both communication and functional aspects of each Acti9 Smartlink can be tested with the software. An automatically generated report can be used to supplement contractual documentation in a project.

3.2 Acti9 Smartlink

Control Test

For each controlled channel (i.e. connected to a contactor), the software can be used to generate an ON - OFF signal. The result can be physically observed and recorded in the Test Report.

Monitoring Test

For each monitored channel (i.e. connected to a circuit breaker), the circuit (breaker can be manually operated. The result is displayed on the Test page and recorded in the Test Report.

Test Report

Example of test report, ready to be saved or printed:



3.2.2.2 Acti9 Smartlink embedded web Pages

The same configuration process can carried out with the web pages, embedded in Ethernet version of Acti9 Smartlink.

Access:

Follow DPWS process as described in chapter 3.1, then click on Acti9_XXYYZZ (where XXYYZZ is the device name in DPWS). On opening, enter the device's login and password to gain access to the web pages:

Login			
Smartlink Ethernet			
0	Language User name	English	٠
5	Password		Login All fields are required

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3.2 Acti9 Smartlink

Network Configuration

Start by entering the information for all general and communication parameters in the setting menu: Name, IP addressing, label.

Quick View	Monitoring & Control	Maintenance	Diagnostics	Settings
General	IPv4			
Identification Date/time		IPv4 address *	C Automatic DHCP [C Manual 10.195.155.121	
Timezone Communication		Subnet mask * Default gateway *	255.255.254.0 10.195.154.1	
Ethernet	IPv6			
IP Network Services		IPv6 link local address	Enable	
User management				

Follow the previous step by configuring the Modbus slave Acti9 Smartlink devices: Name, Modbus address, and label.

Quick View	Monitoring & Control	Maintenance	Diagnostics		Settings			
General	Modbus D	evice Configuration						
Identification	NAME	PRODUCT	ADDRESS	LABEL		ł	ACTIONS	
Date/time	SLMB_1	SmartLinkl	RS485 1	1221		Configure	Edit	Delete
Timezone	SLMB_2	SmartLink	RS485 2			Configure	Edit	Delete
Communication	EM_1	iEM3150	3	-		Configure	Edit	Delete
Ethernet	Auto dis	covery address range for modb	ous serial devices	1	to 8	Auto Discov	ver	
IPv4/v6	New Dev	ice Add						

Modbus auto discovery feature is available:

	MODBUS ADDRESS	PRODUCT	
	1	SmartLinkRS485	Add
	2	SmartLinkRS485	Add
	3	iEM3150	Add
Exit			

3.2 Acti9 Smartlink

IP Network Services	4	iC60_4	iOF+SD24	122	Yes	Edit	Delete
Jser management	5	iEMT 2010_1	iEM2000T	-	Yes	Edit	Delete
Users accounts	9	Reflex_1	Reflex iC60	-	Yes	Edit	Delete
Smartlink Ethernet	10	iEMT 2010_2	iEM2000T	-	Yes	Edit	Delete
Digital Channels	11	Reflex_2	Reflex iC60	-	Yes	Edit	Delete
Analog Channels	Back	Add					
Modbus Parameters	Edit Chann	el Settings					
Modbus Parameters	Edit Chann	el Settings Name*	Reflex_2				
Modbus Parameters IP Filter Iodbus Slave Devices	Edit Chann	el Settings Name * Label	Reflex_2				
Modbus Parameters IP Filter Modbus Slave Devices Device List	Edit Chann	el Settings Name* Label Product*	Reflex_2 Reflex iC60				
Modbus Parameters IP Filter Modbus Slave Devices Device List Incomer Selection	Edit Chann	el Settings Name * Label Product * Channel *	Reflex_2 Reflex iC60 💌				
Modbus Parameters IP Filter Iodbus Slave Devices Device List Incomer Selection	Edit Chann	el Settings Name * Label Product * Channel * Quick View	Reflex_2 Reflex iC60 💌				

Channel Association

Associate each Acti9 connected devices to the corresponding channel. For each device and each channel, complete the device association:

Test Report

Both communication and functional aspects of each Acti9 Smartlink can be tested with the web pages. An automatically generated report is not created like with dedicated test software. However, a screen print can be used to create the report:

Quick View Mon	itoring & Control	Maintenance	Diagnostics	Settings	
General	Communi	cation Products			
Date/time	NAME		STATUS	PRODUCT	PROTOCOL
	Smartlink	_IP1	Ok	Smartlink Ethernet	Modbus TCP
Communication	SLMB_1		Ok	SmartLinkRS485	Modbus Serial
Ethernet	SLMB_2		Ok	SmartLinkRS485	Modbus Serial
IP Network Services	EM_1		Ok	iEM3150	Modbus Serial
Switchboard Architecture					
Communication Products	>				
Auxiliary Devices					

3.3 Enerlin'X IFM

Modbus addresses:

Modbus addresses must be set with the two rotary switches symbolized with **X1** and **X10**. The symbol **X10** corresponds to the tens, and the symbol **X1** to the ones. To set the Modbus address to 4, proceed as follows:

IFM rotary switch:

- > Set the X10 switch to 0
- > Set the X1 switch to 4
- > Turn the padlock switch to the unlocked position.



Verify connection between Enerlin'X IFM and circuit breaker: press the test button on IFM and visually check that the associated Micrologic trip unit flashes simultaneously (ON: 1000 ms/OFF: 1000 ms):







Note: If an FDM121 is used, its screen also flashes.

3.4 Enerlin'X IFE

In this section we configure communication with LV circuit breakers.

3.4.1 Hardware Configuration

ULP Connection:

All connection configurations require the circuit breaker ULP cord. An insulated Compact NSX cord is mandatory for system voltages greater than 480 VAC. When the second ULP RJ45 connector is not used, it must be closed with a ULP terminator.

3.4 Enerlin'X IFE



Check the connection between Enerlin'X IFE, I/O interface and circuit breaker using the "ULP test button". Press the test button on IFE and visually check that IFE, I/O interface and associated Micrologic trip unit flash simultaneously (ON: 1000 ms/OFF: 1000 ms):



Ethernet connection:

Enerlin'X IFE has two Ethernet ports E1 and E2:

Ethernet Cabling

100 base T – 2* RJ45 – E1 and E2

Ethernet 1 and Ethernet 2 ports act as a non manageable switch.

Note: IFE doesn't support redundant Ethernet protocol (RSTP, MRP, Hyper Ring...). IFE provides Ethernet daisy chain connection.

If a daisy chain loop is requested, an Ethernet loop manager must be used.

Note: be careful with ULP and Ethernet connections as both use RJ45 connectors. ULP system supplies 24 V DC power to all connected devices. Serious damage can occur in the event of a false connection.

3.4.2 Software Configuration

This part details Enerlin'X IFE configuration and test that is carried out by web pages. IFE devices must be connected and addressed correctly.

Web Pages Access

Using the Ethernet discovery feature (DPWS) as described in chapter 3.1, open the IFE web pages by clicking on IFE_XXYYZZ and enter the device login and password:

3.4 Enerlin'X IFE



Ethernet network configuration

Enter information for all general and communication parameters in the setup menu: Name, IP addressing, label.

1224.eps	Monitoring	Control	Diagnostics	Maintenance	Setup	
DB418	Device Localization/	Name			IP Config	uration
			IP	v4 Configuration		
	Device Physical Le	ocalization E			 Obtain an IP address a Manual 	automatically using DHCP
	Network Configuration	on			IP address : Subnet mask : Default gatewow :	10.195.155.123 255.255.254.0 0.0.0.0
	Ethernet Configura	ation (Dual port)			Delault gateway .	0.0.0
	IP Configuration		IP	v6 Configuration		
	in configuration		☑ E	Enable IPv6		
	MBTCP/IP Filterin	g		Link	ocal address : FE80::280:F	4FF:FEE3:5BE
	Serial Port		DN	IS		
	Date/Time Configura	ition		 Obtain DNS addresses a Manual 	utomatically	
	Data and Time III	•		Primary server	address : 192.168.2.100	

3.4 Enerlin'X IFE

Modbus configuration

After completing the Ethernet configuration, configure the Modbus slave devices: Name, Modbus address.

Device Configuration ULP • Micrologic P • FE_1 255 edit Device List Serial Port • Compact NSX-E • FM_1 1 Device Logging Serial Port • Compact NSX-E • FM_3 3 Device Log Export Gompact NSX-E • FM_4 4 Other Configuration Serial Port • Modbus • • • SNMP Parameters Serial Port • Modbus • • • Documentation Links Serial Port • Modbus • • • Preferences E Serial Port • Modbus • • • Advanced Services Control User Accounts • Modbus • • •	sda gzz	Monitoring	Control	Diagnostics	Maintenanc	e	Setup				
Device Configuration ULP * Micrologic P * IFE_1 255 edit Device List Serial Port * Compact NSX-E * IFM_1 1 Device Logging Serial Port * Compact NSX-E * IFM_3 3 Device Log Export Serial Port * Compact NSX-E * IFM_4 4 Serial Port * Compact NSX-E * IFM_4 4 Serial Port * Compact NSX-E * IFM_4 4 Serial Port * Modbus * Image: Serial Port * Modbu	D8416				<i>"</i>						
Serial Port * Compact NSX-E * IFM_1 1 Device Logging Serial Port * Compact NSX-E * IFM_2 2 Serial Port * Compact NSX-E * IFM_3 3 Serial Port * Compact NSX-E * IFM_4 4 Serial Port * Compact NSX-E * IFM_4 4 Serial Port * Modbus * Image: Serial Port * Modbus * Image: Serial Port * StMP Parameters Serial Port * Modbus * Image: Serial Port * Modbus * Image: Serial Port * Documentation Links Serial Port * Modbus * Image: Serial Port * Modbus * Image: Serial Port * Preferences Serial Port * Modbus * Image: Serial Port * Modbus * Image: Serial Port * Advanced Services Control Serial Port * Modbus * Image: Serial Port * Modbus * Image: Serial Port * User Accounts Image: Serial Port * Modbus * Image: Serial Port * Modbus * Image: Serial Port *		Device Configuration			ULP 👻	Micrologi	c P 👻	IFE_1		255	edit
Device List Device Logging Device Logging Device Log Export Compact NSX-E IFM_3 Device Log Export Compact NSX-E IFM_4 4 Serial Port * Modbus SNMP Parameters Documentation Links Preferences Advanced Services Control User Accounts V Discover Apply				Serial Port	Serial Port 👻	Compact	NSX-E 🔻	IFM_1		1	
Device Logging Device Log Export Serial Port * Compact NSX-E IFM_3 Serial Port * Modbus SNMP Parameters Documentation Links Preferences Serial Port * Modbus Modbus Serial Port *		Device List			Serial Port 👻	Compact	NSX-E 🔻	IFM_2		2]
Device Log Export Serial Port * Compact NSX-E * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * Serial Port * Modbus * User Accounts Y Discover Apply		Device Logging			Serial Port 👻	Compact	NSX-E 🔻	IFM_3		3	
Device Log Export Serial Port - Modbus Shill Parameters Serial Port - Modbus Serial Port - Modbus Serial Port - Modbus Serial Port - Modbus Serial Port - Modbus Preferences Serial Port - Modbus Serial Port - Modbus V Modbus V Modbus V Modbus V Modbus V Modbus V Modbus V Modbus V Modbus V Modbus V Modbus V Modbus </td <td></td> <td></td> <td></td> <td></td> <td>Serial Port 👻</td> <td>Compact</td> <td>NSX-E 🔻</td> <td>IFM_4</td> <td></td> <td>4</td> <td>]</td>					Serial Port 👻	Compact	NSX-E 🔻	IFM_4		4]
Other Configuration Serial Port v Modbus v SNMP Parameters Serial Port v Modbus v Documentation Links Preferences Advanced Services Control User Accounts V Discover Apply		Device Log Export			Serial Port -	Modbus	•]
SNMP Parameters SNMP Parameters Documentation Links Preferences Advanced Services Control User Accounts Discover Apply		Other Configuration			Serial Port 👻	Modbus	•]
SNMP Parameters Documentation Links Preferences Advanced Services Control User Accounts Discover Apply			ouler configuration		Serial Port -	Modbus]
Documentation Links Preferences Advanced Services Control User Accounts Discover Apply		SNMP Parameters			Serial Port +	Modbus	•]
Preferences Advanced Services Control User Accounts Discover Apply		Documentation Link	ks		Serial Port -	Modbus	•]
Preferences Serial Port - Modbus - Advanced Services Control Serial Port - Modbus - User Accounts Discover Apply		12.8	=		Serial Port +	Modbus	•]
Advanced Services Control User Accounts Discover Apply		Preferences			Serial Port -	Modbus	-]
User Accounts Discover Apply		Advanced Services	Control		Serial Port -	Modbus	•]
Discover Apply		Liner Accounte									
с пі кака стана спорти Арріу		User Accounts	-				Discover		Apply		
		III	4				Discover		UPP19		

Enerlin'X IFE provides an auto discovery feature of connected Modbus slave devices.

Test Report

Both communication and functional aspects (Open / close status and Open / Close control) can be tested with the web pages. A screen print of the web pages can be used to create a test report:

245.eps	Monitoring	Control	Diagnostics	Maintenance	Setup			
DB417					Communication	s Check		
	General							
	Statistics		Device	Device Type	Connection	Comms	Status	
	0100000		IFE_1	Micrologic P	ULP			
	Desiduat Information		IFM_1	Compact NS2	K-E Serial Port			
	Product miormation		IFM_2	Compact NS2	K-E Serial Port		8	
	Davias Information		IFM_3	Compact NS	K-E Serial Port			
	Device mornation		IFM_4	Compact NS2	K-E Serial Port			
	IMU Information							
	Device Health Check				Check Device	Status		
	Read Device Register	S						
	Communications Ch	neck						

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3.4 Enerlin'X IFE

Control Activation

In this document, all main LV circuit breakers are manually operated with no support for open/ close remote controls. However, Enerlin'X IFE provides opening and closing controls from the web pages when using a remote controlled circuit breaker. The feature needs to be activated:

> 1. Press the test button of Enerlin'X IFE for 10 to 15 seconds

> 2. Connect to the IFE web pages / Setup / Webpage Access and accept the feature Disclaimer:

	Disposition	Maintenance	Setup			
and the part of the second						
Serial Port						
Date/Time Configuration						
Data and Time						
E-Mail Configuration						
E-Mail Server Configuration	 Fee	ture Disclaimer:				
Alarms to Be E-Mailed	"Ву в	ccepting this disclaimer you a By	e directed to web page acces using, you are agreeing to ind	s which enables you to control several application application of the several application of the several several application of the several application of t	ations remotely. It is highly recommende for and from any and all claims , losses	d that the Administrator modify the default Administrator p , demands, lawsuits and damages
Device Configuration			that are a result of direc	t or indirect use of this application control fea	ture by reason of any act or emission v	hich the user commits."
Device List				I Understand the risks/Roply	continue to disable	
Device Logging						
Device Log Export						
Other Configuration						
SIMP Parameters						
Documentation Links						
Professional						

The page will time out after 5 minutes if an acceptance or refusal is not entered. If the page times out, the disclaimer page will disappear and the remote control features are not enabled.

> 3. After accepting the disclaimer, device open/ close control orders can be sent remotely by clicking the link under the Operation heading (Open/ Close).

	Resets: Masterpact/M	crologic E)		
Single Device Control	Central	Status	Operation	Date/Time Last Res
	Date/Time			2014-04-18 10:1
Consact E1	MiniMax		8	
Compact A2	Peak Demand Current			
Compact A3	Peak Demand Power			
	Accumulated Energy		8	
			Reset	
	Breaker application	1		
	Control	Status	Operation	Availability
	Breaker Status	Closed	Con Flore	BCMULP

3.4.3 Notification

A notification feature is provided by Enerlin'X IFE for circuit breakers directly connected to the ULP system. A notification is sent via e-mail. The notification may be triggered upon an event such as a circuit breaker alarm and the IO interface. Multiple e-mails can be transmitted to multiple users for different alarm conditions. Settings are managed through the device web pages, > see chapter 3.9.3.7 for details.

Note: e-mail notifications require a non-encrypted SMTP server. For example, notifications will not work in an environment using encryption (SSL/TLS) or SMTP servers (smtp.google.com).

3.5 Enerlin'X I/O Module Application

The I/O module provides pre defined application for circuit breaker management. It is an Input / Output interface for Compact and Masterpact circuit breakers. In this TVDA, one I/O module is used for the main incomer with cradle management (Connected - Disconnected - Test Positions).

3.5.1 Hardware Configuration

I/O Module Identification Setting

Two I/O modules can be used for the same breaker connected to a ULP system (I/O Module 1 or I/O Module 2).

When 2 I/O modules are connected in the same ULP network, the 2 I/O modules are differentiated by the position of the dip switches located on the bottom of the I/O module:



I/O Module Predefined Application

The application rotary switch is used to select predefined applications. The switch has 9 positions with each position assigned to a predefined application. The factory set position is application 1.



The Predefined Applications are summarized in the table below:

Application rotary switch position	Predefined application	Description
1	Cradle management	Monitors the position of the circuit breaker in the cradle
2	Circuit breaker operation	Controls the opening and closing of the circuit breaker by using the control mode (local or remote) and the close inhibit order
3	Cradle management and Energy Reduction Maintenance Setting (ERMS)	Monitors the position of inputs and controls the ERMS mode of the circuit breaker
4	Light and load control	Controls the light and load application
5-8	Spare	Future evolution
9	Custom	Performs the user-defined applications with the I/O module

3.5 Enerlin'X I/O Module Application

3.5.2 Software Configuration

Enerlin'X I/O module tests can be configured in the IFE web pages. IFE device and I/O module must be connected and addressed correctly to function.

Enerlin'X I/O Module Test

Access the monitoring web page of Enerlin'X IFE associated with the I/O module:

Monitoring	Control	Diagnostics	Maintenance	Setup			
Real Time Data		Reactive Energy (kVARh) Apparent Energy (kVAh)		0 0		2014-04-03 17:07:27 2014-04-03 17:07:27	
Single Device Pages		IO Readings					
IFE_1 IFM_1		IO Module 1					
IFM_2 IFM_3 IFM_4		Inputs	Label		Value	Force/Unforce	Unit
		Digital Input 1	Cradle connected positio	n contact(CE)	0	UNFORCED	
		Digital Input 2	Cradle disconnected pos	ition contact(CD)	1	UNFORCED	
Summary Device Pages		Digital Input 3	Cradle test position conta	act(CT)	1	UNFORCED	
		Digital Input 4			0	UNFORCED	
Trending		Digital Input 5			0	UNFORCED	
		Digital Input 6			0	UNFORCED	
		Outputs					
Device Logging		Digital Output 1			0	UNFORCED	
borneo Logging		Digital Output 2			0	UNFORCED	
		Digital Output 3			0	UNFORCED	
		Analog Inputs					
< [4	PT100					°C

A print screen of the web pages can be used to create a report on the I/O module installation

Input / Output Assignment with RSU software

In predefined applications, the Input / Output that are not used are available for customization. Customization can be done by assigning input and output through the software configuration tool RSU:

> From your computer, launch RSU and connect to an Enerlin'X IFE associated with the I/O module.



3.5 Enerlin'X I/O Module Application

> Select I/O assignment menu

-IO Assignr	nents	Application Name	-Digita	l Inputs	7.8								
I IO #1	3 7		A 10	O Designation	Assigned Ever	ts Cha	aracteristics	Threshold	Pu.Weight	Pu.Unit	Pu.Polarity	Filter 7	Гim
J* 10#1	124	Cradie manageme	In	iput1 #1	Craddle conne	NO		5000	-	-	-	0.003	2.0
			T In	iput2 # 1	Craddle discor	NC		5000	-	-	-	0.003	
		Schematics	•					Ш					•
		Logic Diagram	Anala										_
			Anaio	ig input									_
			IO De	esignation A	ssigned Events	Sensor	r PT 100 U	Jnit					
			Input	#1 L	Iser Defined In	PT100	°C						
			1										
✓ IO # 2													
		[-Digita	d Outputs					,	,			_
			IO De	esignation A	ssigned Events	Mode	Delay(s)	Characteristic	s Threshol	d Fallb	ack Position		
			Outpu	ut1 # 1 🛛 🔊	lone	7.1	100	-	-	12			
			Outpu	ut2 # 1 N	lone	-	-	-	-	-			
			Outpu	ut3 # 1 N	lone	-	(-)	-	-	1			
			1										_
													_

> Assign input or output to the desired predefined functions

Kicrologic RSU - C:\Micrologic\Utility\RSU_	A\Data\New.rsa
File Remote functions Setup Update Ma	intenance Help
Micrologic Selection	
Trip unit Distribution 🔻 Micrologic 0.3 NA	3P V In 400 V IEC V P/N LV432061 V
, _,	Digital Inputs Setup
IO Assignments IO # 1 IO # 1 Cradle manager Schematics Logic Diagram	Selected input Input4 # 1 Selected input Input4 # 1 Switchboard board door contact Earth leakage trip signal contact (SDV) Control voltage presence contact Surge protection status contact Switch disconnector ON/OFF indication contact (OF) Fuse blown indication contact Emergency Stop User defined pulse counter-4 User defined lnput-4 None
	Pulse Polarity - Filter Time - sec

> Send the parameters to the circuit breaker.

3.5 Enerlin'X I/O Module Application

Input Test

Input and output values can be checked through Enerlin'X IFE embedded web pages under monitoring:

IO Readings			
Feeder NT (Micrologic E))		
IO Module 1			
	Label	Value	Force/Unforce
Inputs			
Digital Input 1	Cradle connected position contact(CE)	0	UNFORCED
Digital Input 2	Cradle disconnected position contact(CD)	1	UNFORCED
Digital Input 3	Cradle test position contact(CT)	1	UNFORCED
Digital Input 4		0	UNFORCED
Digital Input 5		0	UNFORCED
Digital Input 6		0	UNFORCED
Outputs			
Digital Output 1		0	UNFORCED
Digital Output 2		0	UNFORCED
Digital Output 3		0	UNFORCED
Analog Inputs			
PT100			

Output Test

Output values can be checked through Enerlin'X IFE embedded web pages under the control menu. Follow the same procedure as the IFE control activation. After the procedure is complete, the output can be forced:



3.6 Enerlin'X FDM128

A setting wizard is automatically launched on the initial power up to help complete the FDM128 display unit setup. After configuration, only the date & time need to be adjusted in the event of a power supply failure (Enerlin'X FDM128 will maintain a date and time record of the power supply outages). Each time the digital network is modified, it is recommended to update the communication settings.

3.6.1 General Setting

The following table outlines the steps used in the FDM128 display unit settings wizard:

Step	Screen	Action
1	Welcome	Press the screen to start the wizard.
2	Language selection	Press the desired language. In the footer, press the down arrow icon to access the next step.
3	Date	Press the up/down arrows icons to set the current year, month, and day. In the footer, press the down arrow icon to access the next step.
4	Time	Press the up/down arrows icons to set the current hour and minute. In the footer, press the down arrow icon to access the next step.
5	Phase ID	Press one of the two possible ways to represent the phases 1,2,3,N, or A, B, C, N. In the footer, press the down arrow icon to access the next step.
6	Units of measurement	Select the units of measurement for the analog input of the I/O modules: > the unit of temperature (°C or °F) > the unit of volume (m3 or gallon US or gallon UK).
7	Brightness	Press the -/+ icons to adjust the brightness level of the display. In the footer, press Finish. The setting wizard displays the Selection of the communication architecture screen, to set up the FDM128 communication. Follow the communication settings procedure that corresponds to the network architecture.

3.6.2 Communication Setting Procedure

In this TVD architecture, the version of FDM128 allows configuring up to 8 devices connected to the Ethernet network. In addition, only one gateway is configurable (In this TVDA's local application, a choice is made between IFE and Smartlink Ethernet as a Modbus gateway. Depending on the number of discovered devices behind the gateway, more Ethernet devices can be added up to a total of 8).

The two procedures for configuring the FDM128 communication are detailed in the section below.

3.6.2.1 Enerlin'X IFE or Acti9 Smartlink gateway based Architecture

This procedure is applicable when:

- > FDM128 display unit is connected to an IFE gateway (IFE+)
- > FDM128 display unit is connected to an Acti9 Smartlink Ethernet gateway.

3.6 Enerlin'X FDM128

Step	Action
1	In the Selection of the communication architecture screen, select IFE-based architecture or Acti 9 Smartlink Ethernet-based architecture.
2	Configure the FDM128 display unit within the network. Set the following parameters: > FDM128 IP address > Subnet mask > Subnet default gateway.
3	Press YES to indicate that the FDM128 display unit is connected to an IFE gateway or Acti9 Smartlink Ethernet gateway.
4	Set the IP address of the IFE gateway or Acti9 Smartlink Ethernet gateway.
5	Press Start to launch the auto discovery sequence. Up to 16 devices are displayed.
6	Select up to eight devices among the devices displayed.
7	If you selected fewer than 8 devices among the devices displayed, you can add manually IFE or Acti 9 Smartlink Ethernet devices.
8	Press Finish. The FDM128 display unit can now monitor the list of selected devices. The setting wizard displays the Editing devices screen to allow you to edit the label and name of the devices.

The setup of Acti9 Smartlink devices is excluded from the wizard. To set up an Acti9 Smartlink device, open its Device view screen, and navigate to the Setup menu and click the Setup button:



3.6.2.2 Enerlin'X IFE or Acti9 Smartlink Ethernet architecture

This procedure is applicable when:

> FDM128 display unit is connected to an IFE interface

> FDM128 display unit is connected to an Acti9 Smartlink Ethernet.

The FDM128 setting wizard guides you through the following steps:

Step	Action
1	In the Selection of the communication architecture screen, select IFE-based architecture or Acti 9 Smartlink Ethernet-based architecture.
2	Configure the FDM128 display unit within the network. Set the following parameters: > FDM128 IP address > Subnet mask > Subnet default gateway.
3	Press NO to indicate that there is no gateway.
4	Configure manually up to 8 IFE or Acti9 Smartlink Ethernet devices.
5	Press Finish. The FDM128 display unit can now monitor the list of selected devices. The setting wizard displays the Editing devices screen to allow you to edit the label and name of the devices.

The setup of Acti9 Smartlink devices is excluded from the wizard. To set up an Acti9 Smartlink device, open its Device view screen, and navigate to the Setup menu and click the Setup button.

3.7 Com'X 200 energy server



3.7.1 Hardware Configuration

Wiring of Power Supply:

- > 100-240V AC (+15 %, -20 %)
- > 24V DC (+15 %, -20 %)

DC can be the power backup of AC supply (like a battery) > Power Over Ethernet (PoE).

No external power supply required, easiest installation.





Digital and Analog inputs

No additional I/O block required.

> 6 Digital Inputs (DI)

WAGES and pulse meters can be connected directly to Com'X 200 for simple architecture:

- With LED indication of status and pulse reception

- DI can be powered directly by Com'X 200: one 12 V DC power output available for pulse metering contact or status reading.

- > 2 Analog Inputs (AI):
- Accuracy 1 % for PT100 or PT1000 or 0.5 % for 0-10 V and 4-20 mA
- Al can be powered directly by Com'X 200: one 24VDC power supply output available for sensors.



Ethernet Port

- > 2 Ethernet ports can be configured:
- As a switch: one IP address for both E1 and E2 ports
- As separate interface: E2 data acquisition and E1 data publication.

3.7 Com'X 200 energy server

WIFI module

Com'X 200 as a WIFI access point used for easy configuration.









GPRS module

- > Easily installed or removed after wiring Com'X 200.
- > For isolated sites or sites without access permission to IT infrastructure:
- To send data to Energy Management service platform.
- LED displaying GPRS modem status and signal level.

3.7.2 Software Configuration

Com'X 200 is only configurable via its web pages. Com'X 200 software configuration is not detailed in this document. For more information, > Please refer to chapter 3.9.3. > Please refer to the Com'X 200 user manual for instructions specific to your project.

Com'X 200 web page access for configuring is done through the following:

- > DPWS method, > refer to 3.1.
- > Com'X 200 is a DHCP server by default on E2, it will automatically attribute an IP address to the computer so that it can connect to Com'X 200 default IP address: 10.25.1.1
- > WIFI USB dongle, Com'X 200 as an access point with nothing to configure:
- A convenient way to configure the Com'X 200 energy server when access is difficult or to avoid requesting an IP to the customer network ('Private' WIFI network of Com'X 200)
- Galvanic isolation with WIFI.

3.8 Local energy management

3.8.1 Customer Requirements

In this scenario, Smart Panels are connected to a local monitoring and control system. A local display FDM128 installed on front of the main switchboard provides local monitoring and control of electrical devices. The Ethernet network infrastructure provides remote access to the electrical device web pages. Using these access points, the building electrical equipment can be monitored and controlled from the energy monitoring dashboard.

3.8.2 Network Configuration

The network infrastructure is very simple by providing easy commissioning and operation. IT service is not needed to access the data of the electrical installation for application. Data can be seen easily from the web page interface. The drawing below details the digital network architecture:



In this application Enerlin'X FDM128, Enerlin'X IFE and Acti9 Smartlink must be connected to the same Ethernet network. So Enerlin'X FDM 128 a must be manually configured to be compliant with both connected products Enerlin'X IFE and Acti9 Smartlink Ethernet, with their respective default IP addresses.

3.8 Local energy management

Device type	Name	Localization	Network type	Network address
FDM128	Display_MS	Main Switchboard	Ethernet	169.254.0.50
IFE	IFE_MS	Main Switchboard	Ethernet	169.254.5.190
IFM	IFM1	Main Switchboard	Modbus	1
IFM	IFM2	Main Switchboard	Modbus	2
IFM	IFM3	Main Switchboard	Modbus	3
IFM	IFM4	Main Switchboard	Modbus	4
Smartlink MB	SLMB_MS1	Main Switchboard	Modbus	5
Smartlink MB	SLMB_MS2	Main Switchboard	Modbus	6
Smartlink MB	SLMB_MS3	Main Switchboard	Modbus	7
EM3150	EM_MS	Main Switchboard	Modbus	8
Smartlink Eth	SLIP_FD1	Final Distribution	Ethernet	169.254.0.231
Smartlink MB	SLMB_FD1	Final Distribution	Modbus	1
Smartlink MB	SLMB_FD2	Final Distribution	Modbus	2
EM3150	EM_FD	Final Distribution	Modbus	3

The table below gives the Modbus and Ethernet network addresses.

Network mask: 255.255.0.0

Default gateway / DNS server: 169.254.1.1 (not relevant in this application).

3.8.3 System configuration

In this scenario, Enerlin'X IFE and Acti9 Smartlink use the default IP addresses. The default configuration uses a DHCP client with a backup default IP address in the event a DHCP server is not available. As a result, Enerlin'X IFE and Acti9 Smartlink options need to set the IP Address to static mode with the default IP address.

To set Enerlin'X FDM128, ensure the name and IP addresses are set according to the above table. After being set, the Modbus devices behind IFE and Smartlink Ethernet can be automatically detected.

3.8.3.1 IP addressing / naming

Using the Acti9 Smartlink embedded web pages; the names can be configured as shown below:

Quick View	Monitoring & Control	Maintenance	Diagnostics	Settings	
General	Device id	entification			
Identification	>	Device name *	SLIP_FD1		
Date/time		Product range name	Acti 9		
Timezone		Product model name	Smartlink Ethernet		
Communication		Unique identifier	13814000-1dd2-11b2-0080-0	080f4e400e7	
Ethornot					
IPv4/v6			* Required field	Apply changes	Undo changes

After the name is configured, click on the Communication menu to see the IP address settings. Leave the default IPv4 address and click the "Manual" radio control in the IPv4 section.

3.8 Local energy management

Quick View	Monitoring & Control	Maintenance	Diagnostics	Settings
General	IPv4			
Identification Date/time Timezone		IPv4 address * Subnet mask *	C Automatic DHCP Manual 169.254.0.231 255.255.0.0	
Communication		Default gateway *	169.254.0.231	
IPv4/v6	IPv6			
IP Network Service	es	IPv6 link local address	Enable	

Access the Enerlin'X IFE web pages to configure the device name:

B074.eps	Monitoring	Con	trol	Diagnostics	Maintenance	Setup	p		
DB41	Device Localizatio	n/Name	*					Device Name	
	Device Physical	Localization					Device Name Configur	ration	
	Device Name					Ī	IFE-MS	Apply	

In the IFE web pages, click on IP Configuration under Network Communication. Leave the default IPv4 address and click the "Manual" radio control in the IPv4 section.

75.eps	Monitoring	Control	Diagnostics	Maintenance	Setup	
DB4180	Device Localization/Name	<u>*</u>				IP Configuration
	Device Divisional Learninger				IPv4 Configuration	ion
	Device Physical Localizati Device Name	n				Obtain an IP address automatically using DHCP Manual
	Network Configuration					IP address : 169.254.5.190 Subnet mask : 255.255.0.0
	Ethernet Configuration (Du	al port)				Default gateway : 0.0.0.0
	IP Configuration	_			IPv6 Configuration	ion
	MBTCP/IP Filtering				Enable IPv6	Link local address : FE80: 280:F4FF:FEE3:58E

3.8 Local energy management

3.8.3.2 Modbus Devices Discovery

From Acti9 Smartlink web pages, launch the Modbus "Auto Discover" feature and correctly name the detected devices:

Identification NAME PRODUCT ADDRESS LABEL ACTIONS Date/time SLMB_FD1 SmartLinkRS485 1 Configure Edit Delet Timezone SLMB_FD2 SmartLinkRS485 2 Configure Edit Delet	eral	Modbus Devic	e Configuration					
Date/time SLMB_FD1 SmartLinkRS485 1 Configure Edit Delet Timezone SLMB_FD2 SmartLinkRS485 2 Configure Edit Delet	dentification	NAME	PRODUCT	ADDRESS	LABEL	1	ACTIONS	
Timezone SLMB_FD2 SmartLinkRS485 2 - Configure Edit Dele	Date/time	SLMB_FD1	SmartLinkRS485	1	-	Configure	Edit	Delete
	Γimezone	SLMB_FD2	SmartLinkRS485	2	102	Configure	Edit	Delete
EM_FD iEM3150 3 Configure Edit Delet	• • •	EM_FD	iEM3150	3	15-4	Configure	Edit	Delete

From Enerlin'X IFE web pages, launch the Modbus "Auto Discover" feature and correctly name the detected devices:



Modbus communication diagnosis is available for Enerlin'X IFE and Acti9 Smartlink (Ethernet version).

edu o	Monitoring	Control	Diagnostics	Maintenance	Setup				
G	anoral					Con	nmunications	Check	
	Chatiatian				Device	Device Type	Connection	Comms	Status
	Statistics				IFE MS	Micrologic P	ULP	Passed	In Service
1000					IFM 1	Compact NSX-E	Serial Port	Passed	In Service
Pr	oduct Information				IFM 2	Compact NSX-E	Serial Port	Passed	In Service
	S				IFM 3	Compact NSX-E	Serial Port	Passed	In Service
	Device Information	11			IFM_4	Compact NSX-E	Serial Port	Passed	In Service
	IN ALL L. C				SLMB_MS1	ACTI9	Serial Port	Passed	In Service
	IIVIU Information				SLMB_MS2	ACTI9	Serial Port	Passed	In Service
					SLMB_MS3	ACTI9	Serial Port	Passed	In Service
De	evice Health Check	C			EM_MS	iEM3250	Serial Port	Passed	In Service
	Read Device Regi	sters							
	Communication	s Check					Check Device St	atus	

3.8 Local energy management

Quick View	Monitoring & Control	Maintenance	Diagnostics	Settings	
General	Commun	ication Products			
Date/time	NAME		STATUS	PRODUCT	PROTOCOL
	SLIP_FD	1	Ok	Smartlink Ethernet	Modbus TCP
Communication	SLMB_F	D1	Ok	SmartLinkRS485	Modbus Serial
Ethernet	SLMB_F	D2	Ok	SmartLinkRS485	Modbus Serial
IP Network Services	EM_FD		Ok	iEM3150	Modbus Serial

3.8.3.3 Acti9 Smartlink channel association

From Acti9 Smartlink web pages, configure the channel for SLIP_FD1.

Quick View	Monitoring & Control	Maintenance	Diagnos	stics	Settings		
General	Digital C	hannel Configura	tion				
Identification	Device I	Name : SLIP_FD1	1				
Date/time	CHANN	EL NAME	PRODUCT	LABEL	QUICK VIEW		
Timezone	2	iPRD	Standard IO	Surge	No	Edit	Delete
Communication	7	Incom	Breaker IO	OF-SD	No	Edit	Delete
Ethernet	Add						

Do the same for SLMB_FD1 and SLMB_FD2:

118081.el

Quick View Mc	nitoring & Control	Maintenance	Diagnostics	Settings			
General	Modbus D	evice Configuration					
Identification	Device Na	me : SLMB_FD1					
Date/time	Digital Ch	annel Configuration					
Timezone	CHANNE	L NAME	PRODUCT	LABEL	QUICK VIEW		
Communication	1	Lighting Room1	iOF+SD24	Light	No	Edit	Delete
Ethernet	2	Lighting Room2	iOF+SD24	Light	No	Edit	Delete
IPv4/v6	3	Socket Room1	iOF+SD24	Sockt	No	Edit	Delete
IP Network Services	4	Socket Room2	iOF+SD24	Sock	No	Edit	Delete
User management	5	Count Room 1	iEM2000T	Count	No	Edit	Delete
Users accounts	9	CTRL HEAT R1	Reflex iC60	Heat1	No	Edit	Delete
Constability in Fals and the	10	Count Room 2	iEM2000T	Count	No	Edit	Delete
Smartunk Einefhet	11	CTRL Heat R2	Reflex iC60	Heat2	No	Edit	Delete

3.8 Local energy management

The Acti9 Smartlink Modbus channels can also be named when connected to Enerlin'X IFE (SLMB_MS1, SLMB_MS2, and SLMB_MS3).

Real Time Data	Meter Readings													
Single Device Pages	Basic Readin	Igs: SLMB_MS1 (ACTI9)											2014-05	-05 15:4
IFE_MS	Channel Names													
IFM_2 IFM_3	Parameter		Channel	1	2	3	4	5	6	7	8	9	10	11
SLMB_MS1 SLMB_MS2	Connected Device			Channel 1	iPRD	Channel 3	Channel 4	Channel 5	Channel 6	Channel 7	Channel 8	Channel 9	Channel 10	Channel
SLMB_MS3 EM_MS		Status Input 1		0	0	0	0	0	0	0	0	0	0	0
Summary Device Pages		Status Input 2		0	0	0	0	0	0	0	0	0	0	0
Summary Service Fuger		Status Output 1		0	0	0	0	0	0	0	0	0	0	0
Trending														

Note: in this TVD architecture, channels cannot be controlled from IFE web pages (this feature will be supported in a later version).

3.8.3.4 Web Page monitoring and control

Finally, the configuration of the system can be checked using the steps below.

From Enerlin'X IFE web pages, monitoring real time data are displayed:



3.8 Local energy management

From Acti9 Smartlink web pages, monitoring real time data are displayed and control channels are available for remote controlled devices:

Quick View Mon	hitoring & Control Maintenance	Diagnostics	Settings		
Smartlink Ethernet	Digital Channels				
Pulse Meters	NAME	STATUS	CONTROL	PRODUCT	LABEL
Analog Channels	Channel1	ł	OPEN CLOSE	iOF+SD24	1975
Digital Channels	Channel2	ł	OPEN CLOSE	iOF+SD24	-
Smartlink RS485	Channel3	ł	OPEN CLOSE	iOF+SD24	122
Pulse Meters	Channel4	ł	OPEN CLOSE	iOF+SD24	-
Energy Meters	Channel7	Low	OPEN CLOSE	Standard IO	10-
Energy Meters	Channel7	Low	OPEN CLOSE	Standard IO	
	Channel9	ł	OPEN CLOSE	Reflex iC60	822
	Channel11	× ×	OPEN CLOSE	Reflex iC60	0.55
	Light1	1 N	OPEN CLOSE	Reflex iC60	-
	Light2	ł	OPEN CLOSE	Reflex iC60	1022
	Light3	Trip	OPEN CLOSE	Reflex iC60	-

3.8.3.5 Local Display

Enerlin'X FDM128 local display allows configuring up to 8 devices. The devices must be selected from the electrical application. In addition, FDM128 only allows configuring one Modbus gateway. As a result, Enerlin'X IFE is selected as a Modbus gateway. So the SLIP_FD1 is not configured in the FDM128 as a Modbus gateway, but as an Ethernet interface: SLIP_FD1.

Device type	Name	Localization	Network type	Network address
IFE	IFE_MS	Main Switchboard	Ethernet	169.254.5.190
IFM	IFM3	Main Switchboard	Modbus	3
IFM	IFM4	Main Switchboard	Modbus	4
Smartlink MB	SLMB_MS1	Main Switchboard	Modbus	5
Smartlink MB	SLMB_MS2	Main Switchboard	Modbus	6
Smartlink MB	SLMB_MS3	Main Switchboard	Modbus	7
Smartlink Eth	SLIP_FD1	Final Distribution	Ethernet	169.254.0.231

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Configuration

3.8 Local energy management

Set the date, time and IP address of FDM128. Then select Enerlin'X IFE Gateway:





Enter the IP address of Enerlin'X IFE, launch the Modbus auto discovery and select the 6 devices selected for the main switchboard.

dd/mm/yyyy	12:00 am
Autodiscovery / Ga	teway IP settings
Gateway IP:	169 254 5 190
ESC	Start

Enter the IP address of Acti9 Smartlink and launch the auto discovery:



Note that two more IP addresses are configurable. In this scenario, one will be added.

In total, 7 devices are shown in the local display that must be configured for the Smartlink channels to complete the process.

dd/mm/yyy	y 12:00 am:	dd/mm/yy	yy : 12:00 am
SL1 / N	AME 1	B SL1 / N	IAME 1
Status		Status	G C2 C3 C4 >
Energy	OE+SD24	Energy	< Pulse Counter >
Control		Control	
	Q111 Ventilator cubicle N*2		C112 Energy heating zone 1
			12:
Setup		Setup	C113 Energy heating zone 2
ESC	♡ 1/1 🔊	ESC	♡ 1/1 🔗

3.8 Local energy management

After the above steps are complete, the installation can be locally monitored and controlled from Enerlin'X FDM128:

SL1 / N Status	Q111: Ventilator cubicle N*2	TRIP 🙆
Energy Control	Q112: Auxiliary Supply Z2	OFF 🔇
	Q113: Auxiliary Supply Z3	ON 🔇
Setup	K122: Relay lighting ramp1	ON 😫

dd/mm/yy	уу 1	2:00 a
Ś		3 3
SL1 / N	IAME 1	
Status	Q111: Ventilator cubicle N*2	Close
Energy		
Control	K122: Relay lighting ramp 1	Open
	K123: Relay lighting ramp 2	Close
Setup	K124: Relay heating zone 1,2	Close
ESC	♥ 1/3 🙈	

3.8.3.6 Data Logging and Trending

The electrical real time trending data can be exported for analyses through an IFE capability:

Select a data point for real time trending:



Data logging is also configurable from the setup menu and allows data point storage.



For example, Enerlin'X IFE can store up to three months of data in memory with a 5 sec. logging interval. The collected data points can be exported using FTP to a CSV formatted file.

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3.9 On-line Energy Management

3.9.1 Customer Requirements

In this scenario, Smart Panels provide two ways for monitoring and control of the electrical equipment. The first is through the local software application and the second is using a Schneider Electric on-line energy management service. Enerlin'X FDM128 local display fitted on front of the main switchboard provides local monitoring and control of electrical devices. Through the on-line solution, monitoring and control of the electrical equipment of the building can be accessed almost anywhere with access to an energy report.

3.9.2 Network Configuration

In this application Internet access is required to provide:

- > Access to on-line energy management service
- > E-mail notification
- > Remote access to the electrical building installation.

Internet access needs to be provided through local IT Services or through the Com'X 200 GPRS connection. In this document, it is assumed that the IT services managing the building Ethernet network and internet connection (through DHCP, DNS) and security protocols (e.g. firewalls) will provide secure access. If IT services are not available for this application, Com'X 200 provides a GPRS connection option to push data to an energy management platform. In this scenario, Enerlin'X IFE email notifications are not available.

The drawing below details the digital network architecture:



In this application, an IT service manages the addressing rules to connect the Smart Panels to the building network infrastructure. IP addresses are distributed in fixed mode by a DHCP server. This is done to prevent changing Enerlin'X IFE and Acti9Smartink IP addresses that are manually configured in FDM128 and Com'X 200.

3.9 On-line Energy Management

To sum up, IP addresses delivered by IT service must keep the fixed link between Ethernet devices. IT services must also offer an SMTP server to provide e-mail notifications. The following table gives the Modbus and Ethernet network IP addresses:

Device type	Name	Localization	Network type	Network address
Com'X 200	Data_Server	Main Switchboard	Ethernet	10.195.155.120
FDM128	Display_MS	Main Switchboard	Ethernet	10.195.155.124
IFE	IFE_MS	Main Switchboard	Ethernet	10.195.155.123
IFM	IFM1	Main Switchboard	Modbus	1
IFM	IFM2	Main Switchboard	Modbus	2
IFM	IFM3	Main Switchboard	Modbus	3
IFM	IFM4	Main Switchboard	Modbus	4
Smartlink Eth	SLIP_MS1	Main Switchboard	Modbus	10.195.155.125
Smartlink MB	SLMB_MS1	Main Switchboard	Modbus	1
Smartlink MB	SLMB_MS2	Main Switchboard	Modbus	2
EM3150	EM_MS	Main Switchboard	Modbus	3
Smartlink Eth	SLIP_FD1	Final Distribution	Ethernet	10.195.155.121
Smartlink MB	SLMB_FD1	Final Distribution	Modbus	1
Smartlink MB	SLMB_FD2	Final Distribution	Modbus	2
EM3150	EM FD	Final Distribution	Modbus	3

Network mask: 255.255.254.0

Default gateway / DNS server: 10.195.154.1 / 10.195.136.22.

3.9.3 System configuration

In this scenario, Com'X 200 gathers data from both switchboards, IFE_MS, SLIP_MS1 and SLIP_FD1 to transfer them to "Energy Operation", one of on-line services by Schneider Electric. A local FDM128 display provides monitoring and control of selected loads in both switchboards. The notification service from Enerlin'X IFE provides alerts to users in case of main power supply failure.

The first step is to name and set the IP addresses according to the above table. Then use discover feature to find the Modbus devices behind Enerlin'X IFE and Acti9 Smartlink devices. After this detection, set the FDM128 display to the Com'X 200.

3.9.3.1 IP Addressing / Naming

From Acti9 Smartlink web pages, configure the name:

Quick View	Monitoring & Control	Maintenance	Diagnostics	Settings	
General	Device id	entification			
Identification	>	Device name *	SLIP_MS1		
Date/time		Product range name	Acti 9		
Timezone		Product model name	Smartlink Ethernet		
Communication		Unique identifier	13814000-1dd2-11b2-0080-	0080f4e40145	
Ethernet			* Required field	Apply changes	Undo changes
IPv4/v6					

In this section, two Acti9 Smartlink Ethernet devices are used. To reduce the risk of errors, it is recommended to connect them one by one on the Ethernet LAN.

This can be repeated for all Enerlin'X devices given in the previous table.

3.9 On-line Energy Management

Check the communication with the IP Address provided by IT Services and connected in the distributed Enerlin'X products: For Acti9 Smartlink MS1:

	Monitoring & Control	Maintenance	Diagnostics	Settings	
General	IPv4				
Identification			Automatic DHCP		
Date/time			C Manual		
Timezene		IPv4 address *	10.195.155.125		
Timezone		Subnet mask *	255.255.254.0		
Communication		Default gateway *	10.195.154.1		
Ethernet					
IPv4/v6	> IPv6		-100.5		
IP Network Services	n	ID 6 link local address	Enable		
User management		IFV0 IIIK local address	FE0U20U.F4FF.FEE4.145		
Users accounts	DNS				
			Automatic		
Smartlink Ethernet			C Manual		
Digital Channels		Primary DNS Server *	10.195.136.22		
Analog Channels		Secondary DNS Server	192.168.2.100		
Modbus Parameters				AVE A DESCRIPTION SHARE	
IP Filter			* Required field	Apply changes	Undo changes
		For A	cti9 Smartlink FD1:		
Quick View	Monitoring & Control	Maintenance	Diagnostics	Settings	
General	IPv4				
Identification					
			• Automatic DHCP		
Date/time			Automatic DHCP Manual		
Date/time		IPv4 address *	Automatic DHCP Manual DHCP 10.195.155.121		
Date/time Timezone		IPv4 address * Subnet mask *	Automatic DHCP ▼ C Manual 10.195.155.121 255.255.254.0		
Date/time Timezone Communication		IPv4 address * Subnet mask * Default gateway *	Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1		
Date/time Timezone Communication Ethernet	IPv8	IPv4 address * Subnet mask * Default gateway *	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 		
Date/time Timezone Communication Ethernet IPv4/v6	> IPv6	IPv4 address * Subnet mask * Default gateway *	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 ✓ Enable 		
Date/time Timezone Communication Ethernet IPv4/v6 IP Network Services	> IPv6	IPv4 address * Subnet mask * Default gateway *	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 ▼ Enable FE80::280:F4FF:FEE4:E7 		
Date/time Timezone Communication Ethernet IPv4/v6 IP Network Services User management	> IPv6	IPv4 address * Subnet mask * Default gateway * IPv6 link local address	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 ▼ Enable FE80::280:F4FF:FEE4:E7 		
Date/time Timezone Communication Ethernet IPv4/v6 IP Network Services User management Users accounts	> IPv6	IPv4 address * Subnet mask * Default gateway *	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 ▼ Enable FE80::280:F4FF:FEE4:E7 		
Date/time Timezone Communication Ethernet IPv4/v6 IP Network Services User management Users accounts Smartlink Ethernet	> IPv6	IPv4 address * Subnet mask * Default gateway * IPv6 link local address	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 ✓ Enable FE80::280:F4FF:FEE4:E7 ✓ Automatic 		
Date/time Timezone Communication Ethernet IPv4/v6 IP Network Services User management Users accounts Smartlink Ethernet Digital Channels	> IPv6 DNS	IPv4 address * Subnet mask * Default gateway *	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 ✓ Enable FE80::280:F4FF:FEE4:E7 ✓ Automatic ✓ Manual 10.405.426.02 		
Date/time Date/time Timezone Communication Ethernet IPv4/v6 IP Network Services User management Users accounts Smartlink Ethernet Digital Channels	> IPv6 DNS	IPv4 address * Subnet mask * Default gateway * IPv6 link local address Primary DNS Server *	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 ✓ Enable FE80::280:F4FF:FEE4:E7 ✓ Automatic C Manual 10.195.136.22 10.195.285 		
Date/time Timezone Communication Ethernet IPv4/v6 IP Network Services User management Users accounts Smartlink Ethernet Digital Channels Analog Channels	> IPv6	IPv4 address * Subnet mask * Default gateway * IPv6 link local address Primary DNS Server * Secondary DNS Server	 Automatic DHCP ▼ Manual 10.195.155.121 255.255.254.0 10.195.154.1 ✓ Enable FE80::280:F4FF:FEE4:E7 ✓ Automatic Manual 10.195.136.22 10.198.3.86 		

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3.9 On-line Energy Management

For Enerlin'X IFE:

Monitoring	Control	Diagnostics	Maintenance	Setup		
Davias Lassifization	Nama				IP Configuration	
Device Localization/	Name			IPv4 Configuratio	on	
Device Physical L Device Name	ocalization				Obtain an IP address automatically using DHC Manual	P
Network Configuration	on				IP address : 10.195.155.123 Subnet mask : 255.255.254.0 Default pataway : 10.195.155.1	
Ethernet Configura	ation (Dual port)				Default galeway . 10:100:104.1	
IP Configuration	_			IPv6 Configuratio	on	
MBTCP/IP Filterin	g			Enable IPv6	Link local address : FE80::280:F4FF:FEE3:5BE	
Serial Port				DNS		
Date/Time Configura	ation			Obtain DNManual	IS addresses automatically	
Date and Time				P	Primary server address : 10.195.136.22	
E-Mail Configuration				Sec	ondary server address : 192.168.2.100	
E-Mail Server Con	figuration				Apply Undo	
Alarms to Be E-M	ailed					

For Com'X 200:

General settings Communication Settings Device Settings	Measurements Table Commissioning Custom Library Maintenance	
Modbus serial	Choose your network configuration * 2 switched ports (1 IP address for	r both)
Network settings	Ethemet configuration	
Proxy settings WI-Fi access point settings	Switched port configuration Interface status ACTIVE Configuration mode * DHCP client IPv4 address* 10 . 195 . 155 . 120 Subnet mask* 255 . 255 . 255 . 254 . 0 IPv6 link-local address FE80:0000:0000:0280:67FF	:FEF9:34A4
	General network settings Default gateway* 10 195 154 1 Primary DNS server* 10 195 136 22 Secondary DNS server - - - -	

For Enerlin'X FDM128:

IP Address needs to be entered manually. DHCP feature is not supported.

3.9 On-line Energy Management

3.9.3.2 Modbus Devices Discovery

From Acti9 Smartlink web pages, launch the Modbus "Auto Discover" feature and correctly name the detected devices:

N/	Modbus D	Devic	e Config	and the second sec								
N/				Jurauon								
	NAME			PRODUC	:T	ADDRESS	LABE	EL			ACTIONS	
SL	SLMB_F	FD1		SmartLin	kRS485	1	877			Configure	Edit	Delete
SL	SLMB_F	FD2		SmartLin	kRS485	2	811			Configure	Edit	Delete
EN	EM_FD	0		iEM3150		3				Configure	Edit	Delete
								-				
A	Auto dise	liscover	ry addres	s range for mod	dbus seria	al devices	1	10	0	Auto Disco	over	
A	Auto dise	discover levice	ry addres Add	s range for mo	dbus seri	al devices	1	to	8]]	Auto Disco	Auto Discover

Do the same for the Smartlink located on the main switchboard.

From Enerlin'X IFE web pages, launch the Modbus "Auto Discover" feature and correctly name the detected devices:



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Modbus communication diagnosis is available for Enerlin'X IFE and Acti9 Smartlink Ethernet version.

Monitoring	Control	Diagnostics	Maintenance	Setup				
					Con	munications	Check	
General								
Statistics				Device	Device Type	Connection	Comms	Status
Otatistics				IFE MS	Micrologic P	ULP	Passed	In Service
				IFM_1	Compact NSX-E	Serial Port	Passed	In Service
Product Information				IFM_2	Compact NSX-E	Serial Port	Passed	In Service
Davies Information				IFM_3	Compact NSX-E	Serial Port	Passed	In Service
Device Information				IFM_4	Compact NSX-E	Serial Port	Passed	In Service
IMU Information								
Device Health Check						Check Device Sta	atus	
Read Device Registe	rs							
Communications (hock							

NAME STATUS PRODUCT PROTOCOL SLIP_MS1 Ok Smartlink Ethernet Modbus TCP EM_MS Ok iEM3150 Modbus Serial SLMB_MS1 Ok SmartLinkRS485 Modbus Serial SLMB_MS2 Ok SmartLinkRS485 Modbus Serial	ieneral	Communication Pro	ducts		
SLIP_MS1 Ok Smartlink Ethernet Modbus TCP EM_MS Ok iEM3150 Modbus Serial SLMB_MS1 Ok SmartLinkRS485 Modbus Serial SLMB_MS2 Ok SmartLinkRS485 Modbus Serial	Date/time	NAME	STATUS	PRODUCT	PROTOCOL
EM_MS Ok iEM3150 Modbus Serial hernet SLMB_MS1 Ok SmartLinkRS485 Modbus Serial SLMB_MS2 Ok SmartLinkRS485 Modbus Serial		SLIP_MS1	Ok	Smartlink Ethernet	Modbus TCP
SLMB_MS1 Ok SmartLinkRS485 Modbus Serial Network Services Ok SmartLinkRS485 Modbus Serial	ommunication	EM_MS	Ok	iEM3150	Modbus Serial
Network Services Ok SmartLinkRS485 Modbus Serial	Ethernet	SLMB_MS1	Ok	SmartLinkRS485	Modbus Serial
	IP Network Services	SLMB_MS2	Ok	SmartLinkRS485	Modbus Serial
he and Arabita sture	P Network Services	SLMB_MS2	Ok	SmartLinkRS485	Modbus Serial
	Communication Products				

3.9.3.3 Acti9 Smartlink channel association

For all Acti9 Smartlink devices, configure the channel association. For Prisma G switchboard:

- > SLIP_FD1
- > SLMB_FD1
- > SLMB_FD2.

For Prisma P switchboard:

- > SLIP_MS1
- > SLMB_MS1
- > SLMB_MS2.

Carry out the configurations from either Acti9 Smartlink test software or from embedded web pages.

> Please refer to chapter 3.8.3.3 for a detailed example.

3.9 On-line Energy Management

3.9.3.4 Monitoring and Control Web Page

This final step details the operation that you may carry out to check configuration of the digital system.

From Enerlin'X IFE web pages, monitoring real time data are displayed:

Neter Readings Meter Readings Single Device Pages South Life Contract NSX.E) Contract NSX.E) <th>Monitoring Contr</th> <th>ol Diagnostics Maintenance</th> <th>Setup</th> <th></th> <th></th>	Monitoring Contr	ol Diagnostics Maintenance	Setup		
Single Device Pages Bisic Readings: IFM_1 (compact NSX:E) Control Current (A) Power Voltage LI Voltage LI Voltage LA Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage La Voltage Voltage La Voltage La Voltage La Voltage	Real Time Data	Meter Readings			
Present Press O Code Current (A) O Power O Voltage LL O Voltage LI Press Press Press Press Press Press Summary Device Pages Press Press Press Press Device Logging Voltage LI O Voltage LI O Voltage LI O Voltage LI Device Logging As Iso Press Nationum Press Nationum Device Logging Nationum Press Nationum Nationum Nationum 0 0 0 0 0 Nationum 0 0 0 0 Nationum 0 0 <td>Single Device Pages</td> <td>Basic Readings: IFM_1 (Compact N</td> <td>ISX-E)</td> <td></td> <td>2014-05-05 15</td>	Single Device Pages	Basic Readings: IFM_1 (Compact N	ISX-E)		2014-05-05 15
Image: State Stat		Load Current (A)	© Power	Voltage LL	O Voltage LN
Ext, LeG parameter SS E (A) Summary Device Pages Device Tatum Maximum SS E (A) Tending Broker Statum Operation Operation Operation Operation Maximum Tending Courter (A) Courter (A) Courter (A) Courter (A) Device Logging Is 0 48 52 Page Courter (A) Courter (A) Courter (A) Courter (A) Page Courter (A) 0 53 60 Device Logging Is 0 48 72 Page Courter (A) 0 53 60 72 Is 0 0 53 60 72 Is 0 0 53 60 72 Is 0 0 10 72 72 Is 0 0 10 72 72 Is 0 0 13 72 72 Power 0 0 13 72 72 Is 0 0 13 14 14 Is 0 14 14 14 Is 0 0 14 14 Is 0	#FE_MS #FM_1 #FM_2 #FM_3 #FM_4 SLMB_MS1 SLMB_MS2 SLMB_MS3	23 mm	100 775	0	23
Summary Device Pages Device Status Device Status Device Status Device Status Trending Load Current (Å) 48 52 B 0 48 72 Device Logging IAng 70 70 No 0 53 67 Version 0 00 72 Version 0 00 72 Version 0 0 72 Version 0 24.3 52.4 Apprentify(M) 0.0 24.3 52.4 Version 0.0 3.3 61 Version 0.0 3.3 61 Version 0.0 3.0 67 Version 0.0 3.0 61 Version 0.0 3.0 <td>EM_MS</td> <td>48 la(A)</td> <td>Min Income</td> <td>48 ID (A)</td> <td>53 IC (A)</td>	EM_MS	48 la(A)	Min Income	48 ID (A)	53 IC (A)
Summary Device Pages Device Loging Device Loging <thdevice loging<="" th=""> <t< td=""><td></td><td>Parameter Protection</td><td>Mightight</td><td>Prosent</td><td>maximum</td></t<></thdevice>		Parameter Protection	Mightight	Prosent	maximum
Tending Load Current (A) 48 92 Tending 0 48 72 B 0 63 72 B 0 53 72 Device Logging IAng 0 70 Na 0 00 72 Power 0 00 72 RakRWN 0 0 72 Appendix 0 24.3 84.1 Appendix(I/A) 0.0 24.3 84.1 Appendix(I/A) 0.0 34.3 84.1 Appendix(I/A) 0.0 34.3 84.1 Vice Appendix(I/A) 0.0 40.0 41.1 Vice Appendix(I/A) 0.0 39.0 39.1 Vice Appendix A	Summary Device Pages	Dreaker Status		Closed	
Instantion Alice 92 Device Logging In 48 92 No 53 67 In 50 67 No 50 72 In 90 90 72 No 0 10 72 No 70 72 70 Power - - - Power 0 21.3 81.1 Rackbelk/NAP() 0.0 23.3 61 Power Factor Total 0.60 3.3 61 Vie 0.0 3.3 61 Vie 0 90 3.0 61 Vie 0 90 90 90 Vie 0 90 90		Load Current (A)			
Bit Control Participation Partit Participation	Trending	ia la	0	48	92
Inc. Inc. <th< td=""><td></td><td></td><td>0</td><td>48</td><td>72</td></th<>			0	48	72
Image Image <th< td=""><td></td><td>1</td><td>0</td><td>53</td><td>67</td></th<>		1	0	53	67
Univer Logging in	D. d. d. and a	LAva	0	50	70
Sg M M M Power - <td>Device Logging</td> <td>in the second se</td> <td>0</td> <td>10</td> <td>72</td>	Device Logging	in the second se	0	10	72
Power Participant Partitipant Participant <th< td=""><td></td><td>in the second seco</td><td>•</td><td>10</td><td>**</td></th<>		in the second seco	•	10	**
Paciety Wy 0.0 24.3 64.1 Rescrive WAR 0.0 24.3 32.4 Apparent (WA) 0.0 34.3 64.1 Power Factor Total -0.68 -0.71 ind 0.67 Votage - -0.71 ind 0.67 Votage -0.71 ind 0.67 -0.71 ind Votage -0.71 ind -0.71 ind -0.71 ind		Bower			
Passchult/VAR) 0.5 24.3 32.4 Apparent/VAR) 0.0 34.3 64.1 Apparent/VAR) 0.6 34.3 64.1 Power Factor Total 0.69 0.71 ind 0.67 Viso 0 4.00 4.11 Viso 0 400 401 Viso 0 398 402 Viso 0 399 402 Viso 0 399 402 Viso 0 201 201 Viso 0 201 201 Viso 0 201 201		Pasi/640	0.0	94.9	04.1
Appenent(kVA) 0.0 32.3 64.1 Power Factor Total -0.68 -0.71 ind 0.67 Vetage		Partin(b)(AP)	0.0	24.3	32.4
Application (VA) Constraint C		Annarant/kVA)	0.0	34.3	84.1
Power Factor Total -0.68 -0.71 ind 0.67 Votage -		Children and U. a. Ch	0.0		
Votage 400 411 Vab 0 400 411 Vbc 0 398 403 Vca 0 398 398 VLLAvg 0 399 402 Van 0 231 231 Van 0 231 244		Power Factor Total	-0.68	-0.71 ind	0.67
Vasi 0 400 411 Vorig 0 390 400 Vorig 0 390 400 Vorig 0 390 390 VLA 0 390 402 VLA 0 390 402 Van 0 231 231 Van 0 231 244		Voltage			
Vbc 0 390 4.03 Vca 0 380 396 VLLArg 0 399 402 Van 0 231 231 Vpm 0 231 244		Vab	0	400	411
Vea 0 396 396 VLL Arg 0 396 402 VLM Arg 0 291 291 Ven 0 291 291		Vbc	0	398	403
VLL Ang 0 399 402 Van 0 231 231 Van 0 231 244		Vca	0	398	398
Ven 0 221 221 Ven 0 231 244		VII Avn	0	399	402
Vin 0 231 244		Van	0	231	231
		Vbn	0	231	244

From Acti9 Smartlink web pages, monitoring real time data are displayed and control channels are available for remote controlled devices:

uick View Moni	toring & Control Maintenance	Diagnostics	Settings		
aartlink Ethernet	Digital Channels				
Pulse Meters	NAME	STATUS	CONTROL	PRODUCT	LABEL
Analog Channels	Channel1	ł	OPEN CLOSE	iOF+SD24	870
Digital Channels	Channel2	ł	OPEN CLOSE	iOF+SD24	
nartlink RS485	Channel3	ł	OPEN CLOSE	iOF+SD24	12
Pulse Meters	Channel4	ł	OPEN CLOSE	iOF+SD24	275
Digital Channels	Channel7	Low	OPEN CLOSE	Standard IO	
Energy Meters	Channel7	Low	OPEN CLOSE	Standard IO	200
	Channel9	ł	OPEN CLOSE	Reflex iC60	822
	Channel11	V.	OPEN CLOSE	Reflex iC60	
	Light1	,L	OPEN CLOSE	Reflex iC60	-
	Light2	ł	OPEN CLOSE	Reflex iC60	1122
	Light3	Trip	OPEN CLOSE	Reflex iC60	-

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3.9.3.5 Local Display

Enerlin'X FDM128 local display allows configuring up to 8 devices. These devices must be selected from the electrical equipment. In addition, FDM128 only allows configuring one Modbus gateway. As a result, the SLIP_MS1 is used as a Modbus gateway for monitoring & control of final distribution from local display.

Device type	Name	Localization	Network type	Network address		
IFE	IFE_MS	Main Switchboard	Ethernet	10.195.155.123		
Smartlink Eth	SLIP_MS1	Main Switchboard	Modbus	10.195.155.121		
Smartlink MB	SLMB_MS1	Main Switchboard	Modbus	1		
Smartlink MB	SLMB_MS2	Main Switchboard	Modbus	2		
Smartlink Eth	SLIP_FD1	Final Distribution	Ethernet	10.195.155.125		

In this scenario, 5 devices can be displayed in FDM128. To achieve this, follow the procedure:

- >1. Set the date & time and IP address of the FDM128
- > 2. Select Acti9 Smartlink Ethernet gateway
- > 3. FDM128 asks if an IP gateway master is available, answer Yes

>4. Enter the IP address of SLIP_MS1, launch the Modbus auto discovery and validate the 3 devices selected for the main switchboard

- > 5. Enter IP address of SLIP_FD1 and launch the discovery
- >6. Enter IP address of IFE and launch the discovery
- >7. Configure all the Acti9 Smartlink channels in the FDM128 display.

3.9.3.6 Data Logging and Trending

The electrical application real time trending data can be exported for analyses through an IFE capability:

Select a data point for real time trending:

Monitoring	Control	Diagnostics	Maintenance	Setup						
-		Real Time Trending								
Real Time Data			Absolut	e Relative 1	- (Mi	nutes)	Data Points	New T	apic(s)	Stop Sampling
Single Device Pages			480							
IFE_MS IFM_1										
IFM_2 IFM_3			443							
SLMB_MS1 SLMB_MS2										
SLMB_MS3 EM_MS									2	
Summary Device Pages			405							
Tranding										
Deal Time Trending			368							
Real Time Trending										
Device Logging										
			330 16:33:4	5:981	16:33:57:981	16:34:0	9:981	16:34:21:981	16:34:33:981	16:34:45:98
						Min	Present	Max	Average	9
				FE_MS Voltage A-	8	411	412	413	412.1	
3.9 On-line Energy Management

Data logging is also configurable from the setup menu and allows data point storage.



For example, Enerlin'X IFE can store up to three months of data in memory with a 5 sec logging interval. The collected data points may be exported using FTP to a CSV formatted file.

3.9.3.7 Notifications

Notifications provide facility managers with an e-mail alert message when the main incomer trips. The e-mail alert is sent from Enerlin'X IFE (IFE_MS).

IT services must provide the SMTP server name (or IP address). The image below shows the e-mail configuration screen:

Monitoring	Control	Diagnostics	Maintenance	Setup			
IP Configuration	*				E	-Mail Server (Configuration
MBTCP/IP Filtering					E-Mail Server		
Serial Port					SMTP services:Enable/Disable:		
	_				E-Mail(SMTP) Server address :	10.195.154.117	
Date/Time Configuration					Authentication enable:		
Date and Time					Login name:		
Date and Time					Password:		
E-Mail Configuration					From address:	IFE@Smart_Panel	
E Mail Samer Configure	ation						
L-man Server Configure	nion				A	pply	Undo
Alarms to Be E-Mailed							

In this document, the SMTP server characteristics are:

- > Authentication is not required
- > SSL or TLS encryption is not supported (Use standard port 25).

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Define the e-mail address of the receiver:

Monitoring	Control	Diagnostics	Maintenance	Setup		aliang prinsipal qita		
MBTCP/IP Filterin	9				U	ser Accounts		
Serial Port				Groups				
Date/Time Configura	tion			Administrators	Engineering	Operations	Maintenance	e
Date and Time						Users		
				Name	Password	EMail Id	Group	Languag
E-Mail Configuration				Administrator	•••••	s@schneider-electric.com	Administrators -	English
E-Mail Server Con	figuration						Maintenance -	English
Alarms to Be E-M	ailed						Maintenance •	English
	53082A						Maintenance •	English
Device Configuration	1 .1						Maintenance •	English
Device List							Maintenance •	English
							Maintenance •	English
Device Logging							Maintenance •	English
Device Log Export	les de la companya de						Maintenance •	English
	E						Maintenance •	English
Other Configuration				-			Maintenance •	English
SNMP Parameter	5			Cuest	1	1	Quest	English
Documentation Lin	iks			Guest			Guest	English
Preferences						Apply		
Advanced Service	s Control				51			
User Accounts								

Configure the e-mail trigger(s):

Con	rol Diagr	nostics	Maintenance	Setup				
					Alarms to	be E-Maile	ed	
e					Alarms	Notifications	To-Recipients	
					Threshold overrun on Input 1 counter(#1)			
					Threshold overrun on Input 2 counter(#1)			
					Threshold overrun on Input 3 counter(#1)			
					Threshold overrun on Input 4 counter(#1)			
(tree lau					Threshold overrun on Input 5 counter(#1)			
(Dual porty					Threshold overrun on Input 6 counter(#1)			
					Switchboard Temperature threshold 1(#1)			
					Switchboard Temperature threshold 2(#1)			
9					Switchboard Temperature threshold 3(#1)			
					IO module in STOP mode (internal failure)(#1)			
					IO module in Error mode (internal failure)(#1)			
tion					Remove device from cradle and put it back			
					Replacement of the cradle has to be performed within 6 month	is 🖪		
					Regrease cradie and disconnecting-contact			
					New Micrologic unit has been detected			
					SwitchBoard Temperature Contact Alarm			
on					SwitchBoard Ventilation Contact Alarm			
					SwitchBoard door Contact Alarm			
					Earth leakage trip signal contact (SDV) alarm			
					Control voltage presence contact alarm			1
					Surge protection status contact alarm			
					Surge failure contact alarm			
					Switch dis-connector ON/OFF indication alarm contact (OF)			
					Fuse blown indication contact alarm			
					Emergency Stop alarm			
					Discrepancy with ERMS orders			
					Energy Reduction Maintenance Setting engaged			
					Circuit-breaker indicator status (OF)		Administrator,	
					Fault trip indicator status (SDE)		Administrator,	1

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In this example, an e-mail alert was configured for changing position or trip of the main incomer. An example of the e-mail sent is shown below:

From : <IFE@Smart_Panel> To : facility_Manager/FR/Schneider@Europe, Date : 06/05/2014 15:00 Subject : IFE-, IFE / Gateway: Fault trip indicator status (SDE) Message automatically generated by: IFE-, IFE / Gateway On DATE (year-month-day): 2014-05-06 / TIME: 14:58:44 Device information:

IP Address: 10.195.155.123 (Subnet Mask: 255.255.254.0) Firmware version: 001.008.000 Hardware version: 001.000.000

IMU NAME: NS1600H

Event NAME: Fault trip indicator status (SDE)

Event Description: Main Incomer Trip

Important Notice: This Email has been automatically generated. Please do not reply.

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Note: beware that e-mail notifications should not be used as a deterministic method; E-mail delivery can be delayed or cancelled based on the e-mail server load and settings. Some paid SMTP services may support e-mail notifications with determinism (Loop check – resend etc.).

3.9.3.8 Com'X 200

Com'X 200 configuration process is a task oriented workflow, intuitive for commissioning phase.

Set the general settings: site information, date & time, data logging time interval and publication method.

General settings Communication Settings Device Setting	gs Measurements Table Commissioning Custom Library Maintenance
Site information	Site information
Date/time settings	Site name * Smart panel - TVDA
Data logging	This name will be used by Energy Operation to create the site and by Energy On Line to create the account
Publication	

Each WAGES data set can be stored using its own data logging frequency (e.g. electrical values having faster variations than temperature). The image below shows data publication settings in the Schneider Electric on-line energy management service "Energy Operation". These settings are provided by Schneider-Electric and must be shared with the building IT services to allow data exchange with the cloud.

3.9 On-line Energy Management

10.eps	General settings Communication Settings Device Settings	Measurements Table	Commissioning	Custom Library	Maintenance		
DB4181	Site information	Publication settings					^
	Date/time settings				Destination platform *	Energy Operation	
	Data logging					O This senice doesn't include automatic firmware update. Please check that your ComX 200 runs with the update your ComX 200 if this is not the case	a last firmware version. We advice you to
	Publication				Publication frequency *	Every hour	
					Protocol *	FTP	
					Server *	tp energyoperation schneider-electric.com	
					Port *	21	
					Authentication required *	Yes No	
					User login *	P\$2-Sandbox1_E0	
					User password *		
					Passive mode *	Yes No	
					Publication ID	14145616331940	
						Generate New Publication ID	
						Register to Support - Software Licensing You can register to Schneider-Electric web portal for easy registration and management of your software lice	nce.
							Required field

Configure the Com'X 200 energy server using the communication interface. In this TVDA, the Modbus serial line input of Com'X 200 is not used as a digital input. Two analog inputs are configured with PT100 temperature sensor.

General settings Communication Settings Device Settings Measurements Table	Commissioning Custom Library Maintenance					
Data_Server_1	General Properties					
Divide and evalue insute	Туре	ComX 200				
Upit a and amount of provide and a more state of the	Name *	Data_Server_1				
	Comment	Smart panel				
	Device Location	Plateforme Solution				
	Monitored Area					
	Building	38EQUI				
	Floor	zero				
	Zone 1					
	Digital and analog inputs					
		Device		Connector		
	Digital Inputs I	1 No device connected				
	1	2 No device connected				
	1	3 No device connected				
	l l	No device connected				
	1	5 No device connected	•			
	1	5 No device connected	•			
	Analog Inputs Al	1 External Temperature		Analog Output		
Devices not connected (1)	AJ	2 Internal Temperature	×	Analog Output		

Configure the Com'X 200 energy server to collect data from IFE_MS, SLIP_MS1 and SLIP_FD1 over Ethernet network:

3.9 On-line Energy Management

Acti9 Smartlink Ethernet Configuration

General settings Communication Settings Device Settings Measurements T	able Commissioning Custom Library Maintenance Device Location	Prataiome Solution	
	Monitored Area		
Ethernet	Building	38EQUI	
Acti 9 Smartlink Eth Gateway_1 (10.195.155.121)	Floor	zero	
Modbus serial	Zone	1	
Acti 9 Smartlink Eth_1 (10.195.155.121)	Digital and analog inputs		
		Device Connecto	or
	Digital Inputs	11 No device connected	
		12 No device connected	
		13 No device connected	
		14 No device connected	
		15 No device connected	
		15 No device connected	
	Analog Inputs A	11 No device connected	
	A	12 No device connected	
	Modbus setial		
	Ethernet		
		Device IP addres	55
		Acti 9 Smartlink Eth Gateway_1 10.195.	155.121
		Acti 9 Smartlink Eth_1 10.195.	155.121

It is mandatory to instantiate two Acti9 Smartlink Ethernet devices. One for the Acti9 channels and the other to get the data from Acti9 Smartlink Modbus devices.

Acti9 Smartlink Modbus Configuration

Auto discovery feature is available to set the Modbus serial line. Manual configuration is also possible.

General settings Communication Settings Device Settings Measurements Table	Commissioning Custom Library Maintenance			
Data_Server_1	General Properties			
Dinital and analog insute		Туре	Acti 9 Smartlink Eth Gateway	
3 . External Temperature		Name *	SLIP_MS1 Gateway	
(Al1)		Comment	Data concentrator for MS	
1 Internal Temperature		Device Location	Main Electrical Room	
(Al2)	Configuration			
Ethernet		Host *	10.195.155.125	
SLIP_MS1 Gateway (10.195.155.125)	E	Port *	502	
Modbus serial		Timeout *	10000	
SLIP_MS1 Interface (10.195.155.125)	Monitored Area			
SLIP EDI Galeniny		Building	1	
(10.195.155.121)		Floor	0	
□ Modbus serial		Zone	2	
SLMB_FD1 (slave 1)	Modbus serial			
SLMB_FD2 (dama 2)			Device	Slave ID
- Canada (SLMB_MS1	. 1
EM_FD .			SLMB_MS2	2

Acti9 channel association needs to be completed for each Acti9 Smartlink in the Com'X 200. Fill in as much information as possible in the Com'X 200. This may include information like localization and description to be ensured analysis of energy data is done correctly.

3.9 On-line Energy Management

Enerlin'X IFE Ethernet Configuration

General settings Communication Settings Device Settings Measurements Table C	ommissioning Custom Library M	laintenance		
External Temperature	General Properties			^
	and and a second second	Type	FE	
(Al2)	-0000000000	Name *	IFE_MS	
Ethernal	3-1=	Comment	Breaker interface	
SLID MS1 Galaxy	20000000000	Device Location	Main electrical room	
(10.195.155.125)	Configuration			^
III Modbus serial		Host *	10 195 166 123	1
SLIP MS1 Interface		Post *	502	
(10, 195, 155, 125)		Timeout *	10000	1
SUP_FD1 Gateway (10.195.155.121)				
Modhus serial	Monitored Area			^
SLP FD1 Interface		Building	1	
(10.195.165.121)		Floor	0	
E I FE MS		Zone	2	
(10.195.155.123)	Modbus serial			^
Modbus serial			Davies	Slava ID
IFM1 (slave 1)			IFAA .	1
			IFM2	2
(slave 2)			IFM3	3
1041			IFM4 •	4
(slave 3)			IFE_MS1 •	255
IFM4			No device connected	
(slave 4)				
IFE_MS1 (days 255)				
(549/4 200)				
Q Discover connected devices	Delete			Required field Save changes Cancel

Add one Enerlin'X IFE on the Ethernet network of the Com'X 200 and launch auto discovery via the Modbus serial line (manual configuration is also possible). Enter the correct names of the detected circuit breaker.

It is mandatory to check (or uncheck) data selected to publish to the EMS for each device. Each one will be listed in the measurement table described just after.

Note: the main circuit breaker connected on ULP input of Enerlin'X IFE must be configured with virtual Modbus address 255.

Monitoring in the Com'X 200

After completing the above steps, the data is accessible in the Com'X 200 monitoring web pages and also available for publication:

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eral settings Communication Settings Device S	Settings Measurements Table Commissioning	Custom Library Maintenance		
itter by Commodity ☑ Electricity 100	Steam 🛛 Environmental parameters 🖉 Other 🕑	All / None		
Electricity Meters				
EX3155 EM_FD Main meter Building 1 Floor 0 Zone 3 Active Energy 5.86 KWh Active Power 414 W	EM3150 EM MS Main meter Building 1 Floor 0 Zone 2 Active Energy 4.81 kWh	Masterpact P IFE_MS1 Main meter Main electrical room Building 1 Floor 0 Zone 2 KWh Active Energy 0 KWh Reactive Energy 0 kWh	Compact NSX Micrologic E IFM1 Main meter Building 1 Picor 0 Zone 2 Active Energy 5.856 kWh Reactive Energy 4.691 kVArh	Compact NSX Micrologic E IFMZ Main meter Building 1 Floor 0 Zone 5 Active Energy 6,100 kWM Reactive Energy 5,890 kVAv
Exempact NSX Micrologic E IFM3 Main meter Building 1 Floor 0 Zone 6 Arthe Fearmy 8,779 MMb	Compact NSX Micrologic E IFM4 Main meter Building 1 Floor 0 Zone 2 Active Francy 0, KWb	EM2010 Lighting 1 Main meter Building 1 Floor 0 Zone 4 Active Francy 0 MMb	Events Lighting 3 Main meter Building 1 Floor 0 Zone 2 Actual Francy 0 MVD	Execut Lighting ext Main meter Building 1 Floor 0 Zone 7 Active Forence 0, 1000
Reactive Energy 8.723 kVArh	Reactive Energy 0 kVArh			Concerningy V and
EN2010 Others Main mater	EM2010 Oven Main meter		JI	JI
Building 1 Floor 0 Zone 0	Floor 0 Zone 5			
Active Energy 0 kWh	Active Energy 0.01 kWh			

Note: Com'X 200 can store up to about 864 000 data points. For example, this would be up to one month of data when taking 200 measurements over a 10 minute interval. In the event that the connection with Energy Management Service is blocked, the data are temporarily stored and retrieved when the communication link is restored.

Com'X 200 Commissioning

The last step consists in activating the data publication:

General settings Communication Settings Device Settings Measurements Table Commissioning Custom Library Maintenance	
Notifications	
C Your system configuration is OK	
Data logging	^
	Start data logging
Topology	~
	Destination platform Energy Operation
	Last full topology sent on: 05/05/2014 10:57/28 AM Send full topology
Publication	^
	Destination platform Energy Operation
	Start periodic publication
	Last publication test done on: 05/05/2014 11:28:55 AM
	Test publication

Verify the health of the system and start periodically publishing data to the EMS.

To publish the data, complete the steps below:

- >1. Activate data logging
- > 2. Send the topology to the EMS once
- **> 3.** Activate periodic data publication.

The system health can be easily checked.

3.9 On-line Energy Management

lifications	
y Your system configuration is OK	
ata logging	
	Data logging started on: 05/07/2014 10:36:28
	Stop data loggin
spology	
	Destination platform Energy Opera
	Last full topology sent on: 05/07/2014 10:38:40
	Send full topolog
ublication	
	Destination platform Energy Opera
	Next publication on: 05/07/2014 11:00:00
	Stop periodic publication
	Last publication test done on: 05/07/2014 10.40.00
	Test publicate
Console	
🚳 05/07/2014 10:40:00 AM Publication has been completed successfully	
05/07/2014 10:39:21 AM Sending ComX200_Smart panel - T_14145616331940_20140507083854.zip	
05/07/2014 10:39:20 AM Connecting to ftp.#nergyoperation.schneider-electric.com:21	
05/07/2014 10:38:52 AM Initializing publication	
C 05/07/2014 10:38:40 AM Publication has been completed successfully	

3.9.3.9 Link with Energy Management Service

In this example, the EMS is Energy Operation on-line by Schneider Electric:



WAGES data points received from Com'X 200 are stored here and can be selected to create an energy dashboard. Site to site comparison is also supported. To enable this feature, contact your Schneider Electric support.

Troubleshooting

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4.3 ULP system	p. 84
4.4 Ethernet	p. 84

Troubleshooting

4.1 Default settings



Com'X200

4.2 Firmware Compatibility

Attention must be paid to the device firmware compatibility (BCM ULP, BSCM, FDM121, MICROLOGIC), when installing a new product range like IFE, adding an I/O association or changing a circuit breaker featuring communication. Use RSU software to verify the Compatibility Matrix:

8203.eps	Micrologic RSU - C:\Micrologic\Utility\RSU_A\Data\New.rsa	
DB41	File Remote functions Setup Update Maintenance Help	
	Micrologic Selection Compatibility Matrix Trip unit Distribution V Micrologic 0.3 VA V 32061 V IEC V P/N LV432061 V	

By clicking on Compatibility Matrix, the ULP system health and operation can be verified.

Troubleshooting

4.2 Firmware Compatibility



In some cases, device firmware needs to be upgraded. Upgrades are possible when connected directly and the computer running RSU\Update feature has access to the internet.

Troubleshooting

4.3 ULP system

Each Enerlin'X product using the ULP system provides a ULP LED diagnostic status. The tables below provide the ULP LED blink code pattern and associated Mode/Action:

ULP LED	Mode	Action
	Nominal	None
	Conflict	Remove extra ULP module
	Degraded	Replace ULP module at the next maintenance operation
	Test	None
	Non-critical firmware discrepancy	Upgrade firmware at the next maintenance operation
	Non-critical hardware discrepancy	Replace ULP module at the next maintenance operation
in i nim i	Configuration discrepancy	Install missing features
juma i juma i	Critical firmware discrepancy	Upgrade firmware
in in the second	Critical hardware discrepancy	Replace ULP module
	Stop	Replace ULP module
	Power OFF	Check power supply

4.4 Ethernet

In some computers, DPWS is blocked by the firewall. In the event your firewall blocks the ping, it needs to be temporarily turned off. Otherwise, get support from your local IT service to enable the DPWS service:

> In the Windows notification area, right-click on the firewall icon (Example with McAfee):



> Open the 'Quick Settings' menu and uncheck the 'Firewall' item:



> Open again the 'Quick settings' menu and check the 'Firewall' item is disabled:

V	1	Host IPS - on
V	1	Network IPS - on
		Firewall - off

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4.4 Ethernet

Procedure to connect to Enerlin'X devices with a computer running Windows XP:

DPWS is not supported by XP nor by previous versions of Windows OS. In the event Windows XP is used, a connection can be made to the Enerlin'X devices with Ethernet. The steps to manually change the IP address of the computer to be able to reach the web pages of devices are outlined below:

Step	Action
1	Disconnect your local computer from the local area network (LAN) and switch off Wi-Fi.
2	Connect an Ethernet cable from the computer to the Enerlin'X IFE or Acti9 Smartlink Ethernet.
3	Start Internet Explorer 8+, Mozilla Firefox 15+, Chrome 24+ or later versions. Note: the computer automatically should use the default IP address 169.254.#.# (# = 0255) and the default subnet mask 255.255.0.0.
4	In the address text box, type 169.254.YY.ZZ where YY and ZZ are the last 2 bytes of the IFE MAC address (to be found on the IFE side label) or Smartlink Ethernet IP address (to be found on the Smartlink Ethernet up label), then press Enter, the home page opens in your browser. For example: for an IFE with MAC address 00-B0-D0-86-BB-F7, or 0-176-208-134-187-247 in decimal, type 169.254.187.247 in the address text box.
5	Press Enter, the login page automatically opens in your browser.
6	Type user name and password, the home page automatically opens in your browser.

Com'X 200 acts as a DHCP server on port Ethernet 2 by default. Connect the computer via LAN to the E2 in Com'X 200 and type 10.25.1.1 in the address text box to access the Com'X 200.

In both cases, the computer must use DHCP and not use a static IP address. To verify the setting, open a DOS command shell (Start\All Programs\Accessories\Command Prompt) and type "Ipconfig" command line. Click Enter. The following information should be displayed (language will vary based on your OS settings):

```
Carte Ethernet Local Area Connection :

Suffixe DNS propre à la connexion. . . :

Adresse IPv6 de liaison locale. . . . : fe80::8dd0:4950:f650:706%11

Adresse IPv4. . . . . . . . . . . : 192.168.1.118

Masque de sous-réseau. . . . . . . : 255.255.255.0

Passerelle par défaut. . . . . . . : 192.168.1.1
```

Verify that the IP address is the default one (i.e. static addressing is not enabled). If parameters are not correct, force an IP address directly in your network configuration using the steps below:



5.1 Installation & Cabling	p. 88
5.2 Bill of Material and Software	p.89
5.3 Reference Documents	p. 92
5.4 Reference Version	p.92
5.5 Software Configuration Tool Procurement	p. 93

5.1 Installation & Cabling

5.1.1 General Recommendation

A dedicated **mounting and assembly** guide is available to help build Smart Panels. Please refer to the reference document for details. It is advised to take communication capability into account as early as possible in a project.

General rules for positioning communication devices:

> 1. Maintain the maximum distance between power parts and auxiliary power distribution and Enerlin'X digital components

> 2. Enerlin'X digital components must be located as low as possible or in the bottom part of the panel, especially when internal temperatures may exceed 70 °C

>3. Smart Panels should provide easy access for connection.

Modbus and Ethernet cables must be twisted and shielded. It is recommended to use RJ45 using 45° or 90° turns to reflect the curvature of beams.

Profiled steel rails should be chosen over aluminum rails. Panels made of several columns must be linked with a PEN bar (Protective Earth and Neutral).

Antennas must not be located an inside a metallic cubicle. If Com'X 200 is used without an external GPRS antenna, special mounting rules must be followed. For related rules, > please refer to Com'X 200 documentation.

If Com'X 200 is used with a WIFI dongle, special mounting rules must be followed. > Please refer to Com'X 200 documentation.

Surge arrester earth terminal must be connected as close as possible to the main earth.

ULP system provides a power supply to ULP devices. Verify the maximum number of devices the power supply can support.

Do not exceed 8 Modbus slaves for one Modbus master. This will provide better response time (Enerlin'X IFE+ or Acti9 Smartlink Ethernet).

5.1.2 EMC consideration

For painted enclosures, use "toothed slice" to assure the ground continuity between all metal parts.

It is recommended to use iron cable trays over plastic to increase conductivity.

Earth cables must be same diameter as power cables.

It is advised to install a metal grid in the product to provide a high quality ground connection.

Earth of DC power supply must be connected when possible.

Panel builders should use micro ohmmeters between different ground metal parts to check the equal potential of each ground.

5.2 Bill of Material and Software

Accessories for Acti 9 Smartlink					
USB cable link / Modbus	for Acti 9 Smartlink test	1	A9XCATM1		
Prefabricated cables 2 connectors	Short: 100 mm	6	A9XCAS06		
	Medium-sized: 160 mm	6	A9XCAM06		
	Long: 870 mm	6	A9XCAL06		
Prefabricated cables 1 connector	Long: 870 mm	6	A9XCAU06		
Connectors	5-pin connectors (Ti24)	12	A9XC2412		
Mounting kit	Din rail (4 feet, 4 straps, 4 adapters)	1	A9XMFA04		
	Linergy FM 200 A (4 adapters)	1	A9XM2B04		
Spare parts	Lock for Linergy FM 80 A (2 clips)	1	A9XMLA02		

Appendix

5.2 Bill of Material and Software

The following drawing and table summarize all of the selected hardware:







5.2 Bill of Material and Software

Description			Reference	Description			Reference
	I/O a	pplication module	LV434063	Communicating device with BCM (Breaker Control Module)		device ker Control	33106
					Internal termina	l block	33119
				2	ULP cord,	L=0.35 m	LV434195
B	IFE	Ethernet interface	LV434010		shielded cable	L = 1.3 m	LV434196
		IUI LV DIEakei				L = 3 m	LV434197
		Ethernet interface	LV434011	3	Ethernet cable	L=1 m	VDIP184546010
		for LV breakers and gateway			RJ45: ■ 10-100 mb	L = 0.5 m	VDIP184546005
C	24 V Clas reco	dc Power supply s B product mmended	ABL7RM24025		 Lenght 100 m max Cable RJ45, Category 6 SFTP, 	I	
	Switch Ethernet		TCS ESU 053SN0		recommanded		
				4	Modbus cable: shielded twist RS485 stand	ed pair ard +	50965
6	Com Ener	ı'X 200: ·gy server	EBX200		Power Supply a roll of cable RS485, 4 wires (2 x RS485 + 2 power supply) with a length of 60 m		
	Switchboard front display module FDM128	LV434128	5	10 ULP line tern	ninators	TRV00880	
				6	ULP cable,	L = 0.3 m	TRV00803
					shielded cable	L=0.6 m	TRV00806
		Madhua Cl				L=1 m	TRV00810
G	inter	face module	TRV00210			L = 2 m	TRV00820
	Stac	ker (set of 10)	TRV00217			L = 3 m	TRV00830
		. ,				L = 5 m	TRV00850
		~			5 RJ45 connect female/female	ors	IRV00870
U	11.		AJAMEAUO	7	Communicating	device	LV434205
CHIEF C	Actis	9 Smartlink Ethernet			Status & Contro	I Module)	
0			A9XMSB11				
Contraction of the second	Actis	Smartlink Modbus			NSX cord	L=0.35 m	LV434200
	IEM:	3150	A9MEM3150		shielded cable	L = 1.3 m	LV434201
						L = 3 m	LV434202

5.3 Reference Documents

The table below outlines referenced documents that can be used as a resource to gather more details when needed.

Reference	Date
TVDASPV1-CAD1	05/2014
TVDASPV1-CAD2	05/2014
LVCATENLX_EN	04/2014
DESW051_EN	05/2014
HRB49218-01	2014
HRB49217-00	2014
HRB45777-00	2014
S1B33423	2012
EAV14819-00	2014
253537642	2014
5100512864A (B)	2014
GHD1632301-05	2014
DOCA0084EN-00	04/2014
DOCA0055EN-00	04/2014
DOCA0004EN	2012
DOCA0073EN	04/2014
DOCA0036EN-01	03/2014
DOCA0035EN-01	02/2014
DOCA0037EN-01	04/2014
	Reference TVDASPV1-CAD1 TVDASPV1-CAD2 LVCATENLX_EN DESW051_EN HRB49218-01 HRB49217-00 HRB49217-00 S1B33423 EAV14819-00 253537642 5100512864A (B) GHD1632301-05 DOCA0084EN-00 DOCA00055EN-00 DOCA0036EN-01 DOCA0035EN-01 DOCA0037EN-01

5.4 Reference Version

The following tables outline the firmware and software version number of the devices used in this document:

Devices	Firmware version	Web pages
IFE	1.8.0	1.8.3
I/O application module	2.1.1	NA
IFM	1.1.1	NA
Smartlink Ethernet	2.2.1	1.1.0
Smartlink Modbus	1.0.2	NA
FDM128	5.5.3	NA
Com'X 200	1.1.15	NA
BCM ULP	4.0.7	NA
BSCM	9.9.9.9.0	NA

Software tools	Software version	Link
Acti9 Smartlink test	3.0.0	See 5.5.1
RSU	11.13.7	See 5.5.2

NA: Not Applicable.

Appendix

5.5 Software Configuration Tool Procurement

5.5.1 Acti9 Smart Test: Download Procedure:

> 1. Go to the Schneider Electric home page at www. schneider- electric. com.

- >2. In the Search box, type the range name: Acti9 Smartlink
- > 3. Go to Product Offer
- >4. Click the link of Acti9 Smartlink product
- >5. Click Documents & Downloads, and then click Software/Firmware.

5.5.2 RSU-A: Download procedure:

>1. Go to the Schneider Electric home page www.schneider-electric.com.

>2. In the Search box, type the name of the following circuit breaker range: Compact NSX

- Go to Product Offer
- >4. Click the link of Compact NSX product
- > 5. Click Documents & Downloads, and then click Software/Firmware.

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Schneider Electric Industries SAS

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