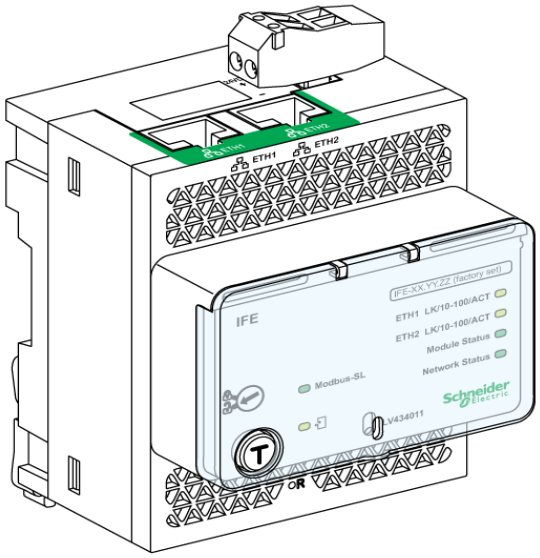
IFE Ethernet Interface for LV Circuit Breaker

User Guide

05/2015



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The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of Contents

Safety Information

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. 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

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE 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 and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designated to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.

About the Book

At a Glance

Document Scope

The aim of this document is to provide the users, installers, and the maintenance personnel with the technical information and procedure needed to access and maintain the IFE web server.

Validity Note

The technical characteristics of the devices described in this document also appear online. To access this information online:

Step	Action
1	Go to the Schneider Electric home page *www.schneider-electric.com*.
2	In the **Search** box type the reference of a product or the name of a product range. ● Do not include blank spaces in the reference or product range. ● To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the **Product Datasheets** search results and click on the reference that interests you. If you entered the name of a product range, go to the **Product Ranges** search results and click on the product range that interests you.
4	If more than one reference appears in the **Products** search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click **Download XXX product datasheet**.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

Related Documents

Title of Documentation	Reference Number
IFE Ethernet interface for LV circuit breaker - Instruction Sheet	HRB49218
Masterpact NT/NW, PowerPact P- and R-frame Modbus Communication Guide	0613IB1313 (EN) 0613IB1314 (ES) 0613IB1315 (FR) 0613IB1316 (ZH)
PowerPact H-, J-, and L-Frame Modbus Communication Guide	0611IB1302 (EN) 0611IB1303 (ES) 0611IB1304 (FR) 0611IB1305 (ZH)
ULP System - User Guide	48940-329 (EN) 48940-329 (ES) 48940-329 (FR)

You can download these technical publications and other technical information from our website at www.schneider-electric.com.

Chapter 1
IFE Presentation

What Is in This Chapter?

This chapter contains the following topics:

Introduction

Overview

The IFE Ethernet interface for LV circuit breaker enables an intelligent modular unit (IMU), for example a Masterpact NT or PowerPact H-, J-, and L-Frame circuit breaker to be connected to an Ethernet network. Each circuit breaker has its own IFE and a corresponding IP address.

Types of IFE

There are 2 part numbers of the IFE:

- LV434010 - Ethernet interface for LV circuit breaker
  This type of IFE is an Ethernet interface for Compact, PowerPact, and Masterpact circuit breakers.
- LV434011 - Ethernet interface for LV circuit breaker and gateway
  This type of IFE is an Ethernet interface for Compact, PowerPact, and Masterpact circuit breakers and a gateway for Modbus-SL (serial line) connected devices.

IFE Features

The main features of IFE are:

- Dual Ethernet port for simple daisy chain connection
- Device profile web service for discovery of the IFE on the local area network (LAN)
- ULP compliant for localization of the IFE in the switchboard
- Ethernet interface for Compact, PowerPact, and Masterpact circuit breakers
- Gateway for Modbus-SL connected devices (only for the IFE with the part number LV434011)
- Embedded setup web pages
- Embedded monitoring web pages
- Embedded control web pages
- Built-in email alarm notification

NOTE: IFE built-in switch does not support the ring topology as it does not have the feature of the loop back protection.

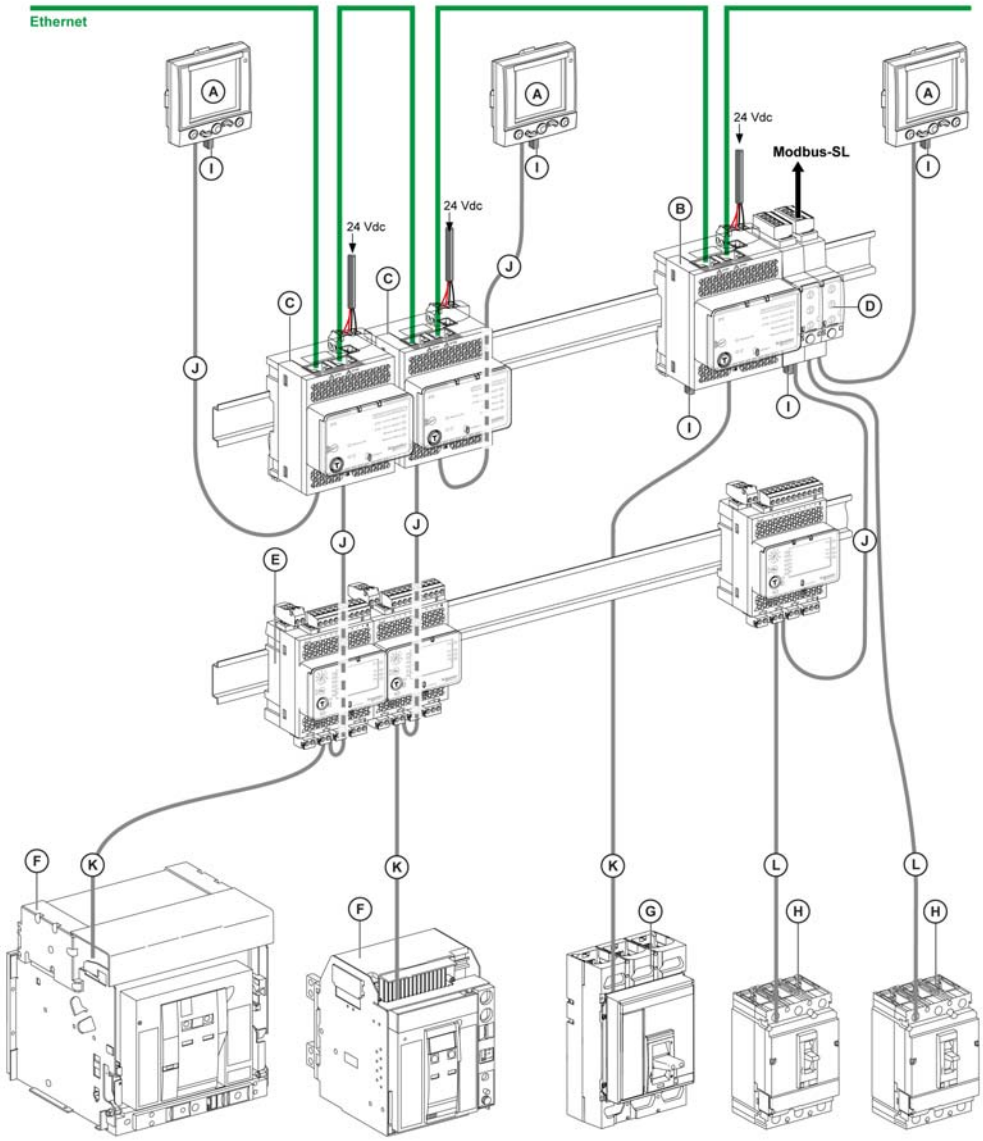
NOTE: IFE does not support the circuit breaker without Micrologic with BSCM and BCM ULP.

Intelligent Modular Unit

A modular unit is a mechanical and electrical assembly containing one or more products to perform a function in a switchboard (incoming protection, motor command, and control).

The circuit breaker with its internal communicating components (Micrologic and so on) and external ULP modules (FDM121, IO module, and so on) connected to one IFM or IFE communication interface is called an intelligent modular unit (IMU).

Communication Architecture



A FDM121 display for LV circuit breaker
B IFE Ethernet interface for LV circuit breaker and gateway
C IFE Ethernet interface for LV circuit breaker
D IFM Modbus-SL interface for LV circuit breaker
E IO input/output interface module for LV circuit breaker
F Masterpact NT/NW circuit breaker
G PowerPact P- and R-Frame circuit breaker
H PowerPact H-, J-, and L-Frame circuit breaker
I ULP termination
J ULP cord
K Circuit breaker ULP cord
L NSX cord

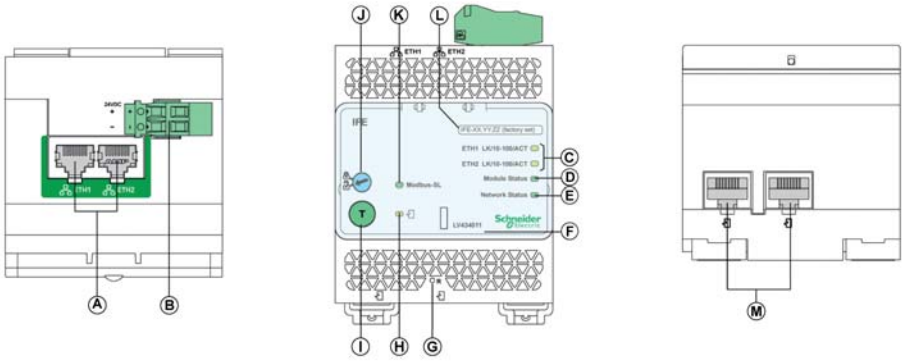
Component Part Numbers

The below table lists the part numbers for the components of the ULP system for the circuit breaker:

Product	Description	Part Number
IFM Modbus-SL interface for LV circuit breaker	–	STRV00210
IFE Ethernet interface for LV circuit breaker	Ethernet interface	LV434010
	Ethernet interface and gateway	LV434011
Stacking accessory	10 stacking accessories	TRV00217
BCM ULP breaker communication module	–	33106
BSCM breaker status control module	–	LV434205
IO input/output interface for LV circuit breaker	–	LV434063
FDM121 display for LV circuit breaker	–	STRV00121
Surface-mounting accessory	–	TRV00128
Maintenance module	–	STRV00911
NSX cord	L = 0.35 m (1.15 ft)	LV434200
	L = 1.3 m (4.27 ft)	LV434201
	L = 3 m (9.84 ft)	LV434202
Circuit Breaker ULP cord	L = 0.35 m (1.15 ft)	LV434195
	L = 1.3 m (4.26 ft)	LV434196
	L = 3 m (9.84 ft)	LV434197
Insulated ULP module and circuit breaker ULP cord for system voltage greater than 480 Vac	L = 1.3 m (4.26 ft), U > 480 Vac (cord with female socket)	LV434204
ULP cord	L = 0.3 m (0.98 ft), 10 cords	TRV00803
	L = 0.6 m (1.97 ft), 10 cords	TRV00806
	L = 1 m (3.28 ft), 5 cords	TRV00810
	L = 2 m (6.56 ft), 5 cords	TRV00820
	L = 3 m (9.84 ft), 5 cords	TRV00830
	L = 5 m (16.40 ft), 1 cord	TRV00850
RJ45 female/female connector	10 RJ45 female/female connectors	TRV00870
ULP line termination	10 ULP terminations	TRV00880
2-wire RS 485 isolated repeater module	–	TRV00211
Modbus line termination	2 Modbus cable terminations with impedance of 120 Ω + 1 nF	VW3A8306DRC
Modbus cable	Belden: 7 mm (0.27 in.) diameter shielded cable with 2 twisted pairs	3084A
	Belden: 9.6 mm (0.38 in.) diameter (recommended) shielded cable with 2 twisted pairs	7895A
	Cable with 2 twisted pairs without shielding drain wire	50965
24 Vdc power supply	24/30 Vdc-24 Vdc-1 A-overvoltage category IV	685823
	48/60 Vdc-24 Vdc-1 A-overvoltage category IV	685824
	100/125 Vdc-24 Vdc-1 A-overvoltage category IV	685825
	110/130 Vac-24 Vdc-1 A-overvoltage category IV	685826
	200/240 Vac-24 Vdc-1 A-overvoltage category IV	685827
	380/415 Vac-24 Vdc-1 A-overvoltage category IV	685829
	100/500 Vac-24 Vdc-3 A-overvoltage category II	ABL8RPS24030

Hardware Description

Description



A Ethernet 1 and Ethernet 2 RJ45 communication ports
B 24 Vdc power supply terminal block
C Ethernet communication LEDs
D Module status LED
E Network status LED
F Sealable transparent cover
G Reset button
H ULP status LED
I Test button (accessible cover closed)
J Locking pad
K Modbus traffic status LED (IFE gateway only)
L Device name label
M 2 RJ45 ULP ports

Mounting

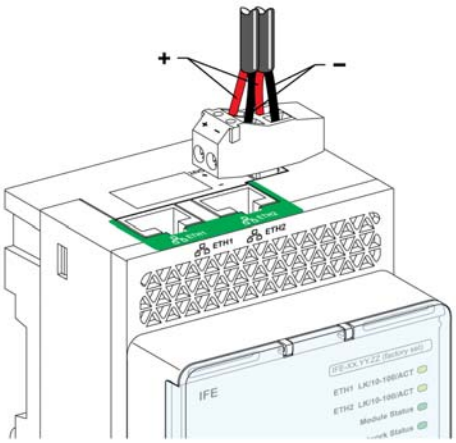
The IFE mounts on a DIN rail. The stacking accessory enables the connection of several IFMs to an IFE gateway without additional wiring.

NOTE: The stacking feature is available only for the IFE gateway with the part number LV434011.

24 Vdc Power Supply

The IFE must be always supplied with 24 Vdc. The IFMs stacked to an IFE gateway are supplied by the IFE gateway and it is not necessary to supply them separately.

It is recommended to use an UL listed and recognized limited voltage/limited current or a class 2 power supply with a 24 Vdc, 3 A maximum.



Ethernet Communication LEDs

The Ethernet communication dual color LEDs, indicate the status of the Ethernet ports **ETH1** and **ETH2**.

LED Indication	Status Description
OFF	No power or no link
Steady yellow	10 Mbps, link established, and no activity
Blinking yellow	10 Mbps, ongoing activity
Steady green	100 Mbps, link established, and no activity
Blinking green	100 Mbps, ongoing activity

Module Status LED

The module status dual color LED, indicates the IFE status.

LED Indication	Status Description	Action
OFF	No power	None
Steady green	IFE operational	None
Blinking green (250 ms ON, 250 ms OFF)	Hidden control web page available	None
Blinking green (500 ms ON, 500 ms OFF)	IFE Firmware corrupted	Please contact your local Schneider Electric service team for support.
Blinking red (500 ms ON, 500 ms OFF)	IFE in degraded mode	Replace ULP module at the next maintenance operation.
Steady red	IFE out of service	None
Blinking green/red (1 s green, 1 s red)	Firmware upgrade in progress	None
Blinking green/red (250 ms green, 250 ms red)	Self test in progress	None

Network Status LED

The network status dual color LED, indicates the Ethernet network status.

LED Indication	Status Description
OFF	No power or no IP address
Steady green	Valid IP address
Steady red	Duplicated IP address
Blinking green/red (250 ms green, 250 ms red)	Self test in progress
Steady amber	Error in IP configuration

Modbus Serial Line Traffic LED

The Modbus serial line traffic yellow LED, indicates that the traffic is being transmitted or received over the Modbus serial line network through the IFE gateway.

The LED is ON during the transmission and reception of the messages. The LED is OFF otherwise.

NOTE: The LED is OFF on the IFE without gateway feature (part number LV434010).

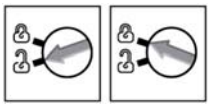
Modbus Address

The IFE accepts the Modbus address of the intelligent modular unit (IMU) to which it is connected.

The Modbus address is 255 and cannot be changed.

Locking Pad

The locking pad on the front panel of the IFE enables or disables the ability to send the remote control commands over the Ethernet network to the IFE, and to the other modules of the connected IMU.



- If the arrow points to the open padlock (factory setting), remote control commands are enabled.
- If the arrow points to the closed padlock, remote control commands are disabled.
  The only remote control command that is enabled even if the arrow points to the closed padlock is the set absolute time command.

Test Button

The test button has two functions, according to the duration of the button pressed.

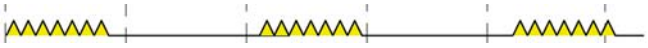
Time Range	Function
1–5 s	Tests the connection between all the ULP modules for 15 seconds.
10–15 s	Activates the hidden configuration mode for 5 minutes. **NOTE:** The hidden configuration is not activated if the button is pressed for more than 15 s.

Reset Button

When the reset button is pressed for 1–5 seconds, it forces the IP acquisition mode to the factory default setting (DHCP).

ULP LED

The yellow ULP LED describes the mode of the ULP module.

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
	Configuration discrepancy	Install missing features
	Critical firmware discrepancy	Upgrade firmware
	Critical hardware discrepancy	Replace ULP module
	Stop	Replace ULP module
	Power OFF	Check power supply

Customer Engineering Tool

Ecoreach

Ecoreach is a software application that helps to manage a project as part of testing, site commissioning and maintenance phases of the project life cycle. It enables to prepare the settings of the devices offline (without connecting to the device), save the project in cloud as reference, and configure the devices when connected with the devices. Also it offers value added features like discover communicating devices, organize devices in switchboard, manage a hierarchical structure of the electrical installation, perform communication test, generate reports, upgrade firmware, and so on.

The Ecoreach software enables the configuration of the following devices, modules, accessories:

Products–Family	ULP/IMU Modules	Accessories
• Masterpact NT/NW circuit breakers • PowerPact P- and R-Frame circuit breakers	• Micrologic trip units • Communication interface modules: BCM, CCM, BCM ULP IFM, IFE • ULP modules: IO module, FDM121 display unit (1)	M2C and M6C output modules
PowerPact H-, J-, and L-frame circuit breaker	• Micrologic trip units • Communication interface modules: BSCM, IFM, IFE • ULP modules: IO module, FDM121 display unit (1)	SDTAM and SDx output modules
(1) For FDM121 module, only the firmware and language download are supported.		

For more information, refer to the *Ecoreach Online Help*.

Ecoreach Software Features

Ecoreach software allows you to perform the following actions:

- Create projects by device discovery and selection of devices from Schneider Electric catalog
- Monitor the status of protection and IO status
- Read information like, alarms, measurements, parameters
- Configuration or settings download and upload for single or multiple devices
- Perform control actions in a secured way
- Generate and print device settings report and communication test report
- Manage multiple devices with electrical and communication hierarchy model
- Manage artifacts (project and device documents)
- Check consistency in settings between devices in a communication network
- Compare configuration settings between the project and device (online)
- Download latest firmware and upgrade devices
- Safe repository of projects in Ecoreach cloud and sharing of projects with other users

Legacy Software

The Ecoreach software replaces the following legacy software:

- Compact NSX RSU (Remote Setting Utility): PowerPact H-, J-, and L-frame configuration software.
- Masterpact RSU (Remote Setting Utility): Masterpact and PowerPact P- and R-frame configuration software.
- RCU (Remote Control Utility): A SCADA software for:
  - PowerPact H-, J-, and L-frame circuit breakers
  - PowerPact P- and R-frame circuit breakers
  - Masterpact NT/NW circuit breakers
  - Power meters

The legacy software is available at *www.schneider-electric.com*.

Schematics with Masterpact NT/NW and PowerPact P- and R-Frame Circuit Breakers

Description

Depending on the type of circuit breaker used, connect the IFE Ethernet interface for LV circuit breaker to the circuit breaker using one of the following configurations:

- Connection of the IFE to a fixed manually-operated PowerPact P- or R-frame circuit breaker with a BCM ULP.
- Connection of the IFE to a fixed electrically-operated Masterpact NT/NW or PowerPact P-frame circuit breaker with a BCM ULP.
- Connection of the IFE to a drawout Masterpact NT/NW or PowerPact P-frame circuit breaker with a BCM ULP and its respective IO input/output interfaces for LV circuit breakers.

ULP Connection

NOTICE

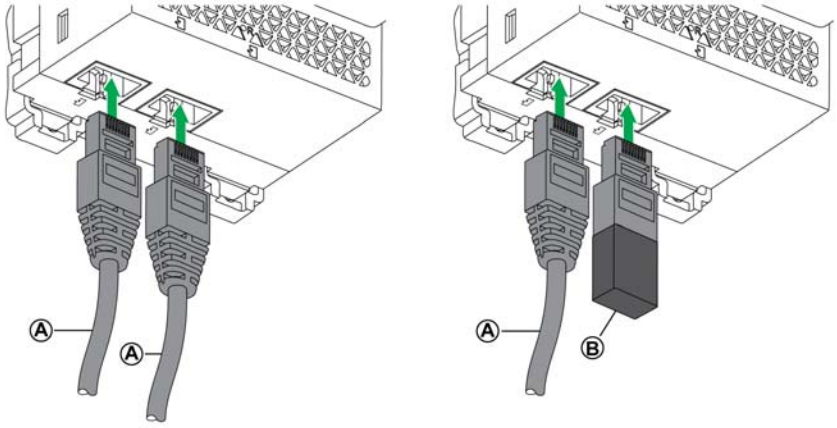
HAZARD OF EQUIPMENT DAMAGE

- Never connect an Ethernet device to a RJ45 ULP port.
- The IFE RJ45 ULP ports are for ULP modules only.
- Any other use can damage the IFE or the device connected to the IFE.
- To check if a ULP module is compatible with the IFE's RJ45 ULP ports, refer to the *ULP System User Guide*.

Failure to follow these instructions can result in equipment damage.

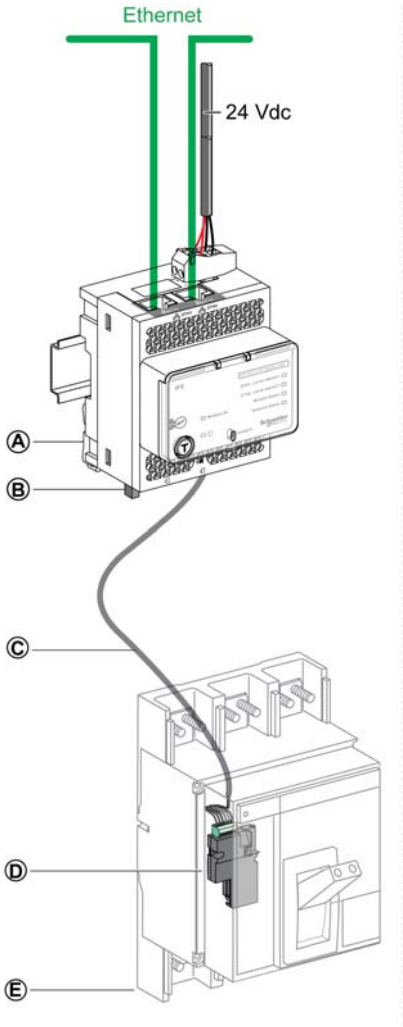
All connection configurations require the circuit breaker ULP cord. The insulated NSX cord is mandatory for system voltages greater than 480 Vac.

When the second RJ45 ULP port is not used, it must be closed with a ULP termination.



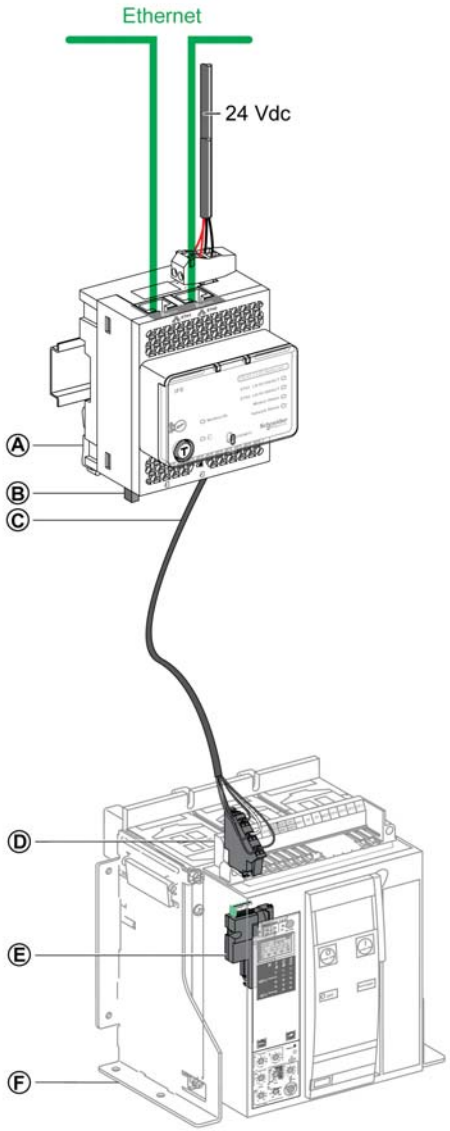
A ULP cord
B ULP termination

Connection of the IFE to a Fixed Manually-Operated PowerPact P- or R-Frame Circuit Breaker



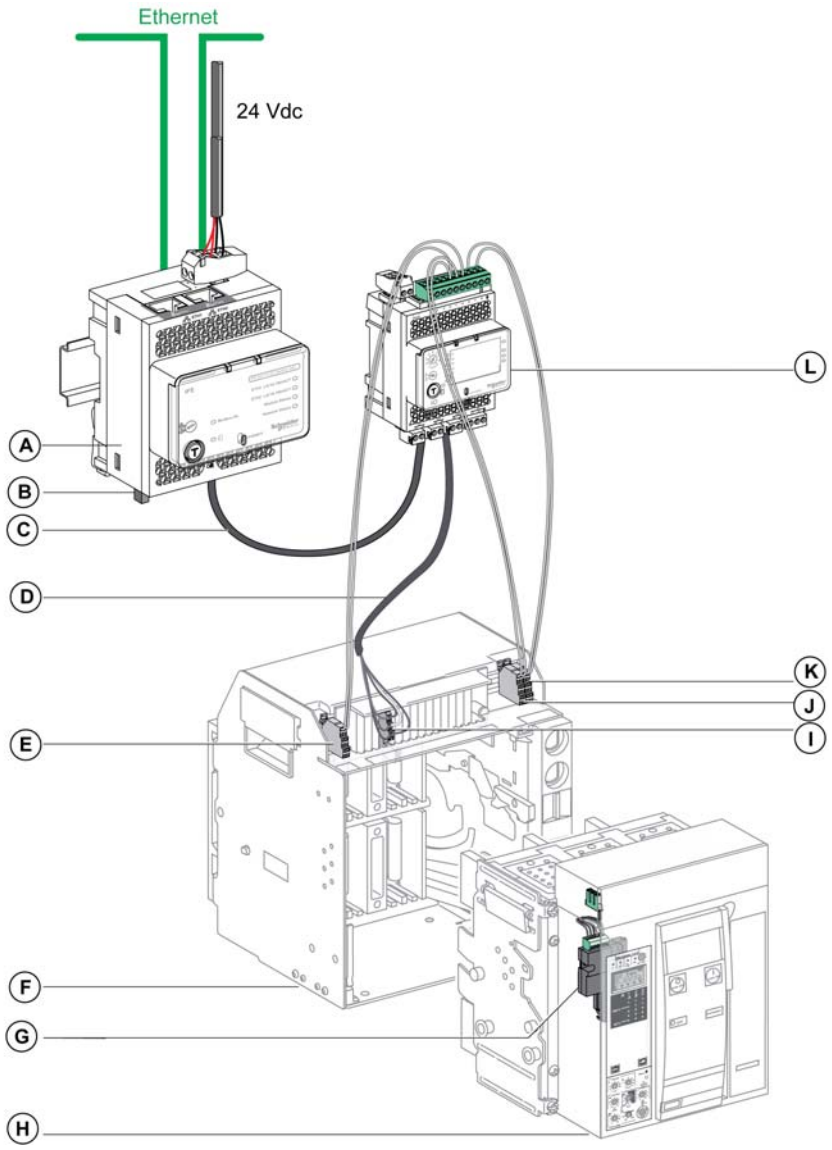
A IFE Ethernet interface for LV circuit breaker
B ULP termination
C Circuit breaker ULP cord
D BCM ULP breaker communication module
E Fixed manually-operated PowerPact P- or R-frame circuit breaker

Connection of the IFE to a Fixed Electrically-Operated Masterpact NT/NW or PowerPact P-Frame Circuit Breaker



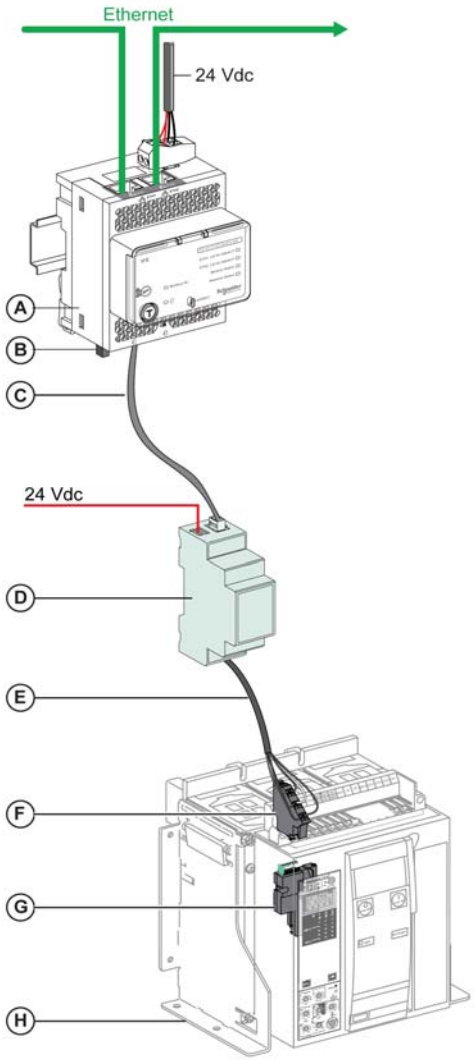
A IFE Ethernet interface for LV circuit breaker
B ULP termination
C Circuit breaker ULP cord
D Fixed terminal block
E BCM ULP breaker communication module
F Fixed electrically-operated circuit breaker

Connection of the IFE to a Drawout Masterpact NT/NW or PowerPact P-Frame Circuit Breaker



A IFE Ethernet interface for LV circuit breaker
B ULP termination
C ULP cord
D Circuit breaker ULP cord
E Circuit breaker disconnected position contact (CD)
F Circuit breaker cradle
G BCM ULP breaker communication module
H Drawout circuit breaker
I Drawout terminal block
J Circuit breaker connected position contact (CE)
K Circuit breaker test position contact (CT)
L IO input/output interface for LV circuit breaker

Connection of the IFE to a Fixed or Drawout Masterpact NT/NW or PowerPact P- or R-Frame Circuit Breaker for System Voltage Greater Than 480 Vac



A IFE Ethernet interface for LV circuit breaker
B ULP termination
C ULP cord
D Insulated ULP module for system voltage greater than 480 Vac
E Circuit breaker ULP cord for system voltage greater than 480 Vac
F Fixed terminal block
G BCM ULP breaker communication module
H Fixed electrically-operated circuit breaker

Schematics with PowerPact H-, J-, and L-Frame Circuit Breakers

General Description

Depending on the configuration of the PowerPact H-, J-, and L-frame circuit breaker, connect the IFE Ethernet interface for LV circuit breaker to the circuit breaker using one of the following configurations:

- connection of the IFE to the Micrologic trip unit
- connection of the IFE to the BSCM (breaker status and control module)
- connection of the IFE to the BSCM and to the Micrologic trip unit

ULP Connection

NOTICE

HAZARD OF EQUIPMENT DAMAGE

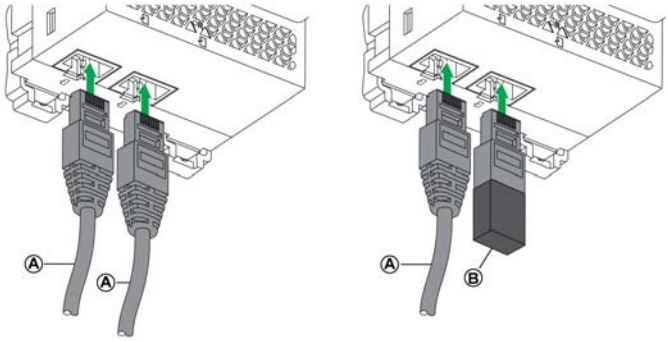
- Never connect an Ethernet device to a RJ45 ULP port.
- The IFE RJ45 ULP ports are for ULP modules only.
- Any other use can damage the IFE or the device connected to the IFE.
- To check if a ULP module is compatible with the IFE's RJ45 ULP ports, refer to the *ULP System User Guide*.

Failure to follow these instructions can result in equipment damage.

All the connection configurations require the NSX cord. The insulated NSX cord is mandatory for system voltages greater than 480 Vac.

See the *PowerPact H-, J-, and L-Frame Circuit Breakers User Manual* for more information regarding the description and mounting of the PowerPact H-, J-, and L-frame circuit breaker-compliant products (Micrologic trip unit, BSCM, NSX cord).

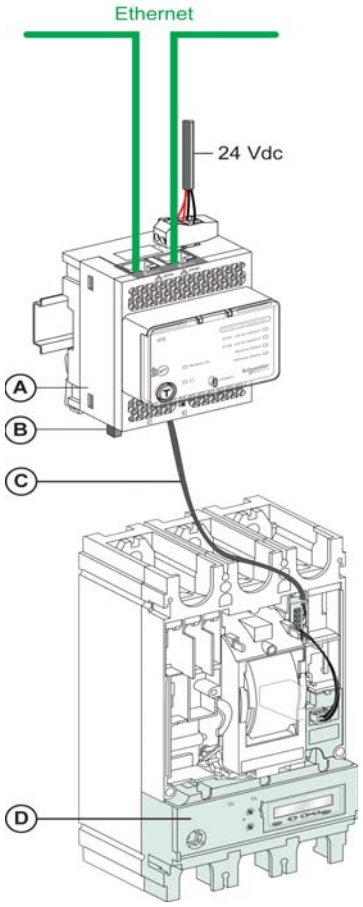
When the second RJ45 ULP port is not used, it must be closed with a ULP termination.



A ULP cord
B ULP termination

Connection of the IFE to the Micrologic Trip Unit

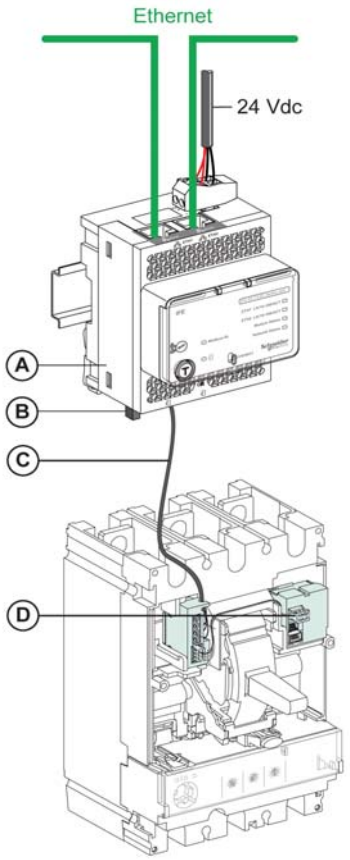
Connect the IFE to the Micrologic trip unit using the NSX cord:



A IFE Ethernet interface for LV circuit breaker
B ULP termination
C NSX cord
D Micrologic trip unit

Connection of the IFE to the BSCM

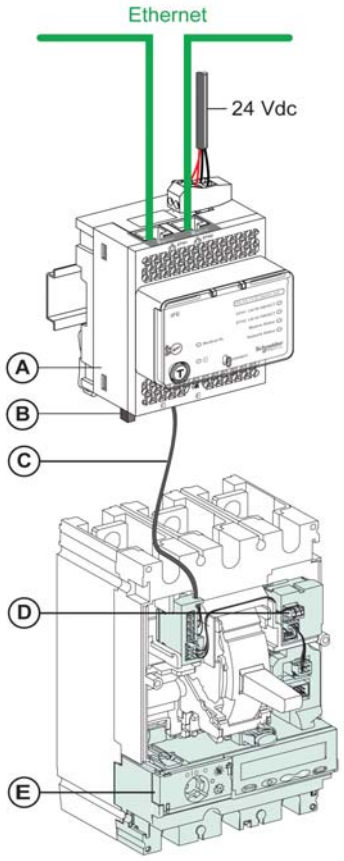
Connect the IFE to the BSCM using the NSX cord:



A IFE Ethernet interface for LV circuit breaker
B ULP termination
C NSX cord
D BSCM Breaker status and control module

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

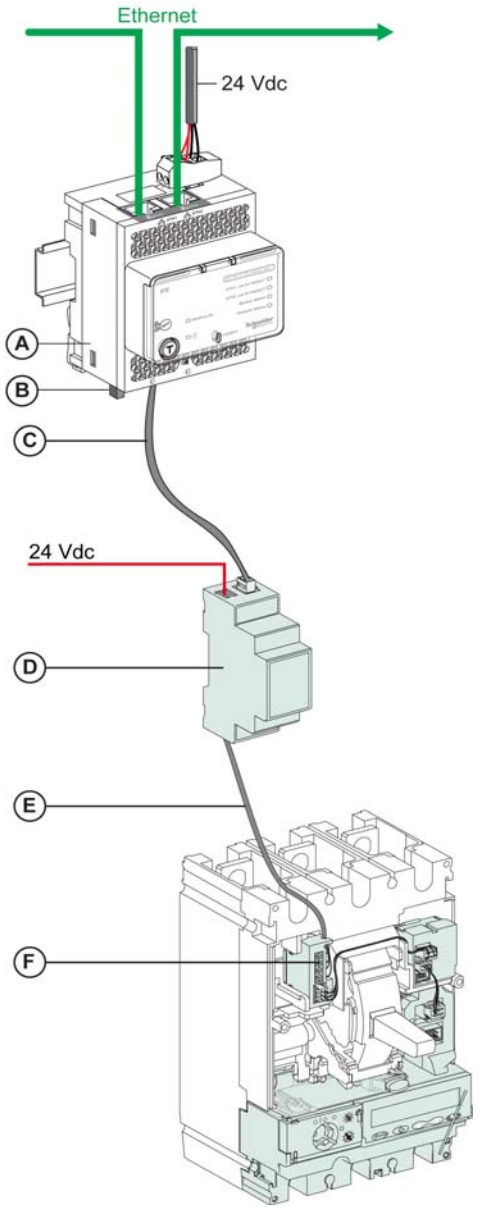
Connect the IFE to the BSCM and to the Micrologic trip unit using the NSX cord:



A IFE Ethernet interface for LV circuit breaker
B ULP termination
C NSX cord
D BSCM Breaker status and control module
E Micrologic trip unit

Connection of the IFE to a Circuit Breaker for System Voltage Greater Than 480 Vac

The following figure represents the same connection schematic but with the insulated NSX cord:



A IFE Ethernet interface for LV circuit breaker
B ULP termination
C ULP cord
D Insulated ULP module for system voltage greater than 480 Vac
E Insulated ULP cord for system voltage greater than 480 Vac
F Connector for PowerPact H-, J-, and L-frame Circuit Breakers internal connection

Technical Characteristics

Environmental Characteristics

Characteristic		Value
Conforming to standards		• IEC 60950 • IEC 60947-6-2
		• UL508 • UL60950 • IACS E10
Certification		cULus, CE, EAC, and FCC marking
Ambient temperature	Storage	-40 to +85 °C (-40 to +185 °F)
	Operation	-25 to +70 °C (-13 to +158 °F)
Protective treatment		ULV0, conforming to IEC/EN 60068-2-30
Pollution		Level 3

Mechanical Characteristics

Characteristic	Value
Shock resistance	Conforming to IEC 60068-2-27 15 g/11 ms, 1/2 sinusoidal
Resistance to sinusoidal vibrations	Conforming to IEC/EN 60068-2-6

Electrical Characteristics

Characteristics		Value
Power supply		24 Vdc, -20%/+10% (19.2–26.4 Vdc)
Consumption	Typical	24 Vdc, 120 mA at 20 °C
	Maximum with gateway	19.2 Vdc, 3 A at 60 °C

Physical Characteristics

Characteristic	Value
Dimensions	72 x 105 x 71 mm (2.83 x 4.13 x 2.79 in)
Mounting	DIN rail
Weight	182.5 g (0.41 lb)
Degree of protection of the installed module	• On the front panel (wall-mounted enclosure): IP4x • Connectors: IP2x • Other parts: IP3x
Connections	Screw type terminal blocks

24 Vdc Power Supply Characteristics

It is recommended to use an UL listed/UL recognized limited voltage/limited current or a class 2 power supply with a 24 Vdc, 3 A maximum.

For more information, refer to the *ULP System User Guide*.

Characteristic	Value
Power supply type	Regulated switch type
Rated power	72 W
Input voltage	100–120 Vac for single phase
	200–500 Vac phase-to-phase
PFC filter	With IEC 61000-3-2
Output voltage	24 Vdc
Power supply output current	3 A

Firmware Update

Description

The IFE consists of two component types that can be upgraded using the customer engineering tool *(see page 16)*:

- Firmware
- Webpage, device supporting file, and data file
  It is recommended to use the Ecoreach software, customer engineering tool, for all firmware upgrades. Ecoreach provides a one click update option that ensures consistency between the firmware and device webpages. The following instructions also explain on how to update the webpage using FTP.

NOTE: The Ecoreach software must be used for maintaining the firmware of the device.

NOTE: Before starting the firmware upgrade take a backup of the data log files *(see page 74)*.

NOTE: The customer engineering tool automatically downloads the latest firmware version from the Schneider Electric server.

If you add or update a device, the firmware has the potential to create inconsistencies. Hence, it is important to review your firmware upgrade plan with respect to other devices in the system. If the firmware creates inconsistencies, the system may have some limitations or unexpected behavior.

The primary reason for updating the system is to obtain the latest system features. The following system compatibility table shows the firmware versions of the products that are compatible with each other:

Range	Product	Reference Number	SmartPanel 1.0 Firmware Versions	SmartPanel 1.1 Firmware Versions
Enerlin'X	Input/Output Interface Module for LV Circuit Breaker	LV434063	V2.1.4	V2.1.4
	IFE Ethernet Interface for LV Breakers and Gateway	LV434010 LV434011	Firmware V1.8.4 Web page V1.8.9	Firmware V1.9.8 Web page V1.9.9
	IFM Modbus-SL Interface for LV Circuit Breaker	TRV00210	V2.2.7	V2.2.7
	FDM121 Display for LV Circuit Breaker	TRV00211	V2.3.5	V2.3.5
	FDM128 Display for 8 LV Devices	LV434128	V5.5.6	V6.1.1
	ULP accessories	LV4•••••	–	–
	Com'X 200	EBX200	V1.1.20	V1.3.5
	BCM ULP Breaker Communication Module	33702 33703 33708 33713 33714 33842 33848 S64205	V4.0.9 Product data code greater than or equal to 14251	V4.0.9 Product data code greater than or equal to 14251
	BSCM Breaker Status and Control Module	Product data code greater than or equal to 3N141810186	V2.2.7	V2.2.7
	Micrologic Control Unit for Masterpact NT/NW and Compact NS Circuit Breakers	–	V8282	V8282

To manage the device firmware, refer to the device documentation and Ecoreach, that assures the feature set is complete and compatible.

NOTE: The Ecoreach compatibility check is used for PowerPact H-, J-, and L-frame circuit breakers and Masterpact devices. As a result, the Enerlin'X devices that are not part of these product lines (for example, FDM128, Com'X, iEM, and power meters) need to be manually verified with System Compatibility table.

Checking the Firmware Version

Step	Action	Result
1	Open the web browser and log in to the IFE webpage.	Opens the IFE home page.
2	Locate the firmware version on **Device Information** page on the **Diagnostics** menu *(see page 82)*. **NOTE:** If you have updated the firmware recently, press **F5** to refresh the webpage and update the displayed firmware number.	Determines the firmware version of the IFE.

Updating the Firmware, Webpages, and Device Supporting Files using Ecoreach Software

For more information, refer to the *Ecoreach Online Help*.

The Ecoreach software is available at *www.schneider-electric.com*.

Getting the Webpage and the Device Supporting Files

Step	Action	Result
1	Start the web browser, enter *www.schneider-electric.com* in the **Address** text box, then press **Enter**.	Opens the *www.schneider-electric.com* website.
2	In the search box enter `IFE_DataFiles`, and then click the search button.	The `IFE_DataFiles_Vx.y.z` zip files appear in the search result (where x.y.z is the datafile version number).
3	Select the last version of the datafiles, and then click the `IFE_DataFiles_Vx.y.z` zip file to save the IFE data file in the local directory.	The **Save As** dialog box opens.
4	Click **Save As** to store the `IFE_DataFiles_Vx.y.z` zip file in the desired location.	Saves the `IFE_DataFiles_Vx.y.z` zip in the desired location.
5	Click the `IFE_DataFiles_Vx.y.z` zip file to unzip and save in the desired location.	Saves the IFE data file in the desired directory/folder.

Updating the Webpages and Device Supporting Files Using FTP

Step	Action	Result
1	Start the web browser, enter `ftp://<device IP address>` in the **Address** text box, then press **Enter**.	Starts the FTP session and prompts for user name and password.
2	Enter `Administrator` as the user name and `Gateway` as the password in the text boxes, and then click **Log On**.	Succeeds login process and locates a directory `wwwroot`.
3	Upgrade the webpage by: • locating `wwwroot` directory. Except the folder(s), delete all the files in `wwwroot` directory. Drag and drop the new files from the `wwwroot` folder of the newly saved `IFE_DataFiles_Vx.y.z` file. • locating `logging/templates` directory. Delete all the files in `logging/templates` directory. Drag and drop the new files from the `logging/templates` folder of the newly saved `IFE_DataFiles_Vx.y.z` file.	• Deletes the files from the directory except the folder(s). • Adds the new files from the PC to the directory. • Updates the webpages and the device supporting files.
4	Restart the IFE.	Updates the webpages and the device supporting files.

NOTE: After the successful firmware upgrade using legacy software (RSU or Ecoreach), perform a power cycle of the IFE to bring the IFE to a normal state.

NOTE: Only the webpages and the device supporting files can be updated using FTP.

Updating the Executable Binary Component using Legacy Software

For more information, refer to the *RSU Online Help*.

Protecting the Environment

Recycling Packaging

The packing materials from this equipment can be recycled. Please help protect the environment by recycling them in appropriate containers.

Thank you for playing your part in protecting the environment.

End-of-Life Recycling

At the end of life, the modules of the ULP system have been optimized to decrease the amount of waste and valorize the components and materials of the product in the usual end of life treatment process.

The design has been achieved so as components are able to enter the usual end of life treatment processes as appropriate: depollution if recommended, reuse and/or dismantling if recommended so as to increase the recycling performances and shredding for separating the rest of materials.

Chapter 2
IFE Web Server

What Is in This Chapter?

This chapter contains the following sections:

Section 2.1
IFE Ethernet Interface for LV Circuit Breaker

What Is in This Section?

This section contains the following topics:

Access to IFE Webpages

Supported Web Browsers

Browser	Version with Windows XP	Version with Windows Vista	Version with Windows 7
Internet Explorer	IE 8.0	IE 9.0	IE 10.0
Firefox	15.0	20.0	20.0
Chrome (recommended)	24.0 and later	24.0 and later	24.0 and later

First Access to the IFE Webpages

The IFE name must be configured during the first access to the IFE webpages.

The procedure to access the IFE webpages for the first time depends on the operating system of the computer:

- Windows Vista, Windows 7, or newer operating systems
- Windows XP or older operating systems

NOTE: On upgrade of IFE before accessing the webpages for the first time, delete the browser cache.

First Access Through PC with Windows 7 or Windows Vista

Step	Action
1	Disconnect the PC from the local area network (LAN) and switch off Wi-Fi.
2	Connect an Ethernet cable from the computer to the IFE or to the Ethernet switch inside the panel.
3	Open **Windows Explorer**.
4	Click **Network** and the **IFE-XXYYZZ** appears in the list of devices. **NOTE:** If the IFE-name is not displayed in the list of devices in **Windows Explorer**, check if the PC and the IFE are not connected through the router.
5	Double-click the selected **IFE-XXYYZZ**, the login page automatically opens in the browser.
6	Enter `Administrator` as the user name and `Gateway` as the password, the home page automatically opens in the browser. **NOTE:** The user name and password are case-sensitive.
7	To localize the IFE-XXYYZZ, select the **Configuration & Settings** menu, go to **Device Location/Name** submenu, click **Device Physical Location**, and click **Blink ON**. The ULP LED of the selected IFE-XXYYZZ blinks for 15 seconds (test mode).
8	To name the **IFE-XXYYZZ**, select the **Configuration & Settings** menu, go to **Device Name** submenu, click **Device Name**. Click **IFE-XXYYZZ** to set the IFE name.
9	Write the IFE name on a blank device name label and stick it on the existing one.

NOTE:

- XXYYZZ are the last 3 bytes of the MAC address in hexadecimal format.
- Please check the firewall settings if DPWS is not enabled.

First Access Through PC with Windows XP or Other Operating System

Step	Action
1	Disconnect the computer from the local area network (LAN) and switch off Wi-Fi.
2	Connect an Ethernet cable from the computer to the IFE.
3	Start the web browser *(see page 35)*. **NOTE:** The computer automatically uses the default IP address 169.254.#.# (#=0–255) and the default subnet mask 255.255.0.0.
4	In the address text box, enter `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), then press **Enter**: the home page opens in the browser. Example: For an IFE with MAC address 00-B0-D0-86-BB-F7 or 0-176-208-134-187-247 in decimal, enter 169.254.187.247 in the address text box.

Step	Action
5	Press **Enter**, the login page automatically opens in the browser.
6	Enter `Administrator` as the user name and `Gateway` as the password. The homepage automatically opens in the browser. **NOTE:** The user name and password are case-sensitive.
7	To localize the IFE-XXYYZZ, select the **Configuration & Settings** menu, go to **Device Locaation/Name** submenu, click **Device Physical Location**, go to **Device Physical Location** and click **Blink ON**. The ULP LED of the selected IFE-XXYYZZ blinks for 15 seconds.
8	To name the IFE-XXYYZZ, select the **Configuration & Settings** menu, go to **Device Location/Name** submenu, click **Device Name**, go to **Device Name**. Click IFE-XXYYZZ to set the IFE name.
9	Write the IFE-name on a blank device name label and stick it on the existing one.

NOTE: XXYYZZ are the last 3 bytes of the MAC address in hexadecimal format.

Access to Webpages

Follow the Network Discovery, Name Browsing, and IP Address Browsing process to access the webpages.

The webpage access depends on the IT infrastructure.

Network Discovery

Follow the below procedure to access the IFE webpages once the IFE name has been configured.

Step	Action
1	Connect the IFE or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Open **Windows Explorer**.
4	Click **Network**, the IFE-name is displayed in the list of devices. **NOTE:** If the IFE-name is not displayed in the list of devices in **Windows Explorer**, check if the PC and the IFE are not connected through the router.
5	Double-click the IFE-name which is written on the device label located on the front face of the selected IFE, the login page automatically opens in the browser.

Name Browsing

DNS server is mandatory.

Step	Action
1	Connect the IFE or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Start the web browser *(see page 35)*.
4	In the address text box, enter the IFE-name which is written on the device label located on the front face of the selected IFE.
5	Press **Enter**, the login page automatically opens in the browser. **NOTE:** If the IFE does not appear in the list of devices in **Windows Explorer**, check if the PC and the IFE are not connected through the router.

IP Address Browsing

IP static configuration has to be set.

Step	Action
1	Connect the IFE or the Ethernet switch inside the panel to the local area network (LAN).
2	Connect the computer to the local area network (LAN).
3	Start the web browser *(see page 35)*.
4	In the address text box, enter IP address given by the IT administrator.
5	Press **Enter**, the login page automatically opens in the browser. **NOTE:** If the login page in the web browser does not open or does not display correctly, check if **Internet Explorer\Tools\Compatibility View Settings\Display Intranet sites in Compatibility View** in Internet Explorer is checked.

First Time Log In

The web browser is a tool for reading and writing data. It is recommended to change the default password during the first-time login to prevent unauthorized access.

⚠ WARNING

UNAUTHORIZED DATA ACCESS

- Immediately change the default password to a new and secure password.
- DO NOT distribute the password to unauthorized or otherwise unqualified personnel.

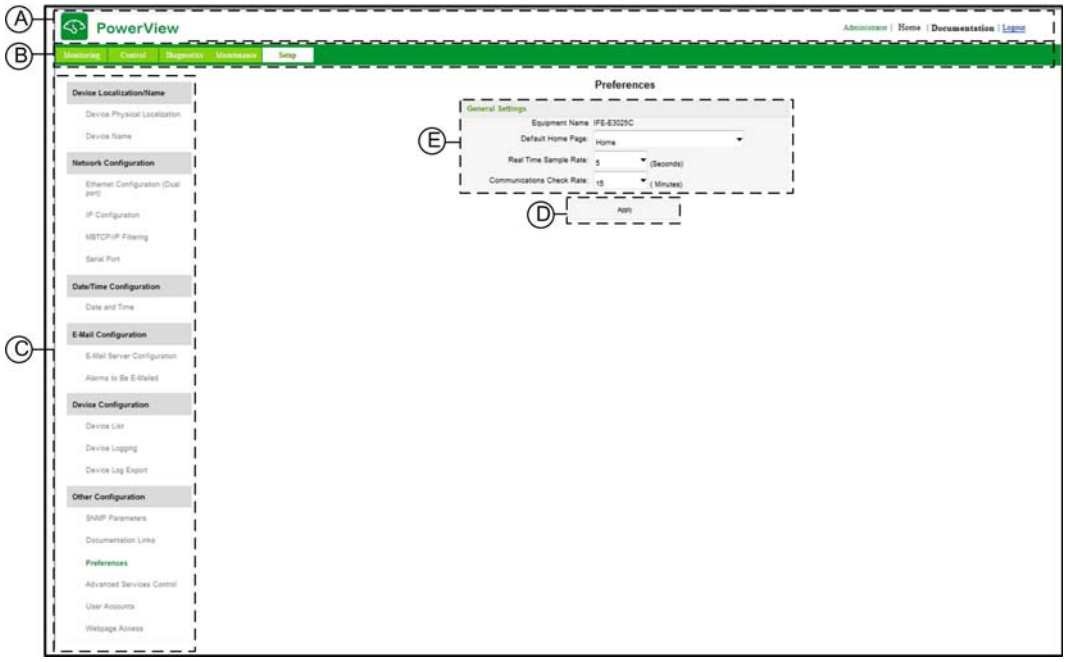
Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: The password should not be shared or distributed to unauthorized personnel. The password should not contain any personal or obvious information.

User Interface Layout

Overview

This graphic shows the IFE user interface layout.



A Banner
B Menu tabs
C Subtabs
D Action button
E Display zone

Banner

The banner displays the following information at the top of all the pages.

Generic Information	Description
User name checked	Name of the user who has logged in
Home	A link to the home page
Logout	To log out the IFE session, click **Logout** or close your browser. It is recommended to log out from the IFE when it is not in use.

Main Tabs

The main tabs are:

- **Monitoring**
- **Control**
- **Diagnostics**
- **Maintenance**
- **Configuration & Settings**

Subtabs

The subtabs display the submenus under the selected main tab.

Action Buttons

The action buttons correspond to the selected tab and it varies.

The following table describes the interface buttons:

Button	Action
Save changes	Validates the modification.
Apply	Applies the changes.
Cancel	Cancels the modifications to return to the last saved settings.

Display Zone

The display zone shows the selected subtab in detail with all the related fields.

Webpage Description

Monitoring Webpage

Monitoring Submenu	Webpage	Description
Real Time Data	**Single Device Pages** *(see page 71)*	The single device pages table view provides, basic readings of selected devices.
	Summary Device Pages *(see page 71)*	The summary device pages table view provides, summaries of one or more selected devices.
	Trending *(see page 71)*	The trending page view provides, real-time graphic and table trending of common topics across multiple devices.
Device Logging	**Single Device Pages** *(see page 73)*	The single device pages provide, the graphic and table trending logs of user-selectable quantities for selected devices.
	Summary Device Pages *(see page 75)*	The summary device pages provide, graphic trending logs of multiple devices with a common topic.

Control Webpage

Resets and controls the connected slave devices.

Diagnostics Webpage

Diagnostics Submenu	Webpage	Description
General	**Statistics** *(see page 80)*	Displays diagnostic data used to troubleshoot the network-related problems.
Product Information	**Device Information** *(see page 82)*	• Displays the IFE basic information to set the IFE device name and helps in the device physical location. • Contains information about the product name, serial number, model number, firmware version, unique identifier, MAC address, IPv4 address, and IPv6 link local address.
	IMU Information *(see page 83)*	Displays the list of the IMU devices connected to the ULP port.
Device Health Check	**Read Device Registers** *(see page 84)*	Displays register data connected locally to the IFE.
	Communication Check *(see page 85)*	Verifies the communications health of all the slave devices connected to IFE.
IO Readings	**ULP IO Module** *(see page 86)* **NOTE: ULP IO Module** refers to the slave device name defined in the **Device List** page.	Displays the status of ULP IO module of the selected device. Displays **No IO modules connected** if the selected device is not connected to a IO module.

Maintenance Webpage

Maintenance Submenu	Webpage	Description
General	**Maintenance Log** *(see page 88)*	Shows the date, time, and user who last performed maintenance on the equipment, and provides entry detail on the maintenance performed.
Maintenance Counters	**Maintenance Counters** *(see page 89)*	Displays the maintenance counters of the connected devices.
Restore the Smartlink's	**Device to be Restored** *(see page 90)*	Moves the configuration settings from IFE to the Smartlink devices.

Configuration & Settings Webpage

Configuration & Settings Submenu	Webpage	Description
Device Location/Name	**Device Physical Location** *(see page 43)*	• Localizes the device IFE-XXYYZZ • Click **Blink ON**. • The ULP LED of the selected device IFE-XXYYZZ blinks and is active for 15 s (Test mode: 1 s ON, 1 s OFF).
	Device Name *(see page 44)*	Configures the IFE device name
Network Configuration	**Ethernet Configuration (Dual port)** *(see page 45)*	Configures the Ethernet.
	IP Configuration *(see page 46)*	Configures the IP parameters.
	Modbus TCP/IP Filtering *(see page 48)*	Configures the maximum number of Modbus TCP/IP server connections. Configures the IP addresses that can access the IFE through Modbus TCP/IP.
	Serial Port *(see page 49)*	Configures serial communication parameters.
Date/Time Configuration	**Date and Time** *(see page 50)*	Sets the date and time manually.
Email Configuration	**Email Server Configuration** *(see page 51)*	Configures the alarms to be emailed. Configures the SMTP parameter for mailing purpose.
	Alarms to Email *(see page 53)*	Configures the alarms to be sent through email.
Device Configuration	**Device List** *(see page 56)*	Configures local serial devices on the Modbus serial daisy chain and IMU core product connected to the ULP port.
	Device Logging *(see page 61)*	Configures device logging parameters.
	Device Log Export *(see page 63)*	Configures device logging export options.
Other Configuration	**SNMP Parameters** *(see page 64)*	Configures Simple Network Management Protocol (SNMP).
	Documentation Links *(see page 65)*	Configures file and URL documentation links.
	Preferences *(see page 66)*	Configures IFE preferences.
	Advanced Services Control *(see page 67)*	Configures the advanced service control parameters.
	User Account *(see page 68)*	Creates and edits groups and users. Configures email accounts.
	Webpage Access *(see page 69)*	Configures webpage access rights for each user group.

Section 2.2
IFE Web Server - Configuration & Settings Pages

What Is in This Section?

This section contains the following topics:

Device Location/Name

Device Physical Location

Step	Action	Result
1	From the **IFE** menu bar, click **Configuration & Settings**.	Opens the **Configuration & Settings** menu.
2	From the **Configuration & Settings** menu, in the **Device Location/Name** submenu, click **Device Physical Location**.	Opens the **Device Physical Location** page.
3	In **Device Physical Location** webpage, click **Blink ON**.	Sets the IFE in nominal mode and the LED blinks in ULP pattern with 1 s ON and 1 s OFF.

Device Name

Device Name Configuration

Step	Action	Result
1	From the **IFE** menu bar, click **Configuration & Settings**.	Opens the **Configuration & Settings** menu.
2	From the **Configuration & Settings** menu, in the **Device Location/Name** submenu, click **Device Name**.	Opens the **Device Name** page.
3	In **Device Name Configuration** webpage, enter the device name and click **Apply**.	Sets the IFE in test mode and the ULP LED blinks with 1 s ON and 1 s OFF.

Ethernet Configuration (Dual Port)

Ethernet

Parameter	Description	Settings
MAC address	A unique media access control address of an IFE. The MAC address is written on the label which is placed on the side of the IFE.	–
Frame format	Used to select the format for data sent over an Ethernet connection.	• **Ethernet II** • **802.3** • **Auto** (Factory setting)

Ethernet Port Control

Parameter	Description	Settings
Speed and mode for Port #1	Used to define the physical Ethernet connection speed and transmission mode for Ethernet port 1.	**Auto-negotiation** (Factory setting)
Speed and mode for Port #2	Used to define the physical Ethernet connection speed and transmission for Ethernet port 2.	**Auto-negotiation** (Factory setting)

Broadcast Storm Protection

Parameter	Description	Settings
Level	Defines the storm protection level. The level value corresponds to a committed information rate (CIR) value, that is, the amount of traffic entering the switch port from which the storm protection drops entering the broadcast traffic. **NOTE:** If the level value is changed, you are prompted to restart the device to implement changes.	• **0** • **1** • **2** • **3** • **4** (Factory setting) • **5** • **6**
Committed Information Rate	Defines the read-only value of the storm protection level.	–

IP Configuration

IPv4 Configuration

Parameter	Description	Settings
Obtain an IP address automatically using	Used to select the mode for assigning the IPv4 parameters set. Obtain IPv4 parameters automatically using BOOTP or DHCP. **NOTE:** While using a DHCP server, the device name must be limited to 16 characters.	• **DHCP** (Factory setting) • **BOOTP**
Manual IP address	Used to enter the static IP address of an IFE.	**169.254.X.Y** (Factory setting) **NOTE:** X and Y are the last 2 bytes of the IFE MAC address (which is found on the IFE label).
Manual Subnet mask	Used to enter the Ethernet IP subnet mask address of your network.	**255.255.0.0** (Factory setting)
Manual Default gateway	Used to enter the gateway (router) IP address used for wide area network (WAN) communication.	**169.254.2.1** (Factory setting) Factory setting of gateway is same as the default IP address of the IFE.

IPv6 Configuration

Parameter	Description	Settings
Enable IPv6	Defines the IPv6 configuration.	**Enabled** (Factory setting) **NOTE:** The setting is unavailable to edit.
Link local address	Used to open the IFE webpage for future use. **NOTE:** In the URL address box, use [ ] brackets to enter the link local address.	–

DNS

Parameter	Description	Setting
Obtain DNS address automatically	Defines the dynamic behavior of the DNS server address configuration. Used to obtain the IP address from the DNS server automatically. **NOTE:** Domain name system (DNS) is the naming system for computers and devices connected to a local area network (LAN) or the Internet.	Disabled when manual setting is selected.
Manual Primary server address	Defines the IPv4 address of the primary DNS server.	–
Manual Secondary server address	Defines the IPv4 address of the secondary DNS server. Used to perform a DNS resolution when the resolution fails with the primary DNS server.	–

Duplicate IP Address Detection

While connected to your network, the IFE publishes its IP address. To avoid any duplicate IP address conflicts, the IFE uses the address resolution protocol (ARP) to see if any other device on your network is using the same IP address. The below table explains how the IFE handles a duplicate IP address when it is detected.

Duplicate IP Address Scenario

Scenario	Duplicate IP Detected	Network Status LED
Ethernet link detected	Reverts to the default IP address, subnet mask, and gateway address. ARP requests are sent every 15 seconds until the IP address is available. IFE uses the IP address when it is available,	Steady red
Manual address change	Reverts to the default IP address, subnet mask, and gateway address. The ARP requests are sent every 15 seconds until the IP address is available. The IFE uses the IP address when it is available.	Steady red
Receives an ARP request	If more than one ARP is detected within 10 seconds, initiate the process to reacquire the IP.	OFF

Modbus TCP/IP Filtering

Description

This page allows you to define the level of access for Modbus TCP/IP clients connected to IFE.

Block Connections

You can select the maximum number of IP connections allowed, 8 or 16.

NOTE: When the maximum number of IP connections is changed, a message pops-up on the screen **Max Connection is changed. Restart the Device to Take Effect** and prompts to restart the device.

IP Filtering

Parameter	Description	Setting
Enable IP_Filtering	Activates the IP address filtering. The list of IP addresses available in the table is granted access.	• Enabled • Disabled (No filtering)
Address	Filters the required IP address entered by you.	10 addresses (Maximum allowed IP addresses)

Accessibility	Defines the access level for the corresponding IP address.	• Read: The following Modbus TCP/IP function codes are allowed:
		  • 1 (0x01)
		  • 2 (0x02)
		  • 3 (0x03)
		  • 4 (0x04)
		  • 7 (0x07)
		  • 8 (0x08)
		  • 11 (0x0B)
		  • 12 (0x0C)
		  • 17 (0x11)
		  • 20 (0x14)
		  • 24 (0x18)
		  • 43 (0x2B), with subfunction codes 14 (0x0E), 15 (0x0F), and 16 (0x10).
		  • 100 (0x64)
		• **None**: The access to the IP address is blocked.
		• **Read/Write**: Full access is provided.

Allow Anonymous IP	Allows all Modbus TCP/IP clients to have the read-only access.	• Enabled • Disabled (Factory setting)

Serial Port

Serial Port Settings

Parameter	Settings
Baud Rate	• 9600 bps • 19200 bps (Factory setting) • 38400 bps
Parity	• **Even** (Factory setting) • **Odd** • **None**
Stop bits	• **Auto** (Factory setting) • 1 bit • 2 bits
Termination	• **Enabled** • **Disabled** (Factory setting)
Response Timeout	• 1 s (Factory setting) • 0.1–0.5 s • 1–10 s

NOTE: When **Stop bits** parameter is set to **Auto**, the actual value is based on the parity chosen.

Date and Time

Local Date and Time

Parameter	Description	Setting
Current Date	Allows you to set the present date manually.	Date format: yyyy-mm-dd
Current Time	Allows you to set the present time manually.	Time format: h: min: sec

Email Server Configuration

Introduction

The built-in email alarm notifications used to send emails when the connected devices trigger an alarm. The alarms are notifications that occur in response to a status change or when exceeds a threshold value. The administrator selects and configures several alarm notifications. The recipient list is configurable to notify the several users of the same alarm.

The email alarm notifications require unfiltered Internet access. This level of service is suited for small or mid-sized non-critical buildings. The device sends the emails when Internet access is available through a dedicated connection or through a local area network (LAN) with Internet access.

NOTE: The email alarm notifications should not be used if email services are managed internally by a customer IT domain administrator.

Email Server

Parameter	Description	Setting
Enable	Allows you to enable or disable the email service in IFE.	**Enable** selected

Email SMTP Server Settings

Parameter	Description	Setting
SMTP server address	Allows you to enter an email server address (SMTP server). **NOTE:** Contact your network administrator to know the IP address or the name of the simple mail transfer protocol (SMTP) server.	–
SMTP server port	Allows you to enter the SMTP server port.	**25** (factory setting)
Authentication	If the SMTP server requires login information, enable the **Authentication Enable** check box.	• **Enabled** • **Disabled** (factory setting)
SMTP account login	Allows you to enter the SMTP account login name.	–
SMTP account password	Allows you to enter the SMTP account password.	–

Schneider Electric provides an email service, free of charge, which allows you to receive the alarm notifications. When you choose to activate this service, you accept that Schneider Electric collects the data of your smart panel and your email address for the purpose to improve the product and the associated services and in accordance with our *Data Privacy policy.*

The email notification includes the following settings to use the service:

Parameter	Setting
SMTP server address	smartpanels.schneider-electric.com
SMTP server port	25 or 587
Authentication	Enabled
SMTP account login	Schneider1234
SMTP account password	Schneider1234

Email Sender Address

Parameter	Description	Setting
From address	In the **From Address** box, enter the email address of the administrator who is administering the device.	–

The **From address** can be used in different ways:

- Use the **From address** as context provider: If you want to be only notified without a reply, use a **From address** as contextual information. The **From address** syntax includes “no-reply”, “device name”, “site name”, @a validated domain .com, .net, and so on.
- Create an alias in the **From address** to allow replies to be sent to the person in charge of an alarm: An email can be sent to multiple people who are responsible for a specific appliance. This feature allows the receivers to reply to follow up with the responsible person.
  For example, the facility manager would receive an email from an alarm. Facility manager can send a reply email to the maintenance contractor to follow up on the action.

Email Language

Parameter	Description	Setting
Language	Allows you to select the language of the email body.	● **English** (factory setting) ● **French**

Email Test

Parameter	Description	Setting
Recipient address for test	Allows you to enter the email address of the recipient to test the delivery of the email.	–

The **Email Test** feature enables connection from the device to the service. If the test emails are not received, the Internet connection needs to enable the email ports (port 25 or 587). The required setting of the port is done in accordance between the device that sends the email and the site router settings.

NOTE: The email with custom text that uses characters such as à, è, ù, é, â, ê, î, ô, û , ë, ï, ü, ÿ, and ç are not shown correctly in the email but the generic text message is shown correctly.

Alarms to Email

Description

This feature is supported for the device connected on the ULP port. The **Alarms to Email** page provides the list of the alarms that can be selected for the notification through email. The webpage lists only the alarms of the devices that are connected to the IFE. The list of available alarms depends on the devices connected to the ULP port.

Device Connected	Alarms
BSCM	Circuit breaker indicator status (OF)
	Fault trip indicator status (SDE)
	Trip_indicator status (SD)
Micrologic trip units of PowerPact H-, J-, and L-Frame or BCM ULP	Long time protection Ir pre-alarm (PAL Ir)
	Ground fault protection Ig pre-alarm (PAL Ig)
	Earth leakage protection IDn pre-alarm (PAL IDn)
	Long time protection Ir
	Short time protection Isd
	Instantaneous protection Ii
	Ground fault protection Ig
	Earth leakage (Vigi) protection IDn
	Integrated Instantaneous protection
	STOP (trip unit internal failure)
	Instantaneous with earth leakage protection
	Reflex tripping protection
	Unbalance motor protection
	Jam motor protection
	Underload motor protection
	Long start motor protection
BCM ULP	Iunbal protection
	I1 Max protection
	I2 Max protection
	I3 Max protection
	IN Max protection
	Vmin protection
	Vmax protection
	Vunbal protection
	Reverse Power protection
	Fmin protection
	Fmax protection
	Phase rotation
BCMT	Wear on contacts

Device Connected	Alarms
IO module 1	Switchboard Temperature threshold 1(#1)
	Switchboard Temperature threshold 2(#1)
	Switchboard Temperature threshold 3(#1)
	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)
	Threshold overrun on Input 5 counter(#1)
	Threshold overrun on Input 6 counter(#1)
IO module 2	Switchboard Temperature threshold 1(#2)
	Switchboard Temperature threshold 2(#2)
	Switchboard Temperature threshold 3(#2)
	Threshold overrun on Input 1 counter(#2)
	Threshold overrun on Input 2 counter(#2)
	Threshold overrun on Input 3 counter(#2)
	Threshold overrun on Input 4 counter(#2)
	Threshold overrun on Input 5 counter(#2)
	Threshold overrun on Input 6 counter(#2)
IO module 1 or IO module 2	IO module in STOP mode (internal failure)
	IO module in Error mode (internal failure)
	Remove device from cradle and put it back
	Regrease cradle and disconnecting-contact
	Cradle replacement must be performed within 6 months
	new Micrologic unit has been detected
	SwitchBoard Temperature Contact Alarm
	SwitchBoard Ventilation Contact Alarm
	Earth leakage trip signal contact (SDV) alarm
	Control voltage presence contact alarm
	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
	Energy Reduction Maintenance Setting engaged
	Discrepancy with ERMS orders
Micrologic trip units of PowerPact H-, J-, and L-Frame	User-defined alarm 1
	User-defined alarm 2
	User-defined alarm 3
	User-defined alarm 4
	User-defined alarm 5
	User-defined alarm 6
	User-defined alarm 7
	User-defined alarm 8
	User-defined alarm 9
	User-defined alarm 10

NOTE: If an email SMTP server is not located on the same Ethernet network segment as IFE, ensure that the IFE default gateway is properly configured.

Parameter	Description
Alarms	List of alarms for configuration
Notification	A check box to enable the notification.
To-Recipients	Allows you to choose from a list of email recipients.
Custom-Text	Allows you to enter a custom text.

Device List

Description

The device list is used to define the list of devices connected to the IFE (ULP port, serial port) and remote Modbus slave devices. In the device list, you can add, delete and/or discover devices. A maximum of 20 slave devices can be added in the device list. Under each master IFE or remote device maximum of 12 devices can be added.

The list of connected device is defined:
- Either automatically, using the device discovery procedure
- Or manually, by adding the devices one by one.

NOTE: The webpages are supported only for the devices added in the device list.

NOTE: If there are Acti9 serial devices configured using IFE with firmware v1.8.4 and IFE is upgraded to newer version then on the click of **Device List** the message **There are some Acti 9 serial devices to be restored. Click 'OK' if you want to restore them Now. Click 'Cancel' if you want to delete the saved configuration and proceed to device list** appears on the screen.

- When you click **OK** the **Maintenance** page appears where the configuration of the smartlink device can be performed.
- The access to the **Device list** page is available only if all the Acti 9 smartlink devices configuration is restored or if you click **Cancel**.

Device List Parameters

Parameters	Description	Settings
IP Address	Displays the device IP address. ● For master IFE: The **IP Address** box is unavailable to edit. ● For remote device: Allows you to enter IP address in the **IP Address** box.	–
Gateway	Indicates if the IP device is a gateway or not. ● For master IFE: The **Gateway** check box is unavailable. ● For remote device: Allows you to add/discover the slave devices of remote device when you select the **Gateway** check box.	● Gateway check box is always selected for IFE with part number LV434011 ● Gateway check box is always cleared for IFE with part number LV434010
Address	Displays the Modbus slave address of the master IFE and the remote device. ● For master IFE: The **Address** box is unavailable to edit. ● For remote device: Allows you to enter the Modbus slave address of the remote device in the **Address** box.	● For master IFE: 255 (fixed) ● For remote device: (1–247 or 255)
Name	Allows you to enter the names for IFE and remote device.	–
Connection	Displays the connection type. It is unavailable to edit. **NOTE:** Connection list appears only for Master IFE slave devices.	The 2 types of port are: ● **ULP** port ● **Serial port** (available for part number LV434011)
Device Type	Allows you to select the slave devices from the list of supported devices *(see page 93)*.	–
Device Name	Allows you to enter the name for the discovered devices. ● For **ULP** port: Click **edit**, and then click **Device Name** to edit the device name, ● For **Serial port**, remote device, and its slaves: Click **Device Name** to edit the device name. **NOTE:** Delete and edit operations are not allowed if the device is selected for logging.	–
Slave ID	Displays the local address of the device connected to the master IFE or remote device.	● For **ULP** port: 255 (Fixed) ● For **Serial port** and remote device: 1–247
Add Remote Devices	Allows you to add remote devices.	–
Apply	Allows you to save device list configuration.	–

Parameters	Description	Settings
Delete	Allows you to delete the selected slave devices. **NOTE:** Delete operation is not allowed if the device is selected for logging.	–
Discover	Allows you to discover the slave devices. **NOTE:** The **Discover** button for the remote device is available only if you click the **Apply** button.	–
	Allows you to add a new slave device to the device list.	–
Delete Remote Device	Allows you to delete the remote device. **NOTE:** Delete operation is not allowed if the device is selected for logging.	–

Adding Device to the Device List for the First Time

Step	Action	Result
1	Slave device to master IFE: Add the Master IFE slave device manually *(see page 58)* or by device discovery *(see page 57)*.	Adds the slave device to master IFE.
2	Remote device: In the **Device List** page, click **Add Remote Devices** to add a remote device.	Adds the remote device in the **Device List** page.
3	Slave device to remote device: Add the slave device for remote device by device discovery. **NOTE:** The **Discover** button for the remote device is available only if you click the **Apply** button.	Adds the slave device to remote device.
4	Repeat step 2 and 3 to add more remote devices to **Device List** page. Click **Apply** to save the modified changes.	–

Device Discovery Procedure

When you start device discovery, the IFE queries the ULP port, serial port, and Ethernet port using a user-defined address range. Modbus RTU protocol is used for discovery on the serial port. If the device replies to the query, the local ID is set to the current discovery address, and the device is given a default device name. The IFE, then tries to identify the device type. If the IFE recognizes the device type of the discovered device, the IFE sets the recognized device type in the **Device Type** field. If the IFE does not recognize the **Device Type** of the discovered device, the IFE sets to Modbus in the **Device Type** field.

The list of devices supported by the IFE is in Appendix *(see page 93)*.

The table shows the steps to add device using device discovery procedure:

Step	Action	Result
1	From the IFE menu bar, click **Configuration & Settings**.	Opens the **Configuration & Settings** menu.
2	From the **Configuration & Settings** menu, in the **Device Configuration** submenu, click **Device List** .	Opens the **Device List** page.
3	To discover locally connected devices, click **Discover**.	Opens the **Device Discovery** page.
4	Enter **Start Modbus ID** and **Stop Modbus ID**.	Enters the discovery address range.
5	Click **Start Discover**. (Click **Stop Discover** to stop the process). **NOTE:** Discovery only finds local serial Modbus devices connected to the IFE. The device on the ULP port is discovered automatically.	Begins to discover all connected devices.
6	Enter a new device name in the **Name** text box.	Renames the device.
7	Select the **Save** check box for the device to be saved in the device list.	Selects or deselects a device entry to be saved or removed.
8	Click **Apply** in the **Device Discovery** page.	Displays the saved device list.

Device Discovery Parameters

Parameters	Description	Setting
Start/Stop Modbus ID	Defines the Modbus slave address range that is to be used to discover devices on the IFE serial port.	• **Start Modbus ID:** 1–247 (Factory setting: 1) • **Stop Modbus ID:** 1–247 (Factory setting: 10)
Save	Allows you to save the selected device to the **Device List**.	–
IP Address	Displays the IP address of the IFE or the remote device.	–
Defined	Lists the device type that was defined for this device.	–
Assigned	Allows you to assign the device type from the drop-down list.	–
Name	Allows you to enter a custom name for the device.	–
Local ID	The slave address of the device connected to the IFE.	–
Status	Displays the discovery or validation status.	• Attempting (trying to determine the device type that matches in the device list.) • Discovering (query attempt of device which is not in the device list.) • Found (device found but the device type does not match what is defined in the device list.) • Unknown (device found but the device type is unknown.) • Valid (device type identified and matches what is defined in the device list.) • Failed (failed to communicate with the device.)

Adding a Device Manually

Step	Action	Result
1	From the **IFE** menu bar, click **Configuration & Settings**.	Opens the **Configuration & Settings** menu.
2	From the **Configuration & Settings** menu, in the **Device Configuration** submenu, click **Device List**.	Opens the **Device List** page.
3	Click the  button to add a new device.	Allows you to add device in the device list.
4	Choose the supported device from the **Device Type** list.	Selects the device type selected from the list.
5	Enter a new device name in the **Device Name** text box.	Renames the device.
6	Enter the local address of the device in the **Local ID** text box.	Displays the local address of the device.
7	Click **Apply**.	• If the device type selected is **Smartlink-RS485**: the **configure** link is displayed to give access to the Smartlink-RS485 configuration page. • For the other device types: the new device is added to the list. **NOTE:** The **configure** link is unavailable if you do not click **Apply** after selecting **Smartlink-RS485**.

Configuring the Smartlink-RS485 Channels

The Smartlink-RS485 configuration page is used to configure the channels of Smartlink-RS485. You can add or modify the channel parameters in the Smartlink-RS485 configuration page.

Step	Action	Result
1	Click **configure** after you select **Smartlink-RS485** as device type.	The Smartlink-RS485 configuration page appears.
2	Click **Add.**	**Add New Digital Channel** parameter appears.
3	Enter the name and label of the channel in the **Name** and **Label** text box.	–
4	Select the product type from the **Product** list.	–

Step	Action	Result
5	Enter the channel number in the **Channel** text box.	–
6	Click **Apply**.	The channel is added in the **Digital Channel Configuration** list with the options to edit or delete channel configuration using the **Edit** or **Delete** button respectively.

Digital Channel Configuration Parameters

Parameter	Description	Settings
Channel	Displays the channel of the product.	1—11
Name	Displays the name of the channel.	–
Product	Displays the type of the product supported by Smartlink-RS485.	• **OF+SD24** • **iOF+SD24** • **iATL24** • **iACT24** • **Reflex iC60** • **RCA iC60** • **Breaker IO** • **Standard IO** • **Pulse Counter** • **iEM3110** • **iEM3155** • **iEM3210** • **iEM2000T** • **iEM3255** • **PM3210** • **PM3255**
Label	Displays the label of the channel.	–
Edit	Allows you to modify the configuration for the selected channel.	–
Delete	Allows you to remove the configuration for the selected channel.	–
Back	Allows you to navigate to the **Device List** page.	–
Add	Allows you to add a new channel.	–

Add New Digital Channel Parameters/ Edit Channel Settings Parameters

Parameter	Description	Settings
Name	Allows you to enter a custom name for the channel configuration.	–
Label	Allows you to enter a custom label for the channel configuration.	–
Product	Allows you to select a product supported by Smartlink-RS485 from the list.	–
Channel	Allows you to enter the channel number.	–
Input	Allows you to enter the input number. **NOTE:** The input parameter is available only if you choose **Standard IO** or **Pulse Counter** as the product type.	• 1 • 2
Pulse Weight	Allows you to enter the pulse weight into the respective Smartlink-RS485 channel. **NOTE:** The **Pulse Weight** parameter is available only if you choose pulse meter as the product type.	0–65535
Unit	Allows you to select the unit of pulse meter consumption value. **NOTE:** The **Unit** parameter is available only if you choose pulse meter as the product type.	• m^3 • kWh

Parameter	Description	Settings
Apply	Allows you to save the channel configuration when you click the **Apply** button after entering all the required parameters.	–
Undo	Allows you to cancel the modification done to channel configuration when you click the **Undo** button after entering all the required parameters.	–

NOTE: Analog channel cannot be configured for Smartlink Ethernet device using IFE webpage.

Device Logging

Description

Logging is available for the devices which are in the device list *(see page 56)*. The logging contents can be customized using topics. Topics are the parameters for a device that can be selected to have the desired logging content. The number of log entries per device is fixed irrespective to the number of topics selected for that device. The IFE can log data received at predefined intervals (5, 10, 15, 20, 30, and 60 minutes). Below is an explanation of how the IFE logs data and how to set up logging for a device.

Logging Interval

Many devices in a power monitoring system do not have the ability to record data in non-volatile memory. The IFE provides this data logging at predefined intervals for up to 13 devices.

The features of IFE data logging are:

- The maximum number of log entries per device is fixed to 12960.
- Select maximum of 13 devices for data logging.
- Select maximum of 23 topics per device for data logging(topics are kVAh, kWh, kVARh, and so on).
- Select the desired device and list of topics for data logging.

NOTE: Number of days of logging is impacted only by the log interval selected. It is independent of number of devices selected, number of topics selected per device, and type of topic selected.

Logging interval is a predefined time for the IFE to log data received from the device. The logging capacity of a device is calculated by multiplying the log capacity factor with the logging interval set in the **Device Logging** page.

Logging capacity (in days) = Log capacity factor * logging interval (in minutes)

The log capacity factor is 9 and is calculated as follows:

Log capacity factor = 12960/1440

Where:

- 12960 is the maximum number of log entries per device
- 1440 is the number of minutes per day

Example: If the **Logging Interval** in the **Device Logging** page is set to 5 minutes then the logging capacity is 45 days.

The table shows the logging capacity for the corresponding logging interval:

Logging Interval (Minutes)	Logging Capacity (Days)
5	45
10	90
15	135
20	180
30	270
60	540

Interval Logging Setting Procedure

Each device (except Acti 9 Smartlink Ethernet and Acti 9 Smartlink Modbus) in the device list may be independently enabled for logging. Topics to log are unique to each device. To view interval data logs, refer to Device Logging *(see page 73)* in **Monitoring** menu.

NOTE: To enable the **Device Logging** feature, there must be a time value selected from the **Logging Interval** drop-down list. It is recommended to disable the logging feature for the specific device being configured. To do this, clear the logging check box for the device being selected.

Logging

To disable logging, select a logging interval of zero, ensure that the logging selections are cleared, then click **Apply**.

Purge Data

To delete a data log, check **Purge Data** for the topics to be deleted.

Customize

To customize logging content, enable device logging. Click **Topics** under **Customize** for the device to be configured.

Device Log Export

Description

The **Device Log Export** page is used to export the device logs automatically by IFE. The device log export allows you to configure IFE to export device logs periodically. You can choose to export the device log files through email or FTP.

NOTE: If the email and the FTP servers are not located on the same Ethernet network segment as the IFE, ensure that the IFE default gateway is properly configured.

Transport

Parameter	Description	Setting
Disabled	When **Disabled** is selected, either email or FTP is enabled.	–
Email	Allows you to choose the way of exporting the log files through email.	–
FTP	Allows you to choose the way of exporting the log files through FTP. **NOTE:** When **FTP** is selected, **Test FTP** is enabled.	–
Test FTP	Sends the text file to the FTP server configured in the FTP parameters. The text file contains the device information, and the device name with the date and time.	–
Incremental	Selects only the new interval data logged since the last successful data export. **NOTE:** ● If the transport is scheduled for **Hourly** or **Logging Interval**, the incremental check box is selected automatically and is unavailable to be cleared. ● If the **Incremental** check box is not selected, the complete log file is sent through an email as an attachment on each scheduled interval.	–

Schedule

Parameter	Description	Setting
Logging Interval	Selects how often the data logs are sent.	● **Hourly** ● **Daily** ● **Weekly** ● **Monthly** ● **Logging Interval**

To Addresses

Parameter	Description	Setting
To Addresses	Lists the email recipients configured in the IFE user accounts.	–

SNMP Parameters

Manage IP Parameters

The IFE supports SNMP, allowing a network administrator to access remotely an IFE with an SNMP manager and to view the networking status and diagnostics of the IFE in the MIB-II format.

Parameter	Description	Setting
Manager One	Allows you to configure the IP address of SNMP manager one.	–
Manager Two	Allows you to configure the IP address of SNMP manager two.	–
System Contact	Allows you to configure the SNMP system contact name.	–
System Location	Allows you to configure the SNMP system location.	–
Read-only Community Name	Allows you to configure the SNMP read-only community name.	**Public** (Factory setting)
Read-write Community Name	Allows you to configure the SNMP read-write community name.	**Private** (Factory setting)
Trap	Allows you to trap the community name.	**Public** (Factory setting)

Enabled Traps

Parameter	Description	Setting
Coldstart Trap	Generates a trap when the IFE is powered ON.	–
Warmstart Trap	Not supported	–
Linkdown Trap	Generates a trap when an Ethernet port communication link is disconnected.	–
Linkup Trap	Generates a trap when an Ethernet port communication link is reconnected.	–
Authentication Failure Trap	Generates a trap when an SNMP manager is accessing the IFE with incorrect authentication.	–

Documentation Links

Description

The IFE supports two types of documentation links:

- Local file access (documentation stored onboard the IFE)
- URL access

Local File Access

To access the files, select **Enabled** for the file name link to be enabled. The local file documents to be appeared on the documentation webpage must be placed in the IFE wwwroot/documentation folder using FTP.

URL Access

Parameter	Description	Setting
Enabled	Always selected to enable the URL link access.	–
New Window	Always selected if the selected files and URLs to be opened in a new window when clicked.	–
Link Text	Sets the documentation link that appears on the documentation page.	127 characters
File Name	Displays the file name which is available in the IFE documentation link.	–
URL	Displays the link to the external webpage to be accessed.	–

Preferences

General Settings

Parameter	Description	Setting
Equipment Name	Displays the equipment name. This name is used in the web interface banner. **NOTE:** The device name can be updated in the **Device Name** of the **Device Location/Name** in the **Configuration & Settings** menu.	–
Real Time Sample Rate	Controls how often data is read from the device in the standard monitoring table views.	5–60 Seconds Factory setting: 5 seconds
Communication Check Rate	Controls how often a communications check is performed while the browser is displaying real-time readings in the standard monitoring table views. This function attempts to bring any out-of-service devices back into service automatically.	5–30 minutes Factory setting: 5 minutes

Advanced Services Control

Industrial Protocol

Parameter	Description	Setting
Enable Modbus/TCP	Allows you to enable/disable the Modbus/TCP service.	● Enabled (Factory setting) ● Disabled

Services Configuration

Parameter	Description	Setting
Enable FTP server	Allows you to enable/disable the FTP service.	● Enabled (Factory setting) ● Disabled
Enable device announcement	Allows you to enable/disable the DPWS service.	● Enabled (Factory setting) ● Disabled
Enable SNMP	Allows you to enable/disable the SNMP service.	● Enabled (Factory setting) ● Disabled

User Accounts

Description

The IFE users are assigned with user names and passwords. Each user belongs to a group, and each group has access rights to the IFE webpages assigned by the IFE administrator.

NOTE: There are two pre-defined user accounts:
- Administrator (the pre-defined password is `Gateway`)
- Guest (the pre-defined password is `Guest`)

Groups

To change the group name, enter a new name in one of the groups text boxes.

NOTE: The administrator group name cannot be changed.

Users

Parameter	Description
Name	Enter a name (1 to 15 characters) for a new user. **NOTE:** User names are case-sensitive and can contain only alphanumeric characters.
Password	Enter a password (0 to 11 characters) for a new user.
Email ID	Enter a valid email address for the selected name.
Group	Select a group for the new user.
Default Language	Select the default language for the new user.

NOTE: The maximum number of user-defined accounts are 11.

IFE Accounts and Passwords

Accounts	Password
Administrator	Gateway
Guest	Guest
User-defined accounts (11 accounts possible)	User-defined passwords

NOTE: The passwords can be reset by the user.

Webpage Access

Group Access

Group	Access
Administrator	Full access to all webpages. **NOTE:** It is recommended to change the default administrator password for system security the first time you log in.
Guest	Read-only access to selected webpages.
User-defined groups	Choosing from the following options, the administrator assigns webpage access for each group. The access levels are as follows: ● **None**: A group has no access to selected webpage ● **Read-Only**: The password grants a group read-only access to the selected webpage ● **Full**: A group has the same access as the administrator group to the selected webpage

NOTE:

- The **Webpage Access** is available for the **Administrator** only.
- The **Administrator** has full access to all the webpages.

Section 2.3
IFE Web Server - Monitoring Pages

What Is in This Section?

This section contains the following topics:

Real Time Data

Description

The **Real Time Data** page provides:

- the basic readings of the selected devices in real time on **Single Device Pages**.
- the device summaries on **Summary Device Pages**.
- the real-time trending for the selected device for the selected topics on **Trending**.

NOTE: Refresh the webpage by action on the function key F5 when out of service is displayed.

Single Device Pages

This page displays the basic readings like breaker status, cradle status, load current, power, power factor, voltage, and so on, of the selected devices on real-time basis.

The table shows the steps to monitor the real-time data of a device:

Step	Action	Result
1	From the **IFE** menu bar, click **Monitoring**.	Opens the **Monitoring** menu.
2	From the **Monitoring** menu, in the **Real Time Data** submenu, select a device from **Single Device Pages**.	Displays the real-time data of the selected device.

Summary Device Pages

The summary device table views provide summary of one or more selected devices.

Step	Action	Result
1	From the **Monitoring** menu, in the **Real Time Data** submenu, click **Summary Device Pages**.	Expands tree for summary page selection choices.
2	Select the **Summary Page** to be viewed.	Opens the device selection list.
3	Select the devices from the **Available Devices**, then click **Apply**. **NOTE:** Click **select all** to select all the available devices. Click **clear all** to clear all the selected devices.	Summary of the selected device appears. **NOTE:** Click **New selection** to navigate back to the device selection list.

Trending

Step	Action	Result
1	From the **IFE** menu bar, click **Monitoring**.	Opens the **Monitoring** menu.
2	From the **Monitoring** menu, in the **Real Time Data** submenu, select **Trending**.	Expands the data tree for real-time data option selection and the time trending option selection.
3	Select **Real Time Trending**.	Opens the real-time trending setup page.
4	Select up to 4 devices from the **Available Devices** list.	Selects devices for trending.
5	Select the topics from the **Available Topics** list. **NOTE:** Only topics common to all selected devices are available for trending. The maximum number of topics to trend is dependent on the number of devices selected.The multiplication (product) of the selected devices and the selected topics must be 8 or less.	Selects topics for trending.
6	Click **Apply** to open the **Real Time Trending** display page.	Opens the real-time trending display page.
7	Set the trending parameters.	Allows trending parameters to be set.

Trending Parameters

Step	Action	Result
1	Select **Absolute** or **Relative** trending. **NOTE: Absolute** redraws the x-axis in the graph after each sample, filling it with all the data collected since the start of the trend. The **Relative** updates the graph with the latest data after each sample while the x-axis stays constant to show the overall trend time selected.	Selects graph mode.
2	Choose a trend time from 1–15 minutes. This is the duration of the trend. **NOTE:** Data samples are taken as fast as possible but may take longer depending on the communications load on the Modbus-SL port.	Selects the amount of time of the trend.
3	Select **Start Sampling** to start the trending of the selected device topics. **NOTE:** Trending may be stopped before reaching the trend time by clicking **Stop Sampling**. If **Start Sampling** is pressed after stopping the sampling, a new trend is started.	Starts trending.
4	Press **Data Points** to view a log of all the sampled topics recorded during the trend time.	Displays a log of all topic values sampled during the trend.
5	Press **New Selection** to reselect the devices and topics to trend.	Navigates back to the real-time trending setup page.

Device Logging

Introduction

Device logging page provides the graphic and table representations of the selected device log data. For more details on configuring device logging, refer to Device Logging *(see page 61)*.

Single Device Pages

Step	Action	Result
1	From the **IFE** menu bar, click **Monitoring**.	Opens the **Monitoring** menu.
2	From the **Monitoring** menu, click **Device Logging**.	Expands tree to show available device logging choices.
3	From the **Device Logging**, click **Single Device Pages**.	Expands tree to show available devices that have logged data available for viewing.
4	Select a device from the **Device List**.	Displays the device log for the selected device.
5	To view a data range, select a period range from the period range drop-down list: ● **Last Full Day** ● **Last Full Week** ● **Last Full Month** ● **All**	Plots the selected period range.
6	Hold the left mouse button and drag a selection box around a graph area to zoom in on it.	Zooms in on the selected graph area.
7	To return to the original full view, enter **Z** on your keyboard, or double-click the graph.	The view zooms out.
8	Click **Data Points** to view the selected interval data log table.	Opens the selected **Interval Data Log** table.
9	To view different topics, click **New Topic(s)**. Enable the check boxes of the topics to be displayed, and click **Apply**.	Enables the display of the selected topics.

The data logged from each device is displayed in a webpage in a time-trend chart format. The time-trend chart is preconfigured to display data from the **Last Full Day**, **Last Full Week**, **Last Full Month**, or **All**.

Energy parameters are logged as accumulating values but are displayed as incremental values on an interval basis. All other parameters are logged and displayed as the actual value recorded.

Retrieving a Data Log

Interval data logs can be retrieved using the methods given in the following table:

Retrieval Method	File Format Retrieved
IFE FTP server	Comma-separated variable (CSV)
Export to an external FTP server	CSV
Data point button	HTML
Microsoft web query	CSV
Email	CSV

To view the list of all the available log files, follow steps 2 to 4 in the section Getting an Interval Data Log using FTP *(see page 74)*. Files are in the format: *Device Name.csv* where the device name is the name given to the slave device. For example, a device named building 1 utility entrance is *Building 1 Utility Entrance.csv*.

When the log files are exported, the date and time are appended to the file name in the following format: _YYYYMMDDHHMMSS. For example, *Building 1 Utility Entrance_20100218115216.csv*. This indicates that the file was exported on 2010 February 18 at 11:52:16 AM.

Log Format

Data is logged in the CSV file with the following format:

Row	Data in CSV Format	Description
1	IFE name,IFE sn, IFE address, device name, device local ID, device type name, logging interval.	This row contains the column headings for the information in row 2.
2	IFE 555, 23227,157.198.184.116, building1 utility entrance, 3, CM4000,15	This row contains the information about the IFE and the logged device.
3	This row is blank.	–
4	,,,topic id 1,topic id 2,topic id 3	This row contains the column headings for the topic IDs in row 5. A topic ID is a numerical reference to the quantity being logged. Topic IDs are used to identify the quantity, regardless of the device or language. The first three commas are used for layout purposes in a spreadsheet application.
5	,,,1617,1621,1625	This row contains the topic IDs of the values logged.
6	This row is blank.	–
7	Error, UTC offset (Minutes), local time stamp, apparent energy (kVAh), real energy (kWh), reactive energy (kVARh)	This row contains the column headings for the data logged in rows 8 and higher.
8 and higher	These rows contain the logged data. 0,-300,2008-10-09 14:15:00,1400738.219,1201962.707,647069.906,15 0,-300,2008-10-09 14:20:00,1400758.260,1201980.725,647078.602,15 0,-300,2008-10-09 14:25:00,1400778.198,1201998.661,647087.233,15	

If a spreadsheet application is used to view the CSV file, data should look similar to the interval data log opened in a spreadsheet application.

Error Codes for Data Logs

The below error codes may be seen when troubleshooting data logs:

Error Code	Definition	Result
19	Communication error occurred (for example: CRC, protocol, or exception).	Logging is left enabled unless the last interval was missed.
25	Timeout occurred when a request was sent without receiving a corresponding response within the allowed time.	Logging is left enabled unless the last interval was missed.
38	Invalid data.	-
100	Interval time expired before data could be recorded.	Missed interval.

Contact technical support if you need assistance in resolving these or other error conditions.

Retrieving Data Log Using IFE FTP Server

You can use IFE FTP server to retrieve a data log file by connecting to the IFE via FTP and transferring the .csv file, as shown in the steps below.

NOTE: If you want the IFE to send the data log file via FTP automatically, the device log export must be configured for FTP.

Step	Action	Result
1	Create a folder on your computer, such as `C\:file_logs`.	Creates a folder to store the IFE data log.
2	Launch Windows Explorer, enter `ftp://` and the IP address of the IFE in the address text box (for example, `ftp://169.254.0.10`), press **Enter**.	Opens the **Log On As** dialog box.
3	Enter the user name as `Administrator` and password as `Gateway` in the text boxes, click **Log On**.	Opens an FTP session with the IFE and displays the files stored in the IFE.
4	Navigate to the directory*/logging/data* on the IFE.	Opens the data logging directory on the IFE.
5	Copy the log file and paste it into the folder created in step 1.	Copies the data log to the folder.

Retrieving Data Log Using the Data Points Button

Step	Action	Result
1	From the **Device Logging** webpage, click **Data Points**.	Opens a new window displaying the logged data.
2	Press **CTRL+A**, then press **CTRL+C**.	Selects all of the data and copies the data to the clipboard.
3	Open Excel, then press **CTRL+V**.	Pastes the data into an Excel spreadsheet.

Retrieving an Interval Data Log Using the Microsoft Web Query Feature

Step	Action	Result
1	Launch your web browser.	Opens the web browser.
2	Verify that the log file is available by typing the IFE IP address followed by */stream/devlog_data.html?device=x* (where “x” is the device local ID).	Opens the data log page.
3	Launch Microsoft Excel. ● For Excel 2003: On the **Data** menu, go to **Import External Data** and select **New Web Query**. ● For Excel 2007: On the **Data** menu, go to **From Web** and enter the URL in the **Address** bar, and then click **Import**.	Opens the **New Web Query** dialog box.
4	In the **New Web Query** dialog box, enter the address of the log entered in step 2, then click **Go**.	Opens the data log file.
5	Click the outer-most arrow to select all of the data and click **Import**.	Selects the data, then opens the **Import Data** dialog box.
6	Click **OK**.	Imports the data.

NOTE: If you want to display the latest data each time you open the spreadsheet, click **Properties** on the **Import Data** dialog and select **Refresh data on file open**.

Retrieving Data Log Using Email

The IFE must be configured to deliver data logs to an email address. For more information, refer to Email Export *(see page 63)*.

Summary Device Pages

The summary device view provides the summary of one or more selected devices.

Step	Action	Result
1	From the **Monitoring** menu, click **Device Logging**.	Expands the tree for device logging choices.
2	Under **Device Logging**, click **Summary Device Page**.	–
3	Under **Summary Device Pages**, click **Single Topic for Multiple Devices**.	Opens the setup page for the multiple devices, and single topic page for multiple devices.
4	Select a device from the **Available Devices** list. **NOTE:** A maximum of four devices may be selected.	Selects the devices for the summary options.
5	Select a topic from the **Available Topics** list. **NOTE:** Only topics that are common between the selected devices are available.	Selects the topic to display for each selected device.
6	Select **Next**.	Displays the single topic for multiple devices page.
7	Hold the left mouse button and drag a selection box around a graph area to zoom in on it.	Zooms in on the selected graph area.
8	To return to the original full view, enter **Z** on the keyboard, or double-click the graph.	The view zooms out.

The topic logged from the selected devices is displayed in a webpage in a time-trend chart format. The time-trend chart is preconfigured to display data from the last full day, last full week, last full month, or last 6 weeks.

Energy parameters are displayed as incremental values on an interval basis. All other parameters are logged and displayed as the actual value recorded.

Section 2.4
IFE Web Server - Control Page

Single Device Control

Reset Commands

The IFE **Control** page allows you to execute one or more reset commands per device type.

From the **Control** menu, in the **Single Device Control** submenu, on the device list, select the device and click **Reset**. Select an **Operation** in the **Resets** list to reset.

This feature is always enabled.

Application Control

The IFE Control page allows you to control the following applications remotely:

- Breaker application
- IO application
- Acti 9 Smartlink application

By default, this feature is disabled in IFE.

Enable Application Control in IFE

Follow the below procedure to enable the **Application Control** feature in IFE.

NOTE: The application control feature is enabled only when the user is logged in as an administrator.

Step	Action	Result
1	Press the test button on the front face of the IFE for 10–15 seconds. **NOTE:** Do not press the test button less than 10 seconds or more than 15 seconds.	Initiates the application control feature.
2	After 15 seconds, IFE initiates the application control feature.	The feature disclaimer window is available continuously for 5 minutes. The module status LED starts blinking continuously for 5 minutes (1 s ON, 1 s OFF) once the test button is released.
3	Access the IFE webpage and login as an administrator.	The administrator login to the IFE webpage.
4	From the **Configuration & Settings** menu, click **Webpage Access**.	The **Administrator** reads the disclaimer and chooses either the option **I Understand the risks/Apply** or **Continue to disable**. The application control feature disclaimer is: *By accepting this disclaimer, you are directed to webpage access which enables you to control several applications remotely. It is highly recommended that the administrator modify the default administrator password. By using, you are agreeing to indemnify and hold harmless Schneider Electric for and from any claims, losses, demands, lawsuits, and damages that are a result of direct or indirect use of this application control feature by reason of any act or emission which the user commits.* The disclaimer page is available in the language selected by the administrator.
5	Select **I Understand the risks/Apply**.	The application control feature is now enabled for the administrator. The breaker application and IO application are enabled in the webpage access for providing access to the other user groups.
6	Select **Continue to disable**.	The application control feature is disabled. The breaker application and IO application are disabled in the webpage access.

Breaker Application

From the **Control** webpage, in the **Breaker Application**, the authorized group can perform the following operations:

Control	Status	Operation	Availability
Breaker	Open/Close/Tripped/NA	Open/Close/Reset	PowerPact H-, J-, and L-frame circuit breaker with BSCM
		Open/Close	Masterpact NT/NW or PowerPact P- and R-frame circuit breaker with BCM ULP

NOTE: Pop-up message confirms that the command is successfully sent. It does not confirm whether the complete operation is successful.

IO Application

From the **Control** webpage, in the **IO Application**, the authorized group can perform the following operations:

Control	Status	Operation	Availability
Reset input counters	–	I1 I2 I3 I4 I5 I6	IO 1
		#I1 #I2 #I3 #I4 #I5 #I6	IO 2
Reset output counters	–	O1, O2, O3	IO 1
		#O1 #O2 #O3	IO 2
Light control	ON or OFF	ON / OFF	IO 1
Load control	ON or OFF	ON / OFF	IO 1
User-defined output control	ON or OFF	ON / OFF	IO 1 or IO 2

NOTE:

- The IO application control is possible only when the IO module is connected to a circuit breaker.
- The light and the load control are available when the application rotary switch of IO 1 is in position 4.
- The user-defined output control is available only when the user-defined output has been assigned with customer engineering tool.
- If the input is assigned as a pulse counter, the operation is P1, P2, P3, P4, P5, and P6 for IO 1. For IO 2, the pulse counter operation is #P1, #P2, #P3, #P4, #P5, and #P6.

Acti 9 Smartlink Application

From the **Control** webpage, in the **Acti9 Smartlink**, the authorized group can perform the following operations:

Control Device	Status	Operation	Availability
Reflex	Open/Close/Trip	Open/Close	Reflex iC60
RCA	Open/Close/Trip	Open/Close	RCA iC60
Contactor/Impulse Relay	Open/Close/Device disconnected	Open/Close	iACT24/iATL24

Section 2.5
IFE Web Server - Diagnostics Pages

What Is in This Section?

This section contains the following topics:

Statistics

Description

This page shows the readings accumulated since the IFE was last activated. If the power to the IFE is terminated or the device is reset due to a configuration change or other event, all cumulative values are reset to 0.

Reset Procedure

Step	Action	Result
1	From the **IFE** menu bar, click **Diagnostics**.	Opens the **Diagnostics** menu.
2	From the **Diagnostics** menu, in the **General** submenu, click **Statistics**.	Opens the **Statistics** page.
3	View the data.	See the statistics for each group.
4	Click **Reset**.	Resets the IFE cumulative diagnostic data to 0.

Interpreting Ethernet Statistics

Global Statistic	Description
Received Frames	Number of frames received
Transmitted Frames	Number of frames transmitted
Reset Counters	Resets the transmitted and received frames

Statistic Per Port	Description
Link Speed	Operational speed (10 Mbps or 100 Mbit/s)
Duplex mode	Current mode of operation (full duplex or half duplex)

Interpreting Modbus TCP/IP Statistics

Statistic	Description
Port status	Status of the connected Ethernet port
Opened TCP connections	Number of active connections
Received messages	Number of messages received
Transmitted messages	Number of messages transmitted
Reset counters	Resets the received and transmitted messages

Interpreting System Statistics

Statistic	Description
CPU	Status of the CPU: ● Nominal ● Degraded ● Out of service
Boot Memory	Healthiness of the boot memory
EEPROM	Healthiness of EEPROM
File System	Healthiness of the file system
Ethernet PHY 1	Healthiness of PHY 1 hardware
Ethernet PHY 2	Healthiness of PHY 2 hardware
DDR	Healthiness of the execution memory

Interpreting Date and Time Statistics

Statistic	Description
Date	Current date
Time	Current time
Uptime	Run time during the system power-up

Interpreting Modbus Serial Statistics

Statistic	Description
Transmitted Message	A counter that increments each time a frame is sent.
Received Message	A counter that increments each time a frame is received.
Error Message	An error marked from the slave or the response timeout.

Interpreting ULP Statistics

Statistic	Description
Frames Transmitted	Number of CAN frames transmitted successfully
Frame Received	Number of CAN frames received successfully
Max Transmit Error	Maximum number of CAN transmitted errors (TEC)
Max Receive Error	Maximum number of CAN received errors (REC)
Bus off	CAN Bus off count
Max Bus off	Maximum number of bus off counts

Interpreting File System Statistics

Statistic	Description
Total Size	Total amount of the IFE disk size in kilobytes
Used Size	Total amount of used disk size on the IFE disk in kilobytes
Free Size	Total amount of unused disk space on the IFE disk in kilobytes
Bad Size	Amount of corrupted disk space on the IFE disk in kilobytes

Interpreting TCP Port Connections Statistics

Statistics	Description
Remote IP	Remote IP address
Remote Port	Remote port number
Transmitted messages	Number of messages transmitted
Received message	Number of messages received
Sent Errors	Number of error messages sent
Reset Counters	Resets the transmitted and received messages

Device Information

Device Name Configuration Procedure

Step	Action	Result
1	From the **IFE** menu bar, click **Diagnostics**.	Opens the **Diagnostics** page.
2	From the **Diagnostics** menu, in the **Product Information** submenu, click **Device Information**.	Opens the **Device Information** page.

List of Parameters in Device Information

Parameter	Description
Device name	Device name which is updated in the device name field
Product name	Name of the product
Serial number	Device serial number
Model number	Device model number
Firmware version	Current firmware version
Unique Identifier	Combination of MAC address and the time
MAC address	Unique MAC address
IPv4 address	Addressing scheme to specify the source and destination addresses
IPv6 link local address	Address used to communicate on the local network

IMU Information

Description

This page gives the information about the devices which are connected to the IFE in ULP port. The devices connected are:

- Breaker Communication Module
- Breaker Communication Module for ULP system
- Micrologic Trip Unit
- Breaker Status and Communication Module
- FDM121 display for LV circuit breaker
- IO 1
- IO 2
- Maintenance module

Read Device Registers

Description

Read device registers allows the IFE to read Modbus registers from the selected device.

Read Procedure

Step	Action	Result
1	From the **IFE** menu bar, click **Diagnostics**.	Opens the **Diagnostics** menu.
2	From the **Diagnostics** menu, in the **Device Health Check** submenu, click **Read Device Registers**.	Opens the **Read Device Registers** page.
3	From the **Device Name**, select the device.	Selects the device from the drop-down list.
4	Enter **Local** (or choose from the defined device list), **Starting Register**, and the **Number of Registers** to read.	Enters the registers to read from the specified device.
5	Select **Data** type.	Selects the appropriate data type.
6	To change how Modbus data is displayed in the **Value** column, select **Decimal**, **Hexadecimal**, **Binary**, or **ASCII**.	Selects how the data values are displayed.
7	Click **Read**.	Reads the device registered according to the selected configuration.

IFE Read Device Register Parameters

Parameter	Description	Settings
Device Name	Selects a device to read from the list of previously added devices. The slave device of a master IFE not defined in the device list can be read by entering its local ID number. **NOTE:** The slave device of a remote device not defined in the devise list cannot be read by entering its local ID number.	–
Local ID	The address (local ID) of the device that is to be read.	1
Starting Register	Register number in decimal.	0–65535 Factory setting: 1000
Number of Registers	The number of registers to read.	1–125 Factory setting: 10
Register column	Lists the register numbers in decimal.	–
Value column	Lists the data stored for a register. Values retrieved depend on the device connected to the IFE. Refer to the documentation for the connected device for more information about stored register values.	–
Data type	Lists the data types available for the device.	• **Holding Registers** (Factory setting) • **Input Registers** • **Input Coils** • **Output Coils**
Decimal, Hexadecimal, Binary, or ASCII options	Select an option to specify how the value column data is displayed.	**Decimal** (Factory setting)

Communication Check

Automated Communication Check

While browsing the real-time data views, the IFE has an automated communication check that runs every 15 minutes by default. To change the timing, refer to Preferences *(see page 66)*. This check verifies the communication health of all the devices configured on the IFE, and attempts to re-establish the communication to any device marked out of service within the current browser session.

Manual Communication Check

In certain cases, there is no need to wait for the automated communications check interval and need to force the check to run manually.

Step	Action	Result
1	From the **IFE** menu bar, click **Diagnostics**.	Opens the **Diagnostics** menu.
2	From the **Diagnostics** menu, in the **Device Health Check** submenu, click **Communication Check**.	Opens the **Communication Check** page.
3	Click **Check Device Status**.	Runs a communications check. The communicating device displays: ● **Passed** in the **Comms** column. ● **In Service** in the **Status** column. A device that is not communicating display: ● **Failed** in the **Comms** column. ● **Out of Service** in the **Status** column if it has failed multiple times.

IO Module

Description

This page shows the IO module input/output configuration. It displays six digital inputs, three digital outputs, and one analog input. The IO application control is possible only when the IO module is connected to a circuit breaker.

The table shows the steps to access the **IO Readings** page:

Step	Action	Result
1	From the **IFE** menu bar, click **Diagnostics**.	Opens the **Diagnostics** page.
2	From the **Diagnostics** menu, select a device from **IO Readings** submenu.	Opens the **IO Readings** page for the selected device.

List of Parameters in IO Module

Parameter	Description	Setting
Inputs	Displays the 6 digital inputs configured in the IO module.	–
Outputs	Displays the 3 digital outputs configured in the IO module.	–
Analog Inputs	Displays the analog input assigned in the IO module.	–
Label	Displays the cradle positions of digital input 1, digital input 2, and digital input 3 **NOTE:** It is valid for predefined application 1 and 3 only.	• Cradle connected position contact (CE) • Cradle disconnected position contact (CD) • Cradle test position contact (CT)
Value	Displays the value of the 6 digital inputs and 3 digital outputs	• 1 • 0
Force/Unforce	Displays the 6 digital inputs and 3 digital outputs are forced or unforced	• **UNFORCED** • **FORCED**

Section 2.6
IFE Web Server - Maintenance Pages

What Is in This Section?

This section contains the following topics:

Maintenance Log

Description

The maintenance log provides a way to document maintenance performed on the IFE, the connected equipment, or the system of which, the IFE is a part. Each entry is recorded with the date and time the entry was made, and the name of the user who made it.

Maintenance Log Setting Procedure

Step	Action	Result
1	From the **IFE** menu bar, click **Maintenance**.	Opens the **Maintenance** menu.
2	From the **Maintenance** menu, in the **General** submenu, click **Maintenance Log**.	Open the **Maintenance Log** page.
3	To add a new log entry, click **Add Log Entry**. Enter the maintenance text details in **Entry Detail** text box and click **Apply**.	Opens the **Add Log Entry** page and allows you to enter the maintenance details.
4	Select the check box next to the entry to be deleted. Click **Delete Entries**.	Deletes the selected entry.
5	Click **Delete Log** to delete all the entries in the log.	Clears the maintenance log.

Maintenance Counters

Description

This page provides the maintenance counter information for the selected device. The page displays the information about the circuit breaker operation counters, contact wear counters, and the cradle counters.

Viewing Maintenance Counters

Step	Action	Result
1	From the **IFE** menu, click **Maintenance**.	Opens the **Maintenance** page.
2	From the **Maintenance** menu, click **Maintenance Counters**.	Opens the **Maintenance Counters** page.
3	Select the device from the device list. **NOTE:** This feature is available for circuit breakers only.	Displays the information about the circuit breaker operation counters, contact wear counters, and the cradle counters.

Restore the Smartlink's

Description

This page allows you to move the configuration settings from the IFE to the Smartlink device. The page displays the information about the device name, device type, and device status. The **Restore** submenu is available only if the Smartlink devices and the IFE firmware versions are equal or greater than the versions listed in the system compatibility table for SmartPanel V1.1. For more details, refer firmware update *(see page 29)*.

Restore Page Parameters

Parameter	Description	Settings
Check box	Allows you to select the desired device to shore the configuration in the Smartlink device.	• Selected • Cleared **NOTE:** The check box is unavailable if the device is not connected or the device has incompatible firmware version
Remote Gateway Name	Displays the name of the remote gateway device.	–
Name	Displays the name of the device entered in the device list.	–
Device Type	Displays the device type selected for the device in the device list.	–
Status	Displays the status of the device to restore the configuration in the Smartlink device.	• **OK** • **Not OK : Incompatible version** • **Not OK : Communication Failure**
Restore	Allows you to store the configuration in the Smartlink devices.	–

Restoring the Smartlink Device Configuration

Step	Action	Result
1	From the IFE menu bar, click **Maintenance**.	Opens the **Maintenance** menu.
2	From the **Monitoring** menu, click **Restore the Smartlink's** submenu.	Displays the **Device to be restored** page.
3	From the **Device to be restored** page, select the devices to restore the configuration.	Selects the desired devices to restore the configuration.
4	Click **Restore**.	**Restoration Confirmation** dialog box appears.
5	Click **OK**.	Configuration is restored in Smartlink devices from IFE.

Appendices

Appendix A
Appendix A - List of IFE Supported Devices

List of IFE Supported Device Types

Description

The table below gives the list of devices that can be connected as Modbus slaves on an IFM stacked to the IFE gateway. This list of supported devices was accurate at the time this document was published. Check *www.schneider-electric.com* for updates.

Device Group	Device
Masterpact NT/NW, Compact NS, and PowerPact P- and R-frame circuit breakers with Micrologic trip units	Micrologic A
	Micrologic E
	Micrologic P
	Micrologic H
Compact NSX and PowerPact H-, J-, and L-frame circuit breakers with Micrologic trip units	Compact NSX-A
	Compact NSX-E
	PowerPact - A
	PowerPact - E
Insulation monitoring devices	Vigilohm IM20
	Vigilohm IM20-H
Power factor controller	Varlogic
Power meters	PM810
	PM820
	PM850
	PM870
	PM9C
	PM1200
	PM3250
	PM3255
	PM5320
	PM5340
	PM5350
	PM5560
	PM5561
	PM5563
	iEM3250
	iEM3255
	iEM3350
	iEM3355
Others	Acti 9 Smartlink Modbus
	Acti 9 Smartlink Ethernet

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