Enerlin'X FDM121 Front Display Module for One Circuit Breaker

User Guide

04/2018

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www.schneider-electric.com

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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, service, 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 his own expense.

About the Book

At a Glance

Document Scope

The aim of this guide is to provide installers and maintenance personnel with the information needed to set up and operate the FDM121 front display module for one circuit breaker.

Validity Note

This document is applicable to FDM121 front display module for one circuit breaker associated with circuit breakers:

- Masterpact™ NT/NW
- Compact™ NS 630–1600 A and 1600–3200 A
- Compact™ NSX 100–630 A
- PowerPact™ P- and R-frame
- PowerPact™ H-, J-, and L-frame

The information contained in this guide is likely to be updated at any time. Schneider Electric strongly recommends that you have the most recent and up-to-date version available on *www.schneider-electric.com*

Related Documents

Title of Documentation	Reference Number
Enerlin'X FDM121 Front Display Module for One Circuit Breaker - Instruction Sheet	*QGH80971*
Micrologic 5, 6, and 7 Trip Units for Compact NSX Circuit Breakers - User Guide (IEC Version)	*DOCA0141EN* *DOCA0141ES* *DOCA0141FR* *DOCA0141ZH*
Micrologic 5 and 6 Trip Units for PowerPact H-, J-, and L- Frame Circuit Breakers - User Guide (UL Version)	*48940-312-01 (EN, ES, FR)*
Micrologic A/E Trip Units - User Guide (IEC Version)	*04443724AA*
Micrologic P Trip Units - User Guide (IEC Version)	*04443726AA*
Micrologic H Trip Units - User Guide (IEC Version)	*04443728AA*
Micrologic 2.0A, 3.0A, 5.0A, and 6.0A Trip Units - Instruction Bulletin (UL Version)	*48049-136-05 (EN, ES, FR)*
Micrologic 5.0P and 6.0P Trip Units - Instruction Bulletin (UL Version)	*48049-137-05 (EN, ES, FR)*
Micrologic 5.0H and 6.0H Trip Units - Instruction Bulletin (UL Version)	*48049-330-03 (EN, ES, FR)*
ULP System for Compact and Masterpact Circuit Breakers - User Guide (IEC Version)	*DOCA0093EN* *DOCA0093ES* *DOCA0093FR* *DOCA0093ZH*
ULP System for PowerPact and Masterpact Circuit Breakers - User Guide (UL Version)	*0602IB1503 (EN)* *0602IB1504 (ES)* *0602IB1505 (FR)* *0602IB1506 (ZH)*
Enerlin'X IO Input/Output Application Module for One Circuit Breaker - User Guide (IEC Version)	*DOCA0055EN* *DOCA0055ES* *DOCA0055FR* *DOCA0055ZH*
Enerlin'X IO Input/Output Application Module for One Circuit Breaker - User Guide (UL Version)	*0613IB1317 (EN)* *0613IB1318 (ES)* *0613IB1319 (FR)* *0613IB1320 (ZH)*

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Chapter 1
FDM121 Presentation

Aim of This Chapter

What Is in This Chapter?

This chapter contains the following topics:

Introduction

Description

The FDM121 display shows the measurements, alarms, and operating assistance data from the intelligent modular unit (IMU). The FDM121 display can control the circuit breaker equipped with a motor mechanism or the pre-defined application performed by the IO module *(see page 37)*.

The FDM121 display is compatible with Masterpact NT/NW, Compact NS, Compact NSX, and PowerPact circuit breakers.

FDM121 Display Features

The main features of the FDM121 display are:

- Display interface for Compact, Masterpact, and PowerPact circuit breakers
- ULP compliant for location of the FDM121 display in switchboard
- Dual ULP interface for easy daisy chain
- Monitoring and controlling operation of circuit breakers
- Alarm LED for medium/high priority events

Intelligent Modular Unit

Definition

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).

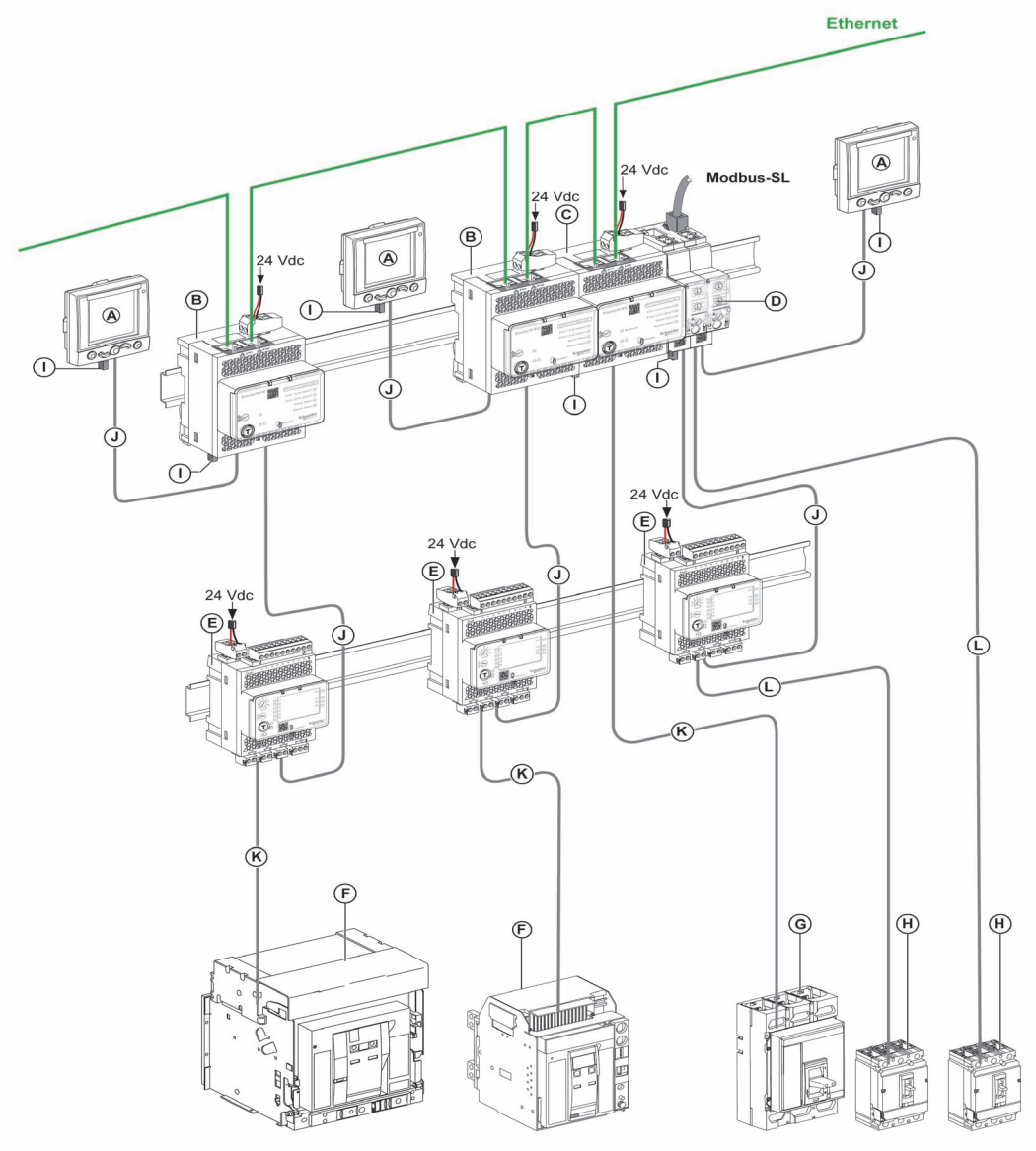
The circuit breaker with its internal communicating components (Micrologic control unit) and external ULP modules (IO module) connected to one communication interface is called an intelligent modular unit (IMU).

ULP Modules Per Circuit Breaker Range

The following table lists the compatible ULP modules for each range of circuit breakers.

ULP Module	Part Number	Masterpact NT/NW or Compact NS or PowerPact P- and R-frame with BCM ULP Module and Micrologic Control Unit	Compact NSX or PowerPact H-, J-, and L-frame with BSCM Module and/or Micrologic Trip Unit
IFE Ethernet interface for one circuit breaker	LV434001	✓	✓
IFE Ethernet switchboard server	LV434002	✓	✓
IFM Modbus-SL interface for one circuit breaker	TRV00210	✓	✓
IFM Modbus-SL interface for one circuit breaker	LV434000	✓	✓
FDM121 front display module for one circuit breaker	TRV00121	✓	✓
IO input/output application module for one circuit breaker	LV434063	✓	✓
USB maintenance interface	• STRV00911 (UL) • TRV00911 (IEC)	✓	✓

Communication Architecture



A FDM121 front display module for one circuit breaker
B IFE Ethernet interface for one circuit breaker
C IFE Ethernet switchboard server
D IFM Modbus-SL interface for one circuit breaker
E IO input/output application module for one circuit breaker
F Masterpact NT/NW circuit breaker
G Compact NS, PowerPact P- or R-frame circuit breaker
H Compact NSX, PowerPact H-, J-, or L-frame circuit breaker
I ULP line termination
J ULP cord
K Circuit breaker BCM ULP cord
L NSX cord

Component Part Numbers

The following 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 one circuit breaker	With 5-pin connector	• STRV00210 (UL) • TRV00210 (IEC)
IFM Modbus-SL interface for one circuit breaker	With RJ45 port	LV434000
IFE Ethernet interface for one circuit breaker	–	LV434001
IFE Ethernet switchboard server	–	LV434002
Stacking accessory	Ten stacking accessories	TRV00217
BCM ULP circuit breaker communication module	–	33106
BSCM circuit breaker status control module	–	LV434205
IO input/output application module for one circuit breaker	–	LV434063
FDM121 front display module for one circuit breaker	–	• STRV00121 (UL) • TRV00121 (IEC)
Surface-mounting accessory	–	TRV00128
USB maintenance interface	–	• STRV00911 (UL) • TRV00911 (IEC)
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 BCM 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), ten cords	TRV00803
	L = 0.6 m (1.97 ft), ten cords	TRV00806
	L = 1 m (3.28 ft), five cords	TRV00810
	L = 2 m (6.56 ft), five cords	TRV00820
	L = 3 m (9.84 ft), five cords	TRV00830
	L = 5 m (16.40 ft), five cords	TRV00850
RJ45 female/female connector	Ten RJ45 female/female connectors	TRV00870
ULP line termination	Ten ULP line terminations	TRV00880
Two-wire RS 485 isolated repeater module	–	TRV00211
Modbus line termination	Two Modbus cable terminations with impedance of 120 Ω + 1 nF	VW3A8306DRC
Modbus cable for IFM interface with 5-pin connector	Belden: 7 mm (0.27 in.) diameter shielded cable with two twisted pairs	3084A
	Belden: 9.6 mm (0.38 in.) diameter (recommended) shielded cable with two twisted pairs	7895A
	Cable with two twisted pairs without shielding drain wire	50965
RJ45 male/male Modbus-SL cable	L = 0.3 m (0.98 ft)	VW3A8306R03
	L = 1 m (3.28 ft)	VW3A8306R10
	L = 3 m (9.84 ft)	VW3A8306R30
T-junction RJ45 Modbus	L = 0.3 m (0.98 ft)	VW3A8306TF03
	L = 1 m (3.28 ft)	VW3A8306TF10

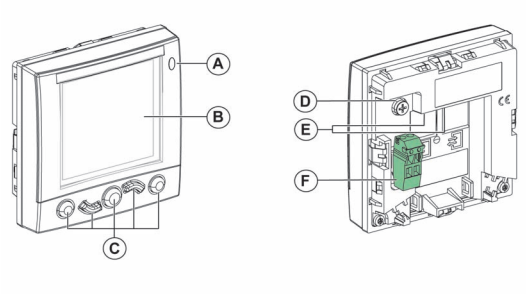
Product	Description	Part Number
24 Vdc power supply	24/30 Vdc-24 Vdc-1 A-overvoltage category IV	• 685823 (UL) • 54440 (IEC)
	48/60 Vdc-24 Vdc-1 A-overvoltage category IV	• 685824 (UL) • 54441 (IEC)
	100/125 Vdc-24 Vdc-1 A-overvoltage category IV	• 685825 (UL) • 54442 (IEC)
	110/130 Vac-24 Vdc-1 A-overvoltage category IV	• 685826 (UL) • 54443 (IEC)
	200/240 Vac-24 Vdc-1 A-overvoltage category IV	• 685827 (UL) • 54444 (IEC)
	380/415 Vac-24 Vdc-1 A-overvoltage category IV	• 685829 (UL) • 54445 (IEC)
	100/500 Vac-24 Vdc-3 A-overvoltage category II	ABL8RPS24030

Remote Controller

A remote controller is a device that is able to communicate with an IMU using a communication interface, such as the IFE Ethernet interface. For example, FDM128 Ethernet display for eight devices, supervisor, PLC, BMS, SCADA system, and so on, are remote controllers.

Hardware Description

Description



A Alarm indicator LED
B LCD screen
C Navigation keys
D Functional ground
E 2 RJ45 ULP ports
F 24 Vdc power supply terminal block

Alarm Indicator LED

The orange alarm indicator LED alerts the user when a new high-priority or medium-priority alarm is detected in the IMU. It also indicates that one of the ULP modules of the IMU is in degraded mode or off.

Alarm indicator LED status	Meaning
Steady OFF	Nominal operation (no high-priority or medium-priority alarm detected, no module in degraded mode or off)
Blinking	• At least one high-priority alarm is present in the **Event Log** list and has not been acknowledged by the user. • An IMU module is off. The LED goes off after acknowledgment on the non-operational module or when the module concerned is no longer off.
Steady ON	• At least one medium-priority alarm is present in the **Event Log** list and there is no high-priority alarm. • An IMU module is in degraded mode. The LED goes off after acknowledgment on the degraded module or when the module concerned is no longer degraded.

For more information on the management of events and alarms, refer to the Alarms menu *(see page 40)*.

Functional Ground

In an environment with a high level of electromagnetic disturbance, connect the FDM121 display functional ground to the local machine ground in the switchboard by using a grounding strip.

24 Vdc Power Supply

NOTICE

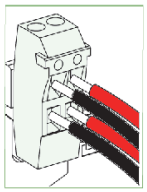
HAZARD OF EQUIPMENT DAMAGE

It is recommended to use an UL listed/UL recognized limited voltage/limited current or a class 2 power supply with 24 Vdc, 3 A maximum. For more information, refer to the *ULP System User Guides* *(see page 7)*.

Failure to follow these instructions can result in equipment damage.

The FDM121 display is supplied either through the ULP cables or by direct connection of the power supply to the FDM121 power supply terminal block:

- For a communicating architecture, connect the 24 Vdc power supply to the connector on the IFM or IFE communication interface. The communication interface powers the other modules on the IMU through the ULP cables.
  In this architecture, the FDM121 power supply terminal block can be removed to reduce the dimensions.
- For a standalone architecture, connect the 24 Vdc power supply to the FDM121 power supply terminal block. The FDM121 display powers the other modules on the IMU through the ULP cables.

Power supply terminal block	Wire	Color	Description	Cross-section	Stripped length
		Black	0 V	0.2–1.5 mm^2 (24–16 AWG)	7 mm (0.28 in)
		Red	24 Vdc	0.2–1.5 mm^2 (24–16 AWG)	7 mm (0.28 in)

The FDM121 power supply terminal block has two points per terminal to simplify, if necessary, distribution of the power supply to other devices in the switchboard.

ULP Connection

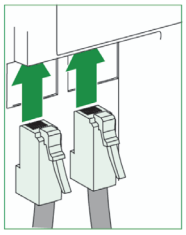
NOTICE

HAZARD OF EQUIPMENT DAMAGE

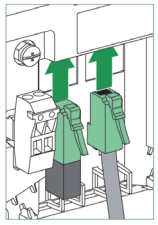
- The FDM121 RJ45 ports are for ULP modules only.
- Any other use can damage the FDM121 display or the device connected to it.
- To check if a ULP module is compatible with the FDM121 RJ45 ports, refer to the *ULP System User Guides* *(see page 7)*.

Failure to follow these instructions can result in equipment damage.

Use the two RJ45 ULP ports on the FDM121 display to connect it to the IMU. Both ULP ports are identical and in parallel, allowing the ULP modules of the IMU to be connected in any order.



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



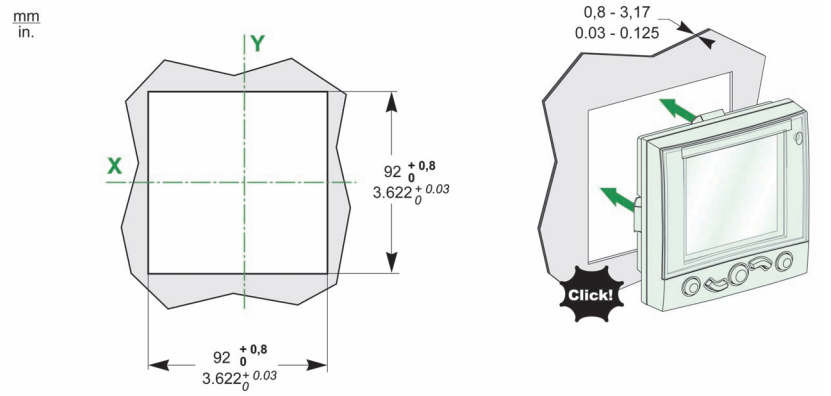
Mounting

There are two possible mounting configurations for the FDM121 display:

- Mounting in a door cut-out secure with a clip.
- Retrofit mounting through drill holes and secured with a surface-mounted accessory.

Door Cut-Out Mounting

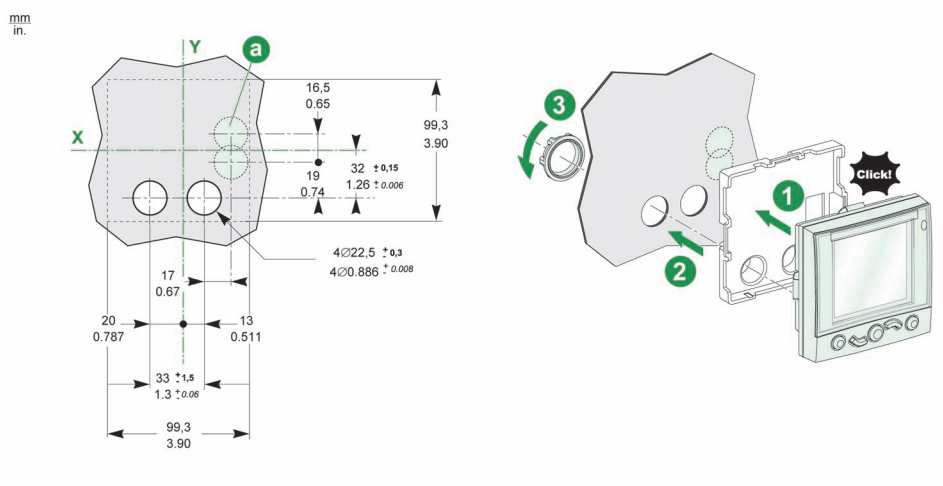
Mount the FDM121 display by cutting a standard 92 x 92 mm (3.622 x 3.622 in) cut-out on the door and pushing FDM121 display through the hole until secured by clips.



Hole Mounting

Mount the FDM121 display by drilling two holes 22.5 mm (0.89 in) in diameter and securing the FDM121 display by using a surface-mounting accessory and a locking nut.

If the FDM121 power supply terminal block is used to power the IMUs, a third cut-out made up of two drill holes 22.5 mm (0.89 in) in diameter is needed.



Ecoreach Software

Overview

Ecoreach software helps you to manage a project as part of testing, commissioning, and maintenance phases of the project life cycle. The innovative features in it provide simple ways to configure, test, and commission the smart electrical devices.

Ecoreach software automatically discovers the smart devices and allows you to add the devices for an easy configuration. You can generate comprehensive reports as part of Factory Acceptance Test and Site Acceptance Test to replace your heavy manual work. Additionally, when the panels are under operation, any change of settings made can be easily identified by a yellow highlighter. This indicates the difference between the project and device values, and hence provides a system consistency during the operation and maintenance phase.

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

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

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

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

Key Features

Ecoreach software performs the following actions for the supported devices and modules:

- Create projects by device discovery
- Save the project in the Ecoreach cloud for reference
- Upload settings to the device and download settings from the device
- Compare the settings between the project and the device
- Perform control actions in a secured way
- Generate and print the device settings report
- Perform a communication wiring test on the entire project and generate and print test report
- View the communication architecture between the devices in a graphical representation
- View the measurements, logs, and maintenance information
- Export Waveform Capture (WFC)
- View the status of device and IO module
- View the alarm details
- Buy, install, remove, or retrieve the Digital Modules
- Check the system firmware compatibility status
- Upgrade to the latest device firmware
- Perform force trip and automatic trip curve tests

Technical Characteristics

Environmental Characteristics

Characteristics		Value
Conforming to standards		• IACS E10 • EN 61326-1 • CSA C22.2 • IEC/UL 61010-2-201 • IEC 61000-6-2 Ed.2
Certification		• CE and C-Tick marking
		• UL • CSA
Ambient temperature	Storage	-40 °C to +85 °C (104–185 °F)
	Operation	-10 °C to +55 °C (14–131 °F) (on the front panel)
Relative humidity	Conforming to IEC/EN 60068-2-78	Four days, 40 °C (104 °F), 93% RH, energized
Protective treatment	Conforming to IEC/EN 60068-2-30	Six cycles of 24 hours, 25/55 °C (77/131°F), 95% RH, energized
Pollution		3
Corrosive atmosphere	Conforming to IEC 60068-2-60	Four gases (H_2S, SO_2, NO_2, Cl_2)
Level of pollution	Access to hazardous parts and water penetration	IP53 (splashing outside the protective cover)
	Conforming to IEC/EN 60947-1 and IEC/EN 60529	IP2x (connectors)
	Conforming to IEC 62262/EN 50102	IK05 (external mechanical impacts)
Flame resistance	Conforming to IEC/EN 60947-1 and IEC/EN 60695-2-11	• 650 °C (1,202 °F) 30 s/30 s on de-energized insulating parts • 960 °C (1,760 °F) 30 s/30 s on de-energized insulating parts
	Conforming to UL94	V0

Mechanical Characteristics

Characteristics		Value
Degree of protection of the installed module		• Part projecting beyond the escutcheon: IP4x • Other module parts: IP3x • Connectors: IP2x
Shock resistance	Conforming to NF EN 22248 (free fall, in packaging)	H = 90 cm (35.4 in)
	Conforming to IEC 60068-2-27	15 g (0.53 oz)/11 ms 1/2 sinusoidal
Resistance to sinusoidal vibration	Conforming to IEC/EN 60068-2-6	1 g (0.035 oz)/5-150 Hz

Electrical Characteristics

Characteristics		Value
Power supply		24 Vdc, -20%/+10% (19.2–26.4 Vdc)
Consumption	Typical	21 mA/24 Vdc at 20 °C (68 °F)
	Maximum	30 mA/19.2 Vdc at 60 °C (140 °F)
Resistance to electromagnetic discharges	Conforming to IEC/EN 61000-4-2	• 4 kV (direct) • 8 kV (air)
Immunity to radiated electromagnetic interference	Conforming to IEC/EN 61000-4-3	10 V/m
Immunity to electrical fast transients/burst	Conforming to IEC/EN 61000-4-4	• 2 kV (power) • 8 kV (signal)
Immunity to radiated fields	Conforming to IEC/EN 61000-4-6	10 V
Immunity to surges	Conforming to IEC/EN 61000-4-5	

NOTE: 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. For more information, refer to the *ULP System User Guides* *(see page 7)*.

Physical Characteristics

Characteristics		Value
Dimensions (W x D x H)		• Without power supply terminal block: 96 x 96 x 33.1 mm (3.8 x 3.8 x 1.3 in) • With power supply terminal block: 96 x 96 x 43.2 mm (3.8 x 3.8 x 1.7 in)
Weight		0.2 kg (7.06 oz)
Mounting		• Flush-mounted • Surface-mounted, with surface-mounting accessory
Display	Screen	128 x 128 pixels
	Viewing angle	• Horizontal: ± 30° • Vertical: ± 60°

Firmware Upgrade

Description

The firmware of FDM121 display can be upgraded using the Ecoreach software *(see page 18)*. It is recommended to use the Ecoreach software for all firmware upgrades. Ecoreach provides a one click update option for firmware upgrade.

From Smart Panels 1.3, the firmware for each FDM121 display is upgraded in a single operation through Ecoreach software.

NOTE:

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

Firmware Compatibility

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:

Product	Part Number	Smart Panels 1.0 Firmware Versions	Smart Panels 1.1 Firmware Versions	Smart Panels 1.2 Firmware Versions	Smart Panels 1.3 Firmware Versions	Smart Panels 1.4 Firmware Versions
IO module	LV434063	V2.1.4	V2.1.4	V2.1.4	V3.2.2	V3.2.9
IFE interface	LV434001	–	–	–	V3.5.3	V3.6.11
IFE server	LV434002	–	–	–	V3.5.3	V3.6.11
IFE interface	LV434010	Firmware V1.8.4 Webpage V1.8.9	Firmware V1.9.8 Webpage V1.9.9	Firmware V1.10.18 Webpage V1.10.18	V3.5.3	V3.6.11
IFE server	LV434011	Firmware V1.8.4 Webpage V1.8.9	Firmware V1.9.8 Webpage V1.9.9	Firmware V1.10.18 Webpage V1.10.18	V3.5.3	V3.6.11
IFM interface	LV434000	–	–	–	–	V3.0.16
IFM interface	TRV00210	V2.2.7	V2.2.7	V2.2.9	V2.2.11	V2.2.11
FDM121 display	TRV00121	V2.3.5	V2.3.5	V2.3.5	V2.3.5	V2.3.5
FDM128 display	LV434128	V5.5.6	V6.1.1	V6.2.2	V6.3.4	V6.3.10
Com'X 200/210	EBX200 EBX210	V1.1.20	V1.3.5	V2.2.1	V2.2.1	V3.6.3
Com'X 510	EBX510	–	–	V3.0.6	V3.5.24	V3.6.3
BCM ULP module	33106	V4.0.9 Product data code greater than or equal to 14251	V4.0.9 Product data code greater than or equal to 14251	V4.1.4 Product data code greater than or equal to 14251	V4.1.5 Product data code greater than or equal to 14251	V4.1.7 Product data code greater than or equal to 14251
BSCM module	Product data code greater than or equal to 3N141810186	V2.2.7	V2.2.7	V2.2.7	V2.2.7	V2.2.7
Micrologic trip unit for Masterpact NT/NW and circuit breakers	–	V8282	V8282	V8282	V8282	V8282
Acti9 Smartlink Modbus	A9XMSB11	V1.1.4	V1.2.1	V1.3.5	V1.3.5	V1.3.7

Product	Part Number	Smart Panels 1.0 Firmware Versions	Smart Panels 1.1 Firmware Versions	Smart Panels 1.2 Firmware Versions	Smart Panels 1.3 Firmware Versions	Smart Panels 1.4 Firmware Versions
Acti9 Smartlink Ethernet	A9XMEA08	V2.1.3	V2.2.7	Firmware V2.5.5 Webpage V2.5.5	V2.5.5	V2.5.5
Acti9 Smartlink SI B	A9XMZA08	–	–	–	V1.0.6	V1.2.8
Acti9 Smartlink SI D	A9XMWA20	–	–	–	–	V1.2.8
Ecoreach	–	–	–	V2.0.5.5008	V2.3	V2.5

For example, the following device updates require a mandatory upgrade of device firmware between Smart Panels 1.0 and Smart Panels 1.1:

- FDM128 V6.1.1 requires Acti9 Smartlink Modbus to be updated to V1.2.1
- FDM128 V6.1.1 requires Acti9 Smartlink Ethernet to be updated to V2.2.7
- IFE V1.9.8 requires Acti9 Smartlink Ethernet to be updated to V2.2.7
- IFE V1.9.8 requires Acti9 Smartlink Modbus to be updated to V1.2.1
- Acti9 Smartlink Ethernet V2.2.7 requires Acti9 Smartlink Modbus to be updated to V1.2.1

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 status is used for Compact NSX, PowerPact H-, J-, and L-frame circuit breakers, and Masterpact devices. As a result, the devices that are not part of these product lines (for example, FDM128 display, Acti9 Smartlink Ethernet, Acti9 Smartlink Modbus, Com'X, and power meters) need to be manually verified with System Compatibility table.

Updating the Firmware 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*.

Schneider Electric Green Premium™ Ecolabel

Description

Green Premium by Schneider Electric is a label that allows you to develop and promote an environmental policy while preserving your business efficiency. This ecolabel is compliant with up-to-date environmental regulations.

Accessing Green Premium

Green Premium data on labeled products can be accessed online through any of the following ways:

- By navigating through the Schneider Electric website.
- By flashing the QR code displayed in the following image:

Checking Products Through the Schneider Electric Website

To check the environmental criteria of a product using a PC or smartphone, follow these steps:

Step	Action
1	From *www.schneider-electric.com*, select **Support → Additional Links → Green Premium Eco Label**.
2	Click **Find Green Premium Products** to open the search tool webpage.
3	Fill in the fields: ● Enter the commercial reference or product range of the product to search for. ● Optional: Enter the manufacturing date code of the product with format **YYWW**. By default, this field is filled with the date of the search.
4	To search for several products simultaneously, click the **Add product** button, and then fill in the fields.
5	Click **Check product(s)** to generate a report of the environmental criteria available for the products with the entered commercial references.

Environmental Criteria

The Green Premium ecolabel provides documentation on the following criteria about the environmental impact of the products:

- RoHs: European Union Restriction of Hazardous Substances (RoHS) directive.
- REACh: European Union Registration, Evaluation, Authorization, and Restriction of Chemicals regulation.
- PEP: Product Environmental Profile.
- EoLI: End of Life Instructions.

RoHs

Schneider Electric products are subject to RoHS requirements at a worldwide level, even for the many products that are not required to comply with the terms of the regulation. Compliance certificates are available for products that fulfill the criteria of this European initiative, which aims to eliminate hazardous substances.

REACh

Schneider Electric applies the strict REACh regulation on its products at a worldwide level, and discloses extensive information concerning the presence of SVHC (Substances of Very High Concern) in all of these products.

PEP

Schneider Electric publishes complete set of environmental data, including carbon footprint and energy consumption data for each of the life cycle phases on all of its products, in compliance with the ISO 14025 PEP ecopassport program. PEP is especially useful for monitoring, controlling, saving energy, and/or reducing carbon emissions.

EoLI

These instructions provide:

- Recyclability rates for Schneider Electric products.
- Guidance to mitigate personnel hazards during the dismantling of products and before recycling operations.
- Part identification for recycling or for selective treatment, to mitigate environmental hazards/incompatibility with standard recycling processes.

Chapter 2
FDM121 Use

Aim of this Chapter

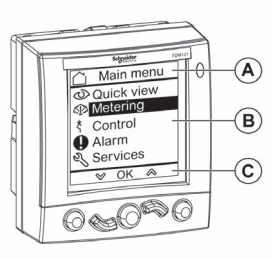
What Is in This Chapter?

This chapter contains the following topics:

Operation

Screen

The screen displays the information needed to operate the ULP modules.

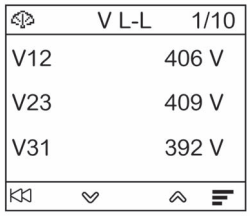


A Identification zone
B Information zone
C Navigation zone

The FDM121 display is divided in three zones:

- The identification zone identifies the current screen (screen title) and notifies the user when an alarm trips.
- The information zone displays specific data on the screen (such as measurements, alarms, and settings).
- The navigation zone indicates which navigation options are available by using the keys, depending on the menu displayed.

The table below shows an example of the display:

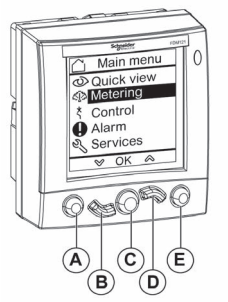
Example	Description
	• Identification zone ❍ The icon indicates that you are in the **Metering** menu. ❍ The measurements displayed are voltages. ❍ The **V L-L V L-N** submenu in the **Metering** menu consists of 10 screens. The **V L-L** screen displayed is number 1. • Information zone ❍ The voltage values **V12**, **V23**, and **V31** are displayed. • Navigation zone ❍ The navigation options for the **V L-L** screen are displayed.

The FDM121 display also has white backlighting:

- Pressing a navigation key turns the backlighting on for 3 minutes.
- The backlighting blinks every 250 ms when a prohibited ULP modular unit configuration is detected (for example, if two identical modules are part of the same IMU).
- The backlighting blinks once per second over a period of 15 seconds when the test mode is active. Push the test button located on one of the ULP modules connected to the FDM121 display.

Navigation Keys

There are five keys which provide navigation:



A Back/Home key
B Down key
C Confirm/clear/set-up key
D Up key
E Context-sensitive key

The navigation zone indicates which navigation options are available by using the keys, depending on the menu displayed.

The table below lists the navigation options available from the five keys on the FDM121 display. When no icon is displayed in the zone corresponding to a key, this key is inactive for the menu displayed.

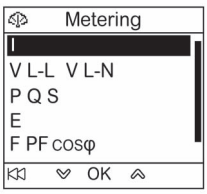
Key	Icon	Description
Back/Home		• Exits a menu or a submenu and returns to the previous menu. • Used to return to the **Main menu** from the **Quick view** menu displayed when the FDM121 display is powered up.
Down		Used to point to the desired measurements or moves on to the next screen.
Confirm	**OK**	• Confirms selection of a menu option. • Clears a new event.
Set-up		Used to access settings: • FDM121 time and date • Temperature or volume unit • IFE IP address
Up		Used to point to the desired measurements or to go back to the previous screen.
Context-sensitive		Displays measurements in bar graph mode.
		Displays measurements in dial graph mode.
	888	Displays measurements in numeric mode.
		Used to display detailed information for an event in the event log or for an alarm in the alarm history.
		Used to return to the event log or alarm history.
		Used to change the selected field in edition mode.

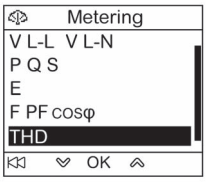
Scrolling

The screen can display a maximum of five visible menu items. When a list includes more than five items, a scroll bar appears on the right side of the screen.

Use the and keys to scroll through a menu item list. The position of the scroll bar indicates the relative position of the highlighted item in the list.

Example: The **Metering** menu is displayed on two screens.





Password Management

General Description

Four passwords are defined, each one corresponding to a level.

A level is assigned to a role:
- Levels 1, 2, and 3 are used for general-purpose roles, like an operator role.
- Level 4 is the administrator level. The administrator level is required to write the settings to the ULP modules using the Ecoreach software *(see page 18)*.

When an FDM121 command is protected by password, the user must enter the password of the right level in a dedicated window.

Initial Passwords

The password values set in factory are:

Password level	Factory setting
Level 1	'1111' = 0x31313131
Level 2	'2222' = 0x32323232
Level 3	'3333' = 0x33333333
Level 4 (administrator level)	'0000' = 0x30303030

Password Modification

Passwords are modified with the Ecoreach software *(see page 18)*.

Passwords are composed of exactly four ASCII characters. They are case-sensitive and the allowed characters are:
- digits from 0 to 9
- letters from a to z
- letters from A to Z

Password Reset

If the initial passwords have been changed, three cases require to reset the passwords to their factory settings with the Ecoreach software *(see page 18)*:
- A password is forgotten.
- A new module is added in the IMU: for example, an FDM121 display.
- An inoperative module is replaced in the IMU.

Resetting passwords with the Ecoreach software *(see page 18)* is only available with the **Schneider service** user profile.

Password Screen

The **Password** screen displays when a password protected command is to be accessed and the default level 3 password has been modified in the controlled device.

NOTE: The FDM121 display supports only level 3 password.

Entering a Password

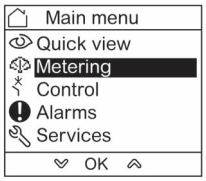
The procedure for entering a password is as follows.

Step	Action
1	Use the ⩔ and ⩓ keys to increase or decrease the value of the digit. It automatically rolls over from numeric to alphabetical characters.
2	Use the ▷ key to move to the next digit. Pressing this key on the fourth digit loops you back to the first digit.
3	Use the **OK** key to confirm the password. If the password is correct, the given command is sent. Otherwise an error screen is displayed.
4	Use the ⏮ key to return to the previous menu without sending any command.

Main Menu

Presentation

The **Main menu** offers five menus for monitoring and using the ULP system intelligent modular units (IMU).



The description and content of the menus depend on the IMU. For more information, refer to the documentation for the device connected to the FDM121 display.

For example, if you have an FDM121 display connected to a Compact NSX, refer to the *Micrologic 5, 6, and 7 Trip Units User Guide* *(see page 7)*.

The menus available in the **Main menu** are as follows:

Menu	Description
Quick view	**Quick view** menu *(see page 31)* The **Quick view** menu provides quick access to the information essential for operation.
Metering	**Metering** menu *(see page 33)* The **Metering** menu displays the data made available by the Micrologic trip unit: ● Current, voltage, power, energy, power factor, frequency, and harmonic distortion measurements ● Minimum and maximum metering values
Control	**Control** menu *(see page 35)* The **Control** menu is used to control a circuit breaker equipped with a communicating motor mechanism from the FDM121 display. The proposed commands are: ● Circuit breaker opening ● Circuit breaker closing with or without self-timer ● Circuit breaker reset after trip ● IO module lighting control ● IO module load control
Alarms	**Alarms** menu *(see page 40)* The **Alarms** menu is used to display: ● The event log file for the last 40 events and alarms detected by the devices connected to the FDM121 display since the last power-up of the FDM121 display. ● The alarm history (for example, alarms, trips, maintenance, and control status) for the device connected to the FDM121 display.
Services	**Services** menu *(see page 44)* The **Services** menu contains all the FDM121 display setup functions and the operating assistance information: ● Reset (peak demand values, energy meters, minimum and maximum values) ● Setup (display module date and time, parameters, display settings, date and time, units) ● Maintenance (operation counters, load profile) ● Product version (identification of the intelligent modular units) ● Language (choice of language display) ● Monitoring and controlling the IO modules (IO status, forcing command, pulse counters, and temperature) ● Setup of the IP address of the IFE Ethernet interface for one circuit breaker

Navigation

Navigation within the **Main menu** is as follows:

- Use the ^ and v keys to select one of the menus.
- Use the **OK** key to confirm selection of a menu.

Quick View Menu

Presentation

The **Quick view** menu presents information that is essential for operating the device connected to the FDM121 display, divided into a number of screens.

The **Quick view** menu is displayed by default when the FDM121 display is powered up.

The number of available screens and their content depend on the device connected to the FDM121 display. The behavior is the same for Compact, PowerPact, and Masterpact circuit breakers.

For example, with Compact NSX circuit breakers, they depend on:
- The type of Micrologic trip unit (A or E)
- The number of circuit breaker poles (3-pole or 4-pole)
- The presence of options (ENVT or ENCT)

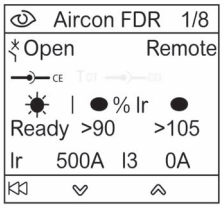
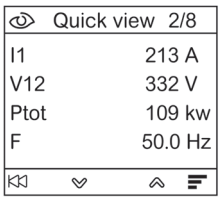
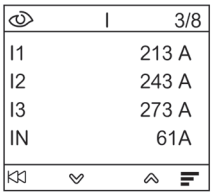
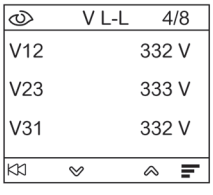
The screen number and the number of available screens are indicated in the upper right of the display.

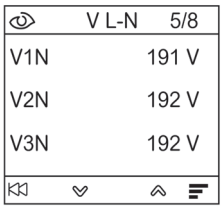
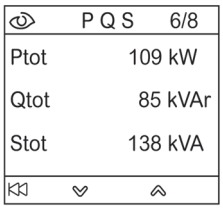
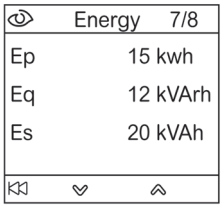
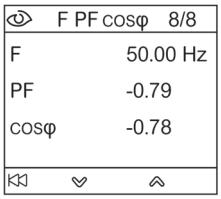
Navigation

Navigation within the **Quick view** menu is as follows:
- Use the ⩓ and ⩔ keys to go from one screen to another.
- Use the ⊠ key to return to **Main menu**.
- Use the ☰ , ◿ , and 888 keys to modify how measurements are displayed.

Example of Screens in the Quick View Menu

The following table shows screens 1 to 8 of the **Quick view** menu for a Compact NSX 4-pole circuit breaker equipped with a Micrologic E trip unit:

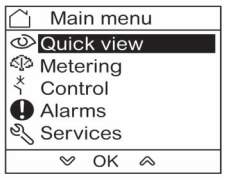
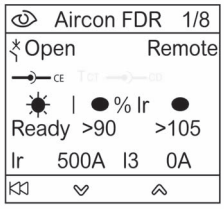
Screen	Description
	Screen 1 in the **Quick view** menu displays the following information: ● The name of the IMU (**Aircon FDR** on the screen example opposite). The name of the IMU is defined with the Ecoreach software or with the remote controller by using the communication network. It can be up to 45 characters long, but only the first 14 characters are visible on the FDM121 display. ● The open/closed/trip status of the circuit breaker if the BSCM is present (**Open** on the screen example opposite). ● The status of the LED indicators on the front of the trip unit. ● The long-time protection Ir pickup setting. ● The current intensity of the most heavily loaded phase (**I3 = 217 A** in the screen example opposite). ● The cradle status of the circuit breaker. When two IO modules are connected to the FDM121 display, the FDM121 display does not display the cradle status in case of configuration discrepancy due to cradle application configured in both the IO modules.
	Screen 2 in the **Quick view** menu displays the current, voltage, active power, and frequency: ● Phase 1 current **I1** ● Phase 1 to phase 2 voltage **V12** ● Active power total **Ptot** ● Frequency **F**
	Screen 3 in the **Quick view** menu displays the currents: ● Phase 1 current **I1** ● Phase 2 current **I2** ● Phase 3 current **I3** ● Neutral current **IN** **NOTE:** IN displays the current for neutral applicable breakers.
	Screen 4 in the **Quick view** menu displays the phase-to-phase voltages: ● Phase 1 to phase 2 voltage **V12** ● Phase 2 to phase 3 voltage **V23** ● Phase 3 to phase 1 voltage **V31**

Screen	Description
	Screen 5 in the **Quick view** menu displays the phase-to-neutral voltages: ● Phase 1 to neutral voltage **V1N** ● Phase 2 to neutral voltage **V2N** ● Phase 3 to neutral voltage **V3N**
	Screen 6 in the **Quick view** menu displays the powers: ● Active power **Ptot** in **kW** ● Reactive power **Qtot** in **kVAr** ● Apparent power **Stot** in **kVA**
	Screen 7 in the **Quick view** menu displays the energy meters: ● Active energy **Ep** in **kWh** ● Reactive energy **Eq** in **kVArh** ● Apparent energy **Es** in **kVAh**
	Screen 8 in the **Quick view** menu displays: ● The frequency **F** in **Hz** ● The power factor **PF** ● **cos ϕ**

Intelligent Modular Unit (IMU) Name

For optimum use of the electrical equipment, use the Ecoreach software *(see page 18)* or the remote controller by using the communication network to assign a name to the IMU relating to the function with which it is associated.

The procedure for displaying the IMU name is as follows:

Step	Action	Display
1	Select the **Quick view** menu in the **Main menu** by using the ^ and v keys. Confirm selection of the **Quick view** menu by pressing the **OK** key.	
2	Screen 1 in the **Quick view** menu displays the IMU name: **Aircon FDR**. The IMU name defined with Ecoreach software or the remote controller can consist of 45 characters maximum, but only the first 14 characters are visible on the FDM121 display.	

Metering Menu

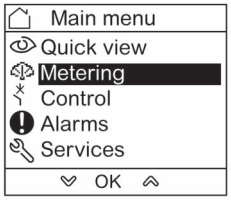
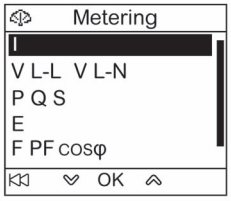
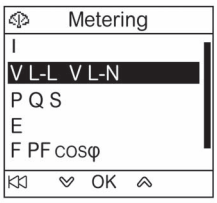
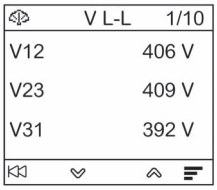
Presentation

Use the **Metering** menu to display current, voltage, energy measurements, and so on.

The full list of measurements displayed depends on the device connected to the FDM121 display.

Navigation

The procedure below describes an example of access to the **Metering** menu, the metering screens, and selection of the voltage measurements when a Compact NSX circuit breaker equipped with a Micrologic 5.2 E trip unit is connected to the FDM121 display.

Step	Action	Display
1	Select the **Metering** menu in the **Main menu** by using the ⩔ and ⩓ keys. Confirm selection of the **Metering** menu by pressing the **OK** key.	
2	The **Metering** menu is displayed on two screens. The following selections can be made in the **Metering** menu: ● Current **I** ● Voltage **V L-L V L-N** ● Power **PQS** ● Energy **E** ● Frequency **F**, power factor **PF**, and cos ϕ ● Total harmonic distortion **THD**	
3	Select, for example, the **V L-L V L-N** submenu in the **Metering** menu by using the ⩔ and ⩓ keys.	
4	Screen 1/10 in the **V L-L V L-N** submenu displays the phase-to-phase voltage values. Use the ⩔ and ⩓ keys to switch from one screen to another and display all the metering screens in the **V L-L V L-N** submenu. Use the ☰ key to modify the display mode and to switch to bar graph mode.	

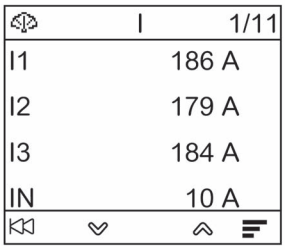
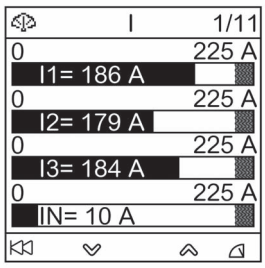
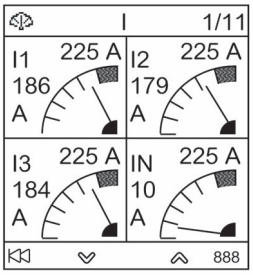
NOTE: Use the ⮌ key to return to the **Metering** menu.

Measurement Display Modes

The current, voltage, and power measurements can be displayed in three different ways, by using the context-sensitive key to switch from one display mode to another:

- The ☰ icon represents bargraph mode display.
- The ◿ icon represents dial mode display.
- The 888 icon represents numeric mode display.

The table below shows an example display for current in the three modes.

Numeric mode	Bargraph mode	Dial mode
		
Press the key to switch the display to bargraph mode.	Press the key to switch the display to dial mode.	Press the 888 key to switch the display to numeric mode.

Control Menu

Presentation

The **Control** menu is used to control from the FDM121 display:
- the circuit breaker
- the light and load application managed by the IO module

DANGER

RISK OF ELECTROCUTION, ELECTRIC ARC, OR BURNS

Do not execute any commands from the FDM121 display before returning the IMU to nominal operating mode when the FDM121 display backlighting is blinking.

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

Blinking of the FDM121 display indicates that the IMU is operating in degraded mode. It may be an architecture problem. For more information, refer to the *ULP System User Guides* *(see page 7)*.

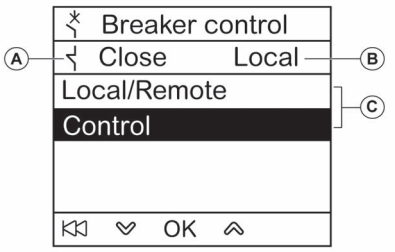
If the IMU operating in degraded mode includes an FDM121 display version lower than V2.1.3, there is a risk of controlling a device other than the one intended.

Devices Compatible with Circuit Breaker Control

The table presents the minimum hardware configuration required to control each range of circuit breakers.

Range	Minimum hardware configuration required
• Masterpact NT • Masterpact NW • Compact NS 630-1600 • PowerPact P-frame	• Fixed or withdrawable circuit breaker + BCM ULP + communicating coils MX and XF or communicating motor mechanism • Fixed or drawout switch-disconnector + BCM ULP + communicating coils MX and XF or communicating motor mechanism
• Compact NSX • PowerPact H-, J-, and L-frame	• Fixed or withdrawable circuit breaker + BSCM with firmware version 2.1.7 and above + communicating motor mechanism in automatic mode • Fixed or withdrawable switch-disconnector + BSCM with firmware version 2.1.7 and above + communicating motor mechanism in automatic mode

Breaker Control Screen



A Circuit breaker status
B Current control mode of the circuit breaker
C Selection of the breaker control commands

Circuit Breaker Status

Depending on the devices connected, the FDM121 display displays the following status of the circuit breaker:

Range	Status
• Masterpact NT • Masterpact NW • Compact NS 630-1600 • PowerPact P-frame	• **Open**: The circuit breaker is open. • **Close**: The circuit breaker is closed. • **TripSDE**: The circuit breaker is tripped on detected electrical error. • **NA**: The status of the circuit breaker is not available (no communication between the circuit breaker and the FDM121 display.
• Compact NSX • PowerPact H-, J-, and L-frame	• **Open**: The circuit breaker is open. • **Close**: The circuit breaker is closed. • **TripSDE**: The circuit breaker is tripped on detected electrical error. • **Trip**: The circuit breaker is tripped. • **NA**: The status of the circuit breaker is not available (no communication between the circuit breaker and the FDM121 display.

Circuit Breaker Control Mode Selection

The FDM121 display can select the local or remote control mode of the circuit breaker, except when an IO module configured for Breaker operation is in the IMU, or when the circuit breaker hardware configuration is not compatible.

Local and **Remote** modes are mutually exclusive.

The circuit breaker control mode selection is password protected. If the level 3 default password of the circuit breaker was modified, then a screen asking for the password is displayed *(see page 28)*.

You are not prompted to confirm the selection when selecting the circuit breaker control mode (Local/Remote).

Circuit Breaker Control Commands

The FDM121 display can control the circuit breaker only in local control mode. In remote control mode, the **Control** function is not available.

The circuit breaker control commands are password protected. If the level 3 default password of the circuit breaker was modified, then a screen asking for the password is displayed *(see page 28)*.

After selection of a command, you are prompted to confirm it.

The control commands depend on the type of circuit breaker.

Range	Control commands
• Masterpact NT • Masterpact NW • Compact NS 630-1600 • PowerPact P-frame	• **Open**: command to open the circuit breaker without delay • **Close**: command to close the circuit breaker without delay • **Close self-timer**: command to close the circuit breaker with a 15-second delay **NOTE:** No **Reset** command from the FDM121 display. It is only possible to use an electrical reset or to push the reset button on front face of the circuit breaker.
• Compact NSX • PowerPact H-, J-, and L-frame	• **Open**: command to open the circuit breaker without delay • **Close**: command to close the circuit breaker without delay • **Close self-timer**: command to close the circuit breaker with a 15-seconds delay • **Reset**: command to reset the circuit breaker after a trip.

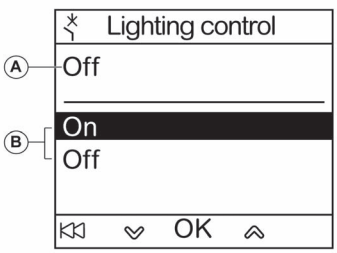
NOTE: The **Close** command and **Close self-timer** command are not allowed when the close order is inhibited.

Light and Load Control

The FDM121 display can control the light and load pre-defined application (application 4) performed by an IO module connected to the IMU.

The FDM121 display can control the light and load application only in local control mode. In remote control mode, the **Lighting control** and **Load control** functions are not available.

The **Lighting control** screen and the **Load control** screen present the same information:



A Current application status
On Lighting or load is on.
Off Lighting or load is off.
B Application control orders
On Command to switch on the light or the load.
Off Command to switch off the light or the load.

The light control and load control commands are password protected. If the level 3 default password of the IO module was modified, then a screen asking for the password is displayed *(see page 28)*.

After selection of a command, you are prompted to confirm it.

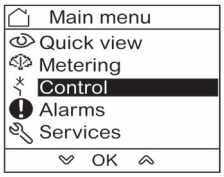
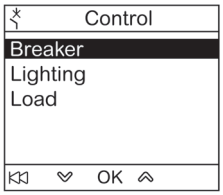
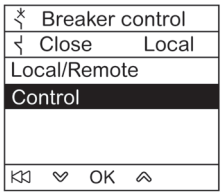
The light and load commands issued from the local FDM121 display are used as follows:

- To switch the lights on and off. The lights are controlled by an impulse relay. The switch order can be either delayed or not.
- To switch the loads on and off. The loads are controlled by a contactor. The switch order can be either delayed or not.

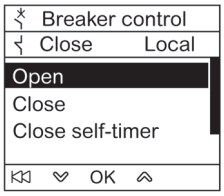
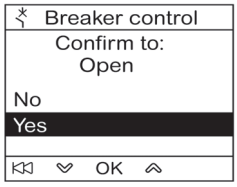
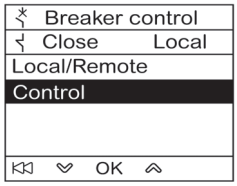
For more information, refer to the *IO Module User Guides* *(see page 7)*.

Navigation Through the Breaker Control Screens

The procedure for controlling a Masterpact NW circuit breaker in local mode is as follows:

Step	Action	Display
1	Select the **Control** menu in the **Main menu** by using the ⌄ and ⌃ keys. Confirm selection of the **Control** menu by pressing the **OK** key.	
2	Select the **Breaker** submenu in the **Control** menu by using the ⌄ and ⌃ keys. Confirm selection of the **Breaker** submenu by pressing the **OK** key.	
3	Select **Control** (1) to control the circuit breaker. Confirm your selection by pressing the **OK** key.	

(1) Submenu available only when the hardware is compatible with the function, the control mode is local, and there is no conflict on ULP bus.

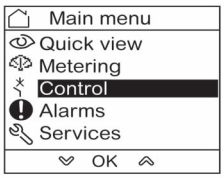
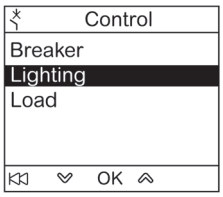
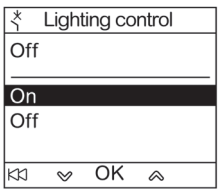
Step	Action	Display
4	Select one of the three possible actions to control the Masterpact NW circuit breaker: • **Open** • **Close** • **Close self-timer** Confirm the selected action by pressing the **OK** key. **NOTE:** Circuit breaker control commands are password protected. If the level 3 default password of the circuit breaker was modified, then a screen asking for the password is displayed *(see page 28)*.	
5	A screen confirming the action to be carried out is displayed. Select **Yes** to confirm opening the circuit breaker. **NOTE:** If you select **Close self-timer**, a 15-second timer starts before a close command is sent. Pressing the ⏮ key before the end of the countdown returns to the **Breaker control** submenu without sending any command to the circuit breaker.	
6	The new circuit breaker status is displayed on the screen.	
(1) Submenu available only when the hardware is compatible with the function, the control mode is local, and there is no conflict on ULP bus.		

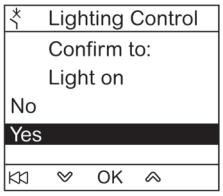
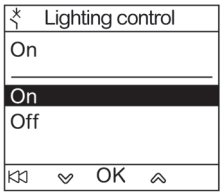
NOTE: Use the ⏮ key to return to the **Breaker control** menu.

Navigation Through the Lighting or Load Control Screens

Navigation through the **Lighting control** and **Load control** screens is similar.

The procedure for controlling the **Lighting** application is as follows:

Step	Action	Display
1	Select the **Control** menu in the **Main menu** by using the ⏷ and ⏶ keys. Confirm selection of the **Control** menu by pressing the **OK** key.	
2	Select the **Lighting** submenu (1) in the **Control** menu by using the ⏷ and ⏶ keys. Confirm selection of the submenu by pressing the **OK** key.	
3	Select **On** from the menu to turn on the light. Confirm your selection by pressing the **OK** key. **NOTE:** Light control and load control commands are password protected. If the level 3 default password of the IO module was modified, then a screen asking for the password is displayed *(see page 28)*.	
(1) Submenu available only when: • the FDM121 display is connected to an IO module configured for the pre-defined application 4 Light and load control, • the control mode is local, • there is no conflict on ULP bus.		

Step	Action	Display
4	A screen confirming the action to be carried out is displayed. Select **Yes** to confirm turning on the light.	
5	The new lighting status is displayed on the screen.	

(1) Submenu available only when:
- the FDM121 display is connected to an IO module configured for the pre-defined application 4 Light and load control,
- the control mode is local,
- there is no conflict on ULP bus.

Alarms Menu

Definitions

An event is a digital data changing state or any incident detected by the modules of the IMU. Events are time-stamped and logged in the module event history.

An alarm is a type of event that requires a specific attention from the user.

The user can associate an alarm with any measurement or event in the IMU.

Each alarm is given a pre-defined priority level:
- High priority
- Medium priority
- Low priority
- No priority

The user can set the alarm parameters and assign priorities with Ecoreach software *(see page 18)*.

For more information about alarm setup and priorities, refer to the *Micrologic Trip Units User Guides* *(see page 7)*.

Presentation

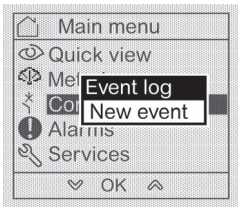
Events and alarms are displayed in the **Alarms** menu of the FDM121 display, where you have the choice between 2 submenus:
- **Event log** displays the 40 last events from the connected devices. The events are recorded by the FDM121 display. The event log file is lost in case of FDM121 power loss.
- **Alarm History** displays the alarms detected by the connected devices. They are not lost in case of FDM121 power loss. The alarms are sorted by types which availability depends on the devices connected to the FDM121 display:

Range	Alarm History Options
• Masterpact NT • Masterpact NW • Compact NS 630-1600 • PowerPact P-frame	• Trip • Alarms from IO module 1 • Alarms from IO module 2
• Compact NSX • PowerPact H-, J-, and L-frame	• Alarms • Trip • Maintenance operations • Device status and control • Alarms from IO module 1 • Alarms from IO module 2

NOTE: Events and alarms are displayed in the reverse chronological order on the **Event log** and **Alarm History** screens.

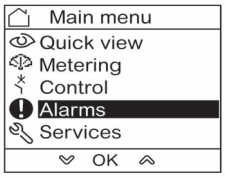
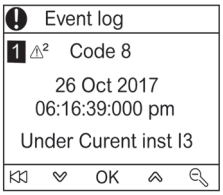
Alarm Real-Time Indication and Acknowledgment

The high-priority and medium-priority alarm are indicated in real time on the FDM121 display on a different way. They must be acknowledged also in a different way.

Priority	Indication in real time	Clearing of alarms
High	• **New Event** pop-up screen • Alarm indicator LED blinking	1 Press the **OK** key to clear the **New Event** message.  2 Select the new event in the **Event log** screen and press the **OK** key. 3 The LED turns off after every high-priority alarm has been acknowledged.
Medium	• Alarm indicator LED steady ON	1 Select the new event in the **Event log** screen and press the **OK** key. 2 The LED turns off after every medium-priority alarm has been acknowledged and no high-priority alarm is present.

Navigation Through the Event Log Screens

The procedure for navigating through the **Event log** screens is as follows:

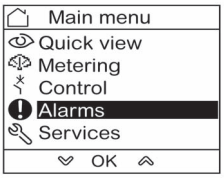
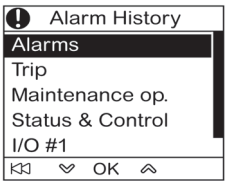
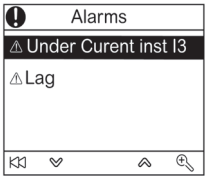
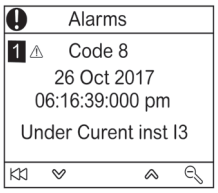
Step	Action	Display
1	Select the **Alarms** menu in the **Main menu** by using the ⌄ and ⌃ keys. Confirm selection of the **Alarms** menu by pressing the **OK** key.	
2	Select the **Event log** submenu by using the ⌄ and ⌃ keys. Confirm selection of the **Event log** submenu by pressing the **OK** key.	
3	The **Event log** screen is displayed: ● The events are listed in a reverse chronological order from which they occurred. ● The description of a new event is written in bold font. ● The alarm priority level is indicated at top right of the alert pictogram. Press the **OK** key to clear a new event: the description of the cleared events is written in normal font.	
4	Press the ⌄ and ⌃ keys to switch from one event to another. Press the 🔍 key to display detailed information about an event.	
5	Press the ⌄ and ⌃ keys to display detailed information about a previous or subsequent event in the event log. Press the 🔍 key to return to the event log.	

Pressing the ⏮ key in any **Event log** screen returns to the screen displayed before the **New event** pop-up screen has appeared.

NOTE: If no event has occurred since the FDM121 display was powered up, the **Event log** submenu displays the screen below. Press the **OK** key to return to the **Alarms** menu.

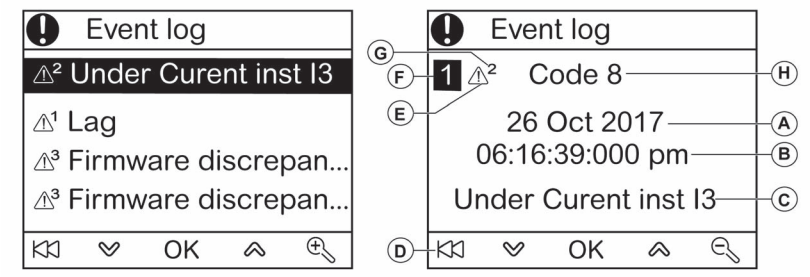
Navigation Through the Alarm History Submenu

The procedure for navigating through the **Alarm History** screens is as follows:

Step	Action	Display
1	Select the **Alarms** menu in the **Main menu** by using the ⌄ and ⌃ keys. Confirm selection of the **Alarms** menu by pressing the **OK** key.	
2	Select the **Alarm History** submenu by using the ⌄ and ⌃ keys. Confirm selection of the **Alarm History** submenu by pressing the **OK** key.	
3	Select one of the type of alarms in the **Alarm History** submenu: • **Alarms** • **Trip** • **Maintenance op.** (maintenance operations) • **Status & Control** (device status and control) • **I/O #1** • **I/O #2** **NOTE: Alarms**, **Maintenance op.**, and **Status & Control** options are available only for Compact NSX and PowerPact H-, J-, and L-frame circuit breakers. Select the **Alarms** submenu by using the ⌄ and ⌃ keys. Confirm your selection by pressing the **OK** key.	
4	The alarm history is displayed, with the alarms listed in a reverse chronological order from which they were triggered. Press the ⌄ and ⌃ keys to switch from one alarm to another. Press the 🔍+ key to display detailed information about an alarm.	
5	Press the ⌄ and ⌃ keys to display detailed information about a previous or subsequent alarm in the history. Press the 🔍− key to return to the alarm history.	

Event or Alarm Screen

Event and alarm screens are similar. The general and detailed screens are respectively as follows:



A Event or alarm occurrence date

B Event or alarm occurrence time:
- in hours and minutes in the general screen
- in hours, minutes, seconds, and milliseconds in the detailed screen

C Event or alarm name

D Key to return to the event log or alarm history

E Event or alarm type:
- ⚠ indicates the occurrence of the event or alarm
- ⚠ indicates completion of the event or alarm

F Screen number

G Alarm priority level (indicated in the event log only)

H Event or alarm code

Services Menu

Presentation

The **Services** menu provides access to the following functions:
- Reset energy meters, minimum and maximum metering values
- Date and time settings from the FDM121 display
- FDM121 display contrast and brightness settings
- Maintenance indicators (operation counters, load profile, and so on)
- IMU product identification information
- Language selection for the FDM121 screens
- Units for temperature and volume settings
- Monitoring and controlling the IO modules (status, forcing command, and counters)
- IFE IP address setting for the IFE Ethernet interface for one circuit breaker connected to FDM121 display
- Display a QR code to get device information

Availability of menu items depends on the devices connected to the FDM121 display:
- **Reset** submenu is available when a Micrologic trip unit or BCM ULP is connected.
- **Maintenance** submenu available when a Micrologic trip unit, a BSCM, or a BCM ULP is connected.
- **I/O #1** and **I/O #2** submenus are available when IO modules are connected.
- **IFE IP address** submenu is available when an IFE Ethernet interface for one circuit breaker is connected.

Settings Retained in the Event of a Power Loss

If the FDM121 power supply is lost, the FDM121 display retains the following settings:
- Language setting
- Contrast setting
- Brightness setting

If the FDM121 power supply is lost, the date and time are lost.

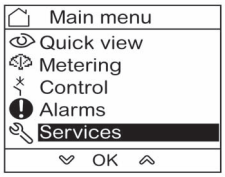
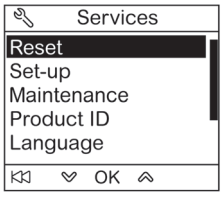
Resetting

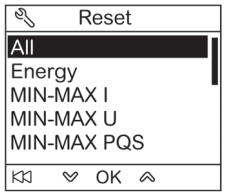
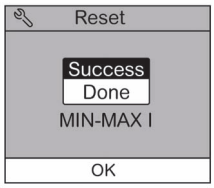
Use the **Reset** submenu to reset:
- all energy meters and minimum and maximum measurement values in a single operation.
- the energy meters only: active energy (**Ep**), reactive energy (**Eq**), and apparent energy (**Es**) meters.
- a group of minimum and maximum measurement values only.

For the group of currents, for example, the following minimum and maximum values are reset simultaneously:
- Phase currents and neutral current (if present)
- Unbalance currents
- Demand current

Availability of submenu items depends on the devices supported.

The procedure for resetting the metering groups of a Masterpact NW circuit breaker in the **Services** menu is as follows:

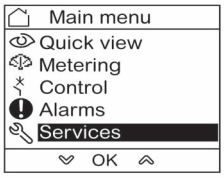
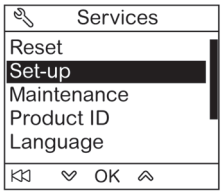
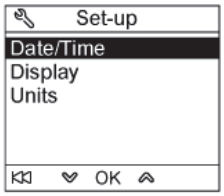
Step	Action	Display
1	Select the **Services** menu in the **Main menu** by using the ⌄ and ⌃ keys. Confirm selection of the **Services** menu by pressing the **OK** key.	
2	The **Services** menu is displayed. Select the **Reset** submenu by using the ⌄ and ⌃ keys. Confirm selection of the **Reset** submenu by pressing the **OK** key.	

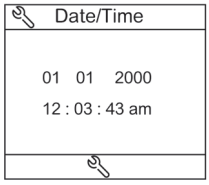
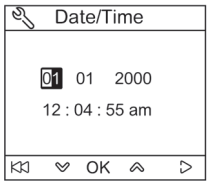
Step	Action	Display
3	The **Reset** submenu is displayed, with the choice of metering groups that can be reset (three screens). Select **MIN-MAX I** by using the ⩒ and ⩓ keys to reset all of the minimum and maximum values of the currents. Confirm selection of resetting the **MIN-MAX I** group by pressing the **OK** key. **NOTE: Reset** command is password protected. If the level 3 default password of the BCM ULP was modified, then a screen asking for the password is displayed *(see page 28)*.	
4	A reset request confirmation message is displayed. Confirm resetting the **MIN-MAX I** group by pressing the **OK** key.	
5	A confirmation message is displayed whichever **Reset** submenu is selected. Press the **OK** key to return to the **Reset** submenu.	

NOTE: Pressing the ⩤ key returns to the **Services** menu.

Setting the Date and Time on the FDM121 Display

The procedure for setting date and time on the FDM121 display from the **Services** menu is as follows:

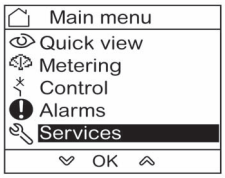
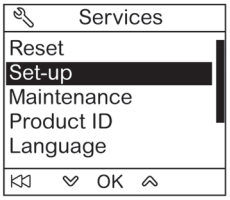
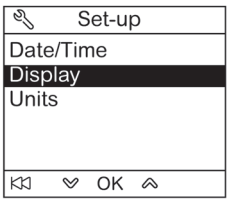
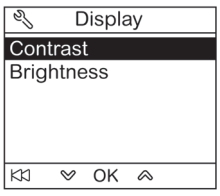
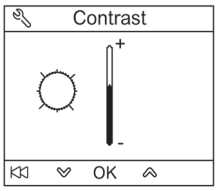
Step	Action	Display
1	Select the **Services** menu in the **Main menu** by using the ⩒ and ⩓ keys. Confirm selection of the **Services** menu by pressing the **OK** key.	
2	The **Services** menu is displayed. Select the **Set-up** submenu by using the ⩒ and ⩓ keys. Confirm selection of the **Set-up** submenu by pressing the **OK** key.	
3	The **Set-up** submenu is displayed. Confirm selection of the **Date/Time** submenu by pressing the **OK** key.	

Step	Action	Display
4	The **Date/Time** submenu is displayed. Press the key to set the system date and time.	
5	Select the field to set by using the key. The display of the selected field switches to reverse video. Use the and keys to adjust the content of the selected field. Press the **OK** key to confirm your settings.	

Setting the Contrast and Brightness on the FDM121 Display

Navigation for setting the contrast and brightness is similar.

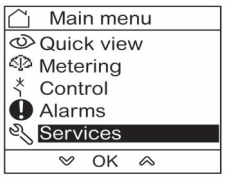
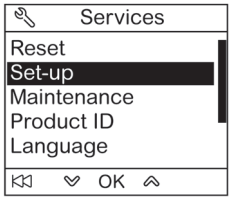
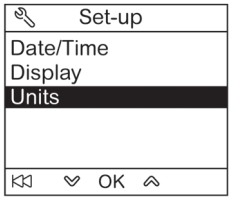
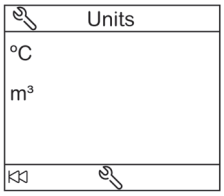
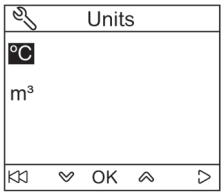
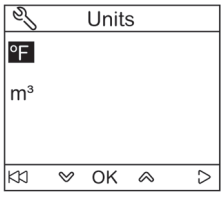
The procedure for setting contrast on the FDM121 display from the **Services** menu is as follows:

Step	Action	Display
1	Select the **Services** menu in the **Main menu** by using the and keys. Confirm selection of the **Services** menu by pressing the **OK** key.	
2	The **Services** menu is displayed. Select the **Set-up** submenu by using the and keys. Confirm selection of the **Set-up** submenu by pressing the **OK** key.	
3	The **Set-up** submenu is displayed. Confirm selection of the **Display** submenu by pressing the **OK** key.	
4	The **Display** submenu is used to set the display of the FDM121 display. Select the **Contrast** submenu by using the and keys. Confirm selection of the **Contrast** submenu by pressing the **OK** key.	
5	The **Contrast** submenu is displayed. Adjust the contrast by using the and keys. Confirm the contrast setting by pressing the **OK** key.	

Setting the Units for Temperature and Volume on the FDM121 Display

Navigation for setting the physical unit for the display of temperature (°C or °F) and volume (m^3, US gallon **galUS**, or imperial gallon **galGB**) is similar.

The procedure for setting the temperature from the **Services** menu is as follows:

Step	Action	Display
1	Select the **Services** menu in the **Main menu** by using the ⌄ and ⌃ keys. Confirm selection of the **Services** menu by pressing the **OK** key.	
2	The **Services** menu is displayed. Select the **Set-up** submenu by using the ⌄ and ⌃ keys. Confirm selection of the **Set-up** submenu by pressing the **OK** key.	
3	The **Set-up** submenu is displayed. Select the **Units** submenu by using the ⌄ and ⌃ keys. Confirm selection of the **Units** submenu by pressing the **OK** key.	
4	Press the 🔧 key to edit the current temperature or volume unit.	
5	Select the field to set by using the ▷ key. The display of the selected field switches to reverse video. Confirm selection of the unit to edit by pressing the **OK** key.	
6	Use the ⌄ and ⌃ keys to adjust the content of the selected field. Confirm the new unit setting by pressing the **OK** key.	

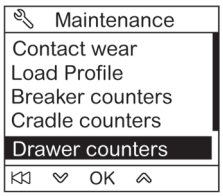
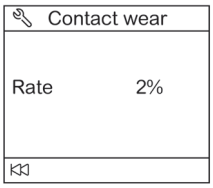
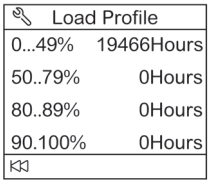
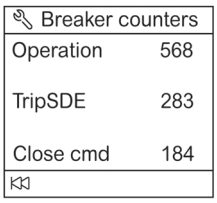
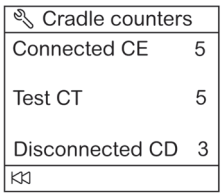
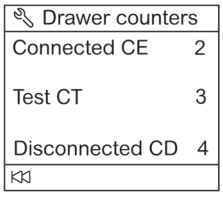
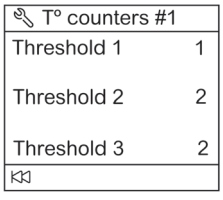
Maintenance Submenu Screens

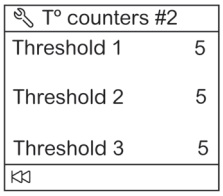
Availability of submenu items depends on the connected devices:

- **Contact wear** submenu is available when a Micrologic trip unit is connected.
- **Load Profile** submenu is available when a Micrologic trip unit is connected.
- **Breaker counters** submenu is available when a BSCM or BCM ULP is connected.
- **Cradle counters** submenu is available when an IO module configured for cradle management application is connected.
- **Drawer counters** submenu is available when an IO module configured for drawer management application is connected.

- **T° counters #1** submenu is available when the analog input of IO module 1 is assigned to Pt100 sensor.
- **T° counters #2** submenu is available when the analog input of IO module 2 is assigned to Pt100 sensor.

The table below presents the screens in the **Maintenance** submenu available on the FDM121 display connected to a Compact NSX circuit breaker. The **Maintenance** submenu is accessible from the **Services** menu in the **Main menu**.

Screens	Description
	Select the maintenance screen in the **Maintenance** submenu by using the ⩔ and ⩓ keys. Confirm selection of the maintenance screen by pressing the **OK** key.
	The **Contact wear** screen in the **Maintenance** submenu displays the amount of wear on the circuit breaker contacts.
	The **Load Profile** screen in the **Maintenance** submenu displays four circuit breaker operating hours counters for four loading sections.
	The **Breaker counters** screen in the **Maintenance** submenu displays the values of the counters: ● **Operations**: OF counter (open to close position counter, resettable) ● **TripSDE**: SDE counter (close to SDE position counter) ● **Close cmd**: counter of close commands by using the communicating motor mechanism
	The **Cradle counters** screen in the **Maintenance** submenu displays: ● the cradle connected position counter (CE) ● the cradle test position counter (CT) ● the cradle disconnected position counter (CD)
	The **Drawer counters** screen in the **Maintenance** submenu displays: ● the drawer connected position counter (CE) ● the drawer test position counter (CT) ● the drawer disconnected position counter (CD)
	The **T° counters #1** screen in the **Maintenance** submenu displays: ● the number of times the switchboard temperature measured by IO module 1 exceeds threshold 1 ● the number of times the switchboard temperature measured by IO module 1 exceeds threshold 2 ● the number of times the switchboard temperature measured by IO module 1 exceeds threshold 3

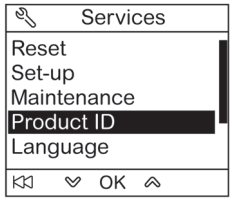
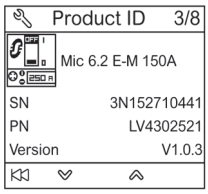
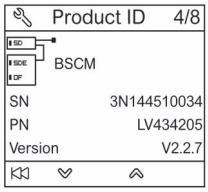
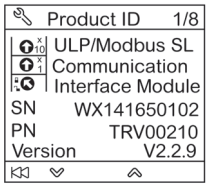
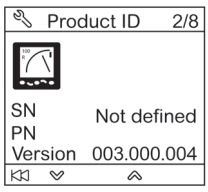
Screens	Description
	The **T° counters #2** screen in the **Maintenance** submenu displays: ● the number of times the switchboard temperature measured by IO module 2 exceeds threshold 1 ● the number of times the switchboard temperature measured by IO module 2 exceeds threshold 2 ● the number of times the switchboard temperature measured by IO module 2 exceeds threshold 3

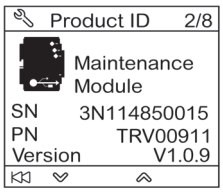
Getting the Product Identification

The FDM121 display displays the serial number, the part number, and the version of every module of the IMU.

The procedure below describes an example of access to the module identification for an IMU consisting of:

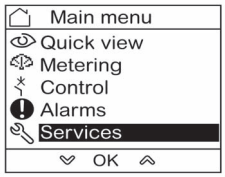
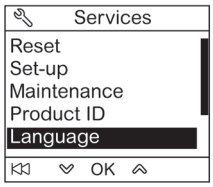
- Compact NSX circuit breaker equipped with a Micrologic 5.2 E trip unit and a BSCM
- IFM interface
- FDM121 display
- USB maintenance interface

Step	Action	Display
1	Select the **Services** menu in the **Main menu**, then select the **Product ID** submenu by using the ⩔ and ⩓ keys. Confirm selection of the **Product ID** submenu by pressing the **OK** key.	
2	The first screen displays the identifying information for the Micrologic trip unit: ● Type of Micrologic trip unit ● **SN** = Serial number ● **PN** = Micrologic trip unit part number ● **Version** = Firmware version Pressing the ⩔ key switches to the next screen. Pressing the ⩓ key switches back to the previous screen.	
3	The next screen displays the identifying information for the BSCM: ● **BSCM** ● **SN** = Serial number ● **PN** = BSCM part number ● **Version** = Firmware version	
4	The next screen displays the identifying information for the IFM Modbus-SL interface for one circuit breaker: ● IFM description ● **SN** = Serial number ● **PN** = IFM part number ● **Version** = Firmware version	
5	The next screen displays the identifying information for the FDM121 display: ● **FDM121** ● **SN** = Serial number ● **PN** = FDM121 part number ● **Version** = Firmware version	

Step	Action	Display
6	The next screen displays the identifying information for the USB maintenance interface: • **Maintenance module** • **SN** = Serial number • **PN** = USB maintenance interface part number • **Version** = Firmware version	

Choosing the Language on the FDM121 Display

The procedure for choosing the language on the FDM121 display from the **Services** menu is as follows:

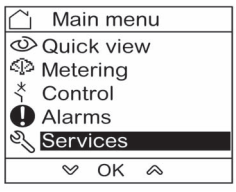
Step	Action	Display
1	Select the **Services** menu in the **Main menu** by using the ⩔ and ⩓ keys. Confirm selection of the **Services** menu by pressing the **OK** key.	
2	The **Services** menu is displayed. Select the **Language** submenu by using the ⩔ and ⩓ keys. Confirm selection of the **Language** submenu by pressing the **OK** key. **NOTE:** In order to be able to change language easily, whichever language has been chosen, the **Language** submenu label is only in English.	
3	The **Language** submenu is displayed. Select the desired display language by using the ⩔ and ⩓ keys. Confirm selection of the language by pressing the **OK** key.	

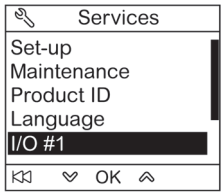
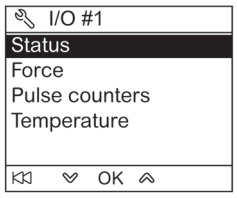
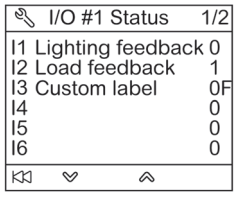
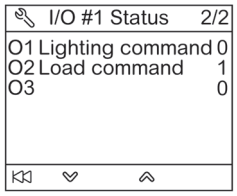
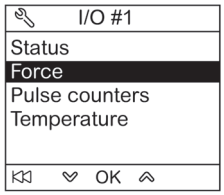
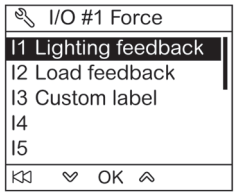
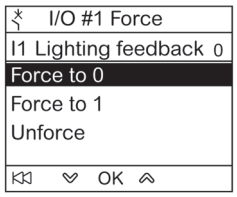
Navigation Through the IO Module Screens

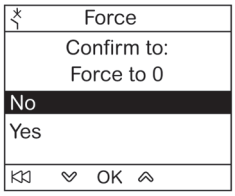
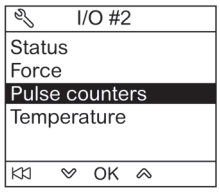
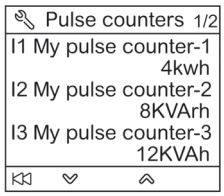
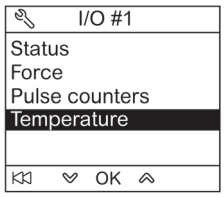
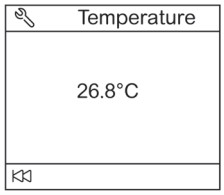
The **I/O #•** submenus provide access to four submenus for monitoring and controlling the IO modules connected to the FDM121 display:

- **Status** submenu displays the I/Os of the IO module
- **Force** submenu is used to force or unforce a command
- **Pulse counters** submenu displays the counters
- **Temperature** submenu displays the switchboard temperature provided by the given IO module

The procedure for navigating through the IO module screens is as follows:

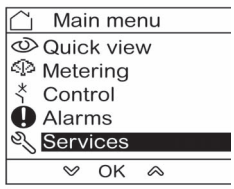
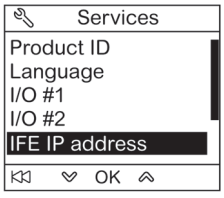
Step	Action	Display
1	Select the **Services** menu in the **Main menu** by using the ⩔ and ⩓ keys. Confirm selection of the **Services** menu by pressing the **OK** key.	

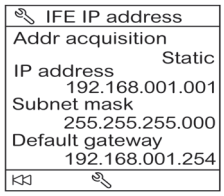
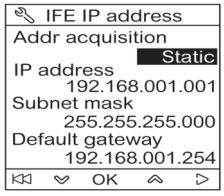
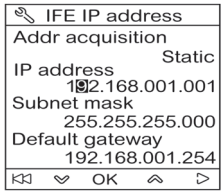
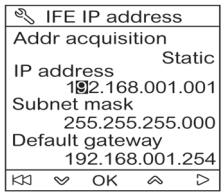
Step	Action	Display
2	The **Services** menu is displayed. Select the **I/O #•** submenu by using the ⩔ and ⩓ keys. Confirm selection of the **I/O #•** submenu by pressing the **OK** key.	
3	The **I/O #•** submenu is displayed. Select the **Status** submenu by using the ⩔ and ⩓ keys. Confirm selection of the **Status** submenu by pressing the **OK** key.	
4	The first **I/O #• Status** screen in the **I/O #•** submenu displays the inputs of the given IO module with the following information for each line, from left to right: ● Input number ● Input label ● Input state: **0** or **1** ● Input forcing status: **F** means that the input state is forced. Use the ⩔ and ⩓ keys to navigate between the screens.	
5	The second **I/O #• Status** screen in the **I/O #•** submenu displays the outputs of the given IO module with the following information for each line, from left to right: ● Output number ● Output label ● Output state: **0** or **1** ● Output forcing status: **F** means that the output state is forced. Use the ⩔ and ⩓ keys to navigate between the screens.	
6	In the **I/O #•** submenu, select the **Force** submenu by using the ⩔ and ⩓ keys. Confirm selection of the **Force** submenu by pressing the **OK** key.	
7	The **I/O #• Force** screen displays all the I/Os of the given IO module. Select an input or output by using the ⩔ and ⩓ keys. Confirm selection by pressing the **OK** key.	
8	The **I/O #• Force** screen of a selected input or output is divided into two parts: ● The part at the top indicates the current command setting right of the label. ● The part at the bottom indicates the possible actions which can be carried out on the I/O in the form of a menu: ❍ **Force to 0** ❍ **Force to 1** ❍ **Unforce** Select the action you want to carry out by using the ⩔ and ⩓ keys. Confirm selection of the action you want to carry out by pressing the **OK** key. **NOTE: I/O #• Force** commands are password protected. If the level 3 default password of the IO module was modified, then a screen asking for the password is displayed *(see page 28)*.	

Step	Action	Display
9	A screen confirming the action to be carried out is displayed. Select **Yes** to confirm the action to be carried out.	
10	In the **I/O #•** submenu, select the **Pulse counters** submenu by using the ⩒ and ⩓ keys. Confirm selection of the **Pulse counters** submenu by pressing the **OK** key.	
11	The **Pulse counters** screen displays all the inputs assigned to pulse counter function of a given IO module. The pulse meter label, value, and unit are indicated for each input of the IO module. Use the ⩒ and ⩓ keys to navigate between the screens. To edit the volume unit, see the **Units** screen *(see page 47)*.	
12	In the **I/O #•** submenu, select the **Temperature** submenu by using the ⩒ and ⩓ keys. Confirm selection of the **Temperature** submenu by pressing the **OK** key.	
13	The **Temperature** screen displays the switchboard temperature measured by Pt100 sensor connected to the analog input of the IO module. To edit the temperature unit, see the **Units** screen *(see page 47)*.	

Setting the IP Address of the IFE Ethernet Interface for One Circuit Breaker

The procedure for setting the IFE IP address from the **Services** menu is as follows:

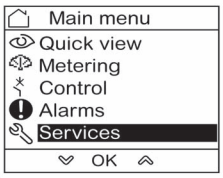
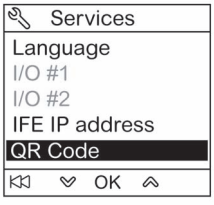
Step	Action	Display
1	Select the **Services** menu in the **Main menu** by using the ⩒ and ⩓ keys. Confirm selection of the **Services** menu by pressing the **OK** key.	
2	The **Services** menu is displayed. Select the **IFE IP address** submenu by using the ⩒ and ⩓ keys. Confirm selection of the **IFE IP address** submenu by pressing the **OK** key.	

Step	Action	Display
3	The **IFE IP address** screen is displayed. To edit the address settings, press the key. **NOTE:** IFE address command is password protected. If the level 3 default password of the circuit breaker was modified, then a screen asking for the password is displayed *(see page 28)*. **NOTE:** If address acquisition mode is different from **Static**, the **IP address**, **Subnet mask**, and **Default gateway** fields are not displayed.	
4	Select the field to set by using the key. The selected field is displayed in reverse video.	
5	Edit digits when necessary: ● Use the and keys to adjust the digit of the selected field. ● Go to the next digit by using the key.	
6	Press the **OK** key to confirm the IFE IP address and return to the **Services** menu.	

NOTE: Pressing the key returns to the **Services** menu and IP address edition is canceled.

Displaying the QR Code on the FDM121 Display

The procedure for displaying the QR Code on the FDM121 display from the **Services** menu is as follows:

Step	Action	Display
1	Select the **Services** menu in the **Main menu** by using the and keys. Confirm selection of the **Services** menu by pressing the **OK** key.	
2	The **Services** menu is displayed. Select the **QR Code** submenu by using the and keys. Confirm selection of the **QR Code** submenu by pressing the **OK** key.	

Step	Action	Display
3	The **QR Code** submenu is displayed. Scan the QR code to get additional information about the device from the Schneider Electric website. To scan the QR code, use a smartphone that is equipped with a camera and installed with a QR code reader.	

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