

FDM121 Display for LV Circuit Breaker

User Guide

06/2014



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

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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.

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Safety Information



Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



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



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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

FCC Notice

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

Validity Note

This document is applicable to FDM121 display for LV circuit breaker associated with circuit breakers:

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

Related Documents

Title of Documentation	Reference Number
FDM121 Display for LV Circuit Breaker - Instruction Sheet	GHD16275
Micrologic 5 and 6 Trip Units for Compact NSX Circuit Breakers - User Guide	LV434103 (FR) LV434104 (EN) LV434105 (ES)
Micrologic 5 and 6 Trip Units for PowerPact H-, J-, and L- Frame Circuit Breakers - User Guide	48940-312 (EN, ES, FR)
Micrologic A/E Trip Units - User Guide	04443723A (FR) 04443724A (EN) EAV16735 (ES)
Micrologic P Trip Units - User Guide	04443725A (FR) 04443726A (EN) EAV16736 (ES)
Micrologic H Trip Units - User Guide	04443727A (FR) 04443728A (EN) EAV16737 (ES)
Micrologic 2.0A, 3.0A, 5.0A, and 6.0A Trip Units - Instruction Bulletin	48049-136 (EN, ES, FR)
Micrologic 5.0P and 6.0P Trip Units - Instruction Bulletin	48049-137 (EN, ES, FR)
Micrologic 5.0H and 6.0H Trip Units - Instruction Bulletin	48049-330 (EN, ES, FR)
ULP System for Compact and Masterpact Circuit Breakers - User Guide	TRV99100 (FR) TRV99101 (EN) TRV99102 (ES)
ULP System for PowerPact and Masterpact Circuit Breakers - User Guide	48940-329 (EN, ES, FR)
IO Input/Output Interface Module for LV Circuit Breaker - User Guide (IEC Version)	DOCA0055EN DOCA0055ES DOCA0055FR DOCA0055ZH
IO Input/Output Interface Module for LV Circuit Breaker - User Guide (UL Version)	0613IB1317 (EN) 0613IB1318 (ES) 0613IB1319 (FR) 0613IB1320 (ZH)

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

Chapter 1

FDM121 Presentation

Aim of This Chapter

What Is in This Chapter?

This chapter contains the following topics:

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Introduction

Description

The FDM121 display unit displays the measurements, alarms, and operating assistance data from the intelligent modular unit (IMU). The FDM121 display unit can control the circuit breaker equipped with a motor mechanism or the pre-defined application performed by the IO module ([see page 32](#)).

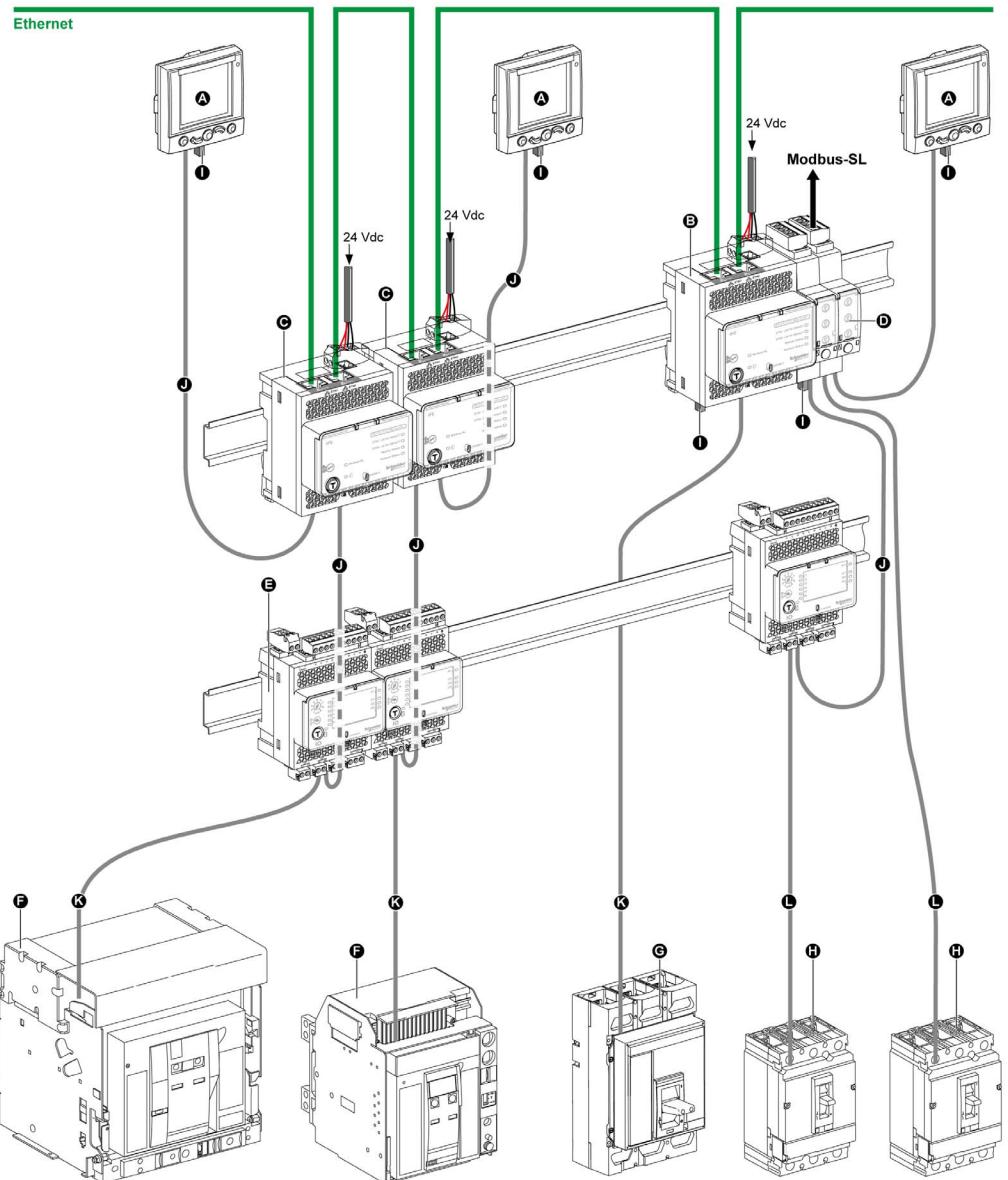
The FDM121 display unit is compatible with Masterpact™ NT/NW, Compact™ NS, Compact™ NSX, and PowerPact™ circuit breakers.

Intelligent Modular Unit

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

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

Communication Architecture



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

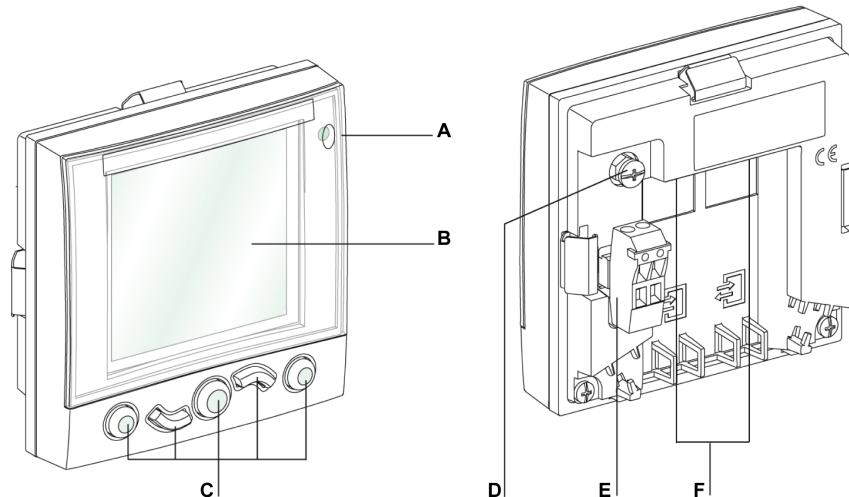
Component Part Numbers

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

Component	Description	Part number
Breaker ULP cord	L = 0.35 m (1.15 ft)	LV434195
	L = 1.3 m (4.26 ft)	LV434196
	L = 3 m (9.84 ft)	LV434197
Cord for system voltage greater than 480 Vac	L = 1.3 m (4.26 ft), U > 480 Vac (cord with female socket)	LV434204
BCM ULP breaker communication module	–	33106
IO input/output interface for LV circuit breaker	–	LV434063
FDM121 display for LV circuit breaker	–	● TRV00121 (IEC) ● STRV00121 (UL)
Surface-mounting accessory	–	TRV00128
IFM Modbus-SL interface for LV circuit breaker	–	● TRV00210 (IEC) ● STRV00210 (UL)
IFE Ethernet interface for LV circuit breaker	Ethernet interface	LV434010
	Ethernet interface and gateway	LV434011
Stacking accessory	10 stacking accessories	TRV00217
Maintenance module	–	● TRV00911 (IEC) ● STRV00911 (UL)
ULP cable	L = 0.3 m (0.98 ft), 10 cables	TRV00803
	L = 0.6 m (1.97 ft), 10 cables	TRV00806
	L = 1 m (3.28 ft), 5 cables	TRV00810
	L = 2 m (6.56 ft), 5 cables	TRV00820
	L = 3 m (9.84 ft), 5 cables	TRV00830
	L = 5 m (16.40 ft), 1 cable	TRV00850
RJ45 female/female connector	10 RJ45 female/female connectors	TRV00870
ULP line terminator	10 ULP line terminators	TRV00880
Modbus terminator	2 Modbus cable terminators with impedance of 120 Ω + 1 nF	VW3A8306DRC
24 Vdc power supply	24/30 Vdc-24 Vdc-1 A-overvoltage category IV	● 54440 (IEC) ● 685823 (UL)
	48/60 Vdc-24 Vdc-1 A-overvoltage category IV	● 54441 (IEC) ● 685824 (UL)
	100/125 Vdc-24 Vdc-1 A-overvoltage category IV	● 54442 (IEC) ● 685825 (UL)
	110/130 Vac-24 Vdc-1 A-overvoltage category IV	● 54443 (IEC) ● 685826 (UL)
	200/240 Vac-24 Vdc-1 A-overvoltage category IV	● 54444 (IEC) ● 685827 (UL)
	380/415 Vac-24 Vdc-1 A-overvoltage category IV	● 54445 (IEC) ● 685829 (UL)
	100/500 Vac-24 Vdc-3 A-overvoltage category II	ABL8RPS24030
	Belden: 7 mm (0.27 in) diameter shielded cable with 2 twisted pairs	3084A
Modbus cable	Belden: 9.6 mm (0.38 in) diameter (recommended) shielded cable with 2 twisted pairs	7895A
	Cable with 2 twisted pairs without shielding drain wire	50965
	–	TRV00211
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

Hardware Description

Description



- A** Alarm Indicator LED
- B** LCD screen
- C** Navigation keys
- D** Functional ground
- E** 24 Vdc power supply terminal block
- F** ULP RJ45 connectors

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	<ul style="list-style-type: none"> • 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. <p>The LED goes off after acknowledgment on the non-operational module or when the module concerned is no longer off.</p>
Steady ON	<ul style="list-style-type: none"> • 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. <p>The LED goes off after acknowledgment on the degraded module or when the module concerned is no longer degraded.</p>

For more information on the management of events and alarms, refer to the Alarms menu ([see page 35](#)).

Functional Ground

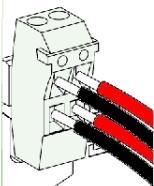
In an environment with a high level of electromagnetic disturbance, connect the FDM121 functional ground to the local machine ground in the switchboard by using a grounding strip.

24 Vdc Power Supply

NOTICE					
HAZARD OF EQUIPMENT DAMAGE					
<ul style="list-style-type: none"> • Voltage other than 24 Vdc will damage the FDM121 display unit. • Do not use any voltage other than 24 Vdc. <p>Failure to follow these instructions can result in equipment damage.</p>					

The FDM121 display unit 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 unit powers the other modules on the IMU through the ULP cables.

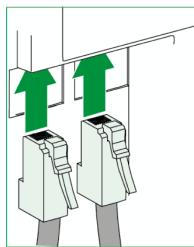
Power supply terminal block	Wire	Color	Description	Cross-section	Stripped length
		Black	0 V	0.2–1.5 mm ² (24–16 AWG)	7 mm (0.28 in)
		Red	24 V	0.2–1.5 mm ² (24–16 AWG)	7 mm (0.28 in)

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					
<ul style="list-style-type: none"> • The FDM121 RJ45 ports are for ULP modules only. • Any other use can damage the FDM121 display unit or the device connected to it. • To check if a ULP module is compatible with the RJ45 ports, refer to the <i>ULP System User Guide</i>. <p>Failure to follow these instructions can result in equipment damage.</p>					

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



NOTE: When the second ULP connector is not used, it must be closed with an ULP line terminator.

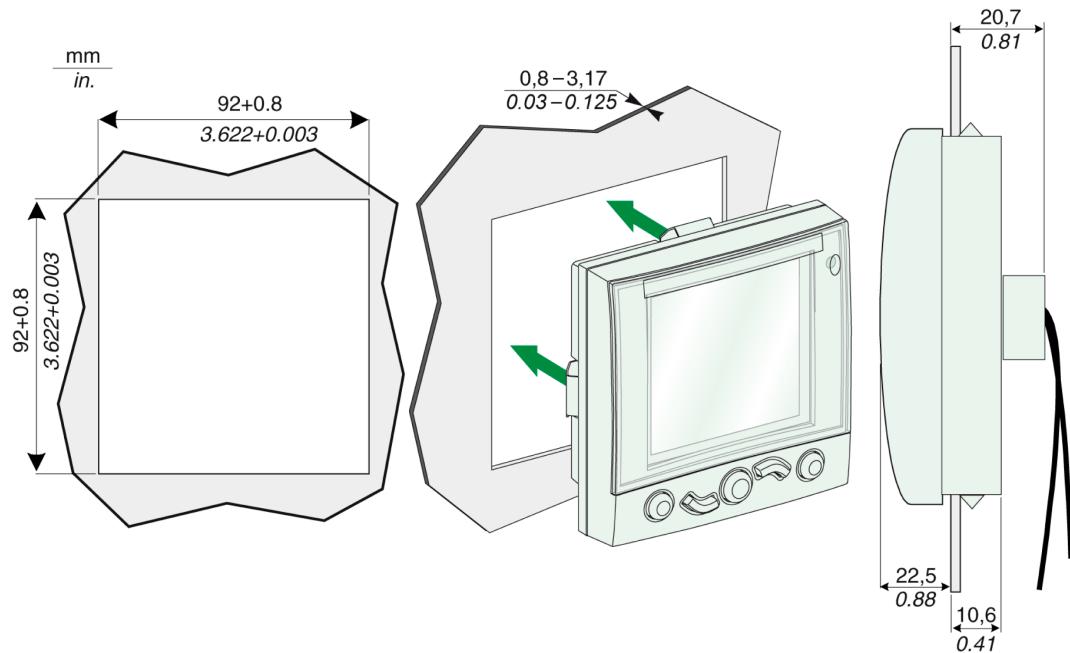
Mounting

There are two possible mounting configurations for the FDM121 display unit:

- 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

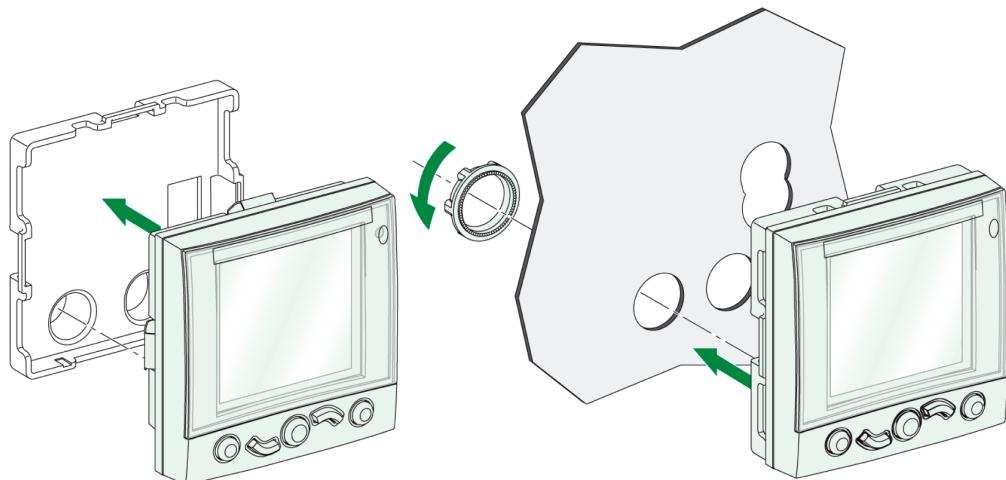
Mount the FDM121 display unit by cutting a standard 92 x 92 mm (3.622 x 3.622 in) cut-out on the door and pushing FDM121 through the hole until secured by clips.



Hole Mounting

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

If the FDM121 display unit 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.



Customer Engineering Tool (CET)

Definition

The customer engineering tool used to configure the FDM121 display for LV circuit breaker can be either Electrical Asset Manager software or:

- Compact NSX RSU software
 - to configure the Compact NSX and PowerPact H-, J-, and L-frame alarms
 - to update the FDM121 firmware
 - to manage the passwords
 - to set date and time
 - to change IMU identification.
- Masterpact RSU software to configure the Masterpact, Compact NS, or PowerPact P- and R-frame pre-defined alarms.
- RCU software to check the network communication with IFM and IFE.

The customer engineering tools are available at www.schneider-electric.com.

Electrical Asset Manager

Electrical Asset Manager is the software which enables the user to have the following features in addition to the features provided by Compact NSX RSU, Masterpact RSU, and RCU software:

- Create projects by device discovery, selection of devices from Schneider Electric catalog and importing Bill Of Material (BOM) files
- Monitor the device protection and IO status
- Read information (alarm logs, measurements, and maintenance parameters)
- Check protection discrimination between two devices
- Upload and download of configuration or settings in batches
- Perform control actions in a secured way
- Generate and print device settings report, communication test report discovered devices report, and imported BOM file devices report
- Manage multiple devices with electrical and communication hierarchy model
- Manage artifacts (project and device documents)
- Check consistency in settings between devices in a communication network
- Compare configuration settings between the project and device (online)
- Download latest firmware and upgrade devices
- Safe repository of projects in Schneider Electric Cloud and Sharing of projects with other users

For more information, see the *Electrical Asset Manager Online Help*.

Compact NSX RSU Software

Compact NSX RSU (Remote Setting Utility) is the Compact NSX and PowerPact H-, J-, and L-frame configuration software. It enables the user to

- check and set up the Micrologic trip unit parameters:
 - protection parameters
 - measurement parameters
 - alarm parameters.
- display the Micrologic tripping curves.
- check and set up the SDx module output parameters.
- check the SDTAM module output parameters.
- check and set up the BSCM breaker status and control module parameters.
- edit and save configurations.

Compact NSX RSU can also be used to configure the intelligent modular unit (IMU) modules connected to Compact NSX, Compact NS, PowerPact H-, J-, and L-frame, PowerPact P- and R-frame, or Masterpact circuit breakers, and enables the user to:

- check and set up the IFM parameters.
- check and set up the IFE parameters.
- modify passwords in the IMU.
- change IMU identification.
- get and set the time.
- configure the IO assignments.
- modify the IO counters.
- reset the IO counters (only with **Schneider service** user profile).
- update firmware of ULP (Universal Logic Plug) modules (only with **Schneider service** user profile).
- reset the passwords to their factory values (only with the **Schneider service** user profile.)
- edit and save configurations.

For more information, see the *Compact NSX RSU Online Help*.

Masterpact RSU Software

Masterpact RSU (Remote Setting Utility) is the Masterpact, Compact NS, and PowerPact P- and R-frame configuration software. Masterpact RSU enables the user to

- check and set up the Micrologic trip unit parameters:
 - protection parameters
 - measurement parameters
 - alarm parameters.
- display the Micrologic tripping curves.
- edit and save configurations.

For more information, see the *Masterpact RSU Online Help*.

RCU Software

RCU (Remote Control Utility) is a simple SCADA software for:

- Compact NSX and PowerPact H-, J-, and L-frame circuit breakers
- Compact NS and PowerPact P- and R-frame circuit breakers
- Masterpact circuit breakers
- power meters

Depending on the equipment the RCU software is connected to, RCU enables the user to

- display the measurements of current (I), voltage (U), energy (E), and total harmonic distortion (THD).
- display the date and time.
- display the identification and maintenance information of the equipment.
- control the equipment (only for circuit breakers).
- log the measurements of power (P), power factor (PF), and energy (E) every 5 minutes.
- display the status of the IOs.
- check the network communication with IFM or IFE.

The RCU software helps users to monitor and control their equipment and helps installers to check and validate the newly installed equipment.

For more information, see the *RCU Online Help*.

Technical Characteristics

Environmental Characteristics

Characteristic		Value
Conforming to standards		<ul style="list-style-type: none"> ● IEC/EN 60947-1 ● IACS E10
		<ul style="list-style-type: none"> ● UL508 - Industrial Control Equipment ● No. 142-M1987 - Process Control Equipment ● CAN/CSA C22.2 No. 0-M91 - General requirements - Canadian Electrical Code Part ● CAN/CSA C22.2 No. 14-05 - Industrial Control Equipment ● CSA C22.2 No.14-10
Certification	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 ₂ S, 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	<ul style="list-style-type: none"> ● 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

Characteristic		Value
Degree of protection of the installed module		<ul style="list-style-type: none"> ● 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

Characteristic		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		<ul style="list-style-type: none"> ● 4 kV (direct) ● 8 kV (air)
Immunity to radiated electromagnetic interference		Conforming to IEC/EN 61000-4-3
		10 V/m

Characteristic	Value	
Immunity to electrical fast transients/burst	Conforming to IEC/EN 61000-4-4	<ul style="list-style-type: none"> ● 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	

Physical Characteristics

Characteristic	Value	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Flush-mounted ● Surface-mounted, with surface-mounting accessory 	
Display	Screen	128 x 128 pixels
	Viewing angle	<ul style="list-style-type: none"> ● Horizontal: ± 30° ● Vertical: ± 60°

Protecting the Environment

Recycling Packaging

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

Thank you for playing your part in protecting the environment.

End-of-Life Recycling

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

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

Chapter 2

FDM121 Use

Aim of this Chapter

What Is in This Chapter?

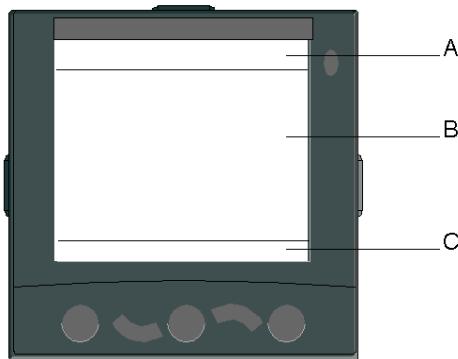
This chapter contains the following topics:

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Operation

Screen

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



A Identification zone

B Information zone

C Navigation zone

The 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:

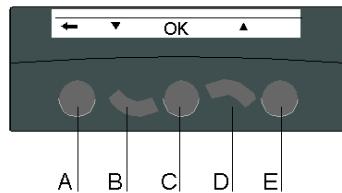
Example	Description															
<table border="1"> <tr> <td>•</td> <td>V L-L</td> <td>1/10</td> </tr> <tr> <td>V12</td> <td>406 V</td> <td></td> </tr> <tr> <td>V23</td> <td>415 V</td> <td></td> </tr> <tr> <td>V31</td> <td>409 V</td> <td></td> </tr> <tr> <td>◀ ▶ ▲ ▼</td> <td></td> <td></td> </tr> </table>	•	V L-L	1/10	V12	406 V		V23	415 V		V31	409 V		◀ ▶ ▲ ▼			<ul style="list-style-type: none"> • Identification zone <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • The voltage values V12, V23, and V31 are displayed. • Navigation zone <ul style="list-style-type: none"> • The navigation options for the V L-L screen are displayed.
•	V L-L	1/10														
V12	406 V															
V23	415 V															
V31	409 V															
◀ ▶ ▲ ▼																

The FDM121 display unit 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 unit.

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 unit. When no icon is displayed in the zone corresponding to a key, this key is inactive for the menu displayed.

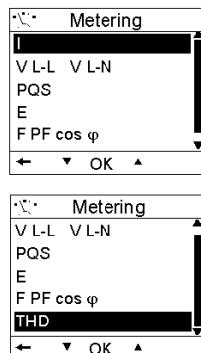
Key	Icon	Description
Back/Home	◀	<ul style="list-style-type: none"> • Exits a menu or a submenu and returns to the previous menu. • Used to return to the Main menu from the Quick view menu displayed when the FDM121 display unit is powered up.
Down	▼	Used to point to the desired measurements or moves on to the next screen.
Confirm	OK	<ul style="list-style-type: none"> • Confirms selection of a menu option. • Clears a new event.
Set-up	🔧	Used to access settings: <ul style="list-style-type: none"> • 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 customer engineering tool ([see page 16](#)).

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 customer engineering tool ([see page 16](#)).

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

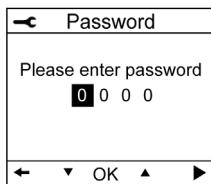
If the initial passwords have been changed, three cases require to reset the passwords to their factory settings with the customer engineering tool ([see page 16](#)):

- A password is forgotten.
- A new module is added in the IMU: for example, an FDM121 display unit.
- A faulty module is replaced in the IMU.

Resetting passwords with the customer engineering tool ([see page 16](#)) 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.



Entering a Password

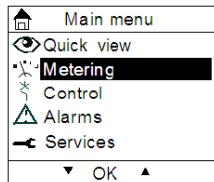
The procedure for entering a password is as follows.

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 unit.

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

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

Menu	Description
Quick view	Quick view menu (see page 27) The Quick view menu provides quick access to the information essential for operation.
Metering	Metering menu (see page 29) The Metering menu displays the data made available by the Micrologic trip unit: <ul style="list-style-type: none">● Current, voltage, power, energy, and harmonic distortion measurements● Minimum and maximum metering values
Control	Control menu (see page 31) The Control menu is used to control a circuit breaker equipped with a communicating motor mechanism from the FDM121 display unit. The proposed commands are: <ul style="list-style-type: none">● 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 35) The Alarms menu is used to display: <ul style="list-style-type: none">● The event log file for the last 40 events and alarms detected by the devices connected to the FDM121 display unit since the last power-up of the FDM121.● The alarm history (for example, alarms, trips, maintenance, and control status) for the device connected to the FDM121 display unit.
Services	Services menu (see page 39) The Services menu contains all the FDM121 display unit setup functions and the operating assistance information: <ul style="list-style-type: none">● Reset (peak demand values, energy meters)● Setup (display module date and time, parameters)● 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, and counters)● Setup of the IP address of the IFE Ethernet interface for LV circuit breaker

Navigation

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

- Use the **▲** and **▼** 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 unit, divided into a number of screens.

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

The number of available screens and their content depend on the device connected to the FDM121 display unit. 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

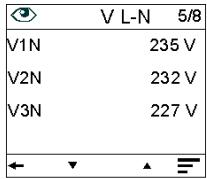
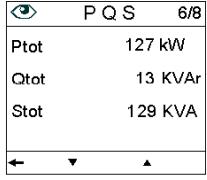
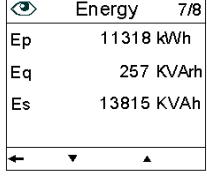
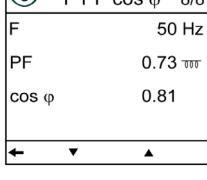
Navigation within the **Quick view** menu is as follows:

- 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 table below 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:

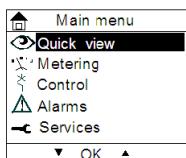
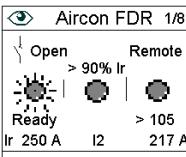
Screen	Description
	Screen 1 in the Quick view menu displays the following information: <ul style="list-style-type: none"> ● The name of the IMU (Aircon FDR on the screen example opposite). ● The open/closed/trip status of the circuit breaker if the BSCM is present (Open on the screen example opposite). ● 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 (I2 = 217 A in the screen example opposite). ● The cradle status of the circuit breaker. When two IO modules are connected to the FDM121 display unit, the FDM121 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: <ul style="list-style-type: none"> ● 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: <ul style="list-style-type: none"> ● Phase 1 current I1 ● Phase 2 current I2 ● Phase 3 current I3 ● Neutral current IN
	Screen 4 in the Quick view menu displays the phase-to-phase voltages: <ul style="list-style-type: none"> ● 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Active energy Ep in kWh Reactive energy Eq in kVArh Apparent energy Es in kVAh
	Screen 8 in the Quick view menu displays: <ul style="list-style-type: none"> 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 customer engineering tool ([see page 16](#)) 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 ▼ 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 the customer engineering tool or the remote controller can consist of 45 characters maximum, but only the first 14 characters are visible on the FDM121 display unit.	

Metering Menu

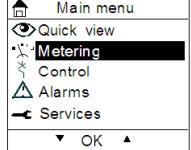
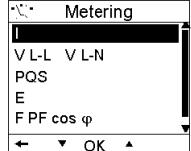
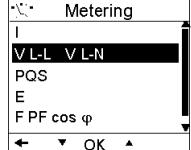
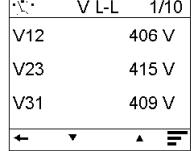
Presentation

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 unit.

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 5.0 E trip unit is connected to the FDM121 display unit.

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: <ul style="list-style-type: none"> • 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  icon represents numeric mode display.

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

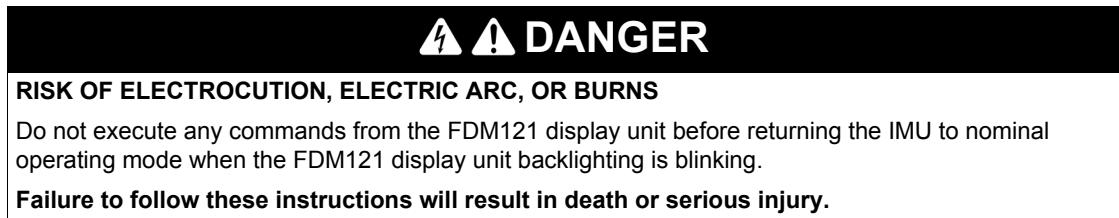
Numeric mode	Bargraph mode	Dial mode
 1/10 I1 113 A I2 159 A I3 84 A IN 50 A    	 1/10 0 225 A I1= 113 A 0 225 A I2= 159 A 0 225 A I3= 84 A 0 225 A IN= 50 A    	 1/10 I1 225 A 113 159 A I2 225 A I3 225 A 84 50 A A 225 A    
Press the  key to switch the display to bargraph mode.	Press the  key to switch the display to dial mode.	Press the  key to switch the display to numeric mode.

Control Menu

Presentation

The **Control** menu is used to control from the FDM121 display unit:

- the circuit breaker
- the light and load application managed by the IO module



Blinking of the FDM121 display unit indicates that the IMU is operating in degraded mode. It may be an architecture problem. For more information, refer to the *ULP System User Guide*.

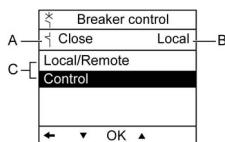
If the IMU operating in degraded mode includes an FDM121 display unit version lower than V2.1.3, there is a risk of controlling a device other than the one intended.

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
<ul style="list-style-type: none"> • Masterpact NT • Masterpact NW • Compact NS 630b-1600 • PowerPact P-frame 	<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Compact NSX • PowerPact H-, J-, and L-frame 	<ul style="list-style-type: none"> • 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 unit displays the following status of the circuit breaker:

- **Open**: The circuit breaker is open.
- **Close**: The circuit breaker is closed.
- **TripSDE**: The circuit breaker is tripped on electrical fault.
- **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 unit).

Circuit Breaker Control Mode Selection

The FDM121 display unit 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 24](#)).

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

Circuit Breaker Control Commands

The FDM121 display unit 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 24](#)).

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

The control commands depend on the type of circuit breaker.

Range	Control commands
<ul style="list-style-type: none"> • Masterpact NT • Masterpact NW • Compact NS 630b-1600 • PowerPact P-frame 	<ul style="list-style-type: none"> • 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 <p>NOTE: No Reset command from the FDM121 display unit. It is only possible to use an electrical reset or to push the reset button on front face of the circuit breaker.</p>
<ul style="list-style-type: none"> • Compact NSX • PowerPact H-, J-, and L-frame 	<ul style="list-style-type: none"> • 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.

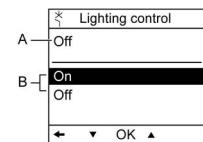
NOTE: The **Close** command and **Close self-timer** command are not allowed when the close order is inhibited.

Light and Load Control

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

The FDM121 display unit 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 24](#)).

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

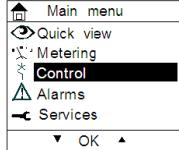
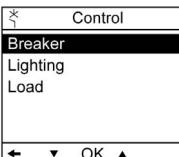
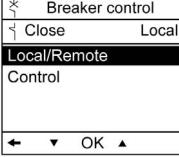
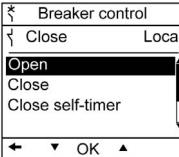
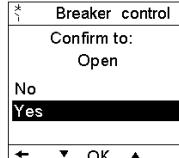
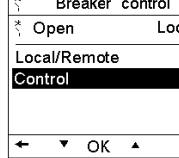
The light and load commands issued from the local FDM121 display unit are used as follows:

- 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 Guide*.

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.	
4	Select one of the three possible actions to control the Masterpact NW circuit breaker: <ul style="list-style-type: none"> ● 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 24).	
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.	

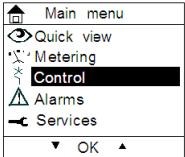
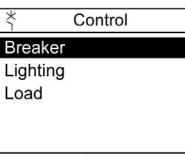
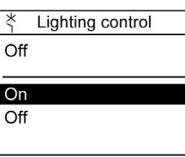
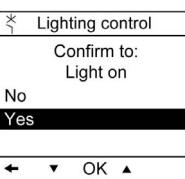
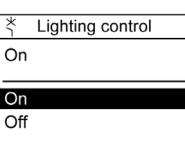
(1) Submenu available only when the hardware is compatible with the function, the control mode is local, and there is no conflict on ULP bus.

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 24).	
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: <ul style="list-style-type: none">● the FDM121 display unit 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 the customer engineering tool ([see page 16](#)).

For more information about alarm setup and priorities, refer to the *Micrologic Trip Units User Guides*.

Presentation

Events and alarms are displayed in the **Alarms** menu of the FDM121 display unit, 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 unit. 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 unit:
 - 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.

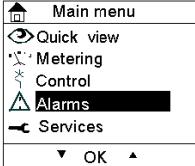
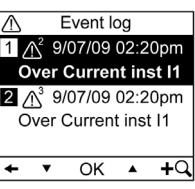
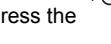
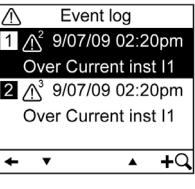
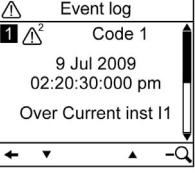
Alarm Real-Time Indication and Acknowledgment

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

Priority	Indication in real time	Clearing of alarms
High	<ul style="list-style-type: none"> ● New Event pop-up screen ● Alarm indicator LED blinking 	<p>1 Press the OK key to clear the New Event message.</p>  <p>2 Select the new event in the Event log screen and press the OK key.</p> <p>3 The LED turns off after every high-priority alarm has been acknowledged.</p>
Medium	<ul style="list-style-type: none"> ● Alarm indicator LED steady ON 	<p>1 Select the new event in the Event log screen and press the OK key.</p> <p>2 The LED turns off after every medium-priority alarm has been acknowledged and no high-priority alarm is present.</p>

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: <ul style="list-style-type: none"> 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.	

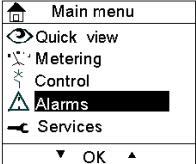
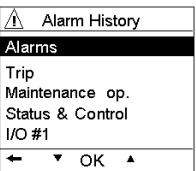
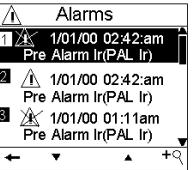
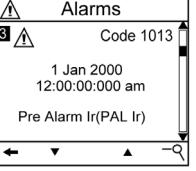
Pressing the  key in any **Event log** screen returns to the screen displayed before the **New event** pop-up screen has appeared.

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



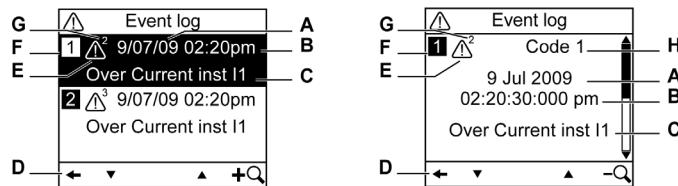
Navigation Through the Alarm History Submenu

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: <ul style="list-style-type: none"> ● Alarms ● Trip ● Maintenance op. (maintenance operations) ● Status & Control (device status and control) ● I/O #1 ● I/O #2 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 and minimum and maximum metering values mode
- Date and time settings from the FDM121 display unit
- FDM121 display unit contrast and brightness settings
- Maintenance indicators (operation counters, load profile, and so on)
- IMU product identification information
- Language selection for the FDM121 screens
- Monitoring and controlling the IO modules (status, forcing command, and counters)
- IFE IP address setting for the IFE Ethernet interface for LV circuit breaker connected to FDM121 display unit

Availability of menu items depends on the devices connected to the FDM121 display unit:

- **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 LV circuit breaker is connected.

Settings Retained in the Event of a Power Loss

If the FDM121 power supply is lost, the FDM121 display unit 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:

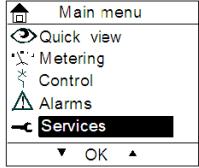
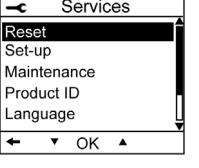
- all energy meters and minimum and maximum measurement values in a single operation.
- the energy meters only: active energy (**Ep**), reactive energy ((**Eq**)), and apparent energy (**Es**) meters.
- a group of minimum and maximum measurement values only.

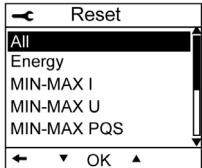
For the group of currents, for example, the following minimum and maximum values are reset simultaneously:

- 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:

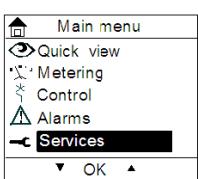
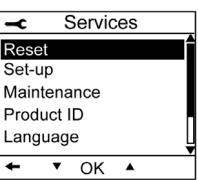
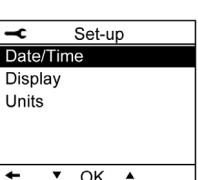
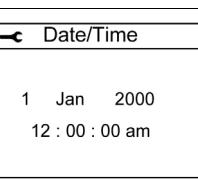
Step	Action	Display
1	Select the Services menu in the Main menu by using the ▼ and ▲ keys. Confirm selection of the Services menu by pressing the OK key.	
2	The Services menu is displayed. Select the Reset submenu by using the ▼ and ▲ keys. Confirm selection of the Reset submenu by pressing the OK key.	

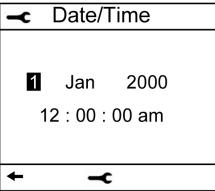
Step	Action	Display
3	The Reset submenu is displayed, with the choice of metering groups that can be reset (three screens). Select MIN-MAX I by using the ▼ and ▲ keys to reset all of the minimum and maximum values of the currents. Confirm selection of resetting the MIN-MAX I group by pressing the OK 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 24).	
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 Unit

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

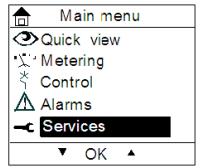
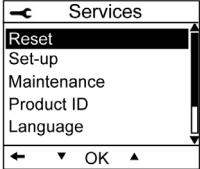
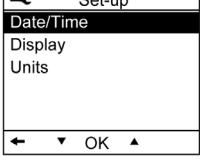
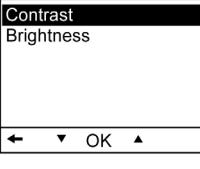
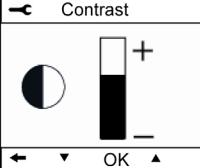
Step	Action	Display
1	Select the Services menu in the Main menu by using the ▼ and ▲ keys. Confirm selection of the Services menu by pressing the OK key.	
2	The Services menu is displayed. Select the Set-up submenu by using the ▼ and ▲ keys. Confirm selection of the Set-up submenu by pressing the OK key.	
3	The Set-up submenu is displayed. Confirm selection of the Date/Time submenu by pressing the OK key.	
4	The Date/Time submenu is displayed. Press the ◀ key to set the system date and time.	

Step	Action	Display
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 Unit

Navigation for setting the contrast and brightness is similar.

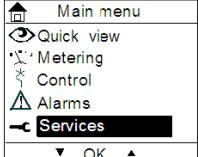
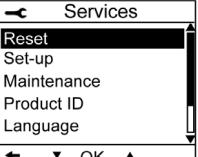
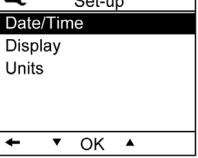
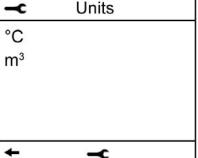
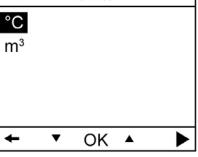
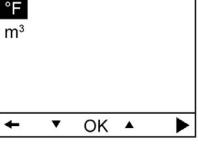
The procedure for setting contrast on the FDM121 display unit from the **Services** menu is as follows:

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 unit. 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 Unit

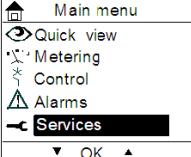
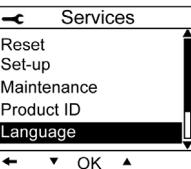
Navigation for setting the physical unit for the display of temperature ($^{\circ}\text{C}$ or $^{\circ}\text{F}$) and volume (m^3 , US gallon **galUS**, or imperial gallon **galGB**) is similar.

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.	

Choosing the Language on the FDM121 Display Unit

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

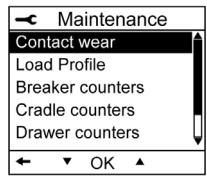
Step	Action	Display
1	Select the Services menu in the Main menu by using the ▼ and ▲ keys. Confirm selection of the Services menu by pressing the OK key.	
2	The Services menu is displayed. Select the Language submenu by using the ▼ and ▲ keys. Confirm selection of the Language submenu by pressing the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

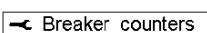
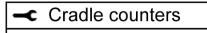
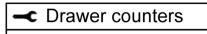
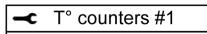
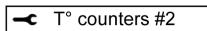
Maintenance Submenu Screens

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 unit connected to a Compact NSX circuit breaker. The **Maintenance** submenu is accessible from the **Services** menu in the **Main menu**.

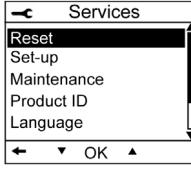
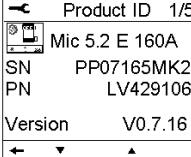
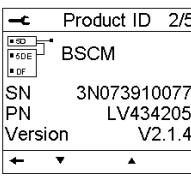
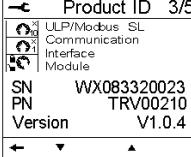
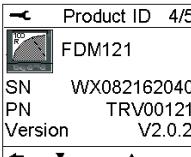
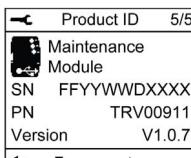
Screens	Description
	Select the maintenance screen in the Maintenance submenu by using the ▼ and ▲ keys. Confirm selection of the maintenance screen by pressing the OK key.

Screens	Description								
 Contact wear <table border="1" data-bbox="345 238 552 390"> <tr> <td>Rate</td> <td>9%</td> </tr> </table>	Rate	9%	The Contact wear screen in the Maintenance submenu displays the amount of wear on the circuit breaker contacts.						
Rate	9%								
 Load Profile <table border="1" data-bbox="345 458 552 588"> <tr> <td>0...49%</td> <td>610 Hours</td> </tr> <tr> <td>50...79%</td> <td>0 Hours</td> </tr> <tr> <td>80...89%</td> <td>0 Hours</td> </tr> <tr> <td>90...100%</td> <td>3 Hours</td> </tr> </table>	0...49%	610 Hours	50...79%	0 Hours	80...89%	0 Hours	90...100%	3 Hours	The Load Profile screen in the Maintenance submenu displays four circuit breaker operating hours counters for four loading sections.
0...49%	610 Hours								
50...79%	0 Hours								
80...89%	0 Hours								
90...100%	3 Hours								
 Breaker counters <table border="1" data-bbox="345 655 552 817"> <tr> <td>Operations</td> <td>39</td> </tr> <tr> <td>TripSDE</td> <td>26</td> </tr> <tr> <td>Close cmd</td> <td>0</td> </tr> </table>	Operations	39	TripSDE	26	Close cmd	0	The Breaker counters screen in the Maintenance submenu displays the values of the counters: <ul style="list-style-type: none"> ● 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 		
Operations	39								
TripSDE	26								
Close cmd	0								
 Cradle counters <table border="1" data-bbox="345 884 552 1046"> <tr> <td>Connected CE</td> <td>4</td> </tr> <tr> <td>Test CT</td> <td>8</td> </tr> <tr> <td>Disconnected CD</td> <td>4</td> </tr> </table>	Connected CE	4	Test CT	8	Disconnected CD	4	The Cradle counters screen in the Maintenance submenu displays: <ul style="list-style-type: none"> ● the cradle connected position counter (CE) ● the cradle test position counter (CT) ● the cradle disconnected position counter (CD) 		
Connected CE	4								
Test CT	8								
Disconnected CD	4								
 Drawer counters <table border="1" data-bbox="345 1114 552 1275"> <tr> <td>Connected CE</td> <td>5</td> </tr> <tr> <td>Test CT</td> <td>28</td> </tr> <tr> <td>Disconnected CD</td> <td>32</td> </tr> </table>	Connected CE	5	Test CT	28	Disconnected CD	32	The Drawer counters screen in the Maintenance submenu displays: <ul style="list-style-type: none"> ● the drawer connected position counter (CE) ● the drawer test position counter (CT) ● the drawer disconnected position counter (CD) 		
Connected CE	5								
Test CT	28								
Disconnected CD	32								
 T° counters #1 <table border="1" data-bbox="345 1343 552 1504"> <tr> <td>Threshold 1</td> <td>215</td> </tr> <tr> <td>Threshold 2</td> <td>44</td> </tr> <tr> <td>Threshold 3</td> <td>2</td> </tr> </table>	Threshold 1	215	Threshold 2	44	Threshold 3	2	The T° counters #1 screen in the Maintenance submenu displays: <ul style="list-style-type: none"> ● 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 		
Threshold 1	215								
Threshold 2	44								
Threshold 3	2								
 T° counters #2 <table border="1" data-bbox="345 1569 552 1733"> <tr> <td>Threshold 1</td> <td>0</td> </tr> <tr> <td>Threshold 2</td> <td>0</td> </tr> <tr> <td>Threshold 3</td> <td>0</td> </tr> </table>	Threshold 1	0	Threshold 2	0	Threshold 3	0	The T° counters #2 screen in the Maintenance submenu displays: <ul style="list-style-type: none"> ● 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 		
Threshold 1	0								
Threshold 2	0								
Threshold 3	0								

Getting the Product Identification

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

The procedure for accessing the module identification for an IMU consisting of a Compact NSX circuit breaker equipped with a Micrologic 5.2 E trip unit and a BSCM, an IFM and an FDM121 display unit, and a maintenance module is as follows:

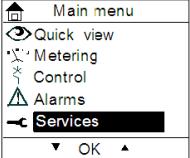
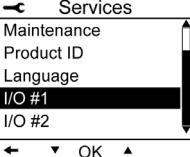
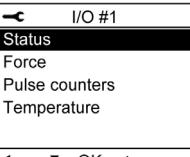
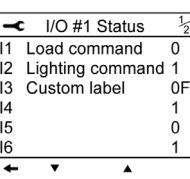
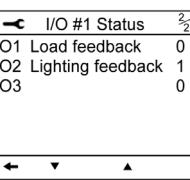
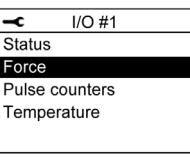
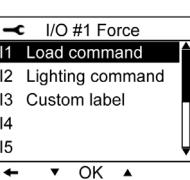
Step	Action	Display
1	Select the Services menu in the Main menu , then select the Product ID submenu by using the ▼ and ▲ keys. Confirm selection of the Product ID submenu by pressing the OK key.	
2	The first screen displays the identifying information for the Micrologic trip unit: <ul style="list-style-type: none">● 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: <ul style="list-style-type: none">● 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 of LV circuit breaker: <ul style="list-style-type: none">● IFM description● SN = Serial number● PN = IFM part number● Version = Firmware version	
5	The next screen displays the identifying information for the FDM121 display unit: <ul style="list-style-type: none">● FDM121● SN = Serial number● PN = FDM121 part number● Version = Firmware version	
6	The next screen displays the identifying information for the maintenance module: <ul style="list-style-type: none">● Maintenance module● SN = Serial number● PN = Maintenance module part number● Version = Firmware version	

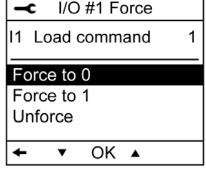
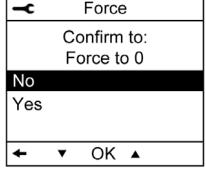
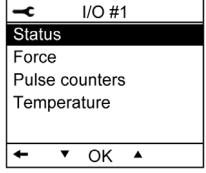
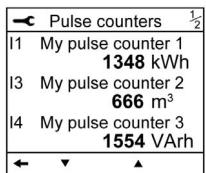
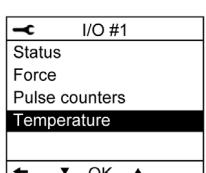
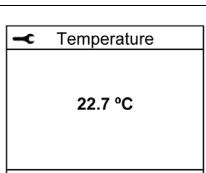
Navigation Through the IO Module Screens

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

- **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

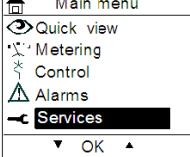
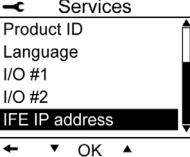
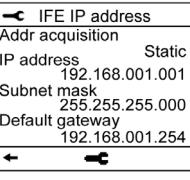
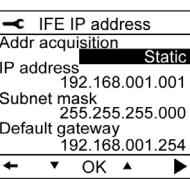
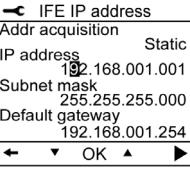
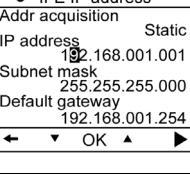
The procedure for navigating through the IO module screens is as follows:

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.	
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: <ul style="list-style-type: none"> ● 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: <ul style="list-style-type: none"> ● 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.	

Step	Action	Display
8	<p>The I/O # Force screen of a selected input or output is divided into two parts:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Force to 0 • Force to 1 • Unforce <p>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 24).</p>	
9	<p>A screen confirming the action to be carried out is displayed. Select Yes to confirm the action to be carried out.</p>	
10	<p>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.</p>	
11	<p>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 42).</p>	
12	<p>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.</p>	
13	<p>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 42).</p>	

Setting the IP Address of the IFE Ethernet Interface for LV 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.	
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 24). 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: <ul style="list-style-type: none">• 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.



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Schneider Electric Industries SAS
35, rue Joseph Monier
CS30323
F - 92506 Rueil Malmaison Cedex

www.schneider-electric.com

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

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