

Masterpact MTZ2/MTZ3

Circuit Breakers and Switch-Disconnectors from 800 to 6300 A

User Guide

10/2016



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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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Important Information

NOTICE

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



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



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

DANGER

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

WARNING

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

CAUTION

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

NOTICE

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

PLEASE NOTE

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

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

About the Book



At a Glance

Document Scope

The aim of this guide is to provide users, installers, and maintenance personnel with technical information needed to operate Masterpact™ MTZ2/MTZ3 circuit breakers and switch-disconnectors, in compliance with the IEC standards.

Validity Note

This document applies to Masterpact MTZ2/MTZ3 circuit breakers and switch-disconnectors.

Related Documents

Title of Documentation	Reference Number
<i>Micrologic X Control Unit - User Guide</i>	DOCA0102EN DOCA0102ES DOCA0102FR DOCA0102ZH
<i>Masterpact MTZ - Modbus Communication Guide</i>	DOCA0105EN DOCA0105ES DOCA0105FR DOCA0105ZH
<i>Masterpact MTZ Circuit Breakers - Maintenance Guide</i>	DOCA0099EN DOCA0099ES DOCA0099FR DOCA0099ZH
<i>Masterpact MTZ Catalogue</i>	LVPED216026EN LVPED216026FR
<i>IO Input/Output Application Module for One Circuit Breaker - User Guide</i>	DOCA0055EN DOCA0055ES DOCA0055FR DOCA0055ZH
<i>IFE Ethernet Interface for One Circuit Breaker - User Guide</i>	DOCA0084EN DOCA0084FR DOCA0084ES DOCA0084ZH
<i>EIFE Embedded Ethernet Interface for One Masterpact MTZ Drawout Circuit Breaker - User Guide</i>	DOCA0106EN DOCA0106FR DOCA0106ES DOCA0106ZH
<i>ULP System - User Guide</i>	DOCA0093EN DOCA0093ES DOCA0093FR DOCA0093ZH

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Chapter 1

Masterpact MTZ2/MTZ3 Description

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
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Fixed Device	12
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Go2SE Landing Page	28
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Masterpact MTZ2/MTZ3 Range

Description

The Masterpact MTZ2/MTZ3 range of circuit breakers and switch-disconnectors offers current ratings from 800 A to 6,300 A, for AC power systems up to 1,150 Vac.

The Masterpact MTZ2/MTZ3 range is available in the following frame sizes:

- Masterpact MTZ2 for current ratings from 800 A to 4,000 A
- Masterpact MTZ3 for current ratings from 4,000 A to 6,300 A

Each frame size is available in the following power systems:

- 3-pole (3P)
- 4-pole (4P)

Devices are available in the following installation types:

- Fixed-mounted devices
- Drawout devices

Convention

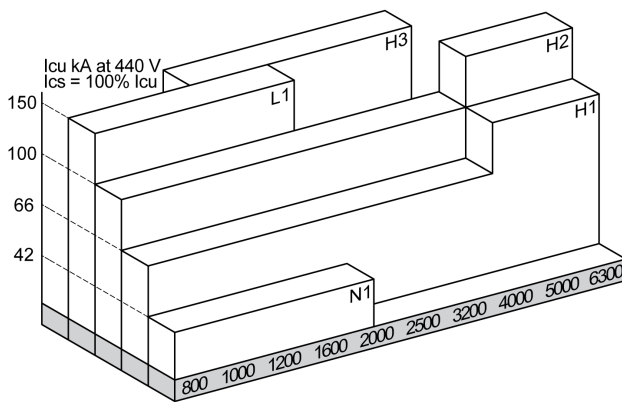
In this guide, the term *Masterpact MTZ device* covers circuit breakers and switch-disconnectors.

Circuit Breakers

The following performance levels are available:

- N1: standard short-circuit level (42 kA) with total discrimination
- H1: high short-circuit level (66 kA) with total discrimination
- H2: very high short-circuit level (100 kA) with very high discrimination (85 kA)
- H3: extremely high short-circuit level (150 kA) with high discrimination (66 kA)
- L1: extremely high short-circuit level (150 kA) with strong current limitation and significant discrimination (30 kA)

NOTE: The values above correspond to a 440 Vac network, for higher voltage levels the values can be different. Refer to *Masterpact MTZ Catalogue*.



Circuit breakers are fitted with a Micrologic™ X control unit.

For full information about available circuit breaker models, frame sizes, interrupting ratings, sensor ratings, and control units, refer to *Masterpact MTZ Catalogue*.

Switch-Disconnectors

The following performance levels are available:

- NA: no protection
- HA: no protection

For information about available switch-disconnector models and frame sizes, refer to *Masterpact MTZ Catalogue*.

Neutral Position on 4P Devices

On 4P devices, the neutral is on the left side as standard.

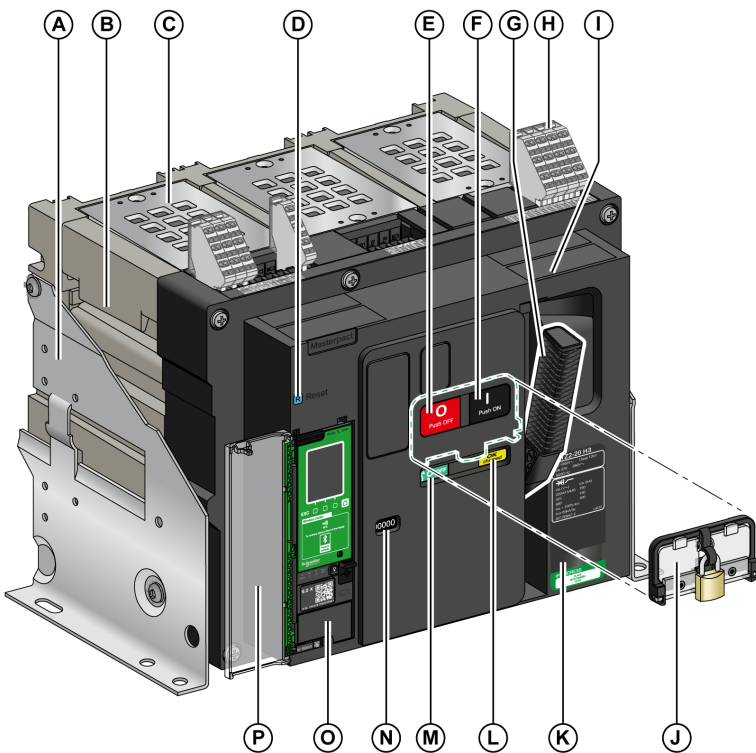
On 4P switch-disconnectors, the neutral position can be switched from the right side to the left side (except on Masterpact MTZ3 HA).

For 4P circuit breakers with performance levels H1 and H2, a version with neutral on the right side is available.

Fixed Device

Fixed Device Description

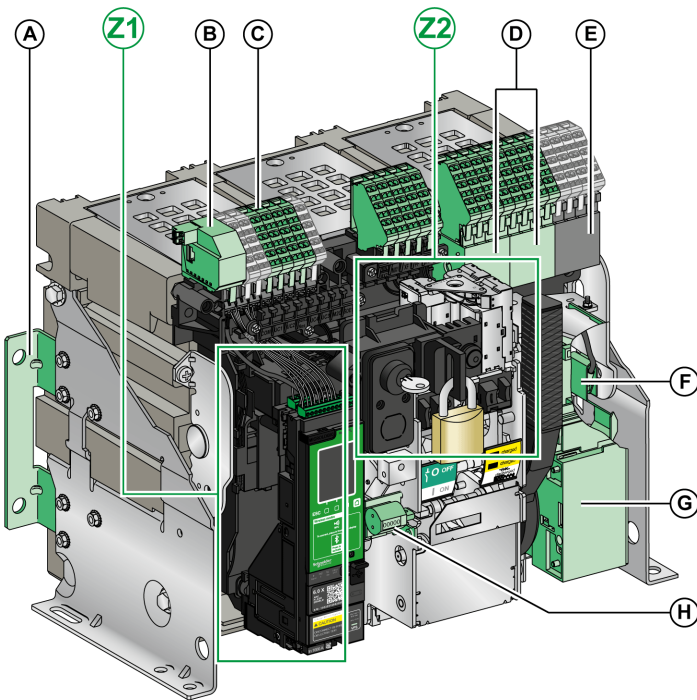
The following image shows the standard version of the fixed device (no optional accessories).



- A Mounting side plate
- B Carrying grip
- C Arc chute
- D Fault-trip reset button
- E Opening pushbutton
- F Closing pushbutton
- G Spring charging handle
- H Terminal blocks for standard accessories
- I Front cover
- J VBP pushbutton locking cover (optional)
- K Rating plate
- L Spring charged and ready-to-close indicator
- M Position indicator of main contacts
- N Window to read the (optional) CDM mechanical operation counter
- O Control unit
- P Control unit transparent cover

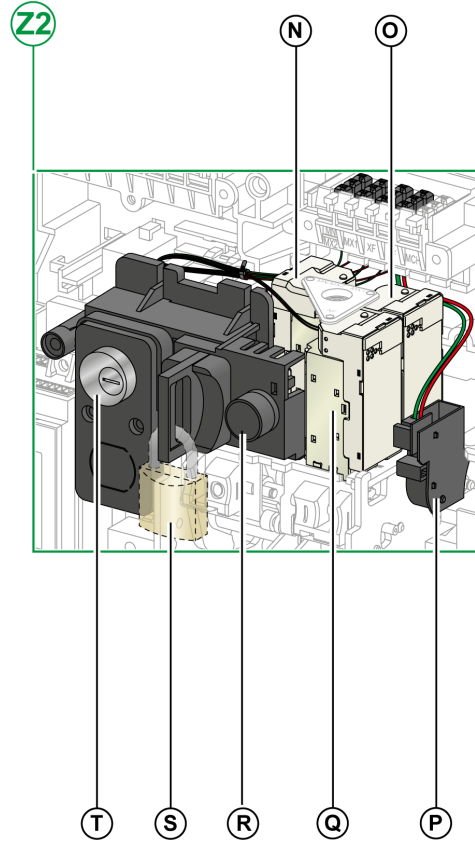
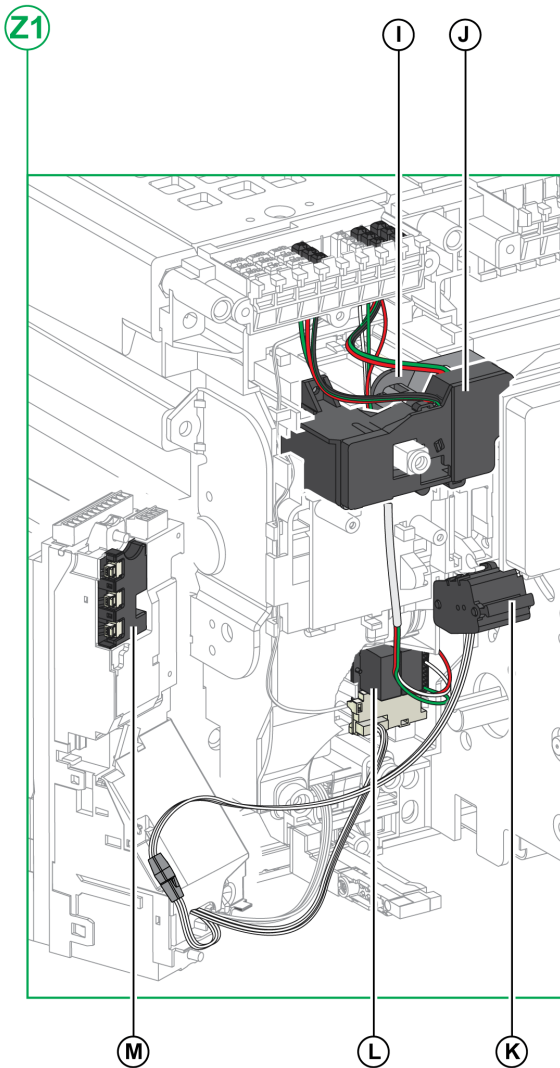
Fixed Device Accessories Description

The following image shows the accessories available for the fixed device.



- A Additional support brackets for mounting on a backplate
- B ULP port module
- C Terminal blocks for optional accessories
- D Optional block of four OF indication contacts
- E Standard block of four OF indication contacts
- F KMT grounding kit
- G MCH gear motor
- H CDM mechanical operation counter
- Z1, Z2 See following images

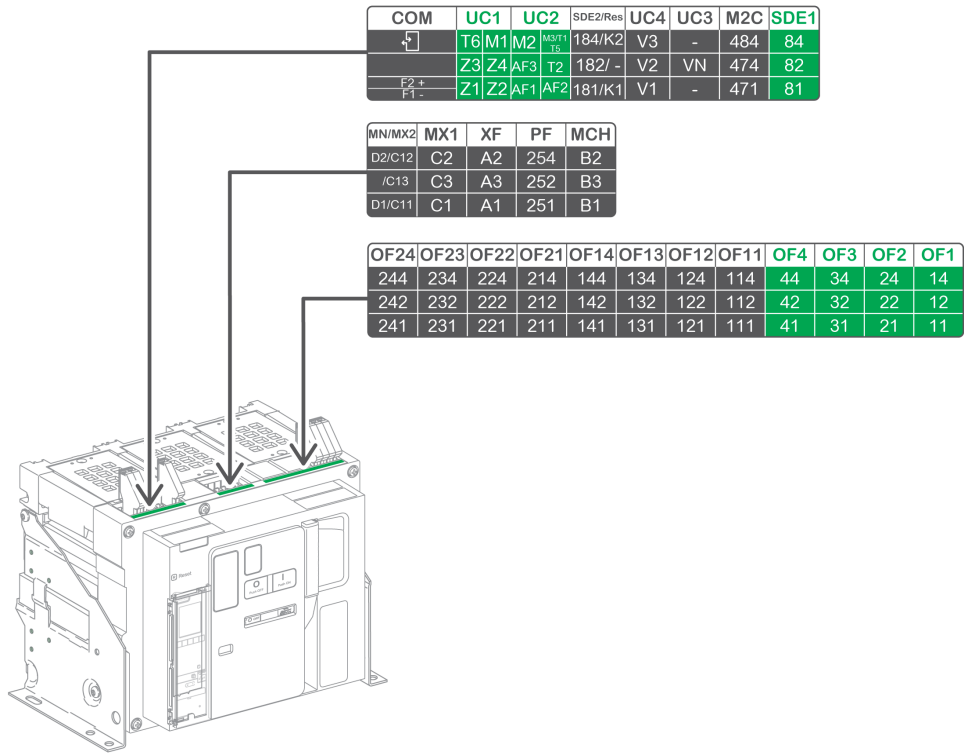
The following images zoom in on the accessories for the fixed device:



- I** Standard SDE1 fault-trip indication contact
- J** Optional SDE2 fault-trip indication contact or RES electrical remote reset
- K** Microswitch
- L** M2C programmable contacts
- M** Isolation module

- N** MN undervoltage release or MX2 opening voltage release
- O** MX1 opening voltage release
- P** PF ready-to-close contact
- Q** XF closing voltage release
- R** BPFE electrical closing pushbutton
- S** VCPO OFF-position locking by padlocks
- T** VSPO OFF-position locking by keylocks

Fixed Device Terminal Block Description



- Terminal block supplied as standard
- Optional terminal block

The following table describes the assignment of the terminal blocks.

Block	Marking	Description	Standard/Optional
A	COM	ULP port module or terminal block for the external power supply of the Micrologic X control unit	Optional
	UC1	Zone selective interlocking, rectangular sensor, or MDGF module input	Standard
	UC2	Neutral external sensors, rectangular sensor, or MDGF module input	Standard
	SDE2/RES	SDE2 fault-trip indication contact 2 or RES electrical remote reset	Optional
	UC4	External voltage connector	Optional
	UC3	External voltage connector	Optional
	M2C	M2C programmable contacts	Optional
	SDE1	SDE1 fault-trip indication contact 1	Standard
B	MN/MX2	MN undervoltage release or MX2 opening voltage release	Optional
	MX1	MX1 opening voltage release	Optional
	XF	XF closing voltage release	Optional
	PF	PF ready-to-close contact	Optional
	MCH	MCH gear motor	Optional
C	OF21–OF24	4 OF indication contacts	Optional
	OF11–OF14	4 OF indication contacts	Optional
	OF1–OF4	4 OF indication contacts	Standard

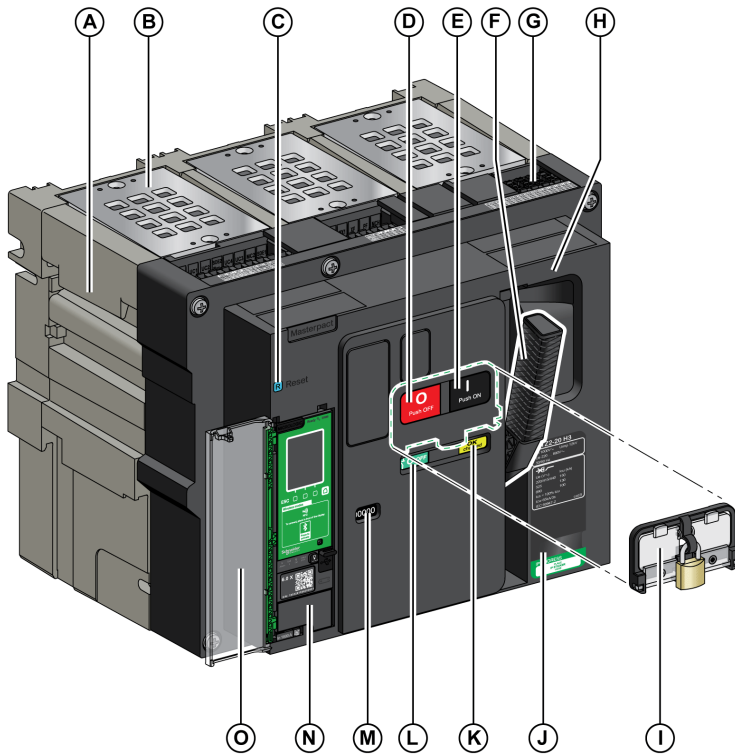
Drawout Device

Definition

A drawout device is composed of the moving part (also called the device) and the chassis (or fixed part).

Drawout Device Moving Part Description

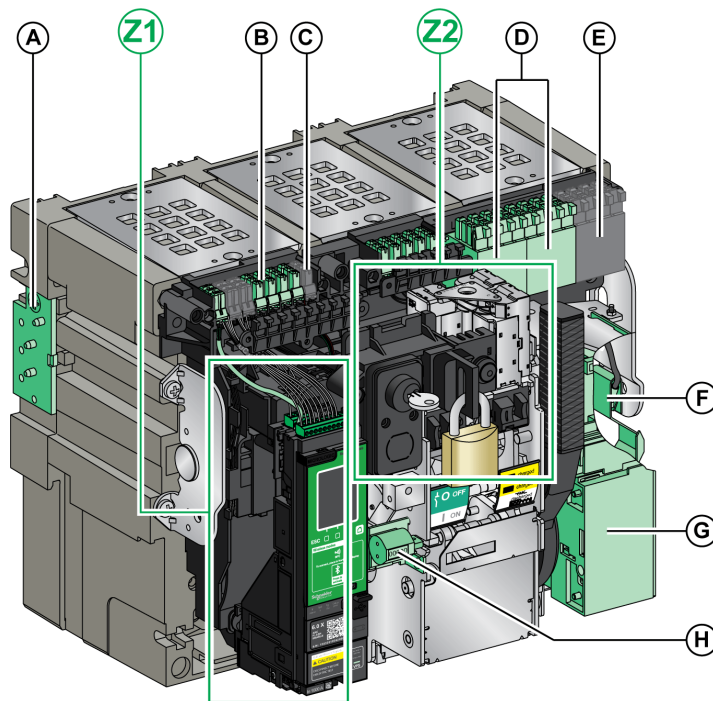
The following image shows the standard version of the moving part of a drawout device (no optional accessories).



- A Carrying grip
- B Arc chute
- C Fault-trip reset button
- D Opening pushbutton
- E Closing pushbutton
- F Spring charging handle
- G Terminal block connectors
- H Front cover
- I VBP pushbutton locking cover (optional)
- J Rating plate
- K Spring charged and ready-to-close indicator
- L Position indicator of main contacts
- M Window to consult the (optional) CDM mechanical operation counter
- N Control unit
- O Control unit transparent cover

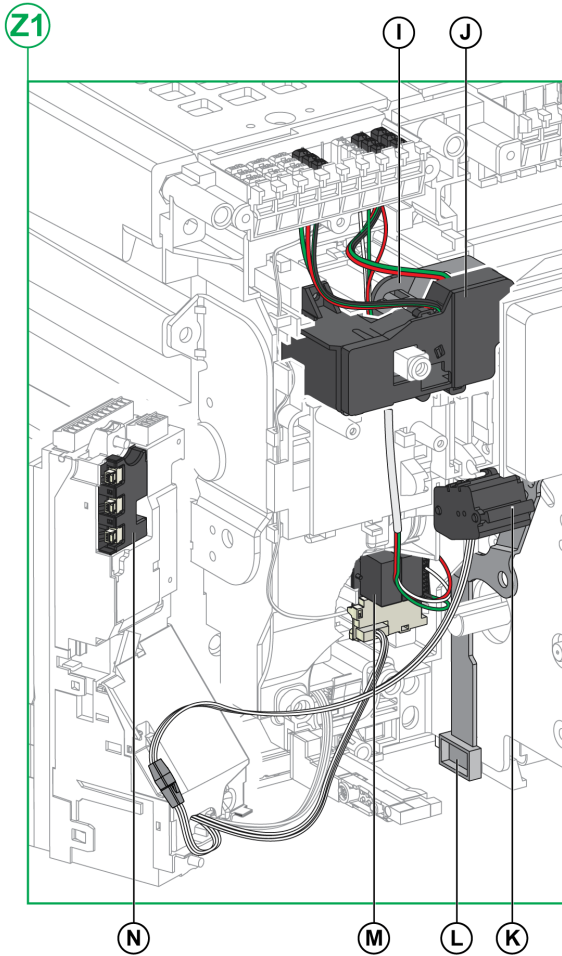
Drawout Device Accessories Description

The following image shows the accessories available for the moving part of a drawout device.

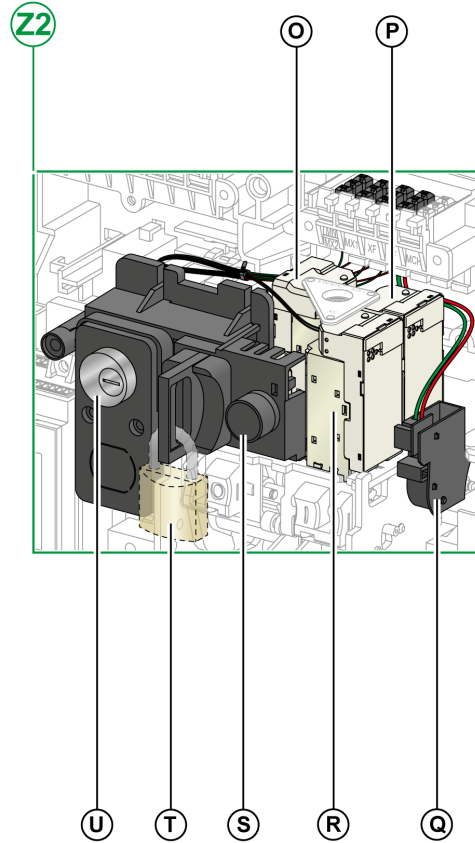


- A** VDC mismatch protection
- B** Terminal block connectors for optional accessories
- C** Terminal block connectors for standard accessories
- D** Optional block of four OF indication contacts or EF combined connected/closed contacts
- E** Standard block of four OF indication contacts
- F** KMT grounding kit
- G** MCH gear motor
- H** CDM mechanical operation counter
- Z1, Z2** See following images

The following images zoom in on the accessories for the moving part of a drawout device.



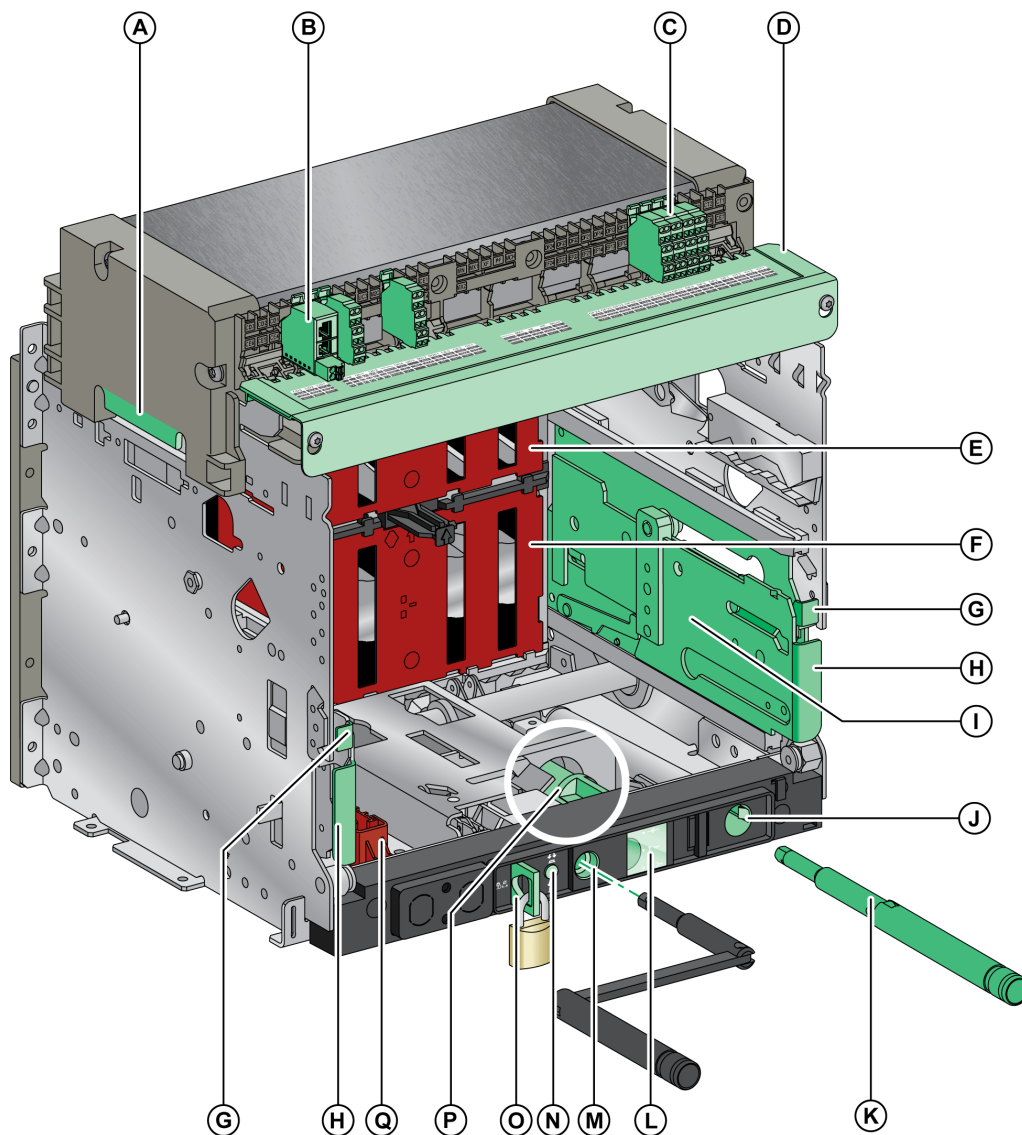
- I** Standard SDE1 fault-trip indication contact
- J** Optional SDE2 fault-trip indication contact or RES electrical remote reset
- K** Microswitch
- L** IBPO interlock between racking handle and opening pushbutton
- M** M2C programmable contacts
- N** Isolation module



- O** MN undervoltage release or MX2 opening voltage release
- P** MX1 opening voltage release
- Q** PF ready-to-close contact
- R** XF closing voltage release
- S** BPFE electrical closing pushbutton
- T** VCPO OFF-position locking by padlocks
- U** VSPO OFF-position locking by keylocks

Chassis Description

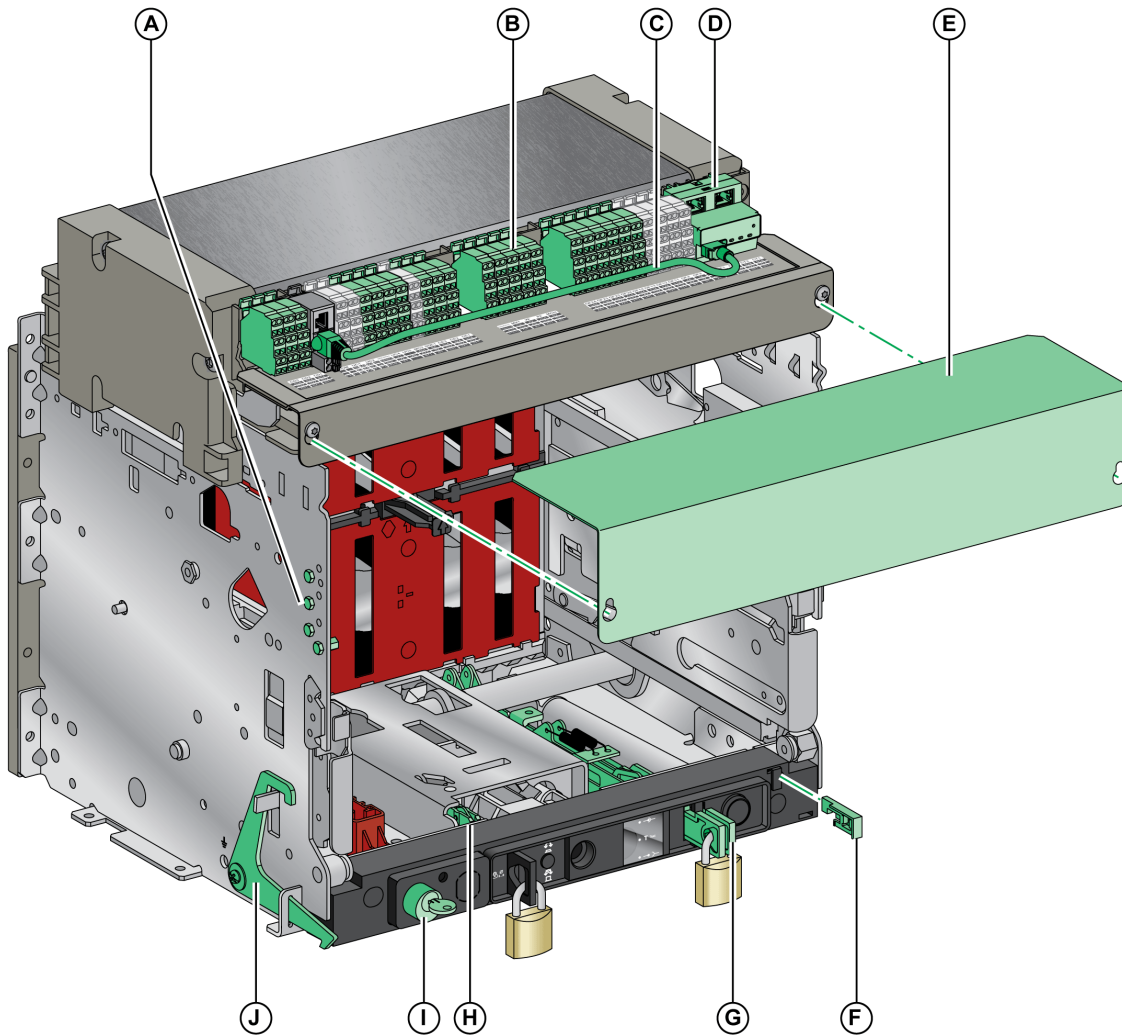
The following image shows the standard version of the chassis (no optional accessories).



- | | |
|---|---|
| A Carrying grip | K Racking handle |
| B ULP port module | L Moving part position indicator |
| C Terminal blocks for standard accessories | M Racking handle socket |
| D Wiring terminal cover | N Position release button |
| E Top safety shutter | O Chassis locking by padlocks |
| F Bottom safety shutter | P Latch for switching chassis locking from disconnected position to any position (connected, test, disconnected) |
| G Rail release tab | Q Shutter locking block |
| H Drawout grip | |
| I Extension rail | |
| J Racking handle storage space | |

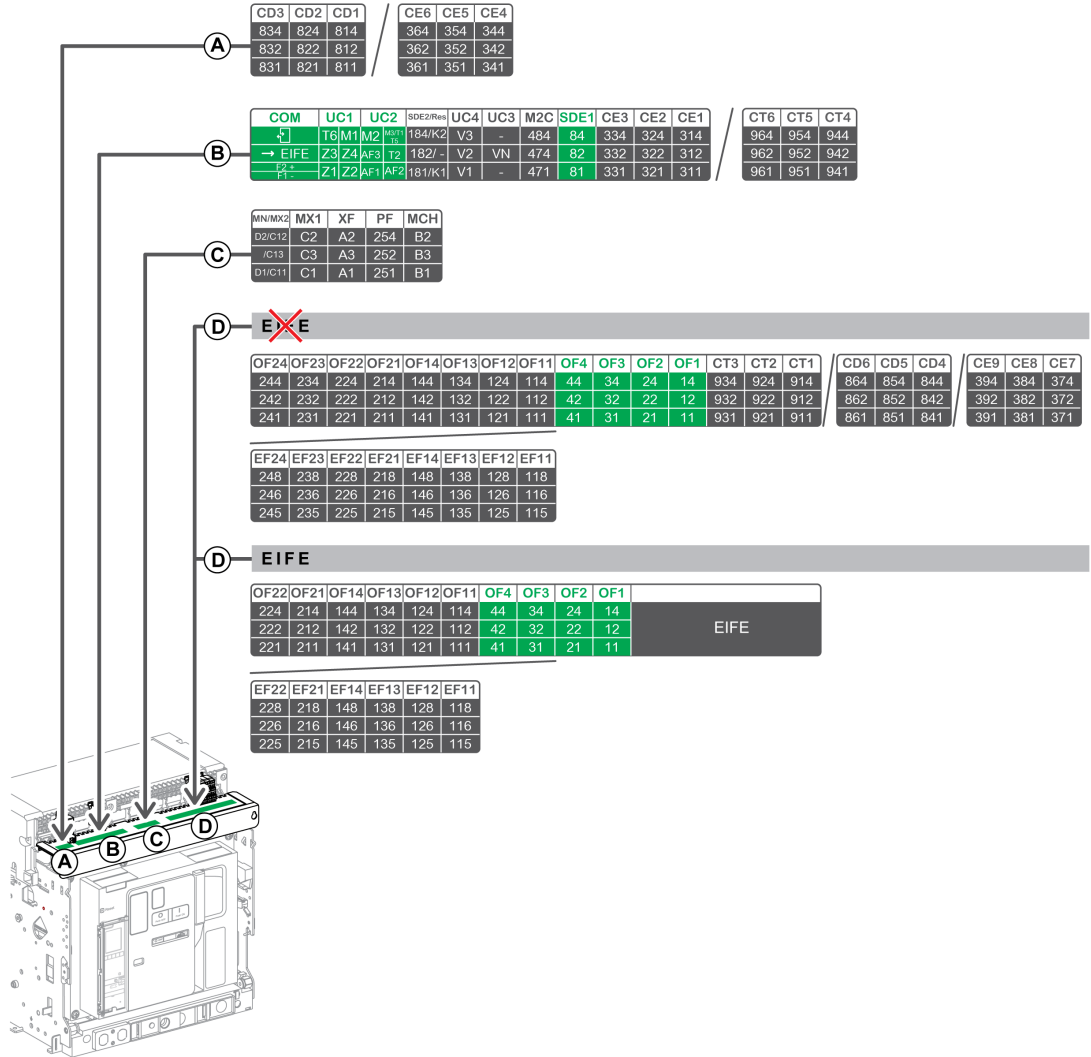
Chassis Accessories Description

The following image shows the accessories available for the chassis.



- | | |
|--|---|
| A VDC mismatch protection | F VPOC racking interlock |
| B Terminal blocks for optional accessories | G VIVC shutter position indication and locking |
| C Cord between ULP port module and EIFE interface | H IBPO interlock between racking handle and opening pushbutton |
| D EIFE embedded Ethernet interface | I VSPD chassis locking by keylocks |
| E CB auxiliary terminal shield | J VPEC door interlock |

Chassis Terminal Block Description



- Terminal block supplied as standard
- Optional terminal block

The following table describes the assignment of the terminal blocks.

Block	Marking	Description	Standard or optional
A	CD1-CD3 CE4-CE6	3 CD disconnected position contacts or 3 CE connected position contacts	Optional
B	COM	ULP port module or terminal block for the external power supply of the Micrologic X control unit	Standard
	UC1	Zone selective interlocking, rectangular sensor, or MDGF module input	Standard
	UC2	Neutral external sensors, rectangular sensor, or MDGF module input	Standard
	SDE2/RES	SDE2 fault-trip indication contact 2 or RES electrical remote reset	Optional
	UC4 (V1, V2, V3)	External voltage connector	Optional
	UC3 (VN)	Voltage connector	Optional
	M2C	M2C programmable contact	Optional
	SDE1	SDE1 fault-trip indication contact 1	Standard
	CE1-CE3 CT4-CT6	3 CE connected position contacts or 3 CT test position contacts	Optional

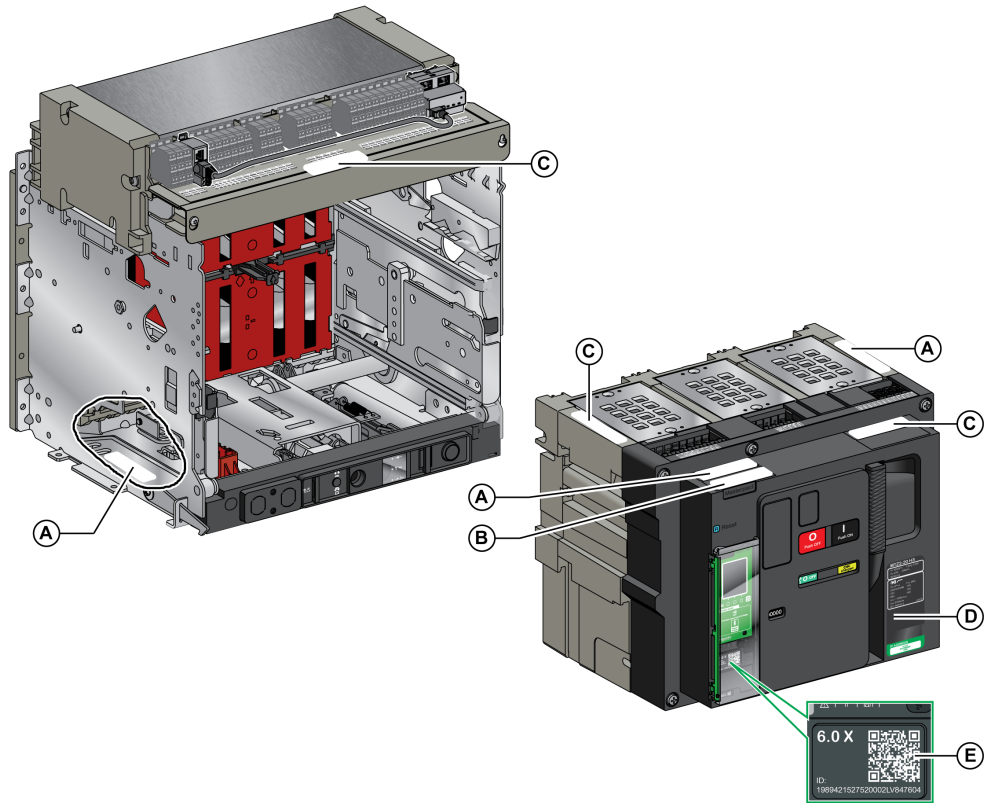
Block	Marking	Description	Standard or optional
C	MN/MX2	MN undervoltage release or MX2 opening voltage release	Optional
	MX1	MX1 opening voltage release	Optional
	XF	XF closing voltage release	Optional
	PF	PF ready-to-close contact	Optional
	MCH	MCH gear motor	Optional
D (without EIFE interface)	OF11–OF24 EF11–EF24	8 OF indication contacts or 8 EF combined connected/closed position auxiliary contacts	Optional
	OF1–OF4	4 OF indication contacts	Standard
	CT1–CT3 CD4–CD6 CE7–CE9	3 CT test position contacts or 3 CD disconnected position contacts or 3 CE connected position contacts	Optional
D (with EIFE interface)	OF11–OF22 EF11–EF22	6 OF indication contacts or 6 EF combined connected/closed position auxiliary contacts	Optional
	OF1–OF4	4 OF indication contacts	Standard
	EIFE	EIFE embedded Ethernet interface	Optional

Device Identification

Identification

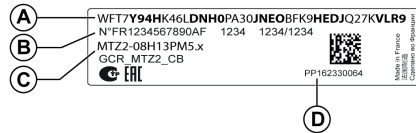
The Masterpact MTZ2/MTZ3 device can be identified in the following ways:

- Rating plate on device
- QR code on the Micrologic X control unit
- Identification labels on the device and on the chassis



- A** Product identification label
- B** Product checked label
- C** Accessory voltages label
- D** Rating plate
- E** QR code

Product Identification Label



The product identification label shows the following information:

- The product code (A)
- Schneider Electric internal identification numbers (B)
- A short description of the device (C), specifying the following characteristics
 - Range
 - Rating
 - Performance level
 - Number of poles
 - Control unit type
- The device serial number (D)

The product code is a line of code representing the complete configuration of a Masterpact circuit breaker or switch-disconnector. It is automatically generated for each Masterpact device after completing the configuration by using the MyPact configuration tool.

The product code appears on the invoice and on the delivery documents as well as on the Masterpact device and packaging labels.

The product code can be entered in the MyPact configuration tool, which generates the complete configuration of the Masterpact device.

Product Checked Label



The device serial number (SN) is coded PYYWWDXXXX, where:

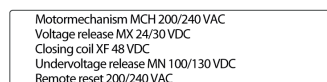
- PP: plant code
- YY: year of manufacture
- WW: week of manufacture
- D: day of the week of manufacture (Monday = 1)
- XXXX: the production number of the product on the day. Ranges from 0001 to 9999.

For example, PP162330064 is the sixty fourth device manufactured at plant PP on Wednesday, June 8, 2016.

The device test date code is coded PYYWWD HH:MM, where:

- PP: plant code
- YY: year of test
- WW: week of test
- D: day of the week of test (Monday = 1)
- HH:MM: the time of test in hours and minutes.

Accessory Voltages Label

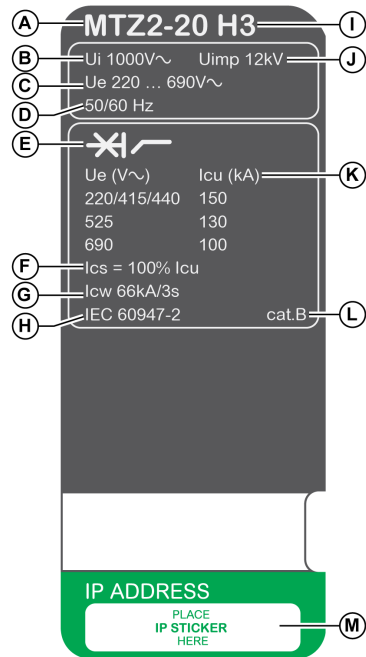


The accessory voltages label gives the voltage of the accessories which are installed in the device and which need to be connected to a power supply.

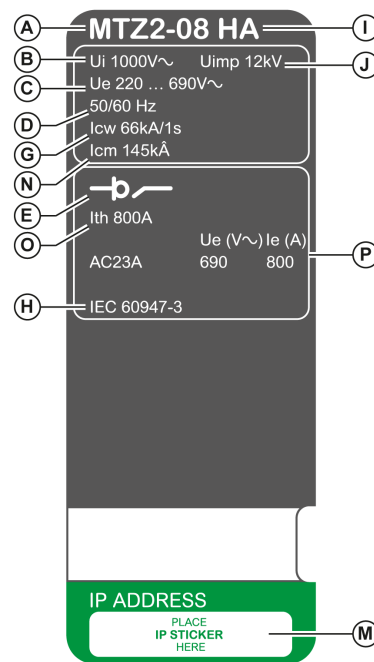
Rating Plate

The rating plate with the device information is located on the front cover of the device.

Circuit breaker rating plate



Switch-disconnector rating plate



- A** Device size and rated current x 100 A
- B** **U_i**: rated insulation voltage
- C** **U_e**: rated operational voltage
- D** Frequency
- E** Type of device: circuit breaker or switch-disconnector, suitable for isolation
- F** **I_{cs}**: rated service short-circuit breaking capacity
- G** **I_{cw}**: rated short-time withstand current
- H** Standards

- I** Performance level
- J** **U_{imp}**: rated impulse withstand voltage
- K** **I_{cu}**: rated ultimate short-circuit breaking capacity
- L** Selectivity category as per IEC 60947-2
- M** Place for sticker with IP address of the optional EIFE interface
- N** **I_{cm}**: rated short-circuit making capacity
- O** **I_{th}**: conventional free air thermal current
- P** **I_e**: rated operational current

QR Code

When the QR code on the front face of a Micrologic X control unit is flashed with a smartphone running a QR code reader and connected to the Internet, the Go2SE landing page is displayed (*see page 28*). The landing page displays some information about the device and a list of menus.

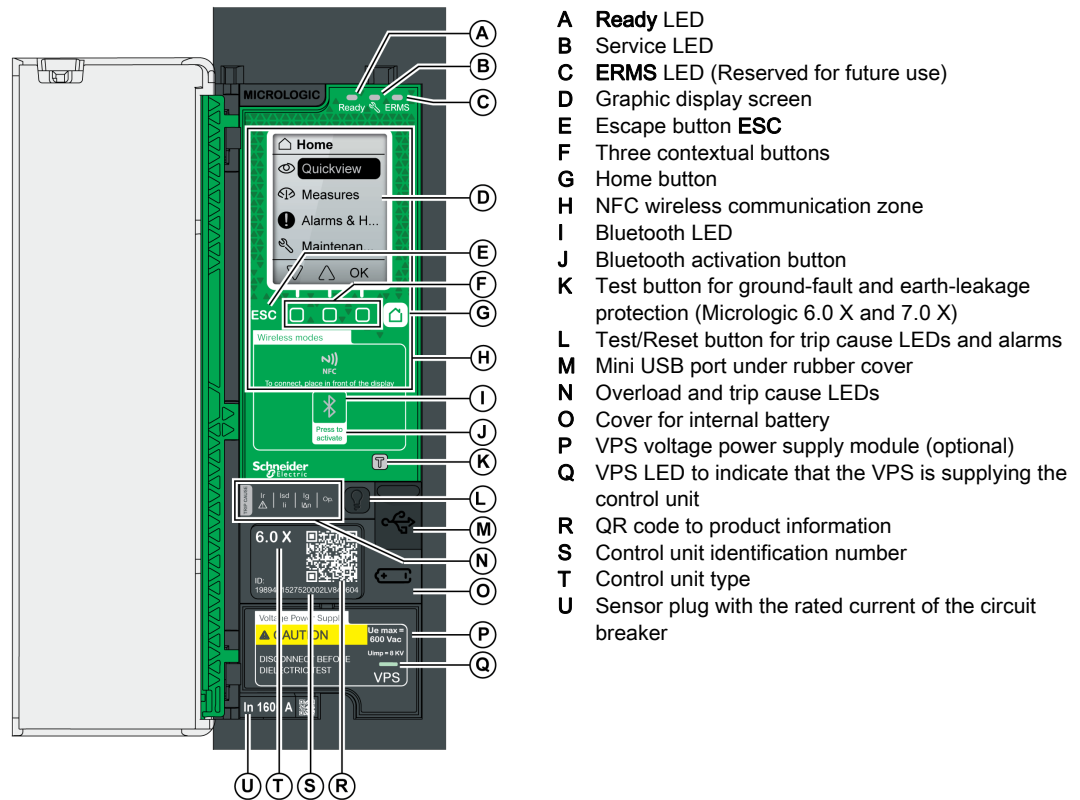
Micrologic X Control Unit: Description

Introduction


The Micrologic X control unit includes:

- Micrologic X status LEDs
- A local HMI comprising a graphic display with colored backlight, contextual buttons, and dedicated buttons
- LEDs to monitor circuit breaker operations as well as the source of trips and alarms

Control Unit Description



Micrologic X Status LEDs

LED	Description
Ready	The Ready LED flashes when the control unit is ready to provide standard protection.
	The service LED alerts the user to the overall health of the circuit breaker. There are three states: <ul style="list-style-type: none"> • Unlit LED: the circuit breaker is in good working order. • Orange LED: non-urgent alert message. • Red LED: alert message that requires immediate action.
ERMS	The ERMS (Energy Reduction Maintenance Setting) LED is reserved for future use.

Local HMI Display Screen with Contextual Buttons and Dedicated Buttons

The local HMI screen and buttons are used to:

- Navigate the menu structure.
- Display monitored values.
- Access and edit configuration settings.

NFC Communication Zone

The NFC communication zone is used to establish an NFC connection between a smartphone that has the Masterpact MTZ Mobile App and the Micrologic X control unit. When the connection is established, the circuit breaker operating data is automatically uploaded to the smartphone.

Bluetooth Activation Button and LED





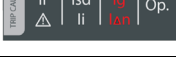
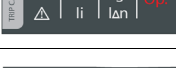
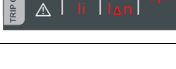
The Bluetooth activation button is used to establish a Bluetooth low energy connection between a smartphone that has the Masterpact MTZ Mobile App and the Micrologic X control unit. When the connection is established, the circuit breaker can be monitored and controlled from the smartphone. When the Bluetooth LED is blinking, it indicates that a Bluetooth device is in communication.

Test Button

The test button is used to test the ground-fault protection for Micrologic 6.0 X and the earth-leakage protection for Micrologic 7.0 X.

Overload and Trip Cause LEDs

The indications of the four trip cause LEDs depend on the type of Micrologic X control unit.

LEDs	Description
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X, 6.0 X, 7.0 X: Overload pre-alarm, the load exceeds 90% and is lower than 105% of the Ir setting of the long-time protection.
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X, 6.0 X, 7.0 X: Overload alarm, the load exceeds 105% of the Ir setting of the long-time protection.
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X, 6.0 X, 7.0 X: Trip due to long-time protection.
	<ul style="list-style-type: none"> Micrologic 2.0 X: Trip due to instantaneous protection. Micrologic 5.0 X, 6.0 X, 7.0 X: Trip due to short-time protection or instantaneous protection.
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X: Not used. Micrologic 6.0 X: Trip due to ground-fault protection. Micrologic 7.0 X: Trip due to earth-leakage protection.
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X, 6.0 X, 7.0 X: Trip due to other protection (optional protections).
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X, 6.0 X, 7.0 X: Micrologic control unit malfunction detected during self-test.

NOTE: If the Micrologic X control unit is not powered, the trip cause LEDs go off after 4 hours. After this period, press the Test/Reset button to light them again.

Test/Reset Button

The Test/Reset button performs the following functions:

- Test of the trip cause LEDs and the service LED: press the Test/Reset button, the five LEDs light up for 1 second. If all the LEDs do not light and the Micrologic X control unit is not powered, replace the internal battery.
After a test, any active trip cause LED is lit again.
- Reset of the latched events: press and hold the Test/Reset button for 3 seconds to reset the latched events and switch off the trip cause LEDs and the service LED.

NOTE: When the Micrologic X control unit is not powered by an external 24 Vdc power supply or through a USB connection, the Micrologic X control unit can be rebooted by pressing and holding the Test/Reset button for 15 seconds. The standard protection functions remain active during the reboot.

Mini USB Port

Remove the rubber cover of the mini USB port to connect the following devices:

- A Mobile Power Pack to supply power to the Micrologic X control unit.
- A PC equipped with Ecoreach software.

NOTE: It is not possible to connect a USB key to the Micrologic X control unit.

QR Code

When the QR code on the front face of a Micrologic X control unit is flashed with a smartphone running a QR code reader and connected to the Internet, the Go2SE landing page is displayed (*see page 28*). The landing page displays some information about the device and a list of menus.

Control Unit Identification Number

The identification number is made up as follows:

- The serial number of the Micrologic X control unit in the format FFFFFFFYWWDXXXXX
- The commercial reference of the control unit in the format LV8•••••

Use the identification number to register your Micrologic X control unit.

Registering your Micrologic X control unit enables you to keep your records up to date and enables traceability.

Control Unit Type

This code indicates the type of Micrologic control unit:

- The number (for example, 2.0) defines the types of protection provided by the control unit.
- The letter (X) identifies the range.

Internal Battery

The internal battery powers the trip cause LEDs and the main diagnostic functions in the absence of any other power supply.

VPS Voltage Power Supply Module

The VPS power supply module provides an internal voltage supply to the Micrologic X control unit.

The VPS module is optional for Micrologic 2.0 X, 5.0 X and 6.0 X. It is installed as standard on Micrologic 7.0 X.

Sensor Plug

The protection ranges depend on the rated current I_n , defined by the sensor plug present in the Micrologic X control unit.

Go2SE Landing Page

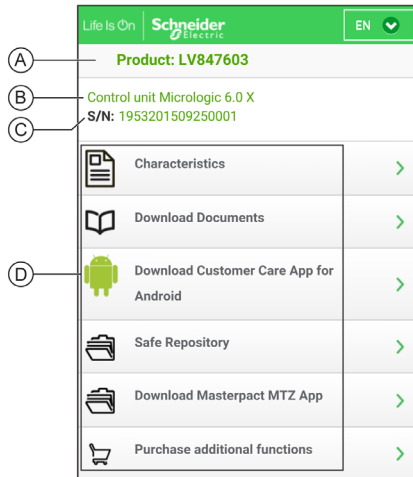
Presentation

When the QR code on the front face of a Micrologic X control unit is flashed with a smartphone running a QR code reader and connected to the Internet, the Go2SE landing page is displayed. The landing page displays some information about the device and a list of menus.

Landing Page Description

The landing page is accessible from Android and iOS smartphones. It displays the same list of menus with slight differences in presentation.

The following example shows the landing page displayed on an Android smartphone:



- A Commercial reference of Micrologic X control unit
- B Type of Micrologic X control unit
- C Serial number of Micrologic X control unit
- D Landing page menus. See the following menu descriptions for details.

Characteristics

Selecting this menu gives access to a product datasheet with detailed information about the Micrologic X control unit.

Download Documents

Selecting this menu gives access to documentation, including the following documents:

- *Micrologic X Control Unit - User Guide*
- *Masterpact MTZ1 Circuit Breakers and Switch-Disconnectors - User Guide*
- *Masterpact MTZ2/MTZ3 Circuit Breakers and Switch-Disconnectors - User Guide*

Download Customer Care App

Selecting this menu gives access to the Schneider Electric customer care mobile application **mySchneider** that can be downloaded on Android and iOS smartphones. The customer care application offers self-service instructions and easy access to expert support and information.

Safe Repository

Selecting this menu gives access to a web service allowing documentation linked to assets to be consulted, stored, and shared in a Schneider Electric environment. Access to the safe repository is restricted to authorized users.

Download Masterpact MTZ Mobile App

Selecting this menu gives access to the Masterpact MTZ Mobile App that can be downloaded and installed on Android and iOS smartphones.

Purchase Additional Functions

Selecting this menu gives direct access to the GoDigital marketplace webpage. Digital Modules are available for purchase in the marketplace.

Operating Conditions

Introduction

Masterpact MTZ devices are designed and tested for operation in industrial atmospheres. It is recommended that equipment is cooled or heated to the proper operating temperature and kept free of excessive vibration and dust.

Ambient Temperature

Masterpact MTZ devices can operate under the following temperature conditions:

- Electrical and mechanical characteristics specified for an ambient temperature of -25 °C to +70 °C .
- Circuit-breaker closing specified down to -35 °C by manual operation with closing pushbutton.

Storage conditions are as follows:

- -40 °C to +85 °C for the device without the control unit.
- -25 °C to +85 °C for the control unit.

Extreme Atmospheric Conditions

Masterpact MTZ devices have successfully passed tests for extreme atmospheric conditions, defined by the following standards:

Standard	Title
IEC 60068-2-1	Dry cold, at -40 °C
IEC 60068-2-2	Dry heat, at +85 °C
IEC 60068-2-30	Damp heat (temperature +55 °C, relative humidity 95%)
IEC 60068-2-52 level 2	Salt mist

Industrial Environments

Masterpact MTZ devices can operate in the industrial environments defined by IEC 60947 (pollution degree up to 3).

It is advisable to check that devices are installed in suitably cooled switchboards without excessive dust.

Conditions	Standard
Corrosive industrial atmospheres	Category 3C3 compliant with IEC 60721-3-3
Sea salts 0.8 to 8 mg/m ² day average over the year	Compliant with IEC 60721-2-5
Mechanically active substances	Category 3S3 compliant with IEC 60721-3-3

Beyond these conditions, Masterpact MTZ devices must be installed inside switchboards with an IP rating equal to or greater than IP54.

Vibration

Masterpact MTZ devices have successfully passed tests for the following vibration levels, in compliance with IEC 60068-2-6 and IEC 60068-2-27:

- 2 Hz to 13.2 Hz: amplitude +/- 1 mm.
- 13.2 Hz to 100 Hz: constant acceleration of 0.7 g.

Vibration testing to these levels is required by merchant marine inspection organizations (for example, Veritas, Lloyd's).

Conditions	Reference
Vibrations, shocks, and shakes in operational conditions	3M4 IEC 60721-3-3 compliant

Altitude

Masterpact MTZ devices are designed and tested to operate at altitudes below 2,000 m.

At altitudes above 2,000 m, the characteristics of the ambient air (electrical resistance, cooling capacity) lower product characteristics as follows:

Characteristics		Altitude			
		2,000 m	3,000 m	4,000 m	5,000 m
Impulse withstand voltage U_{imp} (kV)		12	11	10	8
Rated insulation voltage (U_i) (V)		1,000	900	780	700
Maximum rated operational voltage 50/60 Hz U_e (V)	Masterpact MTZ2/MTZ3 except H10	690	690	630	560
	Masterpact MTZ2/MTZ3 H10	1,000	890	795	700
Rated current (A) at 40 °C		1 x I_n	0.99 x I_n	0.96 x I_n	0.94 x I_n

NOTE: Intermediate values can be obtained by interpolation.

Electromagnetic Disturbances

Masterpact MTZ devices have protection against:

- Overvoltages caused by devices that generate electromagnetic disturbance.
- Overvoltages caused by atmospheric disturbance or by a distribution-system outage (for example, a lighting system failure).
- Devices emitting radio waves (for example, radio transmitters, walkie-talkies, or radar).
- Electrostatic discharge produced by users.

Masterpact MTZ devices have successfully passed the electromagnetic-compatibility tests (EMC) defined by the following international standards:

- IEC 60947-2, appendix F.
- IEC 60947-2, appendix B (control units with earth-leakage function).

The devices have passed the above tests and therefore:

- No nuisance tripping occurs.
- Tripping times are respected.

Chapter 2

Masterpact MTZ2/MTZ3 Normal Operation

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
2.1	Device Operating Actions	32
2.2	Drawout Device Racking Actions	54
2.3	Device Locking Actions	70
2.4	Device Interlocking Actions	86

Section 2.1

Device Operating Actions

What Is in This Section?

This section contains the following topics:

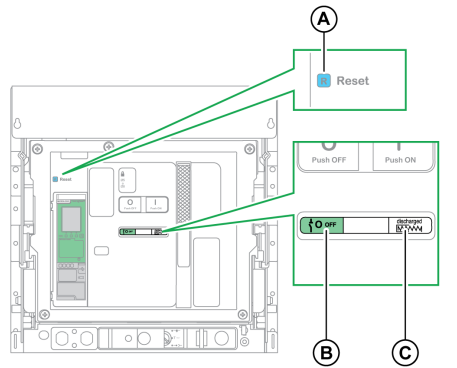
Topic	Page
Operating the Device	33
Control Modes	37
Opening the Device	42
Closing the Device	44
Resetting the Device	47
Operating Accessories	48

Operating the Device

Device Status

The indicators on the front of the device show the following information:

- Reset button:
 - In: the device is closed or open voluntarily (not tripped)
 - Out: the device has tripped
- Position indicator of main contacts: ON or OFF.
- Closing spring and ready-to-close indicator. The state can be one of the following:
 - Discharged (no energy to close the circuit breaker)
 - Charged not ready-to-close
 - Charged ready-to-close



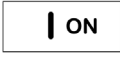


- A Reset button
- B Position indicator of main contacts
- C Closing spring and ready-to-close indicator

The combination of both indicators gives the device status:

Position indicator of main contacts	Closing spring and ready-to-close indicator	Device status description
		Device is off (contacts are open) and closing spring is discharged.
		Device is off (contacts are open) and closing spring is charged. The device is not ready-to-close because at least one of the following conditions is true: <ul style="list-style-type: none"> ● The device has tripped and must be reset. ● The MX opening voltage release is energized. ● The MN undervoltage release is not energized. ● The device is mechanically locked (by using padlock and/or keylock or by using interlocking cables) in the open position.
		Device is off (contacts are open) and closing spring is charged. The device is ready-to-close.
		Device is on (contacts are closed) and closing spring is discharged.
		Device is on (contacts are closed) and closing spring is charged. The device is not ready-to-close because it is already closed.

Device Indication Contacts

The position of the device main contacts is indicated by OF indication contacts.

Name	Contact number	Position of indicators and contacts		
		ON	OFF	Tripped (by Micrologic X control unit)
Device status	–	ON	OFF	Tripped (by Micrologic X control unit)
Position indicator of main contacts	–			
Main contact position	–	Closed	Open	Open
Reset button position	–	IN	IN	OUT
OF indication contact position	1–2	Open	Closed	Closed
	1–4	Closed	Open	Open
SDE indication contact position	1–2	Closed	Closed	Open
	1–4	Open	Open	Closed

Anti-Pumping Function

Masterpact MTZ devices provide a mechanical anti-pumping function. In the event of maintained opening and closing orders, the standard mechanism blocks the main contacts in the open position. After a trip due to an electrical fault or intentional opening using the manual or electrical controls, the closing order must first be discontinued, then reactivated to close the circuit breaker. This prevents a cycle of closing and opening.

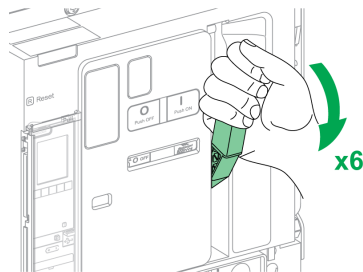
When remote operation features are used, allow at least four seconds for the MCH gear motor to charge the device closing spring completely before the XF closing voltage release is actuated.

To prevent the device from closing prematurely, the PF ready-to-close contact can be series connected with the XF closing voltage release.

Charging the Closing Spring

The closing spring must be charged with sufficient energy to close the Masterpact MTZ:

- Manual charge: Charge the mechanism by pulling the spring charging handle down six times.

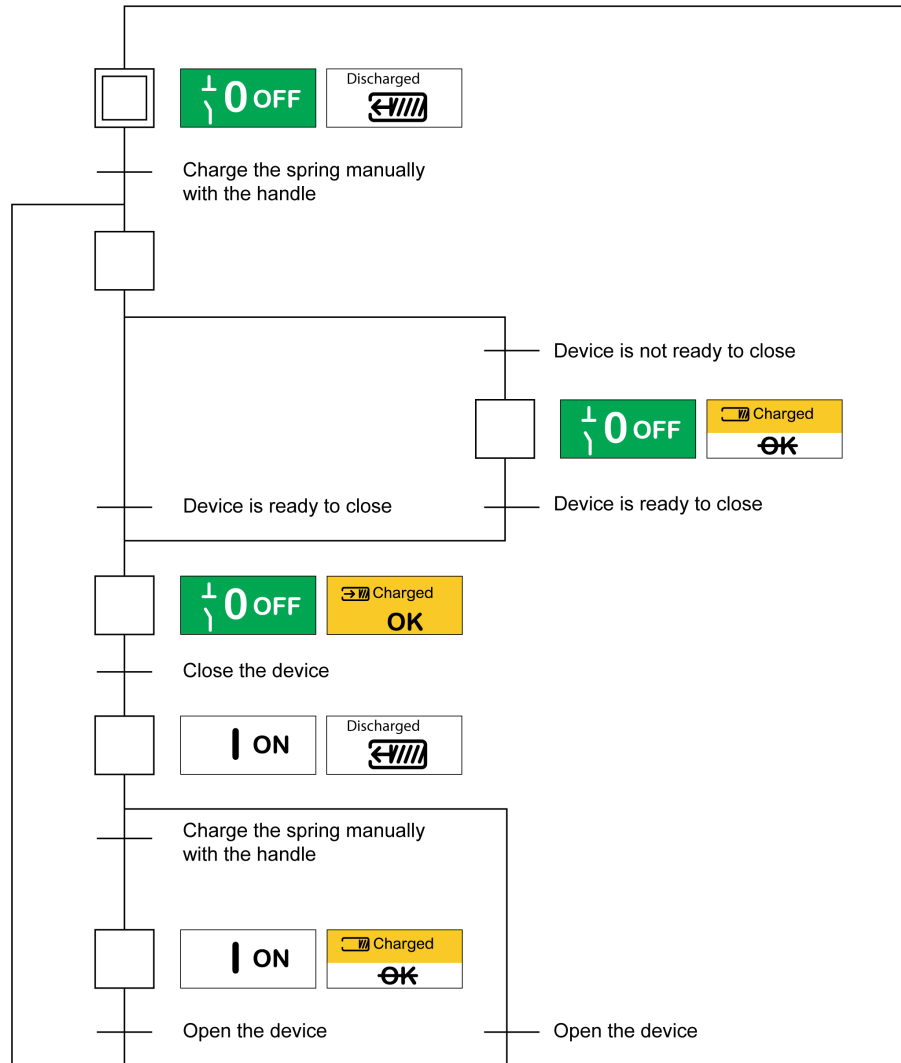


- Automatic charge: If the optional MCH gear motor is installed, the spring is automatically charged after closing.

NOTE: For drawout devices fitted with the optional DAE automatic spring-discharge before device removal (see page 98), the closing spring is discharged when the device is moved from disconnected to withdrawn position.

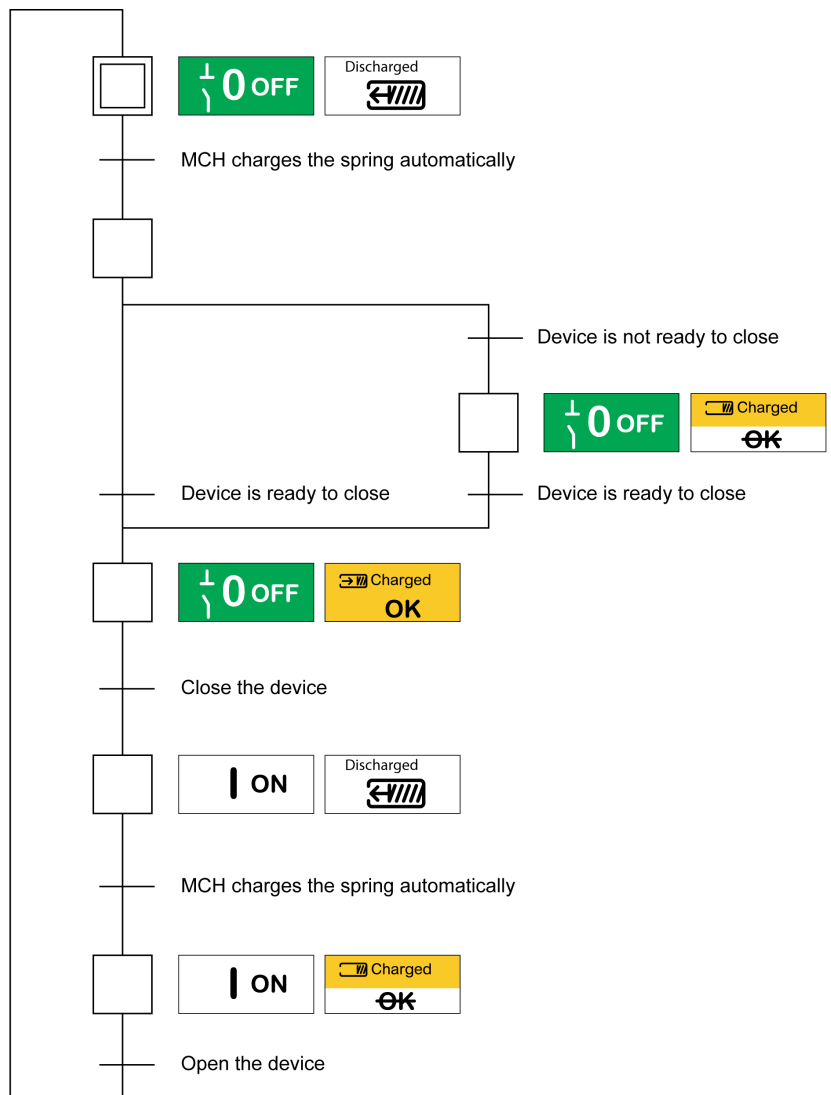
Manual Operation Cycle with the Spring Charging Handle

The following image shows an Open/Close/Open (OCO) cycle for manually charged devices without MCH gear motor:



Electrical Operation Cycle with an MCH Gear Motor

The following image shows an Open/Close/Open (OCO) cycle for electrically charged devices using an MCH gear motor:



Control Modes

Presentation

The control mode is a Micrologic X setting which defines the means to control the opening and closing functions of the circuit breaker.

Two control modes are available: Manual and Auto.

Manual mode only accepts orders made using one of the following:

- The mechanical buttons on the front of the circuit breaker.
- The external pushbutton connected to the MN/MX/XF voltage releases.
- The BPF electrical closing pushbutton.

Auto mode has two settings: Local or Remote. All orders accepted in manual mode are accepted in auto mode, as well as orders from local or remote communication as follows:

- Auto Local: the operator needs to be close to the circuit breaker to establish communication and only orders sent from a local source through communication are accepted:
 - Ecoreach software through USB connection
 - Masterpact MTZ Mobile App through Bluetooth with Masterpact Operation Assistant Digital Module
- Auto Remote: the operator does not need to be next to the circuit breaker to establish communication and only orders sent from a remote source through communication, Ethernet or webpages are accepted.

The control mode factory setting is Auto Remote.

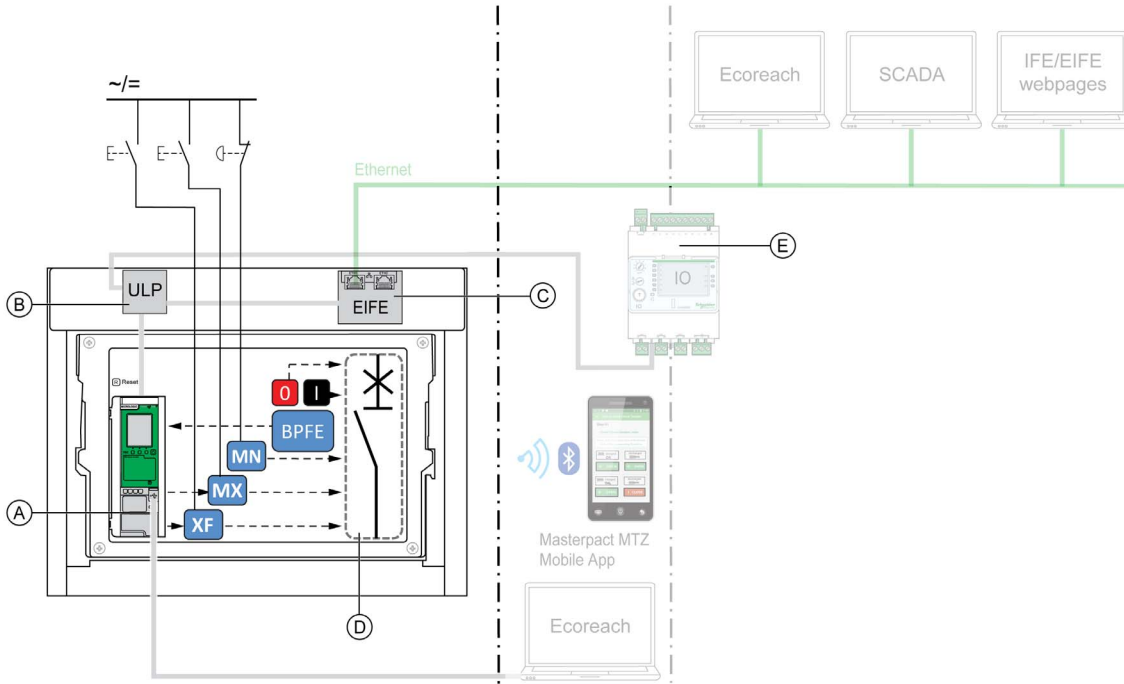
Operation According to Control Mode Configured

The following table summarizes the opening and closing operations available, depending on the control mode configured:

Control mode	Type of order and delivery method							
	Mechanical	Electrical		Through communication				
	Pushbutton	BPF electrical	Point to point (voltage release)	IO module	Ecoreach software through USB	Masterpact MTZ Mobile App through Bluetooth + Masterpact Operation Assistant Digital Module	Ethernet Modbus/TCP	Webpages
Manual	✓	✓	✓	–	–	–	–	–
Auto: Local	✓	✓	✓	✓ ¹	✓	✓	–	–
Auto: Remote	✓	✓	✓	✓ ¹	–	–	✓	✓

¹ According to IO input mode setting

Operation in Manual Mode

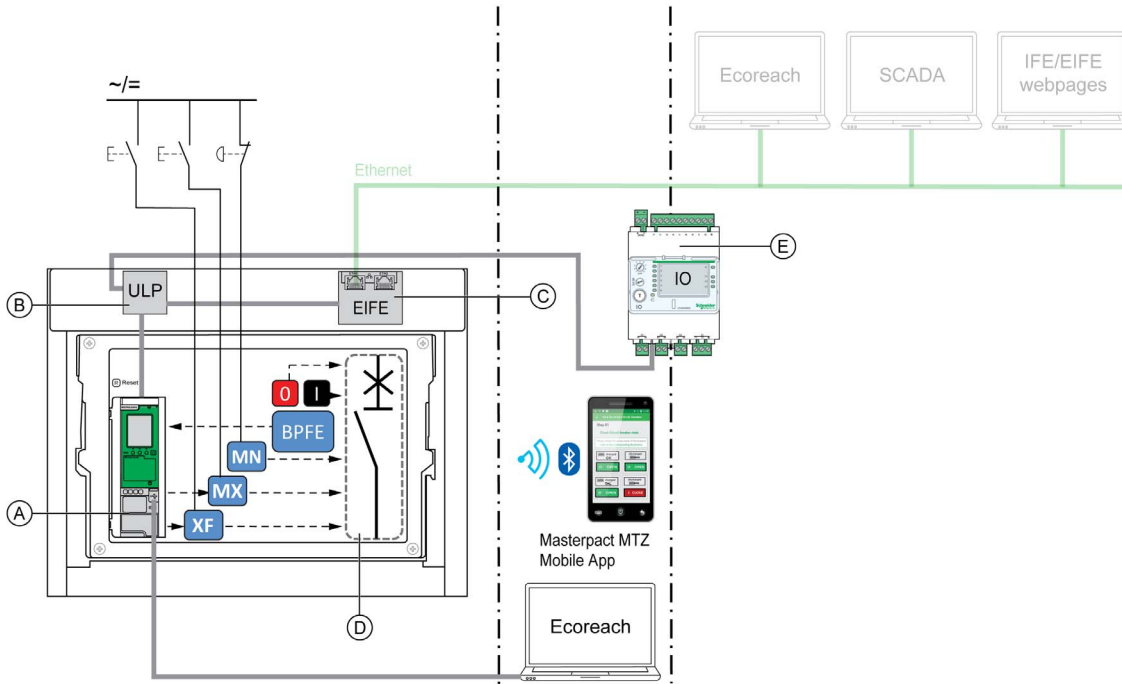


- A Micrologic X control unit
- B ULP port module
- C EIFE embedded Ethernet interface
- D Circuit breaker mechanism
- E IO input/output application module

Opening and closing operations available in Manual mode:

- 0: mechanical opening pushbutton
- 1: mechanical closing pushbutton
- BPFE: electrical closing pushbutton
- External pushbutton wired by customer, and connected to:
 - XF: standard or communicating and diagnostic closing voltage release
 - MX: standard or communicating and diagnostic opening voltage release
 - MN: standard or diagnostic undervoltage release

Operation in Auto: Local Mode

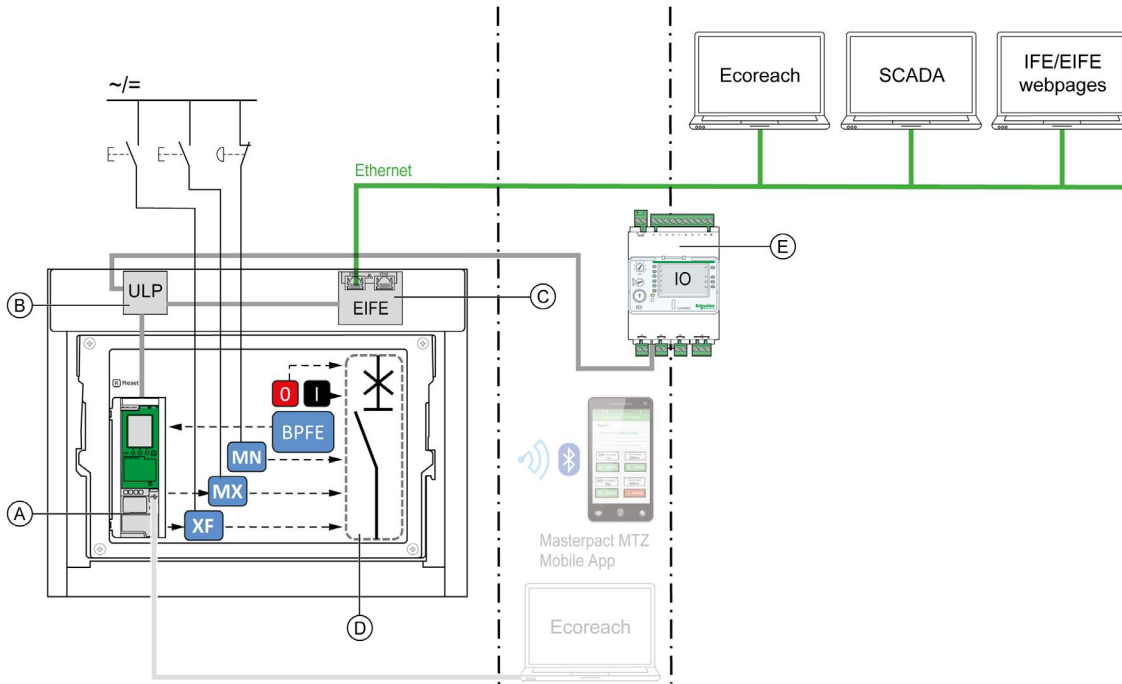


- A Micrologic X control unit
- B ULP port module
- C EIFE embedded Ethernet interface
- D Circuit breaker mechanism
- E IO input/output application module

Opening and closing operations available in Auto: Local mode:

- 0: mechanical opening pushbutton
- 1: mechanical closing pushbutton
- BPFE: electrical closing pushbutton
- External pushbutton wired by customer, and connected to:
 - XF: communicating and diagnostic closing voltage release
 - MX: communicating and diagnostic opening voltage release
 - MN: standard or diagnostic undervoltage release
- IO: with the Breaker Operation predefined application of the IO module set to local control mode
- Ecoreach software: command sent through USB connection
- Masterpact MTZ Mobile App with Masterpact Operation Assistant Digital Module: through Bluetooth low energy wireless communication

Operation in Auto: Remote Mode



- A Micrologic X control unit
- B ULP port module
- C EIFE embedded Ethernet interface
- D Circuit breaker mechanism
- E IO input/output application module

Opening and closing operations available in Auto: Remote mode:

- 0: mechanical opening pushbutton
- 1: mechanical closing pushbutton
- BPFE: electrical closing pushbutton
- External pushbutton wired by customer, and connected to:
 - XF: communicating and diagnostic closing voltage release
 - MX: communicating and diagnostic opening voltage release
 - MN: standard or diagnostic undervoltage release
- IO: with the Breaker Operation predefined application of the IO module set to remote control mode
- Communication: remote command through IFE or EIFE interface

Setting the Control Mode

The Auto or Manual mode can be set as follows:

- On the Micrologic X display screen, at **Home → Configuration → Communication → Control Mode → Mode**
- With the Masterpact MTZ Mobile App through Bluetooth

The Local or Remote mode can be set as follows:

- When the IO module is used with the Breaker Operation predefined application, the local or remote mode is defined only by the control mode selector switch wired on the digital input I1 of the IO module.
- When the IO module is not used with the Breaker Operation predefined application, the local or remote mode can be set as follows:
 - With Ecoreach software through USB connection
 - With the Masterpact MTZ Mobile App through Bluetooth

NOTE:

- The Local or Remote mode cannot be set on the Micrologic X display screen.
- When Auto mode is set, the control mode is Auto Local or Auto Remote, depending on the last setting.

Displaying the Control Mode

The control mode (Manual, Auto Local, or Auto Remote) is displayed as follows:

- On the Micrologic X display screen, at **Home → Configuration → Communication → Control Mode → Mode**
- With Ecoreach software through USB connection
- With the Masterpact MTZ Mobile App through Bluetooth
- On the IFE/EIFE webpages

Predefined Events

Changing the control mode settings generates the following events:

Event	History	Severity
Manual mode enabled	Operation	Low
Local mode enabled	Operation	Low

Opening the Device

Opening Conditions

To open the device, the following conditions must be met:

- Device is closed (I).

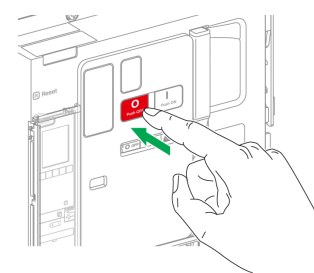
NOTE: An opening order always takes priority over a closing order.

Opening the Device

The following tables present the different ways to open the device in the different control modes available.

The device can be opened in the following ways in **all** control modes:

Opening type	Control mode	Accessories	Opening action
Mechanical	Manual, Auto: Local, or Auto: Remote	–	Press the opening pushbutton on the front of the device. This opening action is possible at any time.
Automatic	Manual, Auto: Local, or Auto: Remote	MN undervoltage release, with or without MN delay unit	The MN undervoltage release opens the device automatically in the case of voltage drop.
By external pushbutton	Manual, Auto: Local, or Auto: Remote	<ul style="list-style-type: none"> • External pushbutton wired by customer • One of the following accessories: <ul style="list-style-type: none"> ○ MX standard or communicating opening voltage release ○ MN undervoltage release, with or without MN delay unit 	Press the external pushbutton which is connected to the MX opening voltage release or to the MN undervoltage release via the customer terminal block. When the MN undervoltage release is connected to the MN delay unit, the device opens with the corresponding time delay.



In addition, the device can be opened in the following ways when **Auto** control mode is configured.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not allow any person to work on the electrical network without physically validating the successful execution of the local or remote software actions for opening the circuit breaker or switching off the electrical circuit.

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

Opening type	Control mode	Accessories	Opening action
Through IO module	Auto: Local or Auto: Remote	<ul style="list-style-type: none"> ● MX communicating opening voltage release ● ULP port ● IO module 	<p>Open the device by using the predefined application 2 Breaker Operation of the IO module.</p> <ul style="list-style-type: none"> ● When the device is set to local control mode by the IO module, the command to open is issued from local pushbuttons wired on digital inputs. ● When the device is set to remote control mode by the IO module, the command to open is issued from remote PLC outputs wired on digital inputs. <p>Refer to <i>IO Input/Output Application Module for One Circuit Breaker - User Guide</i>.</p>
Through Ecoreach software	Auto: Local	<ul style="list-style-type: none"> ● MX communicating opening voltage release 	<p>Send a command to open to the device from Ecoreach software running on a PC connected locally to the device through the mini USB port on the Micrologic X control unit. This opening action is password-protected.</p> <p>Refer to <i>Ecoreach Online Help</i>.</p>
Through Masterpact MTZ Mobile App	Auto: Local	<ul style="list-style-type: none"> ● MX communicating opening voltage release ● Masterpact Operation Assistant Digital Module 	<p>Send a command to open to the device from the Masterpact MTZ Mobile App with Masterpact Operation Assistant Digital Module, through Bluetooth wireless communication. The opening action is password-protected.</p>
Through communication	Auto: Remote	<ul style="list-style-type: none"> ● MX communicating opening voltage release ● ULP port ● Communication interface 	<p>Send a command to open to the device through the communication network. This opening action is password-protected.</p> <p>Refer to <i>Masterpact MTZ - Modbus Communication Guide</i>.</p> <p>NOTE: Ecoreach software running on a PC connected to the device through the communication network can be used to send commands to open.</p>
Through IFE/EIFE webpages	Auto: Remote	<ul style="list-style-type: none"> ● MX communicating opening voltage release ● ULP port module ● Communication interface 	<p>Send a command to open to the device from the IFE/EIFE control webpage. This opening action is password-protected.</p> <p>Refer to:</p> <ul style="list-style-type: none"> ● <i>IFE Ethernet Interface for One Circuit Breaker - User Guide</i> ● <i>EIFE Embedded Ethernet Interface for One Masterpact MTZ Drawout Circuit Breaker - User Guide</i>

If the device does not open, refer to the troubleshooting chapter ([see page 125](#)).

Closing the Device

Closing Conditions

To close the device, the following conditions must be met:

- Device is open (O).
- Closing spring is charged.
- The device is ready to close, **OK** is displayed.

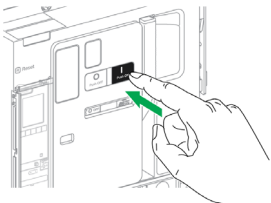
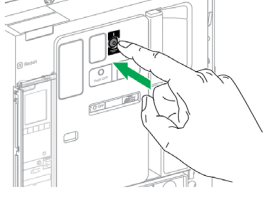
NOTE: An opening order always takes priority over a closing order. The device cannot be closed while an opening order is being received. If **OK** is crossed-out on the ready-to-close indicator, an order to open is being received (either electrically or mechanically) and must be ended before **OK** can be displayed.

 WARNING
<p>HAZARD OF CLOSING ON ELECTRICAL FAULT</p> <p>Do not close the circuit breaker again without first inspecting and, if necessary, repairing the downstream electrical equipment.</p> <p>Failure to follow these instructions can result in death, serious injury, or equipment damage.</p>

Closing the Device

The following tables present the different ways to close the device in the different control modes available.

The device can be closed in the following ways in **all** control modes:

Closing type	Control mode	Accessories	Closing action	
Mechanical	Manual, Auto: Local, or Auto: Remote	–	Press the closing pushbutton on the front of the device. This closing action is possible when the closing conditions are met.	
Electrical with BPFE	Manual, Auto: Local, or Auto: Remote	<ul style="list-style-type: none"> • BPFE electrical closing pushbutton • XF communicating closing voltage release 	Press the BPFE electrical closing pushbutton, mounted on the front cover. The closing action takes into account internal closing conditions of the device and the external conditions that are part of the control and monitoring system of the installation.	
External pushbutton	Manual, Auto: Local, or Auto: Remote	<ul style="list-style-type: none"> • External pushbutton wired by customer • XF standard or communicating closing voltage release • MCH gear motor 	Press the external pushbutton, which is connected to the XF closing voltage release through the customer terminal block.	

In addition, the device can be closed in the following ways when **Auto** control mode is configured.

⚠ DANGER			
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH			
Do not allow any person to work on the electrical network without physically validating the successful execution of the local or remote software actions for closing the circuit breaker or switching on the electrical circuit.			
Failure to follow these instructions will result in death or serious injury.			

Closing type	Control mode	Accessories	Closing action
Through IO module	Auto: Local or Auto: Remote	<ul style="list-style-type: none"> ● XF communicating closing voltage release ● MCH gear motor ● ULP port module ● IO module 	Close the device by using the predefined application 2 Breaker Operation of the IO module. <ul style="list-style-type: none"> ● When the device is set to local control mode by the IO module, the command to close is issued from local pushbuttons wired on digital inputs. ● When the device is set to remote control mode by the IO module, the command to close is issued from remote PLC outputs wired on digital inputs. Refer to <i>IO Input/Output Application Module for One Circuit Breaker - User Guide</i> .
Through Ecoreach software	Auto: Local	<ul style="list-style-type: none"> ● XF communicating closing voltage release ● MCH gear motor 	Send a command to close to the device from Ecoreach software running on a PC connected locally to the device through the mini USB port on the Micrologic X control unit. The closing action is password-protected. Refer to <i>Ecoreach Online Help</i> .
Through Masterpact MTZ Mobile App	Auto: Local	<ul style="list-style-type: none"> ● XF communicating closing voltage release ● MCH gear motor ● Masterpact Operation Assistant Digital Module 	Send a command to close to the device from the Masterpact MTZ Mobile App with Masterpact Operation Assistant Digital Module, through Bluetooth wireless communication. The closing action is password-protected.
Through communication	Auto: Remote	<ul style="list-style-type: none"> ● XF communicating closing voltage release ● MCH gear motor ● ULP port module ● Communication interface 	Send a command to close to the device through the communication network, remotely using the IFE or EIFE interface. This closing action is password-protected. Refer to <i>Masterpact MTZ - Modbus Communication Guide</i> . NOTE: Ecoreach software running on a PC connected to the device through the communication network can be used to send commands to close.
Through IFE/EIFE webpages	Auto: Remote	<ul style="list-style-type: none"> ● XF communicating closing voltage release ● MCH gear motor ● ULP port module ● Communication interface 	Send a command to close to the device from the IFE/EIFE control webpage. This closing action is password-protected. Refer to: <ul style="list-style-type: none"> ● <i>IFE Ethernet Interface for One Circuit Breaker - User Guide</i> ● <i>EIFE Embedded Ethernet Interface for One Masterpact MTZ Drawout Circuit Breaker - User Guide</i>

If the device does not close, refer to the troubleshooting chapter ([see page 125](#)).

Inhibiting the Closing Function

The closing function can be inhibited by sending a command through:

- The communication network through Ethernet Modbus/TCP
- The IO module

 WARNING
--

RESTRICTED CLOSING INHIBITION

Do not use the inhibit closing order to lock the device in open position.

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

The inhibit close order inhibits only the closing orders allowed in Auto control mode. The closing orders issued from the mechanical closing pushbutton or BPFE, or from the pushbutton directly connected to the XF voltage release are not inhibited.

Resetting the Device

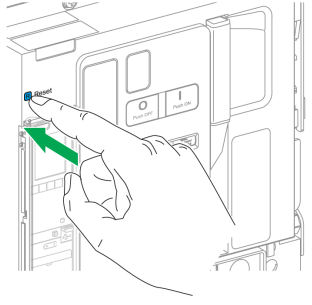
Resetting Conditions

After a trip, the device must be reset before closing it.

Resetting is possible in all control modes.

Resetting the Device

The device can be reset in different ways, according to the device configuration and its accessories:

Type of resetting	Accessories	Resetting action	
Mechanical	–	Push in the fault-trip reset pushbutton on the front of the device. This resetting action is always possible. Pushing in the fault-trip reset pushbutton resets the SDE fault-trip indication contact, and allows the device to be closed.	
Automatic (RAR automatic reset)	<ul style="list-style-type: none"> • XF communicating or standard closing voltage release • MCH gear motor 	After a trip, RAR automatic reset allows the device to be closed without the fault-trip reset pushbutton being pushed in. The use of XF closing voltage release is compulsory with this option. The mechanical indicator and the SDE fault-trip indication contact remain in detected fault position. To reset the SDE fault-trip indication contact and the mechanical indicator, push in the fault-trip reset pushbutton.	
By external pushbutton	<ul style="list-style-type: none"> • External pushbutton • RES electrical remote reset • XF communicating or standard closing voltage release 	Press the external pushbutton which is connected to the RES electrical remote reset via the customer terminal block. The use of XF closing voltage release is compulsory with this option. The RES electrical remote reset resets the SDE fault-trip indication contact and the mechanical indicator, and allows the device to be closed. NOTE: The RES electrical remote reset cannot be installed if SDE2 is already installed.	

Operating Accessories

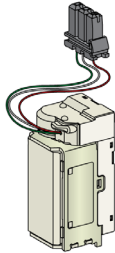
The XF, MX, and MN Voltage Releases

The XF, MX, and MN voltage releases are optional accessories mounted inside the device. They can be of standard type or diagnostic and communicating type (standard or with diagnostic function for MN undervoltage release).

The standard voltage releases can have either impulse-type or maintained actions, depending on the incoming commands.

XF Closing Voltage Release (Standard or With Diagnostic and Communicating Function)

The XF closing voltage release closes the circuit breaker instantaneously when powered, if the spring mechanism is charged. The minimum duration of the pulse operating order must be 200 ms.

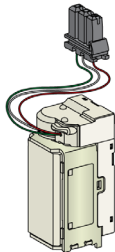


For information on installation, consult the instruction sheets available on the Schneider Electric website:

- XF standard closing voltage release: [NVE40749](#)
- XF communicating closing voltage release: [NVE40766](#)

MX Opening Voltage Release (Standard or With Diagnostic and Communicating Function)

The MX opening voltage release opens the circuit breaker instantaneously when powered. The minimum duration of the pulse operating order must be 200 ms. The MX standard opening voltage release locks the circuit breaker in OFF position if the command is maintained.

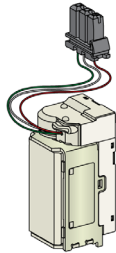


For information on installation, consult the instruction sheets available on the Schneider Electric website:

- MX standard opening voltage release: [NVE40749](#)
- MX communicating opening voltage release: [NVE40766](#)

MN Undervoltage Release (Standard or With Diagnostic Function)

The MN undervoltage release instantaneously opens the circuit breaker when its supply voltage drops to a value between 35% and 70% of its rated voltage. If there is no supply to the release, it is impossible to close the circuit breaker, either manually or electrically. Any attempt to close the circuit breaker has no effect on the main contacts. Circuit breaker closing is enabled again when the supply voltage of the release returns to 85% of its rated value.

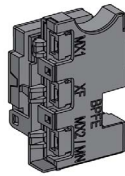


For information on installation, consult the instruction sheets available on the Schneider Electric website:

- MN standard undervoltage release: [NVE40749](#)
- MN undervoltage release with diagnostic function: [NVE40766](#)

Isolation Module for Communicating Voltage Releases

The internal isolation module for Micrologic X control units provides double isolation in compliance with IEC 60664-1 (up to 12 kV). It also provides isolation between the XF, MX, and MN types of voltage release.



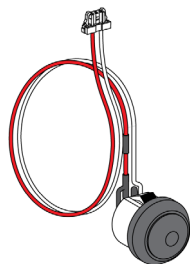
For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [NVE40748](#)

BPFE Electrical Closing Pushbutton

This is an optional accessory that is mounted on the front cover of the device.

The BPFE electrical closing pushbutton carries out electrical closing of the circuit breaker. It takes into account the internal closing conditions of the device and the external conditions that are part of the control and monitoring system of the installation. It connects to the XF standard or communicating closing voltage release.

If BPFE is being used, it is recommended to lock access to the closing pushbutton using the VBP accessory because the closing pushbutton does not take into account internal and external conditions.



For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [NVE40773](#)

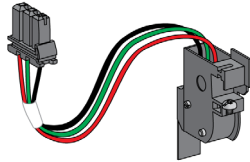
PF Ready-to-close Contact

This is an optional accessory that is mounted inside the device.

The PF ready-to-close contact delivers remotely, the indication delivered locally on the ready-to-close indicator.

It consists of a changeover contact indicating remotely that the circuit breaker is ready to close, that is:

- The circuit breaker is in the open position.
- The spring mechanism is charged.
- There is no maintained opening order.

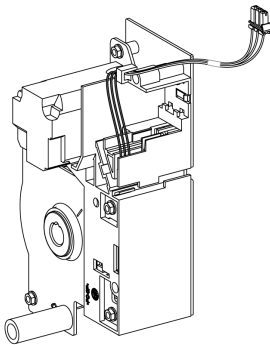


For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [NVE35466](#)

MCH Gear Motor

This is an optional accessory that is mounted inside the device.

The MCH gear motor automatically charges the spring mechanism when the circuit breaker is closed, allowing instantaneous closing of the breaker following opening.



For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [NVE35483](#)

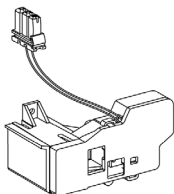
RES Electrical Remote Reset

This is an optional accessory that is mounted inside the device.

Following tripping, this function resets the SDE fault-trip indication contact, and the mechanical indicator and enables circuit breaker closing.

The use of an XF closing release is compulsory with this option.

The additional fault-trip indication contact SDE2 is not compatible with RES.

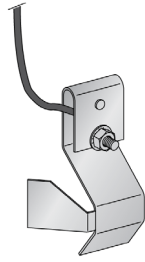


For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [NVE35503](#)

KMT Grounding Kit

This is an optional accessory that is mounted inside the device.

This option allows the breaker mechanism to be grounded when the front cover is removed. The grounding is made through the chassis for the drawout version and through the mounting side plate for the fixed version.



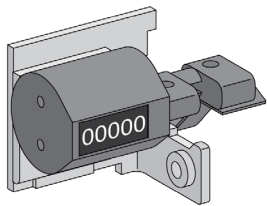
For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [NVE35480](#)

CDM Mechanical Operation Counter

This is an optional accessory that is mounted inside the device.

The CDM mechanical operation counter counts the number of operating cycles and is visible on the front panel. It is compatible with manual and electrical control functions.

This option is compulsory for all source-changeover systems.



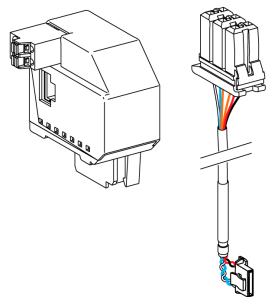
For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [NVE35485](#)

ULP Port Module

The ULP port module is optional on the fixed device and standard on the drawout device. It is mounted with the terminal blocks of the device.

The ULP port module:

- Supplies the Micrologic X control unit.
- Integrates the ULP termination.
- Allows the connection to external ULP modules, like the IO module or the IFE Ethernet interface.



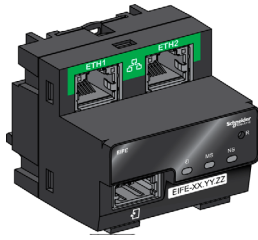
For information on accessory installation, consult the instruction sheets available on the Schneider Electric website:

- ULP port module for fixed Masterpact MTZ2/MTZ3: [NVE40791](#)
- ULP port module for drawout Masterpact MTZ2/MTZ3: [NVE40797](#)

EIFE Embedded Ethernet Interface

This is an optional accessory that is mounted on the chassis of the drawout device.

The EIFE embedded Ethernet interface enables drawout Masterpact MTZ circuit breakers to be connected to an Ethernet network. It provides digital access to all the data delivered by the Micrologic X control unit. In addition, it monitors the position of the device in the chassis: connected, test, and disconnected.

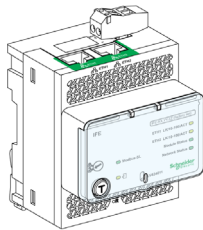


For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [NVE23550](#)

For information on accessory usage, refer to *EIFE Embedded Ethernet Interface for One Masterpact MTZ Drawout Circuit Breaker - User Guide*.

IFE Ethernet Interface for One Circuit Breaker

The IFE Ethernet interface provides an Ethernet access to a single device. The device is connected to the IFE interface through the ULP port module and a prefabricated ULP cord.



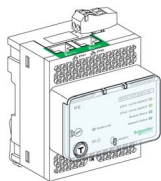
For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [HRB49218](#)

For information on accessory usage, refer to *IFE Ethernet Interface for One Circuit Breaker - User Guide*.

IFE Ethernet Switchboard Server

The IFE Ethernet switchboard server provides an Ethernet access to one or several circuit breakers. It allows the following communication architectures:

- One single circuit breaker connected to the IFE server through the ULP port module.
- Up to 20 circuit breakers, including up to 12 Compact NSX through the IFM Modbus-SL interface for one circuit breaker stacked to the IFE server.



For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [HRB49218](#)

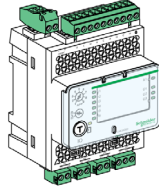
For information on accessory usage, refer to *IFE Ethernet Interface for One Circuit Breaker - User Guide*.

IO Input/output Application Module for One Circuit Breaker

The IO input/output application module for one circuit breaker is one of the components of the ULP architecture.

The IO application module enhances control and monitoring functions, thanks to its built-in applications. Its resources are:

- Six digital inputs that are self-powered for either NO and NC dry contact or pulse counter.
- Three digital outputs that are bistable relay (5 A maximum).
- One analog input for Pt100 temperature sensor.



For information on accessory installation, consult the instruction sheet available on the Schneider Electric website: [HRB49217](https://www.schneider-electric.com/resources/HRB49217)

For information on accessory usage, refer to *IO Input/Output Application Module for One Circuit Breaker - User Guide*.

Section 2.2

Drawout Device Racking Actions

What Is in This Section?


This section contains the following topics:

Topic	Page
Drawout Masterpact MTZ2/MTZ3 Device Status	55
Disconnecting the Drawout Device	59
Connecting the Drawout Device	62
Removing the Drawout Device	65
Installing the Drawout Device in the Chassis	67

Drawout Masterpact MTZ2/MTZ3 Device Status

Drawout Device Handling Conditions

Connection or disconnection of the drawout device requires insertion of the racking handle. When interlocks, padlocks, or an open door lock are in place, the racking handle cannot be inserted.


DANGER

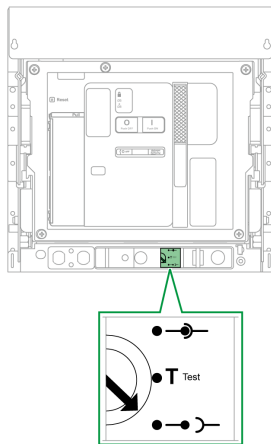
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

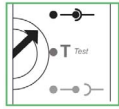
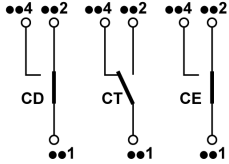
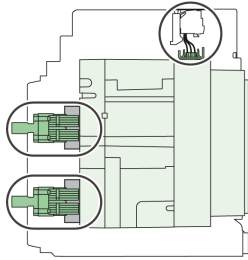
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462 or local equivalent.
- This equipment must only be installed and serviced by qualified electrical personnel.

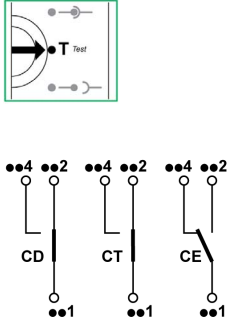
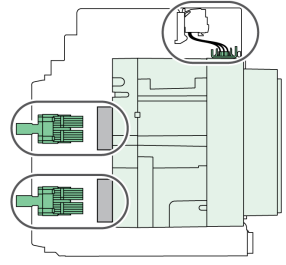
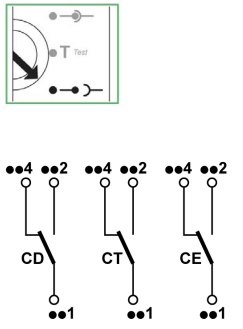
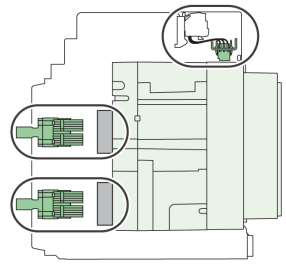
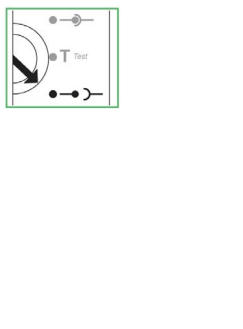
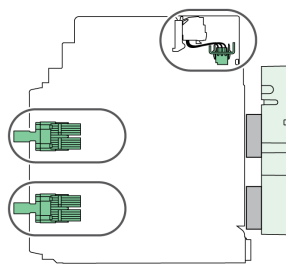
Failure to follow these instructions will result in death or serious injury.

Drawout Device Positions

The indicator located on the front of the chassis locally signals the position of the device in the chassis.



Device position	Position indicator and position contact state	Connector position	Device status
Connected	 	 <ul style="list-style-type: none"> Disconnecting contact clusters: engaged Control: engaged 	<ul style="list-style-type: none"> Can be operated. Ready for service.

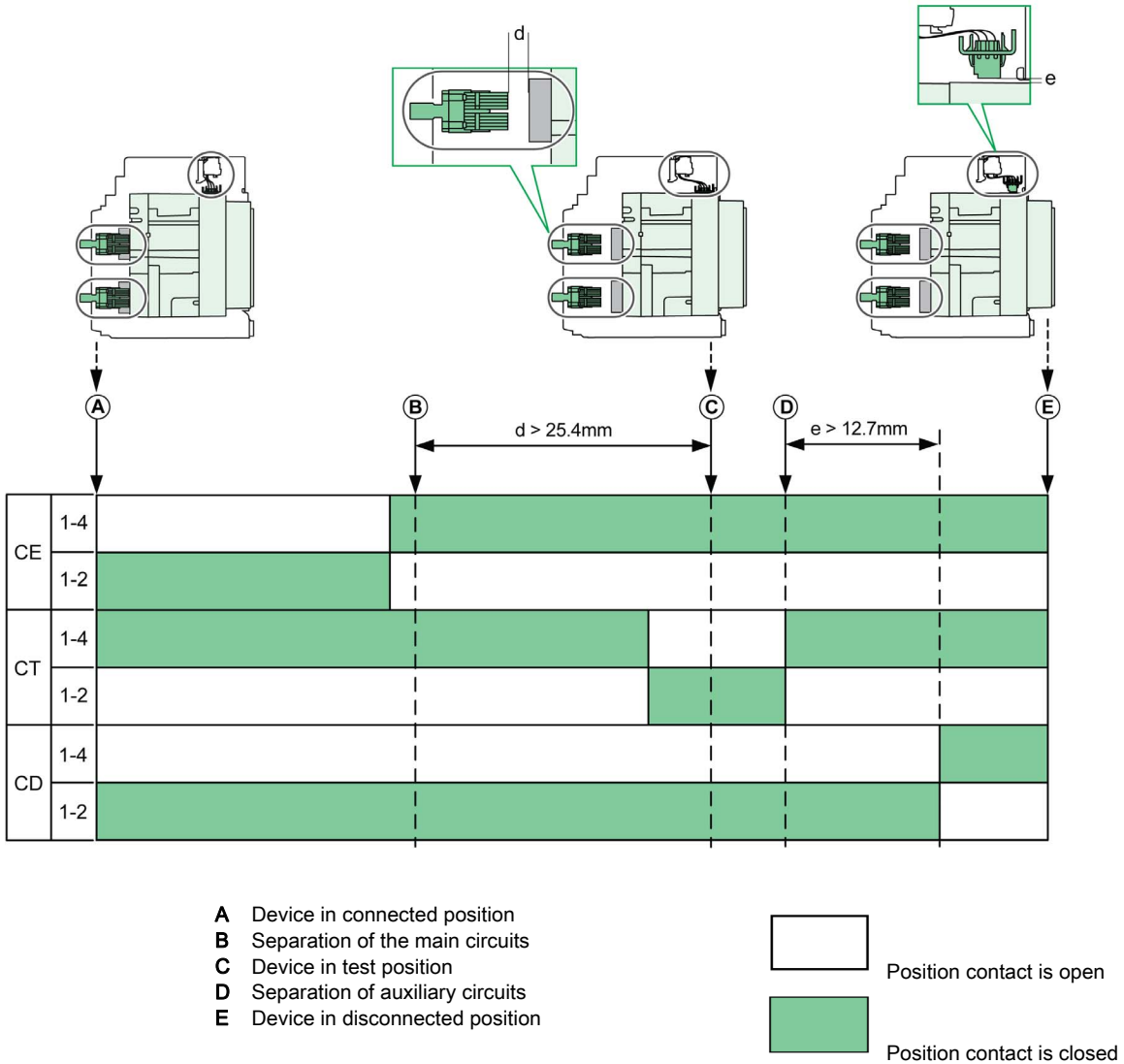
Device position	Position indicator and position contact state	Connector position	Device status
Test		 <ul style="list-style-type: none"> ● Disconnecting contact clusters: disengaged ● Control: engaged 	<ul style="list-style-type: none"> ● Can be operated. ● Can have operation and control systems tested.
Disconnected		 <ul style="list-style-type: none"> ● Disconnecting contact clusters: disengaged ● Control: disengaged 	<ul style="list-style-type: none"> ● Can be operated. ● Can be removed from chassis.
Withdrawn		 <ul style="list-style-type: none"> ● Disconnecting contact clusters: disengaged ● Control: disengaged 	<p>Removed from chassis.</p>

Drawout Device Position Contacts

The position of the device in the chassis is indicated remotely by the following position contacts:

- CE: connected position.
- CT: test position.
- CD: disconnected position. The device is in the disconnected position when the minimum isolation distance between the main contacts and the auxiliary contacts is reached.

The state of the position contacts changes according to the device position during racking-in and racking-out operations, as shown in the diagram below.



Drawout Device Position Contacts Without EIFE Ethernet Interface

Without EIFE Ethernet interface, the standard configuration of the position contacts is the following:

- 3 CD disconnected position contacts
- 3 CE connected position contacts
- 3 CT test position contacts

The following optional configurations are available:

- 6 CE + 3 CT
- 3 CD + 6 CE
- 6 CD + 3 CE
- 9 CE

Drawout Device Position Contacts With EIFE Ethernet Interface

With EIFE Ethernet interface, the standard configuration of the position contacts is the following:

- 3 CD disconnected position contacts
- 3 CE connected position contacts

The following optional configurations are available:

- 3 CE + 3 CT
- 3 CD + 3 CT
- 6 CE

Chassis Management Function

The chassis management function is used to:

- Record and check the position of the moving part of the drawout device in the chassis
- Provide information about preventive maintenance actions
- Notify the remote controller about the position of the drawout device

The chassis management function is performed by:

- The EIFE Ethernet interface, refer to *EIFE Embedded Ethernet Interface for One Masterpact MTZ Drawout Circuit Breaker - User Guide*.
- The IO module, refer to *IO Input/Output Application Module for One Circuit Breaker - User Guide*.

Disconnecting the Drawout Device

Drawout Device Handling Conditions

Connection or disconnection of the drawout device requires insertion of the racking handle. When chassis locking by keylocks, padlocks, or an open door lock are in place, the racking handle cannot be inserted.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462 or local equivalent.
- This equipment must only be installed and serviced by qualified electrical personnel.

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

NOTICE

HAZARD OF EQUIPMENT DAMAGE

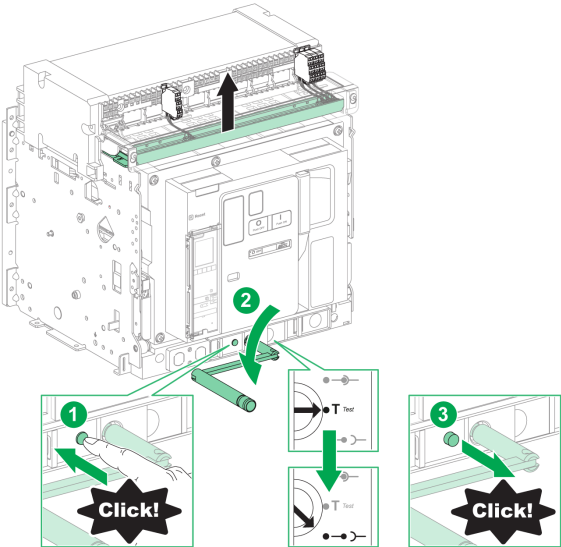
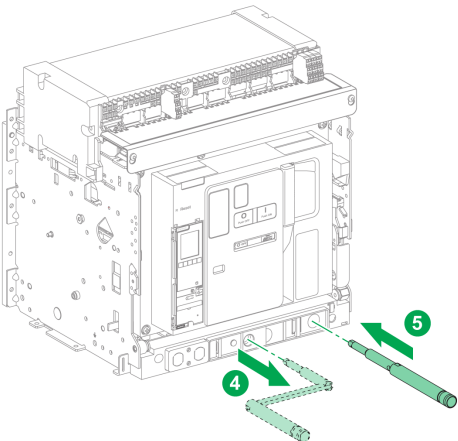
- Use the provided racking handle to rack the device into or out of chassis.
- Do not use power tools for racking.
- Do not turn the handle after position release button has popped out.

Failure to follow these instructions can result in equipment damage.

Racking-out the Device from Connected to Test Position

Step	Action	
1	Press the opening pushbutton to open the device.	
2	Remove the racking handle from its storage space.	
3	Insert the racking handle into the racking handle socket. NOTE: If the IBPO racking interlock option is installed, press the opening pushbutton to allow insertion of the racking handle.	
4	Push in the position release button.	
5	Turn the racking handle counterclockwise.	
6	When the test position is reached, the position release button pops out and the mechanism blocks the racking handle. Result: The device is in the test position.	

Racking-out the Device from Test to Disconnected Position

Step	Action	
1	Push in the position release button.	
2	Turn the racking handle counterclockwise.	
3	When the disconnected position is reached, the position release button pops out and the mechanism blocks the racking handle. Result: The device is in the disconnected position.	
4	Remove the racking handle from the racking socket.	
5	Put the racking handle back into its storage space.	

Connecting the Drawout Device

Drawout Device Handling Conditions

Connection or disconnection of the drawout device requires insertion of the racking handle. When chassis locking by keylocks, padlocks, or an open door lock are in place, the racking handle cannot be inserted.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462 or local equivalent.
- This equipment must only be installed and serviced by qualified electrical personnel.

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

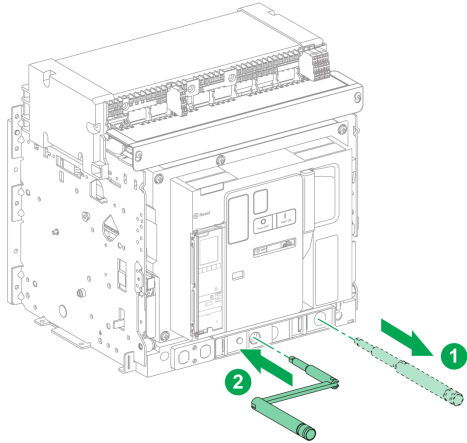
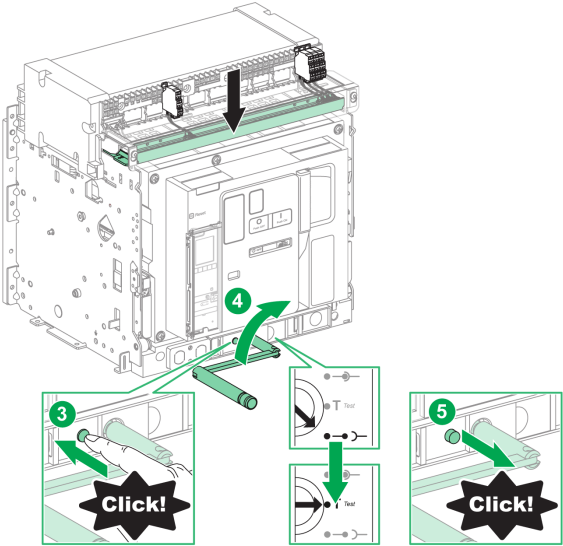
NOTICE

HAZARD OF EQUIPMENT DAMAGE

- Use the provided racking handle to rack the device into or out of chassis.
- Do not use power tools for racking.
- Do not turn the handle after position release button has popped out.

Failure to follow these instructions can result in equipment damage.

Racking-in the Device from Disconnected to Test Position

Step	Action	
1	Remove the racking handle from its storage space.	
2	Insert the racking handle into the racking handle socket. NOTE: If the IBPO racking interlock option is installed, press the opening pushbutton to allow insertion of the racking handle.	
3	Push the position release button.	
4	Turn the racking handle clockwise.	
5	When the test position is reached, the position release button pops out and the mechanism blocks the racking handle. Result: The device is in the test position.	

Racking-in the Device from Test to Connected Position

Step	Action	
1	Push the position release button.	
2	Turn the racking handle clockwise.	
3	When the connected position is reached, the position release button pops out and the mechanism blocks the racking handle. Result: The device is in the connected position.	
4	Remove the racking handle from the racking socket.	
5	Put the racking handle back into its storage space.	

Removing the Drawout Device

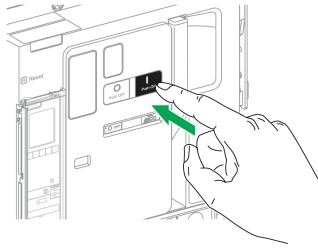
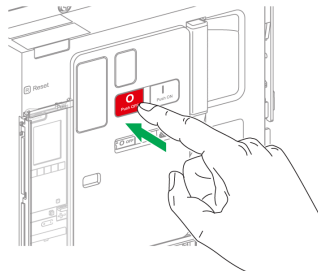
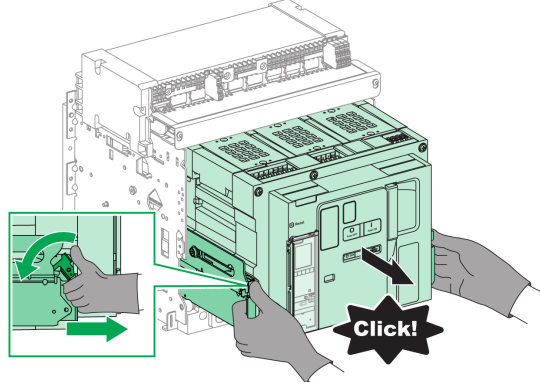
Device Removal

NOTICE

HAZARD OF EQUIPMENT DAMAGE

The chassis must be securely fastened when installing or removing the device.

Failure to follow these instructions can result in equipment damage.

Step	Action	
1	Discharge the closing spring. With the device in the disconnected position, press the closing pushbutton. The breaker will close if the closing spring is charged.	
2	Press the opening pushbutton to open the device.	
3	Press and hold the rail release tabs towards the back.	
4	Pull out the rails to the maximum by pulling on the drawout grips. Result: The device is supported on the rails, clear of the chassis and ready to be lifted.	

Lifting the Device

Both the device and chassis have a carrying grip for lifting. To lift the device, use an overhead lifting device attached to the carrying grip, following the directions given in this section.

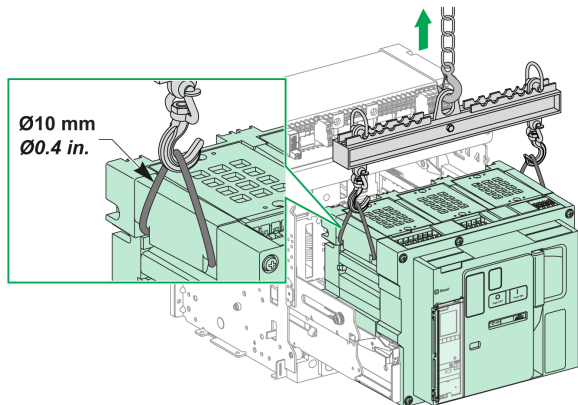
⚠ DANGER

HAZARD OF DEVICE FALLING

- Be sure that lifting equipment has lifting capacity for the device being lifted.
- Follow manufacturer’s instructions for use of lifting equipment.
- Wear hard hat, safety shoes, and heavy gloves.

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

Lift the device from the chassis rails by using the carrying grip located on the sides of the device.



Device Weights

The following table shows the weights of the different devices available.

Number of poles	Device	MTZ2	MTZ3
3P	Moving part (without chassis)	50 kg	120 kg
	Chassis	40 kg	105 kg
	Fixed Device	50 kg	120 kg
4P	Moving part (without chassis)	65 kg	160 kg
	Chassis	55 kg	140 kg
	Fixed Device	65 kg	160 kg

Installing the Drawout Device in the Chassis

Drawout Device Handling Conditions

Connection or disconnection of the drawout device requires insertion of the racking handle. When chassis locking by keylocks, padlocks, or an open door lock is in place, the racking handle cannot be inserted.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462 or local equivalent.
- This equipment must only be installed and serviced by qualified electrical personnel.

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

NOTICE

HAZARD OF EQUIPMENT DAMAGE

- Use the provided racking handle to rack the device into or out of chassis.
- Do not use power tools for racking.
- Do not turn the handle after position release button has popped out.

Failure to follow these instructions can result in equipment damage.

Optional Mismatch Protection

Mismatch protection (*see page 87*) allows the installation of a drawout device only in a chassis with compatible characteristics.

Installing the Device

NOTICE

HAZARD OF EQUIPMENT DAMAGE

- Chassis must be securely fastened when installing or removing the device.
- Before mounting the device, make sure that it matches the chassis.

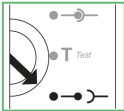
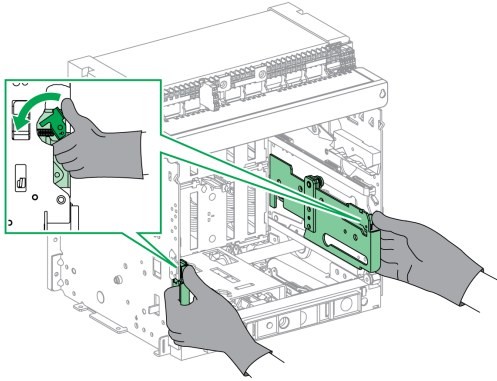
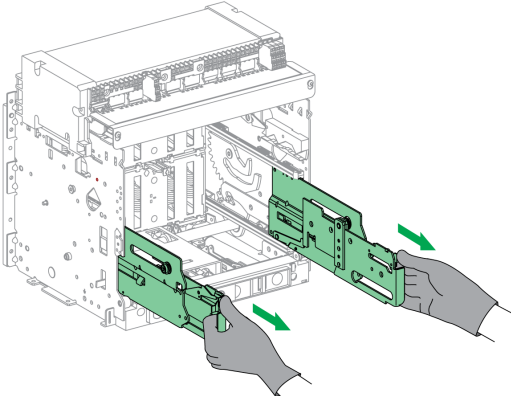
Failure to follow these instructions can result in equipment damage.

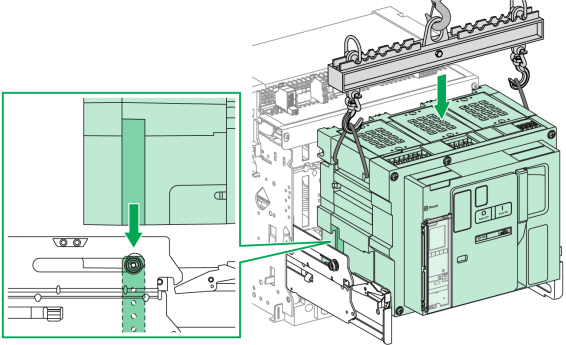
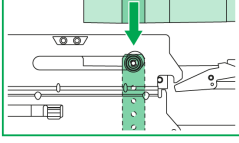
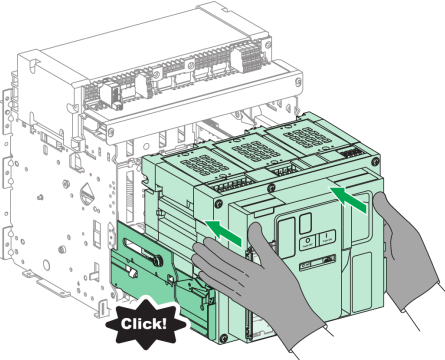
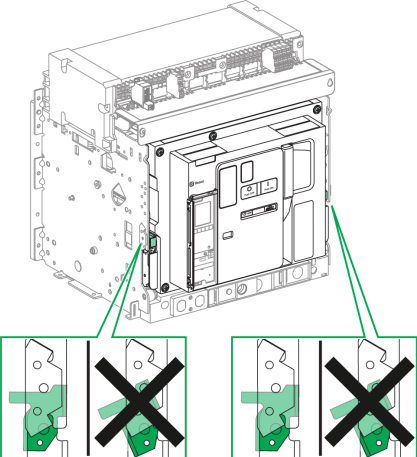
⚠ DANGER

HAZARD OF DEVICE FALLING

- Be sure that lifting equipment has lifting capacity for the device being lifted.
- Follow manufacturer’s instructions for use of lifting equipment.
- Wear hard hat, safety shoes, and heavy gloves.

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

Step	Action	
1	If the chassis is not installed yet in a switchboard or panelboard, securely fasten the chassis on a pallet.	
2	Remove the racking handle from its storage space.	
3	<p>Check that the chassis indicator is in the disconnected position:</p>  <p>If the chassis indicator is not in the disconnected position, follow the steps on disconnecting the drawout device (see page 61).</p>	
4	Press the rail release tabs.	
5	<p>Pull out the drawout grips until the extension rails are fully extended.</p> <p>NOTE: The right-hand rail cannot be extended if the racking handle has not been removed.</p>	

Step	Action	
6	Install the device on the extension rails by using appropriate lifting equipment. Check that the slots on the device are correctly aligned with the guides on the rails while bringing the device down.	
7	Detach the lifting equipment.	
8	Check that the device is in the open position.	
9	Using both hands, push in the device so that the rails are inserted to the maximum in the chassis. Take care not to push the control unit.	
10	Check that the rail release tabs are in the correct position. Result: The device is in the disconnected position.	

Section 2.3

Device Locking Actions

About Locking Actions

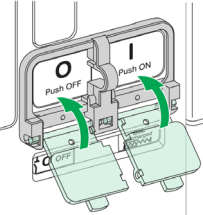
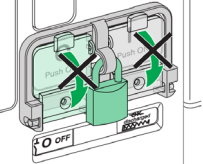
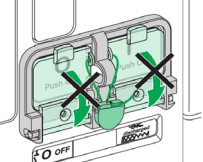
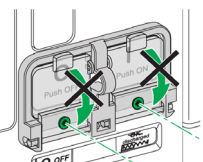
A locking action is a manual locking operation made by the user. A number of optional locking accessories are available for the Masterpact MTZ2/MTZ3 device and chassis. For a complete listing of available locks, refer to *Masterpact MTZ Catalogue*.

What Is in This Section?

This section contains the following topics:

Topic	Page
Locking the Pushbuttons	71
Locking the Device in Open Position with Padlocks	73
Locking the Device in Open Position with Keylocks	75
Chassis Locking in Disconnected Position	77
Chassis Locking in Any Position	81
Locking the Safety Shutters	83

Locking the Pushbuttons

Step	Action	
1	<p>Close the transparent covers of the locking accessory.</p> <p>NOTE: One or both transparent covers of the locking accessory can be closed and locked.</p>	
2	<p>Lock the transparent covers in place by using a padlock, lead seal, or screws.</p>	<p>Padlock</p>  <p>Lead seal</p>  <p>Screws</p> 

Locking the Device in Open Position with Padlocks

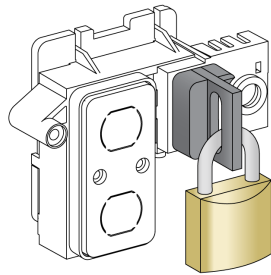
Description

Optional padlocks can be used to lock the Masterpact MTZ2/MTZ3 in the open position. When locked the device cannot be closed either locally with the closing pushbutton or remotely.

To use padlocks to lock the device in the open position, an optional OFF-position locking accessory is necessary. This accessory allows the use of up to three padlocks with shackle diameter 5–8 mm.

VCPO OFF-Position Locking Accessory

The off-position locking accessory is an optional accessory that is mounted on the front face of the device.

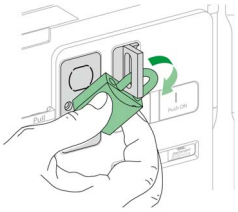
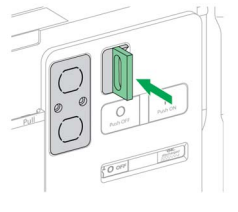
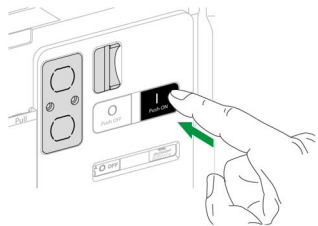


For information on the accessory installation, consult the instruction sheet on the Schneider Electric website: [NVE16146](#).

Locking the Device in the Open Position

Step	Action	
1	Press and hold down the opening pushbutton.	
2	With the opening button pressed, pull out the tab of the off-position locking accessory.	
3	Insert the padlock in the tab and close the padlock. Release the opening pushbutton.	

Unlocking the Device

Step	Action	
1	Remove the padlock.	
2	The tab of the OFF-position locking accessory retracts.	
3	Press the closing pushbutton to close the device.	

Locking the Device in Open Position with Keylocks

Description

Optional keylocks can be used:

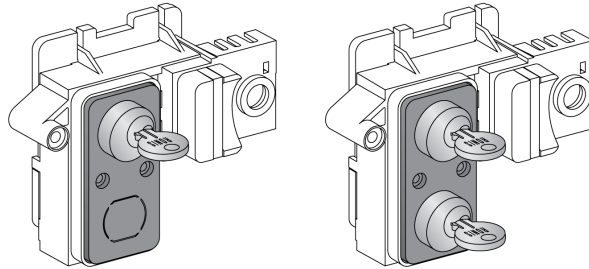
- To lock one Masterpact MTZ2/MTZ3 in the open position. When locked the device cannot be closed either locally with the closing pushbutton or remotely.
- To interlock several Masterpact MTZ2/MTZ3 devices locked with the same key.

To use keylocks to lock the device in the open position, an optional OFF-position locking accessory is necessary.

The keylocks can be used in addition to padlocks.

VSPO OFF-Position Locking Accessory

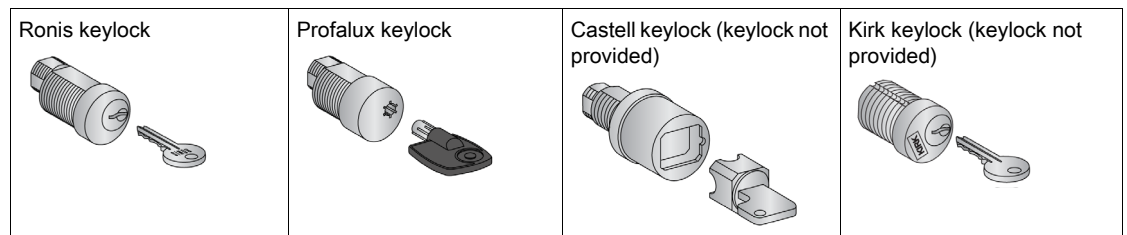
The OFF-position locking accessory is an optional accessory that is mounted on the front of the device.



The OFF-position locking accessory can be fitted with either:

- One keylock.
- Two keylocks with identical keys or different keys.

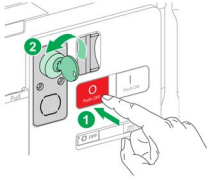
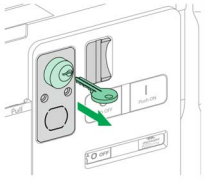
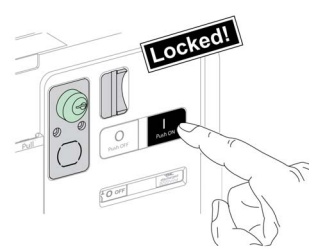
The following types of keylocks can be fitted:



For information on the accessory installation, consult the instruction sheet on the Schneider Electric website: [NVE16146](http://www.schneider-electric.com/NVE16146).

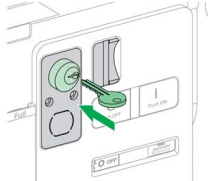
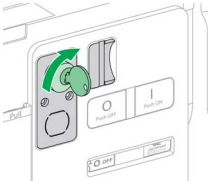
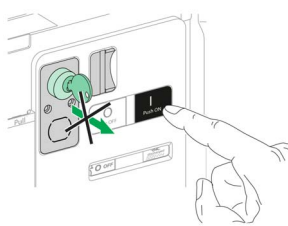
Locking the Device in the Open Position

For devices equipped with two keylocks, locking with one key is sufficient to lock the device in the open position.

Step	Action	
1	Press and hold the opening pushbutton.	
2	With the opening pushbutton pressed, turn the key counterclockwise to lock the device.	
3	Remove the key and release the opening pushbutton.	
4	Check that the device is locked in the open position and cannot be closed either locally with the closing pushbutton or remotely.	

Unlocking the Device

For devices equipped with two keylocks, both keys must be inserted in the keylocks to unlock the device.

Step	Action	
1	Put the key in the keylock.	
2	Turn the key clockwise to unlock the device.	
3	Press the closing pushbutton to close the device. NOTE: The key remains captive in the keylock.	

Chassis Locking in Disconnected Position

Description

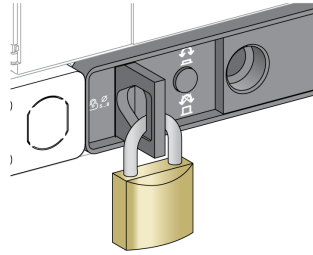
The chassis can be locked in the disconnected position. When the chassis is locked in the disconnected position, the racking handle cannot be inserted.

The chassis can be locked in the disconnected position:

- By up to three padlocks with shackle diameter 5–8 mm.
- By optional keylocks.

Keylocks can be used in addition to padlocks.

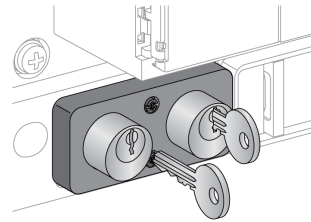
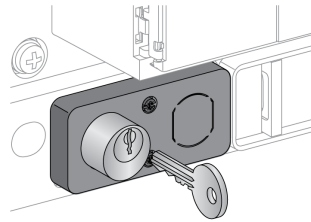
Chassis locking by padlock is always possible and does not require any accessory.



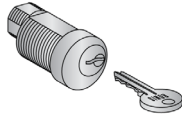
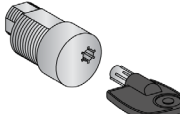
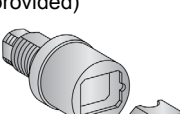
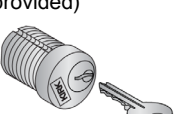
VSPD Chassis Locking by Keylock Accessory

The chassis locking by keylock accessory can be fitted with either:

- One keylock.
- Two keylocks with identical keys or different keys.

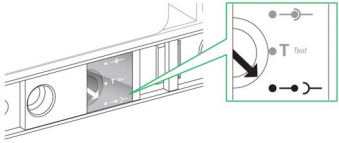
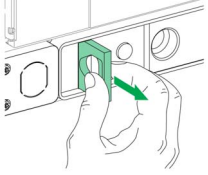
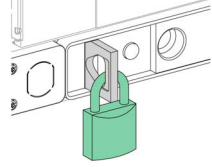
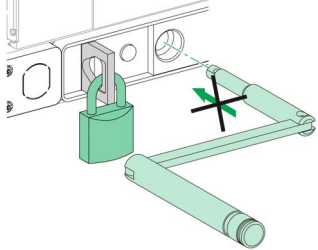


The following types of keylocks can be fitted:

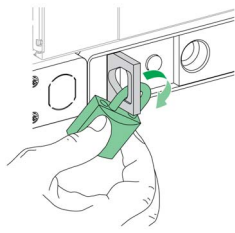
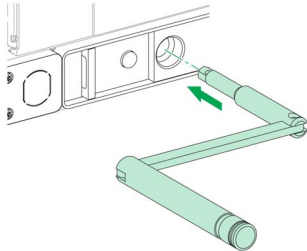
<p>Ronis keylock</p> 	<p>Profalux keylock</p> 	<p>Castell keylock (keylock not provided)</p> 	<p>Kirk keylock (keylock not provided)</p> 
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For information on the accessory installation, consult the instruction sheet on the Schneider Electric website: [NVE16142](https://www.schneider-electric.com/resources/apply/document/nve16142).

Chassis Locking with Padlocks

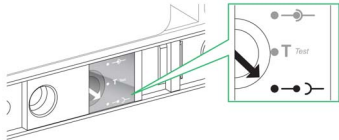
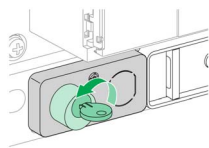
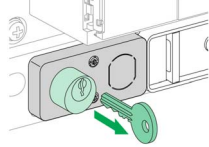
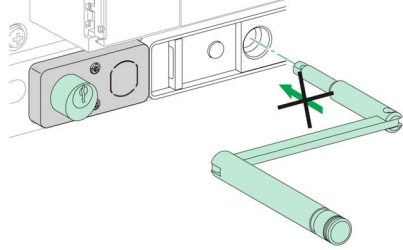
Step	Action	
1	Check that the chassis indicator is in the disconnected position.	
2	Pull out the padlocking tab.	
3	Insert the padlock in the tab and close the padlock.	
4	Check that the racking handle cannot be inserted into the racking handle socket.	

Chassis Unlocking with Padlocks

Step	Action	
1	Remove the padlock. The tab retracts.	
2	Check that the racking handle can be inserted into the racking handle socket.	

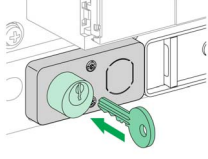
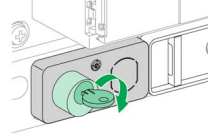
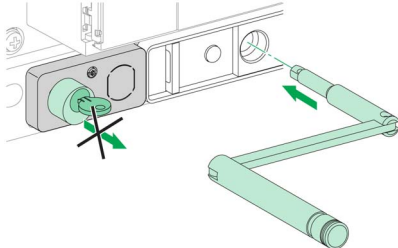
Chassis Locking with Keylocks

For chassis equipped with two keylocks, locking with one key is sufficient to lock the chassis in the disconnected position.

Step	Action	
1	Check that the chassis indicator is in the disconnected position.	
2	Turn the key counterclockwise to lock the chassis.	
3	Remove the key.	
4	Check that the racking handle cannot be inserted into the racking handle socket.	

Chassis Unlocking with Keylocks

For chassis equipped with two keylocks, both keys must be inserted in the keylocks to unlock the chassis.

Step	Action	
1	Put the key in the lock.	
2	Turn the key clockwise to unlock the chassis. NOTE: The key remains captive in the keylock.	
3	Check that the racking handle can be inserted into the racking handle socket.	

Chassis Locking in Any Position

Description

The chassis can be locked in any position (connected, test, or disconnected position). This locking function requires a mechanical adaptation of the chassis, explained in the following procedure. When the chassis is locked, the racking handle cannot be inserted in the racking handle socket. The chassis can be locked in any position:

- By up to three padlocks with shackle diameter 5–8 mm as standard.
- By one or two optional keylocks.

Keylocks can be used in addition to padlocks.

VSPD Chassis Locking by Keylock Accessory

The chassis locking by keylock accessory and the locking and unlocking procedures are the same as for chassis locking in disconnected position (*see page 77*).

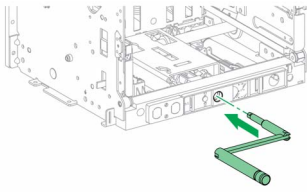
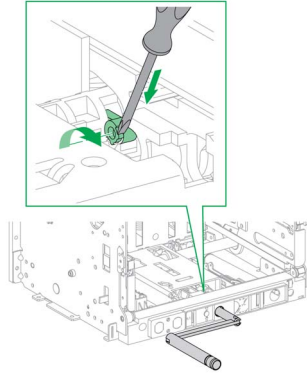
Adapting the Chassis

⚠ DANGER
<p>HAZARD OF DEVICE FALLING</p> <ul style="list-style-type: none"> • Be sure that lifting equipment has lifting capacity for the device being lifted. • Follow manufacturer’s instructions for use of lifting equipment. • Wear hard hat, safety shoes, and heavy gloves. <p>Failure to follow these instructions will result in death or serious injury.</p>

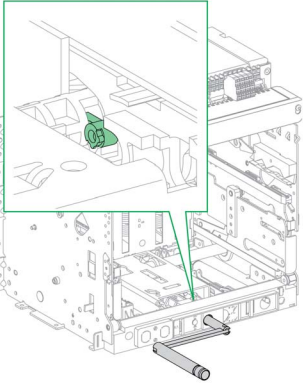
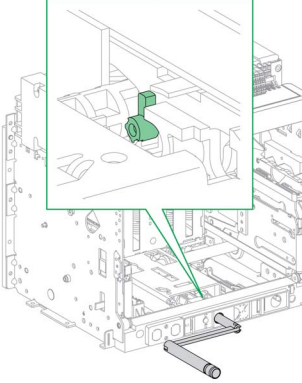
NOTICE
<p>HAZARD OF EQUIPMENT DAMAGE</p> <p>The chassis must be securely fastened when installing or removing the device.</p> <p>Failure to follow these instructions can result in equipment damage.</p>

Follow this procedure to adapt the chassis locking mechanism so that the chassis can be locked in any position.

Step	Action	
1	Make sure that chassis indicator is in the disconnected position.	
2	Remove the device from the chassis (<i>see page 65</i>).	

Step	Action	
3	Insert the racking handle into the racking handle socket.	
4	Rotate the latch to the front. The chassis can now be locked in any position.	

NOTE: To return the chassis to locking only in the disconnected position, rotate the latch to its original position at the rear.

Latch position for locking in disconnected position.	Latch position for locking in any position.
	

Locking the Safety Shutters

Description

A shutter lock locks the safety shutter in closed position so that the moving part of a Masterpact MTZ2/MTZ3 device cannot be connected in its chassis.

The top and bottom safety shutters can be locked independently.

The safety shutters can be locked by padlocks either inside the chassis or on the front of the chassis.

The safety shutters can be locked by optional accessories:

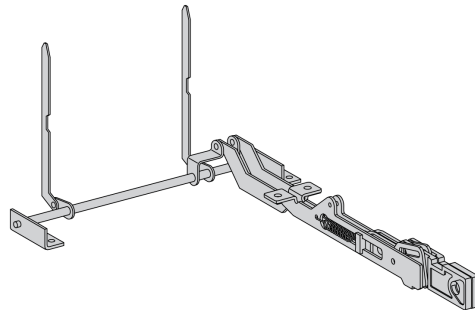
- VIVC shutter position indication and locking accessory
- Shutter locking blocks

The accessories can be locked with one padlock with maximum shackle diameter 5–8 mm.

VIVC Shutter Position Indication and Locking Accessory

Use the shutter position indication and locking accessory to perform the following functions:

- Indicate the position of each safety shutter: open or closed.
- Padlock either or both of the safety shutters in closed position with the moving part in test or disconnected position.

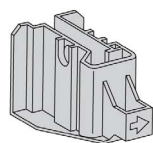


For information on the accessory installation, consult the instruction sheet available at Schneider Electric website: [NVE35478](http://www.schneider-electric.com/NVE35478).

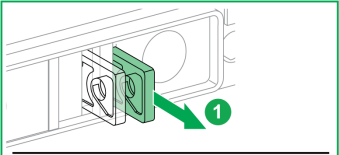
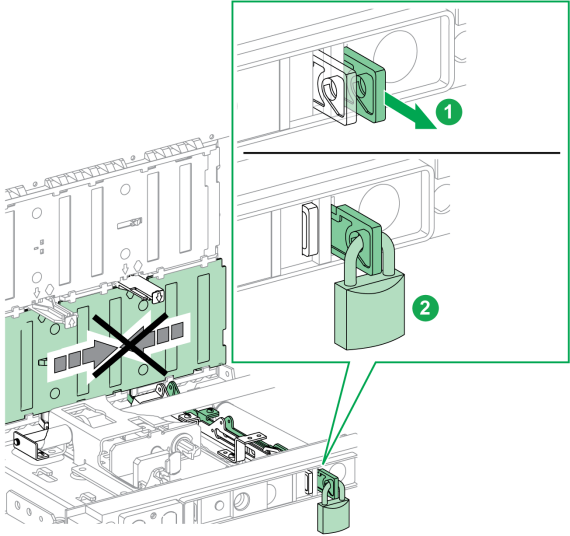
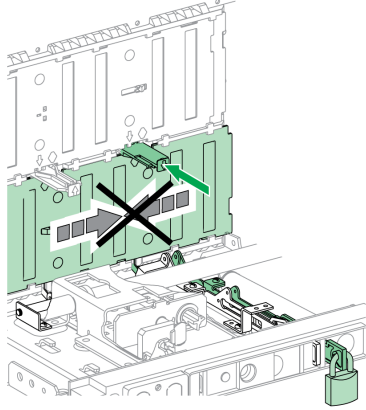
Shutter Locking Blocks

The shutter locking blocks allow the locking of the safety shutters inside the chassis. Shutter locking blocks are delivered with each chassis as standard, and can be stored in the chassis:

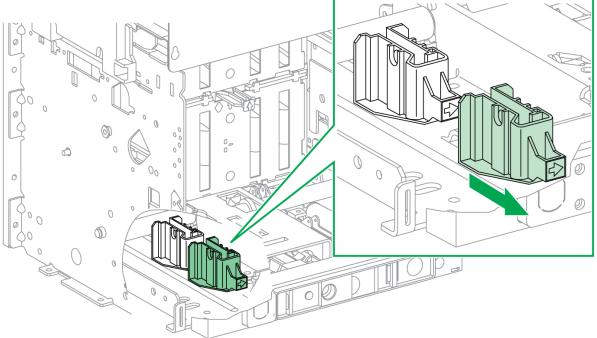
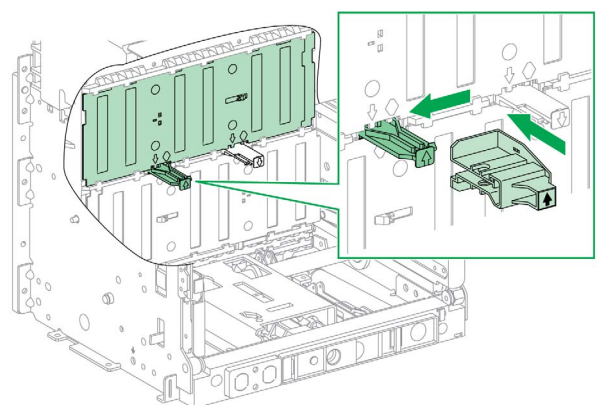
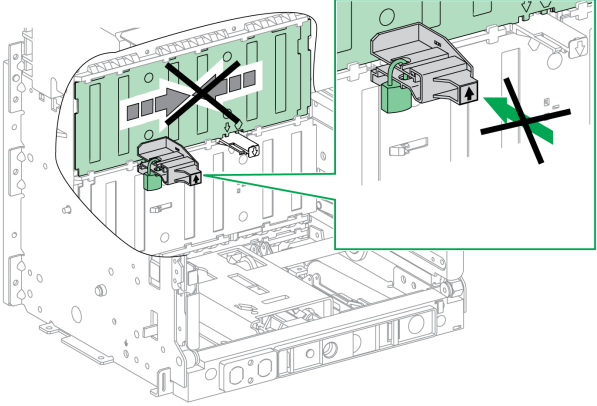
- Two shutter locking blocks on a Masterpact MTZ2
- Four shutter locking blocks on a Masterpact MTZ3



Locking the Safety Shutters by Using Shutter Position Indication and Locking Accessory

Step	Action	
1	The shutter indicator arms can be locked individually or together: <ul style="list-style-type: none"> ● To lock the top safety shutter, pull the left shutter indicator arm tab out of the slot. ● To lock the bottom safety shutter, pull the right shutter indicator arm tab out of the slot. 	
2	Insert the padlock in the padlock tab and close the padlock.	
3	Check that the bottom safety shutters do not open when the actuator on the right is pressed.	

Locking the Safety Shutters by Using Shutter Locking Blocks

Step	Action	
1	Remove the shutter locking blocks stored in the chassis.	
2	Place the shutter locking blocks in the appropriate guides: <ul style="list-style-type: none"> ● To lock the top safety shutter, install a shutter locking block on the shutter mechanism on the left. ● To lock the bottom safety shutter, install a shutter locking block on the shutter mechanism on the right. 	
3	Insert a padlock in each shutter locking block tab and close the padlock.	

Section 2.4

Device Interlocking Actions

About Interlocking Actions

An interlocking action is an automatic locking operation provided by interlocking accessories added to the Masterpact MTZ2/MTZ3 device or chassis.

A number of optional interlocking accessories are available for the Masterpact MTZ2/MTZ3 device and chassis. For a complete listing of available interlocks, refer to *Masterpact MTZ Catalogue*.

For detailed installation instructions on field-installable interlocks, refer to the installation instructions shipped with these accessories.

What Is in This Section?

This section contains the following topics:

Topic	Page
Mismatch Protection	87
VPEC Door Interlock	89
VPOC Open-door Racking Interlock	92
IPA Cable-type Door Interlock	95
Mechanical Interlocking for Transfer Switches	96
DAE Automatic Spring-Discharge Interlock	98
IBPO Racking Interlock Between Racking Handle and Opening Pushbutton	98

Mismatch Protection

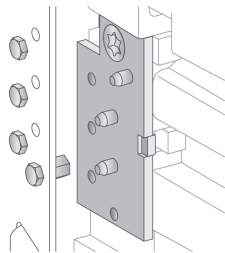
Description

Mismatch protection allows the installation of a Masterpact MTZ2/MTZ3 device only in a chassis with compatible characteristics.

Mismatch protection offers 35 different combinations that can be selected so that a device can only be mounted on a chassis with the matching combination.

Accessory

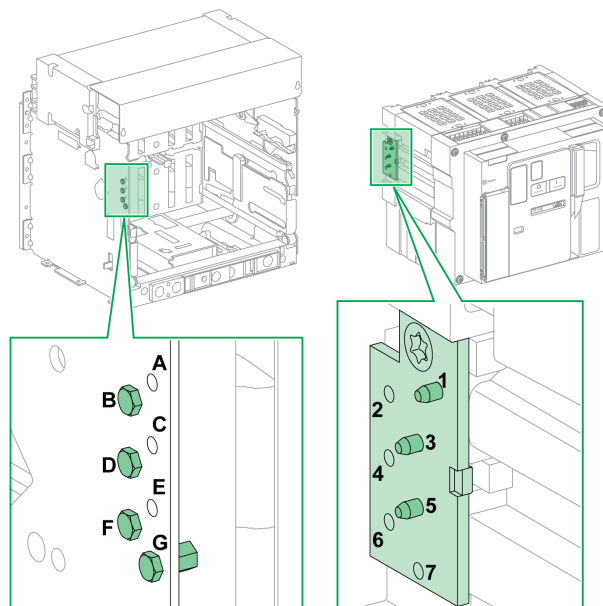
The use of mismatch protection is optional. One mismatch protection accessory is required for each device.



For information on the accessory installation, consult the instruction sheet available at Schneider Electric website: [NVE35465](http://www.se.com/na/literature/35465).

Pin Location of Mismatch Protection

The following illustration shows the pin location on the chassis and device, respectively.



The pin combination selected on the chassis must correspond to the pin combination selected on the device (see following table). For example, the combination ABCD on the chassis corresponds to the combination 567 on the device.

Pins on the chassis are labeled A, B, C, D, E, F, G.

Pins on the device are labeled 1, 2, 3, 4, 5, 6, 7.

Recommended Pin Combinations

The following are the recommended pin combinations:

Pins on chassis	Pins on device	Pins on chassis	Pins on device
ABCD	567	BCDE	167
ABCE	467	BCDF	157
ABCF	457	BCDG	156
ABCG	456	BCEF	147
ABDE	367	BCEG	146
ABDF	357	BCFG	145
ABDG	356	BDEF	137
ABEF	347	BDEG	136
ABEG	346	BDFG	135
ABFG	345	BEFG	134
ACDE	267	CDEF	127
ACDF	257	CDEG	126
ACDG	256	CDFG	125
ACEF	247	CEFG	124
ACEG	246	DEFG	123
ACFG	245		
ADEF	237		
ADEG	236		
ADFG	235		
AEFG	234		

VPEC Door Interlock

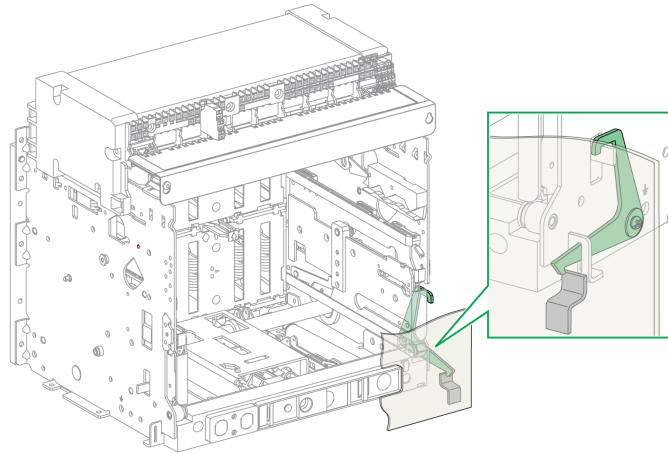
Description

With the door interlock:

- The equipment door is locked and cannot be opened when the drawout device is in connected or test position.
- The equipment door can be opened when the drawout device is in disconnected position.
- The equipment door can be closed with the drawout device in any position.

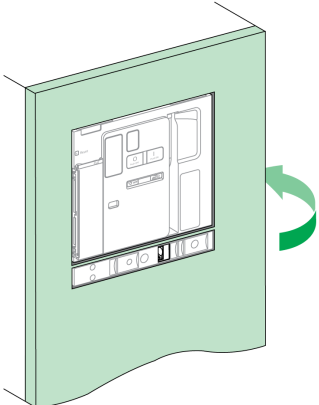
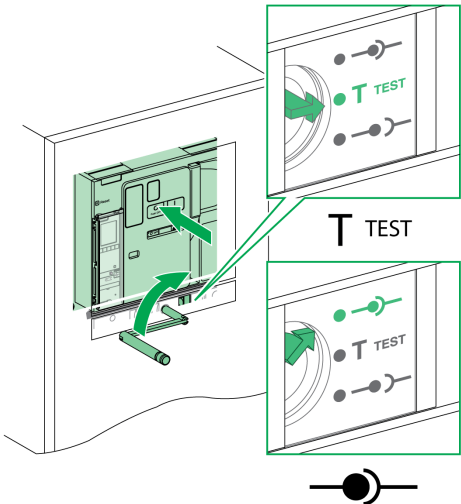
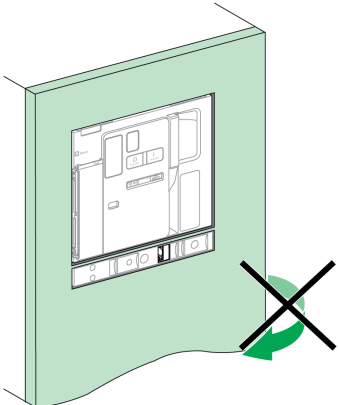
Accessory

The VPEC door interlock accessory is an optional accessory that is mounted on the left side or on the right side of the chassis. One door interlock is necessary for one chassis.

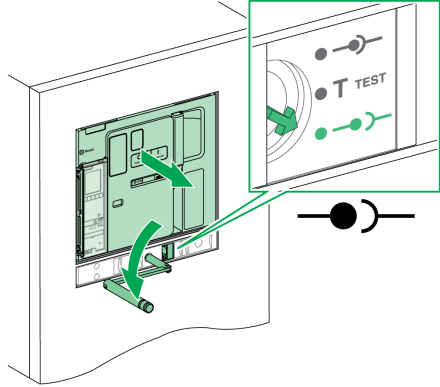
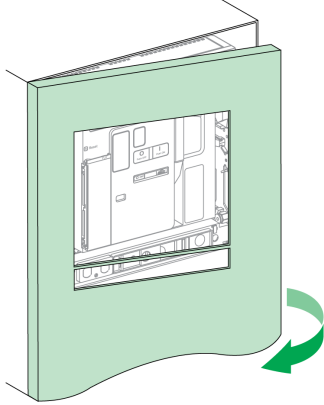


For information on the accessory installation, consult the instruction sheet available at Schneider Electric website: [NVE35493](#).

Locking the Equipment Door

Step	Action	
1	Close the equipment door.	
2	Put the device into the test or connected position (see page 62).	
3	Check that the equipment door is locked.	

Unlocking the Equipment Door

Step	Action	
1	Put the device into the disconnected position (<i>see page 59</i>).	
2	Check that the equipment door is unlocked.	

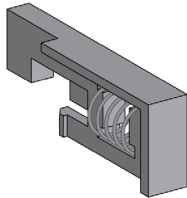
VPOC Open-door Racking Interlock

Description

With the racking interlock installed, a drawout Masterpact MTZ2/MTZ3 device cannot be racked in or out when the equipment door is open because the racking handle cannot be inserted.

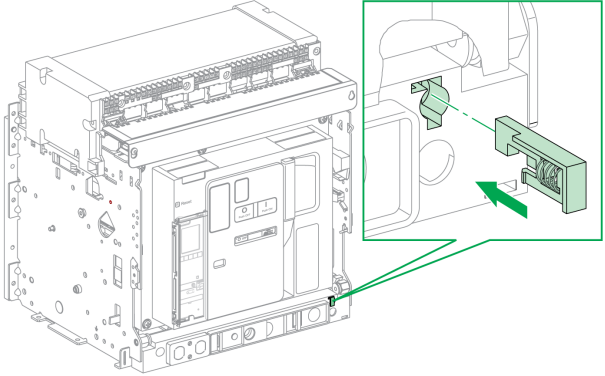
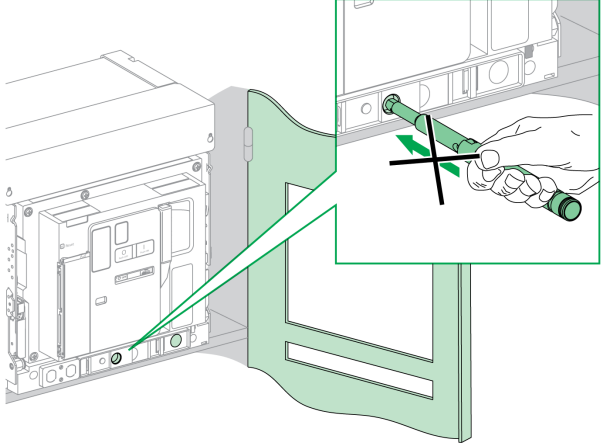
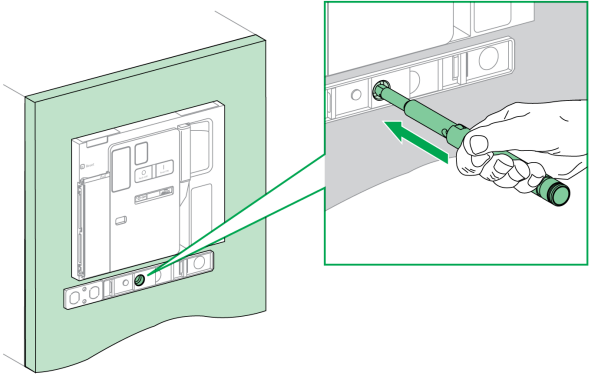
Accessory

The optional VPOC racking interlock can be installed on the right side of the chassis.

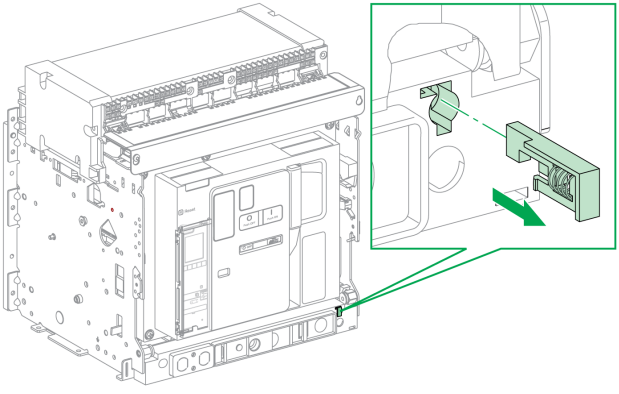
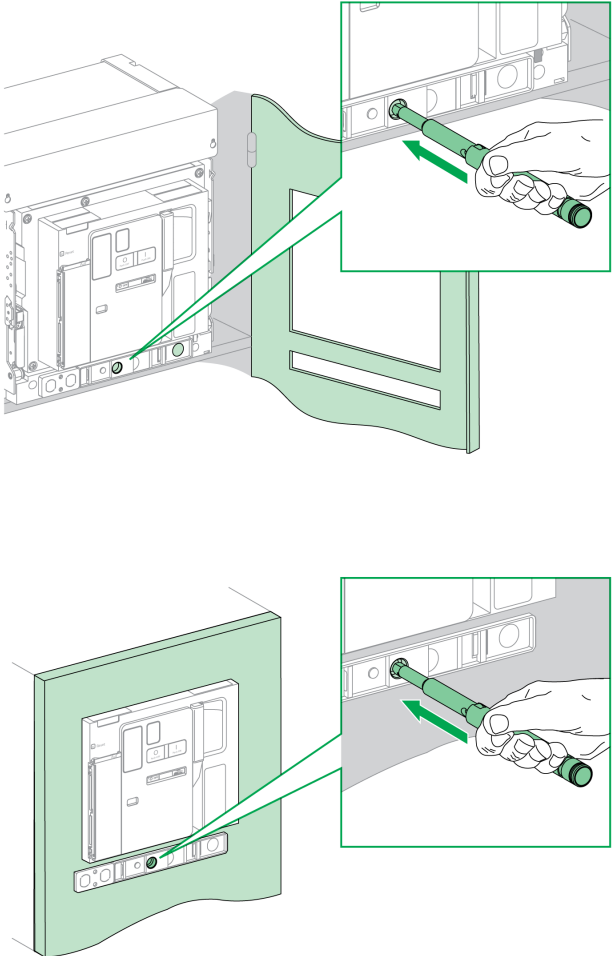


For information on the accessory installation, consult the instruction sheet available at Schneider Electric website: [NVE35494](https://www.schneider-electric.com/resources/technical-documents/NVE35494).

Activating the Racking Interlock

Step	Action	
1	Insert the racking interlock.	
2	Check that the racking handle cannot be inserted into the racking handle socket when the equipment door is open.	
3	Check that the racking handle can be inserted into the racking handle socket when the equipment door is closed.	

Deactivating the Racking Interlock

Step	Action	
1	Pull out the racking interlock.	 <p>The diagram shows a perspective view of the equipment door with a racking interlock being pulled out. An inset shows a close-up of the interlock being removed from its housing, with a green arrow indicating the direction of removal.</p>
2	Check that the racking handle can be inserted into the racking handle socket when the equipment door is open or closed.	 <p>The diagram shows the racking handle being inserted into the racking handle socket. An inset shows a close-up of the handle being inserted into the socket, with a green arrow indicating the direction of insertion. A second inset shows the handle being inserted into the socket when the equipment door is closed.</p>

IPA Cable-type Door Interlock

Description

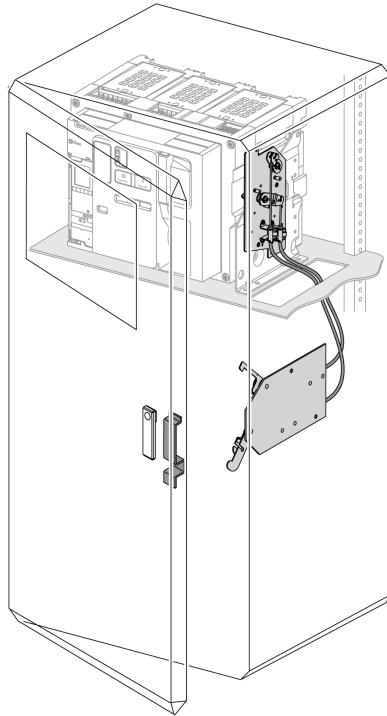
When the cable-type door interlock is installed, the door cannot be opened when the device is closed and the device cannot be closed when the door is open.

The cable-type door interlock comprises a plate, a lock and a cable. It is mounted on the right-hand side of the device.

When the interlock is installed, the mechanical interlock for transfer switches cannot be implemented.

Accessory

The IPA cable-type door interlock is an optional accessory.



For information on the accessory installation, consult the instruction sheet available at Schneider Electric website: [NVE35495](http://www.schneider-electric.com/NVE35495).

Mechanical Interlocking for Transfer Switches

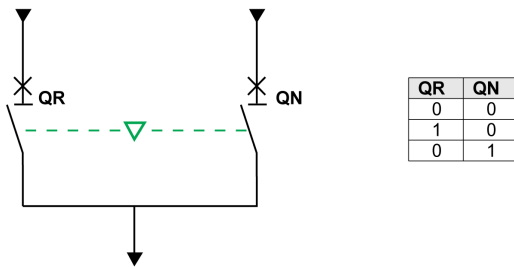
Description

The mechanical interlocking for transfer switches between Masterpact MTZ devices prevents the interlocked devices from closing at the same time. The following interlocking functions are available:

- Interlocking between two devices
- Interlocking between three devices:
 - Three incomers
 - Two incomers and one coupling
 - Two incomers and one replacement

Mechanical Interlocking Between Two Devices

Two devices can be mechanically interlocked by cables or by rods so that both devices cannot be closed at the same time.



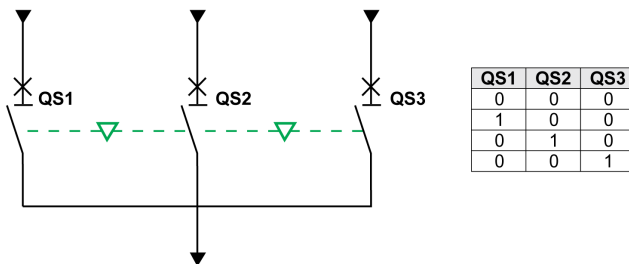
For information on the accessory installation, consult the instruction sheets available at Schneider Electric website:

- For Interlocking by cables: [NVE35496](#)
- For Interlocking by rods: [NVE35497](#)

Mechanical Interlocking Between Three Incomers

Mechanical interlocking is between three main devices connected to different power sources.

Only one of the three devices can be in the closed position at a time. The other two devices are held in the locked open position.

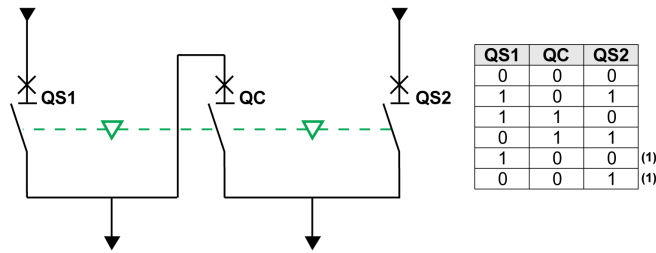


For information on the accessory installation, consult the instruction sheet available at Schneider Electric website: [NVE35498](#)

Mechanical Interlocking Between Two Incomers and One Coupling

Mechanical interlocking is between two main devices connected to different power sources and one tie device.

Two of the three devices can be in the closed position at any time.



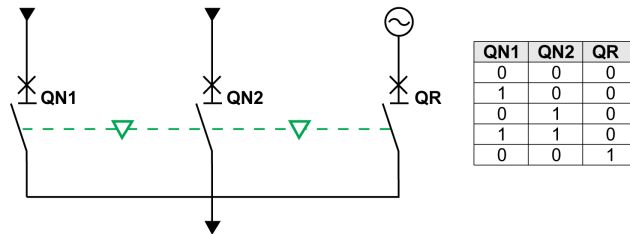
(1) Possible by forcing operation

For information on the accessory installation, consult the instruction sheet available at Schneider Electric website: [NVE35500](http://www.schneider-electric.com/NVE35500)

Mechanical Interlocking Between Two Incomers and One Replacement

Mechanical interlocking is between two main devices connected to the same power source and a third device connected to a generator power source.

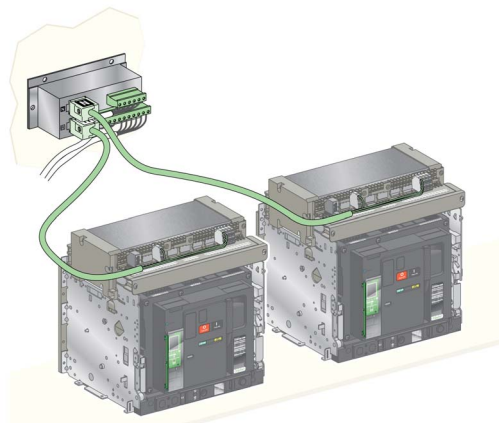
The generator device is locked open when either or both of the main devices are closed.



For information on the accessory installation, consult the instruction sheet available at Schneider Electric website: [NVE35499](http://www.schneider-electric.com/NVE35499)

IVE Electrical Interlocking Unit

Electrical interlocking between Masterpact MTZ devices can be done using the IVE electrical interlocking unit or by using dedicated wiring. The IVE unit is suitable for two devices only. For three devices, dedicated wiring is required to perform the electrical interlocking.



DAE Automatic Spring-Discharge Interlock

Description

The DAE automatic spring-discharge interlock releases the closing spring energy when a drawout Masterpact MTZ2/MTZ3 device is moved from the disconnected position to the withdrawn position.

The DAE interlock is an optional interlock mounted inside the device. It is factory-installed. To install it on site, contact your field service representative.

IBPO Racking Interlock Between Racking Handle and Opening Pushbutton

Description

With the IBPO racking interlock installed a drawout Masterpact MTZ2/MTZ3 device cannot be disconnected in the closed position.

Insertion of the racking handle for connection or disconnection of the drawout device is only possible when the opening pushbutton is pressed.

The IBPO racking interlock is an optional interlock mounted inside the device. It is factory-installed. To install it on site, contact your field service representative.

Inserting the Racking Handle With the IBPO Racking Interlock Installed

Step	Action	
1	Press and hold the opening pushbutton.	
2	Insert the racking handle.	

Chapter 3

Masterpact MTZ Critical Cases

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Finding the Cause of a Trip or an Alarm in Critical Cases	100
Resetting the Circuit Breaker After a Trip Due to an Electrical Fault	103
Resetting the Circuit Breaker After a Trip Due to a Malfunction Detected by the Micrologic X Self-tests	105
Diagnosing Alarms	106

Finding the Cause of a Trip or an Alarm in Critical Cases

Definitions

While operating the device, the user may face two critical cases:

- The circuit breaker has tripped automatically, interrupting the power supply.
- The circuit breaker has not tripped, but the Micrologic X control unit has detected an alarm:
 - For a high severity alarm, the service LED is red, indicating that urgent corrective action is required.
 - For a medium severity alarm, the service LED is orange, indicating that corrective action needs to be scheduled.

Notification of a Trip or Alarm

A trip or alarm event is signaled:

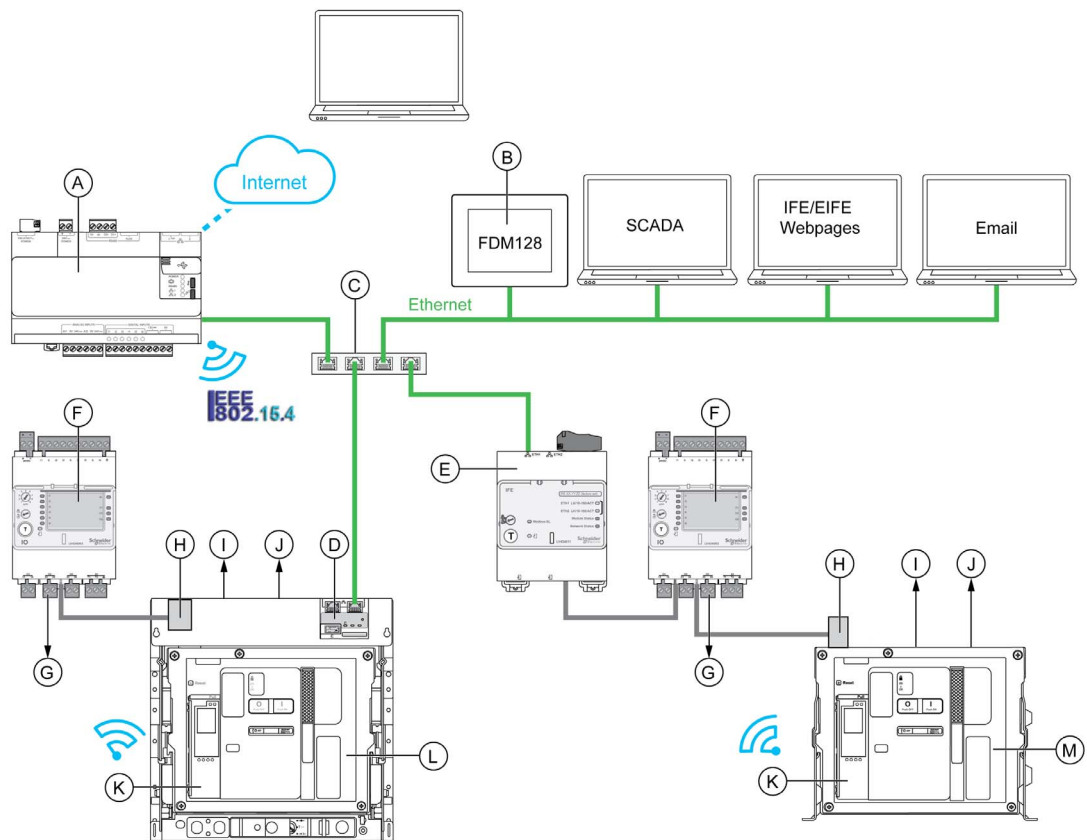
- On the Micrologic X control unit HMI, by the trip cause LEDs or the service LED. When the control unit is powered, a red or orange pop-up message is displayed on the screen.
- By the SDE fault-trip indication contact

Depending on the options installed, a trip or alarm can also be signaled:

- By an additional SDE2 fault-trip indication contact
- By the outputs of the M2C programmable contacts
- By the outputs of an IO application module
- By an email sent through IFE or EIFE Ethernet interface
- On a remote controller connected to the communication network (application customized by user)
- On the FDM128 display

Active alarms can also be consulted in the following ways:

- On a smartphone with Masterpact MTZ Mobile App connected to the Micrologic X control unit through Bluetooth
- On Ecoreach software connected to the Micrologic X control unit:
 - Through USB connection
 - Through Ethernet interface



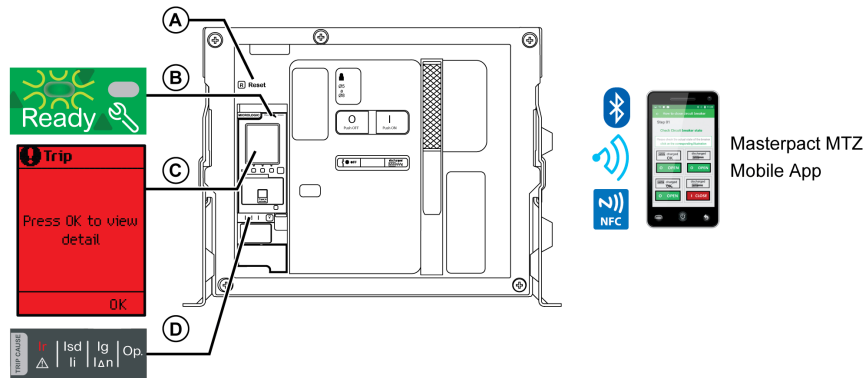
- A Com'X energy server
- B FDM128 Ethernet display for eight devices
- C Ethernet switch
- D EIFE embedded Ethernet interface for one Masterpact MTZ drawout circuit breaker
- E IFE Ethernet interface for one Masterpact MTZ circuit breaker

- F IO input/output application module for one circuit breaker
- G IO module outputs used for event notification
- H ULP port module
- I One or two SDE fault-trip indication contacts
- J Two optional M2C programmable contacts
- K Micrologic X control unit HMI
- L Drawout Masterpact MTZ circuit breaker
- M Fixed Masterpact MTZ circuit breaker

Identifying the Cause of a Trip or Alarm Using the Micrologic X Control Unit

In critical situations, the cause of a trip or an alarm can be identified locally by using one of the following:

- The indicators on the Micrologic X control unit HMI (*see page 102*):
 - The fault trip reset button on the circuit breaker (A)
 - The Micrologic X health status LEDs (Ready and service LEDs) (B)
 - The Micrologic X display screen (C)
 - The trip cause LEDs (D)
- A smartphone with Masterpact MTZ Mobile App installed to get the tripping cause, the trip or alarm context, and the device ID:
 - Through NFC
 - Through Bluetooth



- A Fault trip reset button
- B Health status LEDs
- C Micrologic X display screen
- D Trip cause LEDs

NOTE: The optional Power Restoration Assistant Digital Module provides assistance with restoring power after a trip.

Availability of Diagnostic Data After a Trip

The diagnostic data is available when the Micrologic X control unit is powered.

If the Micrologic X control unit is not permanently powered by an external 24 Vdc power source, connect the Micrologic X control unit to an external power supply, for example, the Mobile Power Pack, through the mini USB port to have access to the diagnostic data.


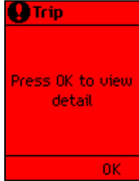


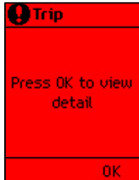

When the Micrologic X control unit is powered externally, the availability of diagnostic data depends on the Micrologic X health state:

- If the Micrologic X control unit is healthy, all diagnostic data is available.
- If there is a malfunction of the Micrologic X control unit, diagnostic data available depends on the type of malfunction.
- If the Micrologic X control unit is inoperative, no data is available.

The trip cause LEDs and the service LED are powered by the Micrologic X internal lithium battery and remain on for 4 hours when there is no other power to the control unit. To switch on the trip cause LEDs again after 4 hours, press the Test/Reset button.


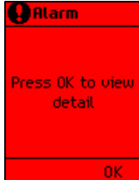






Using the Display Screen and LEDs to Find the Cause of a Trip

The circuit breaker has tripped automatically, interrupting the power supply, and the fault-trip reset button has popped out.

Health status LEDs	Micrologic X display screen	Trip cause LEDs	Probable cause
 <p>Ready LED flashing green. Service LED off.</p>		 <p>One of the trip cause LEDs is on red.</p>	Electrical fault on the network (<i>see page 103</i>)
 <p>Ready LED off. Service LED on red.</p>		 <p>All LEDs are on.</p>	Major Micrologic control unit malfunction detected during self-test (<i>see page 105</i>)

Using the Display Screen and LEDs to Find the Cause of an Alarm

The circuit breaker has not tripped, but the Micrologic X control unit service LED is on.

Health status LEDs	Micrologic X display screen	Trip cause LEDs	Probable cause
 <p>Service LED on red. Ready LED flashing green.</p>		 <p>All LEDs are off.</p>	High severity alarm (<i>see page 107</i>)
 <p>Service LED on red. Ready LED off.</p>		 <p>All LEDs are on.</p>	
 <p>Ready LED flashing green. Service LED on orange.</p>		 <p>All LEDs are off.</p>	Medium severity alarm (<i>see page 108</i>)




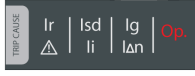
Resetting the Circuit Breaker After a Trip Due to an Electrical Fault

Reset Sequence

The table shows the sequence of actions to follow after a trip due to an electrical fault. Further explanation of each action is given in the following paragraphs.

Stage	Description
1	Identify the trip cause by using the Micrologic X control unit HMI.
2	Acknowledge the trip message on the Micrologic X control unit.
3	Clear the electrical fault on the network.
4	Inspect the circuit breaker and switchboard after a short circuit.
5	Reset the circuit breaker (<i>see page 47</i>).
6	When the circuit breaker is ready-to-close, re-close it (<i>see page 44</i>).

Identifying the Trip Cause

Trip cause LEDs	Description
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X, 6.0 X, 7.0 X: trip due to the long-time protection.
	<ul style="list-style-type: none"> Micrologic 2.0 X: trip due to the short-time protection. Micrologic 5.0 X, 6.0 X, 7.0 X: trip due to the short-time protection or instantaneous protection.
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X: not used. Micrologic 6.0 X: trip due to the ground-fault protection. Micrologic 7.0 X: trip due to the earth-leakage protection.
	<ul style="list-style-type: none"> Micrologic 2.0 X, 5.0 X, 6.0 X, 7.0 X: trip due to other protection (optional protections).

NOTE: Diagnostic assistance can be obtained by using a smartphone running the Masterpact MTZ Mobile App.

Acknowledging a Trip Message on Micrologic X Control Unit

Step	Action
1	Press OK to view details of the trip cause on the display screen.
2	Consult the two tripping context screens: <ul style="list-style-type: none"> Screen 1: Name and settings of the tripping protection. Date and time of the trip. Screen 2: Current values recorded before the trip.
3	Press OK to acknowledge the trip and return to the Home menu. NOTE: If the trip is not acknowledged within the event timeout, the pop-up is displayed again.
4	Press the Test/Reset button for 3 seconds to reset the latched events and switch off the trip cause LEDs and the service LED.

Clearing the Electrical Fault

The fact that a circuit breaker has tripped does not remedy the cause of the electrical fault detected on the downstream electrical equipment.

WARNING

HAZARD OF CLOSING ON ELECTRICAL FAULT

Do not close the circuit breaker again without first inspecting and, if necessary, repairing the downstream electrical equipment.

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

The feed must be isolated before inspecting the electrical equipment downstream of the protection.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462 or local equivalent.
- This equipment must be installed and serviced by qualified electrical personnel.
- Disconnect all power sources before performing maintenance inspections.
Assume that all circuits are live until they are de-energized, tested, grounded, and tagged. Consider all sources of power, including the possibility of backfeeding and control power.
- Always use a properly rated voltage sensing device to confirm that power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

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

Inspecting the Circuit Breaker and Switchboard After a Trip on Short Circuit

After a trip on short circuit due to short-time or instantaneous protection, the circuit breaker and switchboard must be inspected for smoke deposits or cracks in the device casing.

Refer to *Masterpact MTZ Circuit Breakers - Maintenance Guide* and contact your field service representative.


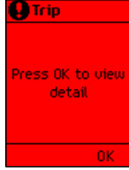

Resetting the Circuit Breaker After a Trip Due to a Malfunction Detected by the Micrologic X Self-tests

Reset Sequence

The following table shows the sequence of actions to take after a trip due to a malfunction detected by the Micrologic X control unit. Further explanation of each action is given in the following paragraphs.

Stage	Description
1	Identify the tripping cause.
2	Acknowledge the trip message on the Micrologic X display screen.
3	Consult the list of malfunctions and perform the actions recommended to restart after the trip.
4	Reset the circuit breaker (<i>see page 47</i>).
5	When the circuit breaker is ready to close, re-close it (<i>see page 44</i>).

Identifying the Trip Cause

Health status LEDs	Micrologic X display screen	Trip cause LEDs	Probable cause
 <p>Ready LED off. Service LED on red.</p>		 <p>All LEDs are on.</p>	Major Micrologic control unit malfunction detected during self-test (<i>see page 105</i>)

Acknowledging the Trip Message on Micrologic X Display Screen

Step	Action
1	Press OK . The screen displays: <ul style="list-style-type: none"> • A description of the malfunction. • The date and time that the malfunction occurred.
2	Consult the list of possible detected malfunctions in the following table and perform the actions recommended.
3	Press OK to acknowledge the trip and return to the Home menu.
4	Press the Test/Reset button for 3 seconds to reset the latched events and switch off the trip cause LEDs and the service LED.

Recommended Actions After a Trip Due to a Micrologic X Malfunction

Trip message	Malfunction description	Recommended action
Internal failure trip	The circuit breaker tripped following a control unit microprocessor (Asic) malfunction	Call Schneider Electric field service for replacement of the control unit
CU self-test major malfunction ¹	The control unit self test detected a major malfunction in the control unit operation	Call Schneider Electric field service for replacement of the control unit
Internal current sensor disconnected	The control unit self test detected the disconnection of an internal sensor of the circuit breaker	Replace the circuit breaker
ENCT disconnected	The control unit self test detected the disconnection of the external neutral current sensor of the circuit breaker	Reconnect the external neutral current sensor (ENCT)
¹ Control unit major malfunction that can trip the device or not, depending on the type of malfunction detected.		

Diagnosing Alarms

Diagnosis Sequence

The following table shows the sequence of actions to take after an alarm is detected by the Micrologic X control unit. Further explanation of each action is given in the following paragraphs.

Stage	Description
1	Identify the alarm detected.
2	Acknowledge the alarm cause on the Micrologic X display screen.
3	Consult the list of alarms and perform the recommended actions.









Identifying the Alarm Detected

The Micrologic X control unit indicates alarms with:

- The ready LED (flashing green or off)
- The service LED (red or orange)
- A pop-up alarm screen (red or orange)

Two levels of alarm are detected and indicated by the color of the service LED:

- Red for high-severity detected alarms.
- Orange for medium-severity detected alarms.

Health status LEDs	Micrologic X display screen	Trip cause LEDs	Probable cause
 <p>Ready</p> <p>Service LED on red. Ready LED flashing green.</p>		 <p>All LEDs are off.</p>	High severity alarm <i>(see page 107)</i>
 <p>Ready</p> <p>Service LED on red. Ready LED off.</p>		 <p>All LEDs are on.</p>	
 <p>Ready</p> <p>Ready LED flashing green. Service LED on orange.</p>		 <p>All LEDs are off.</p>	Medium severity alarm <i>(see page 108)</i>

Acknowledging the Alarm on Micrologic X Display Screen

Step	Action
1	Press OK . The display screen displays: <ul style="list-style-type: none"> • An alarm message. • The date and time that the alarm occurred.
2	Consult the list of alarm messages in the following tables and perform the actions recommended.
3	Press OK to acknowledge the trip and return to the Home menu.
4	Press the Test/Reset button for 3 seconds to reset the latched events and switch off the service LED.

Recommended Action After Detection of High Severity Alarms

Alarm message	Alarm description	Recommended action
Contact wear > 100%. Replace CB	The contact wear indicator reached the threshold of 100%.	Replace the circuit breaker
Earth leakage (Vigi) sensor disconnected	The control unit self test detected the disconnection of an Earth leakage (Vigi) sensor of the circuit breaker.	Reconnect the Vigi sensor
CB has reached the max number of operations.	The circuit breaker reached the maximum number of operations.	Replace the circuit breaker
CU self-test major malfunction ¹	The control unit self test detected a major malfunction in the control unit operation.	Replace the control unit.
MCH has reached the max number of operations	The MCH gear motor reached the maximum number of operations.	Replace the MCH gear motor
Protection reset to default setting if rebooted!	If switched off, the control unit will be reset at next reboot to the default values of the protection settings, due to a control unit malfunction.	Replace the control unit
Error reading sensor plug	The control unit is unable to read the value of the sensor plug.	Check connection of the sensor plug. If it fails again replace the sensor plug or the control unit.
CU factory configuration error	An error occurred in the factory configuration of the control unit.	–
IΔn/Ig test trip failed	The earth leakage (IΔn)/ground (Ig) test trip failed.	Restart the test. If it fails again, replace the control unit
¹ Major Micrologic malfunction that can trip the device or not, depending on the type of malfunction detected.		

Contact your Schneider Electric field service representative for more information about who can carry out the recommended actions.

Recommended Action After Medium Severity Alarms

Alarm message	Alarm description	Recommended action
Contact wear > 60%. Check contacts	The contact wear indicator reached or is above the threshold of 60%.	Check contact wear
Contact wear > 95%. Plan replacement	The contact wear indicator reached or is above the threshold of 95%.	Plan replacement of the circuit breaker
Less than 20% CB operation remaining	The remaining number of operations of the circuit breaker is less than 20%.	Plan replacement of the circuit breaker
XF closing release malfunction	The control unit self test detected a malfunction of the XF closing voltage release.	Replace the XF closing voltage release
XF release no longer detected.	The control unit self test detected the unexpected absence of the XF closing voltage release.	Check the connection of the XF closing voltage release
MX1 opening release malfunction	The control unit self test detected a malfunction of the MX1 opening voltage release.	Replace the MX1 opening voltage release
MX1 release no longer detected.	The control unit self test detected the unexpected absence of the MX1 opening voltage release.	Check the connection of the MX1 opening voltage release
MX2/MN opening release malfunction	The control unit self test detected a malfunction of the MX2 opening voltage release or MN undervoltage release.	Replace the MX2/MN opening release
MX2/MN release no longer detected	The MN undervoltage release or MX2 opening voltage release cannot be detected by the control unit.	Check the connection of the MX2 opening voltage release or the MN undervoltage release
MCH charging operations above threshold	The number of operations of the gear motor (MCH) reached the alarm threshold.	Plan to replace the MCH gear motor
Replace battery	The lithium battery is under 3 V and needs to be replaced soon.	Replace the battery
Protection settings no longer accessible	The protection settings are no longer accessible by the control unit.	Replace the control unit
CU self test minor malfunction	The control unit self test detected a minor malfunction in the control unit.	Plan to replace the control unit
CU self test minor malfunction corrected	The control unit self test detected a minor malfunction in the control unit and corrected it.	–
Metering and other protection malfunction	The control unit self test detected a minor malfunction in the metering and other protection functions of the control unit.	Plan to replace the control unit
Display screen or wireless malfunction	The control unit self test detected a malfunction in the display screen or the wireless module.	Replace the display screen
NFC malfunction	The control unit self test detected a malfunction in the NFC memory.	Plan to replace the control unit
Bluetooth malfunction	The control unit self test detected a Bluetooth malfunction.	Replace the control unit
Address conflict between modules	The control unit self test detected the unexpected presence of IO2 module when IO1 is not present.	Check the supply of the IO1 module
Loss of IFE module	The control unit has lost communication with the IFE module.	Check supply of the IFE module or ULP connection
Loss of IO1 module	The control unit has lost communication with the IO1 module.	Check supply of the IO1 module or ULP connection
Loss of IO2 module	The control unit has lost communication with the IO2 module.	Check supply of the IO2 module or ULP connection
Protection changed by communication	The protection parameters are changed by communication.	–
Config. mismatch between IO and CU	There is an error of declaration between the IO module and the control unit.	With Ecoreach software, modify the module declaration

Alarm message	Alarm description	Recommended action
CU firmware upgrade failed	The firmware upgrade of the control unit failed.	Restart the upgrade procedure from the beginning
Firmware internal error	The control unit self test detected a firmware internal error.	Upgrade firmware version of the control unit with Ecoreach software
Critical hardware modules discrepancy	There is a major hardware discrepancy between the installed modules that prevent them from operating.	Replace module
Critical firmware modules discrepancy	There is a major software discrepancy between the installed modules that prevent them from operating.	Upgrade the modules with Ecoreach software
Non-critical hardware modules discrepancy	There is a minor hardware discrepancy between the installed modules that prevent them from operating correctly.	Plan the replacement of the module
Non-critical firmware modules discrepancy	There is a minor software discrepancy between the installed modules that prevent them from operating correctly.	Plan the upgrade of the modules with Ecoreach software
Firmware discrepancy within CU	The control unit self test detected a discrepancy between the firmware versions of control unit processors.	Upgrade the control unit with Ecoreach software
Ultimate self-protection trip (DIN/DINF) operate	The integrated instantaneous protection (DIN/DINF) operates: at least one of the phase or neutral currents is higher than DIN/DINF threshold (no time delay).	–
Ultimate self-protection (SELLIM) operate	The integrated instantaneous protection (SELLIM) operates: at least one of the phase or neutral currents is higher than SELLIM threshold (no time delay).	–
Ir prealarm ($I > 90\% I_r$)	The long time protection prealarm started: at least one of the phase or neutral currents is higher than 90% I_r threshold. The circuit breaker is operating close to I_r threshold value.	–
Ir start ($I > 105\% I_r$)	The long time protection started: at least one of the phase or neutral currents is higher than I_r threshold. The circuit breaker will trip at the end of time delay.	–
Ir operate	The long time protection operated: at least one of the phase or neutral currents is higher than I_r threshold and the time delay is elapsed.	–
Isd operate	The short time protection operated: at least one of the phase or neutral currents is higher than I_{sd} threshold and the time delay is elapsed.	–
Ii operate	The instantaneous protection operated: at least one of the phase or neutral currents is higher than I_i threshold (no time delay).	–
Ig operate	The ground fault protection operated: the ground fault current is higher than I_g threshold and the time delay t_g is elapsed.	–
$I_{\Delta n}$ operate	The earth leakage ($I_{\Delta n}$) protection started: the earth leakage current is higher than $I_{\Delta n}$ threshold and the time delay $t_{\Delta n}$ is elapsed.	–

Chapter 4

Masterpact MTZ Commissioning

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Introduction	112
Inspection and Micrologic X Settings	114
Tests	116
Communication Tests	119
Final Checks and Reporting	120
Masterpact MTZ Test Form	121

Introduction

Overview

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E, CSA Z462, NOM 029-STPS, or local equivalent.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Unless specified otherwise in the commissioning procedures, all operations (inspection, test, and preventive maintenance) must be carried out with the device, the chassis, and the auxiliary circuits de-energized.
- Check that the device and the chassis are de-energized on the upstream and downstream terminals.
- Always use a properly rated voltage sensing device to confirm that the device, the chassis, and the auxiliary circuits are de-energized.
- Install safety barriers and display a danger sign.
- During the tests, it is strictly forbidden for anyone to touch the device, the chassis, or the conductors while voltage is applied.
- Before putting the equipment back into operation, it is mandatory to check that all connections are made with the correct tightening torque, there are no tools or objects inside the equipment, all devices, doors, and protective covers are in position, and the device is off (open position).

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

This chapter details the testing and commissioning procedure for Masterpact MTZ devices that must be done before the device can be accepted as fit for service and connected to a power supply.

The commissioning procedure must be done by an authorized commissioning engineer with appropriate training and experience:

- Only qualified electrical personnel with training and experience on low voltage circuits must perform the work described in this chapter.
Personnel must understand the hazards involved in working with or near low-voltage equipment. Such work must be performed only after reading the complete set of instructions.
- Some inspections or procedures require that certain parts of the electrical system remain energized at hazardous voltage during the procedure. Observe all safety messages (Danger, Warning, Caution) throughout this chapter and the corresponding instruction notices.
- Wear personal protective equipment, recognize potential hazards, and take adequate safety precautions when performing the procedures outlined in this chapter and the corresponding instruction notices.

The commissioning procedure assumes that the following conditions are met at the start of the procedure:

- The device is not connected to a power system or a control system.
- A drawout device is in the disconnected position.
- The device is not connected to the Ethernet network.

The results of all observations, tests, adjustments, together with any relevant comments must be recorded on the appropriate form, if applicable.

Wherever possible, testing must be done without disconnecting or disturbing existing wiring.

Scope

The commissioning procedure applies to the Masterpact MTZ intelligent modular unit (IMU), made up of:

- Masterpact MTZ circuit breaker
- Micrologic X control unit
- Optional ULP modules:
 - One IFE or EIFE Ethernet interface
 - One or two IO modules

The associated information, which must be read with this procedure, includes specific schematic diagrams, connections, and trip levels for the devices covered by this document.

Equipment

The following equipment is required to do the tests detailed in the commissioning procedure:

- Insulation resistance tester
- Multimeter
- A PC equipped with updated Ecoreach software
- A USB to mini USB cable (LV850067SP) to connect the PC to the Micrologic X control unit

Test Form

A test form (*see page 121*) is proposed to guide you through the commissioning procedure and to record the results of the commissioning tests. Each test is described in detail in the Commissioning chapter.

Only do the tests required, depending on the Masterpact MTZ type and the functions in use.

Inspection and Micrologic X Settings

Visual Inspection

Step	Action
1	Record the equipment identification, including substation name, switchboard name, Masterpact MTZ device type, Micrologic X model type and serial number, Micrologic X type, and protection settings.
2	Check that the device is undamaged, correctly mounted, and securely fastened in the switchboard.
3	Check the 3-phase clearance at terminal blocks.
4	Check that there is no debris remaining at the back of the device housing/enclosure.
5	Check that the ground terminals of the device are securely connected with the correct grounding cables.
6	Check that all external surfaces are undamaged.
7	Rectify any non-conformities, if possible. All equipment non-conformities must be referred to asset management.

Condition of Connections and Auxiliaries

Check device mounting in the switchboard and the tightness of all connections (main connection and auxiliary wiring).

Check that all auxiliaries and accessories are correctly installed:

- Electrical auxiliaries
- Terminal blocks
- Connections of auxiliary circuits

Check Firmware Compatibility

By using Ecoreach software, check that the firmware of the Micrologic X control unit and ULP modules in the intelligent modular unit (IMU) are up-to-date and compatible with each other. The ULP modules are EIFE and IFE Ethernet interfaces, and IO module.

Step	Action
1	Connect a PC running Ecoreach software by using a cable connected to the mini USB port on the front face of the Micrologic X control unit.
2	Establish a connection. Ecoreach software reads the parameters of the control unit.
3	On Ecoreach, use the Overall System firmware status/compatibility matrix to display: <ul style="list-style-type: none"> ● The installed firmware version of the IMU devices (Micrologic X control unit and ULP modules). ● The latest firmware version of the devices that are available on the Schneider Electric System Updates Internet site. ● The recommended actions to get a compatible system. For more information, refer to <i>Ecoreach Online Help</i> .
4	Follow the recommended actions to get a compatible system.

Micrologic X Settings

NOTICE

RISK OF UNINTENDED OPERATION

- The device must only be configured and set by qualified personnel, using the results of the installation protection system study.
- During commissioning of the installation and following any modification, check that the Micrologic X configuration and protection function settings are consistent with the results of this study.
- Micrologic X protection functions are set by default to the minimum value, except for the long time protection function which is set to the maximum value, by default.

Failure to follow these instructions can result in equipment damage.

Check the settings with Ecoreach software connected to the Micrologic X control unit.

Step	Action
1	Connect a PC running Ecoreach software by using a cable connected to the mini USB port on the front face of the Micrologic X control unit.
2	Establish a connection. Ecoreach software reads the parameters of the control unit.
3	Check that the settings read in the control unit match the requirements of the application. If necessary, correct the settings with Ecoreach software: <ul style="list-style-type: none"> ● The protection settings must be defined according to the installation protection system study. ● Other settings must be defined according to the application.
4	Complete the project and device data.
5	Generate the project report with Ecoreach software, and save or print the project report as needed.

NOTE: The protection functions available depend on the type of Micrologic X control unit and its associated options.

Tests

Overview

The tests to do while commissioning an MTZ device are described in this section:

- Functional checks
- Check of MCH gear motor (if fitted)
- Check of M2C programmable contacts and IO module (if fitted)
- Check of electrical continuity
- Check of high-voltage insulation
- Check of Micrologic X **Ready** LED status
- Test of the tripping mechanism with Ecoreach software
- Test of the tripping mechanism with the test button (Micrologic 6.0 X or 7.0 X control units)

Only do the tests required, depending on the Masterpact MTZ type and the functions in use, and record the results on the test form (*see page 121*). In the event of non-conformance, the result must be recorded and the Masterpact MTZ device must not be accepted into service.

Functional Checks

Follow this procedure to check the operation of the Masterpact MTZ device and record the results on the test form.

Step	Action
1	Manually charge the mechanism by pulling the spring charging handle down.
2	Close the device. Check the closing of the device in the different control modes and means designed for the application.
3	Open the device. Check the opening of the device in the different control modes and means designed for the application.

Check of MCH Gear Motor (If Fitted)

Follow this procedure to check the operation of the MCH gear motor and record the results on the test form.

Step	Action
1	Remove the MCH gear motor power supply.
2	Do an opening/closing/opening cycle to discharge the mechanism.
3	With the device in the open position and the mechanism discharged, check electrical continuity between terminals B1 and B2, and electrical non-continuity between terminals B1 and B3.
4	Manually charge the mechanism.
5	Reconnect the MCH gear motor power supply. The device closes and the mechanism is automatically charged.
6	Check electrical continuity between terminals B1 and B3.
7	Operate the device several times to check that the spring mechanism automatically recharges after every closing operation.

Check of M2C Programmable Contacts and IO Module (If Fitted)

Follow this procedure to check the operation of inputs and outputs, and record the results on the test form.

Step	Action
1	Connect a PC running Ecoreach software by using a cable to the mini USB port on the front face of the Micrologic X control unit.
2	Force the state of both inputs of the M2C programmable contacts and check that the operation is correct.
3	Force the state of the six digital inputs and three outputs of the one or two IO modules in the IMU to check the wiring to the circuit breaker. Check that the operation is correct.

Check of Electrical Continuity

Follow this procedure to check electrical continuity using a multimeter or continuity checker and record the results on the test form.


Step	Action
1	Close the device.
2	Check electrical continuity, for each of the phases, between the upper and lower power terminals: <ul style="list-style-type: none"> ● For fixed device: on the power terminals ● For the drawout device: on the chassis power terminals, with the device in the connected position

Check of High-Voltage Insulation

Dielectric tests (high potential and insulation resistance tests) are used to check the insulation between phases, and insulation between each phase and ground. The equipment used to conduct these tests creates a high potential voltage (thousands of volts) to check dielectric or insulation integrity.

If included in the Micrologic X control unit, the voltage power supply (VPS) module connects and disconnects the control unit with the voltage connections in the circuit breaker.

Before conducting any high-voltage insulation tests, move the VPS module to the disconnected position and unplug any cables from the mini USB port on the front face of the Micrologic X control unit. For information on VPS disconnection, consult the instruction sheet [NVE40741](#) available at the Schneider Electric website.

 CAUTION	
DETERIORATION OF VPS MODULE	
Disconnect the VPS module by pulling it out to the disconnected position before running a dielectric test on the equipment.	
Failure to follow these instructions can result in injury or equipment damage.	

Follow this procedure to check insulation resistance and record the results on the test form.

Step	Action
1	Disconnect the VPS module and unplug any cables from the mini USB port on the front face of the Micrologic X control unit.
2	Close the device.
3	Measure the insulation resistance using a 500 Vdc insulation resistance tester between one of the phases and the other two phases grounded. Repeat for each phase.
4	Open the Masterpact MTZ device by pressing the opening pushbutton.
5	Measure the insulation resistance using a 500 Vdc insulation resistance tester between one of the phases and ground, with all other phases grounded. Repeat for each phase.
6	Check that the insulation resistance is above 5 MΩ in each case. If this result is not obtained, contact your field service representative.

Check of Micrologic X Ready LED Status

Follow this procedure to check the functioning of the Micrologic X control unit and record the results on the test form.

Step	Action
1	Provide power to the Micrologic X control unit, for example, by connecting a PC or Mobile Power Pack to the mini USB port on the front face.
2	Check that the Micrologic X Ready LED is flashing green. The Ready LED flashes green to indicate that: <ul style="list-style-type: none"> ● The sensors are correctly wired. ● The tripping mechanism is functioning correctly. ● The Micrologic X control unit is functioning correctly.
3	If the Ready LED is not flashing green, refer to chapter Critical Cases (see page 99).

Test of the Tripping Mechanism With Ecoreach Software

Follow this procedure to test the Masterpact MTZ tripping mechanism and record the results on the test form.

Step	Action
1	Close the circuit breaker.
2	Connect a PC running Ecoreach software by using a cable to the mini USB port on the front face of the Micrologic X control unit.
3	On Ecoreach software, select the circuit breaker and connect to it.
4	Force the circuit breaker to trip by clicking the Force Trip button on the Ecoreach screen. This action is password-protected.
5	Check that the circuit breaker is open.
6	Check that the blue fault-trip reset button has popped out.
7	Check that the Isd/Ii LED is on.
8	Check that the SDE contacts have switched.
9	After the test, reset the circuit breaker.

Test of the Tripping Mechanism with the Test Button (Micrologic 6.0 X and 7.0 X Control Units)

Follow this procedure to test the Masterpact MTZ tripping mechanism when fitted with a Micrologic 6.0 X or 7.0 X control unit, and record the results on the test form.

Step	Action
1	Close the circuit breaker.
2	Use a thin screwdriver to briefly push in (<1 s) the test button on the control unit.
3	Check that the circuit breaker is open.
4	Check that the blue fault-trip reset button has popped out.
5	Check that the Ig/IΔn LED is on.
6	Check that the SDE contacts have switched.
7	After the test, reset the circuit breaker.

Communication Tests

Communication Network Test

Ecoreach software can be used to test the communication network between all the communicating devices of the project:

- Devices connected to the Ethernet network through an IFE or EIFE Ethernet interface.
- Devices connected to a Modbus serial line network from an IFE server.

Step	Action
1	Connect a PC running Ecoreach software by using an RJ45 cable to the Ethernet network, on the IFE or EIFE Ethernet interface for example.
2	In Ecoreach software, at Create report → Communication test & report , select devices to be tested from the list of communicating devices defined in the project.
3	Click Run test . All selected devices are tested.
4	Results are displayed at the end of the test.
5	Generate the communication test report with Ecoreach software, and save or print the project report as needed.

Remote Control Tests

If the Masterpact MTZ device can be opened and closed remotely through the communication network, use the following tests to check for the correct operation of remote control:

Step	Action
1	Connect a PC running Ecoreach software by using an RJ45 cable to the Ethernet network, on the IFE or EIFE Ethernet interface for example.
2	Check that the control mode is set to Auto: Remote.
3	In Ecoreach software, select the circuit breaker and connect to it.
4	Click the Device tab to access the Open and Close buttons.
5	Check that it is possible to open and close the Masterpact MTZ device remotely. These actions are password-protected.

Final Checks and Reporting

Final Checks

After completing the commissioning tests, check the following:

Step	Action
1	Check that connections are made with the correct tightening torque, that there are no tools or objects inside the equipment, and that all devices, doors, and protective covers are in position.
2	Check that the device is off (open position) and the closing spring is charged.

Project Report Generated by Ecoreach Software

Ecoreach software generates a project report with a list of the devices for that project. For each device it provides the following information:

- The circuit breaker identification data
- The Micrologic X identification data, including the list of Digital Modules installed
- The list of accessories including internal accessories (for example, M2C programmable contacts), and external modules (for example, IO module)
- The protection settings for the Micrologic X control unit
- The alarm settings
- The IFE or EIFE Ethernet interface settings

Communication Test Report Generated by Ecoreach Software

Ecoreach software performs a communication test and generates a report of the test. For each device it provides the following information:

- The name and type of the device
- The type of communication
- The address of the device or gateway
- The status of the connection

Masterpact MTZ Test Form

How to Use the Test Form

Print this test form to record the results of the commissioning tests.

Check the box (✓) when the test has been made and is conclusive.

This test form, the project report, and the communication test report should be left on-site in a plastic wallet and in an easily accessible, safe place.

Each test is described in detail in the Commissioning chapter.

Only do the tests required, depending on the Masterpact MTZ type and the functions in use.

When all the tests have been satisfactorily completed, sign and date the test form.

Identification

Workstation		Tests conducted on:	By: Signature:
Substation name		Comments:	
Substation number			
Switchboard name			
Voltage			

Masterpact MTZ device	
Manufacturer	Schneider Electric
Type of Masterpact MTZ device	
Serial number	
Hardware version	

Micrologic X control unit			
Micrologic X type		CT ratio	
Firmware version			

Preliminary Checks

Type of check	(✓)
Visual inspection satisfactory (for example, no visible signs of damage).	
Grounding satisfactory.	
Connection tightness checked.	
Firmware compatibility satisfactory.	
Micrologic X settings applied.	
Project report generated.	

Functional and Interlock Checks

Type of check	(✓)
Mechanism charges when spring charging handle is pulled.	
Masterpact MTZ device closes.	
Masterpact MTZ device opens.	
Mechanism charges automatically after closing when the device is fitted with an MCH gear motor.	
M2C programmable contacts function correctly.	
IO module functions correctly.	
Interlocking systems of the circuit breaker function correctly.	
Interlocking systems between two or three circuit breakers function correctly.	

Electrical Continuity Check

Masterpact MTZ device status	Tested terminals		Electrical continuity
	Incoming side	Outgoing side	
Closed	L1	L1	Ω
Closed	L2	L2	Ω
Closed	L3	L3	Ω

Masterpact MTZ Insulation Test

Masterpact MTZ device status	Terminals under test	Voltage	Insulation resistance
Closed	L1, with L2 and L3 grounded	500 Vdc	MΩ
Closed	L2, with L1 and L3 grounded	500 Vdc	MΩ
Closed	L3, with L1 and L3 grounded	500 Vdc	MΩ
Open	L1, with L1, L2, L3 grounded on the other side	500 Vdc	MΩ
Open	L2, with L1, L2, L3 grounded on the other side	500 Vdc	MΩ
Open	L3, with L1, L2, L3 grounded on the other side	500 Vdc	MΩ

Check of Micrologic X Ready LED

Type of check	(✓)
Micrologic X Ready LED flashes green.	

Test of the Tripping Mechanism for Micrologic X Control Units

Type of check	(✓)
With the circuit breaker closed, force the circuit breaker to trip using Ecoreach software.	
Check that the circuit breaker is open.	
Check that the blue fault-trip reset button has popped out.	
Check that the Isd/li LED is on.	
Check that the SDE contacts have switched.	

Test of the Tripping Mechanism for Micrologic X 6.0 X and 7.0 X Control Units

Type of check	(✓)
With the circuit breaker closed, briefly press (<1 s) the test button on the front face of the control unit.	
Check that the circuit breaker is open.	
Check that the blue fault-trip reset button has popped out.	
Check that the Ig/IΔn LED is on.	
Check that the SDE contacts have switched.	

Communication Tests

Type of check	(✓)
Communication network tested.	
Communication test report generated.	
Remote opening and closing tested.	

Final Checks

Type of check	(✓)
All doors and protected covers are in position.	
The device is off (open position) and the closing spring is charged.	

Chapter 5

Masterpact MTZ Troubleshooting

Troubleshooting the Device

Presentation

The troubleshooting operations are described in the following tables. They are classified into the following events:

- Events related to a closing action
- Events related to an opening action
- Events related to the chassis
- Unexpected tripping

Troubleshooting with Assistance

Assistance for troubleshooting is provided by the Masterpact Operation Assistant Digital Module, which is available to be downloaded using the Masterpact MTZ Mobile App.

The Masterpact Operation Assistant Digital Module helps to close a circuit breaker after a trip or an opening.

The following features are available:

- Ready-to-close status
- Reset (if applicable)
- Spring charging (if applicable)
- Diagnostics on related reclosing information, for example, no power supply to MX opening voltage release, MN undervoltage release, or MCH gear motor

Refer to *Micrologic X Control Unit - User Guide* for more information about downloading Digital Modules.

Events Related to a Closing Action

Problem description	Probable causes	Solutions
Device cannot be closed locally or remotely.	Device is padlocked or keylocked in the open position.	Disable the locking function.
	Device is interlocked mechanically in a mechanical interlocking system.	<ul style="list-style-type: none"> ● Check the position of the other device in the changeover system. ● Modify the situation to release the interlock.
	Device is not correctly connected.	Terminate racking in (connection) of the device.
	The fault-trip reset button has not been reset.	<ul style="list-style-type: none"> ● Clear the fault. ● Push the fault-trip reset button.
	Stored energy mechanism is not charged.	<ul style="list-style-type: none"> ● Charge the mechanism manually. ● If the device is equipped with a MCH gear motor, check the supply of power to the motor. If the problem persists, replace the MCH gear motor.
	MX opening voltage release is permanently supplied.	As there is an opening order, determine the origin of the order. The order must be canceled before the device can be closed.
	MN undervoltage release is not supplied.	<ul style="list-style-type: none"> ● As there is an opening order, determine the origin of the order. ● Check the voltage and the supply circuit ($U > 0.85 U_n$). <p>If the problem persists, replace the MN undervoltage release.</p>
Device cannot be closed remotely but can be closed locally using the closing pushbutton.	XF closing voltage release is continuously supplied, but device is not ready-to-close (XF is not wired in series with PF ready-to-close contact).	<ul style="list-style-type: none"> ● Remove the power supply to the XF closing voltage release. ● Only if the device is ready-to-close, send the closing order again via the XF closing voltage release.
	Closing order not executed by the XF closing voltage release.	Check the voltage and the supply circuit (0.85–1.1 U_n). If the problem persists, replace the XF closing voltage release.
	Device can be reset locally but not remotely.	Check the voltage and the supply circuit (0.7–1.1 U_n). If the problem persists, replace the MCH gear motor.

Events Related to an Opening Action

Problem description	Probable causes	Solutions
Device cannot be opened locally.	Operating mechanism malfunction or welded contacts.	Contact a Schneider Electric service center.
	Opening order is not executed by the MX opening voltage release.	Check the voltage and the supply circuit (0.7–1.1 U_n). If the problem persists, replace the MX opening voltage release.
Device cannot be opened remotely, but can be opened locally.	Opening order is not executed by the MN undervoltage release.	Drop in voltage insufficient or residual voltage ($> 0.35 U_n$) across the terminals of the MN undervoltage release. If the problem persists, replace the MN undervoltage release.

Events Related to the Chassis

Problem description	Probable causes	Solutions
Impossible to insert the racking handle in connected, test, or disconnected position.	A padlock or keylock is present on the chassis or a door interlock is present.	Disable the locking function.
Impossible to turn the racking handle.	The position release button has not been pressed and so the racking handle cannot be rotated.	Press the position release button.
Device cannot be removed from chassis.	Device is not in the disconnected position.	Turn the racking handle until the device is in the disconnected position and the position release button pops out.
	Rails are not completely out.	Pull the rails of the chassis out.
Device cannot be connected (racked in).	Chassis and device do not match (mismatch protection).	Check that the chassis corresponds with the device.
	Safety shutters are locked.	Remove the locks.
	Disconnecting contact clusters are incorrectly positioned.	Reposition the disconnecting contact clusters.
	Chassis is locked in the disconnected position.	Disable the chassis locking function.
	The position release button has not been pressed and so the racking handle cannot be rotated.	Press the position release button.
	Device has not been sufficiently inserted in the chassis.	Insert the device completely so that it is engaged in the racking mechanism.
Device cannot be locked in the disconnected position.	Device is not in the right position.	Check the device position by verifying that the position release button is out.
	Racking handle is still in the chassis.	Remove the racking handle and store it.
Device cannot be locked in the connected, test, or disconnected position.	Locking in any position is not enabled.	Contact a Schneider Electric service center.
	Device is not in the right position.	Check the device position by verifying that the position release button is out.
	Racking handle is still in the chassis.	Remove the racking handle and store it.
The racking handle cannot be inserted to connect or disconnected the device.	Rails are not completely in.	Push the rails all the way in.
The right-hand rail (chassis alone) or the device cannot be drawn out.	Racking handle is still in the chassis.	Remove the racking handle and store it.

Unexpected Tripping

Problem description	Probable causes	Solutions
Unexpected opening without activation of the fault-trip reset button.	MN undervoltage release supply voltage is too low.	Check the voltage and the supply circuit ($U > 0.85 U_n$).
	Load-shedding order sent to the MX opening voltage release by another device.	<ul style="list-style-type: none"> Check the overall load on the distribution system. If necessary, modify the settings of devices in the installation.
	Unnecessary opening order from the MX opening voltage release.	Determine the origin of the order and cancel it.
Unexpected tripping with activation of the fault-trip reset button.	An electrical fault is present, among: <ul style="list-style-type: none"> Overload Ground-fault Short-circuit detected by the control unit 	Refer to Masterpact MTZ critical cases (<i>see page 99</i>).
Instantaneous tripping after each attempt to close the device with activation of the fault-trip reset button.	Thermal memory.	<ul style="list-style-type: none"> Reset the thermal memory on screen. Refer to <i>Micrologic X Control Unit - User Guide</i>. Press the fault-trip reset button.
	Transient overcurrent when closing.	<ul style="list-style-type: none"> Modify the distribution system or the control unit settings. Check the condition of the device before putting it back into service. Press the fault-trip reset button.
	Closing on a short-circuit.	Refer to Masterpact MTZ critical cases (<i>see page 99</i>).
Nuisance tripping of the device with activation of the fault-trip reset button.	Fault-trip reset button is not pushed-in completely.	Push in the fault-trip reset button completely.

Maintenance of the Device

For information about the preventive maintenance program and maintenance procedures, refer to *Masterpact MTZ Circuit Breakers - Maintenance Guide*.

Chapter 6

Schneider Electric Green Premium™ Ecolabel

Schneider Electric Green Premium™ Ecolabel

Description

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



Accessing Green Premium

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

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



Checking Products Through the Schneider Electric Website

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

Step	Action
1	From http://www.schneider-electric.com/ , select Support → Additional Links → Green Premium Eco Label .
2	Click Check your product to open the search tool webpage.
3	Click Launch now to launch the search tool.
4	Fill in the fields: <ul style="list-style-type: none">• Enter the commercial reference or product range of the product to search for.• Optional: Enter the manufacturing date code of the product with format YYWW. By default, this field is filled with the date of the search.
5	To search for several products simultaneously, click the Add product button, and then fill in the fields.
6	Click Check product(s) to generate a report of the environmental criteria available for the products with the entered commercial references.

Environmental Criteria

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

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

RoHs

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

REACH

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

PEP

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

EoLI

These instructions provide:

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



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