# Accessories and auxiliaries
## Selection of auxiliaries for Compact NSX100/160/250

### Standard
All Compact NSX100/160/250 circuit breakers and switch-disconnectors have slots for the electrical auxiliaries listed below.
**5 indication contacts** (see page A-94)
- 2 ON/OFF (OF1 and OF2)
- 1 trip indication (SD)
- 1 fault-trip indication (SDE)
- 1 earth-fault indication (SDV), when the device is equipped with a Vigi module.

**1 remote-tripping release** (see page A-97)
- either 1 MN undervoltage release
- or 1 MX shunt release.

### Remote indications
Circuit breakers equipped with Micrologic trip units may be equipped with a fault-trip indication to identify the type of fault by installing:
**1 indication module with two outputs** (see page A-95)
- either an SDx module with Micrologic 2.2 / 5.2 A or E / 6.2 A or E
- or an SDTAM module with Micrologic 2.2 M or 6-2 E-M (motor protection).

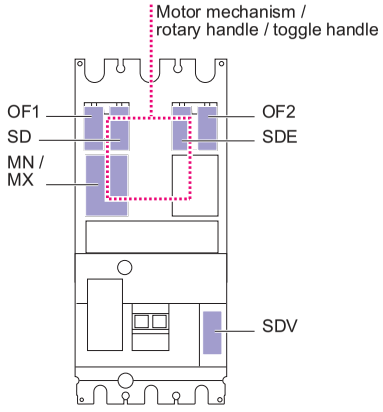
This module occupies the slots of one OF contact and an MN/MX release.

**All these auxiliaries may be installed with a motor mechanism or a rotary handle or a toggle handle.**
The following table indicates auxiliary possibilities depending on the type of trip unit.

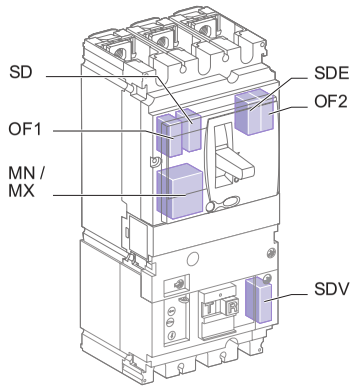
## NA, TMD, TMG, MA

### Standard

DB403040.eps



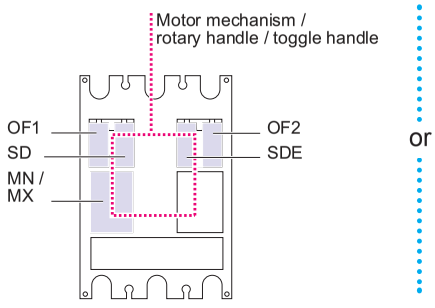

DB111392.eps




## Micrologic 2 / 5 / 6

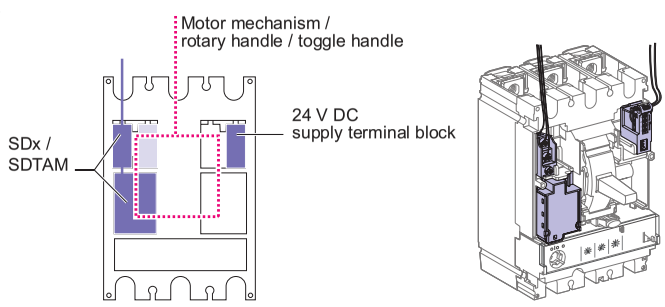
### Standard

DB403041.eps




### Remote indications via SDx or SDTAM

DB403042.eps




*The SDx or SDTAM uses the OF1 and MN/MX slots.*
*External connection is made via a terminal block in the OF1 slot.*
*The 24 V DC supply provides for the Micrologic 5 / 6 display when the device is OFF or under low-load conditions.*

## Communication

Communication requires specific auxiliaries (see page A-40).

**Communication of status indications**

- 1 BSCM module.
- 1 NSX cord (internal terminal block) for both communication and 24 V DC supply to the BSCM.

Communication of status conditions is compatible with a toggle handle and a rotary handle.

**Communication of status indications and controls**

This requires, in addition to the previous auxiliaries:

- 1 communicating motor mechanism connected to the BSCM.

**Communication of measurements**

Available on Micrologic 5 / 6, the system consists of:

- 1 NSX cord (internal terminal block) for both communication and 24 V DC supply to the Micrologic.

Communication of measurements is compatible with a standard or communicating motor mechanism and a rotary handle.

**Communication of status indications, controls and measurements**

Available on Micrologic 5 / 6, the system consists of:

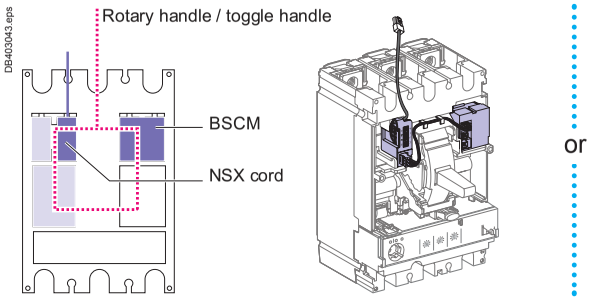
- 1 BSCM module
- 1 NSX cord (internal terminal block) for both communication and 24 V DC supply to the BSCM and the Micrologic
- 1 communicating motor mechanism connected to the BSCM.

**Installation of SDx or SDTAM is compatible with communication.**

The following table indicates auxiliary possibilities depending on the type of trip unit.

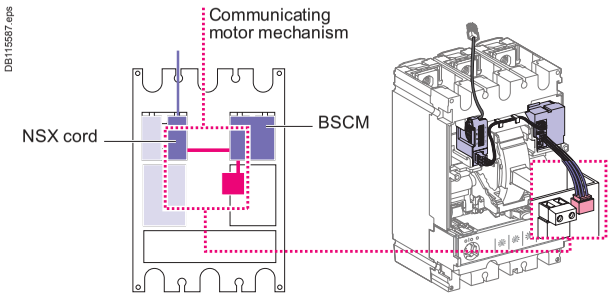
### NA, TMD, TMG, MA, Micrologic 2

**Communication of status indications**



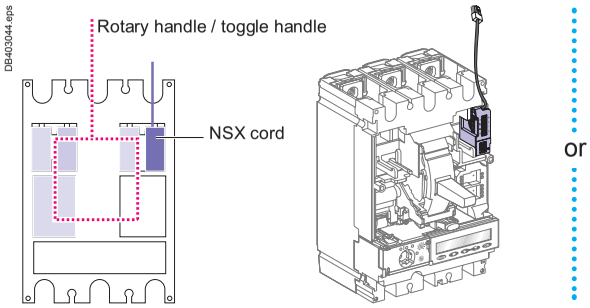

or

**Communication of status indications and controls**



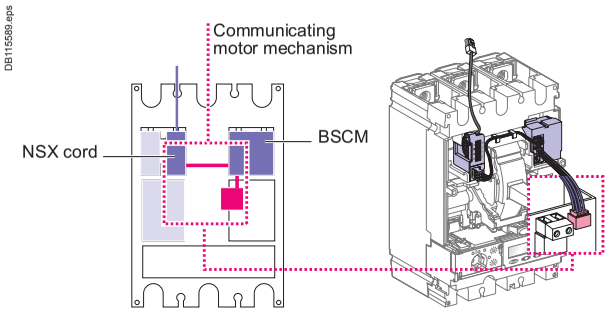

### Micrologic 5 / 6

**Communication of measurements with or without FDM121 display**




or

**Communication of status indications, controls and measurements with or without FDM121 display**



# Accessories and auxiliaries
## Selection of auxiliaries for Compact NSX400/630

### Standard
All Compact NSX400/630 circuit breakers and switch-disconnectors have slots for the electrical auxiliaries listed below.
**7 indication contacts** (see page A-94)
- 4 ON/OFF (OF1, OF2, OF3, OF4)
- 1 trip indication (SD)
- 1 fault-trip indication (SDE)
- 1 earth-fault indication (SDV), when the device is equipped with a Vigi module.

**1 remote-tripping release** (see page A-97)
- either 1 MN undervoltage release
- or 1 MX shunt release.

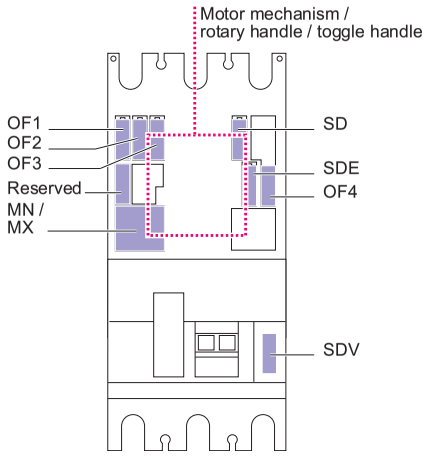
### Remote indications
Circuit breakers equipped with Micrologic trip units may be equipped with a fault-trip indication to identify the type of fault by installing:
**1 indication module with two outputs** (see page A-95)
- either an SDx module with Micrologic 2.2 / 5.2 A or E / 6.2 A or E
- or an SDTAM module with Micrologic 2.2 M or 6-2 E-M (motor protection).

This module occupies the slots of an MN/MX release.

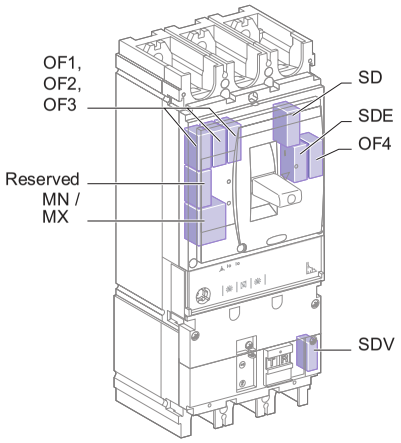
**All these auxiliaries may be installed with a motor mechanism or a rotary handle or a toggle handle.**
The following table indicates auxiliary possibilities depending on the type of trip unit.

## NA, Micrologic 1.3 M
**Standard**

DB403045.eps

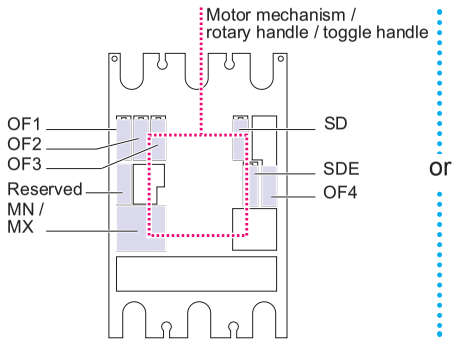



DB115591.eps

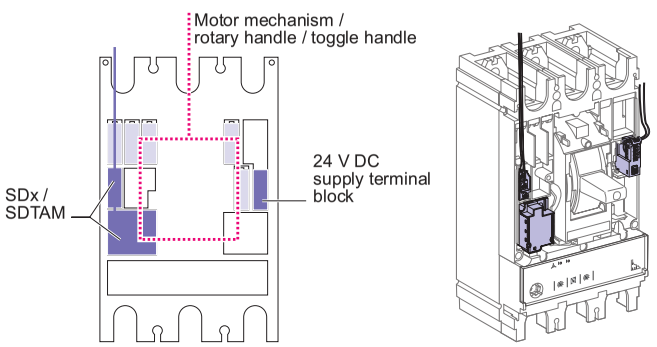



## Micrologic 2 / 5 / 6
**Standard**

DB403046.eps




DB403047.eps




*The SDx or SDTAM uses the reserved slot and the MN/MX slots.*
*External connection is made via a terminal block in the reserved slot.*
*The 24 V DC supply provides for the Micrologic 5 / 6 display when the device is OFF or under low-load conditions.*

## Communication

Communication requires specific auxiliaries (see page A-40).

**Communication of status indications**

- 1 BSCM module
- 1 NSX cord (internal terminal block) for both communication and 24 V DC supply to the BSCM.

Communication of status conditions is compatible with a toggle handle and a rotary handle.

**Communication of status indications and controls**

This requires, in addition to the previous auxiliaries:

- 1 communicating motor mechanism connected to the BSCM.

**Communication of measurements**

Available on Micrologic 5 / 6, the system consists of:

- 1 NSX cord (internal terminal block) for both communication and 24 V DC supply to the Micrologic.

Communication of measurements is compatible with a standard or communicating motor mechanism and a rotary handle.

**Communication of status indications, controls and measurements**

Available on Micrologic 5 / 6, the system consists of:

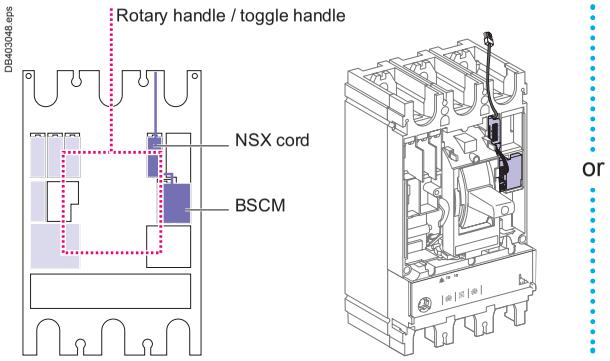
- 1 BSCM module
- 1 NSX cord (internal terminal block) for both communication and 24 V DC supply to the BSCM and the Micrologic
- 1 communicating motor mechanism connected to the BSCM.

**Installation of SDx or SDTAM is compatible with communication.**

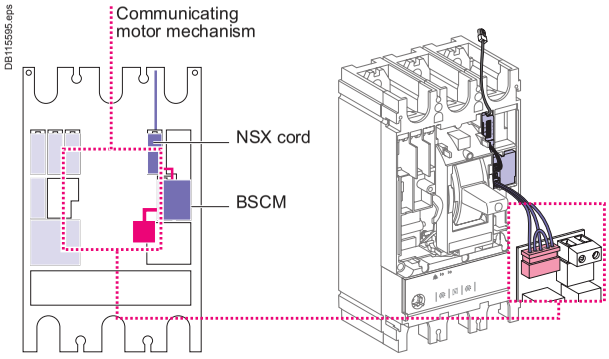
The following table indicates auxiliary possibilities depending on the type of trip unit.

### NA, Micrologic 1.3 M, Micrologic 2

**Communication of status indications**

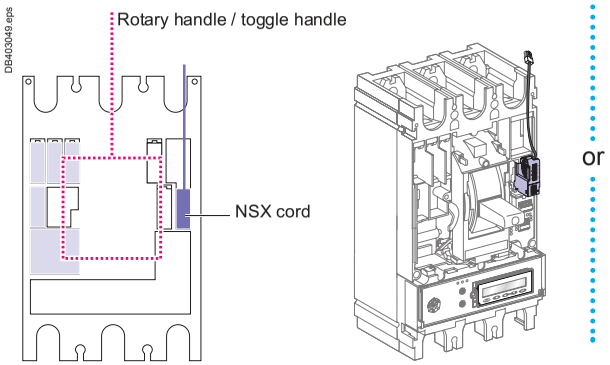



**Communication of status indications and controls**

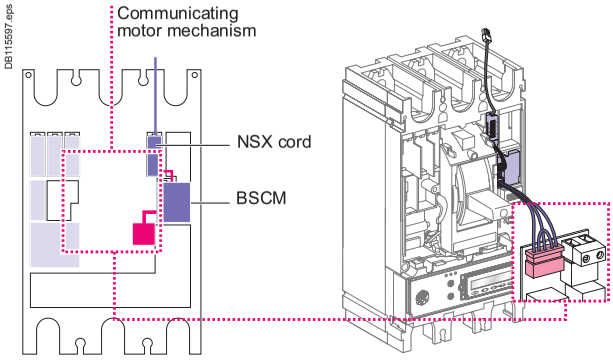



### Micrologic 5 / 6

**Communication of status indications**

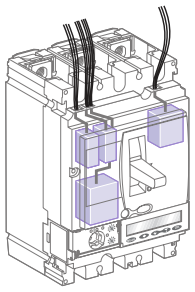



**Communication of status indications, controls and measurements with or without FDM121 display**



# Accessories and auxiliaries
## Connection of electrical auxiliaries

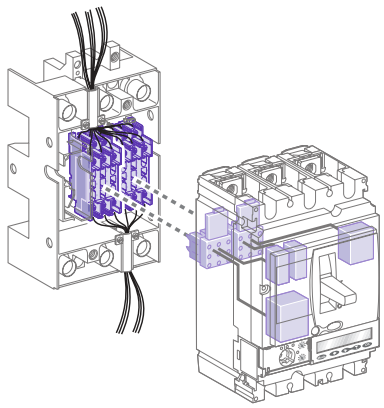
DB112162.EPS



*Fixed Compact NSX.*

### Fixed Compact NSX
Auxiliary circuits exit the device through a knock-out in the front cover.

DB112167.EPS



*Plug-in/withdrawable Compact NSX.*

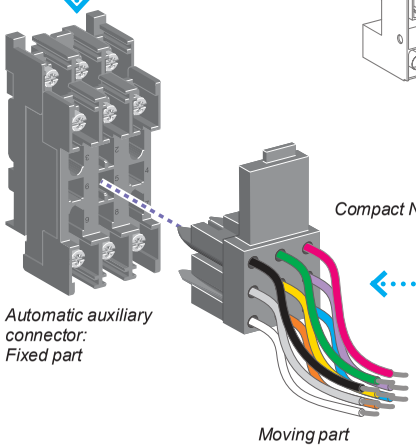
### Withdrawable or plug-in Compact NSX

#### Automatic auxiliary connectors
Auxiliary circuits exit the circuit breaker via one to three automatic auxiliary connectors (nine wires each). These are made up of:
- a moving part, connected to the circuit breaker via a support (one support per circuit breaker)
- a fixed part, mounted on the plug-in base, equipped with connectors for bare cables up to 2.5 mm².

Micrologic trip unit options are also wired via the automatic auxiliary connectors.

**Selection of automatic auxiliary connectors**
Depending on the functions installed, one to three automatic auxiliary connectors are required.

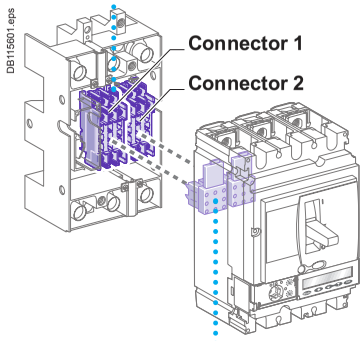
DB111376.EPS



*Automatic auxiliary connector: Fixed part*

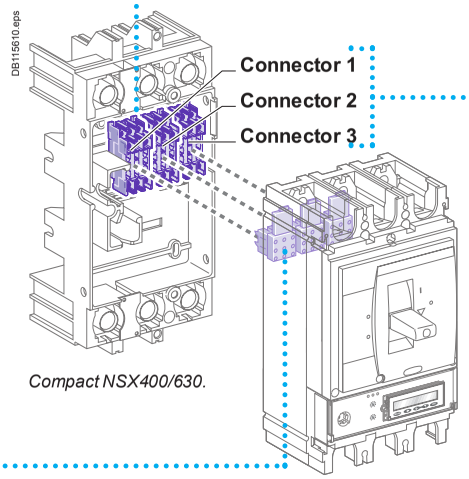
*Moving part*

DB115601.eps




*Compact NSX100/160/250*

DB115610.eps

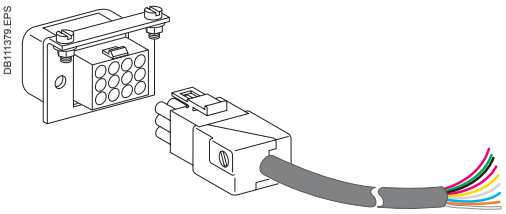



*Compact NSX400/630.*

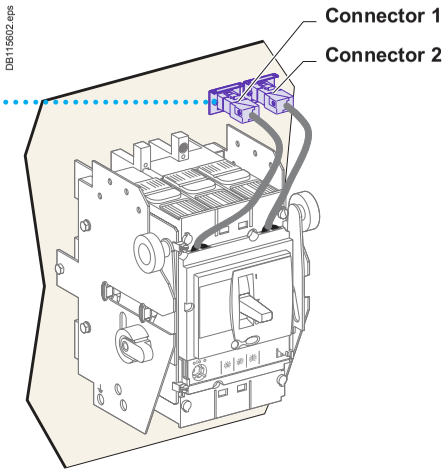
# Withdrawable Compact NSX

## Manual auxiliary connectors

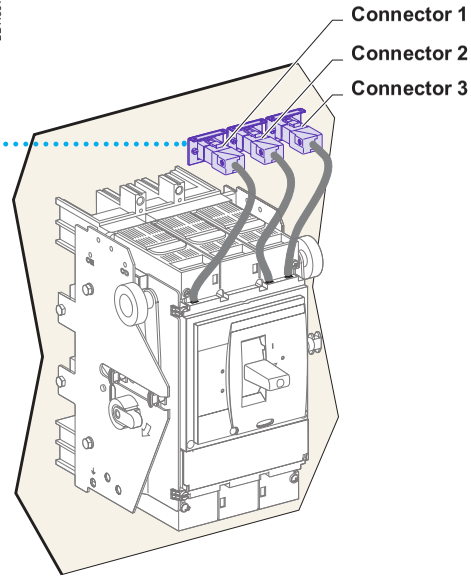
As an option to the automatic auxiliary connectors, withdrawable circuit breakers may be equipped with one to three plugs with nine wires each. In "disconnected" position, the auxiliaries remain connected.
They can then be tested by operating the device.




*Nine-wire manual auxiliary connector.*




*Compact NSX100/160/250.*




*Compact NSX400/630.*

Each auxiliary is equipped with a terminal block with numbered terminals for connection of wires up to:
- 1.5 mm² for auxiliary contacts and voltage releases
- 2.5 mm² for the motor-mechanism module.

| Circuit breaker | Connector 1 | Connector 2 | Connector 3 |
|---|---|---|---|
| | OF1<br>MN/ or SDx/<br>MX SDTAM<br>SD | OF2/SDV / ZSI out (1)<br>SDE<br>NSX cord<br>MT<br>MTc<br>24 V DC | OF3<br>OF4<br>ZSI in<br>ZSI out |
| NSX100/160/250 | ■ | ■ | - |
| NSX400/630 | ■ | ■ | ■ |

*(1) Only for NSX100 to 250.*
***MT**: motor mechanism.*
***MTc**: communicating motor mechanism.*

# Accessories and auxiliaries
## Indication contacts

One contact model provides circuit-breaker status indications (OF - SD - SDE - SDV).
An early-make or early-break contact, in conjunction with a rotary handle, can be used to anticipate device opening or closing.
A CE / CD contact indicates that the chassis is connected / disconnected.

DB125549.eps

*Indication contacts.*

PB103706-68.eps

*CE/CD carriage switches.*

These common-point changeover contacts provide remote circuit-breaker status information.
They can be used for indications, electrical locking, relaying, etc.
They comply with the IEC 60947-5 international recommendation.

## Functions

**Breaker-status indications, during normal operation or after a fault**
A single type of contact provides all the different indication functions:
■ OF (ON/OFF) indicates the position of the circuit breaker contacts
■ SD (trip indication) indicates that the circuit breaker has tripped due to:
□ an overload
□ a short-circuit
□ an earth fault (Vigi) or a ground fault (Micrologic 6)
□ operation of a voltage release
□ operation of the "push to trip" button
□ disconnection when the device is ON.
The SD contact returns to de-energised state when the circuit breaker is reset.
■ SDE (fault-trip indication) indicates that the circuit breaker has tripped due to:
□ an overload
□ a short-circuit
□ an earth fault (Vigi) or a ground fault (Micrologic 6).
The SD contact returns to de-energised state when the circuit breaker is reset.
■ SDV indicates that the circuit breaker has tripped due to an earth fault. It returns to de-energised state when the Vigi module is reset.
All the above auxiliary contacts are also available in "low-level" versions capable of switching very low loads (e.g. for the control of PLCs or electronic circuits).

**Rotary-handle position contact for early-make or early-break functions**
■ CAM (early-make or early-break function) contacts indicate the position of the rotary handle.
They are used in particular for advanced opening of safety trip devices (early break) or to energise a control device prior to circuit-breaker closing (early make).

**Chassis-position contacts**
■ CE/CD (connected/disconnected) contacts are microswitch-type carriage switches for withdrawable circuit breakers.

## Installation

■ OF, SD, SDE and SDV functions: a single type of contact provides all these different indication functions, depending on where it is inserted in the device. The contacts clip into slots behind the front cover of the circuit breaker (or the Vigi module for the SDV function).
The SDE function on a Compact NSX100 - 250 A equipped with a magnetic, thermal-magnetic or Micrologic 2 trip unit requires the SDE actuator.
■ CAM function: the contact fits into the rotary-handle unit (direct or extended).
■ CE/CD function: the contacts clip into the fixed part of the chassis.

### Electrical characteristics of auxiliary contacts

| Contacts | | | Standard | | | | Low level | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Types of contacts** | | | **All** | | | | **OF, SD, SDE, SDV** | | | |
| Rated thermal current (A) | | | 6 | | | | 5 | | | |
| Minimum load | | | 100 mA at 24 V DC | | | | 1 mA at 4 V DC | | | |
| Utilisation cat. (IEC 60947-5-1) | | | AC12 | AC15 | DC12 | DC14 | AC12 | AC15 | DC12 | DC14 |
| Operational current (A) | 24 V | AC/DC | 6 | 6 | 6 | 1 | 5 | 3 | 5 | 1 |
| | 48 V | AC/DC | 6 | 6 | 2.5 | 0.2 | 5 | 3 | 2.5 | 0.2 |
| | 110 V | AC/DC | 6 | 5 | 0.6 | 0.05 | 5 | 2.5 | 0.6 | 0.05 |
| | 220/240 V | AC | 6 | 4 | - | - | 5 | 2 | - | - |
| | 250 V | DC | - | - | 0.3 | 0.03 | 5 | - | 0.3 | 0.03 |
| | 380/440 V | AC | 6 | 2 | - | - | 5 | 1.5 | - | - |
| | 480 V | AC | 6 | 1.5 | - | - | 5 | 1 | - | - |
| | 660/690 V | AC | 6 | 0.1 | - | - | - | - | - | - |

SDx and SDTAM are relay modules with two static outputs. They send different signals depending on the type of fault. They may not be used together.

PB103377-20.eps

*SDx relay module with its terminal block.*

PB103376-20.eps

*SDTAM relay module with its terminal block.*

## SDx module

The SDx module remotes the trip or alarm conditions of Compact NSX circuit breakers equipped with electronic protection.
The SD2 output, available on all Micrologic trip units, corresponds to the overload-trip indication.
The SD4 output, available on Micrologic 5 / 6, is assigned to:
- overload pre-alarm (Micrologic 5)
- ground-fault trip indication (Micrologic 6).

These two outputs automatically reset when the device is closed (turned ON).
For Micrologic 5 / 6, the SD2 and SD4 outputs can be reprogrammed to be assigned to other types of tripping or alarm.

**Output characteristics**
It is possible to assign a function:
- latching with a time delay. Return to the initial state occurs at the end of the time delay
- permanent latching. In this case, return to the initial state takes place via the communication function.

Static outputs: 24 to 415 V AC / V DC; 80 mA max.

## SDTAM module

The SDTAM module is specifically for the motor-protection Micrologic trip units 2.2 M, 2.3 M and 6.2 E-M, 6.3 E-M.
The SDTAM module, linked to the contactor controller, opens the contactor when an overload or other motor fault occurs, thus avoiding opening of the circuit breaker.

**Micrologic 2 M**
The SD4 output opens the contactor 400 ms before normal circuit-breaker opening in the following cases:
- overload (long-time protection for the trip class)
- phase unbalance or phase loss.

The SD2 output serves to memorise contactor opening by SDTAM.

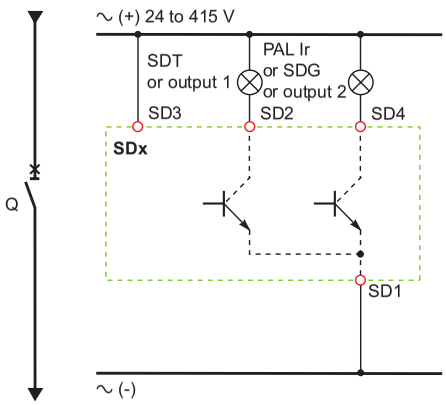
**Micrologic 6 E-M**
The SD4 output opens the contactor 400 ms before normal circuit-breaker opening in the following cases:
- overload (long-time protection for the trip class)
- phase unbalance or phase loss
- locked rotor
- underload (undercurrent protection)
- long start.

The SD2 output serves to memorise contactor opening by SDTAM.

**Output characteristics**
Output reset can be:
- manual by a pushbutton included in the wiring diagram
- automatic after an adjustable time delay (1 to 15 minutes) to take into account the motor-cooling time.

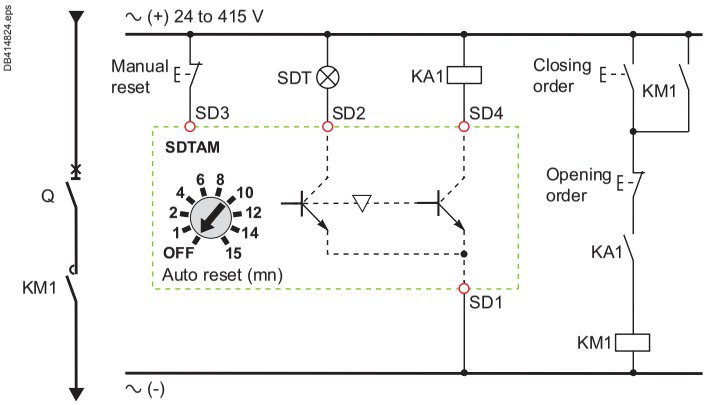
Static outputs: 24 to 415 V AC / V DC; 80 mA max.

DB115603.eps




*SDx wiring diagram.*

DB414824.eps




*SDTAM wiring diagram with contactor control.*

# Accessories and auxiliaries
## Motor mechanism

PB108168.eps

*Compact NSX250 with motor mechanism.*

When equipped with a **motor-mechanism** module, Compact NSX circuit breakers feature very high mechanical endurance as well as easy and sure operation:
- all circuit-breaker indications and information remain visible and accessible, including trip-unit settings and indications
- suitability for isolation is maintained and padlocking remains possible
- double insulation of the front face.

A specific motor mechanism is required for operation via the communication function. This **communicating motor mechanism** must be connected to the BSCM module to receive the opening and closing orders. Operation is identical to that of a standard motor mechanism.

## Applications
- Local motor-driven operation, centralised operation, automatic distribution control.
- Normal/standby source changeover or switching to a replacement source to ensure availability or optimise energy costs.
- Load shedding and reconnection.
- Synchrocoupling.

## Operation
The type of operation is selected using the manual/auto mode selection switch (**7**). A transparent, lead-seal cover controls access to the switch.

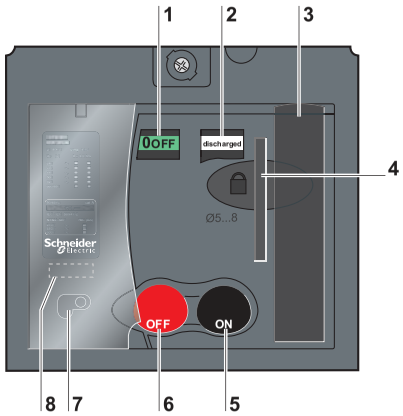
**Automatic**

When the switch is in the "auto" position, the ON/OFF (I/O) buttons and the charging lever on the mechanism are locked.
- Circuit-breaker ON and OFF controlled by two impulse-type or maintained signals.
- Automatic spring charging following voluntary tripping (by MN or MX), with standard wiring.
- Mandatory manual reset following tripping due to an electrical fault.

**Manual**

When the switch is in the "manual" position, the ON/OFF (I/O) buttons may be used. A microswitch linked to the manual position can remote the information.
- Circuit-breaker ON and OFF controlled by 2 pushbuttons I/O.
- Recharging of stored-energy system by pumping the lever 8 times.
- Padlocking in OFF position.

DB111335R.eps




***1*** *Position indicator (positive contact indication)*
***2*** *Spring status indicator (charged, discharged)*
***3*** *Manual spring-charging lever*
***4*** *Keylock device (optional) Locking device (OFF position), using 1 to 3 padlocks, shackle diameter 5 to 8 mm, not supplied*
***5*** *I (ON) pushbutton*
***6*** *O (OFF) pushbutton*
***7*** *Manual/auto mode selection switch. The position of this switch can be indicated remotely.*
***8*** *Operation counter (Compact NSX400/630)*

## Installation and connections
All installation (fixed, plug-in/withdrawable) and connection possibilities are maintained.
Motor-mechanism module connections are made behind its front cover to integrated terminals, for cables up to 2.5 mm².

## Optional accessories
- Keylock for locking in OFF position.
- Operations counter for the Compact NSX400/630, indicating the number of ON/OFF cycles. Must be installed on the front of the motor-mechanism module.

## Characteristics

| Motor mechanism | | | MT100 to MT630 |
|---|---|---|---|
| Response time (ms) | opening | | < 700 |
| | closing | | < 80 |
| Operating frequency | cycles/minute max. | | 4 |
| Control voltage (V) | DC | | 24/30 - 48/60 - 110/130 - 250 |
| | AC 50/60 Hz | | 48 (50 Hz) - 110/130 - 220/240 - 380/440 |
| Consumption (1) | DC (W) | opening | ≤ 500 |
| | | closing | ≤ 500 |
| | AC (VA) | opening | ≤ 500 |
| | | closing | ≤ 500 |

*(1) For NSX100 to NSX250, the inrush current is 2 In for 10 ms.*

## Electrical endurance

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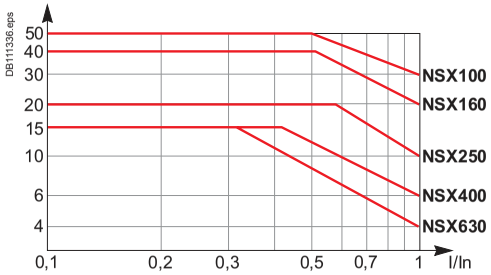
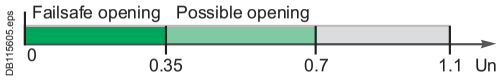



*Circuit breaker + motor-mechanism module, in thousands of operations (IEC 60947 2), at 440 V.*

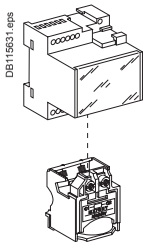

*MX or MN voltage release.*



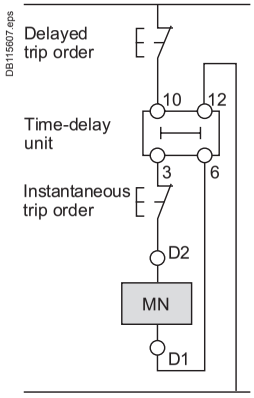

*Opening conditions of the MN release.*


*Closing conditions of the MN release.*

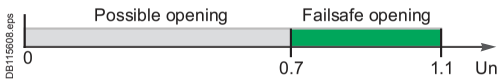

*MN voltage release.*




*MN release with a time-delay unit.*




*Wiring diagram for emergency-off function with MN + time-delay unit.*




*Opening conditions of the MX release.*

MX or MN voltage releases are used to trip the circuit breaker. They serve primarily for remote, emergency-off commands.
It is advised to test the system every six months.

## MN undervoltage release

The MN release opens the circuit breaker when its supply voltage drops to a value below 35 % of its rated voltage Un.
Undervoltage tripping, combined with an emergency-off button, provides fail-safe tripping. The MN release is continuously supplied, i.e. if supply is interrupted:
- either voluntarily, by the emergency-off button,
- or accidentally, through loss of power or faulty wiring,

the release provokes opening of the circuit breaker.

### Opening conditions

Circuit-breaker tripping by an MN release meets the requirements of standard IEC 60947-2.
- Automatic opening of the circuit breaker is ensured when the continuous voltage supply to the release U ⩽ 0.35 x Un.
- If the supply voltage is between 0.35 and 0.7 Un, opening is possible, but not guaranteed. Above 0.7 Un, opening does not take place.

### Closing conditions

If there is no supply to the MN release, it is impossible to close the circuit breaker, either manually or electrically. Closing is ensured when the voltage supply to the release U ⩾ 0.85 x Un. Below this threshold, closing is not guaranteed.

### Characteristics

| | | |
|---|---|---|
| Power supply | V AC | 50/60 Hz: 24 - 48 - 100/130 - 200/240 |
| | | 50 Hz: 380/415 60 Hz: 208/277 |
| | V DC | 12 - 24 - 30 - 48 - 60 - 125 -250 |
| Operating threshold | Opening | 0.35 to 0.7 Un |
| | Closing | 0.85 Un |
| Operating range | | 0.85 to 1.1 Un |
| Consumption (VA or W) | | Pick-up: 10 - Hold: 5 |
| Response time (ms) | | 50 |

### Time-delay unit for an MN release

A time delay unit for the MN release eliminates the risk of nuisance tripping due to a transient voltage dip. For shorter micro-outages, a system of capacitors provides temporary supply to the MN at U > 0.7 to ensure non tripping.
The correspondence between MN releases and time-delay units is shown below.

| Power supply | Corresponding MN release |
|---|---|
| **Unit with fixed delay 200 ms** | |
| 48 V AC | 48 V DC |
| 220 / 240 V AC | 250 V DC |
| **Unit with adjustable delay ⩾ 200 ms** | |
| 48 - 60 V AC/DC | 48 V DC |
| 100 - 130 V AC/DC | 125 V DC |
| 220 - 250 V AC/DC | 250 V DC |

## MX shunt release

The MX release opens the circuit breaker via an impulse-type (⩾ 20 ms) or maintained order.

### Opening conditions

When the MX release is supplied, it automatically opens the circuit breaker. Opening is ensured for a voltage U ⩾ 0.7 x Un.

### Characteristics

| | | |
|---|---|---|
| Power supply | V AC | 50/60 Hz: 24 - 48 - 100/130 - 200/240 |
| | | 50 Hz: 380/415 60 Hz: 208/277 |
| | V DC | 12 - 24 - 30 - 48 - 60 - 125 -250 |
| Operating range | | 0.7 to 1.1 Un |
| Consumption (VA or W) | | Pick-up: 10 |
| Response time (ms) | | 50 |

## Circuit breaker control by MN or MX

When the circuit breaker has been tripped by an MN or MX release, it must be reset before it can be reclosed.
MN or MX tripping takes priority over manual closing.
In the presence of a standing trip order, closing of the contacts, even temporary, is not possible.
Connection using wires up to 1.5 mm² to integrated terminal blocks.

*Note: circuit breaker opening using an MN or MX release must be reserved for safety functions. This type of tripping increases wear on the opening mechanism. Repeated use reduces the mechanical endurance of the circuit breaker by 50 %.*

# Accessories and auxiliaries
## Rotary handles

There are two types of rotary handle:
- direct rotary handle
- extended rotary handle.

There are two models:
- standard with a black handle
- red handle and yellow front for machine-tool control.

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*Compact NSX with a rotary handle.*

PB103607-50.eps

*Compact NSX with an MCC rotary handle.*

PB103608-50.eps


*Compact NSX with a CNOMO machine-tool rotary handle.*

PB105117.eps

*Compact NSX with an extended rotary handle installed at the back of a switchboard, with the keylock option and key.*

## Direct rotary handle

### Standard handle

Degree of protection IP40, IK07.
The direct rotary handle maintains:
- visibility of and access to trip-unit settings
- suitability for isolation
- indication of the three positions O (OFF), I (ON) and tripped
- access to the "push to trip" button.

**Device locking**
The rotary handle facilitates circuit-breaker locking.
- Padlocking:
  - standard situation, in the OFF position, using 1 to 3 padlocks, shackle diameter 5 to 8 mm, not supplied
  - with a simple modification, in the ON and OFF positions. Locking in the ON position does not prevent free circuit-breaker tripping if a fault occurs. In this case, the handle remains the ON position after the circuit breaker tripping. Unlocking is required to go to the tripped then the OFF position.
- Keylock (and padlock)

It is possible to install a Ronis or Profalux keylock (optional) on the base of the handle to obtain the same functions as with a padlock.

**Early-make or early-break contacts (optional)**
Early-make and/or early-break contacts may be used with the rotary handle. It is thus possible to:
- supply an MN undervoltage release before the circuit breaker closes
- open the contactor control circuit before the circuit breaker opens.

### MCC switchboard control

Control of an MCC switchboard is achieved by adding a kit to the standard handle. In addition to the standard functions, the kit offers the characteristics listed below.

**Higher degree of protection IP**
Degree of protection IP43, IK07.
The IP is increased by a built-in gasket.

**Door locking depending on device position**
- The door cannot be opened if the circuit breaker is ON or in the tripped position.

For exceptional situations, door locking can be temporarily disabled with a tool to open the door when the circuit breaker is closed.
- Circuit-breaker closing is disabled if the door is open. This function can be deactivated.

### Machine-tool control in compliance with CNOMO

Control of a machine-tool is achieved by adding a kit to the standard handle. In addition to the standard functions, the kit offers the characteristics listed below.

**Enhanced waterproofness and mechanical protection**
- Degree of protection IP54, IK08.
- Compliance with CNOMO E03.81.501N.

## Extended rotary handle

Degree of protection IP55, IK08.
The extended rotary handle makes it possible to operate circuit breakers installed at the back of switchboards, from the switchboard front.
It maintains:
- visibility of and access to trip-unit settings
- suitability for isolation
- indication of the three positions O (OFF), I (ON) and tripped.

**Mechanical door locking when device closed**
A standard feature of the extended rotary handle is a locking function, built into the shaft, that disables door opening when the circuit breaker is in the ON or tripped positions.
Door locking can be temporarily disabled with a tool to open the door without opening the circuit breaker. This operation is not possible if the handle is locked by a padlock.

**Voluntary disabling of mechanical door locking**
A modification to the handle, that can be carried out on site, completely disables door locking, including when a padlock is installed on the handle. The modification is reversible.
When a number of extended rotary handles are installed on a door, this disabling function is the means to ensure door locking by a single device.

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## Extended rotary handle (cont.)

**Device and door padlocking**

Padlocking locks the circuit-breaker handle and disables door opening:

■ standard situation, in the OFF position, using 1 to 3 padlocks, shackle diameter 5 to 8 mm, not supplied

■ with a simple modification, in the ON and OFF positions. Locking in the ON position does not prevent free circuit-breaker tripping if a fault occurs.

In this case, the handle remains in the ON position after the circuit breaker tripping. Unlocking is required to go to the tripped then the OFF position.

If the door controls were modified to voluntarily disable door locking, padlocking does not lock the door, but does disable handle operation of the device.

**Device locking using a keylock inside the switchboard**

It is possible to install a Ronis or Profalux keylock (optional) on the base of the rotary handle to lock the device in the OFF position or in either the ON or OFF positions.

**Accessory for device operation with the door open**

When the device is equipped with an extended rotary handle, a control accessory mounted on the shaft makes it possible to operate the device with the door open.

■ The device can be padlocked in the OFF position.

■ The accessory complies with UL508.

**Early-make or early-break contacts (optional)**

The extended rotary handle offers the same possibilities with early-make and/or early-break contacts as the standard rotary handle.

**Parts of the extended rotary handles**

■ A unit that replaces the front cover of the circuit breaker (secured by screws).

■ An assembly (handle and front plate) on the door that is always secured in the same position, whether the circuit breaker is installed vertically or horizontally.

■ An extension shaft that must be adjusted to the distance. The min/max distance between the back of circuit breaker and door is:

□ 185…600 mm for Compact NSX100 to 250

□ 209…600 mm for Compact NSX400/630.

For withdrawable devices, the extended rotary handle is also available with a telescopic shaft to compensate for device disconnection. In this case, the min/max distances are:

□ 248…600 mm for Compact NSX100 to 250

□ 272...600 mm for Compact NSX400/630.

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## Manual source-changeover systems

An additional accessory interlocks two devices with rotary handles to create a source-changeover system. Closing of one device is possible only if the second is open.

This function is compatible with direct or extended rotary handles.

Up to three padlocks can be used to lock in the OFF or ON position.

# Accessories and auxiliaries
## Additional measurement and indication modules

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*Voltage-presence indicator.*

## Voltage-presence indicator
The indicator detects and indicates that circuit breaker terminals are supplied with power.

**Installation**
- Mounted in the long or short terminal shields, via the knockouts.
- May be positioned upstream or downstream of the circuit breaker.
- Degree of protection IP40, IK04.
- Not compatible with the motor-mechanism module.

**Electrical characteristics**
Operates on all networks with voltages ranging from 220 to 550 V AC.

## Current-transformer module
This module enables direct connection of a measurement device such as an ammeter or a power meter.

**Installation**
- The module is installed directly on the downstream circuit-breaker terminals.
- Degree of protection IP40, IK04.
- Class II insulation between front and the power circuits.
- Connection to 6 integrated connectors for cables up to 2.5 mm².

**Electrical characteristics**
- Current transformer with 5 A secondary winding.
- Class 3 for the following output-power consumptions:

Accuracy:
- 100 A rating: 1.6 VA
- 150 A rating: 3 VA
- 250 A rating: 5 VA
- 400/600 A rating: 8 VA.

PB105123.eps

*Compact NSX with current-transformer module.*

## Current-transformer module with voltage measurement outputs
This module enables direct connection of a digital measurement device such as a Power Meter PM700, PM800, etc. (not supplied).

**Installation**
- The module is installed directly on the downstream circuit-breaker terminals.
- Degree of protection IP40, IK04.
- Class II insulation between front and the power circuits.
- Built-in connectors for cables from 1.5 to 2.5 mm².

**Electrical characteristics**
- Rated operational voltage Ue: 530 V
- Frequencies of measured values: 50…60 Hz
- Three CTs with 5 A secondary windings for the rated primary current In:
- class 0.5 to 1 for rated power consumption values at the output:
  - 125 A, 150 A and 250 A ratings: class 1 for 1.1 VA
  - 400/600 A rating: class 0.5 for 2 VA
- Connection using a 2.5 mm2 cable up to 2.5 m long.
- Four voltage measurement outputs including protection with automatic reset.
- voltage measurement output impedance 3500 Ω ±25 %, maximum current 1 mA
- The voltage measurement outputs are intended only for measurements (1 mA max.) and may not be used to supply the display.

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*Compact NSX with ammeter module.*

## Ammeter and Imax ammeter modules
**Ammeter module**
Measures and displays (dial-type ammeter) the current of each phase (selection of phases by 3-position switch in front).

**Imax ammeter module**
Measures and displays (dial-type ammeter) the maximum current flowing in the middle phase. The Imax value can be reset on the front.

**Installation**
- Identical for both types of ammeter module.
- The module is installed directly on the downstream circuit-breaker terminals.
- The ammeter clips into the module in any of four 90° positions, i.e. it can be installed of devices mounted both vertically and horizontally.
- Degree of protection IP40, IK04.
- Class II insulation between front and the power circuits.

**Electrical characteristics**
- Ammeter module: accuracy class 4.5.
- Imax ammeter module: accuracy ±6 %.
- Maximum currents are displayed only if they last ≥ 15 minutes.

PB105125.eps

*Insulation monitoring module.*

## Insulation monitoring module

This module detects and indicates an insulation drop on a load circuit (TN-S or TT systems).
Operation is identical to that of a Vigi module, but without circuit-breaker tripping.
Indication by a red LED in front.
An auxiliary contact may be installed for remote insulation-drop indications.
When insulation drops below a minimum, user-set threshold, the LED goes on and the auxiliary contact switches. The fault indication cannot be cancelled except by pressing the manual reset button.

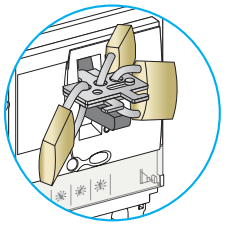
**Installation**

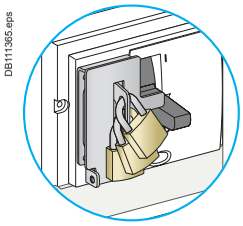
- The module is installed directly on the downstream circuit-breaker terminals.
- Degree of protection IP40, IK04.
- Double insulation of the front face.

**Electrical characteristics**

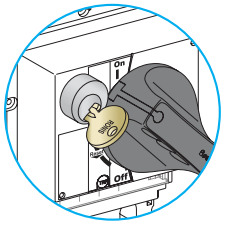
- Settings: 100 - 200 - 500 - 1000 mA.
- Accuracy: -50 +0 %.
- Time delay following insulation drop: 5 to 10 seconds.
- AC-system voltage: 200 to 440 V AC.

# Accessories and auxiliaries
## Locks




*Toggle locking using padlocks and an accessory:*
*Removable device* *Fixed device attached to the case* (3).

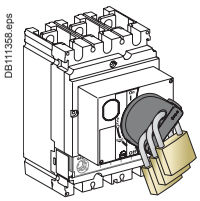


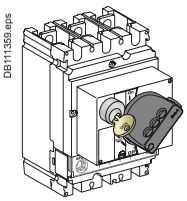

*Rotary-handle locking using a keylock.*

Locking in the OFF position guarantees isolation as per IEC 60947-2. Padlocking systems can receive up to three padlocks with shackle diameters ranging from 5 to 8 mm (padlocks not supplied). Certain locking systems require an additional accessory.

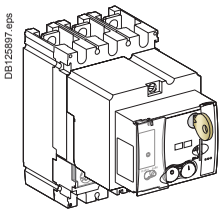
| Control device | | Function | Means | Required accessories |
|---|---|---|---|---|
| Toggle | | Lock in OFF position | Padlock | Removable device |
| | | Lock in OFF or ON position | Padlock | Fixed device |
| Direct rotary handle | Standard | Lock in<br>■ OFF position<br>■ OFF or ON position (1) | Padlock | - |
| | | | Keylock | Locking device + keylock |
| | MCC | Lock in<br>■ OFF position<br>■ OFF or ON position (1) | Padlock | - |
| | CNOMO | Lock in<br>■ OFF position<br>■ OFF or ON position (1) | Padlock | - |
| Extended rotary handle | | Lock in<br>■ OFF position<br>■ OFF or ON position (1) with door opening prevented (2) | Padlock | - |
| | | Lock in OFF position | Padlock | UL508 control accessory |
| | | ■ OFF or ON position (1) inside the switchboard | Keylock | Locking device + keylock |
| Motor mechanism | | Lock in OFF position remote operation disabled | Padlock | - |
| | | | Keylock | Locking device + keylock |
| Withdrawable circuit breaker | | Lock in<br>■ disconnected position | Padlock | - |
| | | | Keylock | Locking device + keylock |
| | | ■ connected position | Keylock | Locking device + keylock |

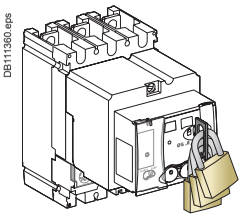
*(1) Following a simple modification of the mechanism.*
*(2) Unless door locking has been voluntarily disabled.*
*(3) Only for 3P-4P.*



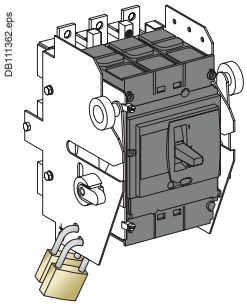



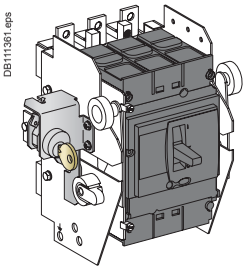

*Rotary-handle locking using a padlock or a keylock.*



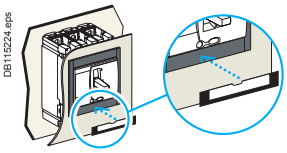




*Motor-mechanism locking using a padlock or a keylock.*

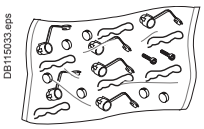



*Chassis locking in the connected position.*




*Identification accessories.*




*Sealing accessories.*

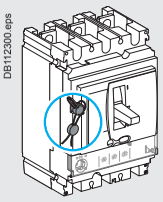
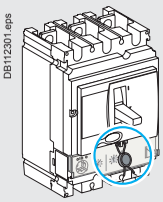
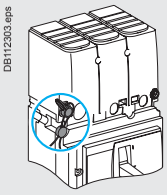
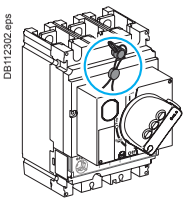
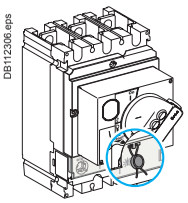
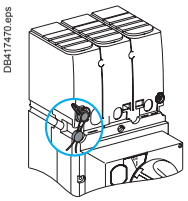
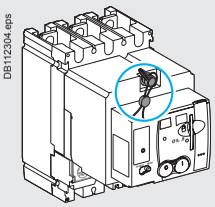
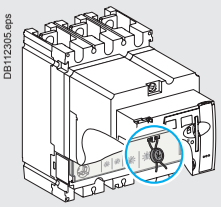
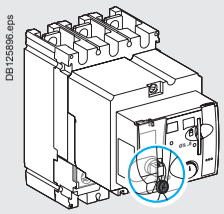
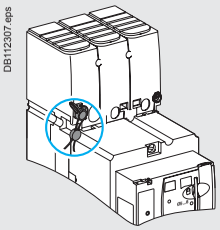
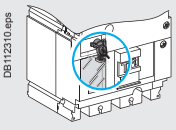
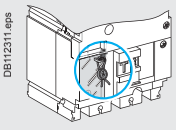
## Outgoing-circuit identification

Compact NSX100 to 630 can be equipped with label holders supplied in sets of ten (cat. no. LV429226).
They are compatible with escutcheons.

## Sealing accessories

Sealing accessories are available. Each bag of accessories contains all the parts required for the types of sealing indicated below.
A bag contains:
- 6 sealing accessories
- 6 lead seals
- 0.5 m of wire
- 2 screws.

## Types of seals and corresponding functions

| | | | | |
|---|---|---|---|---|
| **Toggle control** |   |   | |   |
| **Rotary handle** |   |   | |   |
| **Motor mechanism** |   |   |   |   |
| **Types of seals** | **Front-cover fixing screw** | **Trip-unit transparent cover** | **Motor-mechanism transparent cover** | **Terminal-shield fixing screw** |
| **Protected operations** | ■ front removal<br>■ access to auxiliaries<br>■ trip-unit removal. | ■ modification of settings<br>■ access to test connector. | ■ access to manual/auto mode selection switch: depending on its position, manual (1) or automatic operation is not possible.<br>*(1) In this case, local operation is not possible.* | ■ access to power connections (protection against direct contact). |
| **Access to Vigi-module settings** |   |   | | |
| **Types of seals** | **Vigi-module fixing device** | **Protection cover for settings** | | |
| **Protected operations** | ■ removal of the Vigi module. | ■ modification of settings. | | |

# Accessories and auxiliaries
## Individual enclosures

PB103593-40.eps

*IP55 metal enclosure.*

PB105120.eps

*IP55 insulating enclosure.*

Individual enclosures are available for Compact/Vigicompact NSX devices with two, three or four poles.
All fixed, front connections are possible, except right-angle, 45°, double-L and edgewise terminal extensions.
All spreaders may be installed in the enclosures intended for Compact/Vigicompact NSX250 to 630 devices, except the 70 mm spreaders for NSX400/630.

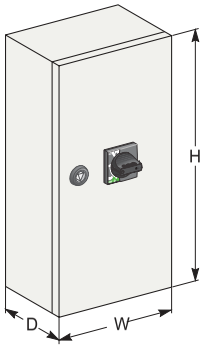
**Two models of enclosures**

■ IP55 metal individual enclosure, with:
□ metal enclosure
□ door with keylock and cut-out for rotary handle
□ extended rotary handle, IP55, IK08, black or red/yellow
□ device mounting plate
□ removable plate (without holes) for cable entry through bottom.
■ IP55 insulating individual enclosure, with:
□ polyester insulating enclosure
□ transparent cover, screwed, neoprene gasket, with cut-out for extended rotary handle
□ extended rotary handle, IP55, IK08, black or red/yellow
□ device mounting plate
□ 2 removable plates (without holes) for cable entry through bottom and/or top.

**Dimensions (H x W x D in mm)**

| | |
|---|---|
| ■ Metal enclosures: | |
| □ Compact NSX100/160 | 450 x 350 x 250 |
| □ Compact NSX250 and Vigicompact NSX100 to 250 | 650 x 350 x 250 |
| □ Compact NSX400 | 650 x 350 x 250 |
| □ Compact NSX630 and Vigicompact NSX400/630 | 850 x 600 x 250 |
| ■ Insulating enclosures: | |
| □ Compact NSX100/160 | 360 x 270 x 235 |
| □ Compact NSX250 and Vigicompact NSX100/160 | 540 x 270 x 235 |
| □ Compact NSX400/630 | 720 x 360 x 235 |
| □ Vigicompact NSX250/630 | 720 x 360 x 235 |

DB115609.eps



Escutcheons are an optional feature mounted on the switchboard door. They increase the degree of protection to IP40, IK07. Protection collars maintain the degree of protection, whatever the position of the device (connected, disconnected).

PB105119.eps

*IP30 escutcheon.*

PB105126.eps

*IP30 escutcheon with access to the trip unit.*

## IP30 or IP40 escutcheons for fixed devices

### IP30

The three types are glued to the cut-out in the front door of the switchboard:

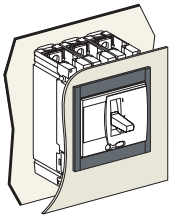
- ■ escutcheon for all control types (toggle, rotary handle or motor mechanism)
- □ without access to the trip unit
- □ with access to the trip unit
- ■ for Vigi modules, can be combined with the above.

### IP40

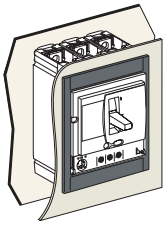
The four types, with a gasket, are screwed to the door cut-out:

- ■ three escutcheons identical to the previous, but IP40
- ■ a wide model for Vigi and ammeter modules that can be combined with the above.

DB112290.eps

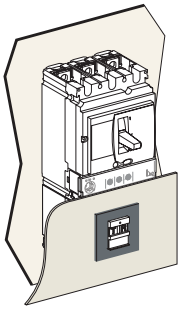


DB112291.eps



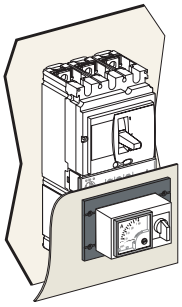
*Escutcheon for toggle without and with access to the trip unit.*

DB112292.eps



*Escutcheon for Vigi module.*

DB112293.eps



*Wide escutcheon for ammeter.*

# Accessories and auxiliaries
## Escutcheons and protection collars

PB103777-36.eps

*Escutcheon with collar for toggle.*

PB103780-36.eps

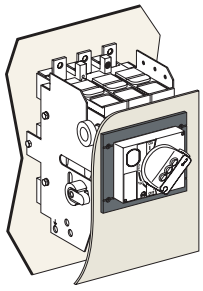
*Escutcheon for Vigi module.*

## IP40 escutcheons for withdrawable devices

### IP40 for withdrawable devices

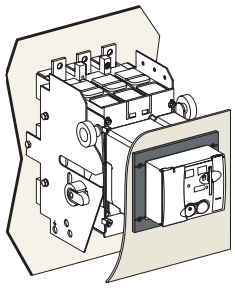
The two types, with a gasket, are screwed to the door cut-out:
- for rotary handle or motor mechanism: standard IP40 escutcheon
- for toggle with extension: standard escutcheon + collar for withdrawal.

DB112294



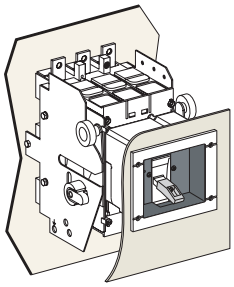
*Standard escutcheon with rotary handle.*

DB112295



*Standard escutcheon for motor mechanism.*

DB112296



*Standard escutcheon with collar for withdrawal, for toggle.*

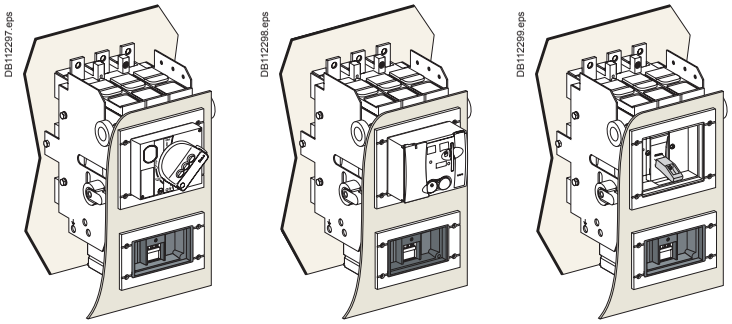
### IP40 for Vigi module on withdrawable devices

The two types, with a gasket, are screwed to the door cut-out:
- for rotary handle or motor mechanism: standard IP40 escutcheon
- for toggle: standard escutcheon + collar for withdrawal.

DB112297.eps

DB112298.eps

DB112299.eps



*Escutcheon for Vigi module, with escutcheons for the three types of control.*

PB103775-40.eps

*Toggle cover.*

PB103820_35.eps

*NS retrofit front cover.*

## IP43 toggle cover

Available only for devices with toggles. Fits over toggle and front cover of the device.

- Mounted on the front of the circuit breaker.
- Degree of protection IP43, IK07.

DB112218.eps

*Toggle cover.*

## Retrofit front covers

These replacement front covers make it possible to install NSX devices in existing switchboards containing NS devices by installing the NS-type retrofit covers on the NSX devices.

- NS100 to 250 cover.
- NS400/630 cover.