

PacT Series
ComPacT NSX
ComPacT INS/INV
MasterPacT NW
DC - DC PV - DC EP

Catalog 2022

Power Circuit Breakers and
Switch-Disconnectors
Direct Current from 16 to 4000 A



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ComPacT NSX, ComPacT INS/INV and MasterPact NW Direct Current

A Complete DC Offer from 16 to 4000 A

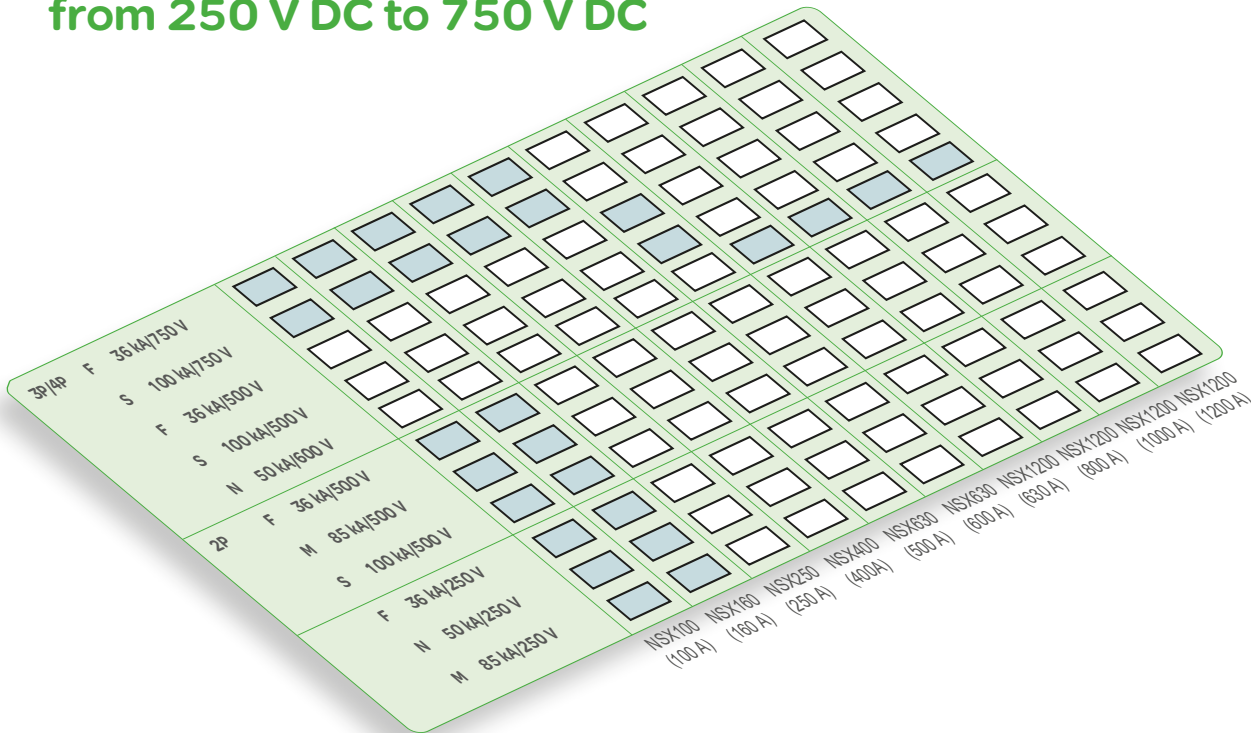
ComPacT NSX, ComPacT INS/INV and MasterPact NW direct current (DC) circuit breakers are used to protect and control low-voltage distribution systems.

They are installed in main low-voltage switchboards (MLVS) and in distribution switchboards (as incomers and outgoers). They can use all the accessories and auxiliaries for the AC ranges and are thus suitable for most DC systems and applications.



A Complete Molded Case Circuit Breaker DC Offer from 80 to 500 A

ComPacT NSX DC from 16 to 1200 A
from 250 V DC to 750 V DC



The ComPacT NSX range is designed for DC voltages from 24 to 750 V and offers:

■ A wide selection of models suited to many applications:

- 1, 2, 3 and 4 poles up to 160 A
- 3 and 4 poles from 250 to 630 A
- 2 poles from 630 to 1200 A

■ High breaking capacities, with four performance levels F, N, M and S:

- F
 - 36 kA in a 1 pole version, for systems ≤ 250 V
 - 36 kA in a 2 poles version, for systems ≤ 500 V
 - 36 kA in a 3 or 4 poles version, for systems ≤ 750 V

- N
 - 50 kA in a 1 pole version, for systems ≤ 250 V
 - 50 kA in a 2 poles version, for systems ≤ 600 V
- M
 - 85 kA in a 1 pole version, for systems ≤ 250 V
 - 85 kA in a 2 poles version, for systems ≤ 500 V

- S
 - 100 kA in a 2 poles version, for systems ≤ 500 V
 - 100 kA in a 3 or 4 poles version, for systems ≤ 750 V

■ Fewer frame sizes: just two poles pitches (35 and 45 mm) for easy integration in installation systems (enclosures, machines, etc.)

■ Accessories for insulation and series or parallel connection of poles, suited to the particularities of DC applications

■ Fixed and withdrawable versions (3 and 4 poles, DC type).

Breaking capacity I_{cu} for 250 V per pole and L/R = 15 ms^[1] (1P: 250 V, 2P: 500 V, 3P: 750 V)

^[1] L/R = time constant of the distribution system (see page A-11).



NSX160 DC - 1P



NSX160 DC - 2P



NSX250 DC - 4P



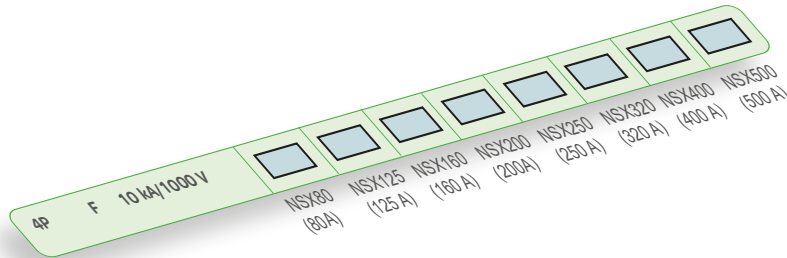
NSX630 DC - 3P



NSX1200 DC - 2P

A Complete Molded Case Circuit Breaker DC Offer from 80 to 500 A

ComPacT NSX DC PV from 80 to 500 A at 1000 V DC



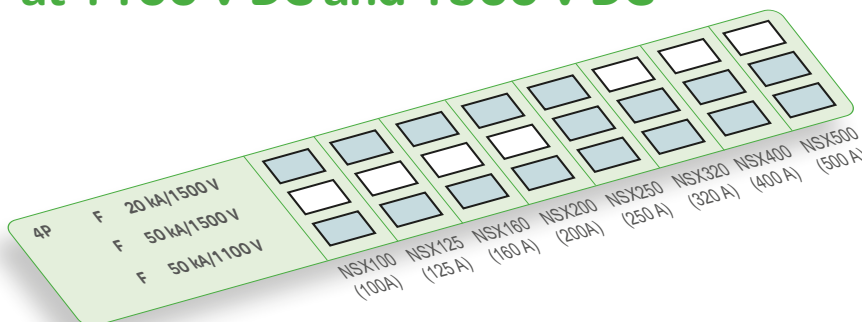
The ComPacT NSX DC PV (Photovoltaic) range is designed for DC voltages under 1000 V and offers:

- Eight current ratings: 80, 125, 160, 200, 250, 320, 400 and 500 A
- A breaking-capacity level F: 10 kA for systems ≤ 1000 V
- Two types of devices:
 - Circuit breaker for the protection of power circuits and loads
 - Switch-disconnector for circuit control and disconnection
- Fixed and withdrawable versions for the entire range
- Integrated protection: overload/short circuit protection with thermal magnetic.



ComPacT NSX200 TM DC PV

ComPacT NSX DC EP from 100 to 500 A at 1100 V DC and 1500 V DC



The ComPacT NSX DC EP (Enhanced Performance) range is designed for DC voltages from 1100 to 1500 V and offers:

- Eight current ratings: 100, 125, 160, 200, 250, 320, 400 and 500 A
- Two high breaking-capacity level F:
 - 50 kA for systems ≤ 1100 V
 - 50 kA for systems ≤ 1500 V
 - 20 kA for systems ≤ 1500 V
- Two types of devices:
 - Circuit breaker for the protection of power circuits and loads
 - Switch-disconnector for circuit control and disconnection
- Fixed and withdrawable versions for the entire range
- Integrated protection: Overload/short circuit protection with Thermal magnetic
- Dedicated to specific applications:
 - Photovoltaic application under 1500 V
 - Marine application under 1500 V are also presented in this catalog.



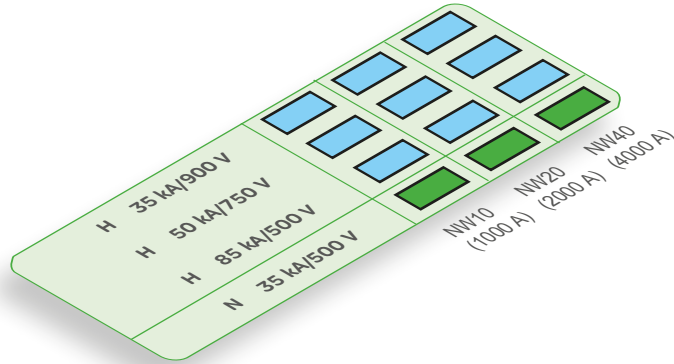
ComPacT NSX250 TM DC EP



ComPacT NSX500 TM DC EP

A Complete Air Circuit Breaker DC Offer from 16 to 4000 A

MasterPact NW DC from 1000 to 4000 A



The MasterPact NW range is designed for DC voltages from 24 to 900 V and offers:

- 2 versions: C/D (3 poles)
E (4 poles)

- Three current ratings: 1000, 2000 and 4000 A

- Two high breaking-capacity levels N and H.

Breaking capacity I_{cu} for $L/R = 15 \text{ ms}$ ^[1] for 500, 750 or 900 V system voltages:

□ N

- 35 kA for systems $\leq 500 \text{ V}$

□ H

- 85 kA for systems $\leq 500 \text{ V}$

- 50 kA for systems $\leq 750 \text{ V}$

- 35 kA for systems $\leq 900 \text{ V}$

- Two types of devices:

□ Circuit breaker for the protection of power circuits and loads

□ Switch-disconnector for circuit control and disconnection

- Fixed and drawout versions for the entire range.

- Specific offers dedicated to the specific conditions of some applications:

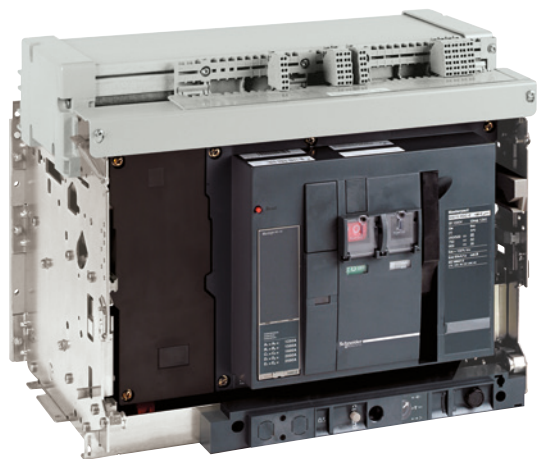
□ NW HADC-D switch-disconnectors for photovoltaic application under 1000 V DC

□ NW EPDC-D circuit breakers for Marine application under 1100 V DC are also presented in this catalog.

^[1] L/R = time constant of the distribution system (see page A-11).



NW10 DC - C/D Version



NW10 DC - E Version

ComPacT NSX DC PV - DC EP, ComPacT INS PV and MasterPact NW DC PV

A Complete DC Offer for Solar
Application from 80 to 4000 A



ComPacT NSX DC PV - DC EP

Circuit Breakers and Switch-Disconnectors

Enhancing the Reliability and the Efficiency of your Photovoltaic Installation

Schneider Electric photovoltaic packages give you dependable, clean, and affordable solar power. High quality, highly efficient, and available everywhere, our systems are simple-to-install, giving you a competitive edge. The ComPacT NSX DC PV range of molded case circuit breakers and switch-disconnectors with operational voltage up to 1500 V DC includes the switchgears and the protection components you need to efficiently operate your photovoltaic installation in commercial buildings and power plants.



With heatsinks supplied as standard, the circuit breaker or switch-disconnector rating is optimized, avoiding the need to oversize protection components and saving space in the enclosure. As part of the ComPacT NSX range, all existing auxiliaries and accessories are compatible. The terminal shields and phase barriers are available for insulation. The shunt trip auxiliary is available for remote disconnection.

ComPacT NSX DC PV - DC EP...
...with short heatsinks



...with long heatsinks



ComPacT INS PV

Switch-Disconnectors



No matter the size or scale of the project, Schneider Electric, has a photovoltaic solution to fit your needs. Fast ROI, high efficiency – it's all a part of our offer as the world leader in energy management.

The INS PV-1 is a direct current switch disconnector dedicated to array isolation and control with Voc until 600 V DC.

Photovoltaic Applications



MasterPact NW HADCD-PV

Switch-Disconnectors



Schneider Electric's MasterPact NW HADCD-PV switch-disconnectors are used for circuit control and disconnection.

Dedicated to Photovoltaic Application



MasterPact NW EPDC-D

Circuit-Breakers for Marine Applications at 1100 V DC



Alternative energies have a major contribution to reducing the carbon footprint in marine industry and building the environmental sustainability of power generation.

Vessels hybrid propulsion systems have continuously been growing worldwide in these last years. The competitive environment together with the increasing power of such systems have created the need for voltage increase on the DC side, in order to limit the cables cross section, to lower the DC power losses, and to reduce the installation costs.

MasterPact NW10-40 EPDC-D is a 1100 V DC air circuit breakers offer tested and certified for marine application.

Marine applications have particular characteristics and require equipment with specific performance. These performance requirements are identified for the IEC 60947-2 products in the IACS UR E10 unified requirements: "Test Specification for marine Type Approval". NW10-40 EPDC-D circuit breakers are certified as per the IEC 60947-2 and the IACS UR E10.



Architecture Overview

Smart Panels

Enerlin'X



Ethernet-Ready Smart Panels

Ethernet-ready Smart Panels enable electrical distribution control and expertise. 'Protect' - 'Measure' - 'Connect' are the 3 pillars of their technology.



4- Act

3- Connect

Give a Voice to the Panel

Ethernet network data transmission is now part of the intrinsic design of protection and metering devices

2- Measure

Keeping a Close Eye on Energy Flows

The switchboard plays a key role in capturing building-related data, by gathering the critical protection and metering components.

1- Protect

Electrical Protection is at the Core of Smart Panel

High-performance technology is present in every breaker and every residual current device.

Architecture Overview

Future Savings, Peace-of-Mind

Access to Smart Panel status, values, is essential for taking advantages of monitoring and management services, locally or remotely.

Act in Small/Medium Buildings

with FDM 128, Com'X 510, Power View, EcoStruxure™ Facility Expert



Electrical device monitoring and control with FDM 128, locally



Optimizing Energy-Efficiency

- Visualize, record energy consumption and WAGES.
- Comply with regulation.

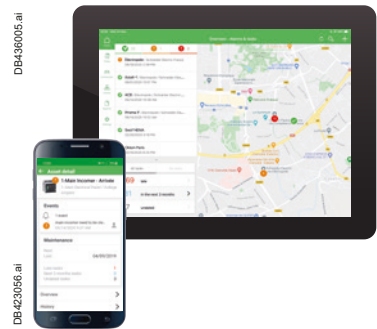


Com'X 510 web pages direct display, or Cloud based pages from other devices with Power View



Improving Continuity of Service

- Get instant notifications
- Manage with assets-maintenance platform
- Get and analyze data for quick crisis-recovery



Distance management with EcoStruxure™ Facility Expert on Smartphone, tablet, PC



Increasing Maintenance Efficiency

- Operate preventive maintenance tools
- Follow maintenance & planning
- Provide business owner instant access to maintenance reports

Architecture Overview

Day-to-Day Energy Management >> Power Availability and Quality, Energy Performance

For simply dealing with building user's needs and energy constraints.
EcoStruxure™ Building Management provides electrical management, monitoring and energy accounting.
Energy decisions are often crucial in large critical buildings, they must be informed.
EcoStruxure™ Power Monitoring Expert (software for PC) collects Smart Panels values to provide expert analyzis.

Act in Large Non-Critical Buildings

with EcoStruxure™ Energy Expert



Managing Equipment and Key Assets

- Check operating status, faults on custom on-line diagrams.



Monitoring Electrical Network

- Observe voltage disturbances, harmonics on graphics.
- Read power factor.



Accounting Energy

- Record power meter data on dashboards.
- Allocate energy consumption with costs.
- Follow conservation goals.

Act in Large Critical Buildings

with EcoStruxure™ Power Monitoring Expert^[1]



Analyzing Power Events

- Speed up downtime crisis recovery.
- Determine incident root cause, events sequence.
- Troubleshoot power quality issues.



Monitoring Power quality

- Be alerted of equipment affected by power quality issue.
- Compare power quality against industry standards.
- Collect facts for future discussion with Utility.



Analyzing Energy Performance

- Evaluate building energy saving performance.
- Identify underperforming loads.
- Analyze Energy Conservation Measures (ECMs) according ISO50001 program.



[1] EcoStruxure™ Power Monitoring Expert, <https://pmedemo.biz/web/>
ID: demo & Password: demo

General Contents

Com**PacT** NSX DC - DC PV - DC EP
Com**PacT** INS/INV DC - DC PV
Master**Pact** NW DC - DC PV

Presentation

Functions and Characteristics

Installation Recommendations

Dimensions and Connection

Electrical Diagrams

Additional Characteristics

Catalog Numbers and Order Form

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B

C

D

E

F

The Benefits of a Comprehensive and Optimized Range Design...

ComPacT NSX and MasterPact NW DC - DC PV - DC EP circuit breakers constitute a flexible and cost-effective means to meet the various needs of DC systems.

DB43894.ai

NSX250 DC			
Ui	750V	Uimp	8kV
Ue(V)	Icu(kA)	Ics	
250	100	100	
500	100	100	
750	100	100	
Cat A IEC/EN 60947-2			

NSX250 DC rating plate

DB438135.ai

NSX250DC EP			
Ui	1600V	Uimp	8kV
Ue(V)	Icu(kA)	Ics	
1100	50	20	
1500	20	20	
IEC/EN 60947-2			
Ue(V)	Icu(kA)	Ics	
1100	50	20	
1500	20	20	
IEC/EN 60947-2 Annex P			
Cat A			

NSX250 DC EP rating plate

DB43895.ai

NSX250 DC PV			
Ui	1000V	Uimp	8kV
Ue(V)	1000	4P	
Icu	10kA		
Ics	10kA		
Cat A IEC/EN 60947-2			

NSX250 DC PV rating plate

DB438137.ai

NSX200 NA DC PV			
Ui	1000V	Uimp	8kV
Ue(Max)	1000V		
Ie 40 °C	200A		
DC22A			
IEC/EN 60947-3			

NSX200 NA DC PV rating plate

DB418137.epa

Compact INS 250			
Ui	800V	Ue(V)	AC22A AC23A DC22A
Uimp	8kV	Ie (A)	250 250 250 (4P)
Ith	250A/60°C		250
IEC / EN 60947-3			

INS 250 rating plate

DB104462.epa

Masterpact NW20 HDC-D			
Ui	1000V	Uimp	12kV
Ue (V)	Icu (kA)		
250/500	85		
750	50		
900	35		
Ics = 100% Icu			
Icw 85kA/1s cat.B			
IEC 60947-2 UTE VDE BS CEI UNE AS			

NW20 HDC-D rating plate

DB116572.epa

Masterpact NW20 HADCD-PV			
Ui	1000V	Uimp	12kV
Ue	1000 V		3P in series
Icw	85kA/1s		
Icm	85kA		
IEC 60947-3			
Ith 2000A 55°C			
	Ue (V)	Ie (A)	
DC22A	1000	2000	

NW20 HADCD-PV rating plate

A Wide, Complete and High-Performance Range

Schneider Electric DC - DC PV - DC EP circuit breakers and switches provide a comprehensive solution for the many applications met in DC systems.

The ComPacT NSX and MasterPact NW DC ranges offer, a wide selection of current ratings (16 to 4000 A) and breaking capacities (up to 100 kA) for the common voltages up to 900 V DC.

The ComPacT NSX and MasterPact NW DC - DC PV ranges are designed for use under 1000 V for photovoltaic application.

The ComPacT INS/INV offers a wide selection of current ratings (40 to 2500 A) for the common voltage up to 250 V DC.

Flexible and Optimized Design

The ComPacT NSX, ComPacT INS/INV and MasterPact NW DC ranges use all the standard accessories and auxiliaries of the AC ranges.

The modular design and many possibilities offered by these systems provide a high degree of flexibility in customizing products, while benefiting from dependable and optimized industrial design.

Dependable and Simple Operation

Even though they use the accessories of the corresponding AC ranges, the ComPacT NSX, ComPacT INS/INV and MasterPact NW DC ranges have been specially designed for DC systems.

Specific accessories have been developed to meet the needs of series or parallel connection of poles by users in a simple and dependable manner (see page opposite). ComPacT NSX, ComPacT INS/INV and MasterPact NW DC devices can be installed in class II switchboards with a degree of protection up to IP54.

Compliance with Standards

ComPacT NSX, ComPacT INS/INV and MasterPact DC circuit breaker ranges comply with:

- The main international standards and in particular IEC 60947-1/2/3
- European (EN 60947-1 and EN 60947-2) and the corresponding national standards: France NF, Germany VDE, UK BS, Australia AS, Italy CEI
- The specifications of the marine classification companies (Veritas, Lloyd's Register of Shipping, Det Norske Veritas, etc.)
- French standard NF C 79-130 and the recommendations issued by the CNOMO organization for the protection of machine tools. For United States UL, Canadian CSA, Mexican NOM and Japanese JIS standards, please consult us.

ComPacT NSX, ComPacT INS/INV and MasterPact NW DC - DC PV switches and auxiliaries comply with the following:

- The main international standards and in particular IEC 60947-2 (circuit breaker), IEC 60947-3 (switch-disconnectors)
- European (EN 60947-1, EN 60947-2 and EN 60947-3) and the corresponding national standards: France NF, Germany VDE, United Kingdom BS, Australia AS, Italy CEI.

Open Communication

ComPacT NSX and MasterPact NW DC devices can be equipped with communication options for integration in a supervision system via Modbus.

Pollution Degree

ComPacT NSX and MasterPact NW DC circuit breakers are certified for operation under pollution conditions in industrial environments, as per standard IEC 60947, corresponding to:

- Pollution degree 3 (ComPacT NSX, ComPacT INS/INV)
- Pollution degree 3 (MasterPact NW).

Tropicalization

ComPacT NSX, ComPacT INS/INV and MasterPact NW DC circuit breakers have successfully passed the tests prescribed by the following standards for severe atmospheric conditions:

- IEC 60068-2-1 - dry cold (-40 °C)
- IEC 60068-2-1 - dry heat (+85 °C)
- IEC 60068-2-30 - damp heat (95 % relative humidity at +55 °C)
- IEC 68-2-52 (level 2) - salt mist.

Environmental Protection

Schneider Electric circuit breaker ranges benefit from Eco-design:

- Use of environment-friendly materials
- Non-polluting production units complying with ISO 14001 standards
- Filtered breaking for high current ratings to avoid pollution in the switchboard
- Low dissipated energy per pole, making energy losses insignificant
- Marking of products in view of sorting recyclable materials at the end of the service life.

... Specifically for DC- DC PV - DC EP Applications

Designed for Direct Current

Performance Levels and Quality Signed Schneider Electric

The creation of a dependable and high-performance DC range requires a large amount of specific design and development work in addition to that invested in the original AC range.

Schneider Electric called on its proven industrial experience in the AC field and its recognized know-how in current interruption to develop a high-performance DC range.

Schneider Electric decided to use the cases and accessories of its ComPacT NSX and MasterPact NW ranges with:

- A high-performance design for the breaking chambers or the poles intended specifically for DC applications (e.g. 100 kA at 250 V per pole for ComPacT NSX and 85 kA at 900 V for two poles for MasterPact NW)
- Fast trip units developed for DC applications
- Optimized pole-connection and isolation possibilities that are both simple and dependable.

Optimized Solutions for the Many Types of DC Systems

The many types of DC systems make it necessary, for cost and technical-optimization reasons, to connect the poles of two, three or four-pole circuit breakers in series or in parallel.

The ComPacT NSX and MasterPact NW ranges enable series connection of poles, thereby optimizing breaking capacity for high voltages.

Series connection reduces the voltage across the terminals of each pole (the total voltage is divided by two, three or four depending on the circuit breaker) and the operation of all poles provides the breaking capacity of the overall device.

This makes it possible to break short-circuit currents at high voltages while optimizing solutions (e.g. a ComPacT NSX 100 kA 250 V per pole can be used on a 750 V system with three poles connected in series, thus reducing the cost compared to a 750 V solution).

The ComPacT NSX range enables parallel connection of the poles, thereby optimizing the use of the rated currents.

Optimized and Dependable Series or Parallel Connection of Poles

Series Connection - Controlled Temperature Rise and Enhanced Performance

Schneider Electric DC circuit breakers comply with product standards IEC 60947-1 and 2.

To that end, series connection of poles meets:

- Temperature-rise conditions. Connections specifically designed to dissipate heat mean the thermal model is equivalent to that for AC applications. The devices dissipate the temperature rise produced by relatively short series connections.
- Connections are designed for severe operating conditions (insulation and safety clearances, ultimate breaking capacity, high pollution levels, etc.).

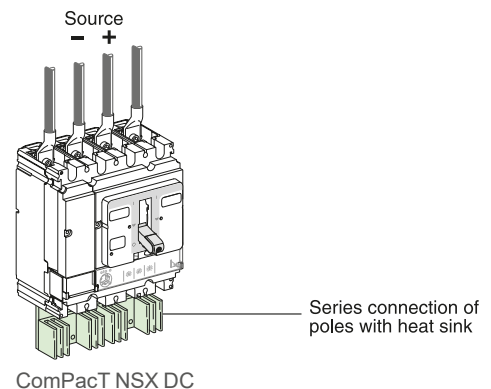
Parallel Connection - Optimization

Certain DC systems require high power levels (hundreds to thousands of amperes) at reduced voltages, most often ≤ 250 V.

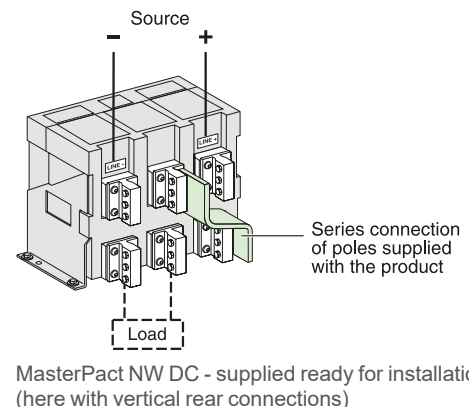
The configurations of DC systems and the exceptional performance levels of ComPacT NSX circuit breakers mean the poles can be parallel connected.

This technique virtually doubles, triples or quadruples the current rating depending on the type of circuit breaker and thus reduces the cost of solutions.

ComPacT NSX DC and MasterPact NW DC circuit breakers offer optimized pole-connection possibilities.



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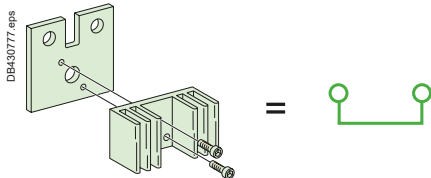


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Great Flexibility in Adapting to DC Applications

Overview of Series Connection of Poles for ComPacT NSX DC

With ComPacT NSX DC circuit breakers, it is easy to create a large number of series pole arrangements using prefabricated connections mounted on site during equipment installation.

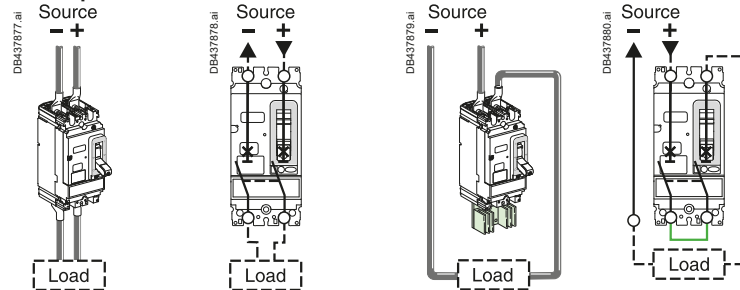


One type of connection per framesize, two catalog numbers for all series connections.

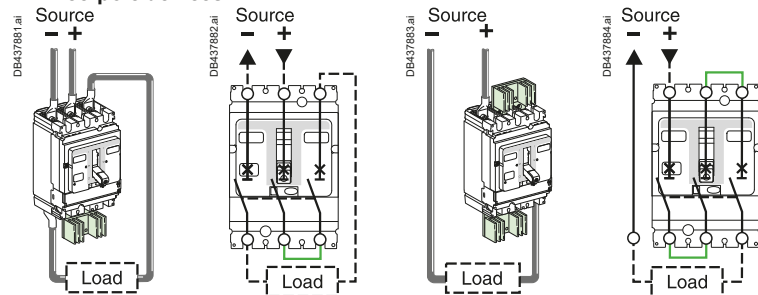
ComPacT NSX DC

Examples of Series Connection

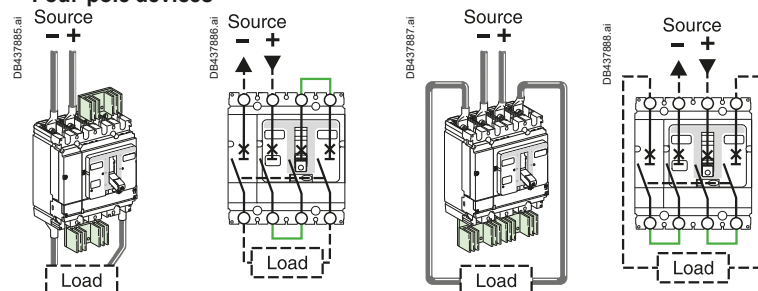
Two-pole devices



Three-pole devices

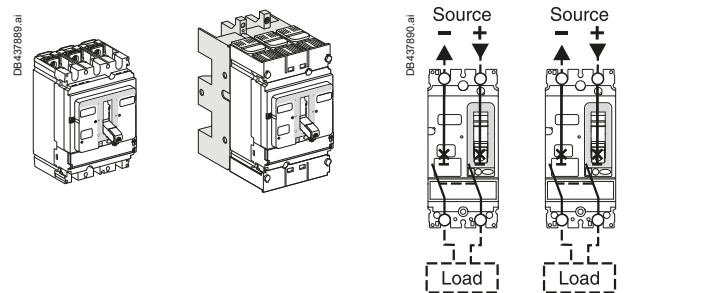


Four-pole devices



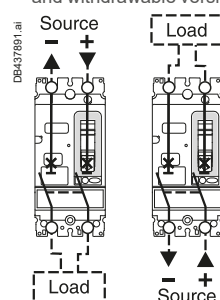
Great Flexibility for Connections

- All connections are possible for the fixed and withdrawable versions
- Indifferent connection of polarities, from left to right or right to left
- Indifferent connection of upstream and downstream cables to top or bottom terminals
- Series connection of poles is possible by upstream/downstream connections. Creation of the connections is the responsibility of the panel builder or the installer.

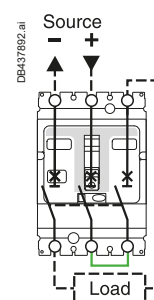


All connections are possible for the fixed and withdrawable versions

Indifferent connection of polarities



Upstream/downstream connections to top or bottom connectors

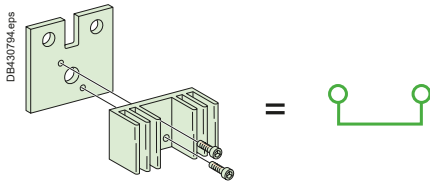


Series connection of poles is possible by upstream/downstream connections (user made)

Great Flexibility in Adapting to DC Applications

Overview of Series Connection of Poles for ComPacT INS/INV

With ComPacT INS/INV switch-disconnectors, it is easy to create a large number of series pole arrangements using prefabricated connections mounted on site during equipment installation.

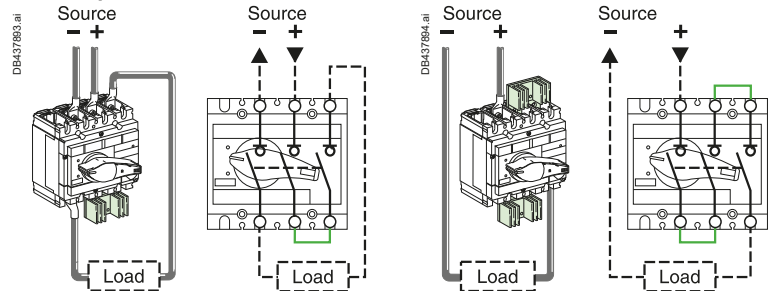


One type of connection per frame size, two catalog numbers for all series connections.

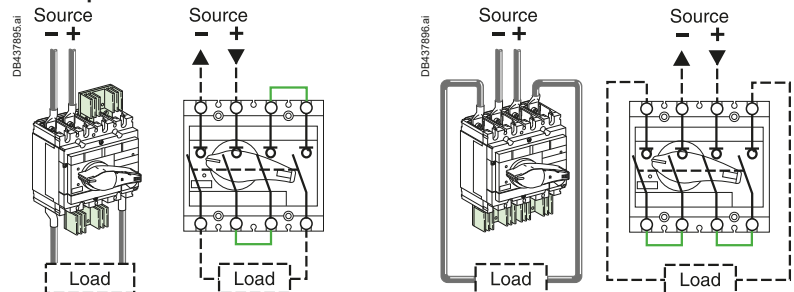
Series Connection of Poles for Direct Current Applications

Examples of Series Connection

Three-pole devices

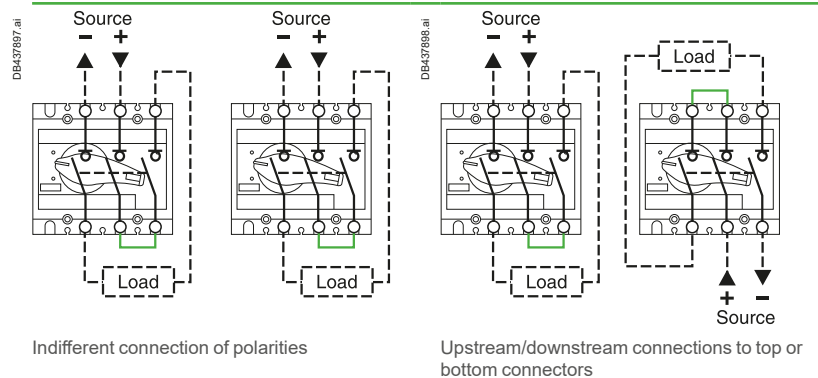


Four-pole devices



- Indifferent connection of polarities, from left to right or right to left
- Indifferent connection of upstream and downstream cables to top or bottom terminals
- Series connection of poles is possible by upstream/downstream connections. Creation of the connections is the responsibility of the panel builder or the installer.

Great Flexibility for Connections



Great Flexibility in Adapting to DC Applications

Overview of Series Connection of Poles for MasterPact NW DC

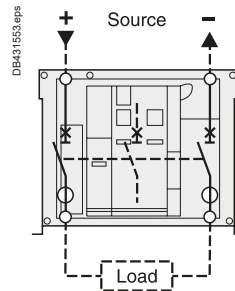
MasterPact NW DC circuit breakers, with high ratings and installed as incoming devices, offer three coupling versions C, D and E ready for connection.

The polarities "Line -", "Line +" indicated on the rear connections of the MasterPact NW DC circuit breakers have to be respected in order to match the magnetic threshold tolerances.

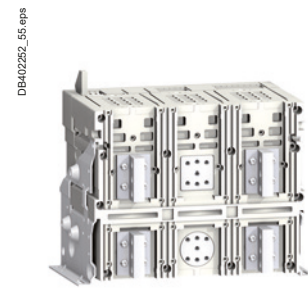
MasterPact NW DC

Three Versions Supplied Ready for Connection

Version C

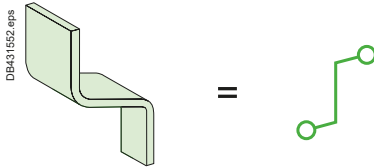


Front view: three-pole case - two poles in series

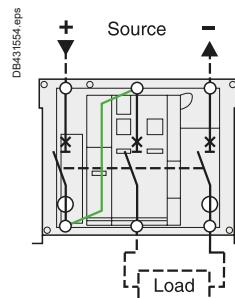


Rear view

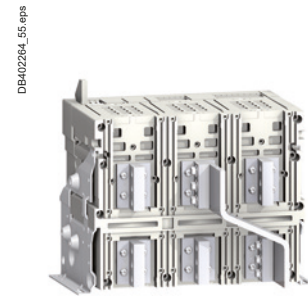
The prefabricated series connections are factory made due to the power ratings. They also dissipate heat.



Version D

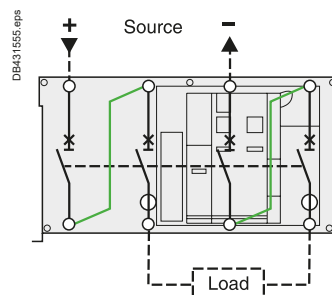


Front view: three-pole case - three poles in series



Rear view with connections

Version E



Front view: four-pole case - four poles in series



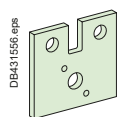
Rear view with connections

Great Flexibility in Adapting to DC Applications

Parallel Connection of Poles

The exceptional performance levels of ComPacT NSX DC, DC PV and DC EP circuit breakers mean the poles can be parallel connected. This technique virtually doubles, triples or quadruples the current rating depending on the type of circuit breaker and thus reduces the cost of solutions.

Examples of Parallel Connection

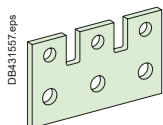


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Parallel pole connection accessories are identical to those for series connections. They are equipped with heat sinks.

Customer connections are made directly to the connection plates after removing the heat sinks.

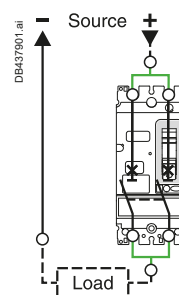
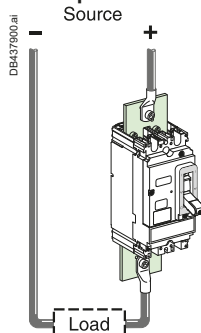


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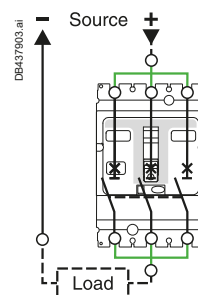
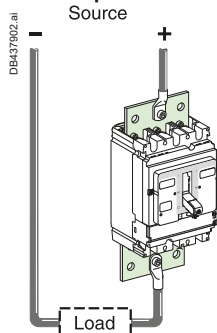


Specific connections are required for parallel connection of three poles.

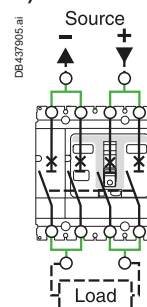
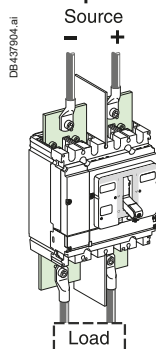
Two-pole devices



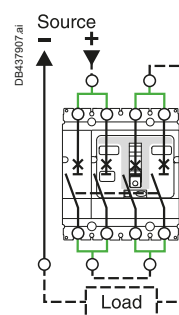
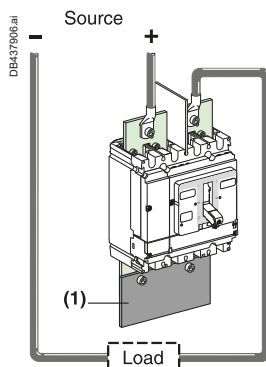
Three-pole devices



Four-pole devices (2 x 2 poles in parallel)



It Is Possible to Mix Series and Parallel Connections

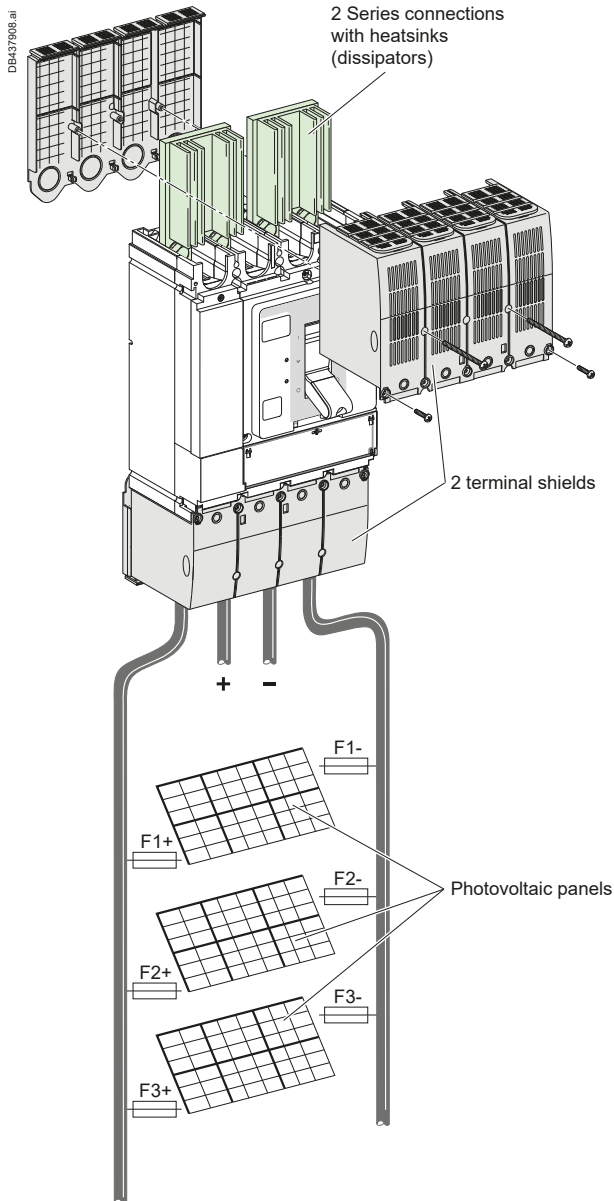


Note: Creation of the additional connection [1] is the responsibility of the panel builder or the installer.

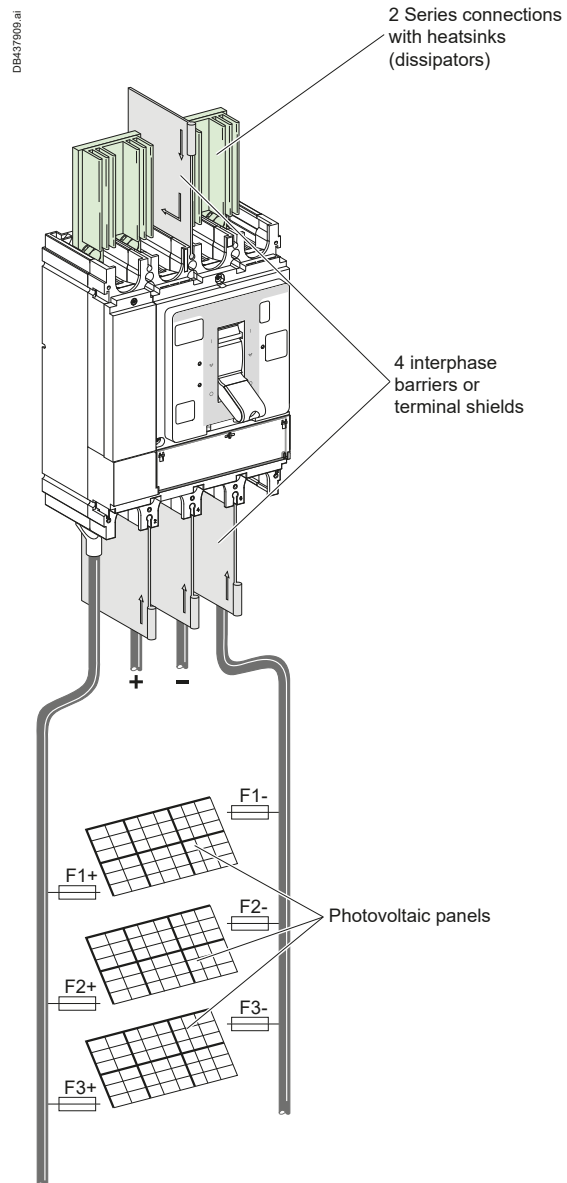
Great Flexibility in Adapting to DC EP Applications

Overview of Series Connectors for NSX DC EP

ComPacT NSX TM DC EP



ComPacT NSX NA DC EP



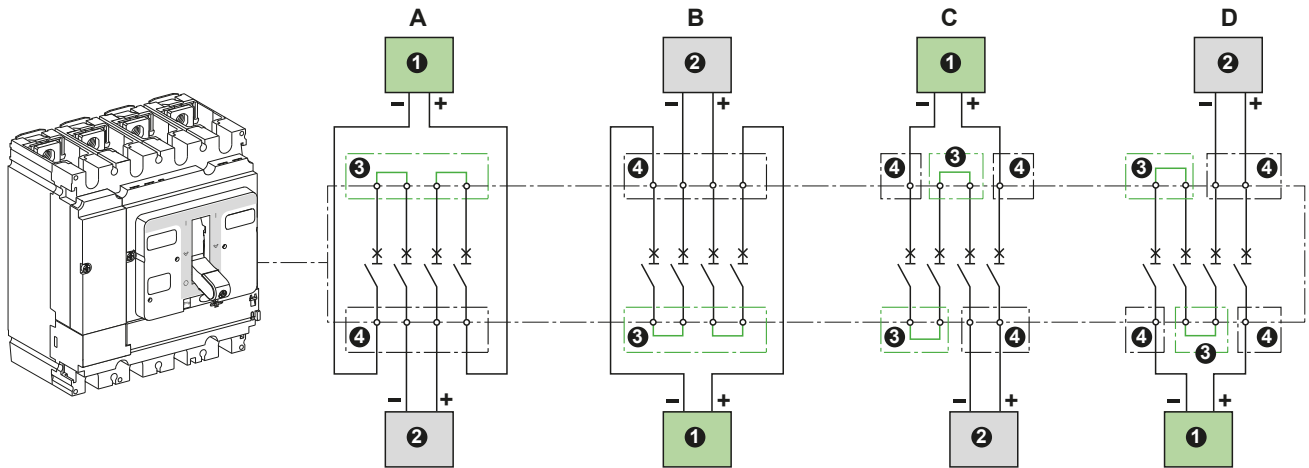
Great Flexibility in Adapting to DC EP Applications

Overview of Series Connectors for NSX DC EP

ComPacT NSX100 to NSX250 DC EP/ComPacT NSX100 to NSX250 NA DC EP

	A	B	C	D
 PV L/R ≤ 2 ms	●	●	●	●
 Marine L/R > 2 ms	-	●	●	-

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- ① Source
- ② Load
- ③ Series connections with heatsinks
- ④ Terminal shields

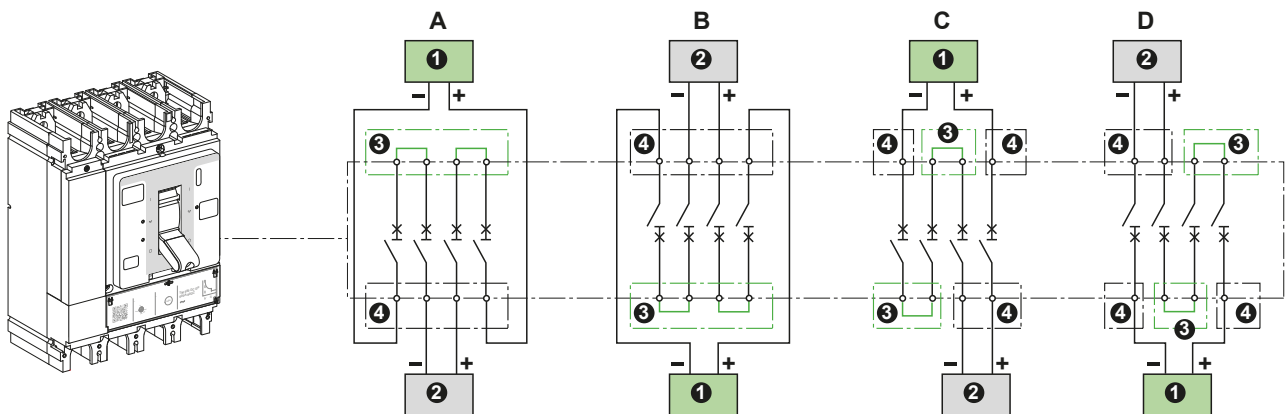
> ComPacT NSX250 TM DC EP
and ComPacT NSX250 NA DC EP
Detailed Guide



ComPacT NSX250 to NSX500 DC EP/ComPacT NSX320 to NSX630 NA DC EP

	A	B	C	D
 PV L/R ≤ 2 ms	●	●	●	●
 Marine L/R > 2 ms	●	●	●	●

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- ① Source
- ② Load
- ③ Series connections with heatsinks
- ④ Terminal shields

> ComPacT NSX500 TM DC EP
and ComPacT NSX630 NA DC EP
Detailed Guide

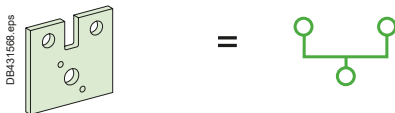


Connection Accessories

The exceptional performance levels of ComPacT INS/INV switch-disconnectors mean the poles can be parallel connected. This technique virtually doubles, triples or quadruples the current rating depending on the type of circuit breaker and thus reduces the cost of solutions.

Parallel Connection of Poles for Direct Current Applications

Examples of Parallel Connection



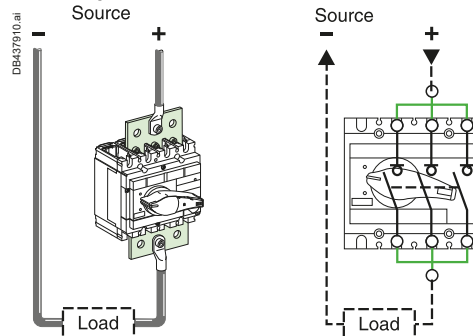
Parallel pole connection accessories are identical to those for series connections. They are equipped with heat sinks.

Customer connections are made directly to the connection plates after removing the heat sinks.

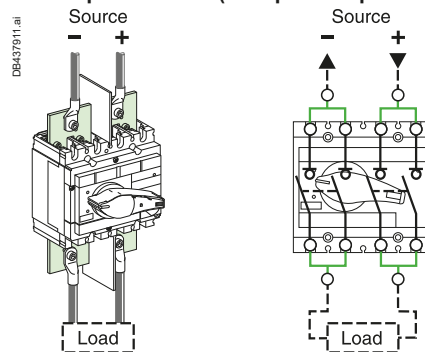


Specific connections are required for parallel connection of three poles.

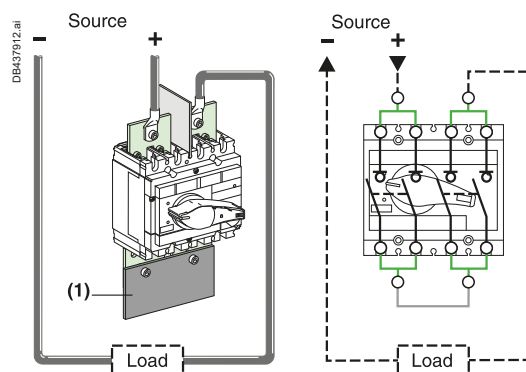
Three-pole devices



Four-pole devices (2 x 2 poles in parallel)



It Is Possible to Mix Series and Parallel Connections



Note: Creation of the additional connection [1] is the responsibility of the panel builder or the installer.

Great flexibility for connections

- Indifferent connection of polarities, from left to right or right to left.
- Indifferent connection of upstream and downstream cables to top or bottom terminals.

Functions and Characteristics

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Selection Guide for DC Circuit Breakers

Types of DC Distribution Systems

There are three types of DC distribution systems (see the table).

The operational voltage in conjunction with one of the three systems determines the number of poles taking part in current interruption.

Selection of a circuit breaker depends essentially on the distribution-system parameters presented below which are used to determine the corresponding characteristics:

- Type of system - determines the type of product and the number of poles connected in series for each polarity
- Rated voltage - determines the number of series poles taking part in current interruption
- Nominal current - determines the rated current of the circuit breaker
- Maximum short-circuit current at the point of installation - determines the breaking capacity.

Types of systems

	Earthed systems		Isolated systems
	The source has one earthed polarity ^[1]	The source has an earthed mid-point	
Diagrams and different faults			
Fault analysis (neglecting resistance of earth electrodes)			
Fault A	■ Maximum Isc at U ■ Only protected polarity concerned ■ All poles of protected polarity must have breaking capacity $\geq$ Isc max. at U	■ Maximum Isc at U/2 ■ Only positive polarity concerned ■ All poles of positive polarity must have breaking capacity $\geq$ Isc max. at U/2	■ No consequences ■ The fault must be indicated by an IMD (insulation-monitoring device) and cleared (standard IEC/EN 60364)
Fault B	■ Maximum Isc at U ■ If only one polarity (the positive here) is protected, all poles of protected polarity must have breaking capacity $\geq$ Isc max. at U ■ If both polarities are protected, to enable disconnection, all poles of the two polarities must have breaking capacity $\geq$ Isc max. at U	■ Maximum Isc at U ■ Both polarities are concerned ■ All poles of the two polarities must have breaking capacity $\geq$ Isc max. at U	■ Maximum Isc at U ■ Both polarities are concerned ■ All poles of the two polarities must have breaking capacity $\geq$ Isc max. at U
Fault C	No consequences	■ Same as fault A ■ All poles of the Negative polarity must have breaking capacity $\geq$ Isc max. at U/2	■ Same as fault A with the same actions
Double fault A and D or C and E	Double fault not possible, system trips on first fault	Double fault not possible, system trips on first fault	■ Maximum Isc at U ■ Only positive polarity (cases A and D) or negative (C and E) concerned ■ All poles of each polarity must have breaking capacity $\geq$ Isc max. at U
Most unfavorable cases			
	Fault A and fault B (if only one polarity is protected)	Fault B	Double fault A and D or C and E
Conclusion: selection of number of poles and breaking capacity			
Layout of protection poles			
	■ On only one polarity ^[1]	■ Identical for each polarity	■ Identical for each polarity
Number of series poles			
Per polarity	■ All on same polarity	■ Equal	■ Equal
Total	■ 1, 2 or 3 without disconnection ■ 2, 3 or 4 with disconnection	■ 2 or 4 ^[2]	■ 2 or 4 ^[2]
Breaking capacity			
	■ All poles of the protected polarity $\geq$ Isc max. at U	■ All poles of both polarities $\geq$ Isc max. at U ■ All poles of each polarity $\geq$ Isc max. at U/2	■ All poles of each polarity $\geq$ Isc max. at U
Disconnection of both polarities^[3]			
	Possible by adding a pole to the non-protected polarity	■ Ensured	■ Ensured
Implementation			
	See the selection table opposite		

^[1] Positive or negative, depending on the polarity connected to the exposed conductive parts.

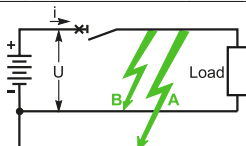
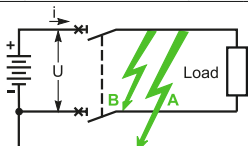
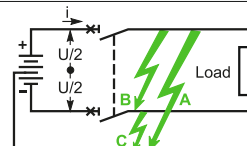
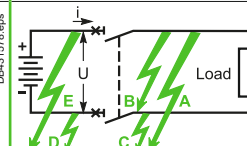
^[2] A 3P circuit breaker can be used if a 2P version does not exist. In this case, the central pole is not connected.

^[3] Disconnection made possible by multi-pole breaking.

Selection Guide for DC Circuit Breakers

Solutions Depending on the Distribution System and the Voltage

Series Connection of Poles

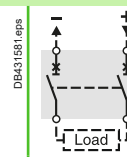
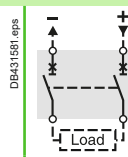
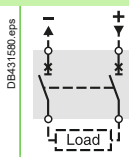
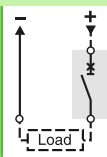
Type of distribution system				
Type	Earthed			Isolated
Source	One polarity (negative here) connected to earth (or exposed conductive parts)		Mid-point connected to earth	Isolated polarities
Protected polarities	1 (disconnection of 1P)	2 (disconnection of 2P)	2	2
Diagrams (and types of faults)				

A

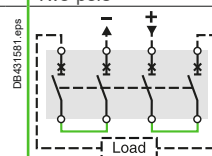
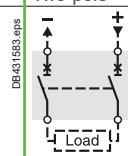
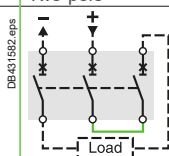
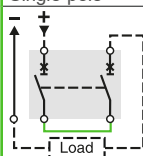
Selection of circuit breaker and pole connection

ComPacT NSX DC

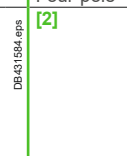
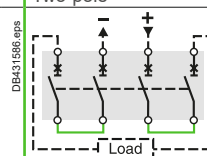
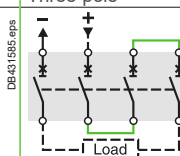
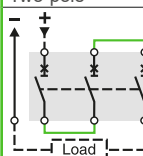
24 V ≤ Un ≤ 250 V



NSX100-600
250 V < Un ≤ 500 V



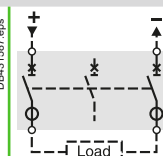
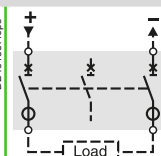
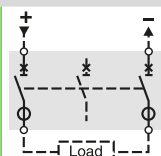
NSX100-500
500 V < Un ≤ 750 V



MasterPact NW DC

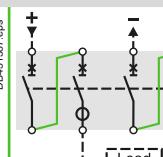
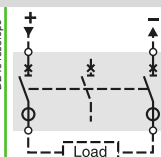
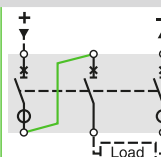
Type N

24 V ≤ Un ≤ 500 V

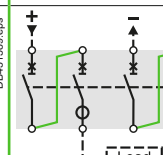
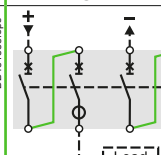
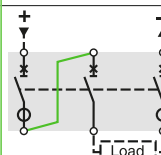


Type H

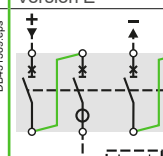
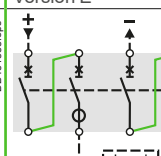
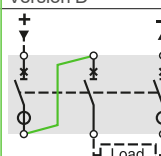
24 V ≤ Un ≤ 500 V



500 V < Un ≤ 750 V



750 V < Un ≤ 900 V



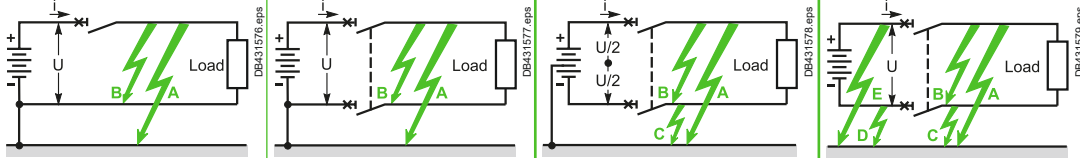
[1] A 3P circuit breaker can be used if a 2P version does not exist. In this case, the central pole is not connected.

[2] ComPacT NSX DC circuit breakers (and switch disconnectors) are designed to break the rated current or fault current at the rated operational voltage (Ue) with all poles. To break the current at voltage > 500 V, three poles in series are required. In double earth fault situations (A + D or C + E), the circuit breaker (and Switch disconnectors) must break the current at full voltage with only half of the poles. ComPacT NSX DC circuit breakers (and Switch disconnectors) are not designed for this purpose and could sustain irremediable damage if used to break the current in a double earth fault situation for voltage > 500 V.

Selection Guide for DC Circuit Breakers

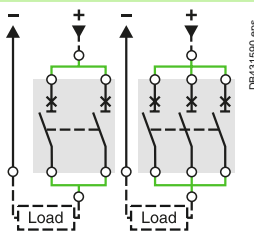
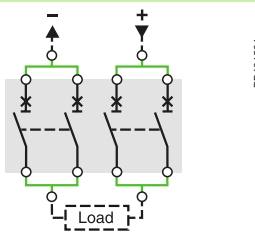
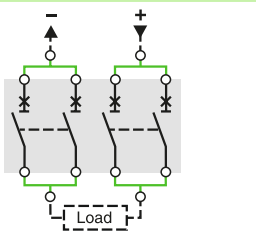
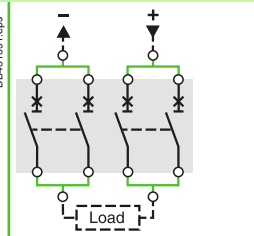
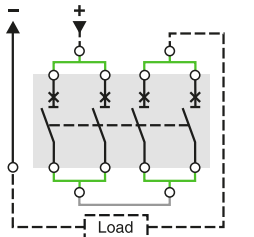
Solutions Depending on the Distribution System and the Voltage

Parallel Connection of Poles

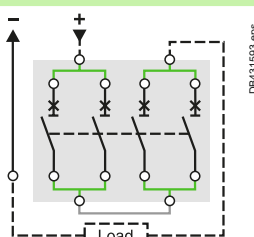
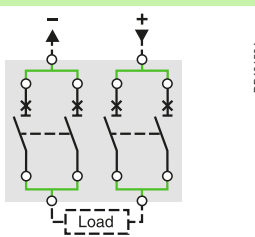
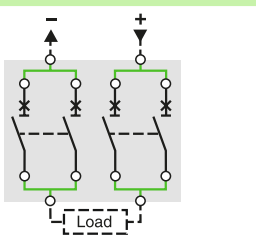
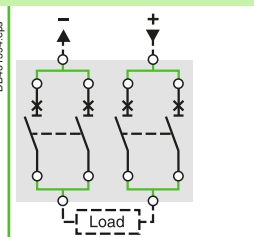
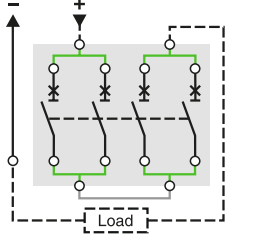
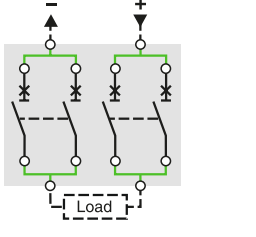
Type of distribution system			
Type	Earthed		Isolated
Source	One polarity (negative here) connected to earth (or exposed conductive parts)		Mid-point connected to earth
Protected polarities	1 (disconnection of 1P)	2 (disconnection of 2P)	2
Diagrams (and types of faults)			

Selection of circuit breaker and pole connection

ComPacT NSX DC

$U_n \leq 250 \text{ V}$	 Two, three-pole, 2, 3P in parallel, four-pole, 4P in parallel	 Four-pole, 2 x 2P in parallel	 Four-pole, 2 x 2P in parallel	 Four-pole, 2 x 2P in parallel
$250 \text{ V} < U_n \leq 500 \text{ V}$	 Four-pole, 2 x 2P in parallel, connected in series	 Four-pole, 2 x 2P in parallel		[1]

ComPacT NSX1200 DC [2]

$U_n \leq 300 \text{ V}$				
$300 \text{ V} < U_n \leq 600 \text{ V}$				[3]

[1] ComPacT NSX DC circuit breakers (and switch disconnectors) are designed to break the rated current or fault current at the rated operational voltage (U_e) with all poles. To break the current at voltage $> 250 \text{ V}$, two poles in series are required. In double earth fault situations (A + D or C + E), the circuit breaker (and switch disconnectors) must break the current at full voltage with only half of the poles. ComPacT NSX DC circuit breakers (and switch disconnectors) are not designed for this purpose and could sustain irremediable damage if used to break the current in a double earth fault situation for voltage $> 250 \text{ V}$.

[2] Do not remove parallel connectors.

[3] ComPacT NSX DC circuit breakers (and switch disconnectors) are designed to break the rated current or fault current at the rated operational voltage (U_e) with all poles. To break the current at voltage $> 300 \text{ V}$, two poles in series are required. In double earth fault situations (A + D or C + E), the circuit breaker (and switch disconnectors) must break the current at full voltage with only half of the poles. ComPacT NSX DC circuit breakers (and switch disconnectors) are not designed for this purpose and could sustain irremediable damage if used to break the current in a double earth fault situation for voltage $> 300 \text{ V}$.

Selection Guide for DC Circuit Breakers

Solutions Depending on the Distribution System and the Voltage

Comparison of Series and Parallel Connection in Terms of Performance

Series connection of poles on a DC circuit breaker is the means to:

- Divide the system voltage by the number of poles
 - Use the rated current for each pole
 - Use the breaking capacity of the circuit breaker for all the poles.
- For example, a ComPacT NSX630, 3P DC type, with the three poles connected in series, provides:
- A maximum voltage of 750 V (250 V per pole)
 - A rated current of 630 A
 - A breaking capacity of 100 kA/750 V.
- Consequently, a 630 A/250 V device can be used in a 750 V system.

Parallel connection of poles, on the contrary, imposes the system voltage on each pole, but is the means to:

- Divide the current flowing through each pole by the number of poles
 - Increase the rated current.
- For example, the same ComPacT NSX630 DC 3P circuit breaker with three poles in parallel provides:
- A maximum voltage of 250 V (250 V per pole)
 - A rated current of 1500 A (see table page B-9).
- Consequently, a 630 A device used in a 250 V system can handle 1500 A.

Series connection of poles divides the voltage per pole and optimizes breaking capacity for high-voltage systems.

Parallel connection of poles divides the current per pole and optimizes the rated current for systems that do not exceed the withstand voltage of each pole.

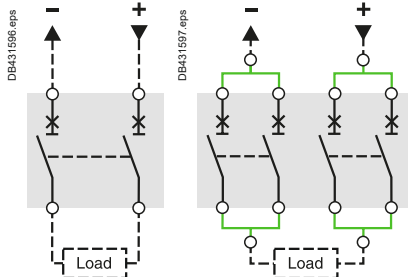
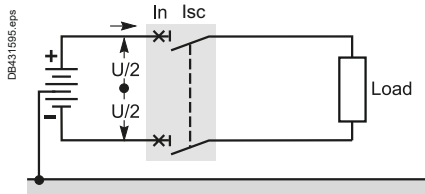
The maximum useable rating and the value of the magnetic setting are indicated (see pages B-7, B-8 and B-9).

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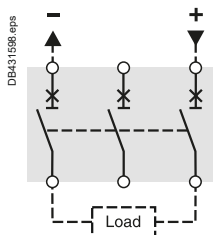
Selection Guide for DC Circuit Breakers

Examples of Circuit Breaker Selection

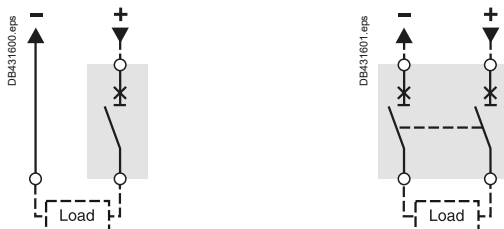
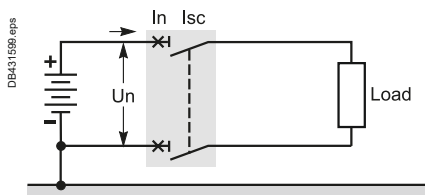
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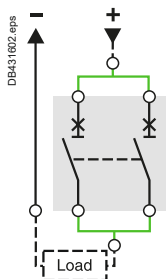
Selection 1
Selection 2: ComPacT NSX160 DC 4P
2 x 2P parallel mounted in series



Selection 3: ComPacT NSX250 DC 3P with 2P connected



Selection 1: ComPacT NSX160F DC 1P
Selection 2



Selection 3: ComPacT NSX100N 2P DC in parallel

Selection of a ComPacT NSX DC

Example 1

- Type of system - mid-point connected to earth
- System voltage - $U_n = 500$ V DC with time constant $L/R = 5$ ms
- Rated current required at point of installation $I_n = 250$ A
- Short-circuit current at the point of installation $I_{sc} = 20$ kA

Selection constraints - (see page A-4)

The system with the mid-point connected to earth requires (see conclusion page A-4):

- Identical protection-pole layout for each polarity.
- An equal number of poles for each polarity, i.e. a total of two or four.
- All poles of the two polarities must have breaking capacity $\geq I_{sc}$ max. at U_n , i.e. 20 kA/500 V in this case.
- All poles of the each polarity must have breaking capacity $\geq I_{sc}$ max. at $U_n/2$, i.e. 20 kA/250 V in this case.

Selection possibilities - (see pages A-5 and A-6)

The tables indicate for 250 V $< U_n \leq 500$ V and for this system:

- Poles connected in series: two-pole 2P in series → **selection 1**
- Poles connected in parallel: four-pole 2 x 2P parallel connected in series → **selection 2**.

Circuit breaker selection - (see pages A-14 and B-8)

- **Selection 1:** The 250 A rated current does not exist in 2P. It is possible to use a 250 A 3P DC type circuit breaker with the central pole not connected → **selection 3**
- **Selection 2:** The 160 A rated current (DC version) is suitable with a 2 x 2P assembly connected in parallel because (see table page B-8):
 - The rated current of the 2 x 2P assembly connected in parallel is $I_n = 288$ A > 250 A
 - And for $L/R = 5$ ms:
 - Breaking capacity of all poles = 36 kA/500 V > 20 kA/500 V
 - Breaking capacity of poles of each polarity = 36 kA/250 V > 20 kA/250 V.

The options are:

- **Selection 1:** ComPacT NSX250S DC, 3P, 2 poles connected
 - **Selection 3:** ComPacT NSX160 DC, 4P, 2 x 2P parallel connected in series.
- Both solutions exist in fixed and withdrawable configurations.

Trip unit selection

- ComPacT NSX250 DC 3P: The selection table (see page A-18) indicates 3 TM250DC trip units, which are interchangeable
- ComPacT NSX160 DC, 4P (2 x 2P) 160 A: The selection table (see page B-8) indicates, for the 2 x 2P parallel configuration mounted in series and for 250 A, A TM125DC trip unit with the magnetic-protection threshold set to 2500 A.

Example 2

- Type of system - one polarity earthed
- System voltage - $U_n = 250$ V DC with time constant $L/R = 5$ ms
- Rated current required at point of installation $I_n = 160$ A
- Short-circuit current at the point of installation $I_{sc} = 20$ kA.

Selection constraints - (see page A-4)

The system with one polarity connected to earth requires (see conclusion page A-4):

- Protection poles on the protected polarity
- All poles contribute to breaking for the polarity:
 - 1, 2 or 3P without disconnection of the two polarities
 - 2, 3 or 4P with disconnection of the two polarities
- All poles of the protected polarity must have breaking capacity $\geq I_{sc}$ max. at U_n , i.e. 20 kA/250 V in this case.

Selection possibilities - (see pages A-5 and A-6)

The tables indicate for $U_n \leq 250$ V and for this system:

- Poles connected in series: single-pole → **selection 1** (or two-pole with disconnection → **selection 2**)
- Poles connected in parallel: two-pole → **selection 3**
- Other selections (parallel connection) are possible, but are of no particular interest.

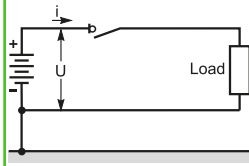
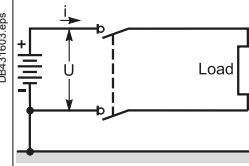
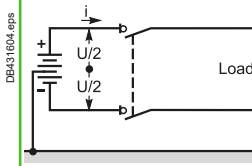
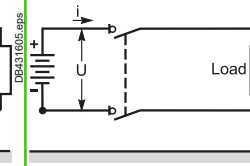
Circuit breaker selection - (see pages A-14 and B-7)

- **Selection 1:** ComPacT NSX160F DC, 1P, 36 kA, available in fixed version (or **selection 2:** ComPacT NSX160F DC, 2P, 36 kA, if disconnection of the two polarities is desired)
- **Selection 3:** ComPacT NSX100N DC, 2P in parallel, 36 kA, providing a rated current of 200 A (see table page B-7), available in fixed version.

Trip unit selection

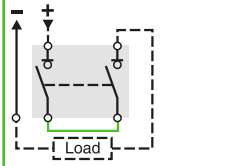
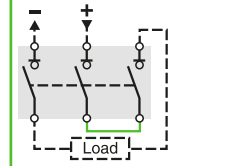
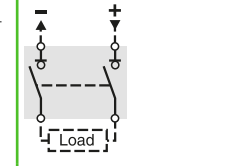
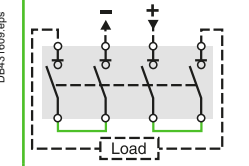
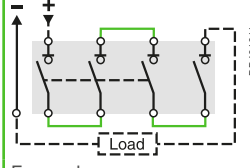
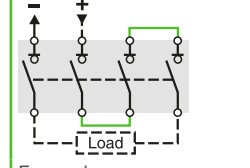
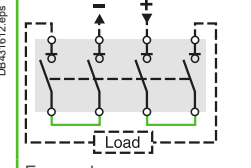
- ComPacT NSX160N DC, 1P: The selection table (see page A-18) indicates a built-in TM160DC trip unit with the magnetic-protection threshold set to 1250 A
- ComPacT NSX100N DC, 2P in parallel: The selection table (see page B-7) indicates, for the 2P parallel configuration and for 160 A, a TM80D trip unit with the magnetic-protection threshold set to 1600 A.

Solutions Depending on the Distribution System and the Voltage

Type of distribution system				
Type	Earthed			Isolated
Source	One polarity (negative here) connected to earth (or exposed conductive parts)		Mid-point connected to earth	Isolated polarities
Protected polarities	1 (disconnection of 1P)	2 (disconnection of 2P)	2	2
Diagrams, connection method				

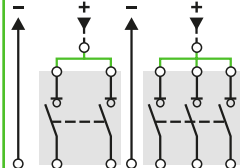
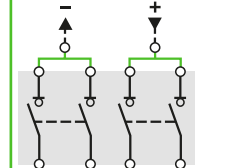
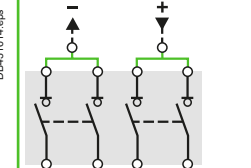
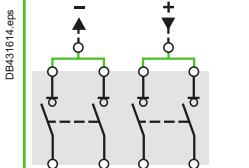
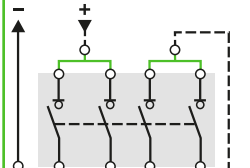
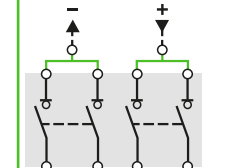
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Series Connection of Poles

Selection of switch-disconnectors and pole connection			
ComPacT INS/INV			
24 V ≤ Un ≤ 125 V			
			
Two-pole ^[1]	Three-pole	Two-pole ^[1]	Four-pole
125 V < Un ≤ 250 V			
			Not applicable
Four-pole	Four-pole	Four-pole	

[1] A 3P switch-disconnectors can be used if a 2P version does not exist. In this case, the central pole is not connected.

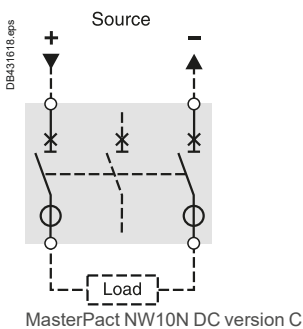
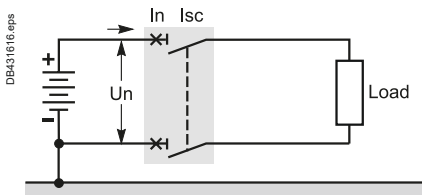
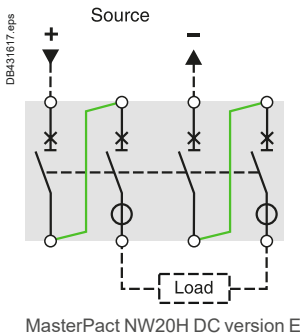
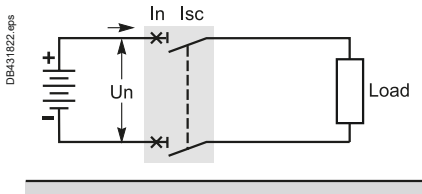
Parallel Connection of Poles

Selection of switch-disconnectors and pole connection			
ComPacT INS/INV			
Un ≤ 63 V			
			
Two, three-pole, 2, 3P in parallel, four-pole, 4P in parallel	Four-pole, 2 x 2P in parallel	Four-pole, 2 x 2P in parallel	Four-pole, 2 x 2P in parallel
63 V < Un ≤ 125 V			
	Not applicable		Not applicable
Four-pole, 2 x 2P in parallel, connected in series		Four-pole, 2 x 2P in parallel	

Selection Guide for DC Circuit Breakers

Examples of Circuit Breaker Selection

A



Selection of a MasterPact NW DC

Example 1

- Type of system - isolated polarities
- System voltage - $U_n = 750$ V DC with time constant $L/R = 30$ ms
- Rated current required at point of installation $I_n = 2000$ A
- Short-circuit current at the point of installation $I_{sc} = 40$ kA

Selection constraints - (see page A-4)

The system with isolated polarities requires (see conclusion page A-4):

- Identical protection for each polarity
- An equal number of poles for each polarity, i.e. a total of two or four
- All poles of each polarity must have breaking capacity $\geq I_{sc}$ max. at U_n , i.e. 40 kA/750 V in this case.

Selection possibilities - (see page A-5)

The table for series poles indicates for a voltage $24 \text{ V} < U_n \leq 750 \text{ V}$ and the type of system, use of a four-pole, version E circuit breaker.

Circuit breaker selection - (see page A-102)

The MasterPact NW DC characteristics table indicates more specifically with a 2000 A a NW20 DC type H circuit breaker with a breaking capacity of 50 kA/750 V ($L/R = 30$ ms).

The correct selection is a MasterPact NW20 DC type H version E, 2000 A, 50 kA, available in fixed and drawout versions.

Example 2

- Type of system - one polarity earthed
- System voltage - $U_n = 500$ V DC with time constant $L/R = 15$ ms
- Rated current required at point of installation $I_n = 1000$ A
- Short-circuit current at the point of installation $I_{sc} = 30$ kA

Selection constraints - (see page A-4)

The system with one polarity connected to earth requires (see conclusion page A-4):

- Protection poles on the protected polarity
- All poles contribute to breaking for the polarity:
 - 1, 2 or 3P without disconnection of the two polarities
 - 2, 3 or 4P with disconnection of the two polarities
- All poles of the protected polarity must have breaking capacity $\geq I_{sc}$ max. at U_n , i.e. 30 kA/500 V in this case.

Selection possibilities - (see page A-5)

The table for series poles indicates for a voltage $24 \text{ V} < U_n \leq 500 \text{ V}$ and the type of system, use of a three-pole, version C circuit breaker.

Circuit breaker selection - (see page A-102)

The MasterPact NW DC characteristics table indicates more specifically with a 1000 A a NW10 DC type N circuit breaker with a breaking capacity of 35 kA/500 V ($L/R = 15$ ms). The correct selection is a MasterPact NW10 DC type N version C, 1000 A, 35 kA, available in fixed and drawout versions.

Calculation of DC Distribution-System Characteristics

Short-Circuit Currents L/R Time Constant

Short-Circuit Currents

Calculation of the short-circuit current across the terminals of a battery

This calculation is key information to select a product.

During a short-circuit, the battery discharges a current equal to:

$$I_{sc} = \frac{V_b}{R_i}$$

- V_b = maximum discharge voltage (battery 100 % charged)
- R_i = internal resistance equivalent to all cells (a function of the capacity in ampere-hours).

Example

- Consider a set of four 500 Ah batteries connected in parallel.
- Discharge voltage of one battery: 240 V (110 cells 2.2 V each).
- Discharge current of one battery: 300 A with a run-time of 30 minutes.
- Discharge current of all four batteries: 1200 A with a run-time of 30 minutes.
- Internal resistance 0.5 mΩ per cell, i.e. for one battery:
 $R_i = 110 \times 0.5 \times 10^{-3} = 55 \times 10^{-3} \Omega$.
- Short-circuit current of one battery: $I_{sc} = 240 \text{ V} / 55 \times 10^{-3} \Omega = 4.37 \text{ kA}$.
- Neglecting the resistance of the connections, for all four batteries discharging the short-circuit current in parallel, the total short-circuit current is four times that of one battery, i.e. $I_{sc} = 4 \times 4.37 \text{ kA} = 17.5 \text{ kA}$.

Note: If the internal resistance is not known, it is possible to use the following rough approximation: $I_{sc} = kc$ where c is the capacity of the battery in ampere-hours and k is a coefficient close to 10 and always less than 20.

Other typical example

PABXs: I_{sc} from 5 to 25 kA at 240 V DC with $L/R = 5 \text{ ms}$.

L/R Time Constant

When a short-circuit occurs across the terminals of a DC circuit, the current rises from the load current ($\leq I_n$) to the short-circuit current I_{sc} over a period of time that depends on the value of the resistance R and inductance L of the short-circuited loop.

The equation determining the current in the loop is:

$$U = Ri + L \Delta i / \Delta t$$

The curve of i versus time is defined (neglecting I_n) by the equation:

$$i = I_{sc} (1 - \exp(-t/\tau))$$

where $\tau = L/R$ is the time constant for the rise to I_{sc} .

Practically speaking, after a time $t = 3\tau$, the short-circuit is considered to be established, because the value of $\exp(-3) = 0.05$ is negligible compared to 1 (see the curve opposite).

The lower the time constant (e.g. battery circuit), the shorter the time required for the current to rise to I_{sc} .

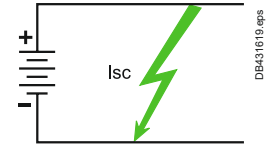
To express breaking capacity, the interrupted short-circuit current with the following time constants is used:

- $L/R = 5 \text{ ms}$, fast short-circuit
- $L/R = 15 \text{ ms}$, standardized value used in standard IEC 60947-2
- $L/R = 30 \text{ ms}$, slow short-circuit.

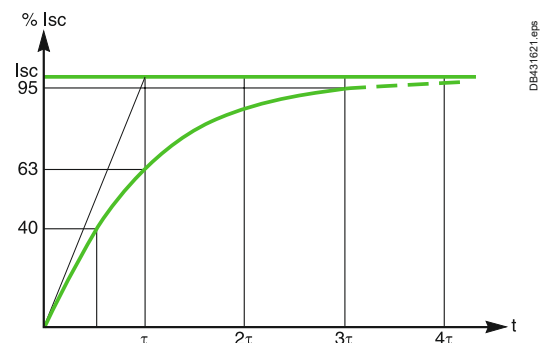
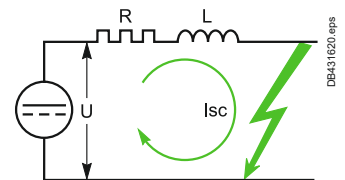
In general, the value of the system time constant is calculated under worst-case conditions, across the terminals of the generator.

Breaking-capacity values for:

- ComPacT NSX DC (table [page A-14](#)) are the same for 5 ms and 15 ms
- MasterPact NW DC (table [page A-102](#)) are indicated for 3 values, 5 ms, 15 ms And 30 ms.



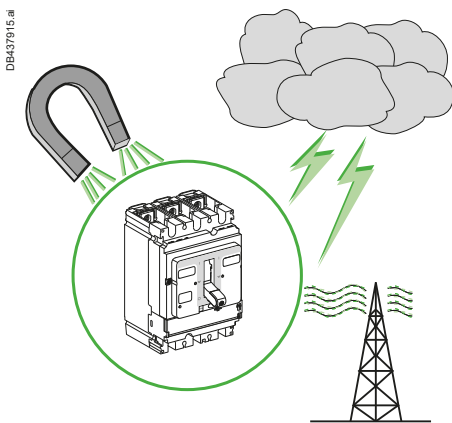
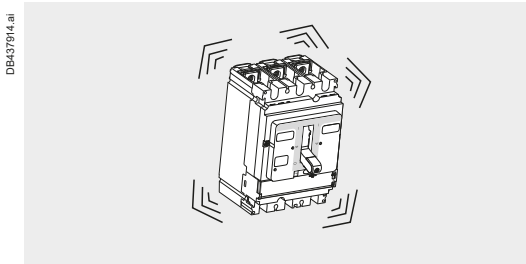
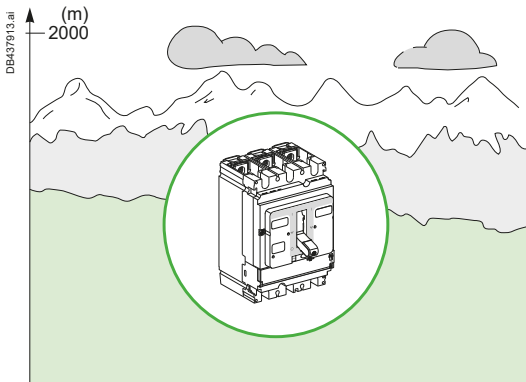
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General Characteristics of ComPacT NSX DC, DC PV and DC EP

Operating Conditions

A



Altitude

ComPacT NSX circuit breakers are designed to operate at their rated values at altitudes under 2000 metres.

Above 2000 metres, the changes in the characteristics of the ambient air (electrical resistance, cooling capacity) result in a reduction of the characteristics below.

Altitude (m)	2000	3000	4000	5000
ComPacT NSX DC				
Impulse withstand voltage U_{imp} (kV)	8	7.1	6.4	5.6
Rated insulation voltage (U_i)	750	710	635	560
Maximum rated operational DC voltage	1 x U_e	0.88 x U_e	0.8 x U_e	0.7 x U_e
Rated current (A)	1 x I_n	0.96 x I_n	0.93 x I_n	0.9 x I_n
ComPacT NSX DC PV				
Impulse withstand voltage U_{imp} (kV)	8	7.1	6.4	5.6
Rated insulation voltage (U_i)	1000	900	800	700
Maximum rated operational DC voltage	1000	900	800	700
Rated current (A)	1 x I_n	0.96 x I_n	0.93 x I_n	0.9 x I_n
ComPacT NSX DC EP				
Impulse withstand voltage U_{imp} (kV)	8	7.1	6.4	5.6
Rated insulation voltage (U_i)	1600	1400	1250	1100
Maximum rated operational DC voltage	1500	1300	1150	1000
Rated current (A)	1 x I_n	0.96 x I_n	0.93 x I_n	0.9 x I_n

Vibrations

ComPacT NSX circuit breakers are tested electromagnetic or mechanical vibration resistant.

Tests are carried out in compliance with standard IEC 60068-2-6 for the levels required by merchant-marine inspection organizations (Veritas, Lloyd's, etc.):

- 2 to 13.2 Hz: amplitude ± 1 mm
- 13.2 to 100 Hz: constant acceleration 0.7 g.

Excessive vibration may cause tripping, breaks in connections or damage to mechanical parts.

Electromagnetic Compatibility

ComPacT NSX circuit breakers are tested against:

- Overvoltages caused by devices that generate electromagnetic disturbances
- Overvoltages caused by atmospheric disturbances or by a distribution-system outage (e.g. failure of a lighting system) and devices emitting radio waves (radios, walkie-talkies, radar, etc.)
- Electrostatic discharges produced by users. The circuit breakers have successfully passed the electromagnetic-compatibility tests (EMC) defined by international standard IEC 60947-2, appendix F.

The above tests show that:

- No nuisance tripping occurs
- Tripping times are respected.

ComPacT NSX circuit breakers comply with the following electromagnetic-compatibility standards:

- IEC/EN 61000-4-2 - electrostatic immunity discharge test, part 2 (circuit breakers)
- IEC/EN 61000-4-3 - electromagnetic-field immunity test
- IEC/EN 61000-4-4 - electrical fast transient/burst immunity test
- IEC/EN 61000-4-5 - surge immunity test
- IEC/EN 61000-4-6 - immunity to conducted disturbances, induced by radiofrequency fields
- CISPR 11 - radio-frequency conducted and radiated emission tests required for CE marking:
 - EN 61000-6-2 - immunity standard for industrial environments
 - EN 50081-1-2 - emissions in commercial and industrial environments.

Ambient Temperature

Operating-Temperature Range

- ComPacT NSX circuit breakers and switches may be used between -25 °C and +70 °C.
- For temperatures higher than 40 °C (65 °C for circuit breakers used to protect motor feeders), devices must be derated as indicated in the documentation.
- Circuit breakers and switches should be put into service under the normal, ambient operating temperatures indicated above. Exceptionally, they may be put into service when the ambient temperature is between -35 °C and -25 °C.

Derating

Above 40 °C, it is necessary to take into account the derating values.

Storage-Temperature Range

ComPacT NSX circuit breakers and switches may be stored in their original packing between -50 °C and +85 °C.

General Characteristics of ComPacT NSX DC, DC PV and DC EP

ComPacT NSX DC and DC PV

Installation in Class II Switchboards

All ComPacT NSX DC circuit breakers are class II front-face devices. They may be installed through the door of class II switchboards (as per standard IEC 60664) without downgrading switchboard insulation. ComPacT NSX DC EP should be either installed in IP5x enclosure or with rotary handles or IP43 rubber toggle covers. Installation requires no special operations even when the circuit breaker is equipped with a rotary handle or a motor mechanism.

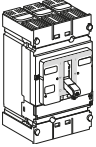
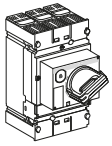
Degree of Protection

ComPacT NSX DC circuit breakers offer the following protection characteristics depending on the installation conditions:

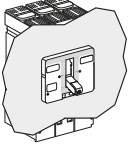
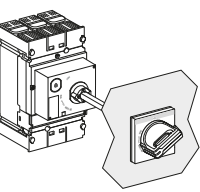
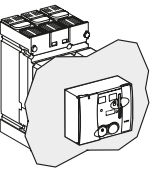
- IP: Degree of protection (standard IEC 60529)
- IK: Protection against external mechanical imPacTs (standard EN 50102).

ComPacT NSX DC

Bare circuit breaker with terminal shields

DB437916.ai		With toggle	IP3X	IK07
DB437917.ai		With direct rotary handle, standard or VDE	IP3X	IK07

Circuit breaker installed in a switchboard

DB437918.ai		With toggle	IP40	IK07
DB437919.ai		With direct rotary handle, standard or VDE	IP40	IK07
		CCM	IP43	IK07
		CNOMO	IP54	IK07
DB437920.ai		With extended rotary handle	IP55	IK08
DB431630.eps		With motor mechanism	IP40	IK07

Positive Contact Indication

ComPacT NSX DC circuit breakers are suitable for isolation as defined by IEC 60947-1 and 60947-2:

- The isolation position corresponds to the O (OFF) position
- The operating handle and the indicators cannot indicate the OFF position unless the contacts are effectively open
- Padlocks may not be installed unless the contacts are open.

The isolation function is certified by tests to achieve:

- The mechanical reliability of the position-indication system
- The absence of leakage currents
- Overvoltage withstand capacity between upstream and downstream connections.

For ComPacT NSX DC, installation of a rotary handle or a motor mechanism does not alter the reliability of the position-indication system.



Circuit Breaker Characteristics

ComPacT NSX100 DC to NSX250 DC



ComPacT NSX DC circuit breaker

Basic frame	Number of poles	
Electrical Characteristics As Per IEC 60947-1/ 60947-2 and EN 60947-1/60947-2		
Rated current at 40 °C	In	(A)
Rated insulation voltage	Ui	(V)
Rated impulse withstand voltage	Uimp	(kV peak)
Rated operational voltage	Ue	(V DC)

Type of circuit breaker

Ultimate breaking capacity (L/R = 5 ms and L/R = 15 ms)	Icu	(kA rms)	V DC	24-125 V (1P) ^[1]
				250 V (1P) ^[1]
				500 V (2P) ^[1]
				750 V (3P) ^[1]
Service breaking capacity	Ics	% Icu		
Rated making capacity	Icm	% Icu		
Utilization category				
Breaking time		(ms)		
Suitability for isolation				

Pollution degree (as per IEC 60664-1)

Protection against overcurrents (see trip unit table page A-19)

Trip units	Built-in
Protection	Interchangeable
	Overloads
	Short-circuits

Durability

(O/C cycles)	Mechanical		
	Electrical		250 V In
			250 V In/2
			500 V In
			500 V In/2
			750 V In
			750 V In/2

Indication and Control Auxiliaries

Auxiliary contacts	
Voltage release	MX shunt release
	MN undervoltage release

Installation and Connections

Fixed	Front connection	
	Rear connection	
Plug-in (base)	Front connection	
	Rear connection	
Withdrawable (chassis)	Front connection	
	Rear connection	
Control	Manual	with toggle
		with direct or extended rotary handle
	Electrical	with remote control

Dimensions and Weight

Dimensions H x W x D (mm) connected in series	Fixed	(mm)	1P
			2P
			3P
			4P
Weight (kg) connected in series	Fixed	(kg)	1P
			2P
			3P
			4P

^[1] Number of poles in series taking part in current interruption.

Example. The NSX100N DC circuit breaker exists in the following versions:

- 1 pole with an Icu of 50 kA, for systems ≤ 250 V
- 2 poles with an Icu of 85 kA, for systems ≤ 500 V; 1 pole can be used in a 250 V system.

Circuit Breaker Characteristics

ComPacT NSX100 DC to NSX250 DC

NSX100 DC								NSX160 DC								NSX250 DC							
1		2		3/4		1		2		3/4		3/4											
100								160								250							
750								750								750							
8								8								8							
250		500		750		250		500		750		250		500		750							
F	N	M	F	M	S	F	S	F	N	M	F	M	S	F	S	F	S						
36	50	85	36	85	100	36	100	36	50	85	36	85	100	36	100	36	100						
36	50	85	36	85	100	36	100	36	50	85	36	85	100	36	100	36	100						
-	-	-	36	85	100	36	100	-	-	-	36	85	100	36	100	36	100						
-	-	-	-	-	-	36	100	-	-	-	-	-	-	36	100	36	100						
100 %																							
100 %																							
A																							
< 10 ms																							
3																							
							-							-	-								
-	-	-	-	-	-			-	-	-	-	-	-										
10000																							
5000																							
10000																							
5000																							
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5000																							
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-						-		-															
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-						-		-															
-						-		-															
-						-		-															
-						-		-															
-						-		-															
161 x 35 x 86		-		-		161 x 35 x 86		-		-		-		-		-							
-		161 x 70 x 86		-		-		161 x 70 x 86		-		-		-		-							
-		-		161 x 105 x 86		-		-		161 x 105 x 86		-		-		-							
-		-		161 x 140 x 86		-		-		161 x 140 x 86		-		-		-							
0.7		-		-		0.7		-		-		-		-		-							
-		1.2		-		-		1.2		-		-		-		-							
-		-		1.6 to 1.9		-		-		1.6 to 1.9		-		-		-							
-		-		2.1 to 2.3		-		-		2.1 to 2.3		-		-		-							

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Circuit Breaker Characteristics

ComPacT NSX400 DC to NSX1200 DC



ComPacT NSX DC circuit breaker

Basic frame		Number of poles		
Electrical Characteristics As Per IEC 60947-1/ 60947-2 and EN 60947-1/60947-2				
Rated current at 40 °C	In	(A)		
Rated insulation voltage	Ui	(V)		
Rated impulse withstand voltage	Uimp	(kV peak)		
Rated operational voltage	Ue	(V DC)		
Type of circuit breaker				
Ultimate breaking capacity (L/R = 5 ms and L/R = 15 ms)	Icu	(kA rms)	V DC	24-125 V (1P) ^[1]
				250 V (1P) ^[1]
				500 V (2P) ^[1]
				750 V (3P) ^[1]
	Icu	(kA rms)	V DC	24-300 V (1P) ^[1]
			300-600 V (2P) ^[1]	
Service breaking capacity	Ics	% Icu		
Rated making capacity	Icm	% Icu		
Utilization category				
Breaking time		(ms)		
Suitability for isolation				
Pollution degree (as per IEC 60664-1)				
Protection against overcurrents (see trip unit table page A-19)				
Trip units			Interchangeable	
Protection			Overloads	
			Short-circuits	
Durability				
(O/C cycles)	Mechanical			
	Electrical		250 V In	
			250 V In/2	
			500 V In	
			500 V In/2	
			750 V In	
			750 V In/2	
			600 V In	
			600 V In/2	
	Indication and Control Auxiliaries			
Auxiliary contacts				
Voltage release	MX shunt release			
	MN undervoltage release			
Installation and Connections				
Fixed			Front connection	
			Rear connection	
Plug-in (base)			Front connection	
			Rear connection	
Withdrawable (chassis)			Front connection	
			Rear connection	
Control	Manual	with toggle		
		with direct or extended rotary handle		
	Electrical	with remote control		
Dimensions and Weight				
Dimensions H x W x D (mm) connected in series	Fixed	(mm)	1P	
			2P	
			3P	
			4P	
Weight (kg) connected in series	Fixed	(kg)	1P	
			2P	
			3P	
			4P	

^[1] Number of poles in series taking part in current interruption.

Example. The NSX100N DC circuit breaker exists in the following versions:

- 1 pole with an Icu of 50 kA, for systems ≤ 250 V
- 2 poles with an Icu of 85 kA, for systems ≤ 500 V; 1 pole can be used in a 250 V system.

Circuit Breaker Characteristics

ComPacT NSX400 DC to NSX1200 DC

NSX400 DC						NSX630 DC				NSX1200 DC							
3/4						3/4		3/4		2							
250		320		400		500		600		630		800		1000		1200	
750		750		750		750		750		750		750		750		750	
8		8		8		8		8		8		8		8		8	
750		750		750		750		500		600		600		600		600	
F		S		F		S		F		S		N					
36		100		36		100		36		100		-		-		-	
36		100		36		100		36		100		-		-		-	
36		100		36		100		36		100		-		-		-	
36		100		36		100		36		100		-		-		-	
-		-		-		-		-		-		50		50		50	
-		-		-		-		-		-		50		50		50	
100 %						100 %						25 %					
100 %						100 %						100 %					
A																	
10ms																	
																	
3																	
5000						5000		5000									
1000						1000		1000									
2000						2000		2000									
1000						1000		1000									
2000						2000		2000									
1000						1000		1000									
2000						2000		2000									
-						-		-				1000					
-						-		-				2000					
																	
																	
																	
												-		-		-	
												-		-		-	
												-		-		-	
												-		-		-	
												-		-		-	
																	
																	
																	
-																	
-												350 x 185 x 110					
255 x 140 x 110																	
255 x 185 x 110																	
-																	
-												9.4					
8												-					
8.4												-					

Trip Unit Characteristics

Types of Trip Units - Trip Units for ComPacT NSX DC

C26NT1M250 eps



A

C16S2TM100 eps



C29F4TM250D1 eps



10_C06S3TM600D eps



C1BN2TM12HD eps



Trip units for ComPacT NSX100 DC - NSX160 DC

Single-pole and two-pole (not interchangeable)

Type of trip unit		TM-D										
Rating	In (A) at 40 °C	16	20	25	30	40	50	63	80	100	125	160
ComPacT circuit breaker	NSX100 AC/DC	●	●	●	●	●	●	●	●	●	-	-
	NSX160 AC/DC	-	-	-	-	-	-	-	-	-	●	●

Overload protection (thermal)

Tripping threshold		Ir (A) at 40 °C										
		Fixed										
		16	20	25	30	40	50	63	80	100	125	160

Protection against short-circuits (magnetic)

Pick-up		Ii (A)										
		Fixed										
		260	260	400	400	700	700	700	800	1000	1200	1250
ComPacT circuit breaker		NSX100/160 AC/DC	True DC value									

Trip units for ComPacT NSX100 DC - NSX160 DC - NSX250 DC

Three-pole 3P-3d and four-pole 4P-4d (interchangeable trip units)

Type of trip unit		TM-D							TM-DC				
Rating (A)	In (A) at 40 °C	16	25	32	40	50	63	80	100	125	160	200	250
ComPacT circuit breaker	NSX100 DC	●	●	●	●	●	●	●	●	-	-	-	-
	NSX160 DC	-	-	-	-	-	-	-	-	●	●	-	-
	NSX250 DC	-	-	-	-	-	-	-	-	-	-	●	●

Overload protection (thermal)

Tripping threshold (A)		Ir (at 40 °C)										
		Adjustable										
		0.7 to 1 x In										

Protection against short-circuits (magnetic)

Pick-up (A)		Ii										Adjustable
		Fixed										
		260	400	550	700	700	700	800	800	1250	1250	5 to 10 x In
ComPacT circuit breaker		NSX100/160/NSX250 DC	True DC value									

Trip units for ComPacT NSX100 DC - NSX160 DC - NSX250 DC

Three-pole 3P-3d and four-pole 4P-4d (interchangeable trip units)

Type of trip unit		TM-G									
Rating (A)	In (A) at 40 °C	16	25	40	63	80	100	125	160	200	250
ComPacT circuit breaker	NSX100 DC										
	NSX160 DC	-	-	-	-	-	-				
	NSX250 DC	-	-	-	-	-	-	-	-		

Overload protection (thermal)

Tripping threshold (A)		Ir (at 40 °C)										
		Adjustable										
		0.7 to 1 x In										

Protection against short-circuits (magnetic)

Pick-up (A)	Ii	Fixed									
ComPacT True DC value circuit breaker	NSX100 DC	80	100	100	150	250	400	530	530	530	625
	NSX160 DC	-	100	100	150	250	400	530	530	-	-
	NSX250 DC	-	-	-	-	-	-	-	-	530	625

Trip units for ComPacT NSX400DC - NSX1200DC

Three-pole, four-pole (not interchangeable)/Two-pole (not interchangeable)

Type of trip unit		TM-DC								
Rating (A)	In(A) at 40 °C	250 ^[1]	320	400	500	600	630	800	1000	1200
ComPacT	NSX400DC				-	-	-	-	-	-
circuit	NSX630DC	-	-	-			-	-	-	-
breaker	NSX1200DC	-	-	-	-	-				

Overload protection (thermal)

Tripping threshold (A)		Ir (at 40 °C)									
		Adjustable 0.7 to 1 x in									

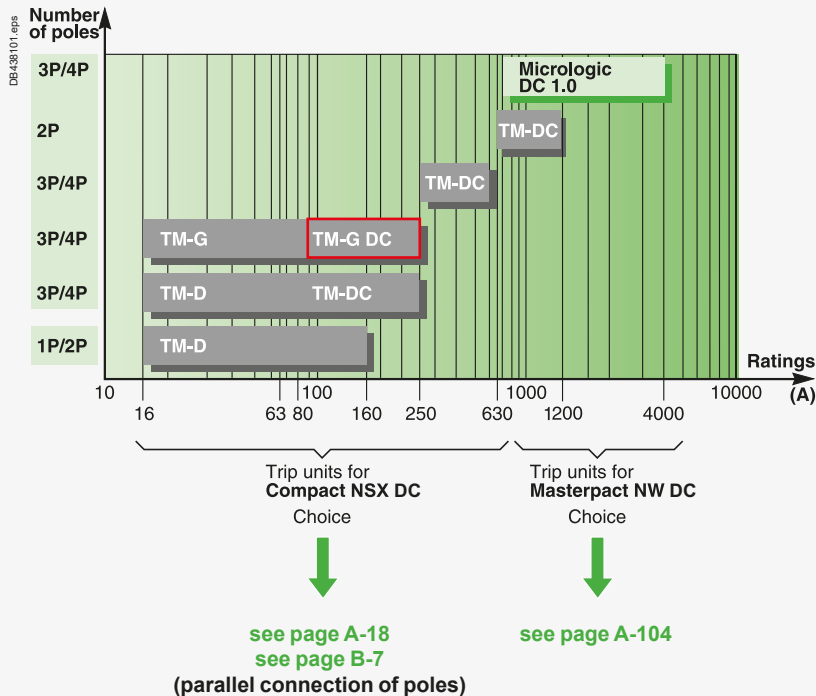
Protection against short-circuits (magnetic)

Pick-up (A)		Ii									
		Adjustable 2.5 to 5 x in									

[1] TM-DC 250 Adjustable range is 2.5 to 4 x In.

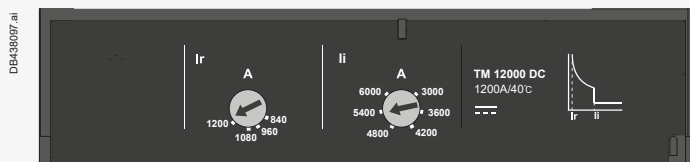
Types of Trip Units - Trip Units for ComPacT NSX DC

Types of Trip Units



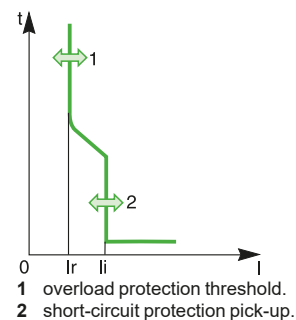
Trip Units for ComPacT NSX DC

TM Thermal-Magnetic Trip Unit up to 1200 A



Up to 1200 A for ComPacT NSX DC, protection is provided by thermal-magnetic trip units.

- TM-D up to 160 A: Fixed thermal threshold and magnetic pick-up.
- TM-D up to 63 A: Adjustable thermal threshold and fixed magnetic pick-up.
- TM-DC from 80 to 250 A: Fixed or adjustable (for 200 and 250 A) magnetic pick-up and adjustable thermal threshold.
- TM-DC from 250 A to 1200 A adjustable magnetic pick-up and adjustable thermal threshold.
- TM-G, up to 250 A: Adjustable thermal threshold and fixed low magnetic pick-up to protect long cables.
- TM-G DC, up to 250A: Adjustable thermal threshold and fixed low magnetic pick-up to protect long cables.



Switch-Disconnectors

Characteristics and Performance of ComPacT NSX Switch-Disconnectors from 100 to 250 NA

Installation standards require upstream protection. However ComPacT NSX100 to 630 NA switch-disconnectors are self-protected by their high-set magnetic release.

CZS42001S.epa

A



ComPacT NSX100 to 250 NA

Common characteristics

Rated voltages			
Insulation voltage (V)	Ui		750
Impulse withstand voltage (kV)	Uimp		8
Operational voltage (V)	Ue		750
Suitability for isolation		IEC/EN 60947-3	yes
Utilization category		DC 22 A/DC 23 A	
Pollution degree		IEC 60664-1	3

Switch-disconnectors

Electrical Characteristics As Per IEC 60947-3 and EN 60947-3

Conventional thermal current (A)	Ith 60 °C			
Number of poles				
Operational current (A) depending on the utilization category	Ie	DC		
		250 V (1 pole)		
		500 V (2 poles in series)		
		750 V (3 poles in series)		
Short-circuit making capacity (kA peak)	Icm	Min. (switch-disconnector alone)		
		Max. (protection by upstream NSX DC circuit breaker)		
Rated short-time withstand current (A rms)	Icw	for	1 s	
			3 s	
			20 s	
Durability (C-O cycles)	Mechanical			
	Electrical	DC	250 V (1 pole) and In/2 500 V (2 poles in series)In	

Positive contact indication

Pollution degree

Protection

Add-on earth-leakage protection By VigiPacT relay

Additional Indication and Control Auxiliaries

Indication contacts

Voltages releases

MX shunt release

MN undervoltage release

Current-transformer module

Insulation monitoring module

Remote Communication by Bus

Device-status indication

Device remote operation

Operation counter

Installation/Connections

Dimensions (mm)	Fixed, front connections	2/3P
W x H x D		4P
Weight (kg)	Fixed, front connections	3P
		4P

TransferPacT Source-Changeover Systems

(See Chapter on TransferPacT Source-Changeover Systems)

Manual source-changeover systems

Remote-operated or automatic source-changeover systems

[1] 2P in 3P case.

Note: For more information, please see catalog ComPacT NSX LVPED221001EN.

Switch-Disconnectors

Characteristics and Performance of ComPacT NSX Switch-Disconnectors from 100 to 250 NA

A

Common characteristics

Control

Manual	With toggle	
	With direct or extended rotary handle	
Electrical	With remote control	

Versions

Fixed		
Withdrawable	Plug-in base	
	Chassis	

NSX100NA	NSX160NA	NSX250NA
100	160	250
2 ^[1] , 3, 4	2 ^[1] , 3, 4	2 ^[1] , 3, 4
DC22A/DC23A	DC22A/DC23A	DC22A/DC23A
100	160	250
100	160	250
100	160	250
2.6	3.6	4.9
100	100	100
1800	2500	3500
1800	2500	3500
690	960	1350
50000	40000	20000
10000	10000	10000
5000	5000	5000
		
3	3	3
		
		
		
		
		
		
		
		
		
105 x 161 x 86		
140 x 161 x 86		
1.5 to 1.8		
2.0 to 2.2		
		
		

Switch-Disconnectors Characteristics

ComPacT NSX400/630 NA DC

CS3630DS-eps



ComPacT NSX630 NA DC

CS34630DS-eps



ComPacT NSX630 NA DC

ComPacT NSX DC switch-disconnector

Number of poles

Electrical Characteristics As Per IEC 60947-3

Rated current (A) (free air + no venting)	In	40 °C
Altitude	m	2000
Rated insulation voltage (V)	Ui	
Rated impulse withstand voltage (kV)	Uimp	
Rated operational voltage (V)	Ue	DC

Type of circuit breaker

Rated short circuit withstand current (kA rms)	Icw/Icm	t = 1 s
Rated conditionnal short-circuit current	Iq	kA
	With back-up fuse	A gG
Rated conditionnal short-circuit current	Iq with NSX DC circuit breaker	kA with MCCB

Utilization category

Suitability for isolation

Pollution degree

Durability

Endurance (C-O cycles)	Mechanical	
	Electrical (In)	750 V

Installation and connections

Control	Manual	Toggle
		Direct or extended rotary handle
	Motor mechanism	
Connections	Fixed	Front connection
		Long rear connection
	Plug-in (on base)	Front connection
		Rear connection
	Withdrawable (on chassis)	Front connection
		Rear connection

Additional measurement, indication and control auxiliaries

Indication contacts	OF	Auxiliary contact
	SD, SDE	Trip, fault-trip
Voltage releases	MX, MN	Shunt trip/undervoltage release

Installation

Accessories	Crimp lugs/bare cable connector
	Terminal extensions and spreaders
	Escutcheons
	Terminal shields and interphase barriers
	Din rail adapter

Dimensions and weight

Dimensions (mm) H x W x D (w/o series connection)	3P
	4P
Weight (kg) (w/o series connection)	3P
	4P

Switch-Disconnectors Characteristics

ComPacT NSX400/630 NA DC

NSX400 NA DC	NSX630 NA DC
3/4	3/4
400	630
	
750	750
8	8
750	750
7.5	7.5
10	10
400	630
100	100
DC22-A	DC22-A
	
3	3
5000	5000
1000	1000
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
-	-
255 x 140 x 110	255 x 140 x 110
255 x 185 x 110	255 x 185 x 110
6	6
7.8	7.8

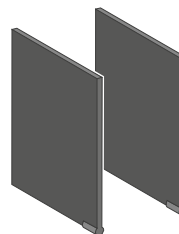
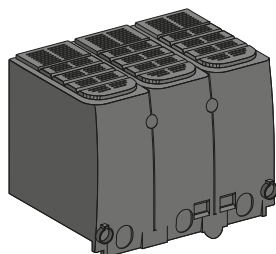
A

Accessories and Auxiliaries

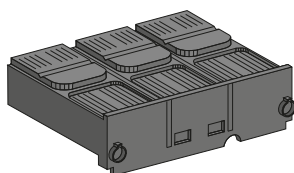
Overview of ComPacT NSX100 to 630 DC [*] Fixed Version

Insulation accessories

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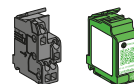


Interphase barriers

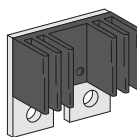


Sealable terminal shields

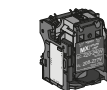
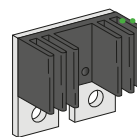
Electrical auxiliaries ► A-39



Indication contact

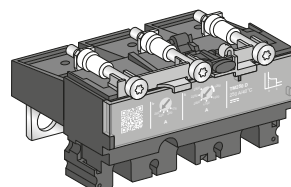


Heat sink



Voltage release

Protection and measurements



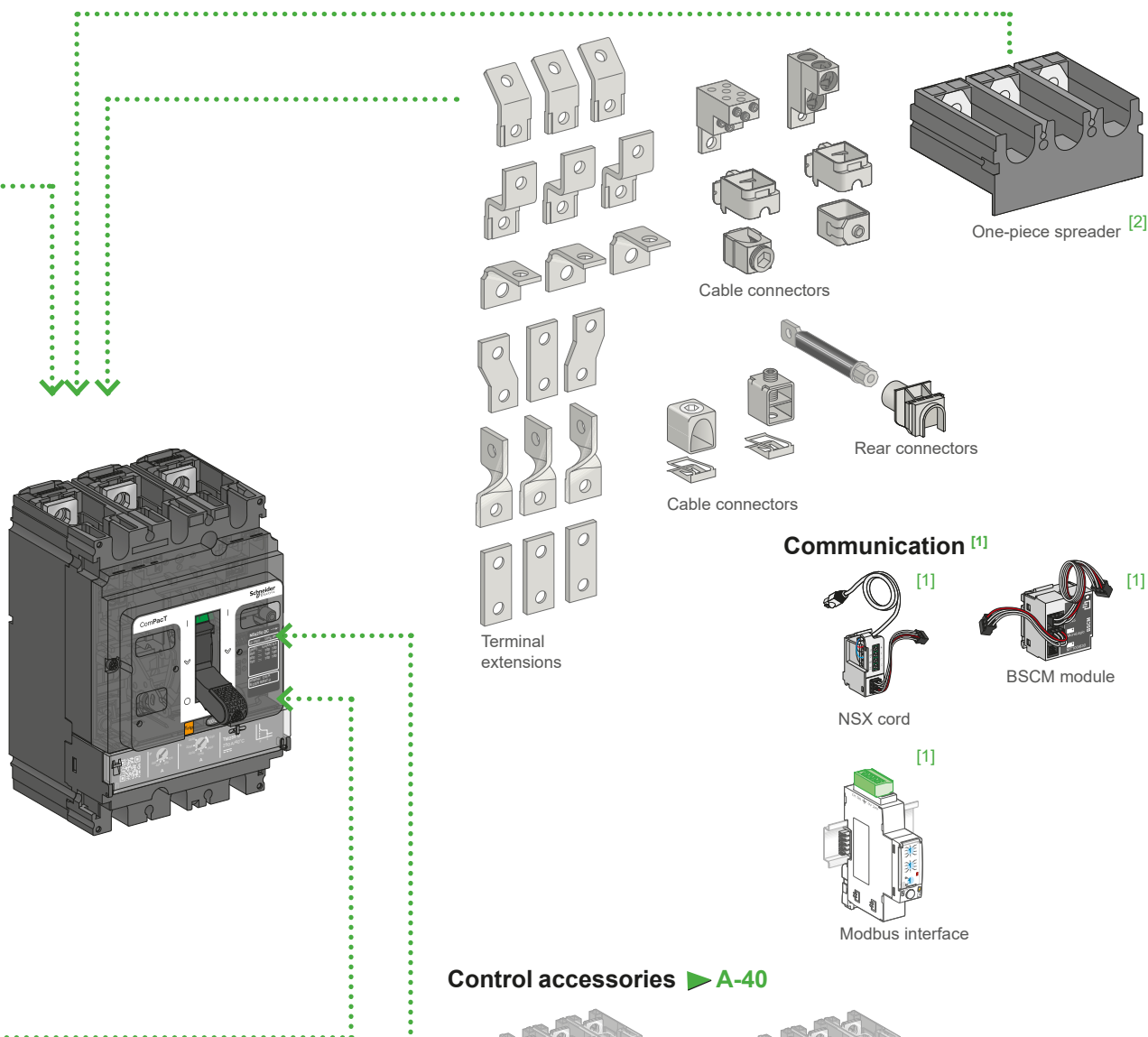
TM-D, TM-G trip unit

[*] Applicable for circuit breaker up to 600 A see page A-16.

Accessories and Auxiliaries

Overview of ComPacT NSX100 to 630 DC [*] Fixed Version

Connection ► A-32



[1] See communication chapter.

[2] Only for ComPacT NSX100-250.

Accessories and Auxiliaries

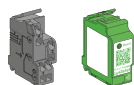
Overview of ComPacT NSX1200 DC Fixed Version

Insulation accessories

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A

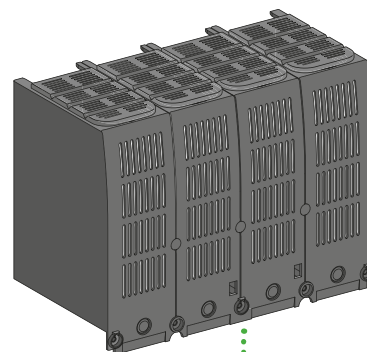
Electrical auxiliaries ► A-39



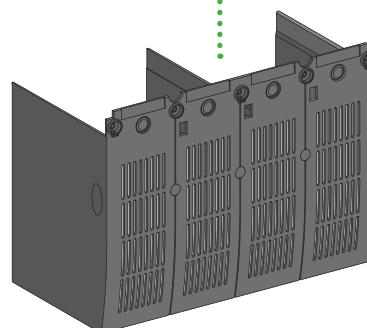
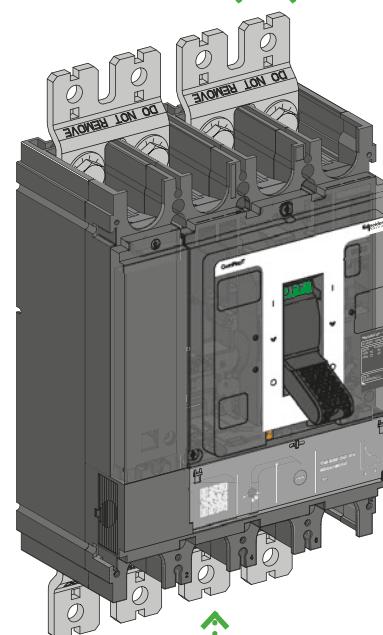
Indication contact



Voltage release



Sealable terminal shields

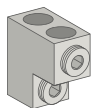


Sealable terminal shields

Accessories and Auxiliaries

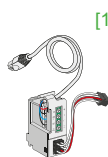
Overview of ComPacT NSX1200 DC Fixed Version

Connection ► A-32

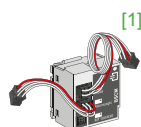


Cable connectors

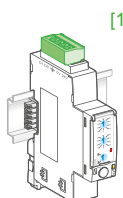
Communication



NSX cord

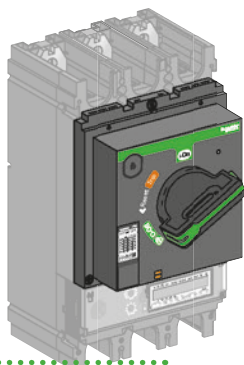


BSCM module

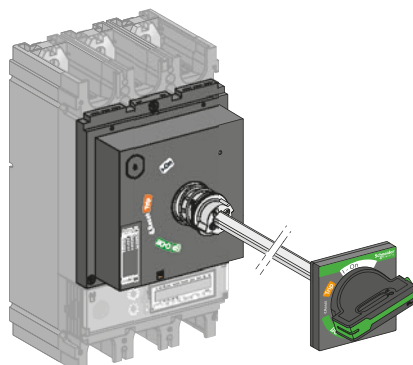


Modbus interface

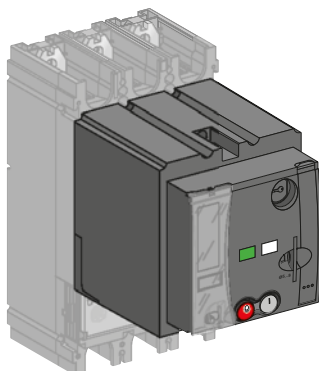
Control accessories ► A-40



Direct rotary handle



Extended rotary handle



Motor mechanism

[1] See communication chapter.

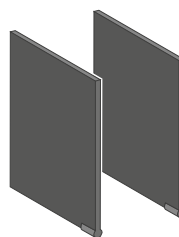
A

Accessories and Auxiliaries

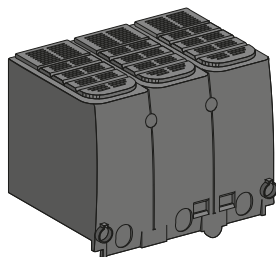
Overview of ComPacT NSX100 to 630 DC ^[1] Plug-in and Withdrawable Versions

Insulation accessories

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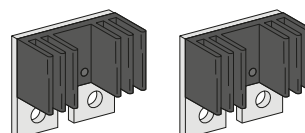


Interphase barriers

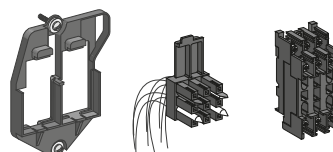


Sealable long terminal shields for plug-in base

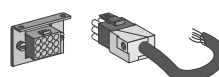
Electrical accessories ► A-34



Heat sink

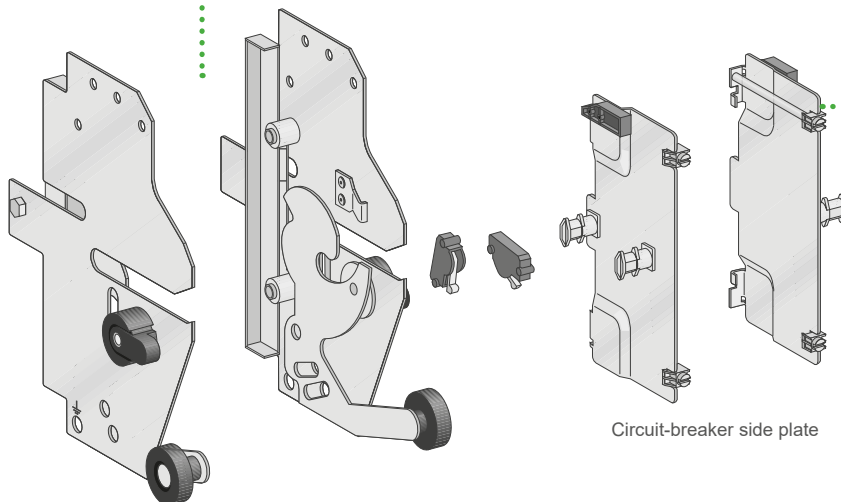


Automatic withdrawable auxiliary connector



Manual auxiliary connector

Mechanical accessories ► A-31



Chassis side plate

Circuit-breaker side plate

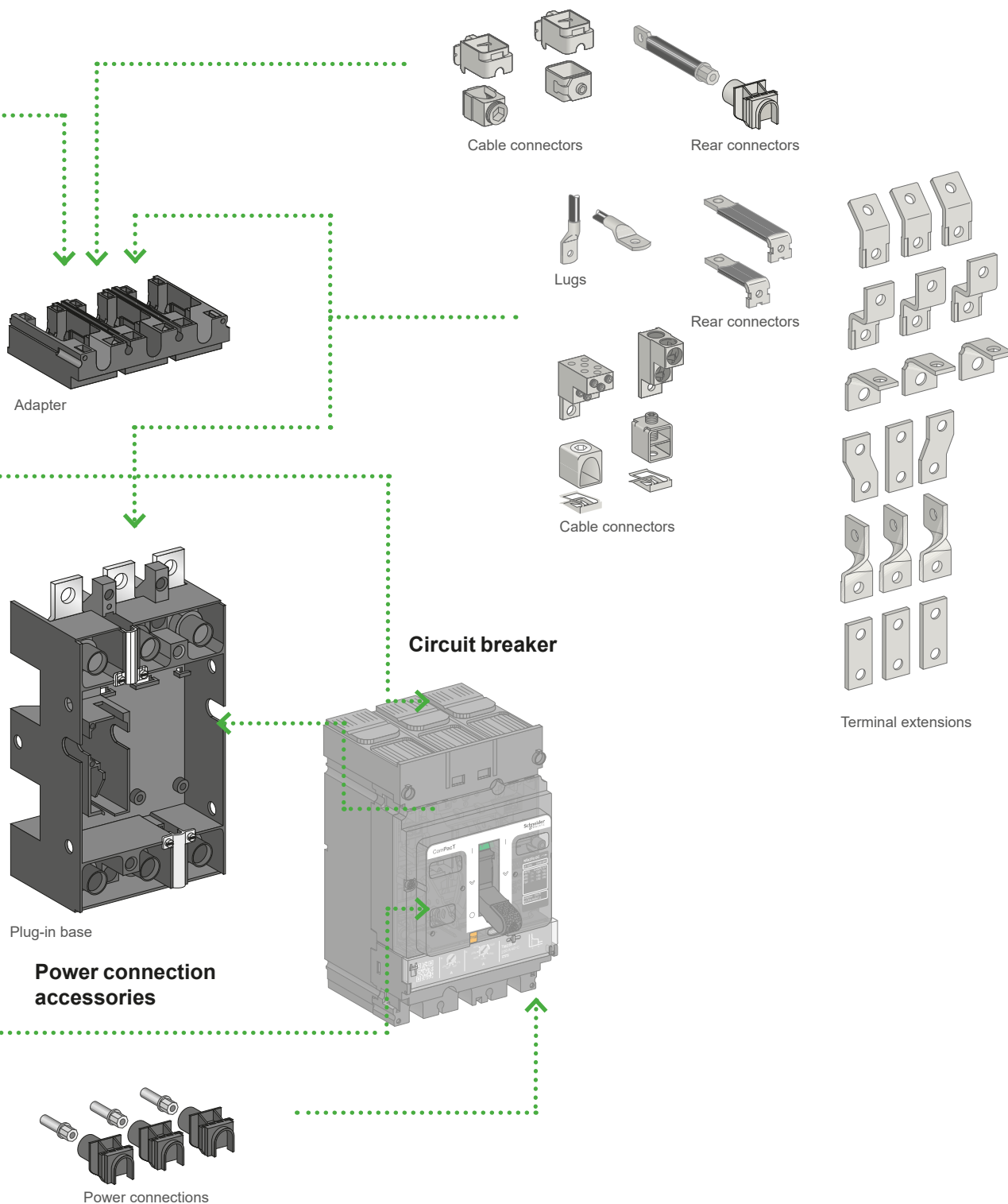
^[1] Applicable for circuit breaker up to 600 A see page A-16.

Accessories and Auxiliaries

Overview of ComPacT NSX100 to 630 DC ^[1] Plug-in and Withdrawable Versions

Connection ► A-32

A



Electrical and Mechanical Accessories

ComPacT NSX100 to 1200 DC

A

ComPacT NSX DC circuit breakers may be installed horizontally, vertically or flat on their back, without derating performance levels.

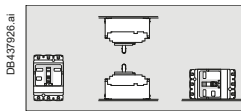
There are three installation versions:

- Fixed
- Plug-in (on a base)
- Withdrawable (on a chassis).

For the last two, components must be added (base, chassis) to the fixed version. Many connection components are shared by the three versions.



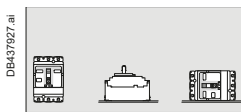
Fixed ComPacT NSX250 DC



Installation positions



Plug-in
ComPacT NSX250 DC

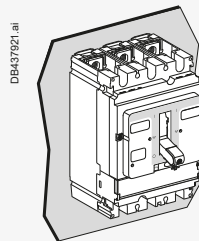


Installation positions

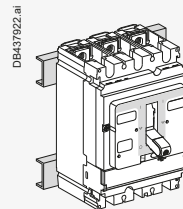
Fixed Circuit Breakers NSX100 to NSX1200

Fixed circuit breakers are designed for standard connection using bars or cables with lugs. Bare-cable connectors are available for connection to bare copper or aluminium cables.

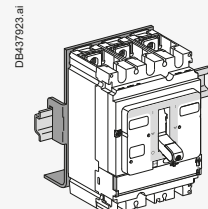
For connection of large cables, a number of solutions with spreaders may be used for both cables with lugs or bare cables.



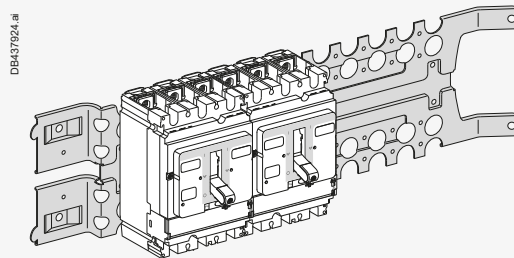
Mounting on a backplate



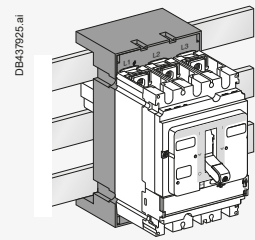
Mounting on rails



Mounting on DIN rail
(with adapter)



Mounting on a Prisma mounting plate



Mounting on busbars with an
adapter

Plug-in Base Circuit Breakers NSX100 to NSX630 ^[1]

The plug-in version makes it possible to:

- Extract and/or rapidly replace the circuit breaker without having to touch the connections on the base.
- Allow for the addition of future circuits by installing bases that will be equipped with a circuit breaker at a later date.
- Isolate the power circuits when the device is mounted on or through a panel. It acts as a barrier for the connections of the plug-in base. Insulation is made complete by the mandatory short terminal shields on the device. The degrees of protection are:
 - Circuit breaker plugged in = IP4
 - Circuit breaker removed = IP2
 - Circuit breaker removed, base equipped with shutters = IP4.

Parts of a plug-in configuration

A plug-in configuration is made by adding a "plug-in kit" to a fixed device.

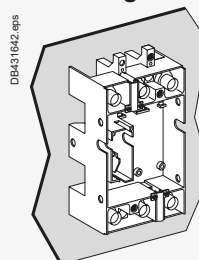
To avoid connecting or disconnecting the power circuits under load conditions, a safety trip causes automatic tripping if the device is ON, before engaging or withdrawing it. The safety trip, supplied with the kit, must be installed on the device. If the device is disconnected, the safety trip does not operate. The device can be operated outside the switchboard.

Accessories

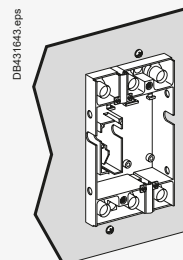
Optional insulation accessories are available.

- Terminal shields to protect against direct contact.
- Interphase barriers to reinforce insulation between phases and to protect against direct contact.

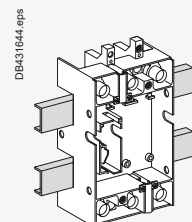
Mounting



Mounting on a backplate



Mounting through a front panel



Mounting on rails

^[1] Applicable for circuit breaker up to 600 A see page A-14 to A-17.

Electrical and Mechanical Accessories

ComPacT NSX100 to 1200 DC

Withdrawable Circuit Breakers NSX100 to NSX630 ^[1]

In addition to the advantages provided by the base, installation on a chassis facilitates handling. It offers three positions, with transfer from one to the other after mechanical unlocking:

- Connected: the power circuits are connected
- Disconnected: the power circuits are disconnected, the device can be operated to check auxiliary operation
- Removed: the device is free and can be removed from the chassis.

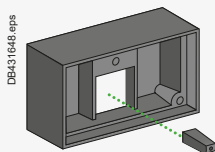
Parts of a withdrawable configuration

A withdrawable configuration requires two side plates installed on the base and two sides plates mounted on the circuit breaker. Similar to the plug-in version, a safety trip causes automatic tripping if the device is ON, before engaging or withdrawing it, and enables device operation in the disconnected position.

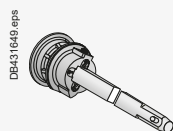
Accessories

Accessories are the same as for the base, with in addition:

- Auxiliary contacts for installation on the fixed part, indicating the "connected" and "disconnected" positions
- Locking by 1 to 3 padlocks (shackle diameter 5 to 8 mm), to:
 - Prevent insertion for connection
 - Lock the circuit breaker in connected or disconnected position
- Toggle collar for circuit breakers with a toggle mounted through a front panel, intended to maintain the degree of protection whatever the position of the circuit breaker (supplied with a toggle extension)
- Telescopic shaft for extended rotary handles. The door can then be closed with the device in the connected and disconnected positions.

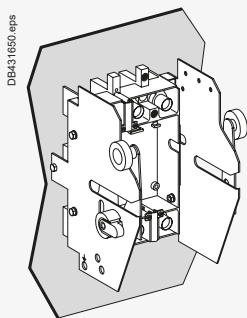


Protection collar for toggle and toggle extension to provide IP4 in the connected and disconnected positions

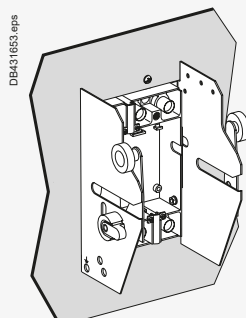


Telescopic shaft

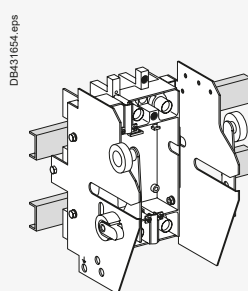
Mounting



Mounting on a backplate



Mounting through a front panel



Mounting on rails

^[1] Applicable for circuit breaker up to 600 A see page A-14 to A-17.

- Disconnected position - the power circuits are disconnected, but the circuit breaker is still on the chassis and may still be operated (ON, OFF, push-to-trip).
- The circuit breaker may be locked using 1 to 3 padlocks (shackle diameter 5 to 8 mm), to prevent connection.
- The auxiliaries can be tested (with manual auxiliary connector).

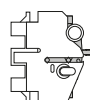
A



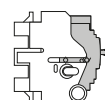
Withdrawable ComPacT NSX250 DC



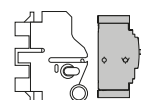
Installation positions



Connected



Disconnected

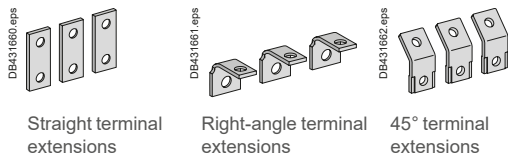
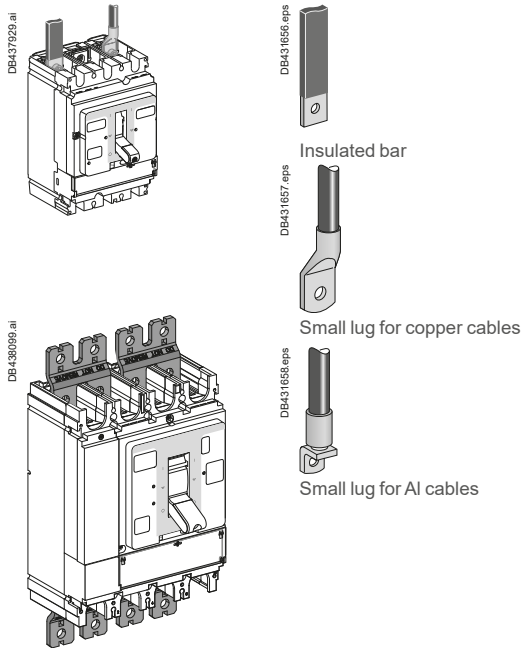


Removed

Electrical and Mechanical Accessories

Connection of Fixed Devices

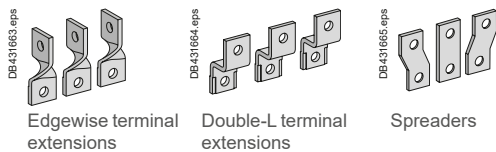
Fixed circuit breakers are designed for standard front connection using bars or cables with lugs. Cable connectors are available for bare cables. Rear connection is also possible.



Straight terminal extensions

Right-angle terminal extensions

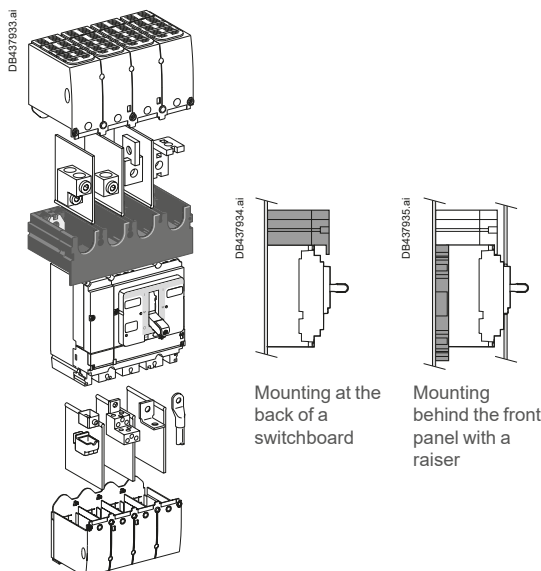
45° terminal extensions



Edgewise terminal extensions

Double-L terminal extensions

Spreaders



Mounting at the back of a switchboard

Mounting behind the front panel with a raiser

Front Connection

Bars or Cables with Lugs

Standard terminals

ComPacT NSX100 to 630 DC come with terminals comprising snap-in nuts with screws:

- ComPacT NSX100/160/250 DC: M8 nuts and screws
- ComPacT NSX400/630 DC: M10 nuts and screws.

These terminals may be used for:

- Direct connection of insulated bars or cables with lugs
- Terminal extensions offering a wide range of connection possibilities.

Interphase barriers or terminal shields are recommended. They are mandatory for certain connection accessories (in which case the interphase barriers are provided).

Bars

When the switchboard configuration has not been tested, insulated bars are mandatory.

Maximum size of bars

ComPacT NSX DC circuit breaker		100 to 250	400 to 630	1200
Without spreaders	pitch (mm)	35	45	45
	maximum bar size (mm)	20 x 2	32 x 6	2 x (32 x 6)
With spreaders	pitch (mm)	45	52.5	-
	maximum bar size (mm)	32 x 2	40 x 6	-

Crimp lugs

There are two models, for aluminium and copper cables.

It is necessary to use narrow lugs, compatible with device connections. They must be used with interphase barriers or long terminal shields. The lugs are supplied with interphase barriers and may be used for the types of cables listed below.

Cable sizes for connection using lugs

ComPacT NSX DC circuit breaker		100 to 250	400 to 630	630 to 1200
Copper cables	size (mm ²)	120, 150, 185	240, 300	185, 2 x 185
	crimping	hexagonal barrels or punching		
Aluminium cables	size (mm ²)	120, 150, 185	240, 300	185, 2 x 185
	crimping	hexagonal barrels		

Terminal extensions

Extensions with anti-rotation ribs can be attached to the standard terminals to provide numerous connection possibilities in little space:

- Straight terminal extensions
- Right-angle terminal extensions
- Edgewise terminal extensions
- Double-L extensions
- 45° extensions.

Spreaders

Spreaders may be used to increase the pitch:

- NSX100 to 250 DC: the 35 mm pitch can be increased to 45 mm
- NSX400/630 DC: the 45 mm pitch can be increased to 52 or 70 mm.

Bars, cable lugs or cable connectors can be attached to the ends.

One-piece spreader for NSX100 to 250 DC

Connection of large cables may require an increase in the distance between the device terminals.

The one-piece spreader is the means to:

- Increase the 35 mm pitch of the NSX100 to 250 DC circuit breaker terminals to the 45 mm pitch of a NSX400/630 DC device
- Use all the connection and insulation accessories available for the next largest frame size (lugs, connectors, spreaders, right-angle and edgewise terminal extensions, terminal shields and interphase barriers).

It may also be used for ComPacT INS switch-disconnectors.

Equipped with a single-piece spreader, ComPacT NSX DC devices can be mounted:

- At the back of a switchboard
- Behind the front panel with a raiser.

The one-piece spreader is also the means to:

- Align devices with different frame sizes in the switchboard
- Use the same mounting plate, whatever the device.

Pitch (mm) depending on the type of spreader

ComPacT NSX DC circuit breaker		100 to 250	400 to 630
Without spreaders		35	45
	With spreaders	45	52.5 or 70
With one-piece spreader		45	-

Electrical and Mechanical Accessories

Connection of Fixed Devices

Bare Cables

For bare cables (without lugs), the prefabricated bare-cable connectors may be used for both copper and aluminium cables.

1-cable connector for ComPacT NSX100 to 250 DC

The connectors snap directly on to the device terminals and are fixed by clips to right-angle and straight terminal extensions as well as spreaders.

1-cable connector for ComPacT NSX400 to 630 DC

The connectors are screwed directly to the device terminals.

2-cable connector for ComPacT NSX100 to 250 and 400/630/1200 DC

The connectors are screwed to device terminals or right-angle terminal extensions.

Distribution connectors for ComPacT NSX100 to 250 DC

These connectors are screwed directly to device terminals. Interphase barriers are supplied with distribution connectors, but may be replaced by long terminal shields. Each connector can receive six cables with cross-sectional areas ranging from 1.5 to 35 mm² each.

Maximum size of cables depending on the type of connector

ComPacT NSX DC circuit breaker		100/160	250	400	630	1200
Steel connectors	1.5 to 95 mm ²	●				
Aluminium connectors	25 to 95 mm ²	●	●			
	120 to 185 mm ²	●	●			
	2 cables 50 to 120 mm ²	●	●			
	2 cables 35 to 240 mm ²			●	●	●
	35 to 300 mm ²			●	●	
Distribution connectors	6 cables 35 mm ²	●	●			

Rear Connection (up to Rated Current 600 A)

Device mounting on a backplate with suitable holes enables rear connection.

Bars or Cables with Lugs

Rear connections for bars or cables with lugs are available in two lengths. Bars may be positioned flat, on edge or at 45° angles depending on how the rear connections are positioned.

The rear connections are simply fitted to the device connection terminals. All combinations of rear connection lengths and positions are possible on a given device.

Bare Cables

For the connection of bare cables, the 1-cable connectors for ComPacT NSX100 to 250 DC may be secured to the rear connections using clips.

Accessories for Series and Parallel Connection (up to Rated Current 600 A)

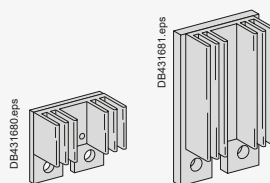
A limited number of accessories can be used to optimize series and parallel connection of poles.

Accessories for Series Connection

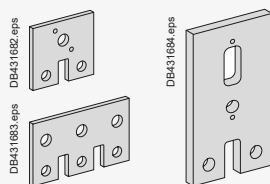
These include series connection plates, equipped with heat sinks.

Accessories for Parallel Connection

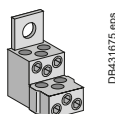
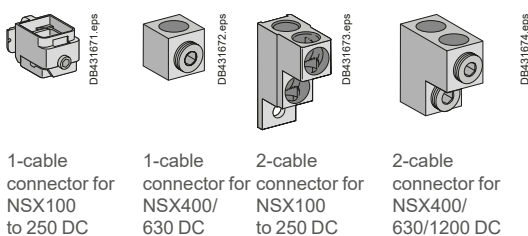
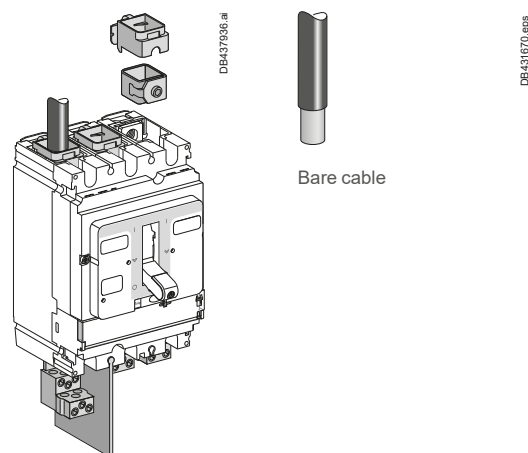
Parallel pole connection accessories are identical to those for series connections. They are equipped with heat sinks. Customer connections are made directly to the connection plates after removing the heat sinks.



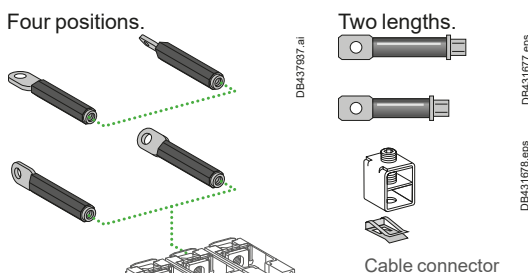
Series connection plates equipped with heat sinks



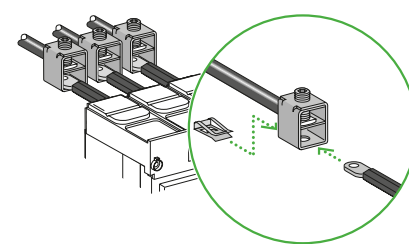
Parallel connection plates



Distribution connector for NSX100 to 250 DC



Rear connection

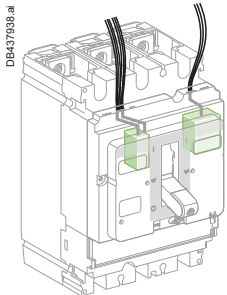


Connection of bare cables to NSX100 to 250 DC by clips

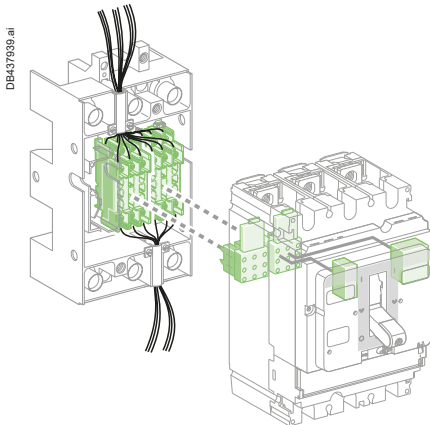
Electrical and Mechanical Accessories

Connection of Electrical Auxiliaries

A



Fixed ComPacT NSX DC



Plug-in/withdrawable ComPacT NSX DC

Fixed ComPacT NSX100-250 DC

Auxiliary circuits exit the device through a knock-out in the front cover.

Withdrawable or Plug-in ComPacT NSX DC

Automatic Auxiliary Connectors

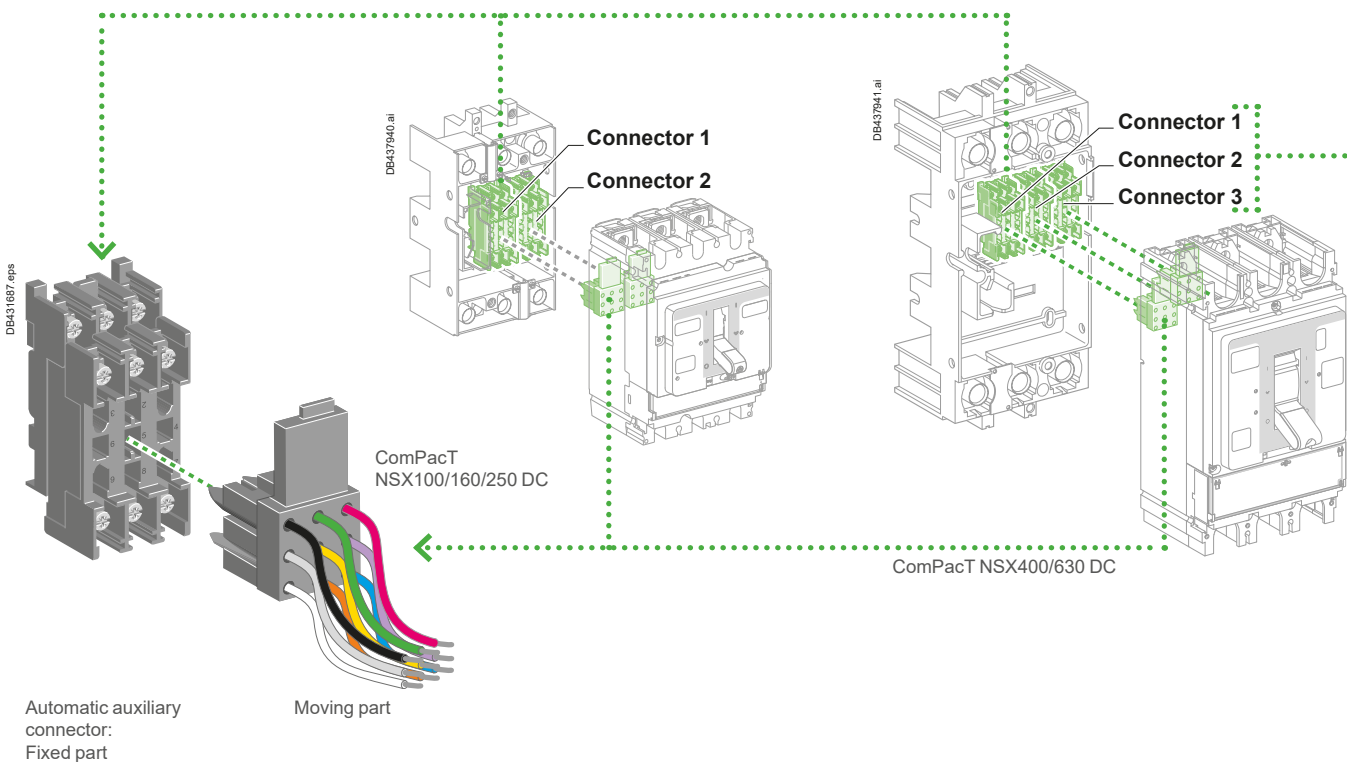
Auxiliary circuits exit the circuit breaker via one to three automatic auxiliary connectors (nine wires each). These are made up of:

- 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.

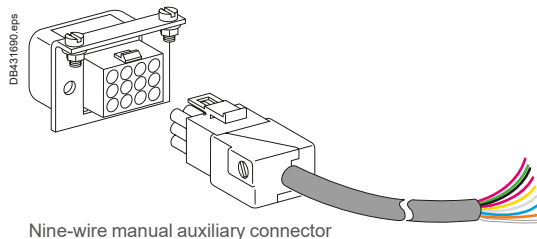
Selection of automatic auxiliary connectors

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



Electrical and Mechanical Accessories

Connection of Electrical Auxiliaries

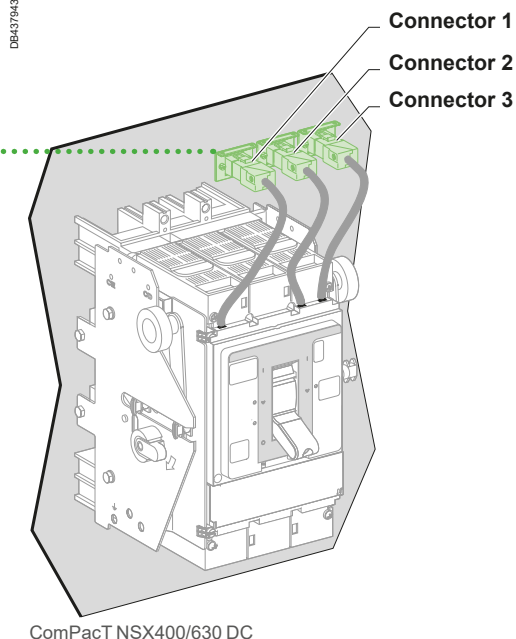
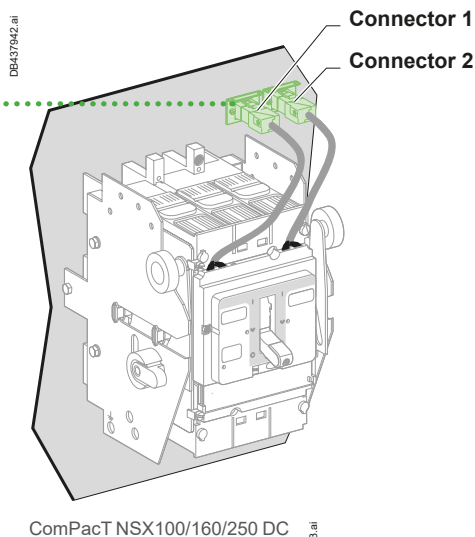


Withdrawable ComPacT NSX DC

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.



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 MN/MX SD	OF2 SDE NSX cord MT 24 V DC	OF3
NSX100/160/250 DC	●	●	-
NSX400/630 DC	●	●	●

MT: motor mechanism

Electrical and Mechanical Accessories

Selection of Auxiliaries for ComPacT NSX100/160/250 DC

PB 120468 eps



A

Remote Tripping

MX or MN voltage releases are used to trip the circuit breaker.

MN Undervoltage Release

This release trips the circuit breaker when the control voltage drops below a tripping threshold:

- Tripping threshold between 0.35 and 0.7 times the rated voltage.
- Circuit breaker closing is possible if the voltage exceeds 0.85 times the rated voltage. For a lower value, circuit breaker closing cannot be ensured.

Circuit breaker tripping by an MN release meets the requirements of standard IEC 60947-2.

Time-Delay Unit for an MN Release

Eliminates nuisance tripping due to transient voltage dips lasting 200 ms.

It is used in conjunction with:

- A 250 V DC MN release, control voltage 220/240 V AC
- A 48 V DC MN release, control voltage 48 V AC.

MX Shunt Release

Trips the circuit breaker when the control voltage rises above $0.7 \times U_n$.

Control signals can be of the impulse type (≥ 20 ms) or maintained.

Operation

When the circuit breaker has been tripped by an MN or MX release, it must be reset locally.

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.

Mechanical Characteristics

- Endurance is equal to 50 % of the mechanical endurance of the circuit breaker.
- The releases clip in behind the front cover.
- Connection using wires up to 1.5 mm^2 , to integrated terminal blocks.

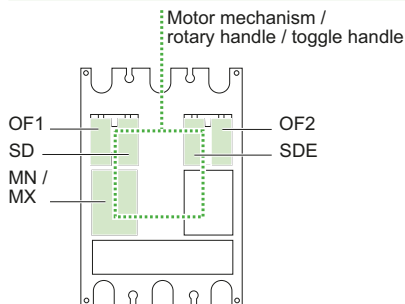
Electrical Characteristics

- Consumption:
 - Pick-up (MX): $< 30 \text{ VA}$
 - Seal-in (MN and MNR): $< 5 \text{ VA}$.
- Response time: $< 50 \text{ ms}$.

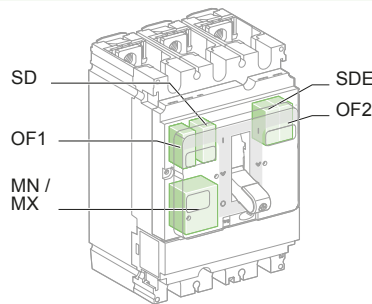
NA, TMD, TMG

Standard

DB431693 eps



DB437944 al



Electrical and Mechanical Accessories

Selection of Auxiliaries for ComPacT NSX100/160/250 DC

Communication

Communication requires specific auxiliaries (see page A-42).

Communication of status indications ^[1]

- 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

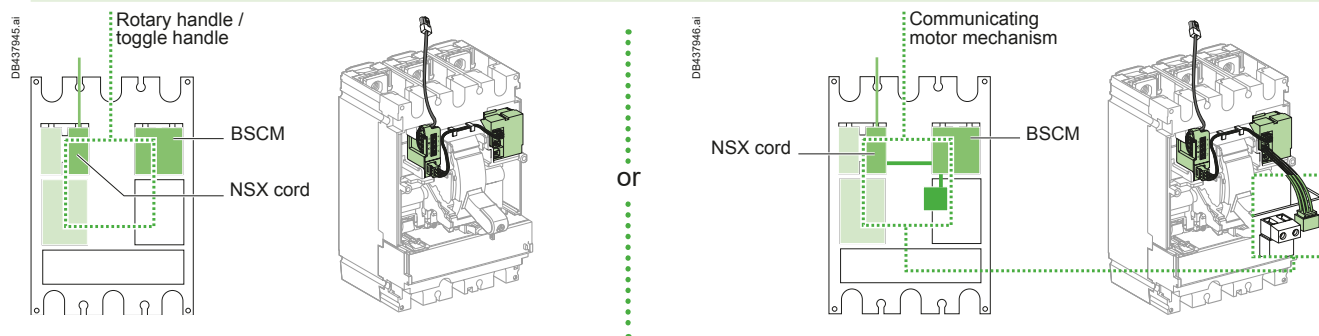
This requires, in addition to the previous auxiliaries:

- 1 IFM connected to the BSCM.

A

TMD, TMG

Communication of status indications ^[1]



^[1] ComPacT NSX100-250 DC only.

Electrical and Mechanical Accessories

Selection of Auxiliaries for ComPacT NSX400/630/1200 DC

A

Standard

All ComPacT NSX400/630/1200 DC circuit breakers and switch-disconnectors have slots for the electrical auxiliaries listed below.

5 indication contacts (see page A-39)

- 3 ON/OFF (OF1, OF2, OF3)
- 1 trip indication (SD)
- 1 fault-trip indication (SDE)

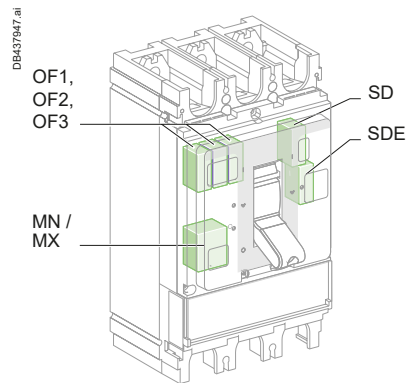
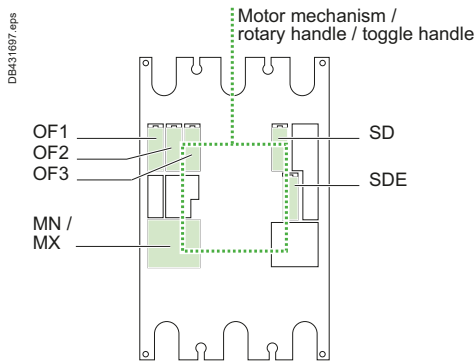
1 remote-tripping release (see page A-43)

- Either 1 MN undervoltage release
- Or 1 MX shunt release

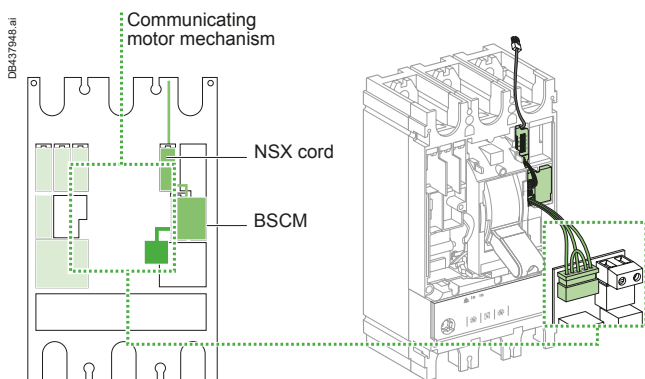
All these auxiliaries may be installed with a motor mechanism or a rotary handle or toggle handle.

NSX400/630/1200 DC

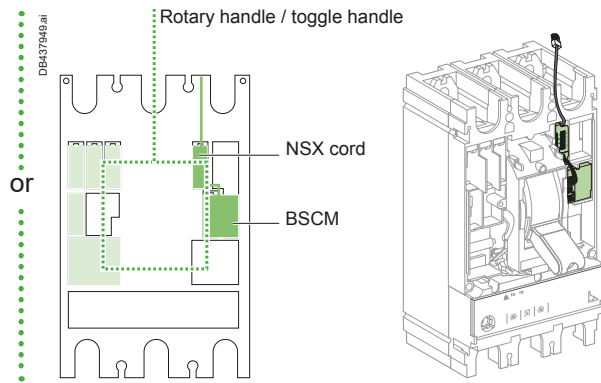
Standard



Communication of status indications



Communication of status indications and controls



Electrical and Mechanical Accessories

Indication Contacts for ComPacT NSX DC

A

One contact model provides circuit breaker status indications (OF - SD - SDE).

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.

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
 - Operation of a voltage release
 - Operation of the "push to trip" button
 - Disconnection when the device is ON.

The SD contact returns to de-energized 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.

The SD contact returns to de-energized state when the circuit breaker is reset.

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 energize 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 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.

The SDE function on a ComPacT NSX100 - 250 DC equipped with a thermal-magnetic 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.

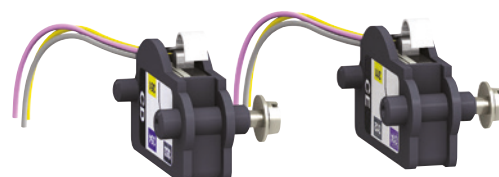
Electrical Characteristics of Auxiliary Contacts

Contacts		Standard				Low level			
Types of contacts		All				OF, SD, SDE			
Rated thermal current (A)		6				5			
Minimum load		100 mA at 24 V DC				1 mA at 4 V DC			
Utilization 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	-	-	-	-	-	-



Indication contacts

LV429454.eps



CE/CD carriage switches

PB10370648.eps

Electrical and Mechanical Accessories

Rotary Handles for ComPacT NSX DC

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.

A



ComPacT NSX DC with a rotary handle



ComPacT NSX DC with an MCC rotary handle



ComPacT NSX DC with a CNOMO machine-tool rotary handle

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. This operation is not possible if the handle is locked by a padlock.
- 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.

Electrical and Mechanical Accessories

Rotary Handles for ComPacT NSX DC

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.

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 DC
 - 209...600 mm for ComPacT NSX400/630/1200 DC.

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:

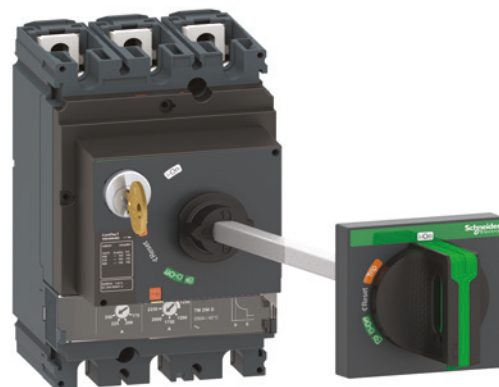
- 248...600 mm for ComPacT NSX100 to 250 DC
- 272...600 mm for ComPacT NSX400/630/1200 DC.

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.



ComPacT NSX DC with an extended rotary handle installed at the back of a switchboard, with the keylock option and key



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PB123901.eps

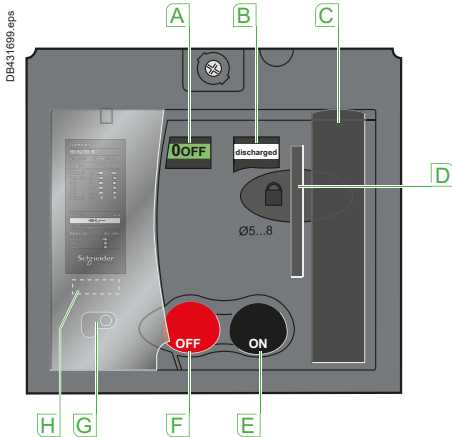
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Electrical and Mechanical Accessories

Motor Mechanism for ComPacT NSX DC



ComPacT NSX250 DC with motor mechanism



- A** Position indicator (positive contact indication)
- B** Spring status indicator (charged, discharged)
- C** Manual spring-charging lever
- D** Keylock device (optional)
Locking device (OFF position), using 1 to 3 padlocks, shackle diameter 5 to 8 mm, not supplied
- E** I (ON) pushbutton
- F** O (OFF) pushbutton
- G** Manual/auto mode selection switch. The position of this switch can be indicated remotely
- H** Operation counter (ComPacT NSX400/630 DC)

When equipped with a **motor mechanism** module, ComPacT NSX DC circuit breakers feature very high mechanical endurance as well as easy and reliable 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^[1]. 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, centralized operation, automatic distribution control.
- Normal/standby source changeover or switching to a replacement source
For availability and energy cost optimization.
- 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.

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

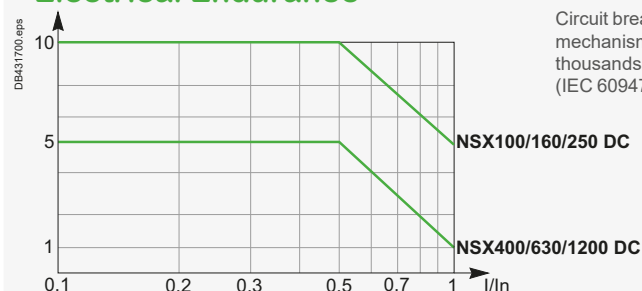
- Keylock for locking in OFF position.
- Operations counter for the ComPacT NSX400/630 DC, indicating the number of ON/OFF cycles. Must be installed on the front of the motor mechanism module.

Characteristics

Motor mechanism			MT100 to MT630
Response time (ms)	opening		< 600
	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 250 DC, the inrush current is 2 In for 10 ms.

Electrical Endurance



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

^[1] NSX100-250 DC only.

Electrical and Mechanical Accessories

Remote Tripping for ComPacT NSX DC

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 U_n .

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 $U \leq 0.35 \times U_n$.
- If the supply voltage is between 0.35 and 0.7 U_n , opening is possible, but not guaranteed. Above 0.7 U_n , 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 $U \geq 0.85 \times U_n$. Below this threshold, closing is not ensured.

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 U_n
	Closing	0.85 U_n
Operating range		0.85 to 1.1 U_n
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 $U \geq 0.7 \times U_n$.

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 U_n
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.

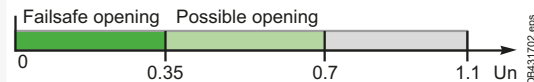
MN or MX tripping takes priority over manual closing.

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.



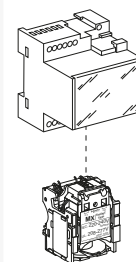
MX or MN voltage release



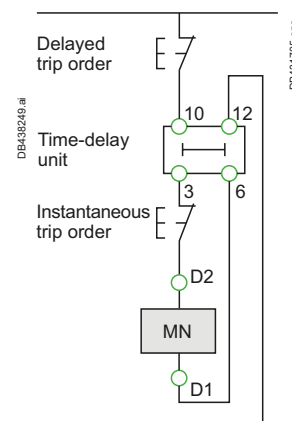
Opening conditions of the MN release



Closing conditions of the MN 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

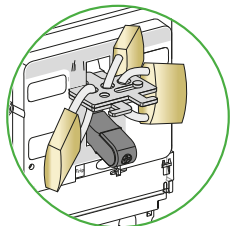
Note: Circuit breaker opening using an MN or MX release must be reserved for safety functions. This type of tripping increases wear on the opening mechanism. Repeated use reduces the mechanical endurance of the circuit breaker by 50 %.

Electrical and Mechanical Accessories

Locks for ComPacT NSX DC

A

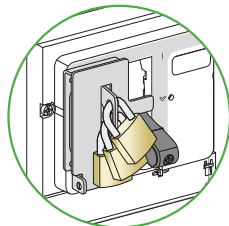
DB437950.ai



Toggle locking using padlocks and an accessory:

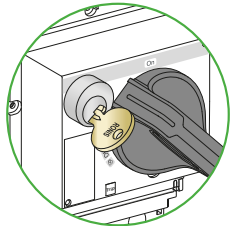
Removable device

DB437951.ai



Fixed device attached to the case [3]

DB437952.ai



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.

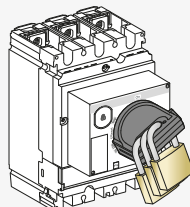
Control device		Function	Means	Required accessories
Toggle		Lock in OFF position	Padlock	Removable device
		Lock in OFF or ON position	Padlock	Fixed device
Direct rotary handle	Standard	Lock in ■ OFF position ■ OFF or ON position [1]	Padlock Keylock	- Locking device + keylock
	MCC	Lock in ■ OFF position ■ OFF or ON position [1]	Padlock	-
	CNOMO	Lock in ■ OFF position ■ OFF or ON position [1]	Padlock	-
Extended rotary handle		Lock in ■ OFF position ■ 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 ■ Disconnected position	Padlock	-
		■ Connected position	Keylock	Locking device + keylock

[1] Following a simple modification of the mechanism.

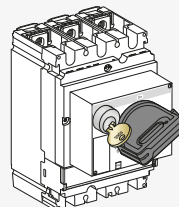
[2] Unless door locking has been voluntarily disabled.

[3] Only for 3-4P.

DB437953.ai

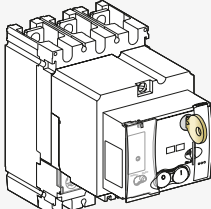


DB437954.ai

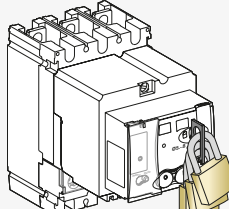


Rotary-handle locking using a padlock or a keylock

DB431712.eps

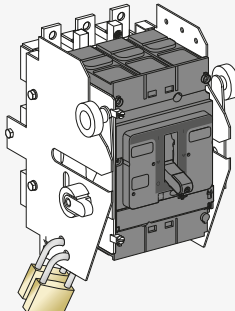


DB431713.eps

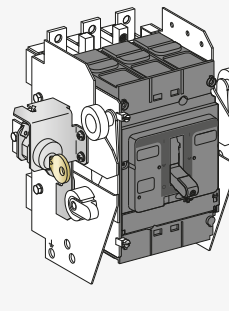


Motor mechanism locking using a padlock or a keylock

DB437955.ai



DB437956.ai



Chassis locking in the connected position

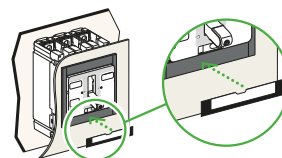
Electrical and Mechanical Accessories

Sealing Accessories for ComPacT NSX DC

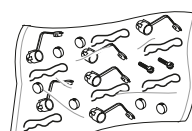
Outgoing-Circuit Identification

ComPacT NSX100 to 630 DC can be equipped with label holders supplied in sets of ten (cat. no. LV429226).

They are compatible with escutcheons.



Identification accessories



Sealing accessories

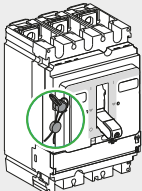
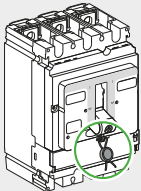
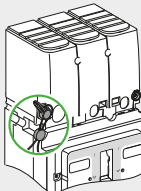
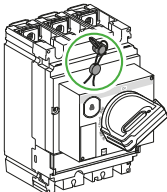
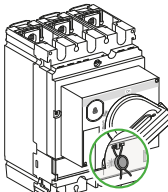
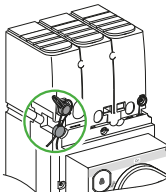
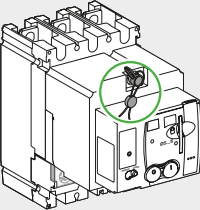
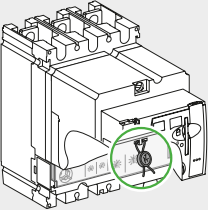
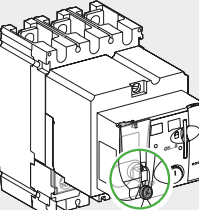
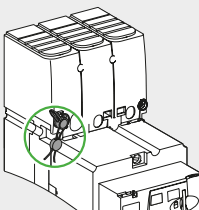
Sealing Accessories

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	 DB437958 ai	 DB437959 ai	 DB437960 ai	
Rotary handle	 DB437961 ai	 DB437962 ai	 DB437963 ai	
Motor mechanism	 DB431724 eps	 DB431725 eps	 DB431726 eps	 DB431727 eps
Types of seals	Front-cover fixing screw	Trip unit transparent cover	Motor mechanism transparent cover	Terminal-shield fixing screw
Protected operations	■ Front removal ■ Access to auxiliaries ■ Trip unit removal.	■ Modification of settings ■ Access to test connector.	■ access to manual/auto mode selection switch: depending on its position, manual [1] or automatic operation is not possible. [1] In this case, local operation is not possible.	■ access to power connections (protection against direct contact).

DB437957.ai

DB431717.epa

A

Electrical and Mechanical Accessories

Escutcheons and Protection Collars for ComPacT NSX DC

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).

A



IP30 escutcheon



IP30 escutcheon with access to the trip unit

IP30 or IP40 Escutcheons for Fixed Devices

IP30

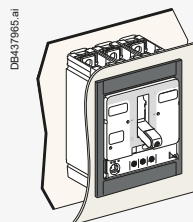
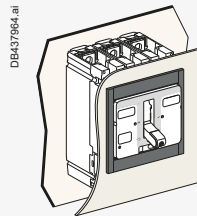
The three types are glued to the cut-out in the front door of the switchboard:

- Escutcheon for all control types (toggle, rotary handle or motor mechanism):
 - Without access to the trip unit
 - With access to the trip unit.

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 module that can be combined with the above.



Escutcheon for toggle without and with access to the trip unit

Electrical and Mechanical Accessories

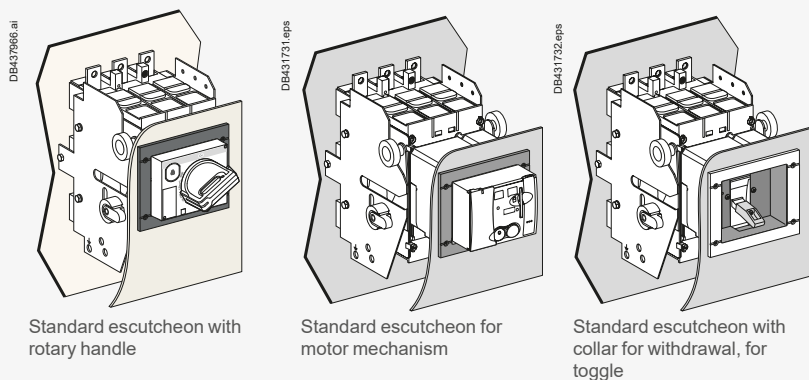
Escutcheons and Protection Collars for ComPacT NSX DC

IP40 Escutcheons for Withdrawable Devices

IP40 for Withdrawable Devices

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

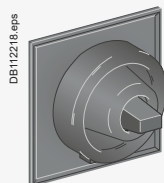
- For rotary handle or motor mechanism: standard IP40 escutcheon
- For toggle with extension: standard escutcheon + collar for withdrawal.



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.



Toggle cover

Retrofit Front Covers

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

- NSX100 to 250 DC cover.
- NSX400/630 DC cover.



Escutcheon with collar for toggle



Toggle cover



NSX retrofit front cover

PB103771-36.eps

PB103775-40.eps

PB103820_35.eps

A

TransferPacT Source-Changeover Systems Presentation

PE191615-50 eps



A

65587-117 eps



Some installations use two supply sources to counter the temporary loss of the main supply.

A source-changeover system is required to safely switch between the two sources. The replacement source can be a generator set or another network.

Manual Source-Changeover System or MTSE (Manual Transfer Switching Equipment)

The simplest way to switch the load. It is controlled manually by an operator. The time required to switch from the S1 source to S2 source is variable.

System

2 or 3 mechanically interlocked circuit breakers or 2 switch-disconnectors.

Applications

Small commercial buildings and small and medium industrial activities where the need for continuity of service is significant but not a priority.

Automatic Source-Changeover System or ATSE (Automatic Transfer Switching Equipment)

An automatic controller may be added to a remote operated source-changeover system. It is possible to automatically control source transfer according to programmed (dedicated controllers) or programmable (PLC) operating modes. These solutions ensure optimum energy management.

The time required to switch from the S1 source to S2 source is fixed.

System

2 or 3 circuit breakers linked by an electrical interlocking system. A mechanical interlocking system protects also against incorrect manual operations, with an automatic control system (dedicated controllers).

Applications

Large infrastructures, industry, critical buildings & process where the continuity of service is a priority.

> TransferPacT
(Source-changeover systems)



LVPED216028EN

TransferPacT Source-Changeover Systems

Manual Source-Changeover Systems

Interlocking of Two or Three Toggle-Controlled Devices

Interlocking system

Two devices can be interlocked using this system. Two identical interlocking systems can be used to interlock three devices installed side by side.

Authorized positions:

- One device closed (ON), the others open (OFF)
- All devices open (OFF).

The system is locked using one or two padlocks (shackle diameter 5 to 8 mm).

This system can be expanded to more than three devices.

There are two interlocking-system models:

- One for ComPacT INS/INV
- One for ComPacT NSX100 to NSX250
- One for ComPacT NSX400 to NSX630.

Combinations of Normal and Replacement devices

All toggle-controlled fixed or plug-in ComPacT NSX100 to NSX630 circuit breakers and switch-disconnectors of the same frame size can be interlocked. The devices must be either all fixed or all plug-in versions.

Interlocking of Two Devices with Rotary Handles

Interlocking system

Interlocking involves padlocking the rotary handles on two devices which may be either circuit breakers or switch-disconnectors.

Authorized positions:

- One device closed (ON), the other open (OFF)
- Both devices open (OFF).

The system is locked using up to three padlocks (shackle diameter 5 to 8 mm).

There are two interlocking-system models:

- One for ComPacT INS/INV
- One for ComPacT NSX100 to NSX250
- One for ComPacT NSX400 to NSX630.

Combinations of Normal and Replacement devices

All rotary-handle fixed or plug-in ComPacT NSX100 to NSX630 circuit breakers and switch-disconnectors of the same frame size can be interlocked. The devices must be either all fixed or all plug-in versions.

Interlocking of Two Devices on a Base Plate

Interlocking system

A base plate designed for two ComPacT NSX devices can be installed horizontally or vertically on a mounting rail. Interlocking is carried out on the base plate by a mechanism located behind the devices. In this way, access to the device controls and trip units is not blocked.

Combinations of Normal and Replacement devices

All rotary-handle and toggle-controlled ComPacT NSX100 to NSX630 circuit breakers and switch-disconnectors can be interlocked. Devices must be either all fixed or all plug-in versions, with or without earth-leakage protection or measurement modules. An adaptation kit is required to interlock:

- Two plug-in devices
- A ComPacT NSX100 to NSX250 with an NSX400 to NSX630.

Connection to the downstream installation can be made easier using a coupling accessory (see next page).

Interlocking of a Number of Devices Using Keylocks (Captive Keys)

Interlocking using keylocks is very simple and makes it possible to interlock two or more devices that are physically distant or that have very different characteristics, for example medium-voltage and low-voltage devices or a ComPacT NSX100 to NSX630 switch-disconnector.

Interlocking system

Each device is equipped with an identical keylock and the key is captive on the closed (ON) device. A single key is available for all devices. It is necessary to first open (OFF position) the device with the key before the key can be withdrawn and used to close another device.

A system of wall-mounted captive key boxes makes a large number of combinations possible between many devices.

Combinations of Normal and Replacement devices

All rotary-handle ComPacT NSX100 to NSX630 circuit breakers and switch-disconnectors can be interlocked between each other or with any other device equipped with the same type of keylock.



Interlocking of two or three toggle-controlled devices

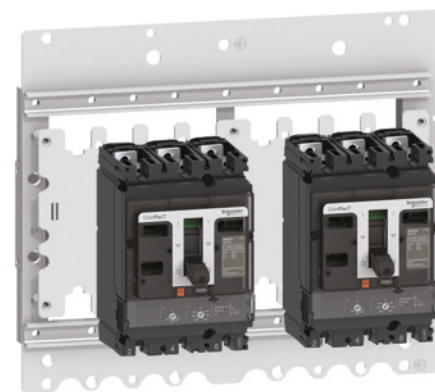
PB113435.eps

A



Interlocking of two devices with rotary handles

PB113418.eps



Interlocking on a base plate

PB113417.eps



Interlocking with keylocks

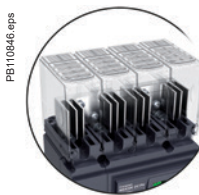
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Circuit Breaker Characteristics

ComPacT NSX80 TM DC PV to NSX500 TM DC PV



ComPacT NSX200 TM DC PV



Connection and insulation accessories

ComPacT NSX DC PV circuit breaker

Number of poles

Electrical Characteristics As Per IEC 60947-2 and EN 60947-2

Rated current (A) (free air + no venting)	In	40 °C heatsink standard-IP4X
--	----	------------------------------

Altitude	m	2000
----------	---	------

Rated insulation voltage (V)	Ui	
------------------------------	----	--

Rated impulse withstand voltage (kV)	Uimp	
--------------------------------------	------	--

Rated operational voltage (V)	Ue	DC
-------------------------------	----	----

Type of circuit breaker

Ultimate breaking capacity (L/R 2 ms)	Icu (kA rms)	DC	1000 V (4P series)
---------------------------------------	--------------	----	--------------------

Service breaking capacity	Ics	% Icu
---------------------------	-----	-------

Suitability for isolation

Selectivity category (Utilization category)

Pollution degree

Durability

Endurance (C-O cycles)	Mechanical	
	Electrical (In)	1000 V

Protection

Overload/short-circuit protection Thermal magnetic

Installation and connections

Control	Manual	Toggle
	Motor mechanism	

Connections	Fixed	Front connection
		ILong rear connection
	Pug-in (on base)	Front connection
		Rear connection
	Withdrawable (on chassis)	Front connection
		Rear connection

Additional measurement, indication and control auxiliaries

Indication contacts	OF	Auxiliary contact
	SD, SDE	Trip, fault-trip

Voltage releases	MX, MN	Shunt trip/undervoltage release
------------------	--------	---------------------------------

Installation

Accessories	Crimp lugs/bare cable connector
	Terminal extensions and spreaders
	Escutcheons
	Terminal shields and interphase barriers
	Din rail adapter

Dimensions and weight

Dimensions (mm) W x H x D (w/o series connection)	4P
Weight (kg)	Fixed front connection 4P

[1] Double earth fault:

PV systems are either insulated from the earth or one pole is earthed through an overcurrent protection. In both set-ups, therefore, there can be a ground fault in which current leaks to the ground. If this fault is not cleared, it may spread to the healthy pole and give rise to a hazardous situation where fire could break out. Even though double insulation makes such an eventuality unlikely, it deserves full attention.

For the two following reasons the double fault situation shall be absolutely avoided: insulation monitoring devices or overcurrent protection in earthed system shall detect first fault and staff shall look after the first fault and clear it with no delay.

■ The fault level could be low (e.g. two insulation faults or a low short-circuit capability of the generator in weak sunlight) and below the tripping value of overcurrent protection (circuit breaker or fuses). However, a DC arc fault does not extinguish itself, even when the current is low. It could be a serious hazard, particularly for PV modules on buildings.

■ Circuit breakers and switches used in PV systems are designed to break the rated current or fault current with all poles at open-circuit maximum voltage ($U_{OC\ MAX}$). To break the current when $U_{OC\ MAX}$ is equal to 1000 V, four poles in series (two poles in series for each polarity) are required. In double earth fault situations, the circuit breaker or switches must break the current at full voltage with only two poles in series. Such switchgear is not designed for that purpose and could sustain irremediable damage if used to break the current in a double ground fault situation.

The ideal solution is to prevent double ground faults arising. Insulation monitoring devices or overcurrent protection in grounded systems detect the first fault. However, although the insulation fault monitoring system usually stops the inverter, the fault is still present. Staff must locate and clear it without delay. In large generators with sub-arrays protected by circuit breakers, it is highly advisable to disconnect each array when that first fault has been detected but not cleared within the next few hours.

Circuit Breaker Characteristics

ComPacT NSX80 TM DC PV to NSX500 TM DC PV

	NSX80 TM DC PV	NSX125 TM DC PV	NSX160 TM DC PV	NSX200 TM DC PV	NSX250 TM DC PV	NSX320 TM DC PV	NSX400 TM DC PV	NSX500 TM DC PV
	4	4	4	4	4	4	4	4
	80	125	160	200	250	320	400	500
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	1000	1000	1000	1000	1000	1000	1000	1000
	8	8	8	8	8	8	8	8
	1000	1000	1000	1000	1000	1000	1000	1000
	10 ^[1]	10 ^[1]	10 ^[1]	10 ^[1]	10 ^[1]	10 ^[1]	10 ^[1]	10 ^[1]
	50 %	50 %	50 %	50 %	100 %	100 %	100 %	100 %
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	A	A	A	A	A	A	A	A
	3	3	3	3	3	3	3	3
	10000	10000	10000	10000	5000	5000	5000	5000
	1500	1500	1000	1000	1000	1000	1000	1000
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	-	-	-	-
	140 x 161 x 86	140 x 161 x 86	140 x 161 x 86	140 x 161 x 86	225 x 185 x 110	225 x 185 x 110	225 x 185 x 110	225 x 185 x 110
	2.8	2.8	2.8	2.8	8.1	8.1	8.1	8.1

Trip unit for ComPacT NSX DC PV non interchangeable ^[2]

Type of trip unit		TM 80 DC PV	TM 125 DC PV	TM 160 DC PV	TM 200 DC PV	TM 250 DC PV	TM 320 DC PV	TM 400 DC PV	TM 500 DC PV
Rating	In (A) at 40 °C	80	125	160	200	250	320	400	500
Overload protection (thermal)									
Tripping threshold	Ir (A) at 40 °C	Adjustable 0.7 to 1 x In							
Protection against short-circuits (magnetic)									
Pick-up	Ii (A)	Fixed 800 A	Fixed 1250 A	Adjustable 5 to 10 In					

^[2] See tripping curves page E-14 and E-15.

A

Circuit Breaker Characteristics

ComPacT NSX100 TM DC EP to NSX500 TM DC EP



ComPacT NSX250 TM DC EP



ComPacT NSX500 TM DC EP

ComPacT NSX DC EP circuit breaker

NSX100
TM DC EP

Frame	250
Number of poles	4

Electrical Characteristics As Per IEC 60947-2 and EN 60947-2

Rated current (A) (free air + no venting)	In	40 °C heatsink standard-IP4X 50 °C	100
Altitude	m	2000	⊙
Rated insulation voltage (V)	Ui		1600
Rated impulse withstand voltage (kV)	Uimp		8
Rated operational voltage (V)	Ue	DC	1500

Type of circuit breaker

Ultimate breaking capacity	Icu (kA rms)	DC	1100 V (4P series)	50 ^[1]
Service breaking capacity	Ics	% Icu		40 %
Ultimate breaking capacity	Icu (kA rms)	DC	1500 V (4P series)	20 ^[1]
Service breaking capacity	Ics	% Icu		100 %
Ultimate breaking capacity (L/R 2 ms)	Icu (kA rms)	DC	1100 V (4P series)	50 ^[1]
Service breaking capacity	Ics	% Icu		40 %
Ultimate breaking capacity (L/R 2 ms)	Icu (kA rms)	DC	1500 V (4P series)	20 ^[1]
Service breaking capacity	Ics	% Icu		100 %
Suitability for isolation				⊙
Selectivity category (Utilization category)				A
Pollution degree				3

Durability

Endurance (C-O cycles)	Mechanical		10000
	Electrical (In)	1500 V	4500

Protection

Overload/short-circuit protection	Thermal magnetic	⊙
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Installation and connections

Control	Manual	toggle	⊙
	Motor mechanism		⊙
Connections	Fixed	Front connection	⊙
		Long rear connection	⊙
	Plug-in (on base)	Front connection	-
		Rear connection	-
	Withdrawable (on chassis)	Front connection	-
		Rear connection	-

Additional measurement, indication and control auxiliaries

Indication contacts	OF	Auxiliary contact	⊙
	SD, SDE	Trip, fault-trip	⊙
Voltage releases	MX, MN	Shunt trip/undervoltage release	⊙

Installation

Accessories	Crimp lugs/bare cable connector	⊙
	Terminal extensions and spreaders	⊙
	Escutcheons	⊙
	Terminal shields and interphase barriers	⊙
	Din rail adapter	⊙

Dimensions and weight

Dimensions (mm) W x H x D (w/o series connection)		4P	140 x 161 x 86
Weight (kg)	Fixed front connection	4P	2.8

[1] Double earth fault:

PV systems are either insulated from the earth or one pole is earthed through an overcurrent protection. In both set-ups, therefore, there can be a ground fault in which current leaks to the ground. If this fault is not cleared, it may spread to the healthy pole and give rise to a hazardous situation where fire could break out. Even though double insulation makes such an eventuality unlikely, it deserves full attention.

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A

The ideal solution is to prevent double ground faults arising. Insulation monitoring devices or overcurrent protection in grounded systems detect the first fault. However, although the insulation fault monitoring system usually stops the inverter, the fault is still present. Staff must locate and clear it without delay. In large generators with sub-arrays protected by circuit breakers, it is highly advisable to disconnect each array when that first fault has been detected but not cleared within the next few hours.

Switch-Disconnectors Characteristics

ComPacT NSX100 NA DC PV to NSX500 NA DC PV

19_C254290/DS_01a



ComPacT NSX200 NA DC PV

PB110847_01a



ComPacT NSX200 NA DC PV

ComPacT NSX DC PV switch-disconnector

Number of poles

Electrical Characteristics As Per IEC 60947-3

Rated current (A) (free air + no venting)	I_n	40 °C
--	-------	-------

Altitude	m	2000
----------	---	------

Rated insulation voltage (V)	U_i
Rated impulse withstand voltage (kV)	U_{imp}

Rated operational voltage (V)	U_e	DC
-------------------------------	-------	----

Type of circuit breaker

Rated short circuit withstand current (kA rms)	I_{cw}/I_{cm}	$t = 1 \text{ s}$
--	-----------------	-------------------

Rated conditionnal short-circuit current	I_q	kA
	With back-up fuse	A gPV

Rated conditionnal short-circuit current	I_q with circuit breaker	kA with MCCB
--	----------------------------	--------------

Utilization category

Suitability for isolation

Pollution degree

Durability

Endurance (C-O cycles)	Mechanical	
	Electrical (I_n)	1000 V

Installation and connections

Control	Manual	Toggle
		Direct or extended rotary handle

	Motor mechanism
--	-----------------

Connections	Fixed	Front connection
		Long rear connection

	Plug-in (on base)	Front connection
		Rear connection

	Withdrawable (on chassis)	Front connection
		Rear connection

Additional measurement, indication and control auxiliaries

Indication contacts	OF	Auxiliary contact
	SD, SDE	Trip, fault-trip

Voltage releases	MX, MN	Shunt trip/undervoltage release
------------------	--------	---------------------------------

Installation

Accessories	Crimp lugs/bare cable connector
	Terminal extensions and spreaders
	Escutcheons
	Terminal shields and interphase barriers
	Din rail adapter

Dimensions and weight

Dimensions (mm) W x H x D (w/o series connection)	4P
Weight (kg) (w/o series connection)	4P

[1] Double earth fault:

PV systems are either insulated from the earth or one pole is earthed through an overcurrent protection. In both set-ups, therefore, there can be a ground fault in which current leaks to the ground. If this fault is not cleared, it may spread to the healthy pole and give rise to a hazardous situation where fire could break out. Even though double insulation makes such an eventuality unlikely, it deserves full attention.

For the two following reasons the double fault situation shall be absolutely avoided: insulation monitoring devices or overcurrent protection in earthed system shall detect first fault and staff shall look after the first fault and clear it with no delay.

- The fault level could be low (e.g. two insulation faults or a low short-circuit capability of the generator in weak sunlight) and below the tripping value of overcurrent protection (circuit breaker or fuses). However, a DC arc fault does not extinguish itself, even when the current is low. It could be a serious hazard, particularly for PV modules on buildings.

- Circuit breakers and switches used in PV systems are designed to break the rated current or fault current with all poles at open-circuit maximum voltage ($U_{OC\ MAX}$). To break the current when $U_{OC\ MAX}$ is equal to 1000 V, four poles in series (two poles in series for each polarity) are required. In double earth fault situations, the circuit breaker or switches must break the current at full voltage with only two poles in series. Such switchgear is not designed for that purpose and could sustain irremediable damage if used to break the current in a double ground fault situation.

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A

A

Switch-Disconnectors Characteristics

ComPacT NSX630b NA DC PV to NSX1600 NA DC PV

PB112180_53.epa



ComPacT NSX1600 NA DC PV

ComPacT NSX DC PV switch-disconnector

Number of poles

Electrical Characteristics As Per IEC 60947-3

Rated current (A) (free air + no venting)	I_n	40 °C
Altitude	m	2000
Rated insulation voltage (V)	U_i	
Rated impulse withstand voltage (kV)	U_{imp}	
Rated operational voltage (V)	U_e	DC

Type of circuit breaker

Rated short circuit withstand current (kA rms)	I_{cw}/I_{cm}	$t = 1\text{ s}$
Rated conditionnal short-circuit current	I_q	kA
	With back-up fuse	A gPV

Rated conditionnal short-circuit current I_q with circuit breaker

Utilization category

Suitability for isolation

Pollution degree

Durability

Endurance (C-O cycles)	Mechanical	
	Electrical (I_n)	1000 V

Installation and connections

Control	Manual	
	Motor mechanism	
Connections	Fixed	Front connection
		Rear connection

Additional measurement, indication and control auxiliaries

Indication contacts	OF	Auxiliary contact
Voltage releases	MX, MN	Shunt trip/undervoltage release

Installation

Accessories	Terminal extensions
	Escutcheons
	Terminal shields and interphase barriers

Dimensions and weight

Dimensions (mm) W x H x D (w/o series connection)	4P
Weight (kg) (w/o series connection)	4P

[1] Double earth fault:

PV systems are either insulated from the earth or one pole is earthed through an overcurrent protection. In both set-ups, therefore, there can be a ground fault in which current leaks to the ground. If this fault is not cleared, it may spread to the healthy pole and give rise to a hazardous situation where fire could break out. Even though double insulation makes such an eventuality unlikely, it deserves full attention.

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A

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Switch-Disconnectors Characteristics

ComPacT NSX100 NA DC EP to NSX630 NA DC EP

A

C25425D3S-1_L32 eps



ComPacT NSX250 NA DC EP

C63463D3S-1_L50 eps



ComPacT NSX630 NA DC EP

ComPacT NSX DC EP switch-disconnector

Frame

Number of poles

Electrical Characteristics As Per IEC 60947-3

Rated current (A) (free air + no venting)	I_n	40 °C
		60 °C

Altitude	m	2000
----------	---	------

Rated insulation voltage (V)	U_i
------------------------------	-------

Rated impulse withstand voltage (kV)	U_{imp}
--------------------------------------	-----------

Rated operational voltage (V)	U_e	DC
-------------------------------	-------	----

Type of circuit breaker

Rated short circuit withstand current (kA rms)	I_{cw}/I_{cm}	$t = 1\text{ s}$
--	-----------------	------------------

Utilization category

Suitability for isolation

Pollution degree

Durability

Endurance (C-O cycles)	Mechanical	
	Electrical (I_n)	1500 V

Installation and connections

Control	Manual	Toggle
		Direct or extended rotary handle

	Motor mechanism
--	-----------------

Connections	Fixed	Front connection
		Long rear connection

	Plug-in (on base)	Front connection
		Rear connection

	Withdrawable (on chassis)	Front connection
		Rear connection

Additional measurement, indication and control auxiliaries

Indication contacts	OF	Auxiliary contact
	SD, SDE	Trip, fault-trip
Voltage releases	MX, MN	Shunt trip/undervoltage release

Installation

Accessories	Crimp lugs/bare cable connector
	Terminal extensions and spreaders
	Escutcheons
	Terminal shields and interphase barriers
	Din rail adapter

Dimensions and weight

Dimensions (mm) W x H x D (w/o series connection)	4P
Weight (kg) (w/o series connection)	4P

[1] Double earth fault:

PV systems are either insulated from the earth or one pole is earthed through an overcurrent protection. In both set-ups, therefore, there can be a ground fault in which current leaks to the ground. If this fault is not cleared, it may spread to the healthy pole and give rise to a hazardous situation where fire could break out. Even though double insulation makes such an eventuality unlikely, it deserves full attention.

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Switch-Disconnectors Characteristics

ComPacT NSX100 NA DC EP to NSX630 NA DC EP

	NSX100 NA DC EP	NSX160 NA DC EP	NSX200 NA DC EP	NSX250 NA DC EP	NSX320 NA DC EP	NSX400 NA DC EP	NSX500 NA DC EP	NSX630 NA DC EP
	250	250	250	250	630	630	630	630
	4	4	4	4	4	4	4	4
	100 heatsink - IP4X	160 heatsink - IP4X	200 heatsink - IP4X	250 heatsink - IP4X	320 heatsink - IP3X	400 heatsink - IP3X	500 heatsink - IP3X	500 heatsink - IP3X
	100 IP0	160 IP0	200 IP0	250 ^[2] IP0	320 IP0	400 IP0	500 IP0	630 ^[3] IP0
	1600 ^[1]	1600 ^[1]	1600 ^[1]	1600 ^[1]	1600 ^[1]	1600 ^[1]	1600 ^[1]	1600 ^[1]
	8	8	8	8	8	8	8	8
	1500	1500	1500	1500	1500	1500	1500	1500
	3,5	3,5	3,5	3,5	7.56	7.56	7.56	7.56
	DC-22A DC-PV2	DC-22A DC-PV2	DC-22A DC-PV2	DC-22A DC-PV2	DC-22A DC-PV2	DC-22A DC-PV2	DC-22A DC-PV2	DC-22A DC-PV2
	3	3	3	3	3	3	3	3
	10000	10000	10000	10000	8000	8000	8000	8000
	4500	4500	4500	4500	3000	3000	3000	3000
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	-	-	-	-	-
	140 x 161 x 86	140 x 161 x 86	140 x 161 x 86	140 x 161 x 86	185 x 255 x 110	185 x 255 x 110	185 x 255 x 110	185 x 255 x 110
	2,8	2,8	2,8	2,8	8,1	8,1	8,1	8,1

■ Circuit breakers and switches used in PV systems are designed to break the rated current or fault current with all poles at open-circuit maximum voltage ($U_{OC\ MAX}$). To break the current when $U_{OC\ MAX}$ is equal to 1000 V, four poles in series (two poles in series for each polarity) are required. In double earth fault situations, the circuit breaker or switches must break the current at full voltage with only two poles in series.

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^[2] $I_n=250A$ at 50 °C

^[3] $I_n=630A$ at 40 °C.

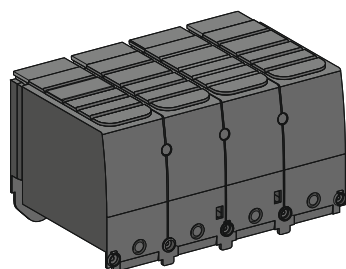
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Accessories and Auxiliaries

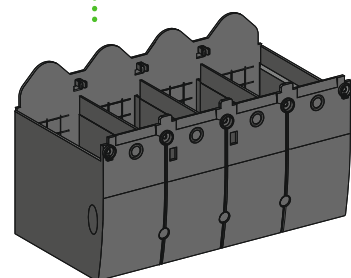
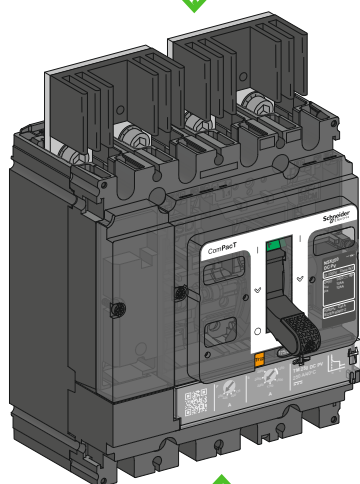
Overview of ComPacT NSX80 TM to NSX500 TM DC PV - Circuit Breakers

DB437967.ai

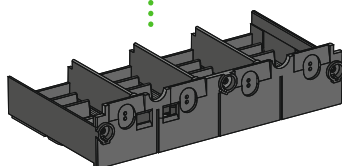
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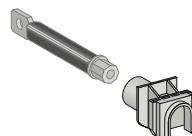
Terminal shields



Terminal shields

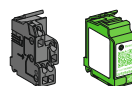


Short terminal shield

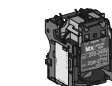


Rear connectors

Electrical auxiliaries



Indication contact

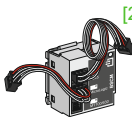


Voltage release

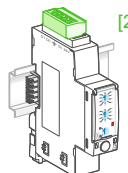
Communication [1]



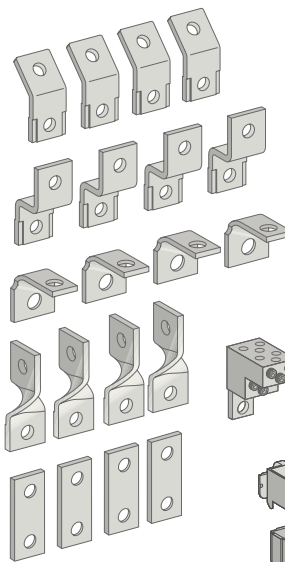
NSX cord



BSCM module



Modbus interface



Terminal extensions

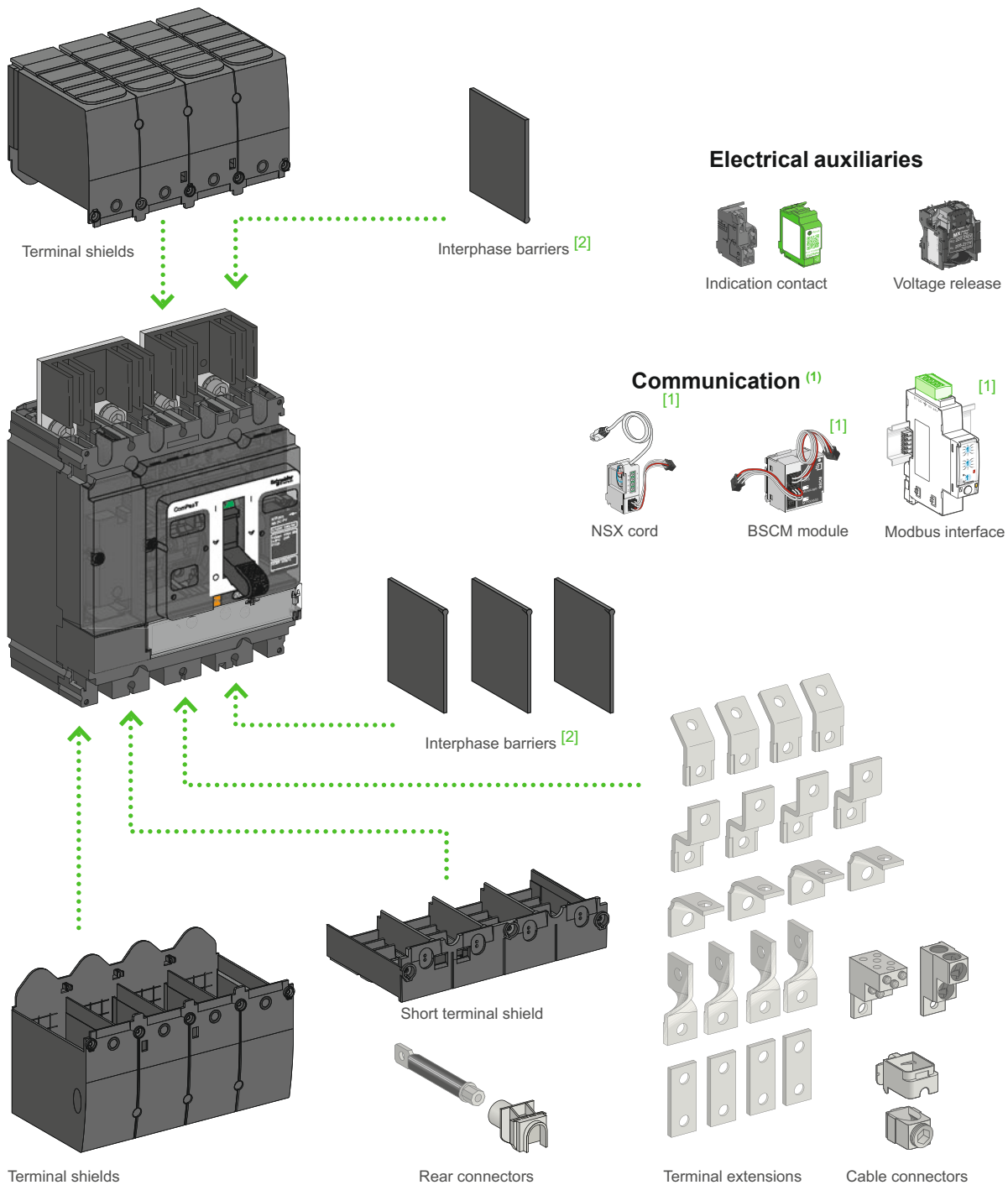
Cable connectors

[1] See communication chapter.

[2] ComPacT NSX100-250 only.

Accessories and Auxiliaries

Overview of ComPacT NSX100 NA to NSX500 NA DC PV - Switch-Disconnectors



[1] See communication chapter.

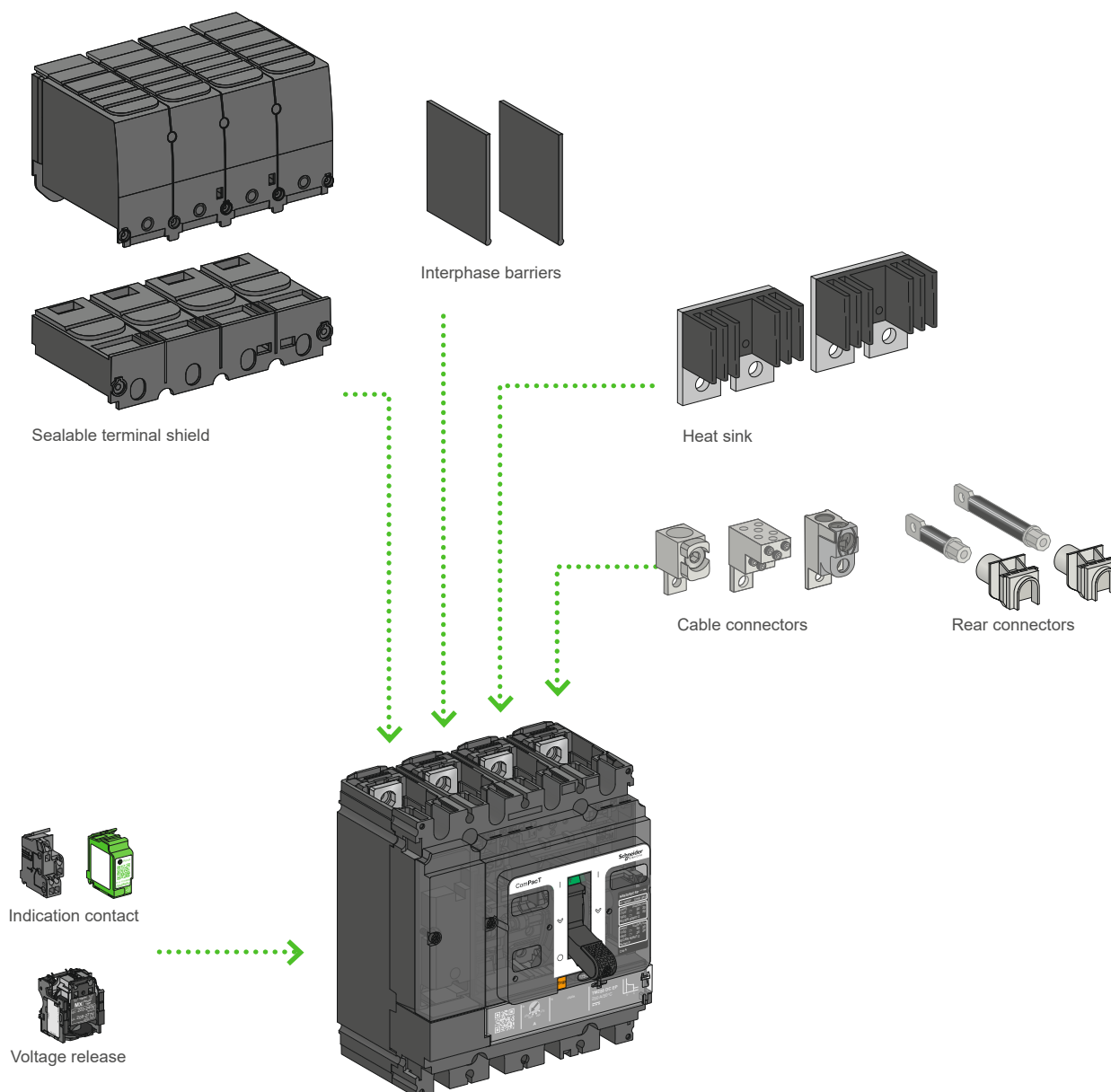
[2] Only for switches.

Accessories and Auxiliaries

Overview of ComPacT NSX100 TM to NSX250 TM DC EP -
ComPacT NSX100 NA to NSX250 NA DC EP
Circuit Breakers and Switch-Disconnectors

A

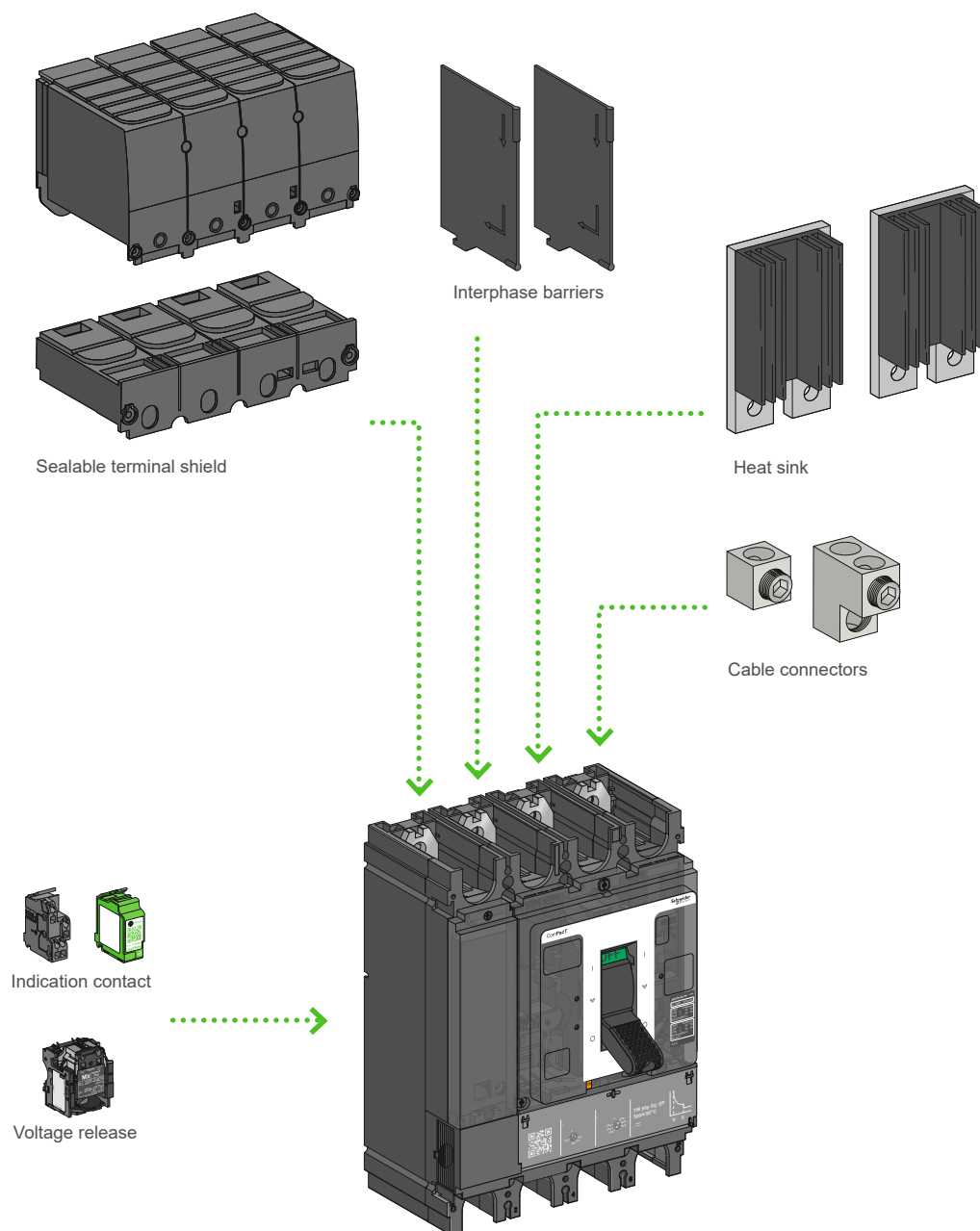
DB438100.ai



Accessories and Auxiliaries

Overview of ComPacT NSX250 TM to NSX500 TM DC EP - ComPacT NSX320 NA to NSX630 NA DC EP Circuit Breakers and Switch-Disconnectors

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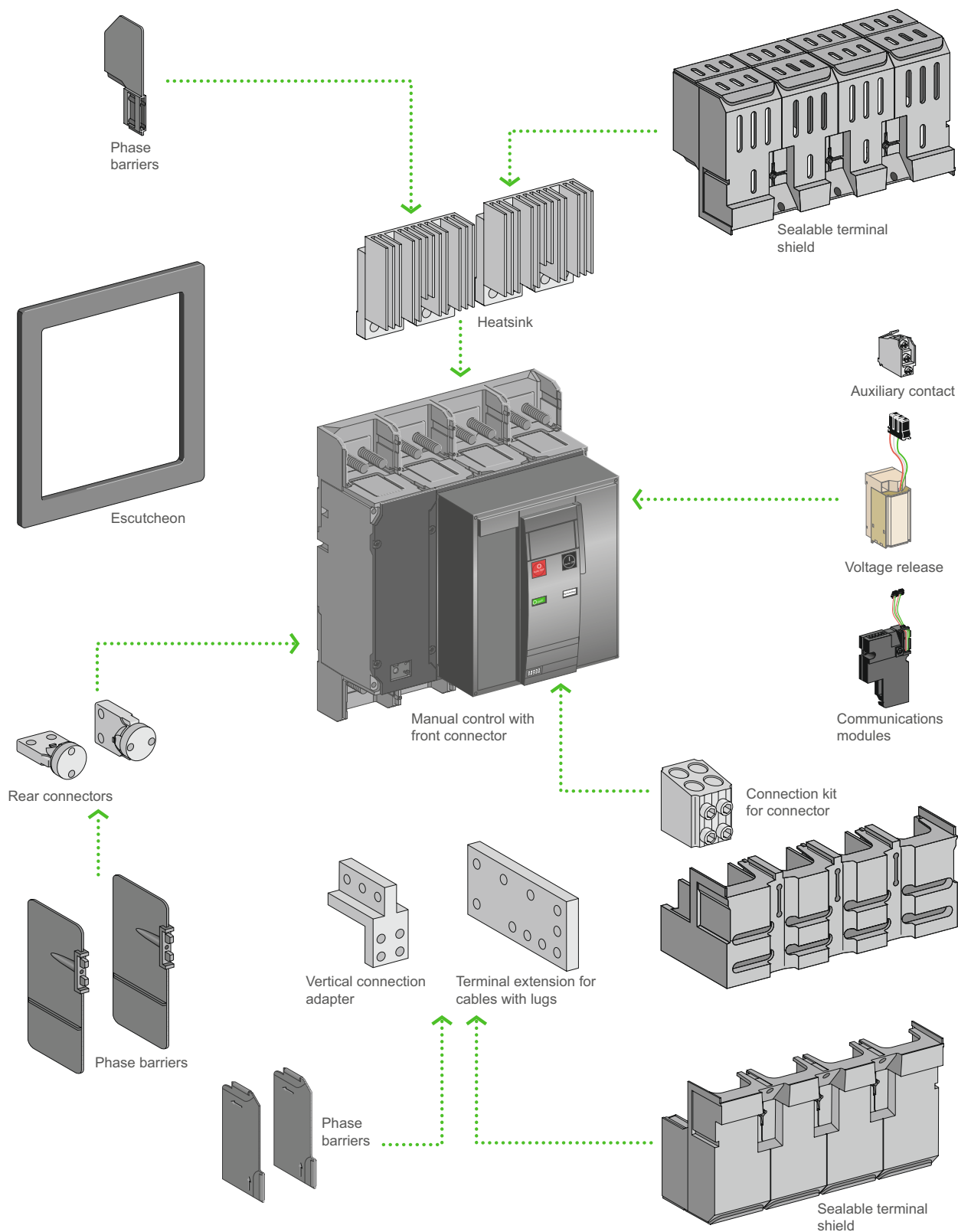
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Accessories and Auxiliaries

Overview of ComPacT NSX630b NA to NSX1600 NA DC PV Switch-Disconnectors

DB431735-eps

A



Functions and Characteristics

ComPacT INS DC PV

DB47877 eps

**Compact
INS PV-1**

Ui 600V
 Uimp 8 kV
 Ith 40A 60°
 --- 600V DC Max 4PS

	Ue (V)	Ie
DC21B	600	10A
DC21B	500	25A
DC21B	400	32A
DC21B	300	40A

IEC / EN 60947-3 

**Schneider
Electric**



ComPacT INS PV-1

No matter the size or scale of the project, Schneider Electric, has a photovoltaic solution to fit your needs. Fast ROI, high efficiency – it's all a part of our offer as the world leader in energy management.

The INS PV-1 is a direct current switch disconnecter dedicated to array isolation and control with Voc until 600 V DC.

A

ComPacT			INS80 PV
Number of poles			4 serial pole
Electrical Characteristics			
Conventional thermal current (A)	Ith		
Conventional thermal current in enclosure (A)	Ithe		
Rated insulation level (DC V)	Ui		
Impulse-withstand voltage (kV)	Uimp		
Rated operational voltage (DC V)	Ue		
Rated operational voltage DC21B (V)			
Rated operational current (A)	Ie	Electrical DC	
	DC21B	600	
	DC21B	500	
	DC21B	400	
	DC21B	300	
Rated duties	Uninterrupted duty		-
	Intermittent duty		Class 120 - 60 %
Short-circuit making capacity (kA peak)	Icm		
Short-time withstand current (A rms)	Icw		
Suitability for isolation			Yes
Durability (O-C cycles)	Mechanical		20000
	Electrical DC		
	600 V		1500
Positive contact indication			Yes
Visible break			-
Emergency-off switch disconnecter			Yes
Degree of pollution			3

Functions and Characteristics

Switch-Disconnecter Selection

ComPacT INS40 to 160 DC

A



ComPacT INS40 to 80 switch-disconnector



ComPacT INS40 to 80 emergency-off switch-disconnector



ComPacT INS100 to 160 switch-disconnector



ComPacT INS100 to 160 emergency-off switch-disconnector

ComPacT INS switch-disconnectors

Number of poles

Electrical Characteristics As Defined by IEC 60947-1/60947-3 and EN 60947-1/60947-3

Conventional thermal current (A)	Ith	at 60 °C
Conventional thermal current in enclosure	Ithe	at 60 °C
Rated insulation level (V)	Ui	AC 50/60 Hz
Impulse-withstand voltage (kV)	Uimp	
Rated operational voltage (V)	Ue	AC 50/60 Hz DC
Rated operational voltage AC20 and DC20 (V)		AC 50/60 Hz
Rated operational current (A)	Ie	Electrical DC

125 V (2P in series)

250 V (4P in series)

Rated duties	Uninterrupted duty
	Intermittent duty
Short-circuit making capacity (kA peak)	Icm Min. (switch-disconnector alone)
Short-time withstand current (A rms)	Icw 1 s 3 s 20 s 30 s

Suitability for isolation

Durability (O-C cycles) Mechanical

Electrical DC

250 V

Positive contact indication

Visible break

Emergency-off switch disconnector

Degree of pollution

Upstream Protection

See the "Complementary technical information" in catalog ComPacT INS/INV "LVPED213024EN".

Switch-Disconnecter Selection

ComPacT INS40 to 160 DC

	INS40		INS63		INS80		INS100		INS125		INS160	
	3-4		3-4		3-4		3-4		3-4		3-4	
	40		63		80		100		125		160	
	40		63		80		100		125		160	
	690		690		690		800		800		800	
	8		8		8		8		8		8	
	500		500		500		690		690		690	
	250		250		250		250		250		250	
	690		690		690		750		750		750	
	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A
	40	40	63	63	80	80	100	100	125	125	160	160
	40	40	63	63	80	80	100	100	125	125	160	160
												
	Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %	
	15		15		15		20		20		20	
	3000		3000		3000		5500		5500		5500	
	1730		1730		1730		3175		3175		3175	
	670		670		670		1230		1230		1230	
	550		550		550		1000		1000		1000	
												
	20000		20000		20000		15000		15000		15000	
	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A
	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
												
	-		-		-		-		-		-	
												
	3		3		3		3		3		3	
	-		-		-		-		-		-	

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Switch-Disconnecter Selection

ComPacT INS40 to 160 DC

A

ComPacT INS switch-disconnectors

Installation

Fixed, front connection

Fixed, rear connection

On symmetrical rails

On a backplate

Connection

By cables To bare cable connectors

By cables with lugs Directly to terminals

To spreaders

To vertical-connection adapters via cable-lug adapters

Flat-facing bars Directly to terminals

To spreaders

Edgewise bars To vertical-connection adapters

Indication and Measurement Auxiliaries

Auxiliary contacts

Current-transformer module

Control, Locking and Interlocking

Control Direct front rotary handle

Extended front rotary handle

Direct lateral rotary handle

Extended lateral rotary handle

Locking By keylock
By padlocksInterlocking By keylock
Mechanical

Complete source-changeover assembly

Operating torque (Nm) (typical value for 3-4 poles with front handle)

Installation and Connection Accessories

Bare cable connectors

Rear connectors

Terminal extensions

Spreaders

One-piece spreader

Terminal shrouds

Terminal shields

Interphase-barrier

Front panel escutcheons

Coupling accessories

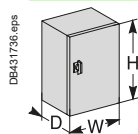
Tightening torque for electrical connections (Nm)

Dimensions and Weights

Overall dimensions H x W x D (mm) 3 poles
4 polesApproximate weight (kg) 3 poles
4 poles

Enclosure Dimensions

H x W x D (mm)



Functions and Characteristics

Switch-Disconnecter Selection

ComPacT INS40 to 160 DC

	INS40	INS63	INS80	INS100	INS125	INS160
	-	-	-			
				-	-	-
	-	-	-			
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	0.7 < Nm < 1.3	0.7 < Nm < 1.3	0.7 < Nm < 1.3	1.4 < Nm < 2	1.4 < Nm < 2	1.4 < Nm < 2
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	5	5	5	8	8	8
	85 x 90 x 62.5	85 x 90 x 62.5	85 x 90 x 62.5	100 x 135 x 62.5	100 x 135 x 62.5	100 x 135 x 62.5
	85 x 90 x 62.5	85 x 90 x 62.5	85 x 90 x 62.5	100 x 135 x 62.5	100 x 135 x 62.5	100 x 135 x 62.5
	0.5	0.5	0.5	0.8	0.8	0.8
	0.6	0.6	0.6	0.9	0.9	0.9
	190 x 115 x 55	190 x 115 x 55	190 x 115 x 55	260 x 160 x 55	260 x 160 x 55	260 x 160 x 55

A

Functions and Characteristics

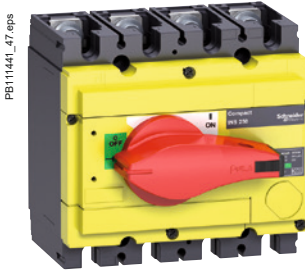
Switch-Disconnecter Selection

ComPacT INS250-100 to 630 DC

A



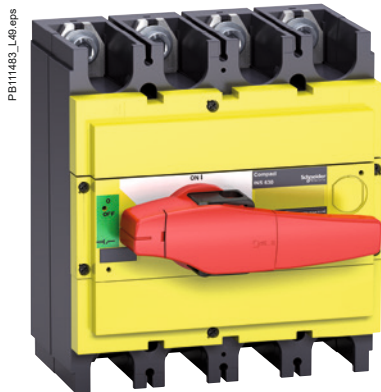
ComPacT INS250 switch-disconnector



ComPacT INS250 emergency-off switch-disconnector



ComPacT INS630 switch-disconnector



ComPacT INS630 emergency-off switch-disconnector

ComPacT INS switch-disconnectors

Number of poles

Electrical Characteristics As Defined by IEC 60947-1/60947-3 and EN 60947-1/60947-3

Conventional thermal current (A)	I_{th}	at 60 °C
Conventional thermal current in enclosure	I_{the}	at 60 °C
Rated insulation level (V)	U_i	AC 50/60 Hz
Impulse-withstand voltage (kV)	U_{imp}	
Rated operational voltage (V)	U_e	AC 50/60 Hz DC
Rated operational voltage AC20 and DC20 (V)		AC 50/60 Hz
Rated operational current (A)	I_e	Electrical DC 125 V (2P in series) 250 V (4P in series)
Rated duties		Uninterrupted duty Intermittent duty
Short-circuit making capacity (kA peak)	I_{cm}	Min. (switch-disconnector alone)
Short-time withstand current (A rms)	I_{cw}	1 s 3 s 20 s 30 s
Suitability for isolation		
Durability (O-C cycles)		Mechanical Electrical DC 250 V
Positive contact indication		
Visible break		
Emergency-off switch disconnector		
Degree of pollution		

Upstream Protection

See the "Complementary technical information" in catalog ComPacT INS/INV "LVPED213024EN".

[1] 550 A (DC).

Switch-Disconnecter Selection

ComPacT INS250-100 to 630 DC

	INS250-100		INS250-160		INS250-200		INS250		INS320		INS400		INS500		INS630		
	3-4		3-4		3-4		3-4		3-4		3-4		3-4		3-4		
	100		160		200		250		320		400		500		630		
	100		160		200		250		320		400		500		630 ^[1]		
	800		800		800		800		800		800		800		800		
	8		8		8		8		8		8		8		8		
	690		690		690		690		690		690		690		690		
	250		250		250		250		250		250		250		250		
	750		750		750		750		750		750		750		750		
	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC23B
	100	100	160	160	200	200	250	250	320	320	400	400	500	500	550	550	630
	100	100	160	160	200	200	250	250	320	320	400	400	500	500	550	550	630
	Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		Class 120 - 60 %		
	30		30		30		30		50		50		50		50		
	8500		8500		8500		8500		20000		20000		20000		20000		
	4900		4900		4900		4900		11500		11500		11500		11500		
	2200		2200		2200		2200		4900		4900		4900		4900		
	1800		1800		1800		1800		4000		4000		4000		4000		
	15000		15000		15000		15000		10000		10000		10000		10000		
	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC23A	DC23B	DC23A	DC23B	DC23A	DC23B	DC23A	DC23B	
	1500	1500	1500	1500	1500	1500	1500	1500	1000	-	1000	-	1000	-	1000	200	
	-		-		-		-		-		-		-		-		-
	3		3		3		3		3		3		3		3		
	-		-		-		-		-		-		-		-		

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Switch-Disconnecter Selection

ComPacT INS250-100 to 630 DC

A

ComPacT INS switch-disconnectors

Installation

Fixed, front connection

Fixed, rear connection

On symmetrical rails

On a backplate

Connection

By cables To bare cable connectors

By cables with lugs Directly to terminals

To spreaders

To vertical-connection adapters via cable-lug adapters

Flat-facing bars Directly to terminals

To spreaders

Edgewise bars To vertical-connection adapters

Indication and measurement auxiliaries

Auxiliary contacts

Current-transformer module

Control, locking and interlocking

Control Direct front rotary handle

Extended front rotary handle

Direct lateral rotary handle

Extended lateral rotary handle

Locking By keylock

By padlocks

Interlocking By keylock

Mechanical

Complete source-changeover assembly

Operating torque (Nm) (typical value for 3-4 poles with front handle)

Installation and Connection Accessories

Bare cable connectors

Rear connectors

Terminal extensions

Spreaders

One-piece spreader

Terminal shrouds

Terminal shields

Interphase-barrier

Front panel escutcheons

Coupling accessories

Tightening torque for electrical connections (Nm)

Dimensions and Weights

Overall dimensions H x W x D (mm) 3 poles

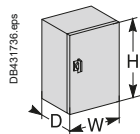
4 poles

Approximate weight (kg) 3 poles

4 poles

Enclosure Dimensions

H x W x D (mm)



A

A

Switch-Disconnecter Selection

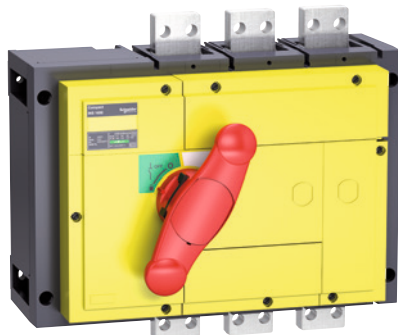
ComPacT INS630b to 2500 DC

PB111510_45.epa



ComPacT INS1600 switch-disconnector

PB111511_45.epa



ComPacT INS1600 emergency-off switch-disconnector

PB111518_72.epa



ComPacT INS2500 switch-disconnector

ComPacT INS switch-disconnectors

Number of poles

Electrical Characteristics As Defined by IEC 60947-1/60947-3 and EN 60947-1/60947-3

Conventional thermal current (A)	I_{th}	at 60 °C
Conventional thermal current in enclosure	I_{the}	at 60 °C
Rated insulation level (V)	U_i	AC 50/60 Hz
Impulse-withstand voltage (kV)	U_{imp}	
Rated operational voltage (V)	U_e	AC 50/60 Hz DC
Rated operational voltage AC20 and DC20 (V)		AC 50/60 Hz
Rated operational current (A)	I_e	Electrical DC 125 V (2P in series) 250 V (4P in series)
Rated duties		Uninterrupted duty Intermittent duty
Short-circuit making capacity (kA peak)	I_{cm}	Min. (switch-disconnector alone)
Short-time withstand current (kA rms)	I_{cw}	0.5 s 0.8 s 1 s 3 s 20 s 30 s

Suitability for isolation

Durability (O-C cycles)

Mechanical

Electrical DC

125 V (2P)

250 V (4P)

Positive contact indication

Visible break

Emergency-off switch disconnector

Degree of pollution

Upstream Protection

See the "Complementary technical information" catalog ComPacT INS/INV "LVPED213024EN".

[1] For vertical connection busbars only. For horizontal connection busbars, see derating charts in "Installation recommendations" in catalog ComPacT INS/INV "LVPED213024EN".

Switch-Disconnecter Selection

ComPacT INS630b to 2500 DC

	INS630b			INS800			INS1000			INS1250			INS1600			INS2000			INS2500		
	3-4			3-4			3-4			3-4			3-4			3-4			3-4		
	630			800			1000			1250			1600 ^[1]			2000			2500		
	630			800			1000			1250			1600 ^[1]			2000			2500		
	1000			1000			1000			1000			1000			1000			1000		
	12			12			12			12			12			12			12		
	690			690			690			690			690			690			690		
	250			250			250			250			250			250			250		
	800			800			800			800			800			800			800		
	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21B	DC22B	DC23B	DC21B	DC22B	DC23B
	630/2	630/2	630/2	800/2	800/2	800/2	1000/2	1000/2	1000/2	1250/2	1250/2	1250/2	1600/2	1600/2	1600/2	2000/2	2000/2	-	2500/2	2500/2	-
	630/4	630/4	630/4	800/4	800/4	800/4	1000/4	1000/4	1000/4	1250/4	1250/4	1250/4	1600/4	1600/4	1600/4	2000/4	2000/4	-	2500/4	2500/4	-
	⊙			⊙			⊙			⊙			⊙			⊙			⊙		
	Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %		
	75			75			75			75			75			105			105		
	50			50			50			50			50			50			50		
	42			42			42			42			42			50			50		
	35			35			35			35			35			50			50		
	20			20			20			20			20			30			30		
	10			10			10			10			10			13			13		
	8			8			8			8			8			11			11		
	⊙			⊙			⊙			⊙			⊙			⊙			⊙		
	5000			3000			3000			3000			3000			3000			3000		
	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23B	DC21B	DC22B	DC23B	DC21B	DC22B	DC23B
	1000	1000	1000	500	500	500	500	500	500	500	500	500	500	500	500	100	100	-	100	100	-
	1000	1000	1000	500	500	500	500	500	500	500	500	500	500	500	500	100	100	-	100	100	-
	⊙			⊙			⊙			⊙			⊙			⊙			⊙		
	-			-			-			-			-			-			-		
	⊙			⊙			⊙			⊙			⊙			-			-		
	3			3			3			3			3			3			3		
	-			-			-			-			-			-			-		

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Switch-Disconnecter Selection

ComPacT INS630b to 2500 DC

A

ComPacT INS switch-disconnectors

Installation

Fixed, front connection

Fixed, rear connection

On symmetrical rails

On a backplate

Connection

By cables

To bare cable connectors

By cables with lugs

Directly to terminals

To spreaders

To vertical-connection adapters via cable-lug adapters

Flat-facing bars

Directly to terminals

To spreaders

Edgewise bars

To vertical-connection adapters

Indication and Measurement Auxiliaries

Auxiliary contacts

Current-transformer module

Control, Locking and Interlocking

Control

Direct front rotary handle

Extended front rotary handle

Direct lateral rotary handle

Extended lateral rotary handle

Locking

By keylock

By padlocks

Interlocking

By keylock

Mechanical

Complete source-changeover assembly

Operating torque (Nm) (typical value for 3-4 poles with front handle)

Installation and Connection Accessories

Bare cable connectors

Rear connectors

Terminal extensions

Spreaders

One-piece spreader

Terminal shrouds

Terminal shields

Interphase-barrier

Front panel escutcheons

Coupling accessories

Tightening torque for electrical connections (Nm)

Dimensions and Weights

Overall dimensions H x W x D (mm)

3 poles

4 poles

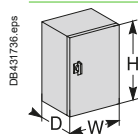
Approximate weight (kg)

3 poles

4 poles

Enclosure Dimensions

H x W x D (mm)



Com**PacT** INS630b to 2500 DC

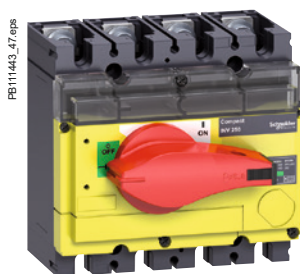
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Switch-Disconnecter Selection

ComPacT INV100 to 630 DC



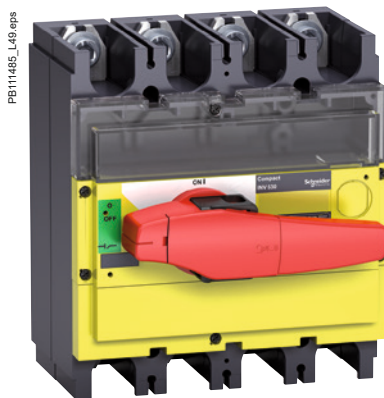
ComPacT INV250 switch-disconnector



ComPacT INV250 emergency-off switch-disconnector



ComPacT INV630 switch-disconnector



ComPacT INV630 emergency-off switch-disconnector

ComPacT INV switch-disconnectors

Number of poles

Electrical Characteristics As Defined by IEC 60947-1/60947-3 and EN 60947-1/60947-3

Conventional thermal current (A)	I_{th}	at 60 °C
Conventional thermal current in enclosure	I_{the}	at 60 °C
Rated insulation level (V)	U_i	AC 50/60 Hz
Impulse-withstand voltage (kV)	U_{imp}	
Rated operational voltage (V)	U_e	AC 50/60 Hz DC

Rated operational voltage AC20 and DC20 (V) AC 50/60 Hz

Rated operational current (A)	I_e	Electrical DC
		125 V (2P in series) 250 V (4P in series)

Rated duties	Uninterrupted duty
	Intermittent duty
Short-circuit making capacity (kA peak)	I_{cm} Min. (switch-disconnector alone)
Short-time withstand current (A rms)	I_{cw} 1 s 3 s 20 s 30 s

Suitability for isolation

Durability (O-C cycles)	Mechanical Electrical DC 250 V
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Positive contact indication

Visible break

Emergency-off switch disconnector

Degree of pollution

Upstream Protection

See the "Complementary technical information" in catalog ComPacT INS/INV "LVPED213024EN".

[1] 550 A (DC).

Switch-Disconnecter Selection

ComPacT INV100 to 630 DC

	INV100			INV160			INV200			INV250			INV320			INV400			INV500			INV630		
	3-4			3-4			3-4			3-4			3-4			3-4			3-4			3-4		
	100			160			200			250			320			400			500			630		
	100			160			200			250			320			400			500			630 ^[1]		
	800			800			800			800			800			800			800			800		
	8			8			8			8			8			8			8			8		
	690			690			690			690			690			690			690			690		
	250			250			250			250			250			250			250			250		
	750			750			750			750			750			750			750			750		
	DC21A	DC22A	DC23B	DC21A	DC22A	DC23B	DC21A	DC22A	DC23B	DC21A	DC22A	DC23B	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A/DC23B
	100	100	100	160	160	160	200	200	200	250	250	250	320	320	320	400	400	400	500	500	500	550	550	550/630
	100	100	100	160	160	160	200	200	200	250	250	250	320	320	320	400	400	400	500	500	500	550	550	550/630
	⊙			⊙			⊙			⊙			⊙			⊙			⊙			⊙		
	Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %		
	30			30			30			30			50			50			50			50		
	8500			8500			8500			8500			20000			20000			20000			20000		
	4900			4900			4900			4900			11500			11500			11500			11500		
	2200			2200			2200			2200			4900			4900			4900			4900		
	1800			1800			1800			1800			4000			4000			4000			4000		
	⊙			⊙			⊙			⊙			⊙			⊙			⊙			⊙		
	15000			15000			15000			15000			10000			10000			10000			10000		
	DC22A	DC23A		DC22A	DC23A		DC22A	DC23A		DC22A	DC23A		DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A/DC23B
	1500	1500		1500	1500		1500	1500		1500	1500		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000/200
	⊙			⊙			⊙			⊙			⊙			⊙			⊙			⊙		
	⊙			⊙			⊙			⊙			⊙			⊙			⊙			⊙		
	⊙			⊙			⊙			⊙			⊙			⊙			⊙			⊙		
	3			3			3			3			3			3			3			3		
	-			-			-			-			-			-			-			-		

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Switch-Disconnecter Selection

ComPacT INV100 to 630 DC

A

ComPacT INV switch-disconnectors

Installation

Fixed, front connection

Fixed, rear connection

On symmetrical rails

On a backplate

Connection

By cables To bare cable connectors

By cables with lugs Directly to terminals

To spreaders

To vertical-connection adapters via cable-lug adapters

Flat-facing bars Directly to terminals

To spreaders

Edgewise bars To vertical-connection adapters

Indication and Measurement Auxiliaries

Auxiliary contacts

Current-transformer module

Control, Locking and Interlocking

Control Direct front rotary handle

Extended front rotary handle

Direct lateral rotary handle

Extended lateral rotary handle

Locking By keylock

By padlocks

Interlocking By keylock

Mechanical

Complete source-changeover assembly

Operating torque (Nm) (typical value for 3-4 poles with front handle)

Installation and Connection Accessories

Bare cable connectors

Rear connectors

Terminal extensions

Spreaders

One-piece spreader

Terminal shrouds

Terminal shields

Interphase-barrier

Front panel escutcheons

Coupling accessories

Tightening torque for electrical connections (Nm)

Dimensions and Weights

Overall dimensions H x W x D (mm)

3 poles

4 poles

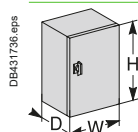
Approximate weight (kg)

3 poles

4 poles

Enclosure Dimensions

H x W x D (mm)



Switch-Disconnecter Selection

ComPacT INV100 to 630 DC

	INV100	INV160	INV200	INV250	INV320	INV400	INV500	INV630
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-				
			<					

Functions and Characteristics

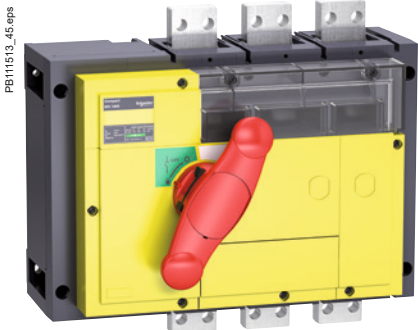
Switch-Disconnecter Selection

Com**PacT** INV630b to 2500 DC

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ComPacT INV1600 switch-disconnector



ComPacT INV1600 emergency-off switch-disconnector



ComPacT INV2500 switch-disconnector

ComPacT INV switch-disconnectors

Number of poles

Electrical Characteristics As Defined by IEC 60947-1/60947-3 and EN 60947-1/60947-3

Conventional thermal current (A)	I_{th}	at 60 °C
Conventional thermal current in enclosure	I_{the}	at 60 °C
Rated insulation level (V)	Ui	AC 50/60 Hz
Impulse-withstand voltage (kV)	U_{imp}	
Rated operational voltage (V)	U_e	AC 50/60 Hz DC
Rated operational voltage AC20 and DC20 (V)		AC 50/60 Hz
Rated operational current (A)	I_e	Electrical DC 125 V (2P in series) 250 V (4P in series)
Rated duties		Uninterrupted duty Intermittent duty
Short-circuit making capacity (kA peak)	I_{cm}	Min. (switch-disconnector alone)
Short-time withstand current (kA rms)	I_{cw}	0.5 s 0.8 s 1 s 3 s 20 s 30 s
Suitability for isolation		
Durability (O-C cycles)		Mechanical Electrical DC 125 V (2P) 250 V (4P)

Positive contact indication

Visible break

Emergency-off switch disconnector

Degree of pollution

Upstream Protection

See the "Complementary technical information" in catalog ComPacT INS/INV "LVPED213024EN".

[1] For vertical connection busbars only. For horizontal connection busbars, see derating charts in "Installation recommendations" in catalog ComPacT INS/INV "LVPED213024EN".

Switch-Disconnecter Selection

ComPacT INV630b to 2500 DC

INV630b			INV800			INV1000			INV1250			INV1600			INV2000			INV2500		
3-4			3-4			3-4			3-4			3-4			3-4			3-4		
630			800			1000			1250			1600 ^[1]			2000			2500		
630			800			1000			1250			1600 ^[1]			2000			2500		
1000			1000			1000			1000			1000			1000			1000		
12			12			12			12			12			12			12		
690			690			690			690			690			690			690		
250			250			250			250			250			250			250		
800			800			800			800			800			800			800		
DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21B	DC22B	DC23B	DC21B	DC22B	DC23B
630/2	630/2	630/2	800/2	800/2	800/2	1000/2	1000/2	1000/2	1250/2	1250/2	1250/2	1600/2	1600/2	1600/2	2000/2	2000/2	-	2500/2	2500/2	-
630/4	630/4	630/4	800/4	800/4	800/4	1000/4	1000/4	1000/4	1250/4	1250/4	1250/4	1600/4	1600/4	1600/4	2000/4	2000/4	-	2500/4	2500/4	-
⊙			⊙			⊙			⊙			⊙			⊙			⊙		
Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %			Class 120 - 60 %		
75			75			75			75			75			105			105		
50			50			50			50			50			50			50		
42			42			42			42			42			50			50		
35			35			35			35			35			50			50		
20			20			20			20			20			30			30		
10			10			10			10			10			13			13		
8			8			8			8			8			11			11		
⊙			⊙			⊙			⊙			⊙			⊙			⊙		
5000			3000			3000			3000			3000			3000			3000		
DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23A	DC21A	DC22A	DC23B	DC21B	DC22B	DC23B	DC21B	DC22B	DC23B
1000	1000	1000	500	500	500	500	500	500	500	500	500	500	500	500	100	100	-	100	100	-
1000	1000	1000	500	500	500	500	500	500	500	500	500	500	500	500	100	100	-	100	100	-
⊙			⊙			⊙			⊙			⊙			⊙			⊙		
⊙			⊙			⊙			⊙			⊙			⊙			⊙		
⊙			⊙			⊙			⊙			⊙			-			-		
3			3			3			3			3			3			3		
-			-			-			-			-			-			-		

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Switch-Disconnecter Selection

ComPacT INV630b to 2500 DC

A

ComPacT INV switch-disconnectors

Installation

Fixed, front connection

Fixed, rear connection

On symmetrical rails

On a backplate

Connection

By cables

To bare cable connectors

By cables with lugs

Directly to terminals

To spreaders

To vertical-connection adapters via cable-lug adapters

Flat-facing bars

Directly to terminals

To spreaders

Edgewise bars

To vertical-connection adapters

Indication and Measurement Auxiliaries

Auxiliary contacts

Current-transformer module

Control, Locking and Interlocking

Control

Direct front rotary handle

Extended front rotary handle

Direct lateral rotary handle

Extended lateral rotary handle

Locking

By keylock

By padlocks

Interlocking

By keylock

Mechanical

Complete source-changeover assembly

Operating torque (Nm) (typical value for 3-4 poles with front handle)

Installation and Connection Accessories

Bare cable connectors

Rear connectors

Terminal extensions

Spreaders

One-piece spreader

Terminal shrouds

Terminal shields

Interphase-barrier

Front panel escutcheons

Coupling accessories

Tightening torque for electrical connections (Nm)

Dimensions and Weights

Overall dimensions H x W x D (mm)

3 poles

4 poles

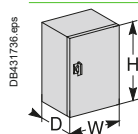
Approximate weight (kg)

3 poles

4 poles

Enclosure Dimensions

H x W x D (mm)



Switch-Disconnecter Selection

ComPacT INV630b to 2500 DC

	INV630b	INV800	INV1000	INV1250	INV1600	INV2000	INV2500
	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	-	-	-	-	-	-	-
	⊙	⊙	⊙	⊙	⊙	⊙	⊙
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	300 x 410 x 146.5	300 x 410 x 146.5	300 x 410 x 146.5	300 x 410 x 146.5	300 x 410 x 146.5	440 x 462.5 x 227.5	440 x 462.5 x 227.5
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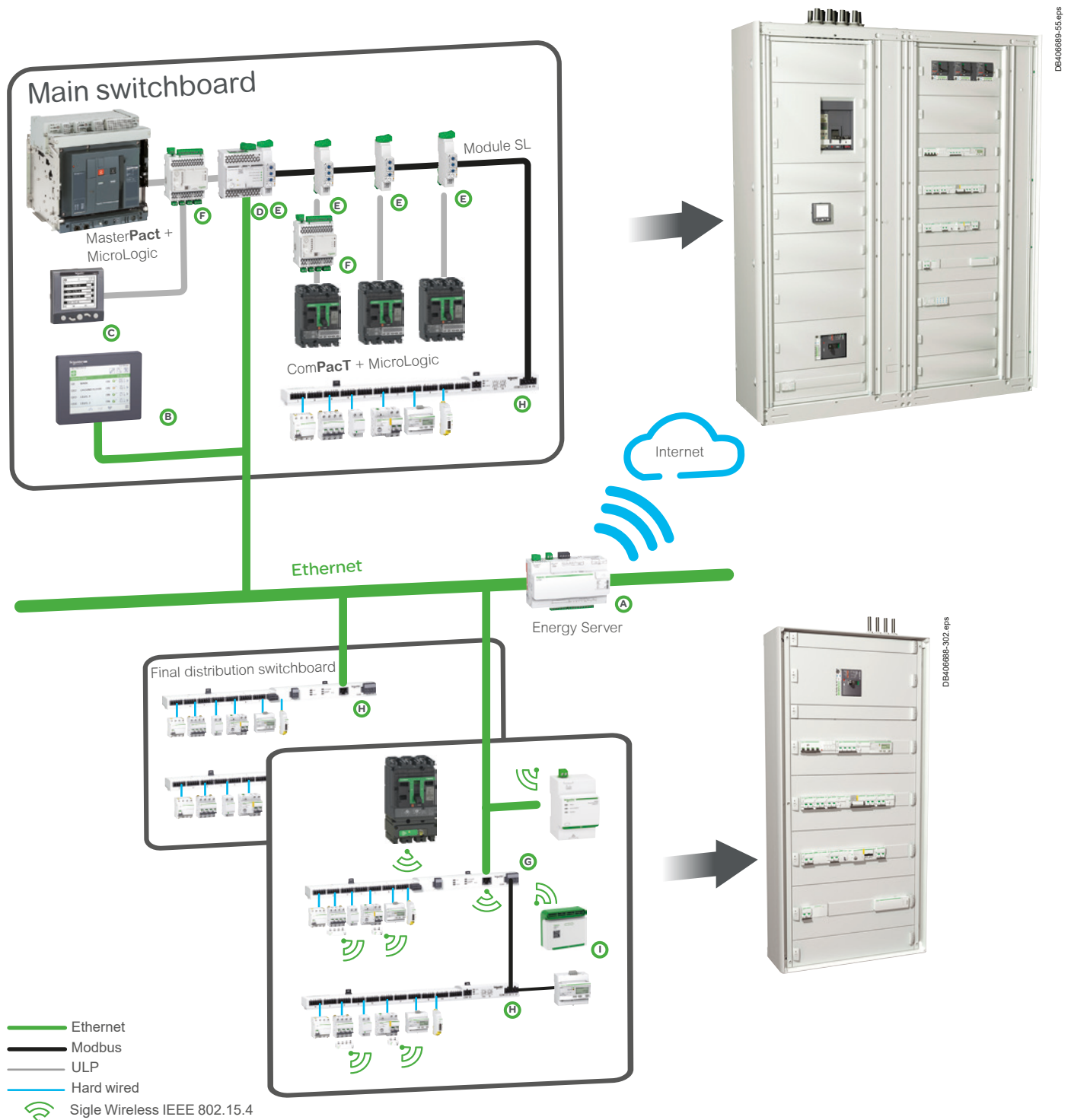
Communication

Enerlin'X Digital System - Overview

Enerlin'X communication system provides access to status, electrical values and devices control using Ethernet and Modbus SL communication protocols.

Ethernet has become the universal link between switchboards, computers and communication devices inside the building. The large amount of information which can be transferred makes the connection of Enerlin'X digital system to hosted web services of Schneider Electric a reality. More advantages are offered to integrators thanks to configuration web pages available remotely or on the local Ethernet network.

Modbus SL is the most widely used communication protocol in industrial networks. It operates in master-slave mode. The devices (slaves) communicate one after the other with a gateway (master).



Communication

Enerlin'X Digital System - Overview

Enerlin'X digital devices and displays							
	Name	Function	Port (to device)	(to server)	Inputs	Outputs	Cial. Ref.
A	 Com'X 210	Energy data logger + Ethernet Gateway	Ethernet	Ethernet cable + WiFi	64 devices: 6 binary 2 analog	-	EBX210
	Com'X 510 24 V DC + PoE	Energy server + Ethernet Gateway	Modbus Smartlink SI B, Zigbee (to wireless meters)		32 Modbus devices + other Ethernet devices (Modbus TCP)	-	EBX510
B		Ethernet LCD color touch screen	-	Ethernet		-	LV434128
C		LCD display for circuit breaker	ULP	-	1 circuit breaker	-	TRV00121
D		Switchboard server	Modbus Smartlink SI B & ULP	Ethernet	20 circuit breakers	-	LV434002
	IFE interface	Ethernet interface for circuit breakers	ULP	Ethernet	1 circuit breaker	-	LV434001
E		Modbus interface for circuit breaker	ULP	Modbus Smartlink SI B	1 circuit breaker	-	LV434000
F		Input/Output application module for circuit breaker	ULP	ULP	6 binary 1 analog (PT100 sensor)	3	LV434063
G		Ethernet server for I/O and Modbus Smartlink SI B devices	Modbus Smartlink SI B & Wireless to PowerTag	Ethernet	14 binary 2 analog	7	A9XMZA08
H		Modbus interface with Input/Output functions	-	Modbus Smartlink SI B	22 binary	11	A9XMSB11
I		Detection of overheating cables	-	-	-	-	SMT10020

> EcoStruxure Power Connected Products Catalog



LVCATENLX_EN

Ethernet Gateway or Interface: routes an internal traffic (ULP or other protocols) to the Internet, the outgoing messages are coded with Modbus TCP/IP protocol.

Server (Switchboard, Energy): routes the internal traffic to the Internet. Other complementary functions such as data logging and storage. Provides devices status and energy trends on internal web pages...

PowerLogic™ HeatTag: HeatTag is a smart sensor for early detection of overheating wire connections or overheating cables. HeatTag helps prevent electrical switchboards from being damaged, by analyzing gas and particles in the air and sending alerts before any smoke or insulator browning.

Note: For more information, see [Configuration & commissioning guide of connected devices & software - New buildings](#)

Communication

IFE Ethernet Interface



IFE interface, ref.: LV434001



IFE interface + gateway, ref.: LV434002

IFE Interface, IFE Interface + Gateway Description

Introduction

The IFE interface and the IFE switchboard server enable LV circuit breakers to be connected to an Ethernet network. The IFE switchboard server incorporates a Modbus gateway. The IFE interface and IFE switchboard server are both equipped with two ULP ports and two Ethernet ports. The IFE switchboard server is equipped with a Modbus RS 485 serial connection. The following circuit breakers can be connected to IFE interface and to IFE switchboard server: Fixed type MasterPact NT/NW, ComPact NSX or PowerPact.

IFE Interface, Ref. LV434001

Provides an Ethernet access to a single LV circuit breaker. The circuit breaker is connected to the IFE interface via its ULP port and a prefabricated ULP cord.

IFE Switchboard Server, Ref.: LV434002

Provides an Ethernet access to one or several LV circuit breakers. It allows to interface to Ethernet:

- One single circuit breaker connected to the IFE interface via its ULP port and a prefabricated ULP cord,
 - Up to 12 ComPact NSX connected through the Modbus serial line interface.
- Each ComPact NSX is connected to Modbus by means of a dedicated IFM interface module performing the ULP/Modbus conversion.

The connection between each ComPact NSX and its associated IFM interface is realized by a prefabricated ULP cord connected to ULP ports.

IFE Interface, IFE Switchboard Server

Provides an Ethernet access to one or several LV circuit breakers.

Functions

- Interface - one circuit breaker is connected to the IFE interface via its ULP port.
- Gateway: several circuit breakers on a Modbus network are connected via the IFE interface + gateway master Modbus port.

IFE Interface, IFE Interface + Gateway Features

- Dual 10/100 Mbps Ethernet port for simple daisy chain connection
- Device profile web service for discovery of the IFE interface, IFE interface + gateway on the LAN
- ULP compliant for localization of the IFE interface in the switchboard
- Ethernet interface for ComPact, MasterPact and PowerPact circuit breakers
- Gateway for Modbus-SL connected devices (IFE interface + gateway only)
- Embedded set-up web pages
- Embedded monitoring web pages
- Embedded control web pages
- Built-in e-mail alarm notification
- RBAC (Role Base Access Control) for the embedded control web pages
- RSTP (Rapid Scanning Tree Protocol) is a solution to implement redundant Ethernet networks
- Internal real-time clock with battery back-up
- RBAC (Role Base Access Control) for the embedded control web pages
- RSTP (Rapid Scanning Tree Protocol) is a solution to implement redundant Ethernet networks

Mounting

The IFE interface and the IFE switchboard server are DIN rail mounting devices. A stacking accessory enables the user to connect several IFMs (ULP to Modbus serial line interfaces) to an IFE switchboard server without additional wiring.

24 V DC Power Supply

The IFE interface and the IFE switchboard server must be supplied either with a 24 V DC AD or with a 24 V DC ABL8 RPS power supply. The IFMs stacked to an IFE switchboard server are supplied by the IFE, thus it is not necessary to supply them separately.

Note: The connection of the +/- of the power supply on +/- terminals of the IFE device must be strictly respected. Crossing the polarities may damage the device.

IFE Interface, IFE Switchboard Server Firmware Update

The firmware can be updated using the EcoStruxure Power Commission software.

Required Circuit Breaker Communication Modules

The connection to IFE interface or to IFE switchboard server requires ULP communication ports.

- MasterPact NT/NW (Fixed or drawout): BCM ULP communication module.
- Drawout MasterPact NT/NW: BCM ULP and its respective I/O (Input/Output) application module.

All connection configurations for MasterPact NT/NW require the breaker ULP cord. The insulated NSX cord is mandatory for system voltages greater than 480 V AC. When the second ULP RJ45 connector is not used, it must be closed with an ULP terminator (TRV00880).

Characteristic		Value
Type of interface module		Modbus RTU, RS485 serial connection Modbus TCP/IP Ethernet
Transmission	Modbus RS485	Transfer rate: 9,600...19,200 Baud Medium Double shielded twisted pair Impedance 120 Ω
	Ethernet	Transfer rate: 10/100 Mbps Medium STP, Cat5e, straight cable
Structure	Type	Modbus, Ethernet
	Method	Master/Slave
Device type	Modbus	Master
	Ethernet	Server
Turnaround time	Modbus	10 ms
	Ethernet	1 ms
Maximum length of cable	Modbus	1000 m
	Ethernet	100 m
Type of bus connector	Modbus	4-pin connector
	Ethernet	RJ45 (Shielded)

Communication

IFE Ethernet Interface

DB419230.eps

DB425732.eps

DB425733.eps

General characteristics		
Environmental characteristics		
Conforming to standards		IEC 60950, IEC 60947-6-2, UL 508, UL 60950, IACS E10
Certification		c UL us, CE, EAC, FCC marking
Ambient temperature	storage	-40 to +85 °C
	operation	-25 to +70 °C
Relative humidity		5 - 85 %
Level of pollution		Level 3
Protective treatment		ULV0 conforming to IEC/EN 60068-2-30
Mechanical characteristics		
Shock resistance		Conforming to IEC/EN 60068-2-27 15 g/11 ms, 1/2 sinusoidal
Resistance to sinusoidal vibrations		Conforming to IEC/EN 60068-2-6 5 Hz < f < 8.4 Hz
Electrical characteristics		
Consumption		150 mA at 24 V DC
Resistance to electrostatic discharge		IEC/EN 61000-4-2:
		■ 8 kV air discharge ■ 6 kV contact discharge
Immunity to radiated fields		IEC/EN 61000-4-3: 10 V/m
Immunity to fast transient perturbations		IEC/EN 61000-4-4: 2 kV
Immunity to surges		IEC/EN 61000-4-5: 2 kV common mode
Immunity to conducted radio frequency field		IEC/EN 61000-4-6: 10 V
Physical characteristics		
Dimensions		72 x 105 x 71 mm
Mounting		DIN rail
Weight		182.5 g (0.41 lb)
Degree of protection of the installed I/O		■ On the front panel (wall mounted enclosure): IP4x
		■ Connectors: IP2x
		■ Other parts: IP3x
Connections		Screw type terminal blocks

IFE Web Page Description

Monitoring web page:

- Real time data
- Device logging.

Control web page:

- Single device control.

Diagnostics web page:

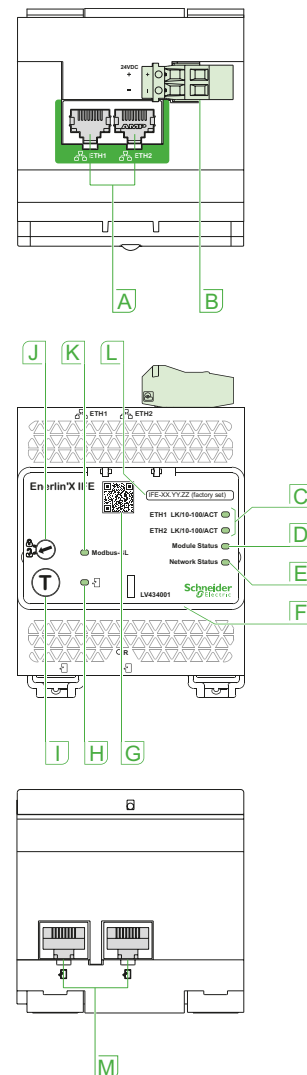
- Statistics
- Device information
- IMU information
- Read device registers
- Communication check.

Maintenance web page:

- Circuit breaker health status
- Maintenance log
- Maintenance counters.

Setup web page:

- Device localization/name
- Ethernet configuration (dual port)
- IP configuration
- Modbus TCP/IP filtering
- Date and time
- E-mail server configuration
- Alarms to be e-mailed
- Device logging
- Device log export
- SNMP parameters
- Preferences
- Advanced services control
- User accounts
- Web page access.



A Ethernet 1 and Ethernet 2 communication port

B 24 V DC power supply terminal block

C Ethernet communication LEDs:

- yellow: 10 Mb
- green: 100 Mb

D Module status LED:

- steady off: no power
- steady green: device operational
- steady red: major fault
- flashing green: standby
- flashing red: minor fault
- flashing green/red: self-test

E Network status LED:

- steady off: no power/no valid IP address
- steady green: connected, valid IP address
- steady orange: default IP address
- steady red: duplicated IP address
- flashing green/red: self-test

F Sealable transparent cover

G QR code to product information

H ULP status LED

I Test button (accessible with cover closed)

J Locking pad

K Modbus traffic status LED (LV434002 only)

L Device name label

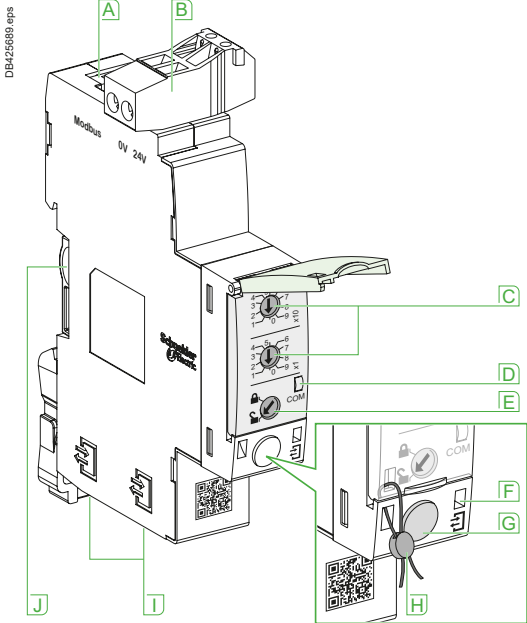
M ULP ports

Communication

IFM Modbus Communication Interface



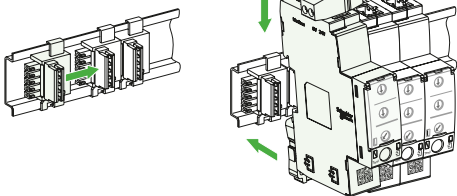
IFM Modbus communication interface
Ref.: LV434000



- A** Modbus screw clamp connector
- B** Modbus address switches
- C** Modbus traffic LED
- D** Modbus locking pad
- E** ULP activity LED
- F** Test button
- G** Mechanical lock
- H** ULP RJ45 connectors
- I** Stacking accessory connection
- J** Modbus Serial RJ45 port

Simplified IFM Installation

Stacking IFM



Stacking accessories

Up to 12 stacked IFM

Function

IFM - Modbus communication interface - is required for connecting MasterPact MTZ, NT/ NW or ComPact NS and NSX to Modbus network whenever the circuit breaker has an ULP port (Universal Logic Plug). The port is available on BCM ULP for MasterPact range and BSCM module for ComPact range.

Note: IFM is defined as an IMU (Intelligent Modular Unit) within the ULP connection System documentation.

Once connected to IFM, the circuit breaker is considered as a slave by the Modbus master. Its electrical values, alarm status, open/close signals can be monitored or controlled by a Programmable Logic Controller or any other system.

Characteristics

ULP port

- 2 RJ45 sockets, internal parallel wiring.
- Connection of a single circuit breaker.
- An ULP line terminator must be connected to the second RJ45 ULP socket. The RJ45 sockets deliver a 24 V DC supply fed from the Modbus socket.
- Built-in test function, for checking the correct connection to the circuit breaker.

Modbus slave port

- Modbus Serial RJ45 port - RJ45 connector provides fast and reliable wiring.
- Lateral socket, for DIN rail stackable connector.
- Both top and lateral sockets are internally parallel wired.
- Multiple IFM can be stacked, thus sharing a common power supply and Modbus line without individual wiring.
- On the front face:
 - Modbus address setting (1 to 99): 2 coded rotary switches
 - Modbus locking pad: enables or disable the circuit breaker remote control and modification of IFM parameters.
 - Self adjusting communication format (Baud rate, parity).

24 V DC power supply

- Screw clamp terminal block
- High electrical insulation between Modbus and 24 V DC connectors
- Separated lines provides improved communication robustness.

Technical Characteristics

General characteristics

Environmental Characteristics

Conforming to standards	IEC 61010, IEC 60950, UL 61010, UL 60950, CISPR 22, 24, 11, IACS E10 c UL us, CE, EAC, FCC marking
Certification	-20 to +70 °C
Ambient temperature	5 - 85 %
Relative humidity	Level 3
Level of pollution	ULV0 conforming to IEC/EN 60068-2-30
Protective treatment	

Mechanical characteristics

Shock resistance	Conforming to IEC/EN 60068-2-27 15 g/11 ms, 1/2 sinusoidal
Resistance to sinusoidal vibrations	Conforming to IEC/EN 60068-2-6 5 Hz < f < 8.4 Hz

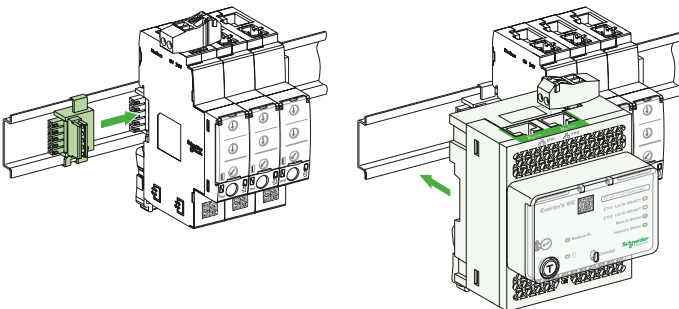
Electrical characteristics

Consumption	30 mA at 24 V DC
Resistance to electrostatic discharge	IEC/EN 61000-4-2: 8 kV AD
Immunity to radiated fields	IEC/EN 61000-4-3: 10 V/m
Immunity to surges	IEC/EN 61000-4-5: class 2

Physical characteristics

Dimensions	109 x 73 x 18 mm
Mounting	DIN rail
Weight	120 g
Degree of protection of the installed module	■ IP20 for connectors ■ IP30 for other areas
Connections	■ RJ45 for ULP and Modbus SL ■ Screw type terminals for Power

Stacking an IFE interface + gateway with IFM



Functions and Characteristics

Communication

COM Option in ComPacT and MasterPact

All the MasterPact devices can be fitted with the communication function thanks to the COM option. MasterPact uses the Ethernet or Modbus communications protocol for full compatibility with the supervision management systems. Eco COM is limited to the transmission of metering data. It is not used to communicate status and controls.

For fixed and Drawout devices, the common communication option is made up of:

- A BCM ULP module, installed behind the MicroLogic control unit and supplied with its set of sensors (OF, SDE, PF and CH micro switches) its kit for connection to XF and MX1 communicating voltage releases and its COM terminal block (inputs E1 to E6). This module is independent of the control unit. It receives and transmits information on the communication network. An infra-red link transmits data between the control unit and the communication module.
Consumption: 30 mA, 24 V.
- IFM, this module required for connection to the network, contains the Modbus address (1 to 99) declared by the user via the two dials in front. It automatically adapts (baud rate, parity) to the Modbus network in which it is installed.

Or

- IFE, the Ethernet interface for LV circuit breaker enables an intelligent modular unit (IMU), for example a MasterPact NT/NW or ComPacT NSX circuit breaker to be connected to an Ethernet network. Each circuit breaker has its own IFE and a corresponding IP address.

For drawout device the Cradle Management option must be added:

I/O (Input/Output) application module for LV breaker, the I/O application module is delivered with withdrawable devices ordered with the COM option, for cradle management. It must be installed on a DIN rail near the device. It must be connected to the ULP system and to the position contacts (CD, CT, CE) that transmit the position of the device in the cradle.

For communicating remote control, option with XF and MX1 communicating voltage releases must be added:

The XF and MX1 communicating voltage releases are equipped for connection to the "device" communication module.

The remote-tripping function (MX2 or MN) are independent of the communication option. They are not equipped for connection to the "device" communication module.

BSCM Module

Functions

The optional BSCM Breaker Status & Control Module is used to acquire device status indications and control the communicating remote-control function. It includes a memory used to manage the maintenance indicators.

Status indications

Indication of device status:
O/F, SD and SDE.

Maintenance indicators

The BSCM module manages the following indicators:

- Mechanical operation counter
- Electrical operation counter
- History of status indications.

It is possible to assign an alarm to the operation counters.

Controls

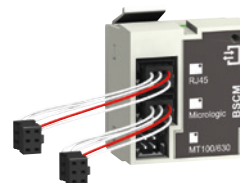
The module can be used to carry out communicating remote control operations: (open, close and reset) in different modes (manual, auto).

Mounting

The BSCM module can be installed on all ComPacT NSX circuit breakers and switch-disconnectors. It simply clips into the auxiliary contact slots. It occupies the slots of one O/F contact and one SDE contact. The BSCM is supplied with 24 V DC power automatically via the NSX cord when the communication system is installed.



BCM ULP



BSCM module

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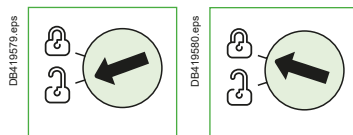
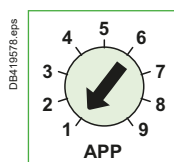
Communication

I/O Application Module



I/O application module

A



I/O Application Module Description

Description

The I/O input/output application module for LV breaker is one of the components of ULP architecture. Built in functionalities and applications enhance control and monitoring needs.

ULP system architecture including I/O modules can be built without any restrictions using a wide range of circuit breakers:

- MasterPact MTZ1/MTZ2/MTZ3/NT/NW
- ComPacT NS1600b-3200
- ComPacT NS630b-1600
- ComPacT NSX100-630 A.

The I/O application module is compliant with the ULP system specifications. Two I/O application modules can be connected in the same ULP architecture.

I/O input/output interface for LV breaker resources

The I/O application module resources are the following:

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

Pre-defined applications

Pre-defined applications improve the IMU approach (Intelligent Modular Unit) in a simple way.

A 9-position rotary switch on the front of the I/O module allows to select the pre-defined applications. Each position is assigned to a pre-defined application except position 9 which allows the user to define a specific application by means of the customer engineering tool. The switch is set in factory to the pre-defined application 1.

For each application the input/output assignment and the wiring diagram are pre-defined. No additional setting with the customer engineering tool is required. The I/O and other resources not assigned to the pre-defined applications are free for user specific applications.

User applications

The user applications with the corresponding resources are defined by means of EcoStruxure Power Commission engineering tool. They use the resources not assigned to the predefined applications. User applications may be required for:

- Protection improvement
- Circuit breaker control
- Motor control
- Energy management
- Monitoring.

24 V DC power supply

The I/O module must be supplied either with a 24 V DC AD or with a 24 V DC ABL8 RPS power supply.

Note: The connection of the +/- of the power supply on +/- terminals of the I/O module must be strictly respected. Crossing the polarities may damage the device.

Mounting

The I/O is a DIN rail mounting device.

Setting Locking Pad

The setting locking pad on the front panel of the I/O enables the setting of the I/O by EcoStruxure Power Commission engineering tool.

Functions and Characteristics

Communication

I/O Application Module

General characteristics

Environmental characteristics

Conforming to standards	IEC 60950, IEC 60947-6-2, UL 508, UL 60950, IACS E10
Certification	c UL us, CE, EAC, FCC marking
Ambient temperature	storage -40 to +85 °C operation -25 to +70 °C
Relative humidity	5 - 85 %
Level of pollution	Level 3
Protective treatment	ULV0 conforming to IEC/EN 60068-2-30

Mechanical characteristics

Shock resistance	Conforming to IEC/EN 60068-2-27 15 g/11 ms, 1/2 sinusoidal
Resistance to sinusoidal vibrations	Conforming to IEC/EN 60068-2-6 5 Hz < f < 8.4 Hz

Electrical characteristics

Consumption	165 mA at 24 V DC
Resistance to electrostatic discharge	IEC/EN 61000-4-2: ■ 8 kV air discharge ■ 6 kV contact discharge
Immunity to radiated fields	IEC/EN 61000-4-3: 10 V/m
Immunity to fast transient perturbations	IEC/EN 61000-4-4: 2 kV
Immunity to surges	IEC/EN 61000-4-5: 2 kV common mode
Immunity to conducted radio frequency field	IEC/EN 61000-4-6: 10 V

Physical characteristics

Dimensions	71.7 x 116 x 70.6 mm
Mounting	DIN rail
Weight	229.5 g (0.51 lb)
Degree of protection of the installed I/O application module	On the front panel (wall mounted enclosure): IP4x I/O parts: IP3x Connectors: IP2x
Connections	Screw type terminal blocks

Digital inputs

Digital input type	Self powered digital input with current limitations as per IEC 61131-2 type 2 standards (7 mA)
Input limit values at state 1 (close)	19.8 - 25.2 V DC, 6.1 - 8.8 mA
Input limit values at state 0 (open)	0 - 19.8 V DC, 0 mA
Maximum cable length	10 m

Note: For a length greater than 10 m and up to 300 m, it is mandatory to use a shielded twisted cable. The shield cable is connected to the I/O functional ground of the I/O application module.

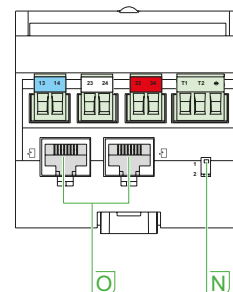
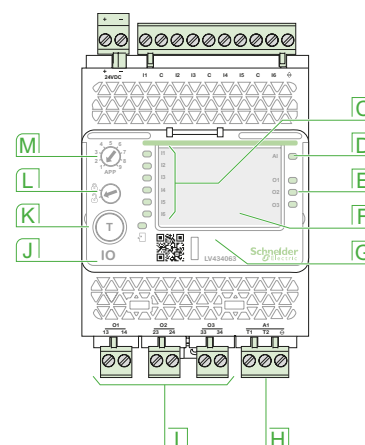
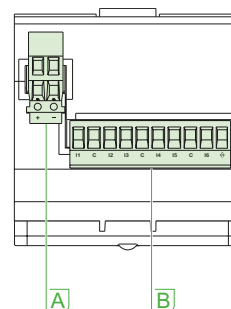
Digital outputs

Digital output type	Bistable relay
Rated voltage	250 V AC maximum ^[1] 30 V DC
Rated carry current	5 A
Contact resistance	30 mΩ
Maximum operating frequency	18000 operations/hr (Mechanical) 1800 operations/hr (Electrical)
Digital output relay protection by an external fuse	External fuse of 5 A or less
Maximum cable length	10 m

Analog inputs

I/O application module analog input can be connected to a Pt100 temperature sensor.

Range	-30 to 200 °C	-22 to 392 °F
Accuracy	±2 °C from -30 to 20 °C ±1 °C from 20 to 140 °C ±2 °C from 140 to 200 °C	±3.6 °F from -22 to 68 °F ±1.8 °F from 68 to 284 °F ±3.6 °F from 284 to 392 °F
Refresh interval	5 s	5 s



- A** 24 V DC power supply terminal block
- B** Digital input terminal block: 6 inputs, 3 commons and 1 shield
- C** 6 input status LEDs
- D** Analog input status LED
- E** 3 output status LEDs
- F** I/O application module identification labels
- G** Sealable transparent cover
- H** Analog input terminal block
- I** Digital output terminal blocks
- J** ULP status LED
- K** Test/reset button (accessible with cover closed)
- L** Setting locking pad
- M** Application rotary switch: 1 to 9
- N** Switch for I/O addressing (I/O 1 or I/O 2)
- O** ULP connectors

[1] 250 V AC OVC 2 according IEC/EN 60947-2. For OVC 3 and 4 surge arresters are required on the polarizing voltage of the output contacts.

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Communication

Communications Modules, IFM and IFE for ComPacT NSX

All ComPacT NSX devices can be equipped with the communication function via a prewired connection system and a Modbus or Ethernet network interface.

The interface can be connected directly or via the FDM121 switchboard display unit. Four functional levels can be combined to adapt to all supervision requirements.

A

Four Functional Levels

The ComPacT NSX can be integrated in a Modbus or Ethernet communication environment. Four functional levels can be used separately or combined.

Communication of status indications

This level is compatible with all ComPacT NSX circuit breakers, whatever the trip unit, and with all switch-disconnectors. Using the BSCM module, the following information is accessible:

- ON/OFF position (O/F)
- Trip indication (SD)
- Fault-trip indication (SDE).

Communication of commands

Also available on all circuit breakers and switch-disconnectors, this level (communicating remote control) can be used to:

- Open
- Close
- Reset.

Modbus principle

The Modbus RS 485 (RTU protocol) system is an open bus on which communicating Modbus devices (ComPacT NS with Modbus COM, Power Meter PM700, PM800, Sepam, Vigilohm, ComPacT NSX, etc.) are installed. All types of PLCs and microcomputers may be connected to the bus.

Addresses

The Modbus communication parameters (address, baud rate, parity) are entered using the Electrical Asset Manager or RSU (Remote Setting Utility).

Number of devices

The maximum number of devices that may be connected to the Modbus bus depends on the type of device (ComPacT with Modbus COM, PM700, PM800, Sepam, Vigilohm, ComPacT NSX, etc.), the baud rate (19200 is recommended), the volume of data exchanged and the desired response time. The RS 485 physical layer offers up to 32 connection points on the bus (1 master, 31 slaves).

A fixed device requires only one connection point (communication module on the device). A drawout device uses two connection points (communication modules on the device and on the chassis).

The number must never exceed 31 fixed devices or 15 drawout devices.

Length of bus

The maximum recommended length for the Modbus bus is 1200 meters.

Bus power source

A 24 V DC power supply is required (less than 20 % ripple, insulation class II).

Ethernet Principle

Ethernet is a data link and physical layer protocol defined by IEEE 802.10 and 100 Mbps specifications that connects computer or other Ethernet devices. Ethernet is an asynchronous Carrier Sense Multiple Access with Collision detection (referred as CSMA/CD) protocol. Carrier Sense means that the hosts can detect whether the medium (coaxial cable) is idle or busy. Multiple Access means that multiple hosts can be connected to the common medium. Collision Detection means a host detects whether its transmission has collided with the transmission of another host (or hosts). IFE Ethernet interface can be connected to a PC or a laptop over Ethernet. The maximum length of Ethernet cable is 100 meters. IFE Ethernet interface + gateway provides a Modbus TCP/IP gateway over Ethernet to enable Modbus TCP communication from a Modbus TCP master to any Modbus slave devices connected to it. The maximum active Modbus TCP client connection is twelve.

IFE Ethernet interface has an embedded web server (web page).

The Modbus RS 485 (RTU protocol) system is an open bus on which communicating Modbus devices (ComPacT NS with Modbus COM, Power Meter PM700, PM800, Sepam, Vigilohm, ComPacT NSX, etc.) are installed. All types of PLCs and microcomputers may be connected to the bus.

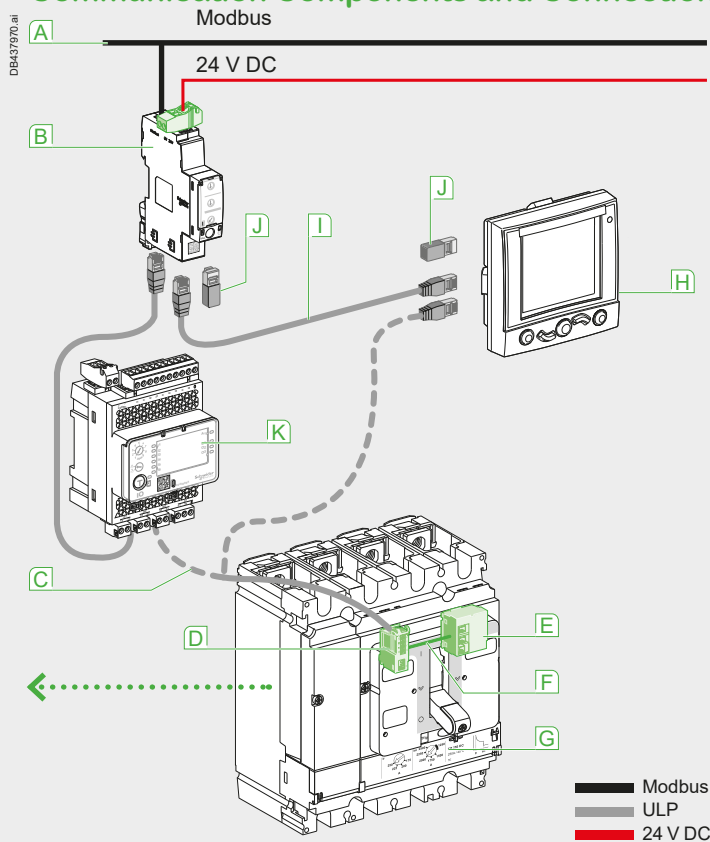
Communication

Communication Components and Connections

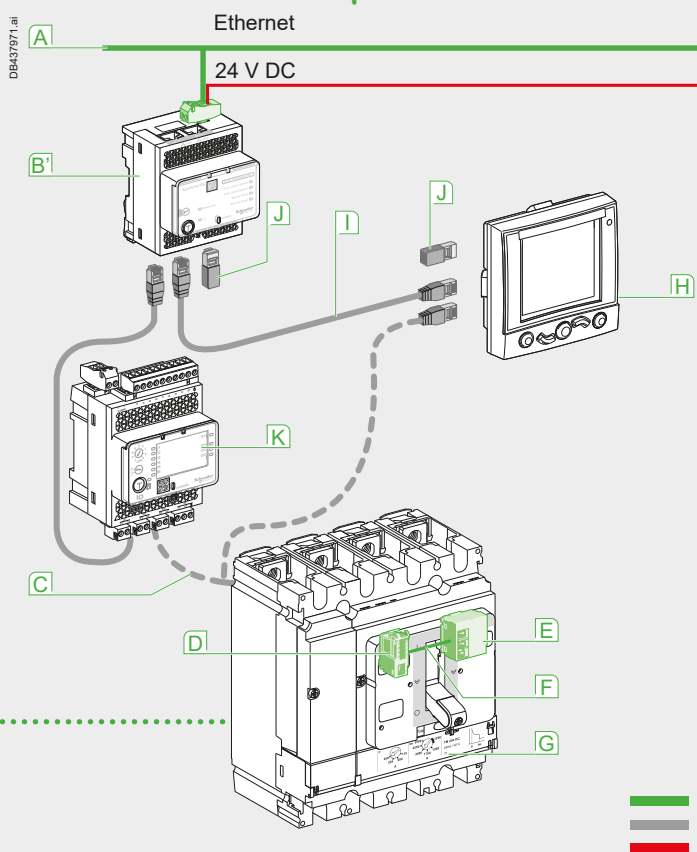
Connections

- ComPacT NSX is connected to the I/O application module or FDM121 display unit via the internal terminal block for the NSX cord equipped with an RJ45 connector:
 - Cord available in three lengths: 0.35 m, 1.3 m and 3 m
 - Insulated 1.3 m version for installations > 480 V AC
 - Lengths up to 10 m possible using extensions.
- The FDM121 display unit and the I/O application module are connected to:
 - The IFM Modbus interface by a communication cable with RJ45 connectors on both ends
 - or
 - The IFE Ethernet interface module by a communication cable with RJ45 connectors on both ends.

Communication Components and Connections, IFM



Communication Components and Connections, IFE



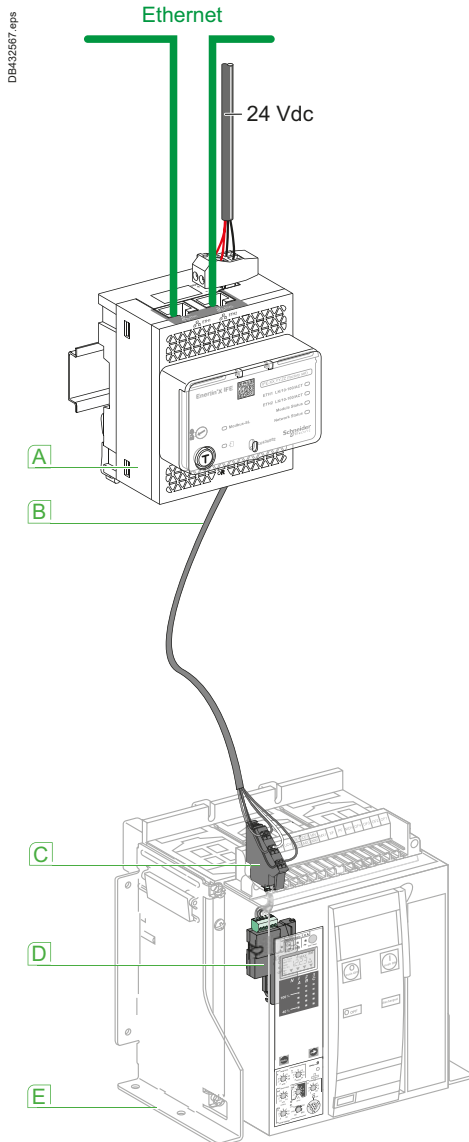
- A Modbus network
- B IFM Modbus interface
- B' IFE Ethernet interface module
- C NSX cord
- D Internal terminal block for communication via NSX cord
- E BSCM module
- F Prefabricated wiring
- G TMD trip unit
- H FDM121 display
- I RJ45 cable
- J Line terminator (on unused connector if applicable)
- K I/O application module

Communication

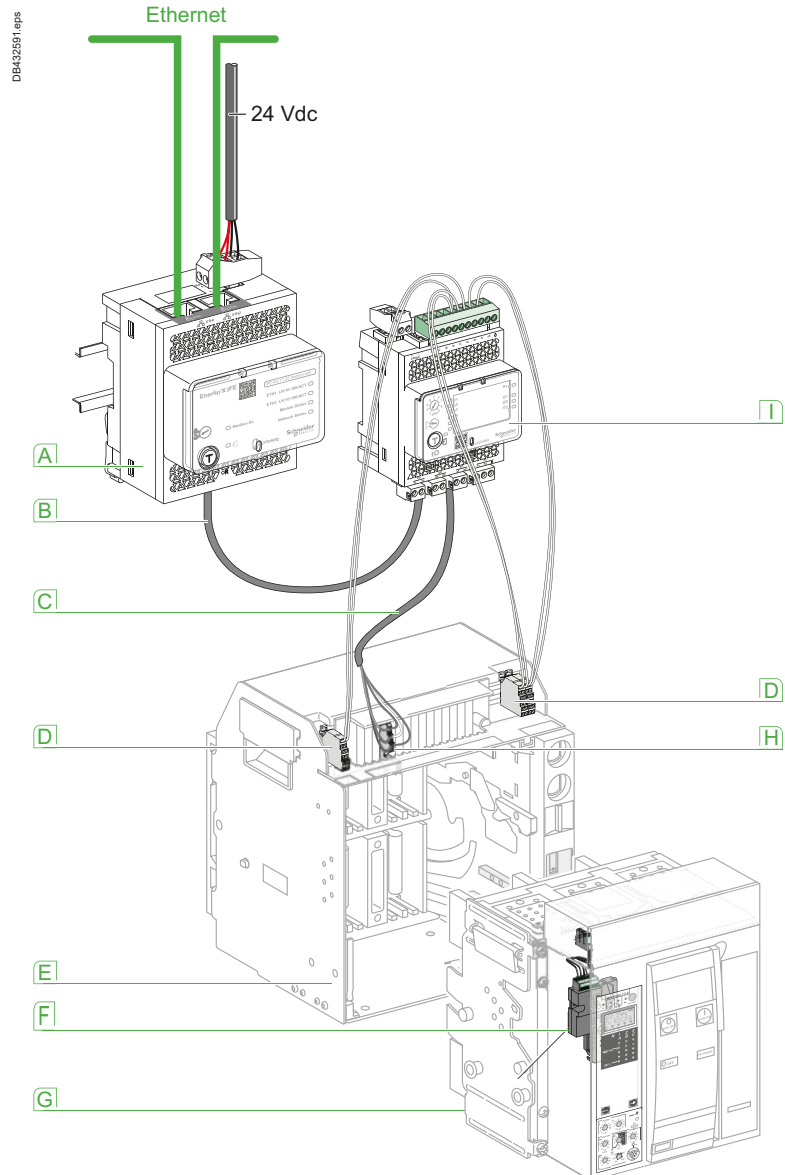
Connection of the IFE to a Fixed or Drawout MasterPact NW

Connect the IFE to a fixed electrically operated MasterPact NW or circuit breaker using the breaker ULP cord

Connect the IFE to a drawout MasterPact NW or circuit breaker using the breaker ULP cord



- A** IFE Ethernet interface for LV circuit breaker
- B** Breaker ULP cord
- C** Fixed COM terminal block
- D** BCM ULP communication module
- E** Fixed electrically operated circuit breaker

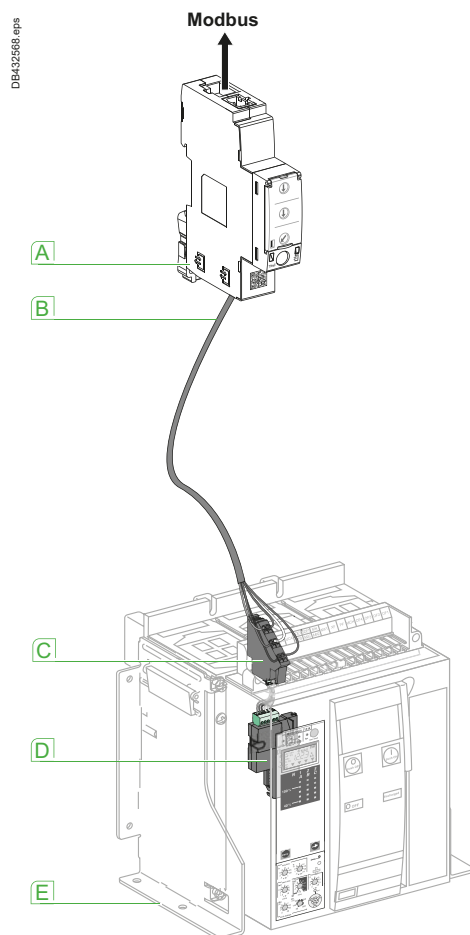


- A** IFE Ethernet interface for LV circuit breaker
- B** ULP cable
- C** Breaker ULP cord
- D** Drawout device position contacts
- E** Circuit breaker cradle
- F** BCM ULP communication module
- G** Drawout circuit breaker
- H** Drawout COM terminal block
- I** I/O (Input/Output) application module for LV circuit breaker

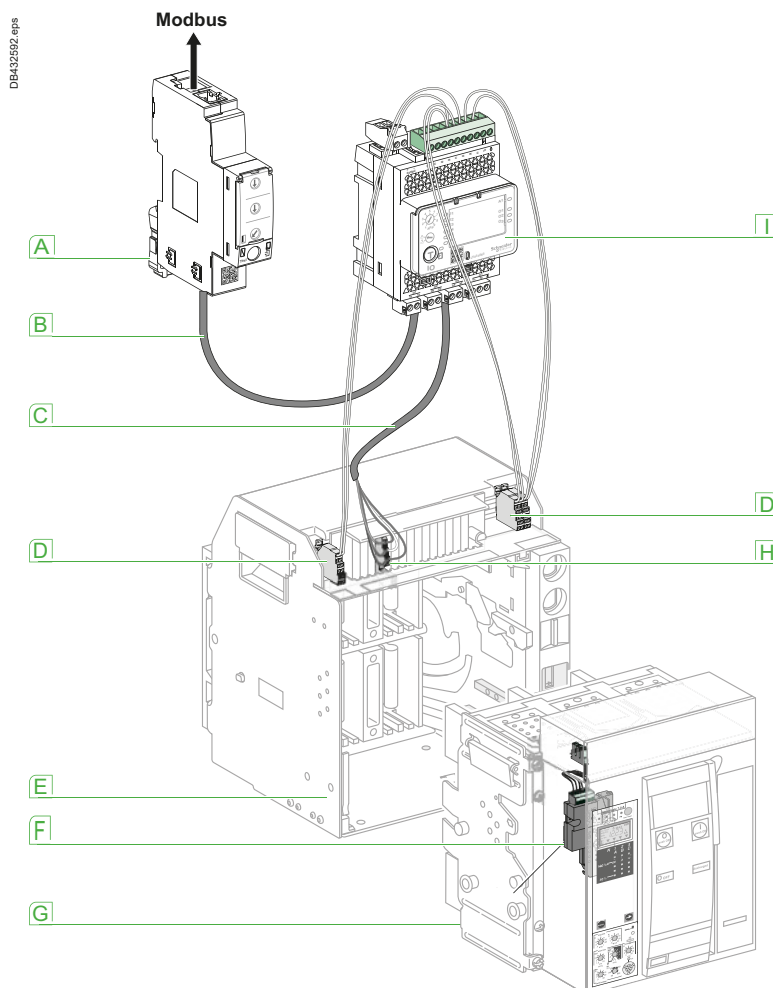
Connection of the IFM to a Fixed or Drawout MasterPact NW

Connect the IFM to a fixed electrically operated MasterPact NW or circuit breaker using the breaker ULP cord

Connect the IFM to a drawout MasterPact NW or circuit breaker using the breaker ULP cord



- A IFM Ethernet interface for LV circuit breaker
- B Breaker ULP cord
- C Fixed COM terminal block
- D BCM ULP communication module
- E Fixed electrically operated circuit breaker

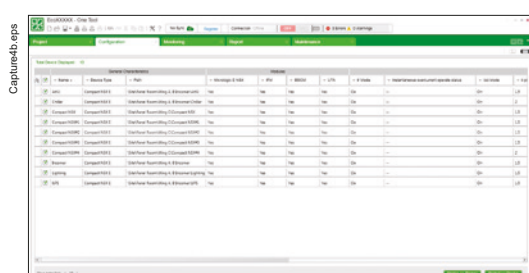
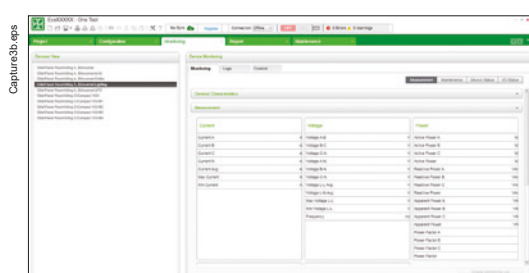
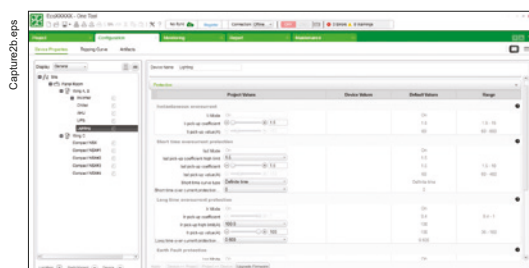
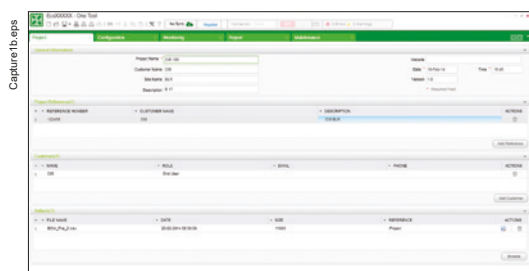


- A IFM Ethernet interface for LV circuit breaker
- B ULP cable
- C Breaker ULP cord
- D Drawout device position contacts
- E Circuit breaker cradle
- F BCM ULP communication module
- G Drawout circuit breaker
- H Drawout COM terminal block
- I I/O (Input/Output) application module for LV circuit breaker

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Communication

Electrical Asset Manager Configuration Engineering Tool



Introduction

Electrical Asset Manager is a software application that helps the user to manage a project as part of designing, testing, site commissioning, and maintenance of the project life cycle.

It enables the user to prepare the settings of the devices offline (without connecting to the device) and configure them when connected with the devices.

It also provides several other value added features for the user to manage the project such as: repository in cloud, attach artifacts to each device or at the project level, organize devices in switchboard wise, manage a hierarchical structure of the installation.

Compatible Devices (Configuration and Device Management)

Electrical Asset Manager is compatible with the following devices:

- ComPacT NSX100-630 (IEC)
- PowerPacTTM (UL) circuit breaker
- ComPacT NS630b-3200 (IEC)
- MasterPac NT/NW (IEC and UL) circuit breaker
- Acti9 Smartlink.
- Compatible devices (Device Management in the project)
- Switch disconnectors (ComPacT NSX, MasterPac & PowerPacT Family)
- Third party devices.

References:

Electrical Asset Manager software package can be downloaded from our website www.schneider-electric.com.

Features

Electrical Asset Manager supersedes the Schneider Electric customer engineering tools such as Remote setting Utility (RSU) and Remote Control Utility (RCU) with additional features.

Electrical Asset Manager supports the connection of Schneider Electric communicable devices to:

- Create projects by device discovery, selection of devices, and import Bill of Material (BOM)
- Monitor the status of protection and IO status
- Read information (alarms, measurements, parameters)
- Check protection selectivity between two devices
- Upload and download of configuration or settings in batch mode to multiple devices.
- Carry out commands and tests
- Generate and print device settings report and communication test report
- Manage multiple devices with electrical and communication hierarchy model
- Manage artifacts (project documents)
- Check consistency in settings between devices on a communication network
- Compare configuration settings between PC and device (online)
- Download latest firmware.

Electrical Asset Manager enables the user to avail the advanced features of the software once the project is saved in Schneider Electric cloud.

Electrical Asset Manager Configuration Engineering Tool

Functions

Offline Mode

A project can be built in offline mode through 2 different ways:

- Through BOM file import
- Through Device Selection.

Additionally, the user can open an existing project and modify the settings offline. The user can do the selectivity curve check and firmware compatibility check for devices in the project.

Online Mode

A project can be built in online mode through device discovery also other than the methods possible through offline method.

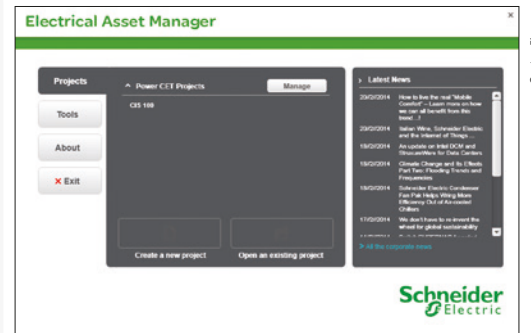
Once the project is built, the following functions can be performed in addition to the functions available in offline mode:

- Compare the device parameters with project parameters
- Load parameters from project to the device and vice versa
- Firmware downloads to the device
- Monitor the measurement, maintenance, device status and I/O status
- Control functions.

User Interface

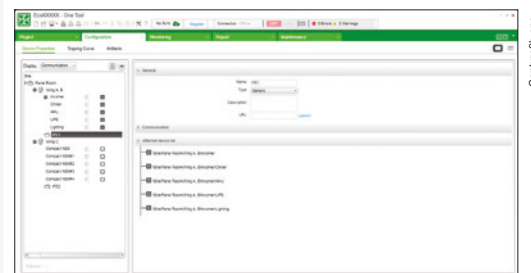
Electrical Asset Manager software provides fast direct access to the project and the devices in the project through different tabs.

- **Project:** to provide the project information including customer details, project references and to add project artifacts (documents related to the project).
- **Configuration:** to build up the tree structure of the project architecture ; to have a table view of the devices added in the project ; to set the parameters of the devices ; to transfer the device settings ; to view the tripping curves; to attach device artifacts and to download the latest firmware, to do the communication test for all the devices and generate the test report.
- **Monitoring:** this allows the user to monitor the real time values of different devices through different sub tabs namely Monitoring, Logs and Control.
- **Reports:** report tab allows you to generate and print a report of the project settings from the report tab. The user details and project characteristics are automatically filled with the details entered in the Project page.

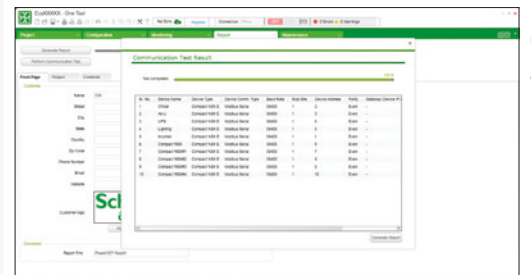


CaptureSteps

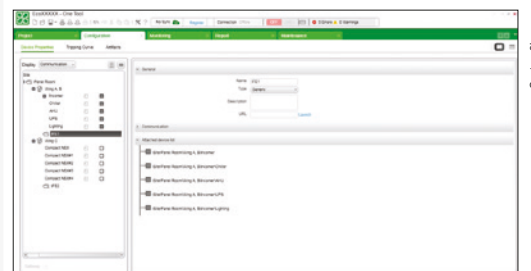
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CaptureSteps



CaptureSteps



CaptureSteps

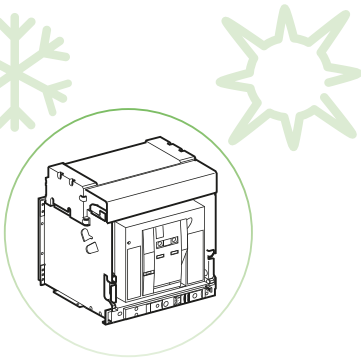
General Characteristics of MasterPact NW DC, EPDC, DC PV

Operating Conditions

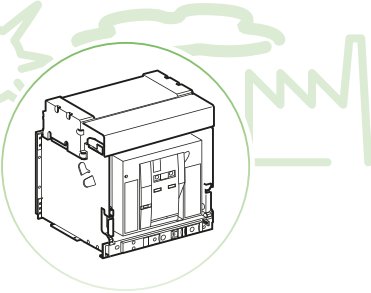
MasterPact circuit breakers have been tested for operation in industrial atmospheres. It is recommended that the equipment be cooled or heated to the proper operating temperature and kept free of excessive vibration and dust.

A

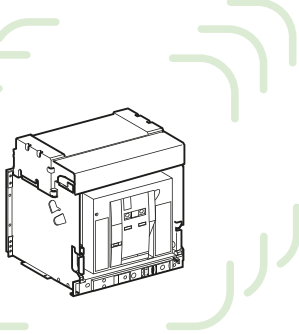
DB431749.eps



DB431750.eps



DB431751.eps



Ambient Temperature

MasterPact devices can operate under the following temperature conditions:

- The electrical and mechanical characteristics are stipulated for an ambient temperature of -25°C to $+70^{\circ}\text{C}$
- Circuit breaker closing is ensured down to -35°C by manual operation (push button).

Storage conditions are as follows:

- -40 to $+85^{\circ}\text{C}$ for a MasterPact device without its control unit
- -25°C to $+85^{\circ}\text{C}$ for the control unit.

Severe Atmospheric Conditions

MasterPact devices have successfully passed the tests defined by the following standards for severe atmospheric conditions:

- IEC 60068-2-1: dry cold at -40°C
- IEC 60068-2-2: dry heat at $+85^{\circ}\text{C}$
- IEC 60068-2-30: damp heat (temperature $+55^{\circ}\text{C}$, relative humidity 95 %)
- IEC 60068-2-52 level 2: salt mist.

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

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

Vibrations

MasterPact devices have successfully passed testing in compliance with IEC 60068-2-6 for the following vibration levels:

- 2 to 13.2 Hz: amplitude $\pm 1\text{ mm}$
- 13.2 to 100 Hz: constant acceleration 0.7 g.

Vibration testing to these levels is required by merchant marine inspection organizations (Veritas, Lloyd's, etc). Some applications have vibration profiles outside of this standard and require special attention during application design, installation, and use. Excessive vibration may cause unexpected tripping, damage to connections or to other mechanical parts. Please refer to the MasterPact maintenance guide (causes of accelerated ageing/operating conditions/vibrations) for additional information.

Examples of applications with high vibration profiles could include:

- Wind turbines
- Power frequency converters that are installed in the same switchboard or close proximity to the MasterPact circuit breaker
- Emergency generators
- High vibration marine applications such as thrusters, anchor positioning systems, etc.

General Characteristics of MasterPact NW DC, EPDC, DC PV

MasterPact NW DC, EPDC, DC PV

Altitude

At altitudes higher than 2000 metres, the modifications in the ambient air (electrical resistance, cooling capacity) lower the following characteristics as follows:

Altitude (m)	2000	3000	4000	5000
NW DC				
Impulse withstand voltage Uimp (kV)	12	10.6	9.5	8.4
Rated insulation voltage (Ui)	1000	900	800	700
Maximum rated operational voltage 50/60 Hz Ue (V)	NW DC ≤500 V	500	450	390
	NW DC 500-900 V	900	800	700
Rated current (A) at 40 °C	1 x In	0.98 x In	0.96 x In	0.94 x In
NW DC PV				
Impulse withstand voltage Uimp (kV)	12	10.6	9.5	8.4
Rated insulation voltage (Ui)	1000	1000	950	850
Maximum rated operational DC voltage	1000	1000	950	850
Rated current (A) at 40 °C	1 x In	0.98 x In	0.96 x In	0.94 x In

Intermediate values may be obtained by interpolation.

Electromagnetic Disturbances

MasterPact NW DC devices are protected against:

- Overvoltages caused by devices that generate electromagnetic disturbances
- Overvoltages caused by atmospheric disturbances or by a distribution-system outage (e.g. failure of a lighting system)
- Devices emitting radio waves (radios, walkie-talkies, radar, etc.)
- Electrostatic discharges produced by users.

MasterPact NW DC 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 (trip units with earth-leakage function).

The above tests ensure that:

- No nuisance tripping occurs
- Tripping times are respected.

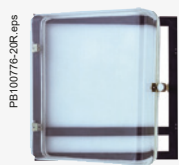
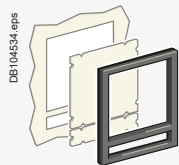
Degree of Protection

MasterPact NW DC circuit breakers offer the following protection characteristics depending on the installation conditions:

- IP: degree of protection (standard IEC 60529)
- IK: protection against external mechanical imPacTs (standard EN 50102).

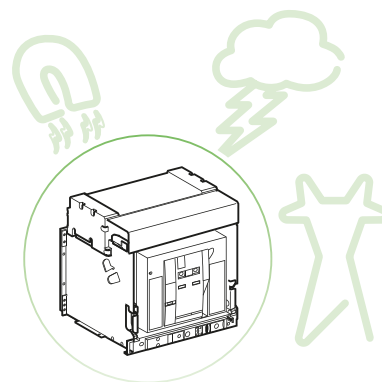
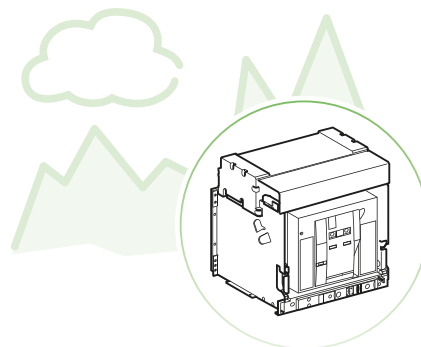
MasterPact NW DC

Circuit breaker installed in a switchboard



Bare circuit breaker	IP30	
Escutcheon (CDP) for fixed and drawout versions, with blanking plate	IP40	IK07

Transparent cover (CCP) for escutcheon and for drawout version	IP54	IK10
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General Characteristics of MasterPact NW DC, EPDC, DC PV

MasterPact NW10 to NW40 DC

PB 04017 eps



NW10 DC 3P

PB105024_42 eps



NW10 DC 4P

MasterPact NW DC Circuit Breaker

Poles coupling version

C or D (3 poles)

E (4 poles)

Electrical Characteristics As Per IEC 60947-1/ 60947-2 and EN 60947-1/60947-2

Rated current at 40 °C/50 °C ^[1]	I_n	(A)
Rated insulation voltage	U_i	(V)
Rated impulse withstand voltage	U_{imp}	(kV peak)
Rated operational voltage	U_e	(V DC)

Type of circuit breaker

Ultimate breaking capacity	L/R = 5 ms	I_{cu}	(kA)	V DC	500
					750
					900
	L/R = 15 ms	I_{cu}			500
					750
					900
	L/R = 30 ms	I_{cu}			500
					750
					900

Service breaking capacity	I_{cs}	% I _{cu}
Rated making capacity	I_{cm}	% I _{cu}
Rated short-time withstand current (basic bloc only)	I_{cw}	1 s
Utilization category		
Breaking time		(ms)
Making time		(ms)
Suitability for isolation		
Pollution degree (as per IEC 60664-1)		

Protection against overcurrents (see trip unit table page D-12)

Trip units	Built-in
Protection	Overloads
	Short-circuits

Durability

(O/C cycles)	Mechanical	With maintenance	
		Without maintenance	
	Electrical	Without maintenance	500 V DC
			900 V DC

Indication and control auxiliaries

Auxiliary contacts	
Voltage release	MX shunt release
	MN undervoltage release

Switch-Disconnecter As Per IEC 60947-3 and EN 60947-3

Type of switch-disconnector

Rated making capacity	I_{cm}	(kA)
Rated short-time withstand current	I_{cw}	(kA) 1 s

Unprotected Circuit Breaker (500 V DC Only)

Tripping by Shunt Trip As Per IEC 60947-2

Type of unprotected circuit breaker

Ultimate breaking capacity	L/R = 6.5 ms	I_{cu}	(kA)	500 V DC
Short-time withstand current		I_{cw}	(kA)	1 s
Ultimate breaking capacity	L/R = 15 ms	I_{cu}	(kA)	500 V DC
Short-time withstand current		I_{cw}	(kA)	1 s
Service breaking capacity		I_{cs}	% I _{cu}	

Overload and short-circuit protection

External protection relay: short-circuit protection, maximum delay: 500 ms

Installation and Connections

Connection	Drawout	3P	RC	Horizontal
		4P		Vertical
	Fixed	3P	RC	Horizontal
		4P		Vertical

Dimensions and Weight

Dimensions
H x W x D (mm) connected in series

Drawout	3P
	4P
Fixed	3P
	4P

Weight (kg) connected in series (approximate values)

Drawout	3P
	4P
Fixed	3P
	4P

^[1] 50 °C - see the derating table for the NW40 DC.

General Characteristics of MasterPact NW DC, EPDC, DC PV

MasterPact NW10 to NW40 DC

NW10 DC		NW20 DC		NW40 DC	
1000		2000		4000	
1000		1000		1000	
12		12		12	
500/900		500/900		500/900	
N	H	N	H	N	H
85	100	85	100	85	100
-	85	-	85	-	85
-	85	-	85	-	85
35	85	35	85	35	85
-	50	-	50	-	50
-	35	-	35	-	35
25	50	25	50	25	50
-	50	-	50	-	50
-	25	-	25	-	25
100 %					
100 %					
50	85	50	85	50	85
A					
30 to 75					
< 70					
3					
-	-	-	-	-	-
20000					
10000					
8500		5000		2000	
-	2000	-	2000	-	1000
	HA		HA		HA
-	85	-	85	-	85
-	85	-	85	-	85
NW10 HADC-C 500V DC		NW20 HADC-C 500V DC		NW40 HADC-C 500V DC	
85		85		85	
85		85		85	
65		65		65	
65		65		65	
100 %					
-		-		-	
				-	-
				-	-
439 x 441 x 494				439 x 441 x 594	
439 x 556 x 494				439 x 556 x 594	
352 x 422 x 427				352 x 422 x 527	
352 x 537 x 427				352 x 537 x 527	
90 to 116					
125 to 146					
60 to 86					
85 to 106					

A

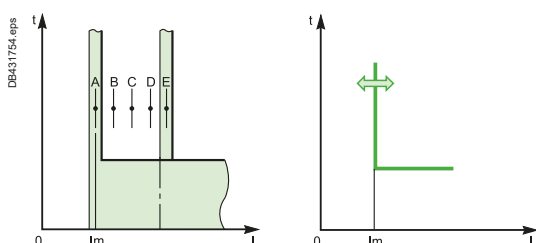
Trip Unit Characteristics

Trip Units for MasterPact NW DC, EPDC

All MasterPact NW DC devices are equipped with a MicroLogic 1.0 DC control unit.

A

PB 01139-32R.eps



Magnetic pick-up value

Protection Using the MicroLogic 1.0 DC Control Unit

MasterPact NW DC circuit breakers use MicroLogic 1.0 DC control units. These interchangeable units with instantaneous thresholds, operating with electromagnetic sensors, can be adjusted on site.

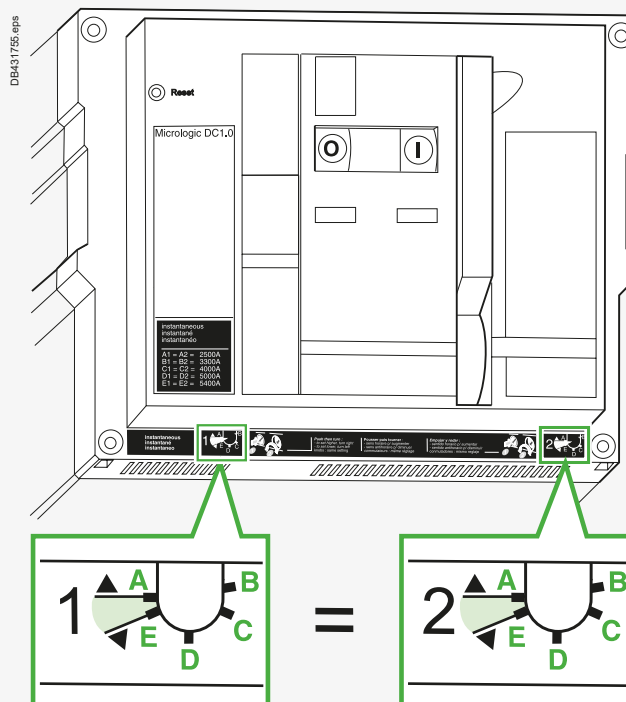
The circuit breakers can be used with the three versions of sensors, defined by their setting range.

Type of sensor	1250/2500 A	2500/5400 A	5000/11000 A
MasterPact NW10 DC	☒	☒	☒
MasterPact NW20 DC	-	☒	☒
MasterPact NW40 DC	-	-	☒

Adjustments

Settings for MasterPact NW DC circuit breakers may be accessed from the front, with the switchboard door open.

- Settings are made for the input (+ pole) and the output (- pole).
- The setting range comprises eleven positions, plus five preferential settings marked **A, B, C, D** and **E**.
- The setting values for the two corresponding sensors must be identical.



Two identical settings

Functions and Characteristics

Trip Unit Characteristics

Trip Units for MasterPact NW DC, EPDC

Setting Values for Magnetic Pick-up Ii

Settings Marked A, B, C, D and E

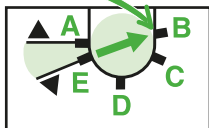
Sensor versions	Minimum Settings A1 and A2	Settings B1 and B2	Settings C1 and C2	Settings D1 and D2	Maximum Settings E1 and E2
1250/2500	1250 A	1500 A	1600 A	2000 A	2500 A
2500/5400	2500 A	3300 A	4000 A	5000 A	5400 A
5000/11000	5000 A	8000 A	10000 A	11000 A	11000 A
Tolerances	±8 %	±10 %	±10 %	±10 %	±10 %

instantaneous
instantané
instantaneo :

$A_1 = A_2 = 2500A$
 $B_1 = B_2 = 3300A$
 $C_1 = C_2 = 4000A$
 $D_1 = D_2 = 5000A$
 $E_1 = E_2 = 5400A$

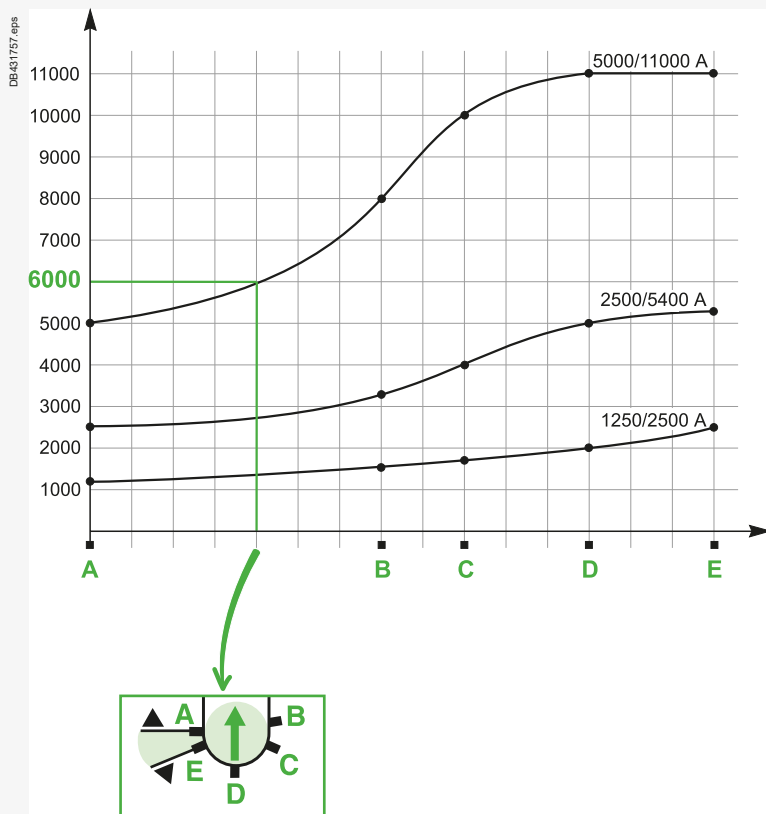
instantaneous
instantané
instantaneo :

$A_1 = A_2 = 5000A$
 $B_1 = B_2 = 8000A$
 $C_1 = C_2 = 10000A$
 $D_1 = D_2 = 11000A$
 $E_1 = E_2 = 11000A$



Intermediate Settings

It is possible to set eleven other (unmarked) intermediate values.



Switch-Disconnectors for PV Application

MasterPact NW HADCD-PV

PE113349_32.eps



MasterPact NW20
HADCD-PV

A

DB416372.eps

Masterpact NW20 HADCD-PV

Ui 1000V Uimp 12kV
Ue 1000 V $\pm$ 3P in series
Icw 85kA/1s
Icm 85kA

IEC 60947-3



Ith 2000A 55°C

Ue (V) Ie (A)
DC22A 1000 2000

MasterPact NW20
HADCD-PV rating plate

DB416460.eps

Masterpact NW40 HADCD-PV

Ui 1000V Uimp 12kV
Ue 1000 V $\pm$ 3P in series
Icw 85kA/1s
Icm 85kA

IEC 60947-3



Ith 4000A 45°C

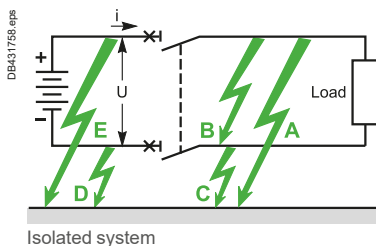
Ue (V) Ie (A)
DC22A 1000 4000

MasterPact NW40
HADCD-PV rating plate

MasterPact NW HADCD-PV Switch-Disconnectors for PV Application				NW20 HADCD-PV	NW40 HADCD-PV
Poles coupling version		D (3 poles)			
Electrical Characteristics As Per IEC 60947-1/60947-3 and EN 60947-1/60947-3					
Rated current at 40/45 °C In		(A)		2000	4000
Rated insulation voltage Ui		(V)		1000	1000
Rated impulse withstand voltage Uimp		(kV peak)		12	12
Rated operational voltage Ue		(V DC)		1000 ^[1]	1000 ^[1]
Switch-disconnector as per IEC 60947-3 and EN 60947-3					
Rated making capacity Icm		(kA)		85	85
Rated short-time withstand current Icw		(kA/1 s)		85	85
Utilization category				DC-22A	DC-22A
Durability					
(O/C cycles)		Mechanical with maintenance		20000	20000
		without maintenance		10000	10000
		Electrical without maintenance	1000 V DC L/R = 2 ms	2000	1000
Installation and connections					
Connection	Fixed	rear connections	Vertical		
			Horizontal		-
	Drawout	rear connections	Vertical		
			Horizontal		-
Dimensions and weight					
Dimensions	Fixed	3P		352 x 422 x 427	352 x 422 x 527
H x W x D (mm) with the series connection	Drawout	3P		439 x 441 x 494	439 x 441 x 594
Weight (kg)	Fixed	3P		60 to 86	
with the series connection (approximate values)	Drawout	3P		90 to 116	

All the accessories of the standard NW HADC switch-disconnectors can be used.

[1] NW HADCD-PV switch-disconnectors for PV applications are designed and qualified to break the rated or the fault current under 1000 V DC with all the 3 poles in series and this is a mandatory condition whatever the type of fault. This comes to say that the PV systems using these switch-disconnectors must be isolated systems from the earth and that the double fault situation (A and D or C and E on the diagram below) must be absolutely avoided: insulation monitoring devices shall detect the first fault and the staff shall look for this first fault and clear it with no delay. These switch-disconnectors cannot be used in grounded systems as in this situation they may be expected to break the current under the full voltage (1000 V DC) with only 1 pole or 2 poles in series. These devices are not designed for that purpose and could sustain irremediable damage if used to break in these conditions.



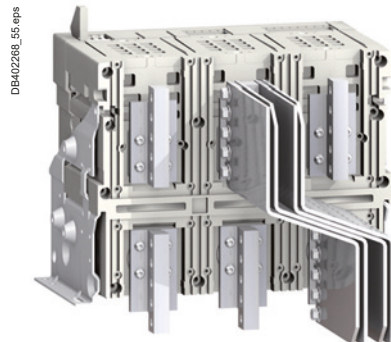
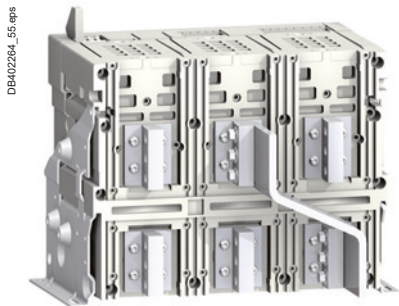
Switch-Disconnectors for PV Application

MasterPact NW HADCD-PV - Connections and Safety Clearances

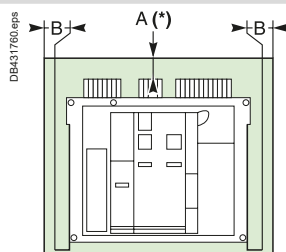
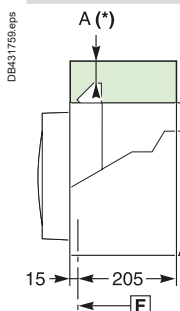
Fixed Version, Vertical Rear Connections

NW20 HADCD-PV

NW40 HADCD-PV



Safety clearances



	Insulated parts	Metal parts	Energized parts
A	0	0	100
B	0	0	60

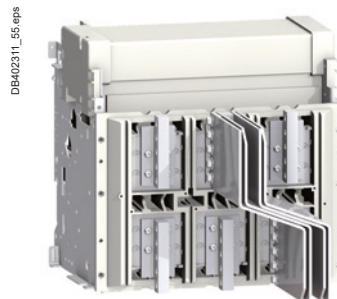
F Datum

A(*) An overhead clearance of 110 mm is required to remove the arc chutes. An overhead clearance of 20 mm is required to remove the terminal block.

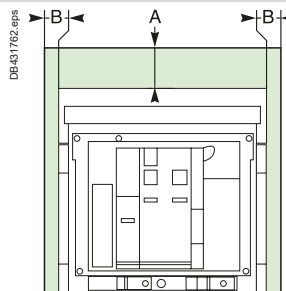
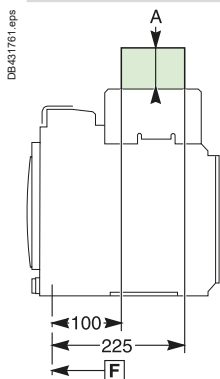
Drawout Version, Vertical Rear Connections

NW20 HADCD-PV

NW40 HADCD-PV



Safety clearances



	Insulated parts	Metal parts	Energized parts
A	0	0	0
B	0	0	60

F Datum

MasterPact NW EPDC-D Circuit Breakers for Marine Applications at 1100 V DC

MasterPact NW EPDC-D General Characteristics

MasterPact NW EPDC-D Circuit Breaker				NW10 EPDC-D	NW20 EPDC-D	NW40 EPDC-D
Poles coupling version				D (3 poles in series)		
Electrical Characteristics As Per IEC 60947-1/60947-2 and EN 60947-1/60947-2						
Rated current at 40°/45°C	I_n	(A)		1000	2000	4000
Rated insulation voltage	U_i	(V)		1250	1250	1250
Rated impulse withstand voltage	U_{imp}	(kV peak)		12	12	12
Rated operational voltage	U_e	(V DC)		1100 ^[1]	1100 ^[1]	1100 ^[1]
Circuit breaker as per IEC 60947-2 and EN 60947-2						
Ultimate breaking capacity	L/R = 15 ms	I_{cu}	(kA)	65	65	65
Service breaking capacity		I_{cs}	%I _{cu}	100%	100%	100%
Rated making capacity		I_{cm}	%I _{cu}	100%	100%	100%
Rated short-time withstand current (basic bloc only)		I_{cw}	(kA/1s)	65	65	65
Selectivity category				A	A	A
Breaking time			(ms)	30 to 75	30 to 75	30 to 75
Making time			(ms)	<70	<70	<70
Suitability for isolation						
Pollution degree (as per IEC 60664-1)				3	3	3
Protection against overcurrents (see trip unit table next page)						
Trip units	Built-in					
Protection	Overloads			-	-	-
	Short-circuits					
Durability						
(O/C cycles)	Mechanical	With maintenance		20000	20000	20000
		Without maintenance		10000	10000	10000
	Electrical	Without maintenance	1100 V DC	1000	1000	1000
Indication and control auxiliaries						
Auxiliary contacts						
Voltage release	MX shunt release					
	MN undervoltage release					
Installation and Connections						
Connection	Drawout	Rear connections	Horizontal			-
			Vertical			
Dimensions and Weight						
Dimensions	Drawout	3P		439 x 441 x 494	439 x 441 x 494	439 x 441 x 594
H x W x D (mm) with the series connection						
Weight (kg) with the series connection (approximate values)	Drawout	3P		90 to 116		

DB438631.ai

MasterPact

NW20 EPDC-D 

U_i 1250V

U_{imp} 12kV

U_e 1100 V  3P in series

I_{cu} 65kA (L/R 15ms)

I_{cs} 100% I_{cu} cat.A



IEC 60947-2 GB/T 14048.2

All the accessories of the standard NW HDC circuit breakers can be used.

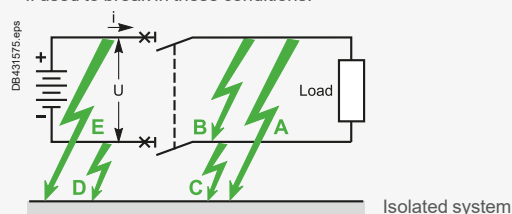
NW EPDC-D circuit breakers were not designed for and cannot be used in PV application.

[1] NW EPDC-D circuit breakers are designed and qualified to break the rated or the fault current under 1100V DC with all the 3 poles in series, and having the 3 poles in series when breaking is a mandatory condition whatever the type of fault.

This implies 2 mandatory conditions:

- the systems using these circuit breakers must be isolated from the earth.
- avoid the double fault situation (A and D or C and E on the diagram above). For this, insulation monitoring devices must detect the first fault, and the staff must locate it and clear it with no delay.

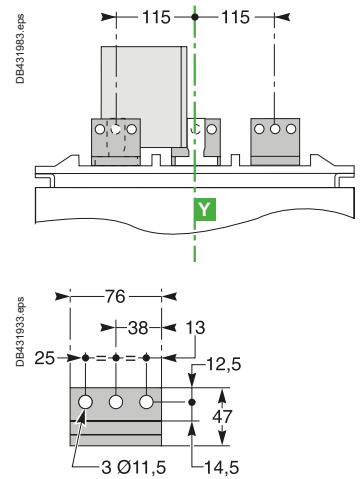
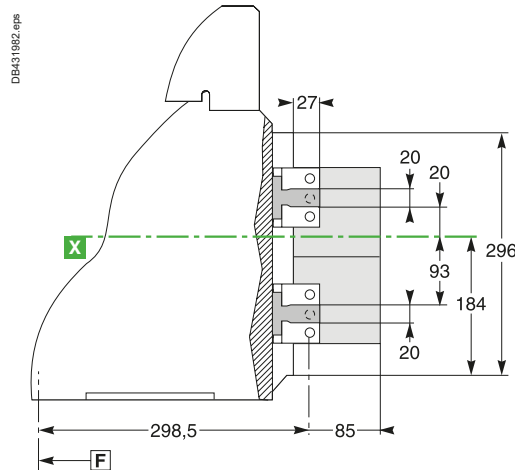
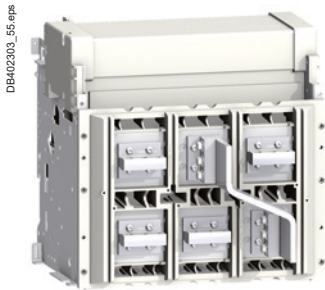
These circuit breakers cannot be used in grounded systems as, in this situation, they may be expected to break the current under the full voltage (1100 V DC) with only 1 pole or 2 poles in series. These devices are not designed for that purpose and could sustain irremediable damage if used to break in these conditions.



MasterPact NW EPDC-D Circuit Breakers for Marine Applications at 1100 V DC

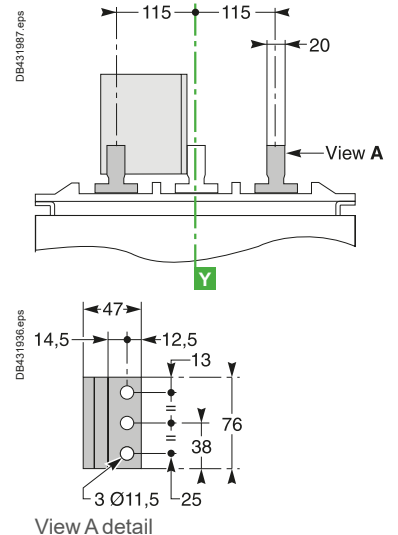
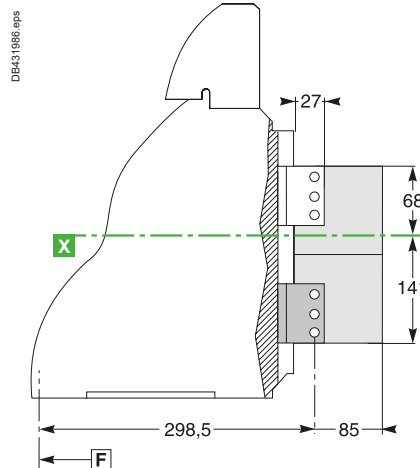
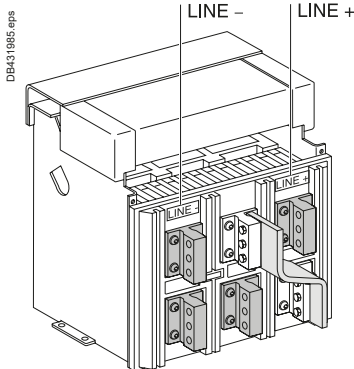
Connections, Dimensions and Safety Clearances

Horizontal rear connection (NW10/20 EPDC-D)

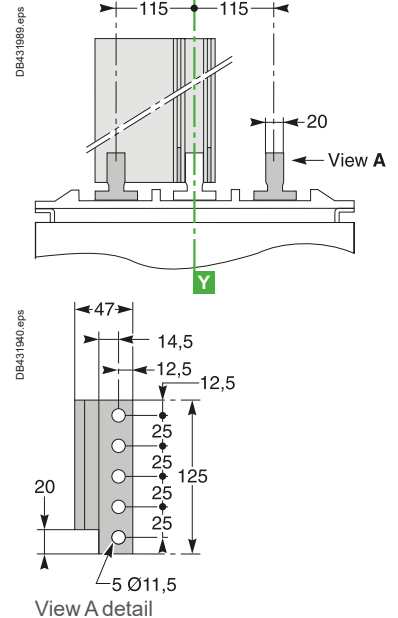
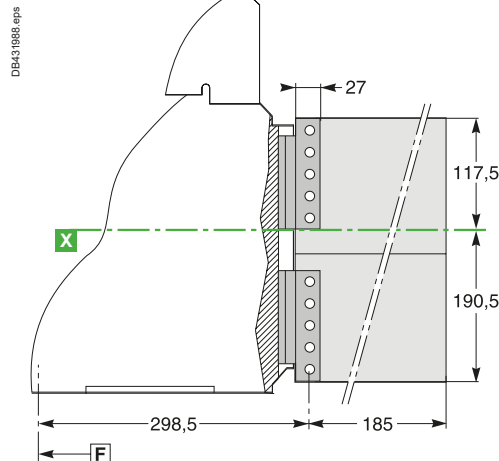
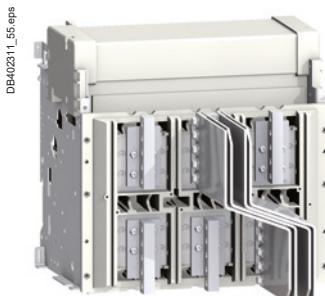


A

Vertical rear connection (NW10/20 EPDC-D)



Vertical rear connection (NW40 EPDC-D)



Note: Recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.

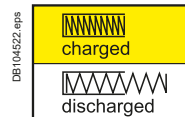
Panorama of Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

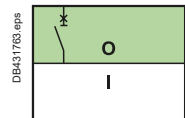
All MasterPact NW DC devices exist in Circuit breaker (equipped with MicroLogic DC 1.0 control unit) and switch-disconnector versions. All auxiliaries are common from 1000 to 4000 A.

A

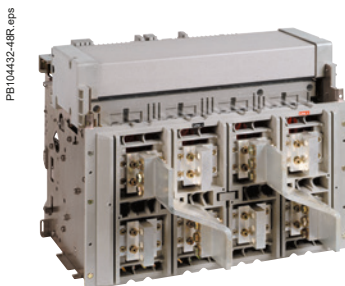
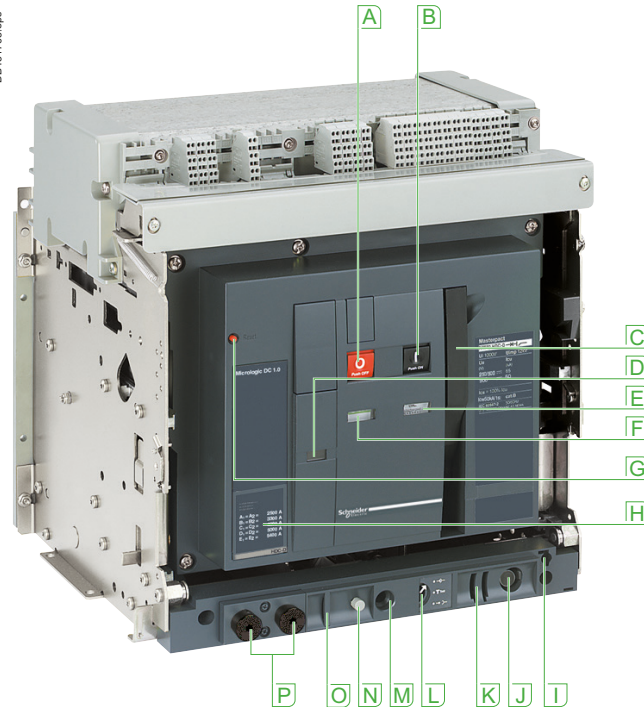
- A** OFF pushbutton
- B** ON pushbutton
- C** Closing mechanism charging handle
- D** Operation counter
- E** Operating mechanism charged and "ready to close" indication:
 - Spring charged
 - Spring discharged



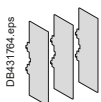
- F** Main contact position indication:
 - ON
 - OFF



- G** Fault trip indication and reset button
- H** MicroLogic 1.0 DC control unit
- I** Racking interlock
- J** Racking-handle storage
- K** Shutter position indication and locking
- L** "Connected/test/disconnected" position indication
- M** Racking-handle port
- N** Reset pushbutton
- O** Padlock locking
- P** Keylock locking



Vertical rear connection



Circuit Breakers and Switch-Disconnectors

- MasterPact NW DC exists in fixed and withdrawable versions:
- Circuit breaker equipped with MicroLogic 1.0 DC control unit
 - Switch-disconnector without the control unit.

Common Auxiliaries from 1000 to 4000 A

All accessories are:

- Accessible from the front in a compartment isolated from the power circuits
- Secured by a single screw
- No adjustments
- Adaptable on site.

Communication

Circuit breaker or switch-disconnector integration in a supervision system requires the COM option.

MasterPact uses the Modbus communication protocol compatible with ION-E electrical engineering expert system software.

An external gateway is available for communication with other networks (Profibus, Ethernet, etc.).

Connections

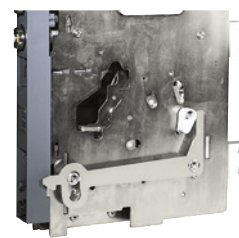
- Rear vertical connection in standard.
- Possibility of conversion to horizontal connection by turning the connectors On the site by the customer (except for the NW40).
- Prefabricated series connections.
- Safety shutters, shutter locking blocks.
- Optional accessories:
 - Interphase barriers
 - Shutter position indication and locking.

Panorama of Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

Locking

- Pushbutton locking by padlockable transparent cover.
- OFF-position locking by padlock or keylock.
- Chassis locking:
 - In disconnected position by keylock
 - In connected, disconnected and test positions.
- Door interlock (inhibits door opening with breaker in connected position).
- Racking interlock (inhibits racking with door open).
- Racking interlock between crank and OFF pushbutton.
- Automatic spring discharge before breaker removal.
- Mismatch protection.

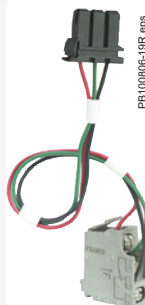


Locking in disconnected position by keylock or padlock

Door interlock (inhibits door opening with breaker in connected position)

Indication Contacts

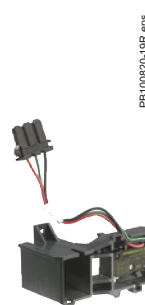
- Standard or low-level contacts:
 - ON/OFF indication (OF)
 - "fault-trip" indication (SDE)
 - Carriage switches for connected (CE), disconnected (CD) and test (CT) positions.



OF contact (microswitch)



OF contact (rotary)



SDE contact



Combined contact (connected/closed)

Remote Operation

- Remote ON/OFF:
 - Gear motor
 - XF closing or MX opening voltage releases
 - PF ready-to-close contact
 - Options:
 - RAR automatic or Res electrical remote reset
 - BPFE electrical closing pushbutton.
- Remote tripping function:
 - MN voltage release:
 - standard
 - adjustable or non-adjustable delay
 - Or 2nd MX voltage release.



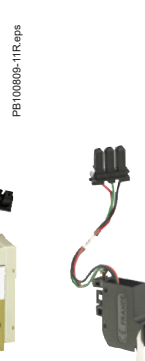
Remote ON/OFF



Gear motor



Voltage releases (MX and XF)



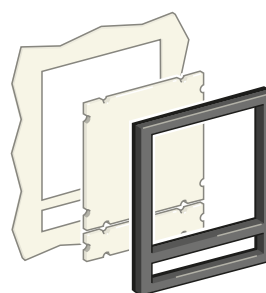
PF ready-to-close contact

Accessories

- Auxiliary terminal shield.
- Operation counter.
- Escutcheon.
- Transparent cover for escutcheon.
- Escutcheon blanking plate.



Operation counter



Escutcheon with blanking plate



Transparent cover

Note: For safety clearances and door cutout see page C-37.

Connection

Overview of Solutions

Two types of connection are available: vertical connection is standard however the connectors can be rotated for on-site conversion to horizontal connection (except for NW40).

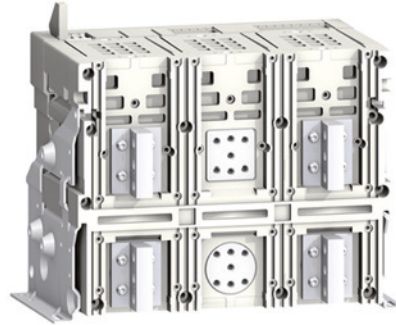
A

Rear Connection Fixed Device

MasterPact NW DC

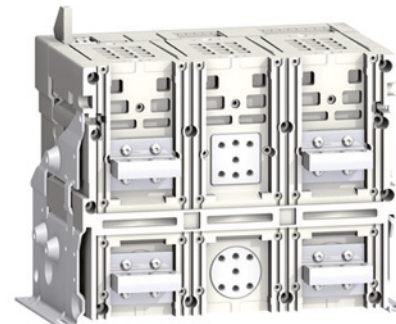
Vertical rear connection

PB105026 eps



Horizontal rear connection

PB105025 eps



Connection Overview of Solutions

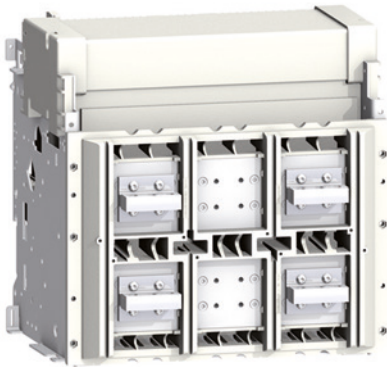
A

Rear Connection Withdrawable Device

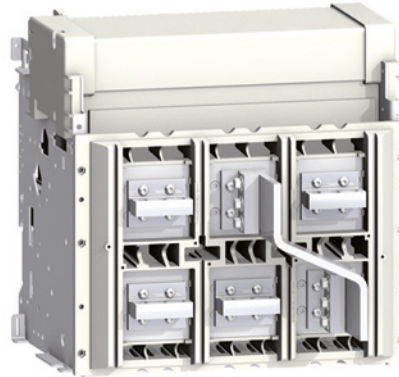
MasterPact NW DC

Horizontal rear connection

DB402291_59.eps

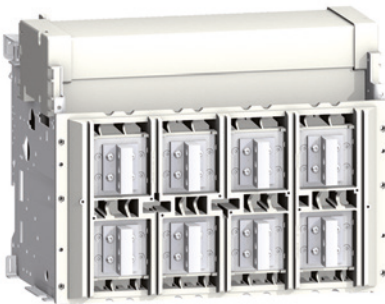


DB402303_59.eps

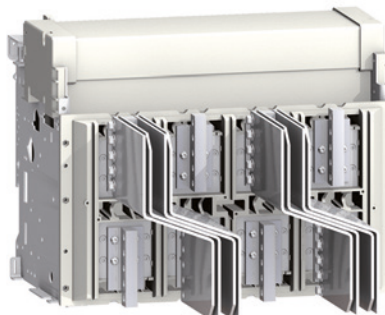


Vertical rear connection

PB104920_59.eps



DB402323_59.eps

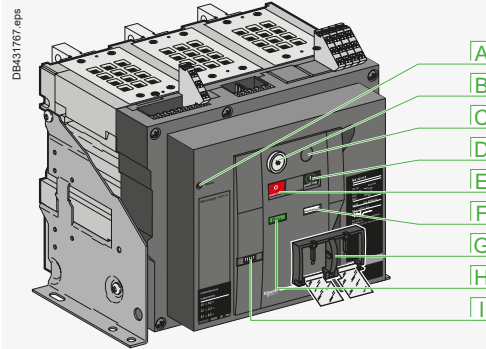


Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

A

Locking on the Device



- A** Fault trip indication and reset button
- B** OFF position locking
- C** Electrical closing pushbutton
- D** ON pushbutton
- E** OFF pushbutton
- F** Operating mechanism charged and "ready to close" indication
- G** Pushbutton locking
- H** Main contact position indication
- I** Operation counter



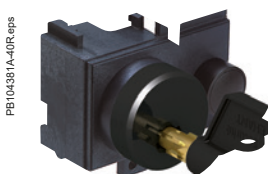
Access to pushbuttons protected by transparent cover



Pushbutton locking using a padlock



OFF position locking using a padlock



OFF position locking using a keylock

Pushbutton Locking VBP

The transparent cover blocks access to the pushbuttons used to open and close the device.

It is possible to independently lock the opening button and the closing button. The locking device is often combined with a remote operating mechanism.

The pushbuttons may be locked using either:

- Three padlocks (not supplied)
- Lead seal
- Two screws.

Device Locking in the OFF Position

VCPO - by Padlocks - VSPO - by Keylocks

The circuit breaker is locked in the OFF position by physically maintaining the opening pushbutton pressed down:

- Using padlocks (one to three padlocks, not supplied)
- Using keylocks (one or two different keylocks, supplied).

Keys may be removed only when locking is effective (Profalux or Ronis type locks).

The keylocks are available in any of the following configurations:

- One keylock
- One keylock mounted on the device + one identical keylock supplied separately for interlocking with another device
- Two different key locks for double locking.

Profalux and Ronis keylocks are compatible with each other.

A locking kit (without locks) is available for installation of one or two keylocks (Ronis, Profalux, Kirk or Castell).

Accessory-compatibility

3 padlocks and/or 2 keylocks.

Cable-Type Door Interlock IPA

This option prevents door opening when the circuit breaker is closed and prevents circuit breaker closing when the door is open.

For this, a special plate associated with a lock and a cable is mounted on the right side of the circuit breaker.

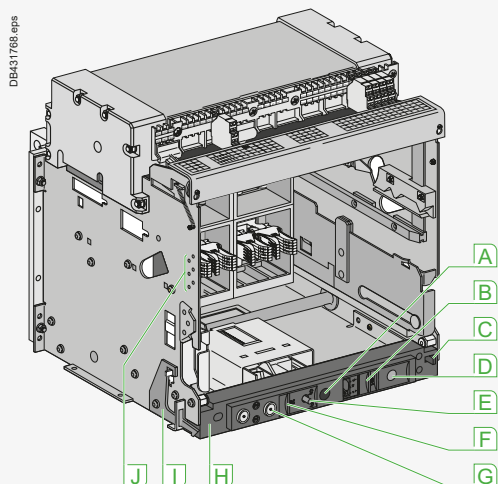
With this interlock installed, the source changeover function cannot be implemented.

This option is identical for fixed or drawout versions.

Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

Locking on the Chassis



- A** Racking-handle port
- B** "Connected/test/disconnected" position indication
- C** Racking interlock
- D** Racking-handle storage
- E** Reset pushbutton
- F** Padlock locking
- G** Keylock locking
- H** Chassis front plate (accessible with cubicle door closed)
- I** "Disconnected" position door interlock
- J** Mismatch protection

"Disconnected" Position Locking By Padlocks (Standard) or Keylocks (VSPD Option)

The circuit breaker can be locked in its disconnected position by using the locks on the chassis. This feature is accessible via the cut out door closed.

Two options are available:

- Using padlocks (standard), up to three padlocks (not supplied)
- Using keylocks (optional), one or two different keylocks are available.

Profalux and Ronis keylocks are available in different options:

- One keylock
- Two different keylocks for double locking
- One (or two) keylocks mounted on the chassis + one (or two) identical keylocks supplied separately for interlocking with another device.

A locking kit (without locks) is available for installation of one or two keylocks (Ronis, Profalux, Kirk or Castell).

Connected", "Disconnected" and "Test" Position Locking

The "connected", "disconnected" and "test" positions are shown by an indicator and are mechanically indexed. The exact position is obtained when the racking handle blocks. A release button is used to free it.

As standard, the circuit breaker can be locked only in "disconnected" position by padlocks or by keylocks. On request, the locking system may be modified to lock the circuit breaker in any of the three positions "connected", "disconnected" or "test".

Door Interlock Catch VPEC

Mounted on the right or left-hand side of the chassis, this device inhibits opening of the cubicle door when the circuit breaker is in "connected" or "test" position. If the breaker is put in the "connected" position with the door open, the door may be closed without having to disconnect the circuit breaker.

Racking Interlock VPOC

This device prevents insertion of the racking handle when the cubicle door is open.

Cable-Type Door Interlock IPA

This option is identical for fixed and drawout versions.

Racking Interlock between Crank and OFF Pushbutton IBPO for NW DC

This option makes it necessary to press the OFF pushbutton in order to insert the racking handle and holds the device open until the handle is removed.

Automatic Spring Discharge Before Breaker Removal DAE for NW DC

This option discharges the springs before the breaker is removed from the chassis.

Mismatch Protection V DC

Mismatch protection ensures that a circuit breaker is installed only in a chassis with compatible characteristics. It is made up of two parts (one on the chassis and one on the circuit breaker) offering twenty different combinations that the user may select.



Racking interlock



Mismatch protection

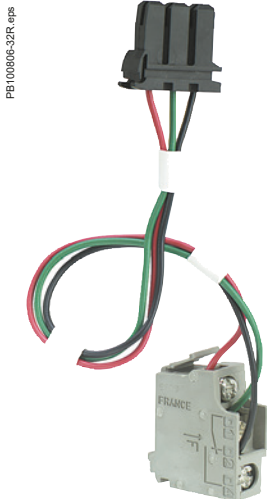
Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

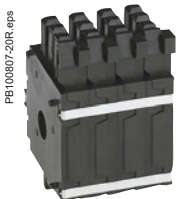
Indication contacts are available:

- In the standard version for relay applications
- In a low-level version for control of PLCs and electronic circuits.

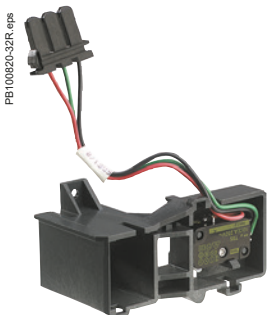
A



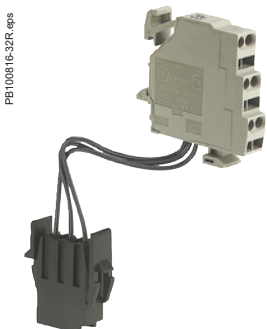
ON/OFF indication contacts
OF (microswitch type)



ON/OFF indication contacts
OF (rotary type)



Additional "fault-trip"
indication contacts SDE



Combined contacts

Indication Contacts

ON/OFF Indication Contacts OF

Rotary type changeover contacts directly driven by the mechanism. These contacts trip when the minimum isolation distance between the main Circuit breaker contacts is reached.

OF			
Supplied as standard			4
Maximum number			12
Breaking capacity (A)	Standard		minimum load: 100 mA/24 V
p.f.: 0.3	V AC	240/380	10/6 ^[1]
AC12/DC12		480	10/6 ^[1]
		690	6
	V DC	24/48	10/6 ^[1]
		125	10/6 ^[1]
		250	3
	Low-level		minimum load: 2 mA/15 V
	V AC	24/48	6
		240	6
		380	3
	V DC	24/48	6
		125	6
		250	3

[1] Standard contacts: 10 A; optional contacts: 6 A.

"Fault-Trip" Indication Contacts SDE

Circuit breaker tripping due to a fault is signalled by:

- A red mechanical fault indicator (reset)
- One changeover contact SDE.

Following tripping, the mechanical indicator must be reset before the circuit breaker may be closed. One SDE is supplied as standard. An optimal SDE may be added. This latter is incompatible with the electrical reset after fault-trip option (Res).

SDE			
Supplied as standard			1
Maximum number			2
Breaking capacity (A)	Standard		minimum load: 100 mA/24 V
p.f.: 0.3	V AC	240/380	6
AC12/DC12		480	2
	V DC	24/48	3
		125	0.3
		250	0.15
	Low-level		minimum load: 2 mA/15 V
	V AC	24/48	3
		240	3
		380	3
	V DC	24/48	3
		125	0.3
		250	0.15

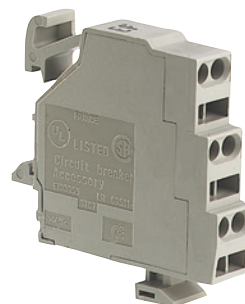
Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

Combined “Connected/Closed” Contacts EF

The contact combines the “device connected” and the “device closed” information to produce the “circuit closed” information. Supplied as an option for MasterPact NW DC, it is mounted in place of the connector of an additional OF contact.

EF			
Maximum number			8
Breaking capacity (A)	Standard		minimum load: 100 mA/24 V
p.f.: 0.3			
AC12/DC12	V AC	240/380	6
		480	6
		690	6
	V DC	24/48	2.5
		125	0.8
		250	0.3
	Low-level		minimum load: 2 mA/15 V
	V AC	24/48	5
		240	5
		380	5
	V DC	24/48	2.5
		125	0.8
		250	0.3



CE, CD and CT “connected/disconnected/test” position carriage switches

“Connected”, “Disconnected” and “Test” Position Carriage Switches

Three series of optional auxiliary contacts are available for the chassis:

- Changeover contacts to indicate the “connected” position CE
- Changeover contacts to indicate the “disconnected” position CD. This position is indicated when the required clearance for isolation of the power and auxiliary circuits is reached.
- Changeover contacts to indicate the “test” position CT. In this position, the power circuits are disconnected and the auxiliary circuits are connected.

Additional actuators

A set of additional actuators may be installed on the chassis to change the functions of the carriage switches.

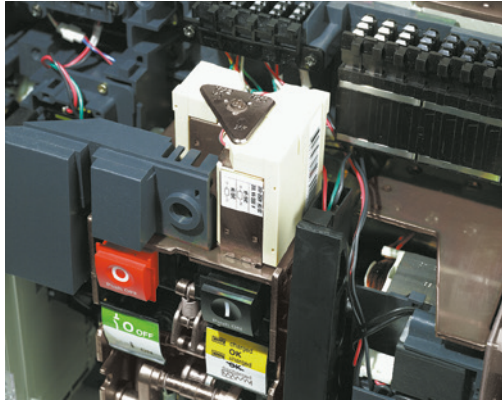
Contacts				CE	CD	CT
Maximum number	Standard with additional actuators			3	3	3
				9	0	0
				6	3	0
				6	0	3
				3	6	0
Breaking capacity (A)	Standard			minimum load: 100 mA/24 V		
p.f.: 0.3						
AC12/DC12	V AC	240		8		
		380		8		
		480		8		
		690		6		
	V DC	24/48		2.5		
		125		0.8		
		250		0.3		
	Low-level			minimum load: 2 mA/15 V		
	V AC	24/48		5		
		240		5		
		380		5		
	V DC	24/48		2.5		
		125		0.8		
		250		0.3		

Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

Two solutions are available for remote operation of MasterPact devices:

- A point-to-point solution
- A bus solution with the COM communication option.



Note:

An opening order always takes priority over a closing order. If opening and closing orders occur simultaneously, the mechanism discharges without any movement of the main contacts. The circuit breaker remains in the open position (OFF).

In the event of maintained opening and closing orders, the standard mechanism provides an anti-pumping function by blocking the main contacts in open position. Anti-pumping function. After fault tripping or intentional opening using the manual or electrical controls, the closing order must first be discontinued, then reactivated to close the circuit breaker.

When the automatic reset after fault trip (RAR) option is installed, to avoid pumping following a fault trip, the automatic control system must take into account the information supplied by the circuit breaker before issuing a new closing order or blocking the circuit breaker in the open position. (information on type of fault: overload, short time delay, earth-leakage fault, fault vigi or short-circuit, etc.)

Note:

MX communicating releases are of the impulse type only and cannot be used to lock a circuit breaker in OFF position. For locking in OFF position, use the remote tripping function (2nd MX or MN).

When Mx or XF communicating releases are used, the third wire (C3, A3) must be connected even if the communication module is not installed. When the control voltage (C3-C1 or A3-A1) is applied to the MX or XF releases, it is necessary to wait 1.5 seconds before issuing an order. consequently, it is advised to use standrad MX or XF releases for applications such as source-changeover systems.

Remote Operation: Remote ON/OFF

The remote ON/OFF function is used to remotely open and close the circuit breaker. It is made up of:

- An electric motor MCH equipped with a "springs charged" limit switch contact CH
- Two voltage releases:
 - A closing release XF
 - An opening release MX.

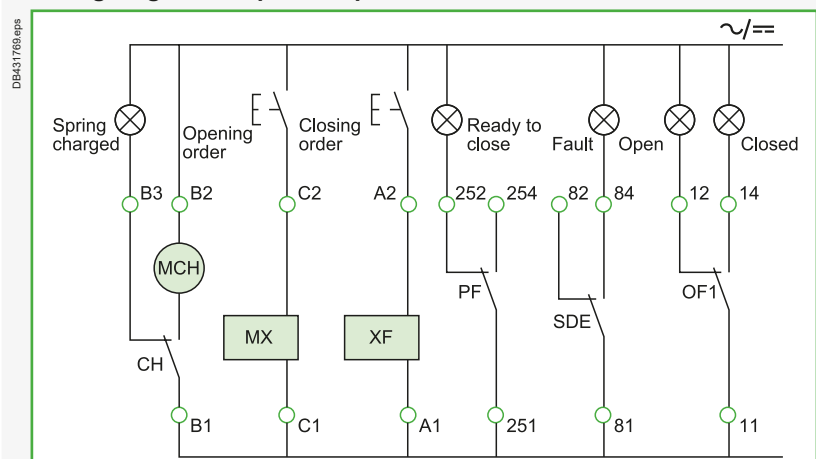
Optionally, other functions may be added:

- A "ready to close" contact PF
- An electrical closing pushbutton BPFE
- Remote RES following a fault.

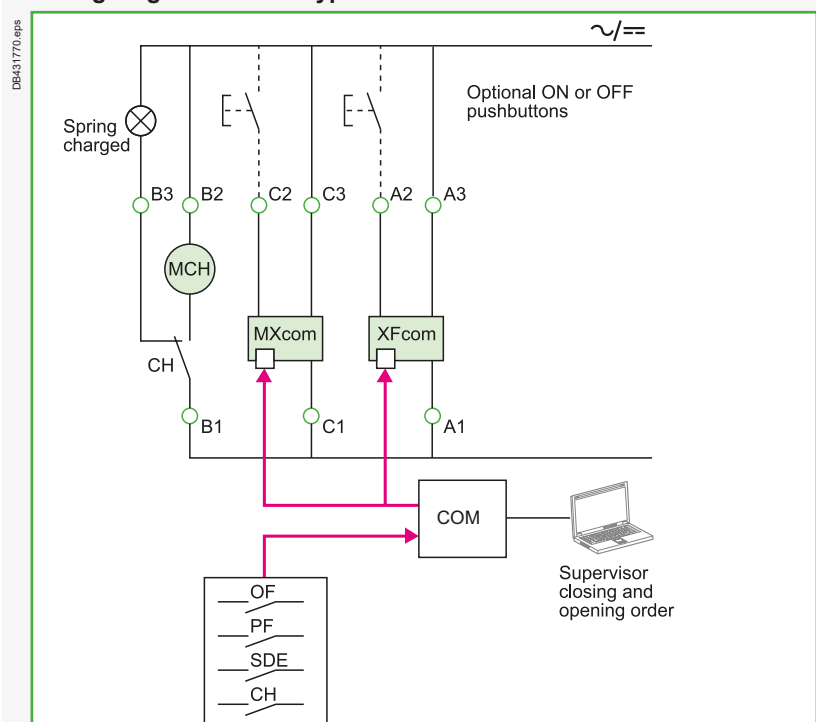
A remote-operation function is generally combined with:

- Device ON/OFF indication OF
- "fault-trip" indication SDE.

Wiring diagram of a point-to-point remote ON/OFF function



Wiring diagram of a bus-type remote ON/OFF function



Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

Electric Motor MCH

The electric motor automatically charges and recharges the spring mechanism when the circuit breaker is closed. Instantaneous reclosing of the breaker is thus possible following opening. The spring-mechanism charging handle is used only as a backup if auxiliary power is absent.

The electric motor (MCH) is equipped as standard with a limit switch contact (CH) that signals the "charged" position of the mechanism (springs charged).

Characteristics		
Power supply	V AC 50/60 Hz	48/60 - 100/130 - 200/240 - 277 - 380/415 - 400/440 - 480
	V DC	24/30 - 48/60 - 100/125 - 200/250
Operating threshold	0.85 to 1.1 Un	
Consumption (VA or W)	180	
Motor overcurrent	2 to 3 In for 0.1 s	
Charging time	maximum 4 seconds	
Operating frequency	maximum 3 cycles per minute	
CH contact	10 A at 240 V	

Voltage Releases XF and MX

Their supply can be maintained or automatically disconnected.

Closing release XF

The XF release remotely closes the circuit breaker if the spring mechanism is charged.

Opening release MX

The MX release instantaneously opens the circuit breaker when energized, the minimum duration of the pulse operating order must be 200 ms. The MX release locks the circuit breaker in OFF position if the order is maintained (except for MX "communicating" releases).

Note: Whether the operating order is maintained or automatically disconnected (pulse-type), XF or MX "communicating" releases ("bus" solution with "COM" communication option) always have an impulse-type action (see diagram).

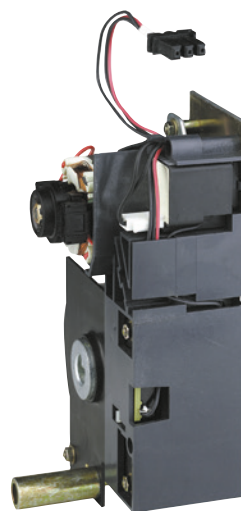
Characteristics	XF	MX
Power supply	V AC 50/60 Hz	24 - 48 - 100/130 - 200/250 - 277 - 380/480
	V DC	12 - 24/30 - 48/60 - 100/130 - 200/250
Operating threshold	0.85 to 1.1 Un	
Consumption (VA or W)	pick-up: 200 (during 200 ms) hold: 4.5	
	pick-up: 200 (during 200 ms) hold: 4.5	
Circuit breaker response time at Un	70 ms $\pm$ 10 (NW DC $\leq$ 4000 A)	50 ms $\pm$ 10 (NW DC)
	80 ms $\pm$ 10 (NW DC > 4000 A)	

"Ready to Close" Contact PF

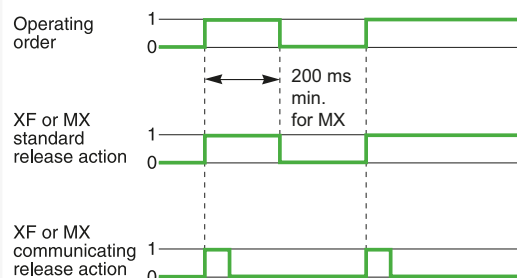
The "ready to close" position of the circuit breaker is indicated by a mechanical indicator and a PF changeover contact. This signal indicates that all the following are valid:

- The circuit breaker is in the OFF position
- The spring mechanism is charged
- A maintained opening order is not present:
 - MX energized
 - Fault trip
 - Remote tripping second MX or MN
 - Device not completely racked in
 - Device locked in OFF position
 - Device interlocked with a second device.

Characteristics		
Supplied as standard	-	
Maximum number	1	
Breaking capacity p.f.: 0.3 AC12/DC12	Standard	minimum load: 100 mA/24 V
		V AC 240/380
		480
	V DC 24/48	5
		690
		3
	Low-level	125
		0.3
		250
		0.15
	Standard	minimum load: 2 mA/15 V
		V AC 24/48
		240
	V DC 24/48	3
		380
		3
	Low-level	125
		0.3
		250
		0.15



Electric motor MCH for MasterPact NW DC



XF and MX voltage releases



"Ready to close" contacts PF

PB100808-32R.eps

DB431945.eps

PB100809-16R.eps

PB100810-16R.eps

Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

A

Electrical Closing Pushbutton BPFE

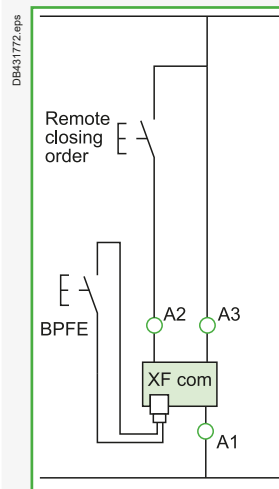
Located on the front panel, this pushbutton carries out electrical closing of the circuit breaker. It is generally associated with the transparent cover that avoids access to the closing pushbutton.

Electrical closing via the BPFE pushbutton takes into account all the safety functions that are part of the control/monitoring system of the installation.

The BPFE connects to the closing release XF in place of the COM module.

The COM module is incompatible with this option.

Different types of voltage exist and the XF electromagnet is compulsory if the BPFE option is selected.



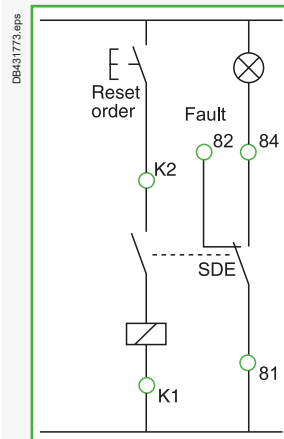
Remote Reset After Fault Trip

Electrical reset after fault trip RES

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

Power supply: 110/130 V AC and 200/240 V AC.

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



Automatic reset after fault trip RAR

Following tripping, a reset of the mechanical indicator (reset button) is no longer required to enable Circuit breaker closing. The mechanical (reset button) and electrical SDE indications remain in fault position until the reset button is pressed. The use of XF closing release is compulsory with this option.

Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

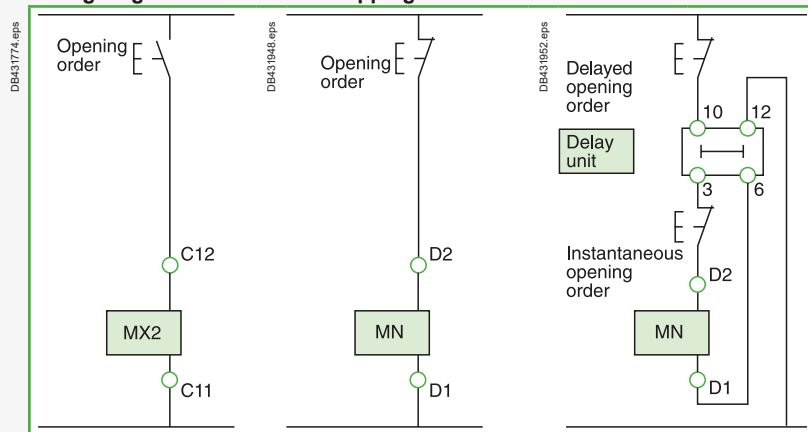
Remote Operation: Remote Tripping

This function opens the circuit breaker via an electrical order. It is made up of:

- A shunt release second MX
- Or an undervoltage release MN
- Or a delayed undervoltage release MNR: (MN + delay unit).

These releases (2nd MX or MN) cannot be operated by the communication bus. The delay unit, installed outside the circuit breaker, may be disabled by an emergency OFF button to obtain instantaneous opening of the circuit breaker.

Wiring diagram for the remote-tripping function



Voltage Releases Second MX

When energized, the MX voltage release instantaneously opens the circuit breaker. A continuous supply of power to the second MX locks the circuit breaker in the OFF position.

Characteristics			
Power supply	V AC 50/60 Hz	24 - 48 - 100/130 - 200/250 - 277 - 380/480	
	V DC	24/30 - 48/60 - 100/130 - 200/250	
Operating threshold	0.7 to 1.1 Un		
Permanent locking function	0.85 to 1.1 Un		
Consumption (VA or W)	pick-up: 200 (during 80 ms)		hold: 4.5
Circuit breaker response time at Un	50 ms ±10		

Instantaneous Voltage Releases MN

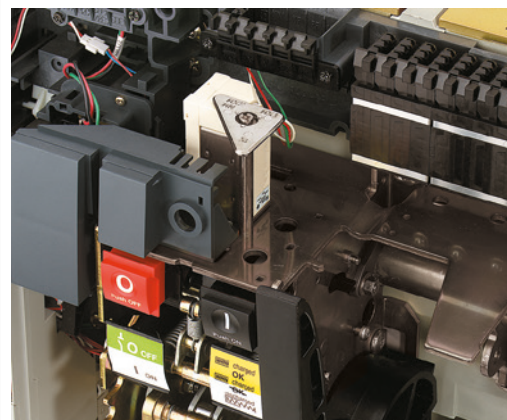
The MN release instantaneously opens the circuit breaker when its supply voltage drops to a value between 35 % and 70 % of its rated voltage. If there is no supply on the release, it is impossible to close the circuit breaker, either manually or electrically. Any attempt to close the circuit breaker 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.

Characteristics			
Power supply	V AC 50/60 Hz	24 - 48 - 100/130 - 200/250 - 380/480	
	V DC	12 - 24/30 - 48/60 - 100/130 - 200/250	
Operating threshold	opening	0.35 to 0.7 Un	
	closing	0.85 Un	
Consumption (VA or W)	pick-up: 200 (during 200 ms)		hold: 4.5
MN consumption with delay unit	pick-up: 200 (during 200 ms)		hold: 4.5
Circuit breaker response time at Un	90 ms ±5		

MN Delay Units

To eliminate Circuit breaker nuisance tripping during short voltage dips, operation of the MN release can be delayed. This function is achieved by adding an external delay unit in the MN voltage-release circuit. Two versions are available, adjustable and non-adjustable.

Characteristics			
Power supply	non-adjustable	100/130 - 200/250	
VAC 50-60 Hz/DC	adjustable	48/60 - 100/130 - 200/250 - 380/480	
Operating threshold	opening	0.35 to 0.7 Un	
	closing	0.85 Un	
Consumption of delay unit alone (VA or W)	pick-up: 200 (during 200 ms)		hold: 4.5
Circuit breaker response time at Un	non-adjustable	0.25 s	
	adjustable	0.5 s - 0.9 s - 1.5 s - 3 s	



PB104360A-6BR eps

A



MX or MN voltage release

PB100809-16R eps

Electrical and Mechanical Accessories

MasterPact NW10 to NW40 DC

A

DB124953.eps



Shields, Blanking Plates, Counters

Auxiliary Terminal Shield CB

Optional equipment mounted on the chassis, the shield avoids access to the terminal block of the electrical auxiliaries.

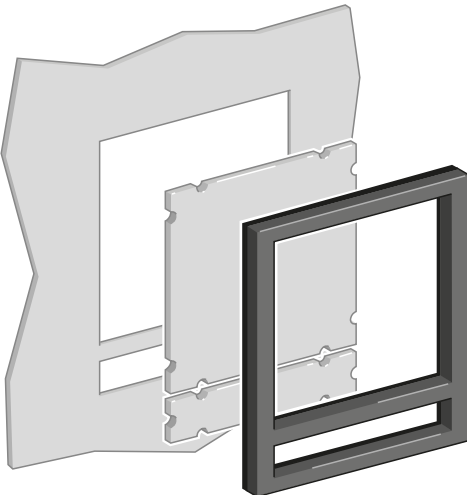
PB104382-52R.eps



Operation Counter CDM

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

DB431775.eps



Escutcheon CDP

Optional equipment mounted on the door of the cubicle, the escutcheon increases the degree of protection to IP 40 (circuit breaker installed free standing: IP30) . It is available in fixed and drawout versions.

Blanking Plate OP for Escutcheon

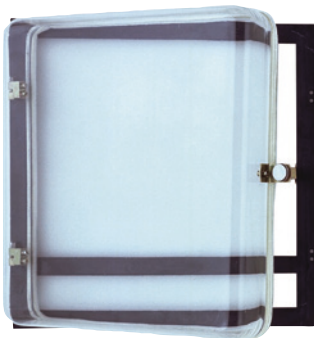
Used with the escutcheon, this option closes off the door cut-out of a cubicle not yet equipped with a device. It may be used with the escutcheon for both fixed and drawout devices.

Transparent Cover CCP for Escutcheon

Optional equipment mounted on the escutcheon, the cover is hinged and secured by a screw. It increases the degree of protection to IP 54, IK10. It adapts to drawout devices.

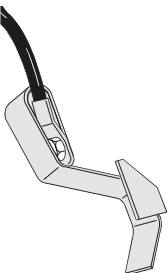
Escutcheon CDP with blanking plate

PB100776-42R.eps



Transparent cover CCP for escutcheon

DB41776.eps



Grounding kit KMT

Grounding Kit KMT

This option allows the grounding of the breaker mechanism while the front cover is removed. The grounding is made via the chassis for the drawout version and via the fixation side plate for the fixed version.

Installation Recommendations

ComPacT NSX100 to NSX1200 DC

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ComPacT NSX DC PV

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ComPacT NSX DC EP

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MasterPact NW10 to NW40 DC, EPDC, DC PV

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ComPacT NSX100 to NSX1200 DC

Installation in Switchboards

Possible Mounting Positions

For Fixed or Withdrawable Circuit Breakers

Fig. A

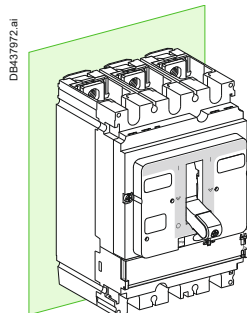


Fig. B

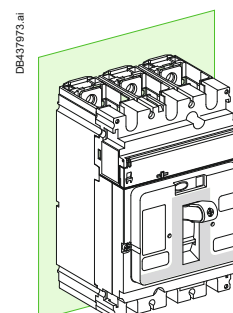


Fig. C

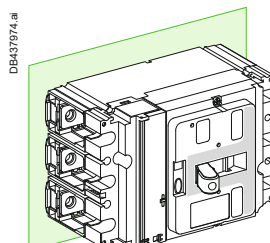


Fig. D

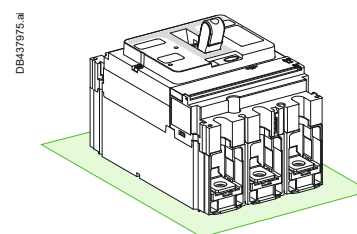
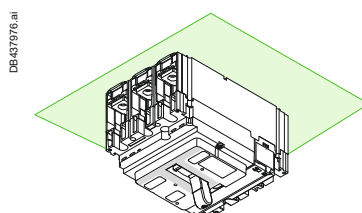


Fig. E

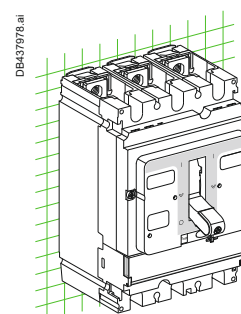
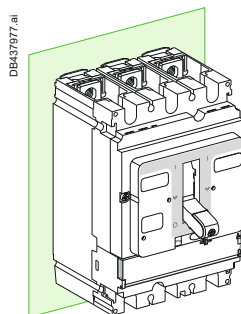


Possible Supports

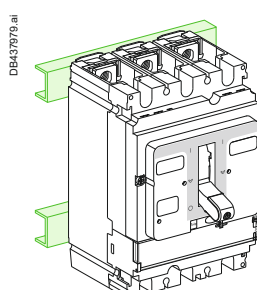
For Fixed or Withdrawable Circuit Breakers

On a plain mounting plate

On a slotted mounting plate



On rails



ComPacT NSX100 to NSX1200 DC

Power Connections

Electrodynamic Forces on the Conductors

The circuit breakers can be connected with copper, tinned copper or tinned aluminum conductors (rigid or flexible bars, cables).

In the event of a short-circuit, electrodynamic forces will be exerted on the conductors.

They must therefore be correctly sized and maintained in place using supports.

Electrical connection points on all types of devices (contactors, circuit breakers, etc.) should not be used for mechanical support.

Ties for Flexible Bars and Cables

The table below indicates the maximum distance between ties depending on the prospective short-circuit current.

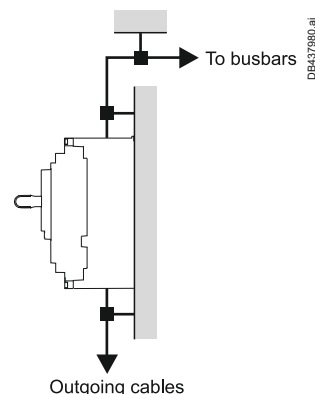
The maximum distance between ties attached to the switchboard frame is 400 mm.

Type of tie	Maximum distance between ties (mm)	Short-circuit current (kA rms)
“PANDUIT” type ties Width: 4.5 mm Max. load: 22 kg White	200	10
	100	14
	50	19
“SAREL” type ties Width: 9 mm Max. load: 90 kg Black Double ties	350	21
	200	27
	100	36
	70	45
	50	100

Note: For 50 mm² cables, use the 9 mm wide ties.

Weights

Type	Circuit breaker	Plug-in base	Chassis	Motor mechanism
NSX100N/H DC	1P/1D	0.5	-	-
	2P/2D	1.45	-	-
NSX100 DC	3P/3D	1.79	0.8	2.2
	4P/4D	2.57	1.05	2.2
NSX160N/H DC	1P/1D	0.5	-	-
	2P/2D	1.45	-	-
NSX160N DC	3P/3D	1.85	0.8	2.2
	4P/4D	2.58	1.05	2.2
NSX250 DC	3P/3D	2.2	0.8	2.2
	4P/4D	2.78	1.05	2.2
NSX400/630 DC	3P/3D	6.19	2.4	2.2
	4P/4D	8.13	2.8	2.2
NSX1200 DC	2P/2D	8.9	-	-

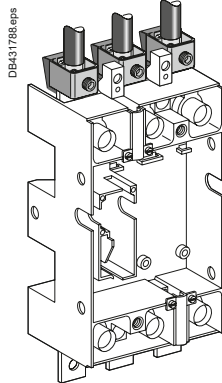
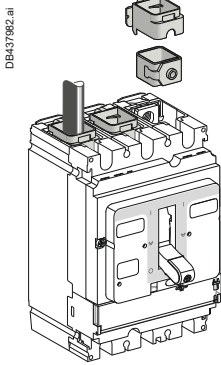
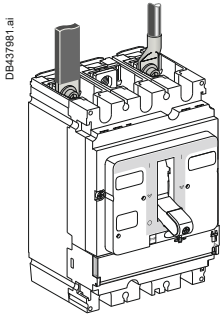


B

ComPacT NSX100 to NSX1200 DC

Power Connections

B



Connection of Insulated Bars or Cables with Lugs

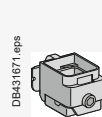
		NSX100/160/250 DC	NSX400/630/1200 DC
	Bars		
	L (mm)	≤ 25	≤ 32
	l (mm)	d + 10	d + 15
	d (mm)	≤ 10	≤ 15
	e (mm)	≤ 6	3 ≤ e ≤ 10
	Lugs		
	L (mm)	≤ 25	≤ 32
	Ø (mm)	8.5	10.5
	Tightening torque (Nm) ^[1]	15	50
	Tightening torque (Nm) ^[2]	5	20

[1] Tightening torque for lugs or bars on the circuit breaker.

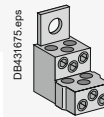
[2] Tightening torque for rear connections or terminal extensions on plug-in base.

Connection of Bare Cables

NSX100 to 250 DC



Cable connector



Distribution connector

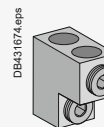
	Cable connector	Steel ≤ 160 A	Aluminium ≤ 250 A		
	L (mm)	20	20		
	S (mm²) Cu/Al	1.5... 95 ^[1]	10... 16	25... 35	50... 185 150 max. flexible
	Tightening torque (Nm)	12	15	20	26
	6-cable distribution connector (copper or aluminium)				
	L (mm)	15 or 30			
	S (mm²) Cu/Al	1.5... 6 ^[1]	8... 35		
	Tightening torque (Nm)	4	6		

[1] For flexible cables from 1.5 to 4 mm², connection with crimped or self-crimping ferrule.

NSX400 to 630 DC



Cable connector



Distribution connector

		Cable connector	2-cable connector
	L (mm)	20	30 or 60
	S (mm²) Cu/Al	35 to 300 rigid 240 max. flexible	2 x 85 to 2 x 240 rigid 240 max. flexible
	Tightening torque (Nm)	31	31

NSX1200 DC

		2-cable connector
	L (mm)	30 or 60
	S (mm²) Cu/Al	2 x 85 to 2 x 240 rigid 240 max. flexible
	Tightening torque (Nm)	31

ComPacT NSX100 to NSX1200 DC

Safety Clearances, Minimum Distances and Insulation of Live Parts

When installing a ComPacT NSX100 to 1200 DC circuit breaker, minimum distances (safety clearances) must be maintained between the device and panels, bars and other protection devices installed nearby. These distances, which depend on the ultimate breaking capacity, are defined by tests carried out in accordance with standard IEC 60947-2.

If installation conformity is not checked by type tests, it is also necessary to:

- Use insulated bars for circuit breaker connections
- Block off the busbars using insulating screens.

Terminal shields, interphase barriers and the insulation kit are recommended and may be mandatory depending on the utilization voltage and the type of installation (fixed, withdrawable).

Dimensions (mm)		Insulation, insulated bars or painted sheet metal			Sheetmetal					
ComPacT circuit breaker		C1	D1	D2	C2	D1	D2	A1 [2]	A2 [3]	B
NSX100-250 DC	U ≤ 250 V	0	30	30	5	35	35	0	10	0
	U ≤ 500 V	0	30	30	10 [1]	35	35	0	20	0
	U ≤ 750 V	0	30 [4]	30 [4]	20 [4]	35 [4]	35 [4]	0	-	0
NSX400-630 DC	U ≤ 250 V	0	30	30	5	60	60	0	10	0
	U ≤ 500 V	0	30	30	10 [1]	60	60	0	20	0
	U ≤ 750 V	0	30 [4]	30 [4]	20 [4]	100 [4]	100 [4]	0	-	0
NSX1200 DC [5]	U ≤ 300 V	0	30	30	10	60	60	0	-	0
	U ≤ 600 V	0	30	30	20	100	100	0	-	0

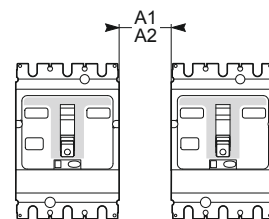
[1] Distance must be doubled with interphase barriers.

[2] For ComPacT NSX DC with long or short terminal shields.

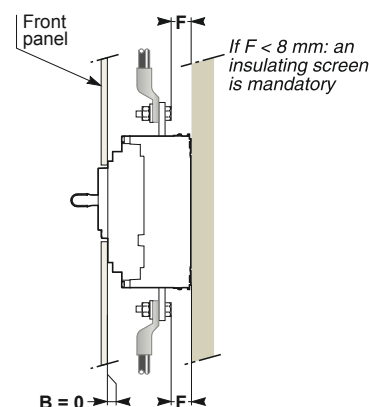
[3] For ComPacT NSX DC without terminal shields.

[4] For voltage > 500 V, terminal shields are mandatory. The length of terminal shields (long or short terminal shields) should be considered.

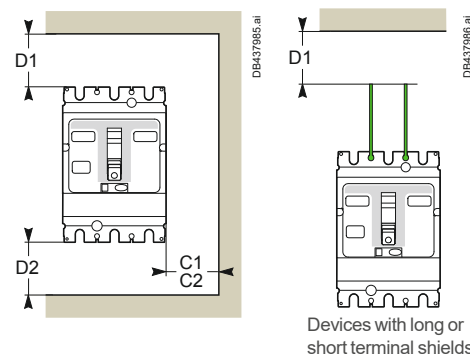
[5] For ComPacT NSX1200 DC, terminal shields are required and are supplied with the circuit breaker.



Minimal distance between two adjacent circuit breakers



Minimal distance between the circuit breaker and front or rear panels



Minimal distance between the circuit breaker and top, bottom or side panels

Terminal Shield Configuration

	NSX400/630					NSX1200
Circuit breaker construction	3P	3P	4P	4P	4P	2P (4P platform)
Pole connection	3P in series	2P in series	3P in series	4P in series	2P parallel	-
Terminal shield construction	3P	3P	4P	4P	4P	4P
upstream	LV438291	LV432593	LV438294	LV432594	LV438293	LV438293
upstream with rear connection downstream	LV438291	LV432593 or LV432591 (short)	LV438294	LV432594 or LV432592 (short)	-	-
	LV438291	LV438292	LV438295	LV438293	LV438293	LV438293

ComPacT NSX100 to NSX1200 DC

Temperature Derating

These values are valid for fixed and withdrawable circuit breakers with or without terminal shields.

- "≤ 500 V" means that 2 poles only are used, for isolated system, this table shall be used up to 250 V only.
- "> 500 V" means that 3 or 4 poles are used, for isolated system, this table shall be used up to 500 V only.

When the ambient temperature is greater than 40 °C, overload-protection characteristics are slightly modified.

To determine tripping times using time/current curves, use the values of the current indicated in the table below, corrected to take into account the ambient temperature.

ComPacT NSX DC temperature derating

NSX DC configuration	Type of trip unit	Rating In (A) for a given temperature						
		Ambient temp. 40 °C	Ambient temp. 45 °C	Ambient temp. 50 °C	Ambient temp. 55 °C	Ambient temp. 60 °C	Ambient temp. 65 °C	Ambient temp. 70 °C
NSX100 DC 1/2P 1P 250 V - 2P 500 V	TM16D	16	15.6	15.2	14.8	14.5	14	13.8
	TM25D	25	24.5	24	23.5	23	22	21
	TM30D	30	31.3	30.5	30	29.5	29	28.5
	TM40D	40	39	38	37	36	35	34
	TM50D	50	49	48	47	46	45	44
	TM63D	63	61.5	60	58	57	55	54
	TM80D	80	78	76	74	72	70	68
	TM100D	100	97.5	95	92.5	90	87.5	85
NSX160 DC 1/2P 1P 250 V - 2P 500 V	TM125D	125	122	119	116	113	109	106
	TM160D	160	156	152	147	144	140	136
NSX100 DC 3/4P ≤ 500 V	TM16D	16.8	16.4	16	15.5	15.2	14.7	14.5
	TM25D	26.3	25.7	25.2	24.7	24.2	23.1	22.1
	TM32D	33.6	33	32	31.5	31	30.5	30
	TM40D	42	41	40	39	38	37	36
	TM50D	53	51	50	49	48	47	46
	TM63D	66	65	63	61	60	58	57
	TM80DC	84	82	80	78	76	74	71
	TM100DC	105	102	100	97	95	92	89
NSX160 DC 3/4P ≤ 500 V	TM125DC	131	128	125	122	119	114	111
	TM160DC	168	164	160	154	151	147	143
NSX250 DC 3/4P ≤ 500 V	TM200DC	210	205	200	194	189	184	179
	TM250DC	250	240	235	230	220	210	200
NSX100 DC 3/4P > 500 V	TM16D	16	15.6	15.2	14.8	14.5	14	13.8
	TM25D	25	24.5	24	23.5	23	22	21
	TM32D	32	31.3	30.5	30	29.5	29	28.5
	TM40D	40	39	38	37	36	35	34
	TM50D	50	49	48	47	46	45	44
	TM63D	63	61.5	60	58	57	55	54
	TM80DC	80	78	76	74	72	70	68
	TM100DC	100	97.5	95	92.5	90	87.5	85
NSX160 DC 3/4P > 500 V	TM125DC	125	122	119	116	113	109	106
	TM160DC	160	156	152	147	144	140	136
NSX250 DC > 500 V	TM200DC	200	195	190	185	180	175	170
	TM250DC	230	225	220	210	200	190	180
NSX400 DC ≤ 500 V	TM250DC	250 A	250 A	240 A	230 A	220 A	205 A	195 A
	TM320DC	320 A	320 A	315 A	305 A	295 A	280 A	270 A
	TM400DC	400 A	400 A	395 A	380 A	370 A	355 A	340 A
NSX400 DC > 500 V	TM250DC	250 A	250 A	240 A	230 A	220 A	205 A	195 A
	TM320DC	320 A	320 A	315 A	305 A	295 A	280 A	270 A
	TM400 DC	400 A	400 A	395 A	380 A	370 A	350 A	340 A
NSX630 DC ≤ 500 V	TM500DC	500 A	500 A	490 A	475 A	460 A	440 A	420 A
	TM600DC	600 A	600 A	585 A	560 A	535 A	510 A	485 A
NSX630 DC > 500 V	TM500DC	500 A	480 A	465 A	450 A	440 A	420 A	410 A
	TM600DC	-	-	-	-	-	-	-
NSX1200 DC 600 V	TM630DC	630 A	610 A	590 A	570 A	550 A	520 A	500 A
	TM800DC	800 A	775 A	740 A	720 A	695 A	665 A	640 A
	TM1000DC	1000 A	970 A	930 A	905 A	870 A	830 A	800 A
	TM1200DC	1200 A	1160 A	1115 A	1085 A	1040 A	995 A	955 A
NSX400 NA DC ≤ 500 V		400 A	400 A	400 A	400 A	400 A	400 A	400 A
NSX400 NA DC > 500 V		400 A	400 A	400 A	400 A	400 A	400 A	400 A
NSX600 NA DC ≤ 500 V		630 A	600 A	580 A	560 A	540 A	520 A	500 A
NSX600 NA DC > 500 V		605 A	585 A	570 A	550 A	530 A	505 A	485 A

Example ■: ComPacT NSX100 DC equipped with a TM80DC trip unit has a rating of:

- 84 A at 40 °C
- 78 A at 55 °C.

ComPacT NSX100 to NSX1200 DC

Characteristics of Circuit Breakers with Parallel Connection of Poles

When poles are connected in parallel, the trip unit corresponding to the maximum circuit breaker rating is never used, for safety reasons related to temperature rise. The heating conditions are modified. The table opposite indicates the new thermal ratings that should be used for 2P, 3P and 4P circuit breakers.

Type of circuit breaker	Pole connections	Type of trip unit	Equivalent rated current ^[1] In (A) at 40 °C	Magnetic threshold Ii (A) ±20 %	Breaking capacity Icu (kA)	
NSX100F DC					250 V	500 V
NSX100F DC 2-pole See example 2 (see page A-8)	2P in parallel	TM16D	40	520	36	-
		TM25D	63	800		
		TM30D	80	800		
		TM40D	100	1400		
		TM50D	125	1400		
		TM63D	158	1400		
		TM80D	200	1600		
NSX100F DC 3-pole	3P in parallel	TM16D	58	780	Please consult us	-
		TM25D	90	1200		
		TM32D	115	1650		
		TM40D	144	2100		
		TM50D	180	2100		
		TM63D	227	2100		
		TM80DC	288	2400		
		TM16G	58	240		
		TM25G	90	300		
		TM40G	144	300		
		TM63G	227	450		
		TM80G	288	750		
		TM100G	360	1200		
NSX100F DC 4-pole	4P in parallel	TM16D	74	1040	Please consult us	-
		TM25D	115	1600		
		TM32D	147	2200		
		TM40D	184	2800		
		TM50D	230	2800		
		TM63D	290	2800		
		TM80DC	368	3200		
		TM16G	74	320		
		TM25G	115	400		
		TM40G	184	400		
		TM63G	290	600		
		TM80G	368	1000		
		TM100G	460	1600		
	2 x 2P (in parallel) in series	TM16D	37	520	36	36
		TM25D	58	800		
		TM32D	74	1100		
		TM40D	46	1400		
		TM50D	115	1400		
		TM63D	145	1400		
		TM80DC	184	1600		
		TM16G	37	160		
		TM25G	58	200		
		TM40G	46	200		
		TM63G	145	300		
		TM80G	184	500		
		TM100G	230	800		

[1] Rated current of the assembly with the indicated pole connections.

Example ■: a ComPacT NSX100F DC 4-pole circuit breaker with 4 poles in parallel, equipped with a TM63D trip unit:

- An equivalent rated current of 290 A
- A fixed magnetic threshold of 2800 A.

ComPacT NSX100 to NSX1200 DC

Characteristics of Circuit Breakers with Parallel Connection of Poles

When poles are connected in parallel, the trip unit corresponding to the maximum circuit breaker rating is never used, for safety reasons related to temperature rise. The heating conditions are modified. The table opposite indicates the new thermal ratings that should be used for 2P, 3P and 4P circuit breakers.

Type of circuit breaker	Pole connections	Type of trip unit	Equivalent rated current ^[1] In (A) at 40 °C	Magnetic threshold li (A) ±20 %	Breaking capacity Icu (kA)	
NSX160F DC					250 V	500 V
NSX160F DC 2-pole	2P in parallel	TM125D	313	2400	36	-
NSX160F DC 3-pole	3P in parallel	TM100DC	360	2400	Please consult us	-
		TM125DC	450	3750		
		TM125G	450	1560		
		TM160G	576	1560		
NSX160F DC 4-pole	4P in parallel	TM100DC	460	3200		
		TM125DC	575	5000		
		TM125G	575	2080		
		TM160G	736	2080		
See example 1 (see page A-8)	2x2P (in parallel) in series	TM100DC	230	1600	36	36
		TM125DC	288	2500		
		TM125G	288	1040		
		TM160G	368	1040		
NSX250F DC						
NSX250F DC 3-pole	2P in parallel	TM160DC	400	2500	36	-
		TM200DC	500	2000 to 4000		
NSX250F DC 3-pole	3P in parallel	TM160DC	576	3750	Please consult us	-
		TM200DC	720	3000 to 6000		
		TM200G	720	1560		
		TM250G	900	1875		
NSX250F DC 4-pole	4P in parallel	TM160DC	736	5000		
		TM200DC	920	4000 to 8000		
		TM200G	920	2080		
		TM250G	1150	2500		
	2x2P (in parallel) in series	TM160DC	368	2500	36	36
		TM200DC	460	2000 to 4000		
		TM200G	460	1040		
		TM250G	575	1250		

Example ■■■: a ComPacT NSX160F DC 4-pole circuit breaker with 2x2P poles in parallel, equipped with a TM125DC trip unit:

- A equivalent rated current of 288 A
- A fixed magnetic threshold of 2500 A.

ComPacT NSX100 to NSX1200 DC

Characteristics of Circuit Breakers with Parallel Connection of Poles

When poles are connected in parallel, the trip unit corresponding to the maximum circuit breaker rating is never used, for safety reasons related to temperature rise. The heating conditions are modified. The table opposite indicates the new thermal ratings that should be used for 2P, 3P and 4P circuit breakers.

Type of circuit breaker	Pole connections	Type of trip unit	Equivalent rated current ^[1] In (A) at 40 °C	Magnetic threshold li (A) ±20 %	Breaking capacity Icu (kA)	
NSX400F DC					250 V	500 V
NSX400F DC 3-pole	2P in parallel	TM250DC	500	1250 to 2000	36	-
		TM320DC	640	1600 to 3200		
	3P in parallel	TM250DC	750	1875 to 3000		
		TM320DC	960	2400 to 4800		
NSX400F DC 4-pole	4P in parallel	TM250DC	1000	2500 to 4000	36	36
		TM320DC	1280	3200 to 6400		
	2x2P (in parallel) in series	TM250DC	500	1250 to 2000		
		TM320DC	640	1600 to 3200		
NSX630F DC						
NSX630F DC 3-pole	2P in parallel	TM500DC	1000	2500 to 5000	36	-
		TM600DC	1065	3000 to 6000		
NSX630F DC 3-pole	3P in parallel	TM500DC	1485	3750 to 7500		
		TM600DC	1500	4500 to 9000		
NSX630F DC 4-pole	4P in parallel	TM500DC	1650	5000 to 10000		
		TM600DC	1985	6000 to 12000		

B

ComPacT NSX DC PV

Safety Clearances and Minimum Distances

Safety Clearance Using Terminals Shields

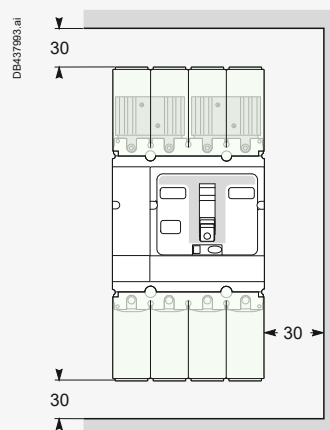
- Terminal shields must be used with all DC PV circuit breakers when operating at 1000 V DC.
- Terminal shields can be used in option with DC PV switch-disconnectors ($U \leq 1000$ V DC).

ComPacT NSX80 to 200 DC PV and ComPacT NSX250 to 500 DC PV

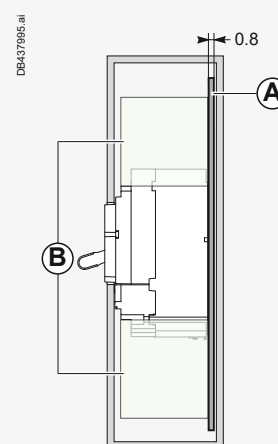
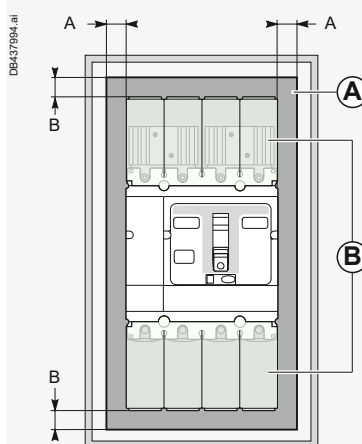
Minimal distance between two adjacent devices



Minimal distance between the device and panels



Minimal distance between the device and panels



Dimensions (mm)	Insulation, insulated bars or painted sheet metal	
	A	B
NSX80-200 DC PV	13	13
NSX250 to 500 DC PV	26	26

(A) Fiber insulating plate to be made by the customer.

(B) Long terminal shield.

Note: The thermal behavior of switchgear and enclosures warrants careful monitoring. PV generator boxes and array boxes are usually installed outdoors and exposed to the elements. In the event of high ambient temperatures, high IP levels could reduce air flow and thermal power dissipation.

In addition, the way switchgear devices achieve high voltage operation - i.e. through the use of poles in series - increases their temperature. Special attention should therefore be paid to the temperature of switchgear inside outdoor enclosures on the DC side.

Schneider Electric recommends checking the installation as per IEC 61439 or any other equivalent standard.

Installation Recommendations

ComPacT NSX NA DC PV

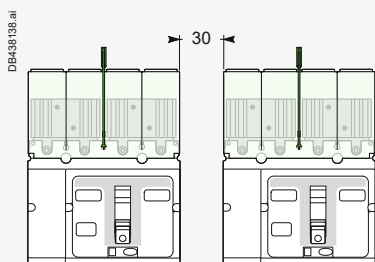
Safety Clearances and Minimum Distances

Safety Clearance with Interphase Barriers

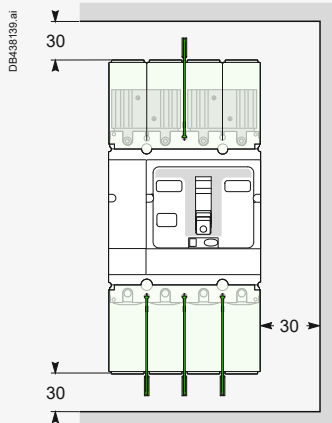
- Interphase barriers can be used **only with DC PV switch-disconnectors** ($U \leq 1000 \text{ V DC}$).

ComPacT NSX100 to 630 NA DC PV

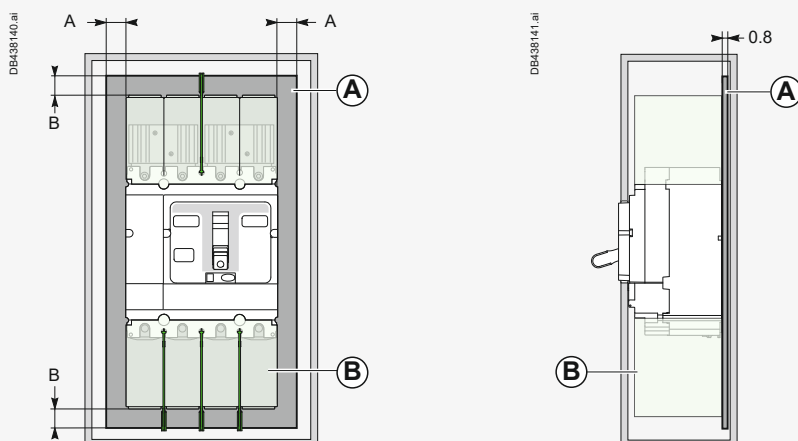
Minimal distance between two adjacent devices



Minimal distance between the device and panels



Minimal distance between the device and panels



Dimensions (mm)	Insulation, insulated bars or painted sheet metal	
	A	B
NSX100 to 250 DC PV	13	13
NSX400 to 630 DC PV	26	26

- (A) Fiber insulating plate to be made by the customer.
- (B) Long terminal shield.

Note: The thermal behavior of switchgear and enclosures warrants careful monitoring. PV generator boxes and array boxes are usually installed outdoors and exposed to the elements. In the event of high ambient temperatures, high IP levels could reduce air flow and thermal power dissipation.

In addition, the way switchgear devices achieve high voltage operation - i.e. through the use of poles in series - increases their temperature. Special attention should therefore be paid to the temperature of switchgear inside outdoor enclosures on the DC side.

Schneider Electric recommends checking the installation as per IEC 61439 or any other equivalent standard.



ComPacT NSX200 NA DC PV with short heatsinks and interphase barriers



ComPacT NSX200 NA DC PV with long heatsinks and interphase barriers

B

ComPacT NSX DC PV

Temperature Derating

ComPacT switch-disconnectors have been tested for operation in industrial atmospheres. It is recommended that the equipment be cooled or heated to the proper operating temperature and kept free of excessive vibration and dust.

DC PV switch-disconnectors

ComPacT NSX NA DC PV

IP	Bottom interphase barrier	Bottom terminal shield	Top interphase barrier	Top terminal shield	Top series connection	Maximum current (A): I _{th}								Cooper cable section ⁽¹⁾
						40 °C	45 °C	50 °C	55 °C	60 °C	65 °C	70 °C		
NSX100 NA DC PV 4P														
IP0	3 (LV429329)	No	1 (LV429329)	No	Short 2 x LV438328	100	100	100	100	100	100	100	Cu 35 mm ²	
IP4X	No	LV429518	No	LV438327	Short 2 x LV438328	100	100	100	100	100	100	100	Cu 35 mm ²	
NSX160 NA DC PV 4P														
IP0	3 (LV429329)	No	1 (LV429329)	No	Short 2 x LV438328	160	160	160	160	160	155	145	Cu 70 mm ²	
IP0	3 (LV429329)	No	1 (LV429329)	No	Long 2 x LV438339	160	160	160	160	160	160	160	Cu 70 mm ²	
IP4X	No	LV429518	No	LV438327	Short 2 x LV438328	160	160	160	160	150	145	135	Cu 70 mm ²	
NSX200 NA DC PV 4P														
IP0	3 (LV429329)	No	1 (LV429329)	No	Short 2 x LV438328	200	195	190	180	170	160	150	Cu 95 mm ²	
IP0	3 (LV429329)	No	1 (LV429329)	No	Long 2 x LV438339	200	200	200	200	195	185	170	Cu 95 mm ²	
IP4X	No	LV429518	No	LV438327	Short 2 x LV438328	190	180	175	165	155	150	140	Cu 95 mm ²	
NSX400 NA DC PV 4P														
IP3X	No	LV432594	No	LV438337	LV438338	400	400	400	400	400	390	380	Cu 240 mm ²	
IP0	3 (LV432570)	No	1 (LV429329)	No	LV438338	400	400	400	400	400	400	400	Cu 240 mm ²	
NSX500 NA DC PV 4P														
IP3X	No	LV432594	No	LV438337	LV438338	500	500	490	470	450	435	420	Cu 2 x 150 mm ²	
IP0	3 (LV432570)	No	1 (LV429329)	No	LV438338	500	500	500	500	500	500	480	Cu 2 x 150 mm ²	

For ComPacT NSX the overload protection is calibrated at 40 °C and for C60 DC PV at 20 °C. This means that when the ambient temperature is less or greater than these temperatures, the Ir protection pickup is slightly modified.

- Temperature rise for ComPacT range have been checked with terminal shields (mandatory) heatsink on top, four cables on bottom connections with section and length according to IEC60947-1 Table 9 and 10.
- Values in the tables are provided for vertical mounting only. In case of horizontal mounting consult us. To obtain the tripping time for a given temperature:
 - See the tripping curves for 20 or 40 °C
 - Determine tripping times corresponding to the Ir value (thermal setting on the device), corrected for the breaker ambient temperature as indicated in the tables below.

DC PV overcurrent protection

ComPacT NSX TM DC PV

Maximum current (A): I _{th}											Cooper cable section ^[1]
20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	65 °C	70 °C	
NSX80 TM DC PV											
88	86	84	82	80	77	75	72	69	66	63	Cu 25 mm ²
NSX125 TM DC PV											
137.5	135	131	128	125	121	116	112	108	103	98	Cu 50 mm ²
NSX160 TM DC PV											
176	172	168	164	160	153	147	142	136	130	124	Cu 70 mm ²
NSX200 TM DC PV											
194	189	183	178	172	167	161	155	149	142	136	Cu 95 mm ²
200	200	200	200	200	188	182	175	168	160	153	Cu 95 mm ² ^[2]
NSX250 TM DC PV											
302	295	288	280	250	243	235	228	220	210	197	Cu 120 mm ²
NSX320 TM DC PV											
371	362	352	342	320	309	297	286	273	261	248	Cu 185 mm ²
NSX400 TM DC PV											
455	444	433	421	400	386	372	358	343	327	311	Cu 240 mm ²
NSX500 TM DC PV											
557	542	526	511	495	478	461	444	426	405	384	Cu 2x150 mm ²

[1] Temperature rise have been checked with four cables on bottom connections with section and length according to IEC60947-1 Table 9.

a. When used in array boxes, with short connection to string protections the cross section of the bars or cables shall have a higher cross section.

b. When cables have a cross section lower than the value indicated an additional 0.9 derating coefficient shall be applied. Values in the tables are provided for vertical mounting only.

[2] Take into account this derating line for products with date code over --15011.

ComPacT NSX DC PV

Temperature Derating - Power Dissipation/Resistance

ComPacT NSX630b to 1600 DC PV Switch-Disconnectors ^[1]

All the given values come from connections tests.

For other kind of connections (rear horizontal/rear vertical) the values remain the same.

DC PV switch-disconnector

ComPacT NSX NA DC PV														
IP	Bottom interphase barrier	Bottom terminal shield	Top interphase barrier	Top terminal shield	Top series connection	Maximum current (A): I _{th}								Copper cable section
						40 °C	45 °C	50 °C	55 °C	60 °C	65 °C	70 °C		
NSX630b NA DC PV 4P														
IP2X	No	33629	No	LV438968	2 x LV438966	630	630	630	630	630	630	630	Cu 2 x 185 mm ²	
IP0	3 (33646)	No	1 (33646)	No	2 x LV438966	630	630	630	630	630	630	630	Cu 2 x 185 mm ²	
NSX800 NA DC PV 4P														
IP2X	No	33629	No	LV438968	2 x LV438966	800	800	800	800	800	800	800	Cu 2 x 240 mm ²	
IP0	3 (33646)	No	1 (33646)	No	2 x LV438966	800	800	800	800	800	800	800	Cu 2 x 240 mm ²	
NSX1000 NA DC PV 4P														
IP2X	No	33629	No	LV438968	2 x LV438966	1000	1000	1000	1000	1000	1000	1000	Bar Cu 2 x 60 x 5 mm	
IP0	3 (33646)	No	1 (33646)	No	2 x LV438966	1000	1000	1000	1000	1000	1000	1000	Bar Cu 2 x 60 x 5 mm	
NSX1250 NA DC PV 4P														
IP2X	No	33629	No	LV438968	2 x LV438966	1250	1250	1250	1250	1232	1169	1102	Bar Cu 2 x 80 x 5 mm	
IP0	3 (33646)	No	1 (33646)	No	2 x LV438966	1250	1250	1250	1250	1250	1227	1157	Bar Cu 2 x 80 x 5 mm	
NSX1600 NA DC PV 4P														
IP2X	No	33629	No	LV438968	2 x LV438966	1473	1428	1384	1338	1291	1243	1193	Bar Cu 2 x 100 x 5 mm	
IP0	3 (33646)	No	1 (33646)	No	2 x LV438966	1500	1500	1500	1448	1397	1345	1291	Bar Cu 2 x 100 x 5 mm	

^[1] For a switch-disconnector mounted in horizontal position, the derating to be applied is equivalent to that of a front or horizontal rear connected switch-disconnector.

The values indicated in the tables opposite are typical values.

Power dissipated per pole (P/pole) in Watts (W)

The value indicated in the table is the power dissipated at I_{N1} four-pole switchboard (these values can be higher than the power calculated on the basis of the pole resistance). Measurement and calculation of the dissipated power are carried out in compliance with the recommendations of Annex G of standard IEC 60947-2.

Resistance per pole (R/pole) in milliohms (mΩ)

The value of the resistance per pole is provided as a general indication for a new device.

The value of the contact resistance must be determined on the basis of the measured voltage drop, in accordance with the manufacturer's test procedure.

ComPacT NSX80 TM to 500 TM DC PV switch-disconnectors

Version	Fixed device	
	TM	
	R/pole	P/pole
NSX80 TM DC PV	1	6.40
NSX100 TM DC PV	0.72	7.20
NSX125 TM DC PV	0.68	10.63
NSX160 TM DC PV	0.49	12.54
NSX200 TM DC PV	0.44	17.60
NSX250 TM DC PV	0.33	20.63
NSX320 TM DC PV	0.215	22.02
NSX400 TM DC PV	0.16	25.60
NSX500 TM DC PV	0.134	33.50

ComPacT NSX630b NA to 1600 NA DC PV switch-disconnectors

Version	Fixed device	
	NA	
	R/pole	P/pole
NSX630b NA DC PV	0.029	11.4
NSX800 NA DC PV	0.029	18.7
NSX1000 NA DC PV	0.030	29.7
NSX1250 NA DC PV	0.030	47.3
NSX1600 NA DC PV	0.033	74.0

Note: This measurement is not sufficient to determine the quality of the contacts, i.e. the capacity of the circuit breaker to carry its rated current.

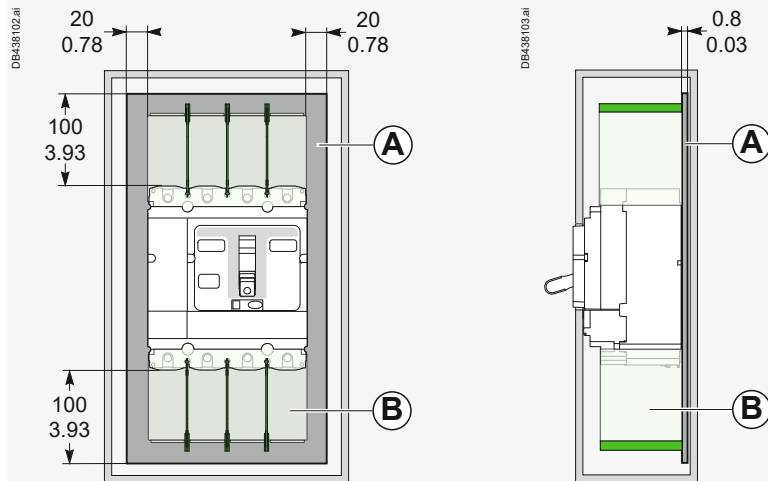
ComPacT NSX DC EP

Safety Clearances and Minimum Distances

Safety Clearance Using Terminals Shields

- Terminal shields must be used with all DC EP circuit breakers when operating at 1500 V DC.
- Terminal shields can be used in option with DC EP switch-disconnectors ($U \leq 1500$ V DC).

Minimal distance between two adjacent devices (ComPacT NSX250 TM DC EP and ComPacT NSX250 NA DC EP)

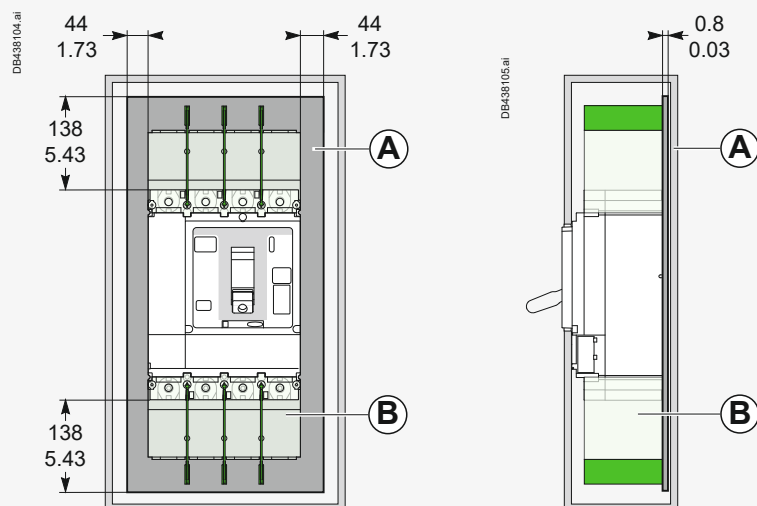


- (A) Insulating screen (LV429331) or fiber insulating plate to be made by the customer.
- (B) Interphase barriers (LV429329) or terminal shield.

ComPacT NSX DC EP

Safety Clearances and Minimum Distances

Minimal distance between two adjacent devices (ComPacT NSX500 TM DC EP and ComPacT NSX630 NA DC EP)



- (A) Insulating screen (LV432579) or fiber insulating plate to be made by the customer.
- (B) Interphase barriers (LV432570) or terminal shield.

Note:

The device must be installed in an IP5x enclosure. The thermal behavior of switchgear and enclosures warrants careful monitoring. PV generator boxes and array boxes are usually installed outdoors and exposed to the elements. In the event of high ambient temperatures, high IP levels could reduce air flow and thermal power dissipation.

In addition, the way switchgear devices achieve high voltage operation - i.e. through the use of poles in series - increases their temperature. Special attention should therefore be paid to the temperature of switchgear inside outdoor enclosures on the DC side.

Schneider Electric recommends checking the installation as per IEC 61439 or any other equivalent standard.

B

ComPacT NSX DC EP

Temperature Derating

ComPacT switch-disconnectors have been tested for operation in industrial atmospheres. It is recommended that the equipment be cooled or heated to the proper operating temperature and kept free of excessive vibration and dust.

DC EP switch-disconnectors													
ComPacT NSX NA DC EP													
IP	Bottom interphase barrier	Bottom terminal shield	Top interphase barrier	Top terminal shield	Top series connection	Maximum current (A): I _{th}							Cooper cable section ⁽¹⁾
						40 °C	45 °C	50 °C	55 °C	60 °C	65 °C	70 °C	
NSX250 NA DC EP													
NSX100 NA DC EP 4P													
IP0	3 (LV429329)	No	1 (LV429329)	No	Short 2 x LV438328	100	100	100	100	100	100	100	Cu 35 mm ²
IP4X	No	LV429518	No	LV438327	Short 2 x LV438328	100	100	100	100	100	100	100	Cu 35 mm ²
NSX160 NA DC EP 4P													
IP0	3 (LV429329)	No	1 (LV429329)	No	Short 2 x LV438328	160	160	160	160	160	155	145	Cu 70 mm ²
IP4X	No	LV429518	No	LV438327	Short 2 x LV438328	160	160	160	160	150	145	135	Cu 70 mm ²
NSX200 NA DC EP 4P													
IP0	3 (LV429329)	No	1 (LV429329)	No	Short 2 x LV438328	200	195	190	180	170	160	150	Cu 95 mm ²
IP4X	No	LV429518	No	LV438327	Short 2 x LV438328	190	180	175	165	155	150	140	Cu 95 mm ²
IP0	3 (LV429329)	No	1 (LV429329)	No	Cable	200	200	200	200	200	200	200	Cu 95 mm ²
NSX250 NA DC EP 4P													
IP0	3 (LV429329)	No	1 (LV429329)	No	Short 2 x LV438328	200	195	190	180	170	160	150	Cu 120 mm ²
IP4X	No	LV429518	No	LV438327	Short 2 x LV438328	190	180	175	175	155	150	140	Cu 120 mm ²
IP0	3 (LV429329)	No	1 (LV429329)	No	Cable	250	250	250	235	230	220	210	Cu 120 mm ²
NSX630 NA DC EP													
NSX320 NA DC EP 4P													
IP3X	No	LV432594	No	LV438337	LV438338	320	320	320	320	320	320	320	Cu 185 mm ²
IP0	3 (LV432570)	No	1 (LV429329)	No	LV438338	320	320	320	320	320	320	320	Cu 185 mm ²
NSX400 NA DC EP 4P													
IP3X	No	LV432594	No	LV438337	LV438338	400	400	400	400	400	390	380	Cu 240 mm ²
IP0	3 (LV432570)	No	1 (LV429329)	No	LV438338	400	400	400	400	400	400	400	Cu 240 mm ²
NSX500 NA DC EP 4P													
IP3X	No	LV432594	No	LV438337	LV438338	500	500	490	470	450	435	420	Cu 2 x 150 mm ²
IP0	3 (LV432570)	No	1 (LV429329)	No	LV438338	500	500	500	500	500	500	480	Cu 2 x 150 mm ²
NSX630 NA DC EP 4P													
IP3X	No	LV432594	No	LV438337	LV438338	500	500	490	470	450	435	420	Cu 2 x 185 mm ²
IP0	3 (LV432570)	No	1 (LV429329)	No	LV438338	500	500	500	500	500	500	480	Cu 2 x 185 mm ²
IP0	3 (LV432570)	No	1 (LV429329)	No	Cable	630	610	590	570	550	530	510	Cu 2 x 185 mm ²

[1] Temperature rise have been checked with four cables on bottom connections with section and length according to IEC60947-1 Table 9 and 10.

a. When used in array boxes, with short connection to string protections the cross section of the bars or cables shall have a higher cross section.

b. When cables have a cross section lower than the value indicated an additional 0.9 derating coefficient shall be applied.

Values in the tables are provided for vertical mounting only.

Installation Recommendations

ComPacT NSX DC EP

Temperature Derating

ComPacT NSX100 to 500 DC EP Overcurrent Protection ^[1]

DC EP overcurrent protection											
ComPacT NSX TM DC EP											
Maximum current (A): I _{th}											Cooper cable section ^[2]
20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	65 °C	70 °C	
NSX250 DC EP											
NSX100 TM DC EP											
110	108	107	105	104	102	100	95	89	84	78	Cu 35 mm ²
NSX125 TM DC EP											
137	135	133	131	129	127	125	119	112	105	98	Cu 50 mm ²
NSX160 TM DC EP											
176	174	172	169	166	163	160	151	142	133	124	Cu 70 mm ²
NSX200 TM DC EP											
225	221	217	213	209	205	200	189	177	165	153	Cu 95 mm ² ^[2]
NSX250 TM DC EP											
262	260	258	256	254	252	250	238	226	213	200	Cu 120 mm ²
NSX500 DC EP											
NSX250 TM DC EP											
302	294	286	277	268	259	250	237	224	211	197	Cu 120 mm ²
NSX320 TM DC EP											
371	363	355	347	338	329	320	302	284	266	248	Cu 185 mm ²
NSX400 TM DC EP											
455	446	437	428	419	410	400	378	356	334	311	Cu 240 mm ²
NSX500 TM DC EP											
557	548	539	530	520	510	500	471	442	413	384	Cu 2x150 mm ²

For ComPacT NSX the overload protection is calibrated at 40 °C or 50 °C. This means that when the ambient temperature is less or greater than these temperatures, the I_r protection pickup is slightly modified.

- calibrated at 40 °C: heatsink on bottom & four cables on top, with terminal shields
- calibrated at 50 °C: standard cable with phase barrier connections with section and length according to IEC60947-1 Table 9 and 10.

^[1] Values in the table are provided for standard cable with phase barrier configuration

- See the tripping curves for 50 °C.

- Determine tripping times corresponding to the I_r value (thermal setting on the device), corrected for the breaker ambient temperature as indicated in the tables below

- For heatsink on bottom & four cables on top, with terminal shield. I_r value is always equal I_n when ambient temperature ≤ 40 °C; in case of ambient temperature > 40 °C; consult us.

^[2] Temperature rise have been checked with cables that section and length according IEC60947-1 Table 9 and 10.

The values indicated in the tables opposite are typical values.

Power dissipated per pole (P/pole) in Watts (W)

The value indicated in the table is the power dissipated at I_n , four-pole switchboard (these values can be higher than the power calculated on the basis of the pole resistance). Measurement and calculation of the dissipated power are carried out in compliance with the recommendations of Annex G of standard IEC 60947-2.

Resistance per pole (R/pole) in milliohms (mΩ)

The value of the resistance per pole is provided as a general indication for a new device.

The value of the contact resistance must be determined on the basis of the measured voltage drop, in accordance with the manufacturer's test procedure.

ComPacT NSX100 TM to 500 TM DC EP switch-disconnectors		
Version	Fixed device TM R/pole	P/pole
NSX250 DC EP		
NSX100 TM DC EP	0.72	7.20
NSX125 TM DC EP	0.68	10.63
NSX160 TM DC EP	0.49	12.54
NSX200 TM DC EP	0.44	17.60
NSX250 TM DC EP	0.44	17.60
NSX500 DC EP		
NSX250 TM DC EP	0.33	20.63
NSX320 TM DC EP	0.215	22.02
NSX400 TM DC EP	0.16	25.60
NSX500 TM DC EP	0.134	33.50

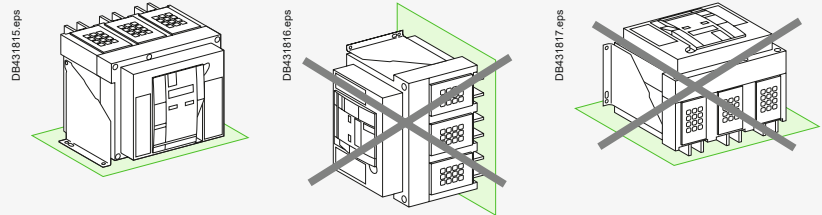
Note: This measurement is not sufficient to determine the quality of the contacts, i.e. the capacity of the circuit breaker to carry its rated current.

MasterPact NW10 to NW40 DC, EPDC, DC PV

Installation in Switchboard

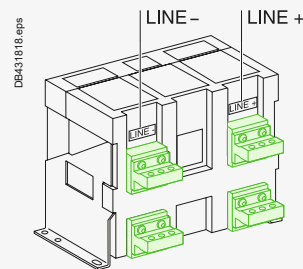
B

Possible Positions



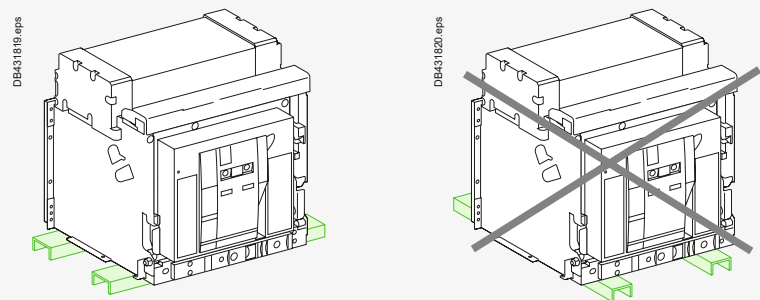
Power Supply

The plus and minus polarities (**LINE +** and **LINE -**) of the power supply must be connected as indicated in the “Dimensions and connection” chapter.

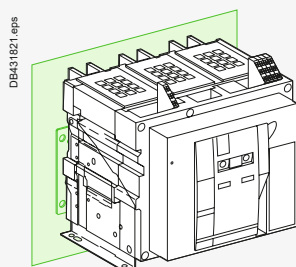


Mounting the Circuit Breaker

It is important to distribute the weight of the device uniformly over a rigid mounting surface such as rails or a base plate.
This mounting plane should be perfectly flat (tolerance on support flatness: 2 mm).
This eliminates any risk of deformation which could interfere with correct operation of the circuit breaker.
MasterPact devices can also be mounted on a vertical plane using the special brackets.



Mounting on rails



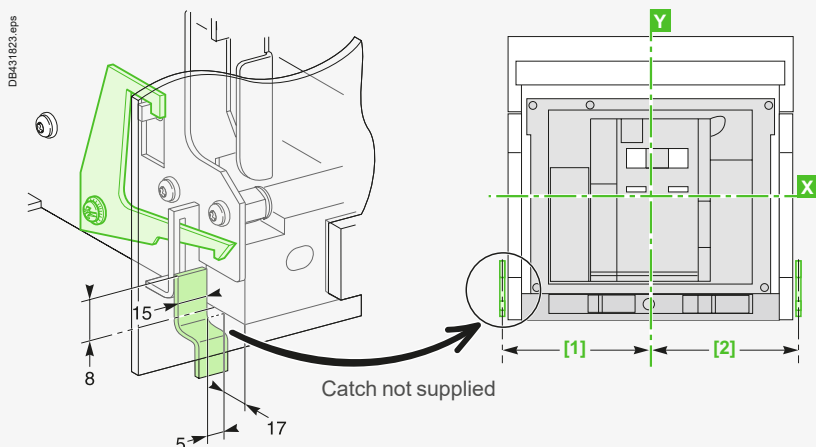
Mounting with vertical brackets

MasterPact NW10 to NW40 DC, EPDC, DC PV Door Interlock

Mounted on the right or left-hand side of the cradle, this device inhibits opening of the cubicle door when the circuit breaker is in "connected" or "test" position.

If the breaker is put in the "connected" position with the door open, the door may be closed without having to disconnect the circuit breaker.

Door Interlock Catch VPEC

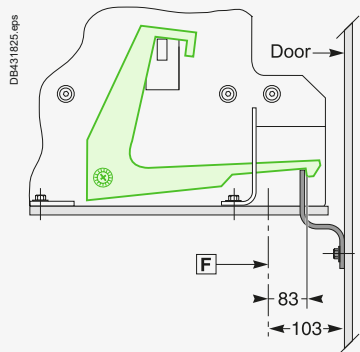


Dimensions (mm)

Type DC	[1]	[2]
NW10-40 DC (versions C-D)	215	215
NW10-40 DC (version E)	330	215
Type DC PV	[1]	[2]
NW10-40 DC PV (version D)	215	215

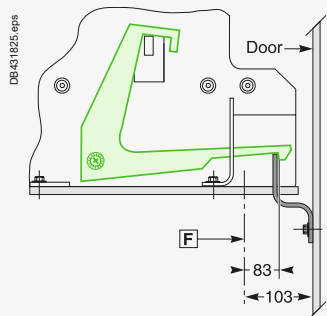
Breaker in "Connected" or "Test" Position

Door Cannot Be Opened



Breaker in "Disconnected" Position

Door Can Be Opened



Note: The door interlock can either be mounted on the right side or the left side of the breaker.

F: Datum

MasterPact NW10 to NW40 DC, EPDC, DC PV

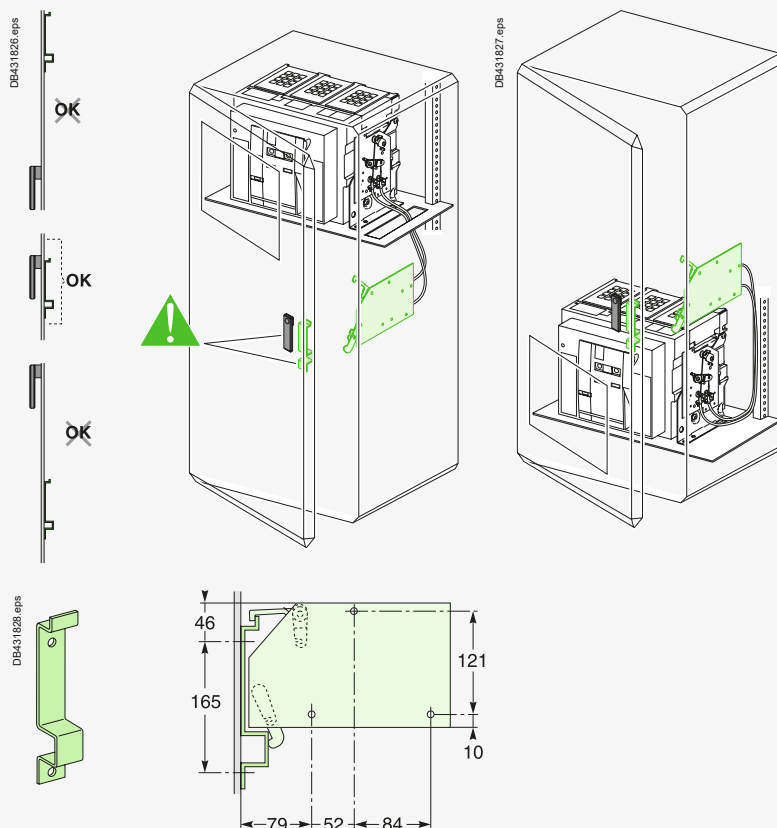
Cable-Type Door Interlock - Connection of MN, MX and XF Voltage Releases

Cable-Type Door Interlock IPA

This option avoids door opening when the circuit breaker is closed and avoids circuit breaker closing when the door is open.

For this, a special plate associated with a lock and a cable is mounted on the right side of the circuit breaker.

With this interlock installed, the source changeover function cannot be implemented.



Wiring of Voltage Releases

During pick-up, the power consumed is approximately 150 to 200 VA. For low control voltages (12, 24, 48 V), maximum cable lengths are imposed by the voltage and the cross-sectional area of cables.

Recommended Maximum Cable Lengths (Meter)

		12 V		24 V		48 V	
		2.5 mm ²	1.5 mm ²	2.5 mm ²	1.5 mm ²	2.5 mm ²	1.5 mm ²
MN	U source 100 %	-	-	58	35	280	165
	U source 85 %	-	-	16	10	75	45
MX-XF	U source 100 %	21	12	115	70	550	330
	U source 85 %	10	6	75	44	350	210

Note: The indicated length is that of each of the two wires.

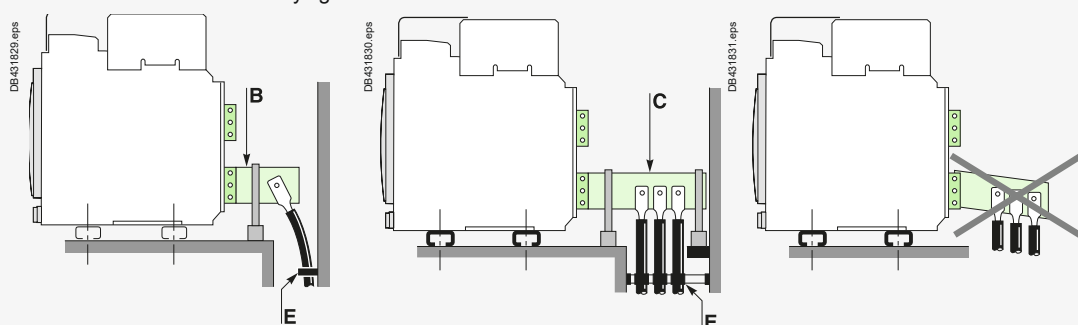
MasterPact NW10 to NW40 DC, EPDC, DC PV Power Connection

Cable Connections

If cables are used for the power connections, make sure that they do not apply excessive mechanical forces to the circuit breaker terminals.

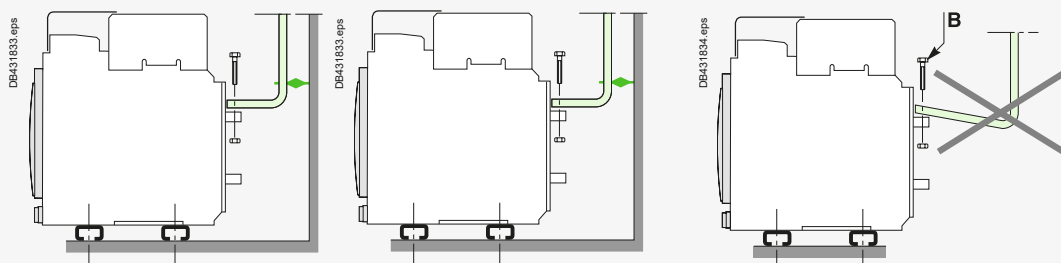
For this, make the connections as follows:

- Extend the circuit breaker terminals using short bars designed and installed according to the recommendations for bar-type power connections:
 - For a single cable, use solution **B** opposite
 - For multiple cables, use solution **C** opposite.
- In all cases, follow the general rules for connections to busbars:
 - Position the cable lugs before inserting the bolts
 - The cables should firmly tightened to the framework of the switchboard **E**.



Busbar Connections

The busbars should be suitably adjusted to ensure that the connection points are positioned on the terminals before the bolts are inserted **B**. The connections are held by the support which is solidly fixed to the framework of the switchboard, such that the circuit breaker terminals do not have to support its weight **C**. (This support should be placed close to the terminals).



Electrodynamic Stresses

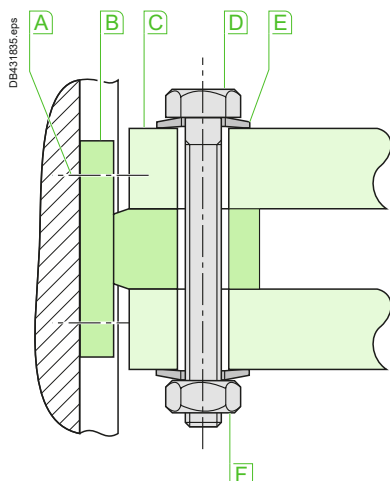
The first busbar support or spacer shall be situated within a maximum distance from the connection point of the breaker (see table below). This distance must be respected so that the connection can withstand the electrodynamic stresses between phases in the event of a short circuit.

Maximum distance A between busbar to circuit breaker connection and the first busbar support or spacer with respect to the value of the prospective short-circuit current.

Isc (kA)	30	50	65	80	100
distance A (mm)	350	300	250	150	150

B

MasterPact NW10 to NW40 DC, EPDC, DC PV Power Connection



- A** Terminal screw factory-tightened to 16 Nm
B Breaker terminal
C Busbar
D Bolt
E Washer
F Nut

Clamping

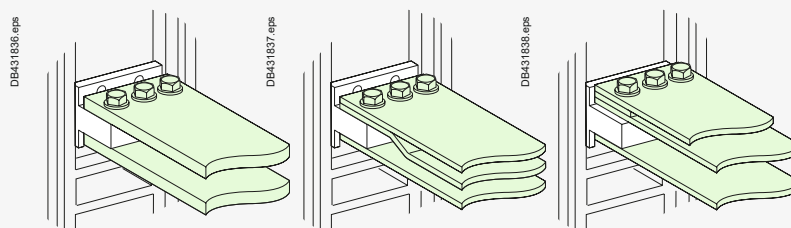
Correct clamping of busbars depends amongst other things, on the tightening torques used for the nuts and bolts. Over-tightening may have the same consequences as under-tightening.

For connecting busbars (Cu ETP-NFA51-100) to the circuit breaker, the tightening torques to be used are shown in the table below.

These values are for use with copper busbars and steel nuts and bolts, class 8.8.

The same torques can be used with AGS-T52 quality aluminium bars (French standard NFA 02-104 or American National Standard H-35-1).

Examples

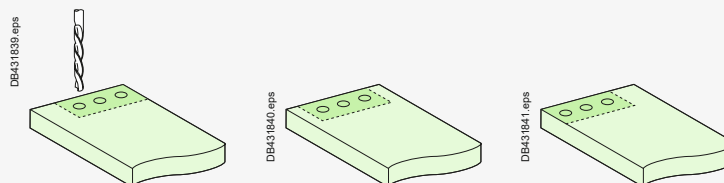


Tightening torques

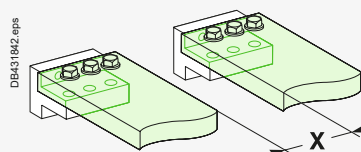
Ø Nominal (mm)	Ø Drilling (mm)	Tightening torque (Nm) with flat washers or split lockwashers	Tightening torque (Nm) with contact or serrated washers
10	11	37.5	50

Busbar Drilling

Examples



Isolation Distance

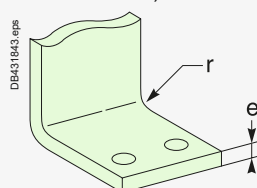


Dimensions (mm)

Ui	X mini
500 V DC	8 mm
900 V DC	14 mm

Busbar Bending

When bending busbars maintain the radius indicated below (a smaller radius would cause cracks).



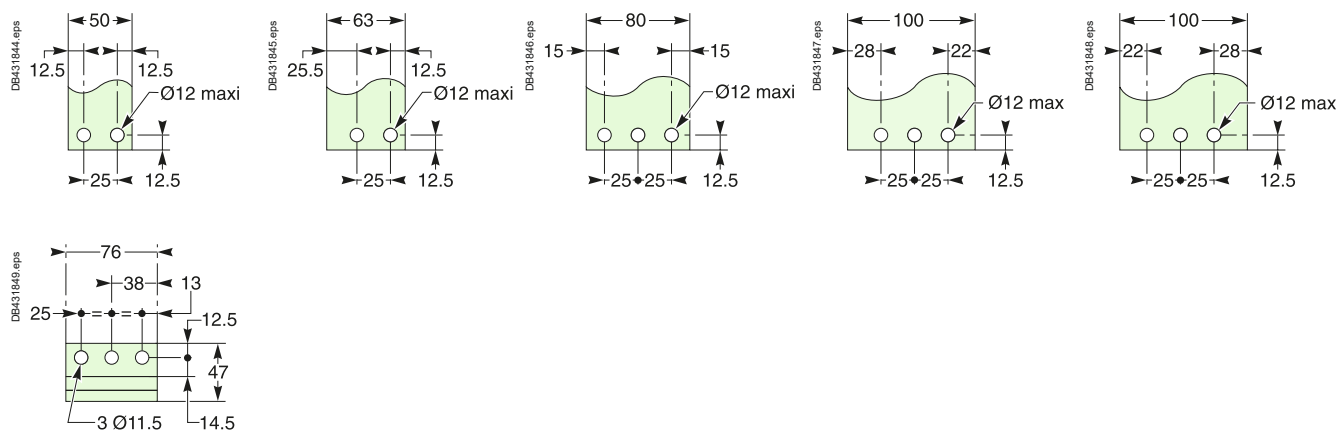
Dimensions (mm)

e	Radius of curvature r Min.	Recommended
5	5	7.5
10	15	18 to 20

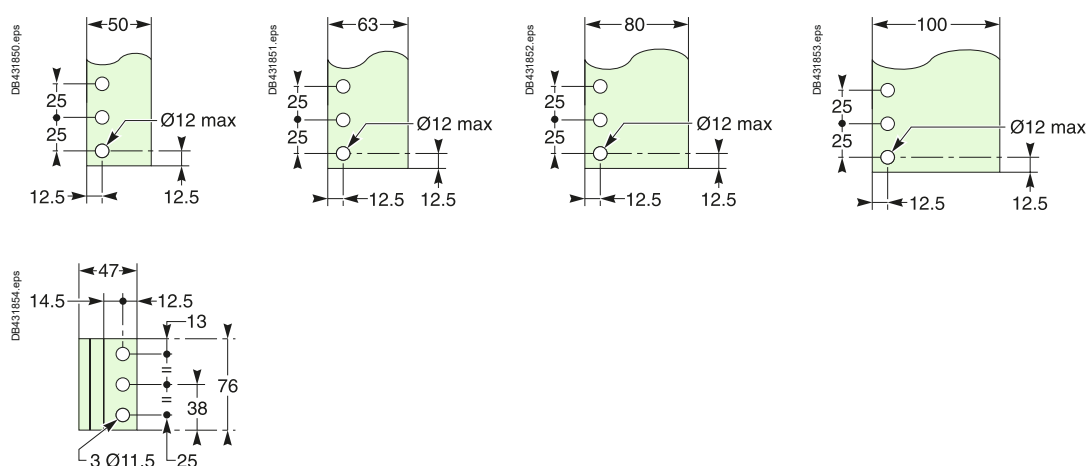
MasterPact NW10 to NW40 DC, EPDC, DC PV

Power Connection

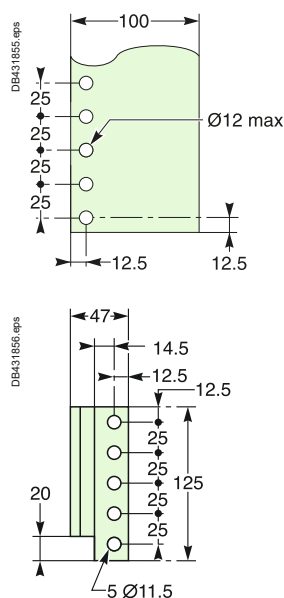
Horizontal Rear Connection NW10 to NW20 DC - DC PV



Vertical Rear Connection NW10 to NW20 DC - DC PV



Vertical Rear Connection NW40 DC - DC PV

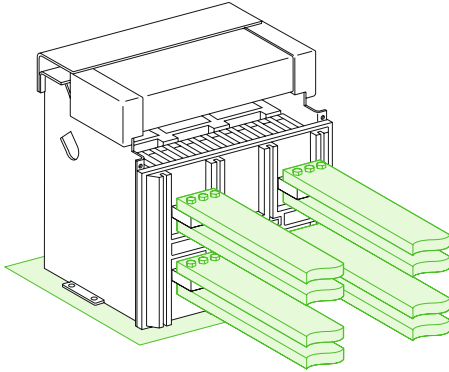


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MasterPact NW10 to NW40 DC, EPDC, DC PV

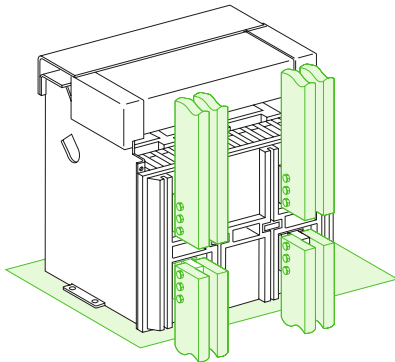
Busbar Sizing

DB431857.eps



B

DB431858.eps



Rear Horizontal Connection

Basis of Tables

- Maximum permissible busbar temperature: 100 °C
- Ti: temperature around the circuit breaker and its connections
- Busbar material is unpainted copper.

Example

Conditions:

- Drawout version
- Horizontal busbars
- Ti: 50 °C
- Service current: 2000 A.

Solution

For Ti = 50 °C, use an NW20 DC - DC PV which can be connected with three 100 x 5 mm bars or two 80 x 10 mm bars.

MasterPact NW DC, EPDC, DC PV	Maximum service current	Ti: 40 °C no. of bars		Ti: 50 °C no. of bars		Ti: 60 °C no. of bars	
		5 mm thick bars	10 mm thick bars	5 mm thick bars	10 mm thick bars	5 mm thick bars	10 mm thick bars
NW10 DC, EPDC	1000	3b.50 x 5	1b.63 x 10	3b.50 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10
NW20 DC, EPDC	2000	3b.100 x 5	2b.80 x 10	3b.100 x 5	2b.80 x 10	3b.100 x 5	3b.80 x 10
NW20 HADCD-PV	2000	3b.100 x 5	2b.80 x 10	3b.100 x 5	2b.80 x 10	3b.100 x 5	3b.80 x 10

Note: The values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Rear Vertical Connection

Basis of Tables

- Maximum permissible busbar temperature: 100 °C
- Ti: temperature around the circuit breaker and its connections
- Busbar material is unpainted copper.

Example

Conditions:

- Fixed version
- Vertical busbars
- Ti: 40 °C
- Service current: 1000 A.

Solution

For Ti = 40 °C, use an NW10 DC - DC PV which can be connected with two 50 x 5 mm bars or one 50 x 10 mm bar.

MasterPact NW DC, EPDC, DC PV	Maximum service current	Ti: 40 °C no. of bars		Ti: 50 °C no. of bars		Ti: 60 °C no. of bars	
		5 mm thick bars	10 mm thick bars	5 mm thick bars	10 mm thick bars	5 mm thick bars	10 mm thick bars
NW10 DC, EPDC	1000	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10	2b.63 x 5	1b.63 x 10
NW20 DC, EPDC	2000	3b.100 x 5	2b.63 x 10	3b.100 x 5	2b.63 x 10	3b.100 x 5	3b.63 x 10
NW40 DC, EPDC	4000	-	4b.100 x 10	-	4b.100 x 10	-	4b.100 x 10
NW20 HADCD-PV	2000	3b.100 x 5	2b.63 x 10	3b.100 x 5	2b.63 x 10	3b.100 x 5	3b.63 x 10
NW40 HADCD-PV	4000	-	4b.100 x 10	-	4b.100 x 10	-	4b.100 x 10

Note: The values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

MasterPact NW10 to NW40 DC, EPDC, DC PV

Temperature Derating - Power Dissipation

Temperature Derating

The table below indicates the maximum current rating, for each connection type, as a function of the ambient temperature around the circuit breaker and the busbars. For ambient temperatures greater than 60 °C, consult us. Ti: temperature around the circuit breaker and its connections.

Version		Drawout device										Fixed device												
Connection		Rear horizontal					Rear vertical					Rear horizontal					Rear vertical							
temp. TI		40	45	50	55	60	40	45	50	55	60	40	45	50	55	60	40	45	50	55	60			
NW DC																								
NW10	Version C	1000					1000					1000					1000							
	Version D	1000					1000					1000					1000							
	Version E	1000					1000					1000					1000							
NW20	Version C	2000					2000					2000					2000							
	Version D	2000					2000					2000					2000							
	Version E	2000					2000					2000					2000							
NW40	Version C	-					4000					-					4000							
	Version D	-					4000					3900	3750	3600	-					4000				
	Version E	-					4000					3800	3650	3500	-					4000				
NW EPDC																								
NW10 EPDC-D		1000					1000					-					-							
NW20 EPDC-D		2000					2000					-					-							
NW40 EPDC-D		-					4000					3900	3750	3600	-					-				
NW DC PV																								
NW20 Version D		2000					2000					2000					2000							
NW40 Version D		-					4000					3900	3750	3600	-					4000				

Power Dissipation

Total power dissipation is the value measured at IN, for a 3 pole (version C, D ^[1]) or 4 pole (version E) breaker (values above the power $P = 3RI^2$).

[1] DC PV version D only.

Version	Drawout device			Fixed device		
	Power dissipation (Watt)			Power dissipation (Watt)		
Version	C	D	E	C	D	E
NW10 DC	45	75	105	25	40	60
NW20 DC	135	230	330	90	160	235
NW40 DC	460	800	1150	360	580	850

Version	Drawout device	No Fixed device
	Power dissipation (Watt)	
Version	D	
NW10 EPDC-D	75	
NW20 EPDC-D	230	
NW40 EPDC-D	800	

Version	Drawout device	Fixed device
	Power dissipation (Watt)	Power dissipation (Watt)
Version	D	D
NW20 HADCD-PV	230	160
NW40 HADCD-PV	800	580



Dimensions and Connection

ComPacT (Fixed Version) 1P-2P

NSX100-NSX160 DC

Dimensions, Mounting, Cutout..... C-4

Dimensions and Mounting

ComPacT NSX100 to 1200 DC Fixed Version..... C-6

ComPacT NSX100 to 630 DC Plug-in Version C-8

ComPacT NSX100 to 630 DC Withdrawable Version C-10

Motor Mechanism Module for ComPacT NSX100 to 1200 DC C-12

Direct Rotary Handle for ComPacT NSX100 to 1200 DC C-13

MCC and CNOMO Type Direct Rotary Handles

for ComPacT NSX100 to 1200 DC Fixed Version C-14

Extended Rotary Handle

for ComPacT NSX100 To1200 DC C-15

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ComPacT NSX100 to 1200 DC Fixed Version..... C-18

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Connection of Insulated Bars or Cables with Lugs to

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Connection of Bare Cables to ComPacT NSX100 to 1200 DC..... C-23

ComPacT (Fixed Version) 2P-3P-4P

Parallel and Series Connection of Poles

ComPacT NSX100 to NSX250 DC C-24

ComPacT NSX400 to NSX630 DC C-25

ComPacT (Fixed Version) 4P

Parallel and Series Connection of Poles

ComPacT NSX630 to NSX1200 DC C-26

ComPacT (Withdraw. Version) 3P-4P

Parallel and Series Connection of Poles

ComPacT NSX100 to NSX250 DC C-27

ComPacT NSX400 to NSX630 DC C-28

ComPacT (Fixed Version)

4P Connection of Poles, Dimensions and Mounting

ComPacT NSX100 to NSX630 DC PV - DC EP C-29

ComPacT (Fixed Version)

4P Connection of Poles, Dimensions

ComPacT NSX630b to 1600 DC PV C-30

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Installation Recommendations..... B-1

Electrical Diagrams..... D-1

Additional Characteristics..... E-1

Catalog Numbers and Order Form F-1

Dimensions and Connection

Com**PacT** (Fixed Version)
4P Rear Connection of Poles, Mounting
Com**PacT** NSX630b to 1600 DC PV C-32

Master**Pact** (Fixed Device)
NW10 to 40 DC Version C/D (3P),
Version E (4P) NW10 to 40 EPDC, DC PV Version D (3P) C-33
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NW10 to 40 DC–DC PV–Version D C-35
NW10 to 40 DC–Version E C-36

Master**Pact** (Drawout Device)
NW10 to 40 DC Version C/D (3P) Version E (4P)
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Master**Pact** NW10 to 40 DC, EPDC, DC PV
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Other Chapters

Presentation 2
Functions and Characteristics A-1
Installation Recommendations B-1
Electrical Diagrams D-1
Additional Characteristics E-1
Catalog Numbers and Order Form F-1

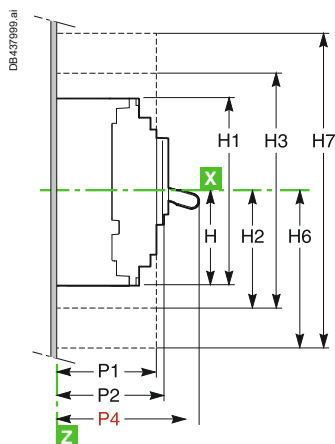


Other Chapters	
Presentation	2
Functions and Characteristics	A-1
Installation Recommendations	B-1
Electrical Diagrams	D-1
Additional Characteristics	E-1
Catalog Numbers and Order Form	F-1

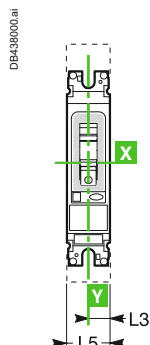
ComPacT (Fixed Version) 1P-2P NSX100-NSX160 DC

Dimensions, Mounting, Cutout

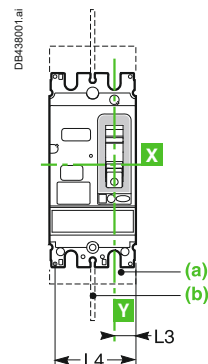
Dimensions



1 pole



2 poles

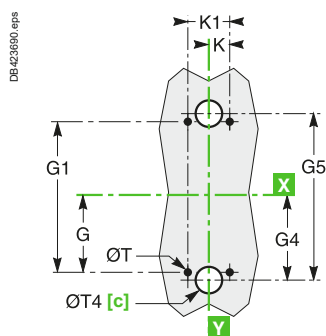


[a] Short terminal shields
[b] Interphase barriers

Mounting

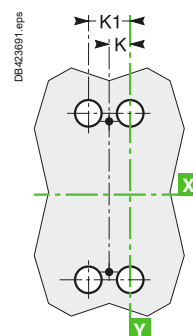
On Backplate

1 pole



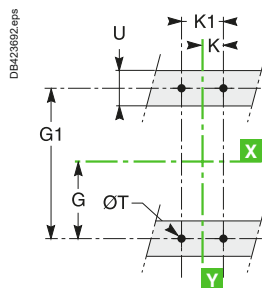
[c] For rear connection only.

2 poles

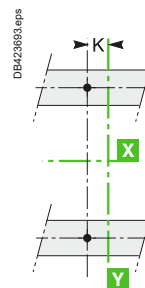


On Rails

1 pole



2 poles

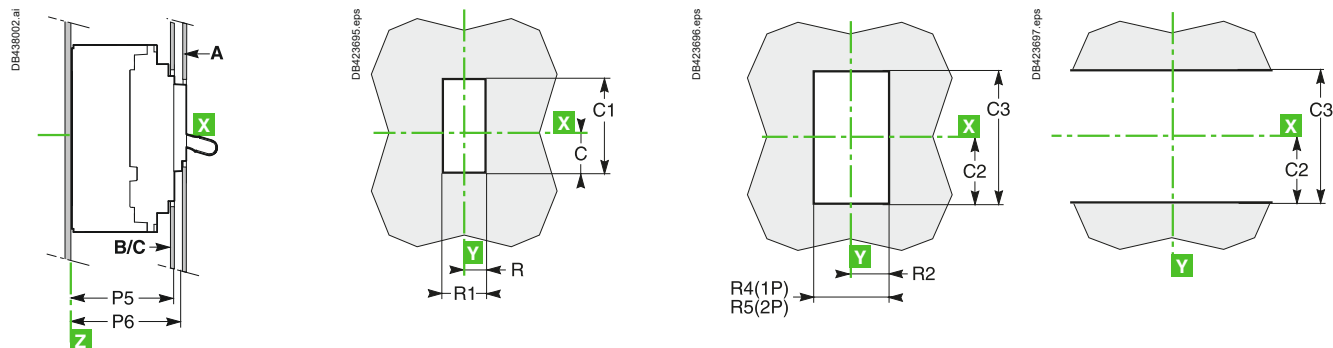


ComPacT (Fixed Version) 1P-2P NSX100-NSX160 DC

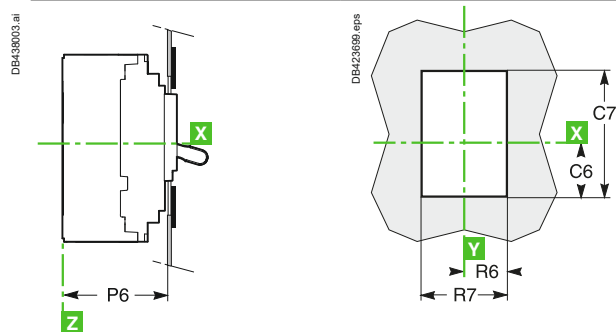
Dimensions, Mounting, Cutout

Front-Panel Cutout

On Backplate



With Escutcheon



Dimensions (mm)

Type	C	C1	C2	C3	C6	C7	G	G1	G4	G5	H
NSX100/160 DC	29	76	54	108	43	104	62.5	125	70	140	80.5
Type	H1	H2	H3	H4	H6	H7	K	K1	L3	L4	L5
NSX100/160 DC	161	94	188	160.5	178.5	357	17.5	35	17.5	70	35
Type	P1	P2	P4	P5	P6	R	R1	R2	R4	R5	R6
NSX100/160 DC	81	86	111	83	88	14.5	29	19	38	73	29
Type	R7	ØT	ØT4	U							
NSX100/160 DC	58	6	22	≤ 32							

C

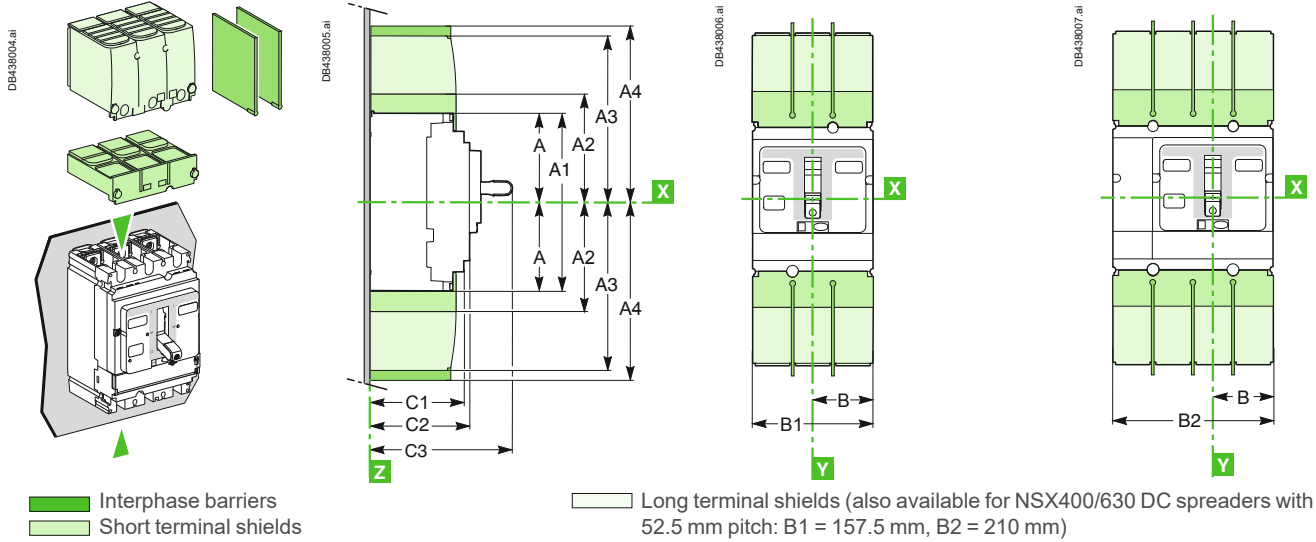
Dimensions and Mounting

ComPacT NSX100 to 1200 DC Fixed Version

Dimensions

3P

4P, 2P (4P Circuit Breaker Platform)



Mounting

On Backplate

NSX100 to 250 DC

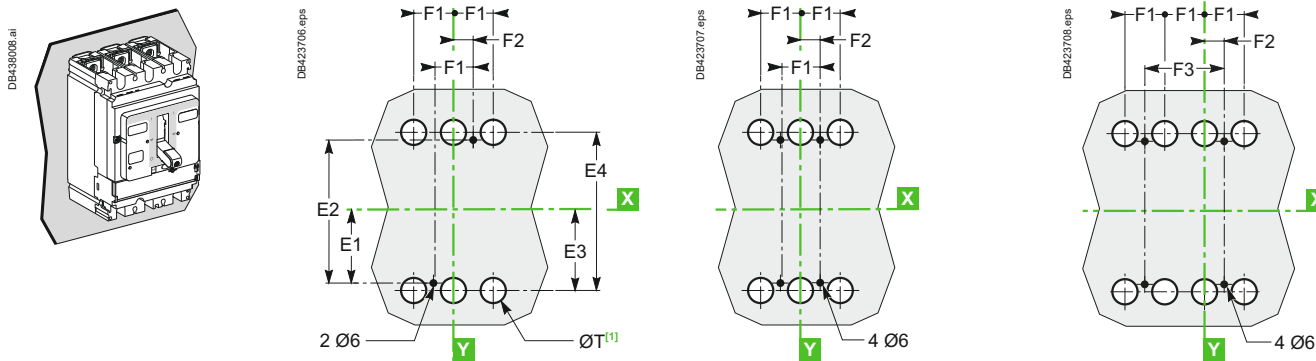
3P

NSX400/630 DC

3P

NSX100 to 1200 DC

4P, 2P (4P Circuit Breaker Platform)



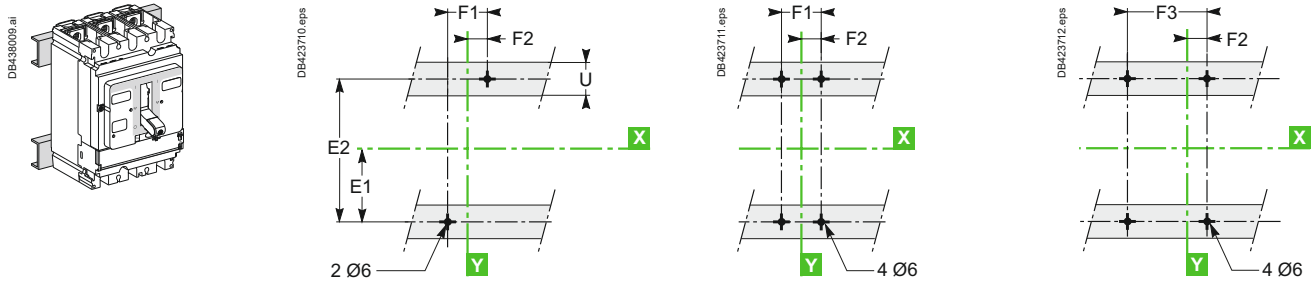
[1] The ØT holes are required for rear connection only.

On Rails

3P

3P

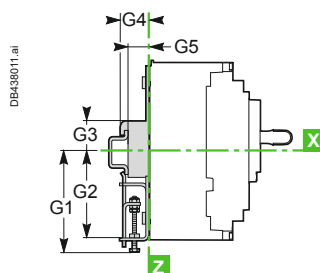
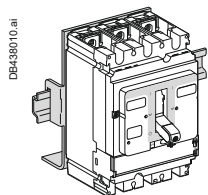
4P, 2P (4P Circuit Breaker Platform)



Dimensions and Mounting

ComPacT NSX100 to 1200 DC Fixed Version

On DIN Rail with Adapter Plate (NSX100 to 250 DC)



Dimensions (mm)

Type	A	A1	A2	A3	A4	B	B1	B2	C1	C2	C3
NSX100/160/250 DC	80.5	161	94	145	178.5	52.5	105	140	81	86	126
NSX400/630 DC	127.5	255	142.5	200	237	70	140	185	95.5	110	168
NSX1200 DC	-	-	-	240	-	70	-	185	95.5	110	168
Type	E1	E2	F1	F2	F3	G1	G2	G3	G4	G5	
NSX100/160/250 DC	62.5	125	35	17.5	70	95	75	13.5	23	17.5	
NSX400/630 DC	100	200	45	22.5	90	-	-	-	-	-	
NSX1200 DC	100	200	-	22.5	90	-	-	-	-	-	

C

Dimensions and Connection

Dimensions and Mounting

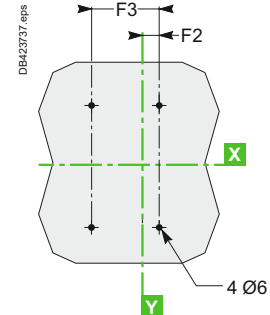
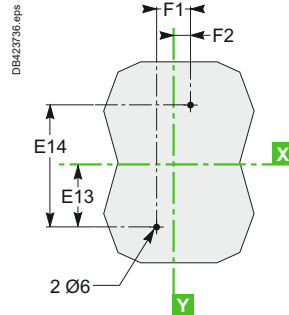
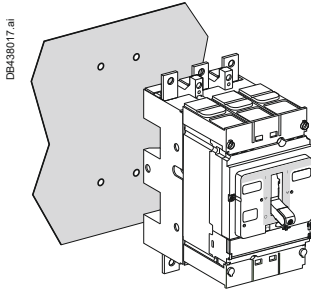
ComPacT NSX100 to 630 DC Plug-in Version

On Backplate (M)

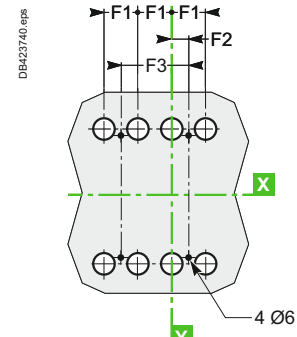
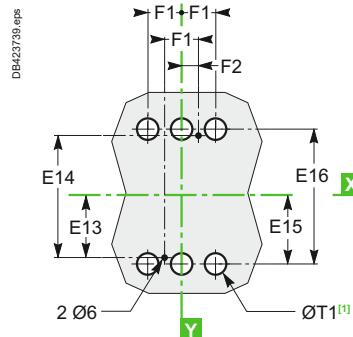
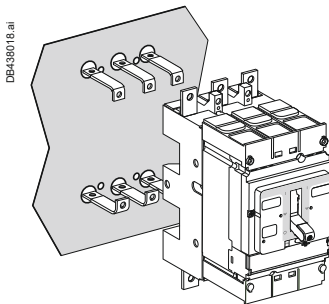
3P

4P

Front connection (an insulating screen is supplied with the base and must be fitted between the base and the backplate)

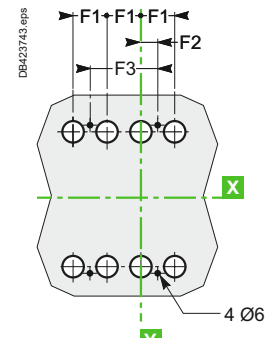
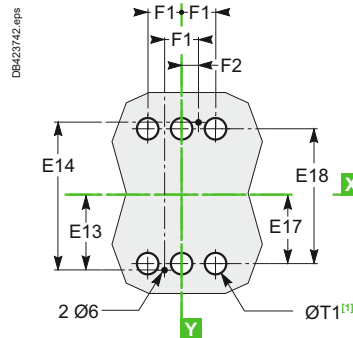
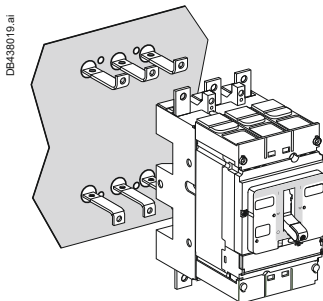


Connection by exterior-mounted rear connectors



[1] The ØT1 holes are required for rear connection only.

Connection by interior-mounted rear connectors

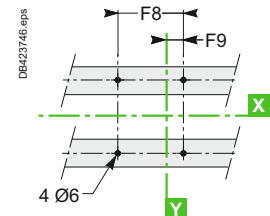
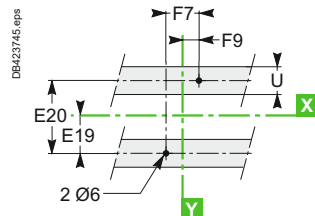
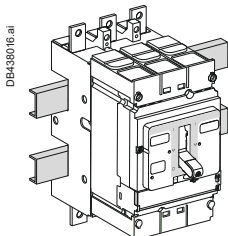


[1] The ØT1 holes are required for rear connection only.

On Rails

3P

4P



Type	A	A1	A2	A10	A11	B	B1	B2	C3	D1	E9	E10	E11	E12	E13	E14	E15
NSX100/160/250 DC	80.5	161	94	175	210	52.5	105	140	126	75	95	190	87	174	77.5	155	79
NSX400/630 DC	127.5	255	142.5	244	281	70	140	185	168	100	150	300	137	274	125	250	126
Type	E16	E17	E18	E19	E20	F1	F2	F3	F4	F5	F6	F7	F8	F9	ØT1	U	
NSX100/160/250 DC	158	61	122	37.5	75	35	17.5	70	54.5	109	144	70	105	35	24	≤ 32	
NSX400/630 DC	252	101	202	75	150	45	22.5	90	71.5	143	188	100	145	50	33	≤ 35	

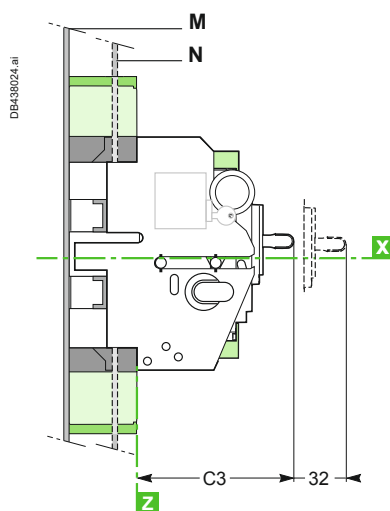
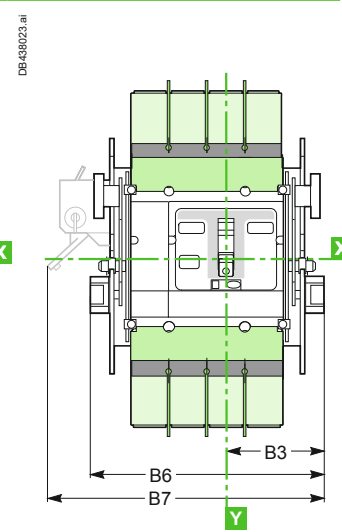
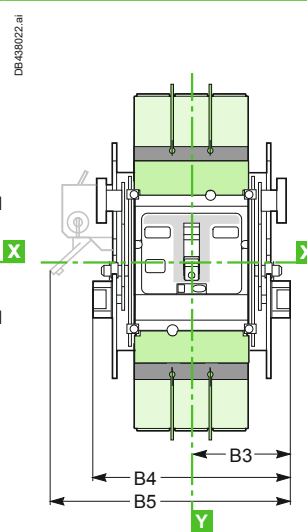
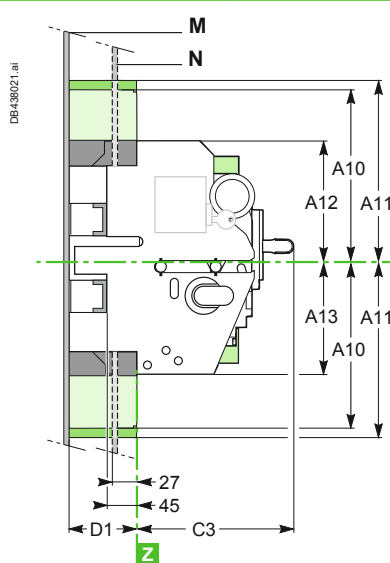
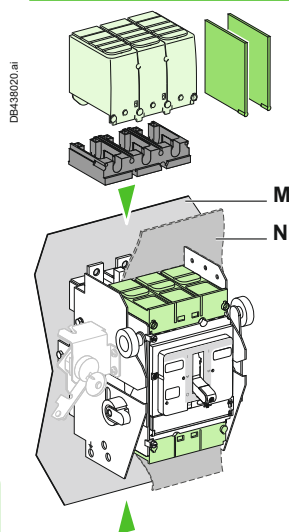
Dimensions and Mounting

ComPacT NSX100 to 630 DC Withdrawable Version

Dimensions

3P

4P



Interphase barriers for base

Short terminal shields on circuit breaker

Long terminal shields

Adapter for base, required to mount long terminal shields or interphase barriers

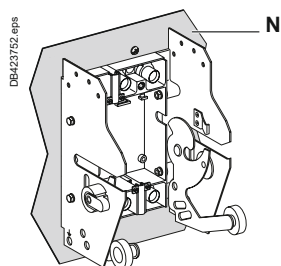
Mounting

Through Front Panel (N)

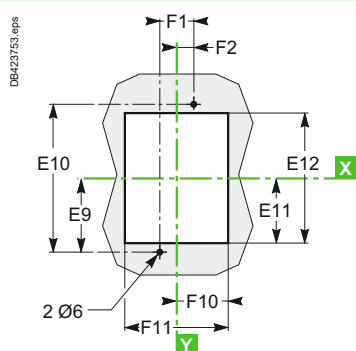
3P

3P

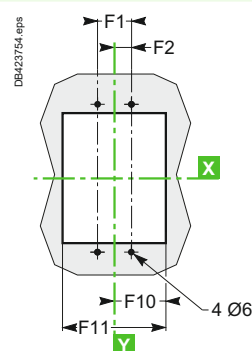
4P



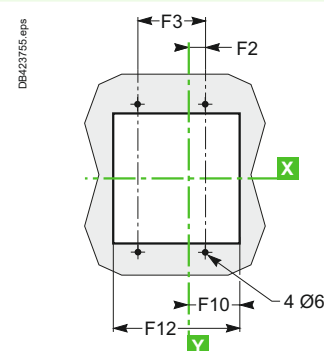
NSX100 to 250 DC



NSX400/630 DC



NSX100 to 630 DC



Dimensions and Mounting

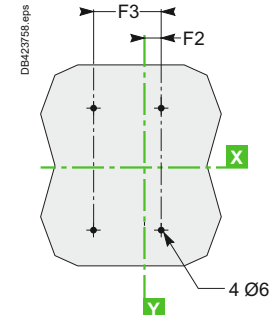
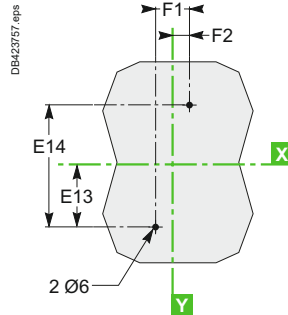
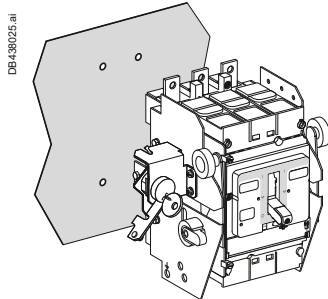
ComPacT NSX100 to 630 DC Withdrawable Version

On Backplate (M)

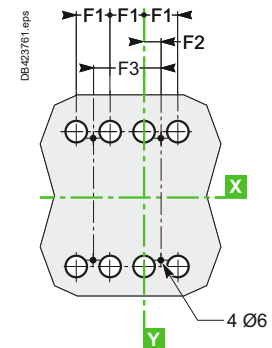
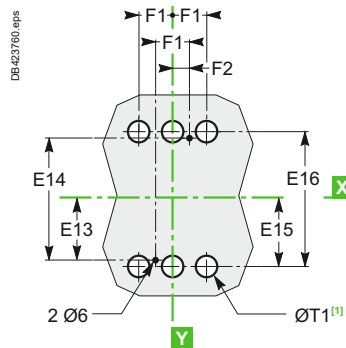
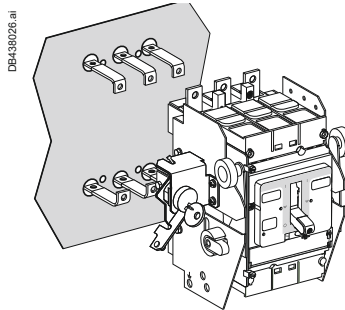
3P

4P

Front connection (an insulating screen is supplied with the base and must be fitted between the base and the backplate)

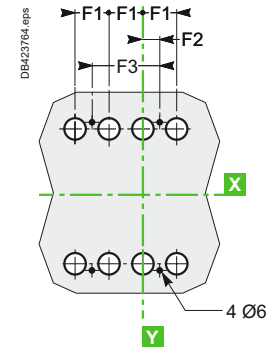
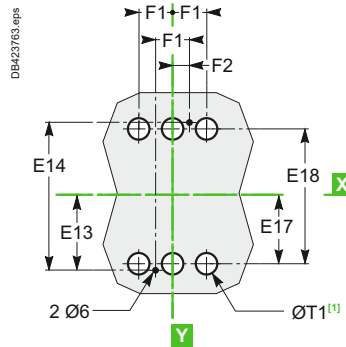
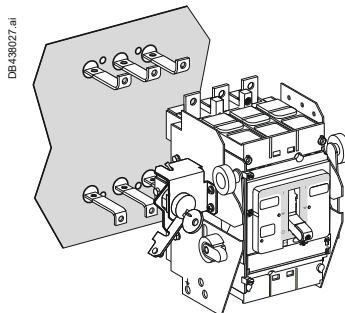


Connection by exterior-mounted rear connectors



[1] The ØT1 holes are required for rear connection only.

Connection by interior-mounted rear connectors

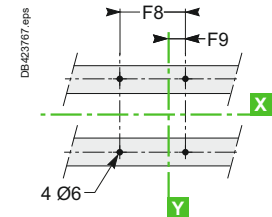
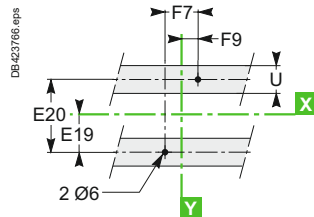
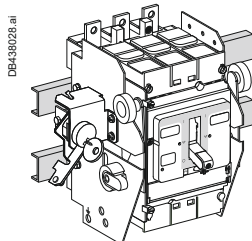


[1] The ØT1 holes are required for rear connection only.

On Rails

3P

4P



Type	A10	A11	A12	A13	B3	B4	B5	B6	B7	C3	D1	E9	E10	E11	E12	E13	E14
NSX100/160/250 DC	175	210	106.5	103.5	92.5	185	216	220	251	126	75	95	190	87	174	77.5	155
NSX400/630 DC	244	281	140	140	110	220	250	265	295	168	100	150	300	137	274	125	250
Type	E15	E16	E17	E18	E19	E20	F1	F2	F3	F7	F8	F9	F10	F11	F12	ØT1	U
NSX100/160/250 DC	79	158	61	122	37.5	75	35	17.5	70	70	105	35	74	148	183	24	≤ 32
NSX400/630 DC	126	252	101	202	75	150	45	22.5	90	100	145	50	91.5	183	228	33	≤ 35

Motor Mechanism Module for ComPacT NSX100 to 1200 DC

4P, 2P(4P Circuit Breaker Platform)

C5: without keylock
C6: with keylock

DB423797 eps

M

N

X

27

45

D1

C5

32

Z

Schneider
Electric

Dimensions and Mounting

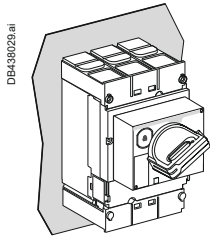
Direct Rotary Handle for ComPacT NSX100 to 1200 DC

Dimensions

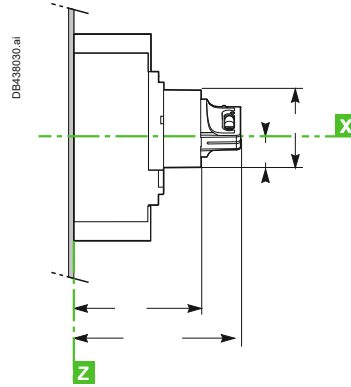
3P

4P, 2P (4P Circuit
Breaker Platform)

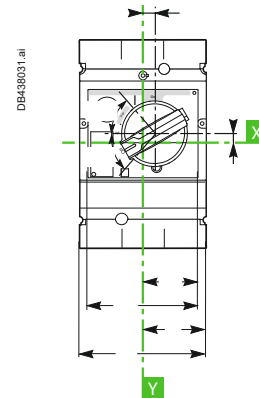
Fixed Circuit Breaker



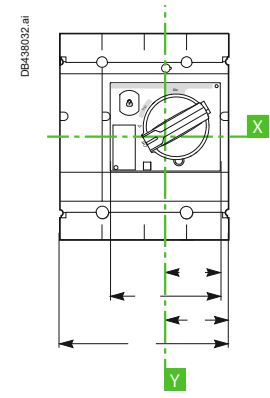
DB438029.ai



DB438030.ai



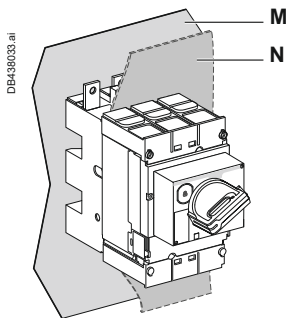
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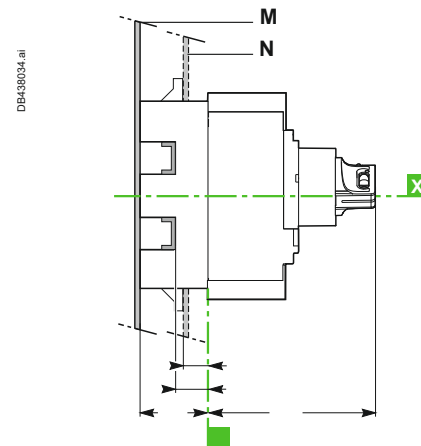
DB438032.ai

C8: without keylock
C9: with keylock

Plug-in Circuit Breaker

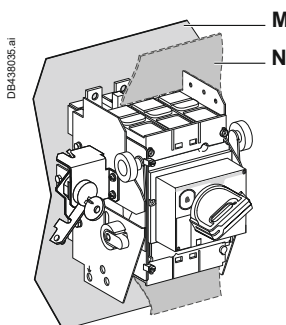


DB438033.ai

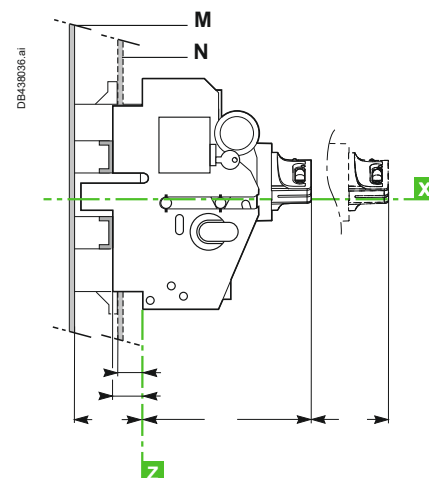
M
N

DB438034.ai

Withdrawable Circuit Breaker



DB438035.ai

M
N

DB438036.ai

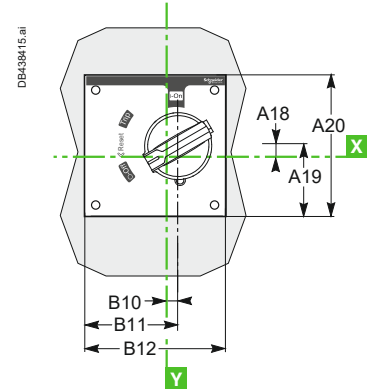
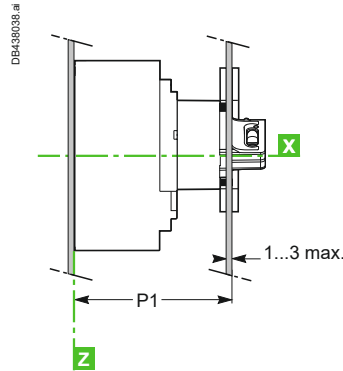
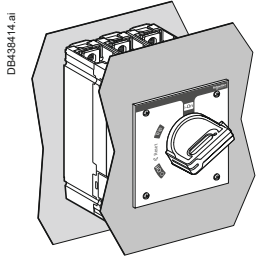
Type	A14	A15	A18	B	B1	B2	B8	B9	B10	C7	C8	C9	D1
NSX100/160/250 DC	27.5	73	9	52.5	105	140	45.5	91	9.25	121	155	164	75
NSX400/630 DC	40	123	24.6	70	140	185	61.5	123	5	145	179	188	100
NSX1200 DC	40	123	24.6	70	140	185	61.5	123	5	145	-	188	-

Dimensions and Mounting

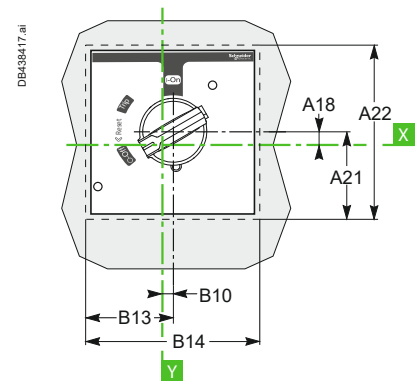
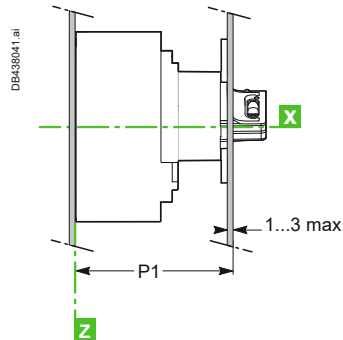
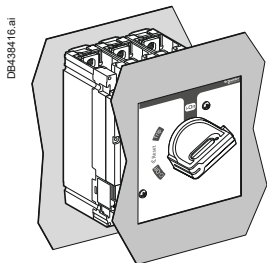
MCC and CNOMO Type Direct Rotary Handles for ComPacT NSX100 to 1200 DC Fixed Version

Dimensions

MCC Type Direct Rotary Handle



CNOMO Type Direct Rotary Handle

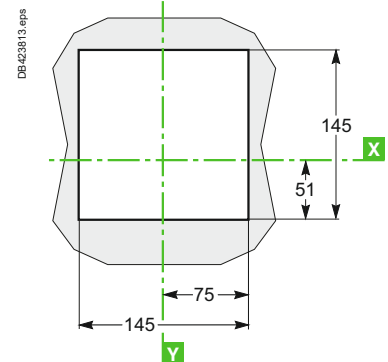
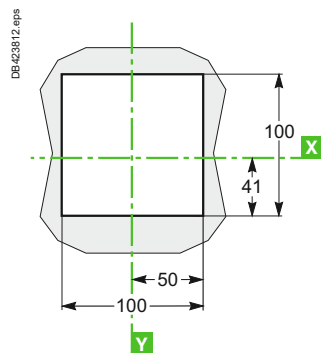
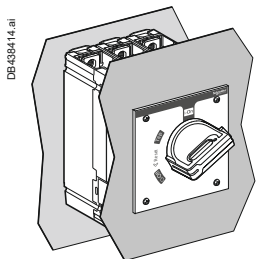


Front-Panel Cutout

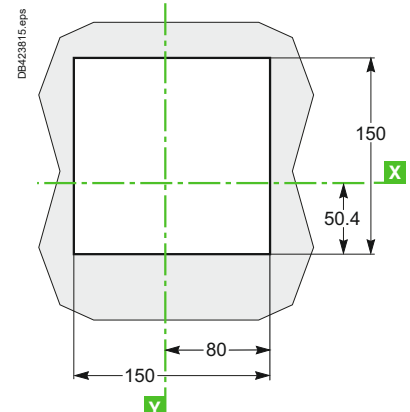
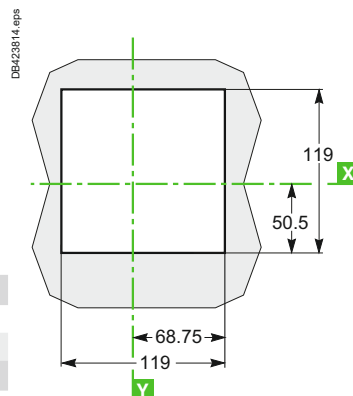
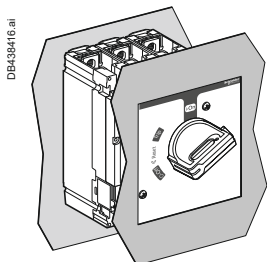
MCC Type Direct Rotary Handle

NSX100 to 250 DC

NSX400/630/1200 DC



CNOMO Type Direct Rotary Handle

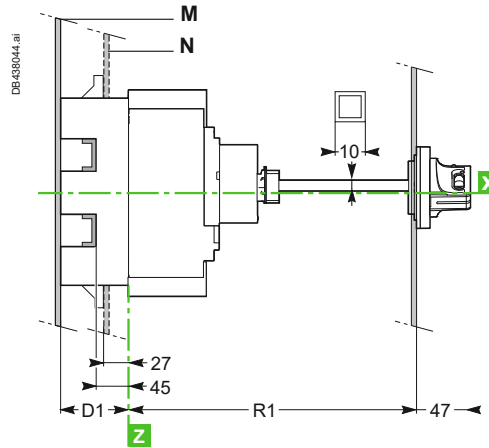
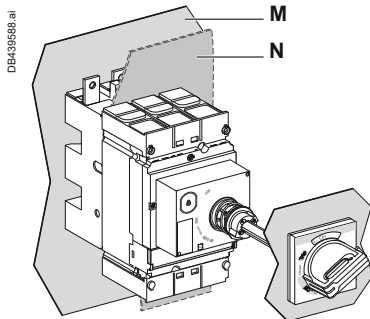


Type	A18	A19	A20	A21	A22	B10
NSX100/160/250 DC	9	60	120	65	130	9.25
NSX400/630/1200 DC	24.6	83	160	82	164	5
Type	B11	B12	B13	B14	P1	P2
NSX100/160/250 DC	69	120	65	130	125	135
NSX400/630/1200 DC	85	160	82	164	149	158

Extended Rotary Handle for ComPacT NSX100 To1200 DC

Dimensions

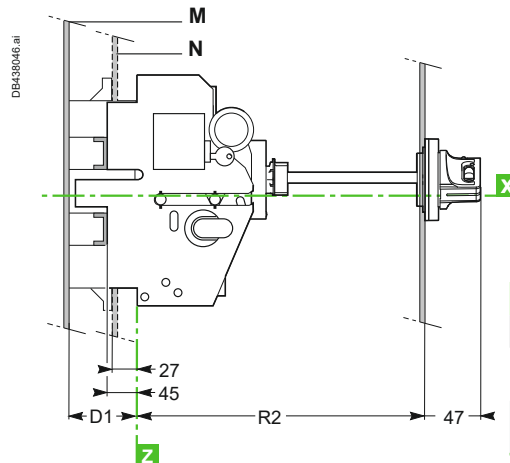
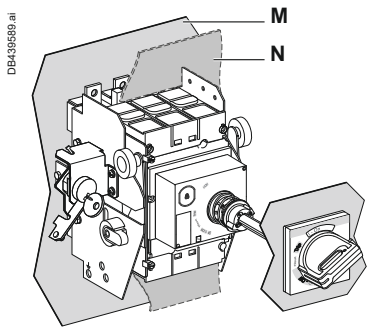
Fixed and Plug-in Circuit Breakers



Cutout for shaft (mm)

Type	R1
NSX100/160/250 DC	min. 171 max. 600
NSX400/630/1200 DC	min 195 max. 600

Withdrawable Circuit Breaker

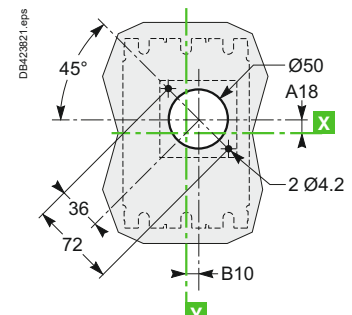
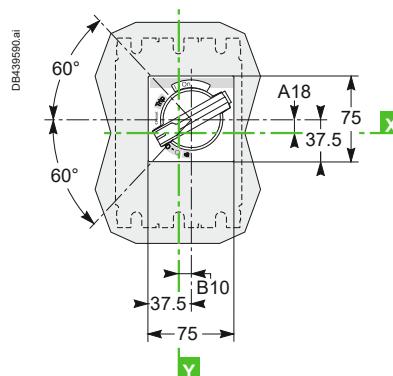


Cutout for shaft (mm)

Type	R2
NSX100/160/250 DC	min. 248 max. 600
NSX400/630 DC	min. 272 max. 600

C

Dimensions and Front-Panel Cutout



Type	A18	B10	D1
NSX100/160/250 DC	9	9.25	75
NSX400/630/1200 DC	24.6	5	100

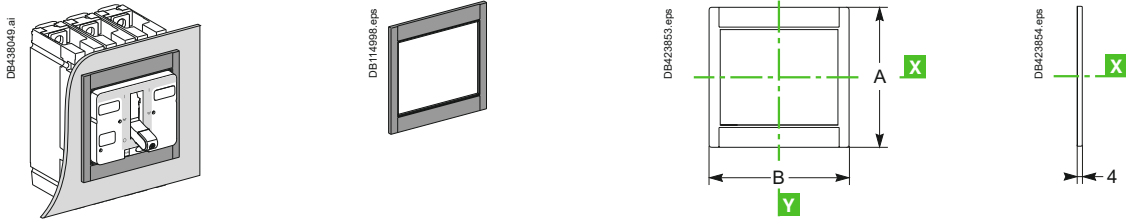
Dimensions and Connection

Front-Panel Accessories

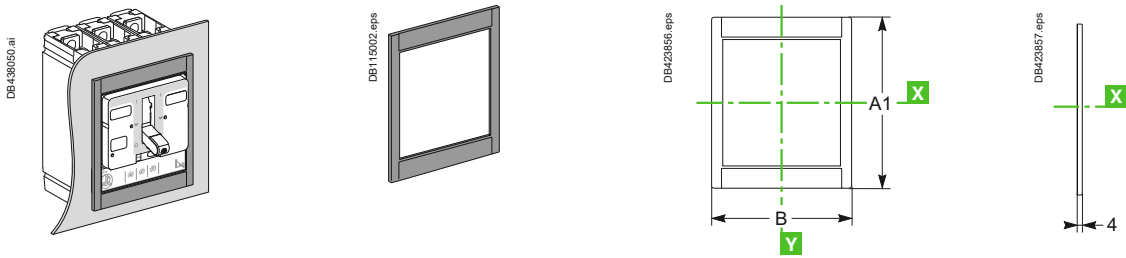
ComPacT NSX100 to 1200 DC

IP30 Front-Panel Escutcheons

For Toggle, Rotary Handle or Motor Mechanism Module

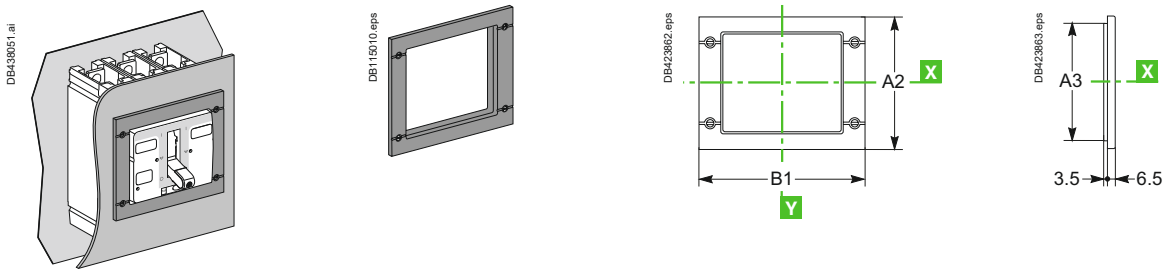


For Toggle or Rotary Handle with Access to Trip Unit



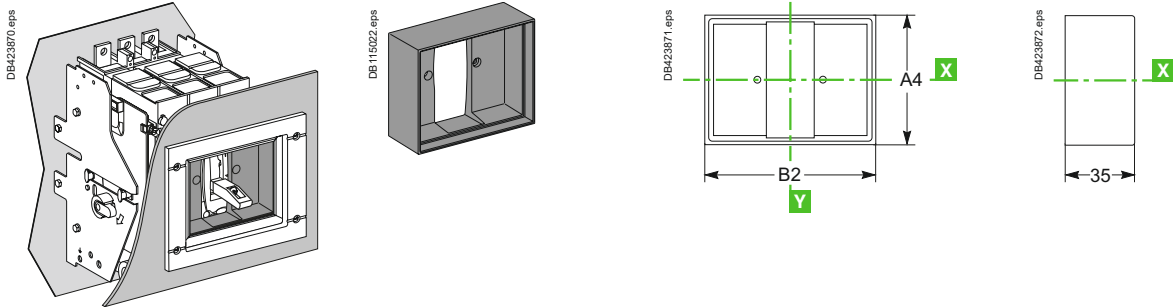
IP40 Front-Panel Escutcheons

For Toggle, Rotary Handle or Motor Mechanism Module and Protection Collar



Protection Collars for IP40 Front-Panel Escutcheons

For Toggle

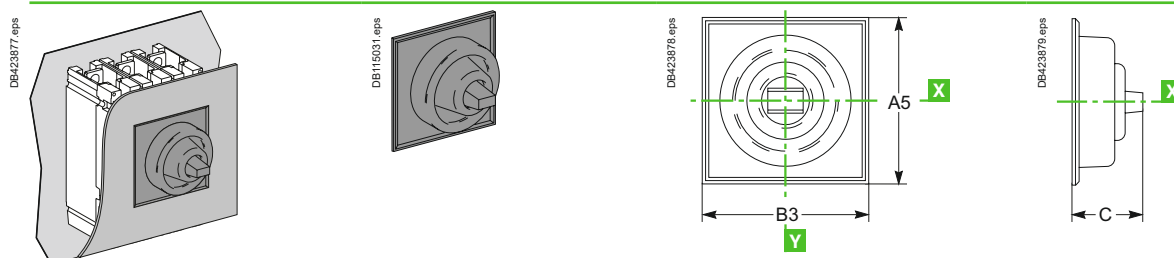


Dimensions and Connection

Front-Panel Accessories

ComPacT NSX100 to 1200 DC

IP43 Toggle Cover



Type	A	A1	A2	A3	A4	A5	B	B1	B2	B3	C
NSX100/160/250 DC	113	138	114	101	73	85	113	157	91	103	40
NSX400/630/1200 DC	163	211	164	151	122.5	138	163	189	122.5	138	60

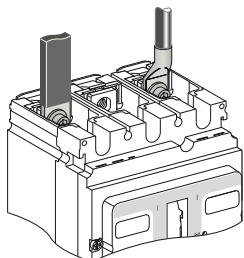
C

Power Connections

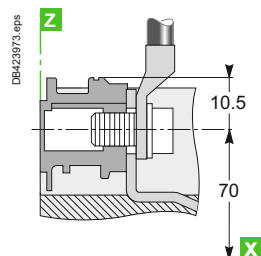
ComPacT NSX100 to 1200 DC Fixed Version

Front Connection without Accessories

DB438052.ai

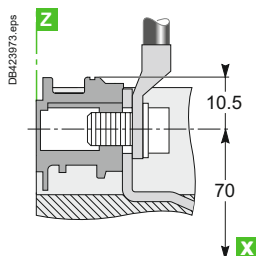


NSX100 to 250 DC



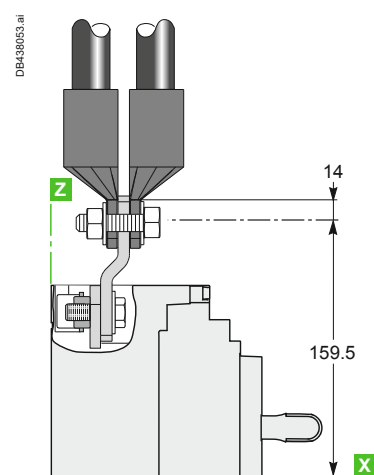
Cables with lugs/bars

NSX400/630 DC



Bars/cables with lugs

NSX1200 DC

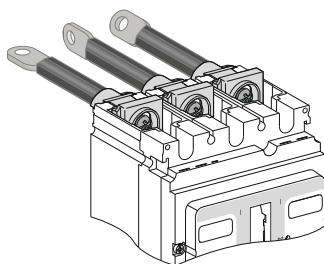


C

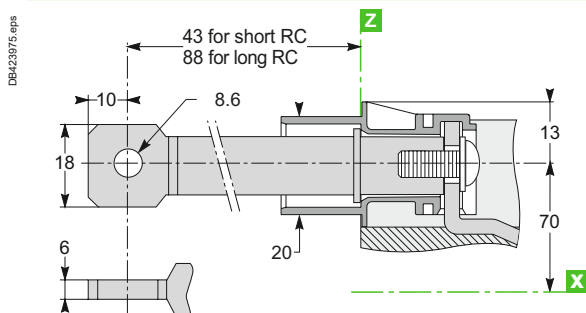
Connection with Accessories

Long and Short Rear Connectors

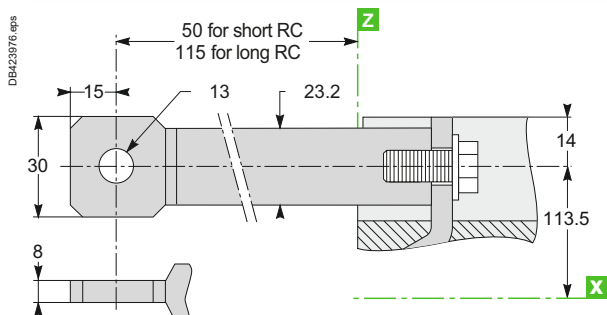
DB438054.ai



NSX100 to 250 DC

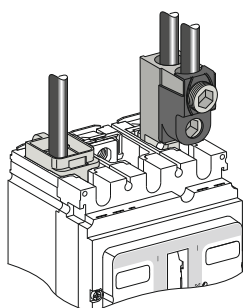


NSX400/630 DC

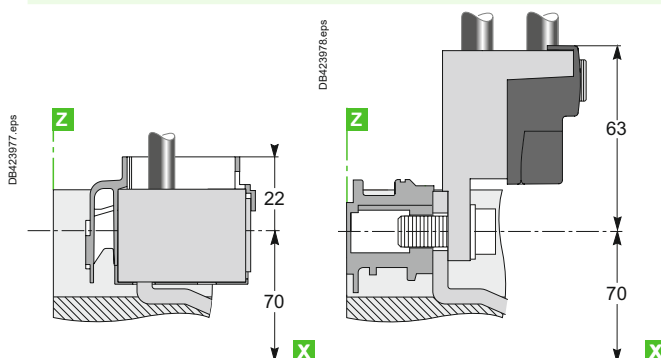


Bare-Cable Connectors

DB438055.ai



NSX100 to 250 DC



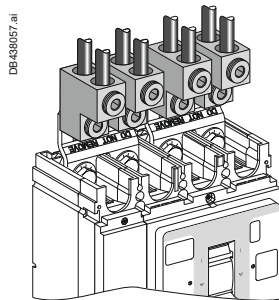
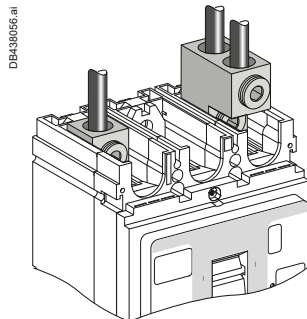
Dimensions and Connection

Power Connections

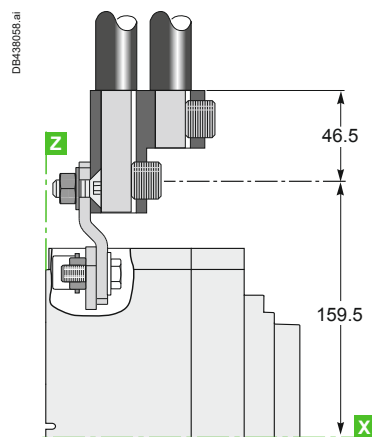
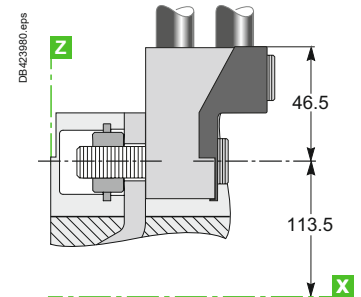
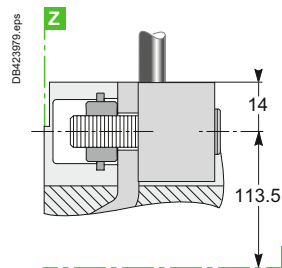
ComPacT NSX100 to 1200 DC Fixed Version

Connection with Accessories (Cont.)

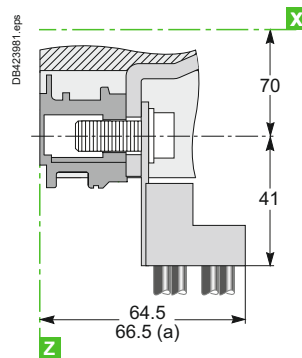
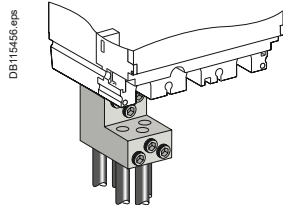
Bare-Cable Connectors



NSX400/1200 DC

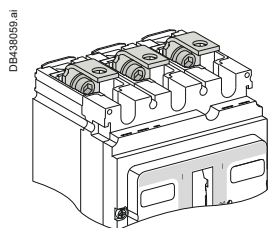


Distribution Connectors (for NSX100 to 250 DC Only)

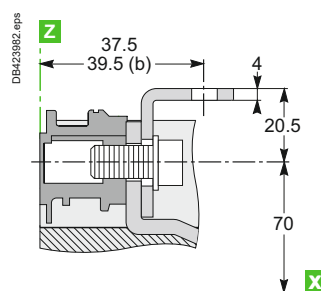


(a) NSX250 DC

Right-Angle Terminal Extensions (Upstream Only)

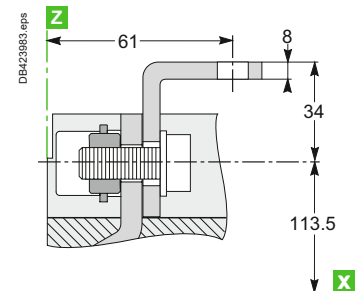


NSX100 to 250 DC



(b) NSX250 DC

NSX400/630 DC

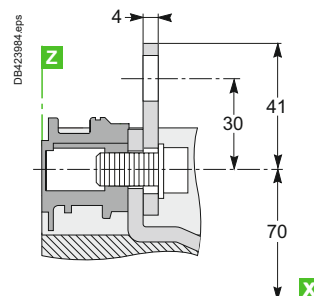
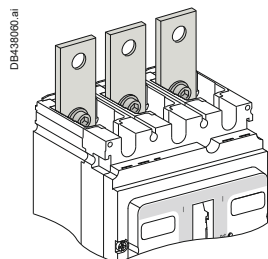


Power Connections

ComPacT NSX100 to 630 DC Fixed Version

Connection with Accessories (Cont.)

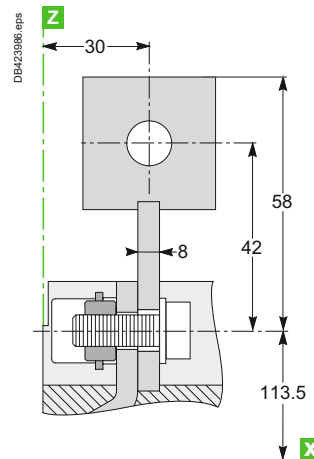
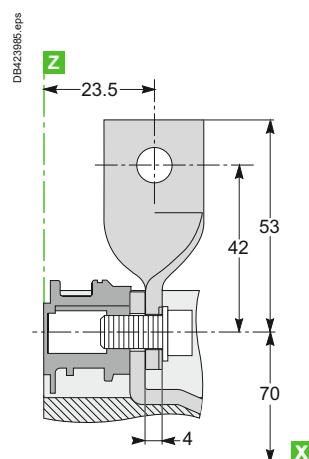
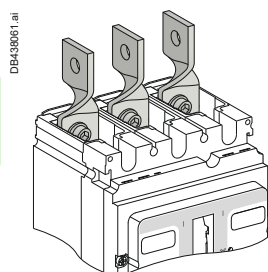
Straight Terminal Extensions (for NSX100 to 250 DC Only)



Edgewise Terminal Extensions

NSX100 to 250 DC

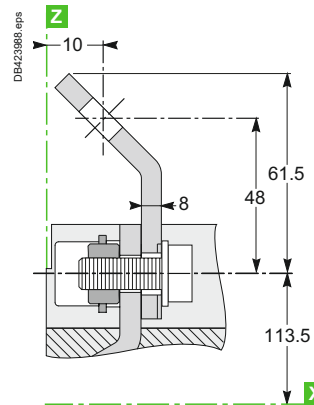
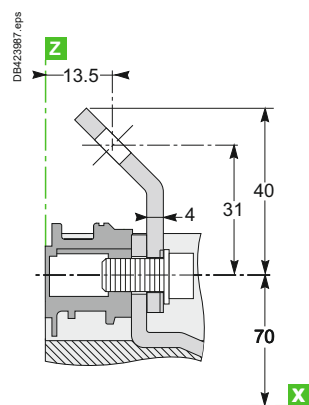
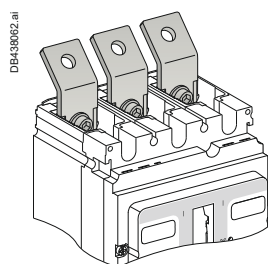
NSX400/630 DC



45° Terminal Extensions

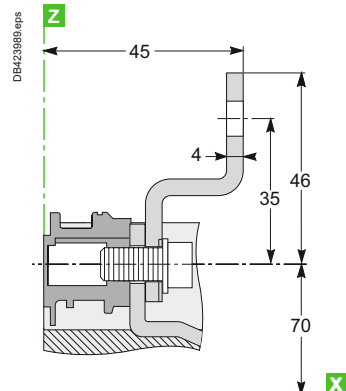
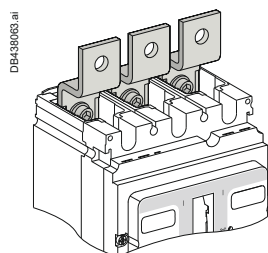
NSX100 to 250 DC

NSX400/630 DC



Double-L Terminal Extensions

NSX100 to 250 DC



Dimensions and Connection

Power Connections

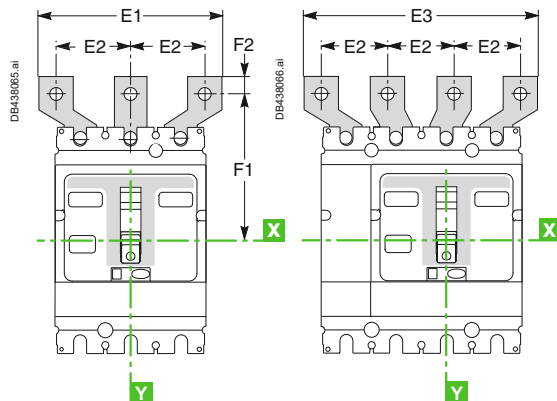
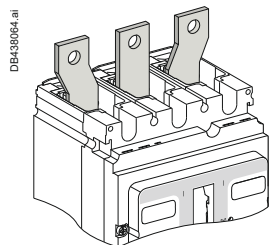
ComPacT NSX100 to 630 DC Fixed Version

Connection with Accessories (Cont.)

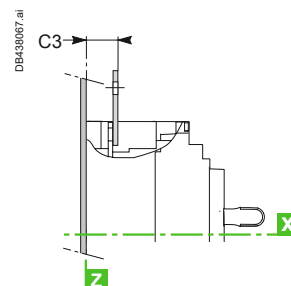
Spreaders

3P

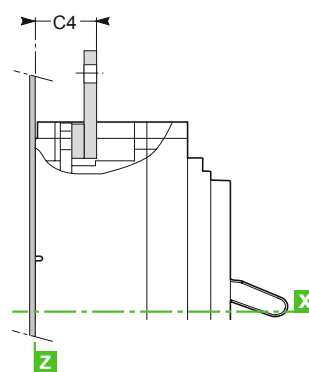
4P



NSX100 to 250 DC

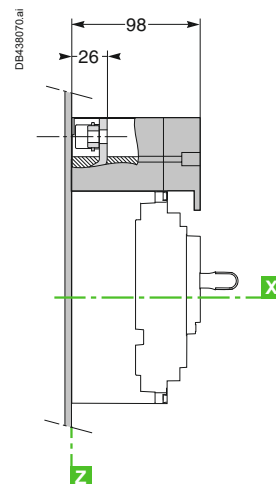
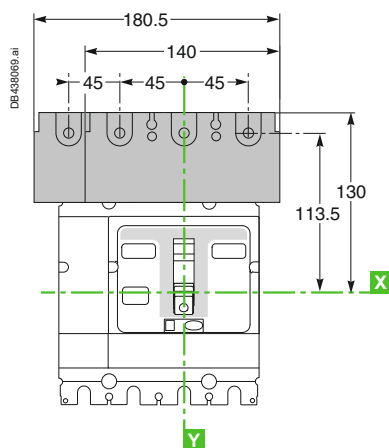
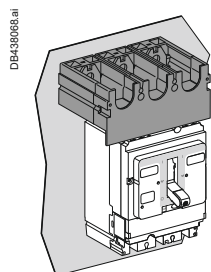


NSX400/630 DC



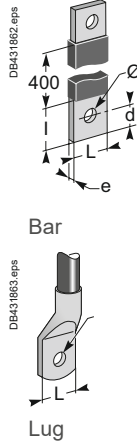
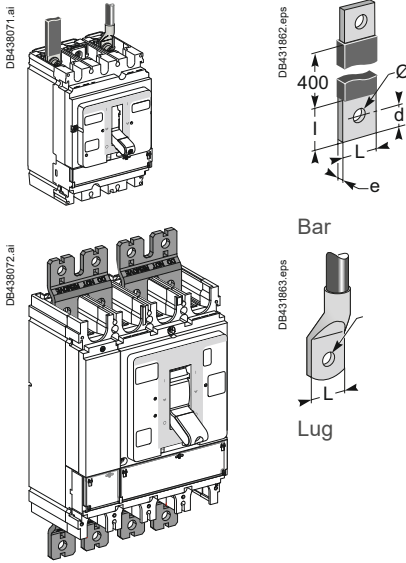
Type	C3	C4	E1	E2	E3	F1	F2
NSX100/160 DC	23.5	-	114	45	159	100	11
NSX250 DC/PV/EP	25.5	-	114	45	159	100	11
NSX400/630 DC	-	44	135	52.5	187.5	152.5	15
			170	70	240	166	15

One-Piece Spreader (for NSX100 to 250 Only)



Power Connections

Connection of Insulated Bars or Cables with Lugs to ComPacT NSX100 to 1200 DC



Direct Connection to NSX100 to 1200 DC

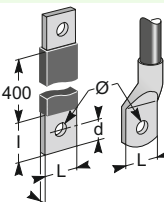
Dimensions	NSX100 DC	NSX160/250 DC	NSX400/630/1200 DC
Bars			
L (mm)	≤ 25	≤ 25	≤ 32
l (mm)	d + 10	d + 10	d + 15
d (mm)	≤ 10	≤ 10	≤ 15
e (mm)	≤ 6	≤ 6	3 ≤ e ≤ 10
Ø (mm)	6.5	8.5	10.5
Lugs			
L (mm)	≤ 25	≤ 25	≤ 32
Ø (mm)	6.5	8.5	10.5
Torque (Nm) [1]	10	15	50
Torque (Nm) [2]	5/5	5/5	20/11
Torque (Nm) [3]	8	8	20

[1] Tightening torque on the circuit breaker for lugs or bars.

[2] Tightening torque on fixed devices for rear connectors/tightening torque on plug-in or withdrawable devices for power connectors.

[3] Tightening torque on the plug-in base for terminal extensions.

Connection with Accessories to NSX100 to 250 DC (IEC 228)

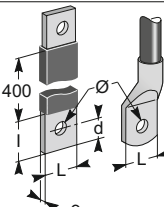
Pole Pitch				
Without spreaders		35 mm		
With spreaders		45 mm		
Dimensions		With Spreaders or Terminal Extensions		
		NSX100 DC	NSX160/250 DC	
	Bars	L (mm)	≤ 25	≤ 25
		l (mm)	20 ≤ l ≤ 25	20 ≤ l ≤ 25
		d (mm)	≤ 10	≤ 10
		e (mm)	≤ 6	≤ 6
		Ø (mm)	6.5	8.5
	Lugs	L (mm)	≤ 25	≤ 25
		Ø (mm)	6.5	8.5
	Torque (Nm) ^[1]		10	15
	Torque (Nm) ^[2]		5	5

[1] Tightening torque on the circuit breaker for spreaders or terminal extensions.

[2] Tightening torque on the plug-in base for spreaders or terminal extensions.

Spreaders and straight, right-angle, 45°, double-L and edgewise terminal extensions are supplied with flexible interphase barriers.

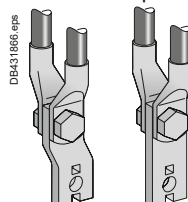
Connection with Accessories to NSX400 DC and 630 DC (IEC 228)

Pole Pitch			
Without spreaders	45 mm		
With spreaders	52.5 or 70 mm		
Dimensions	With Spreaders	With Terminal Extensions	
	Bars		
	L (mm)	≤ 40	≤ 32
	l (mm)	d + 15	30 ≤ l ≤ 34
	d (mm)	≤ 20	≤ 15
	e (mm)	3 ≤ e ≤ 10	3 ≤ e ≤ 10
	Ø (mm)	12.5	10.5
	Lugs		
	L (mm)	≤ 40	≤ 32
	Ø (mm)	12.5	10.5
	Torque (Nm) ^[1]	50	50
Torque (Nm) ^[2]	20	20	

[1] Tightening torque on the circuit breaker for spreaders or terminal extensions.

[2] Tightening torque on the plug-in base for spreaders or terminal extensions.

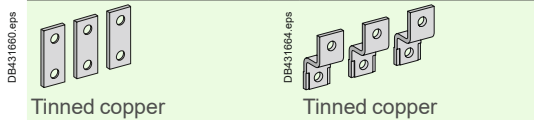
Spreaders and right-angle, 45° and edgewise terminal extensions are supplied with flexible interphase barriers.



Mounting detail: 2 cables with lugs

Accessories for NSX100 to 250 DC

Straight Terminal Extensions Double-L Terminal Extensions



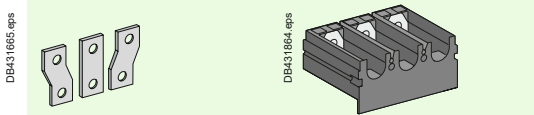
Tinned copper

Tinned copper

Spreaders

separate parts

One-piece spreader

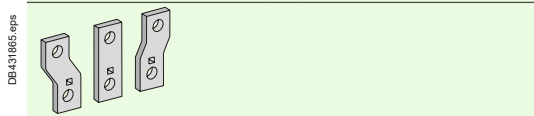


Tinned copper

For U > 600 V, the mandatory insulation kit is not compatible with spreaders made up of separate parts.

Accessories for NSX400 and 630 DC

Spreaders Made up of Separate Parts for 52.5 and 70 Mm Pitch



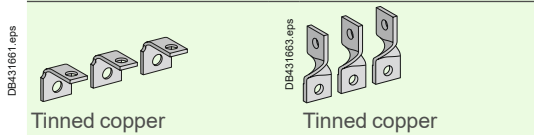
Tinned copper

For U > 600 V, use of the 52.5 mm pitch spreaders requires a specific insulation kit.

The 70 mm pitch spreaders may not be used.

Accessories for NSX100 to 630 DC

Right-Angle Terminal Extensions Edgewise Terminal Extensions



Tinned copper

Tinned copper

To be mounted on upstream side

45° Terminal Extensions



Tinned copper

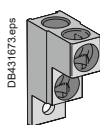
Power Connections

Connection of Bare Cables to ComPacT NSX100 to 1200 DC

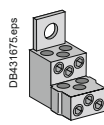
Connection for NSX100 to 250 DC



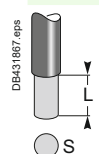
1-cable connector



2-cable connector

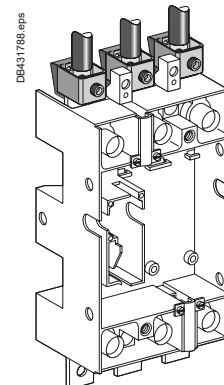
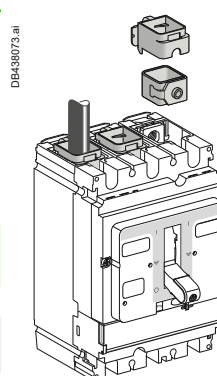


Distribution connector



1-cable connector	Steel ≤ 160 A	Aluminium ≤ 250 A		
L (mm)	25	25		
S (mm²) Cu/Al	1.5 to 95 ^[1]	25 to 50	70 to 95	120 to 185 150 max. flex.
Torque (Nm)	12	20	26	26
2-cable connector				
L (mm)	25 or 50			
S (mm²) Cu/Al	2 x 50 to 2 x 120			
Torque (Nm)	22			
6-cable distribution connector (copper or aluminium)				
L (mm)	15 or 30			
S (mm²) Cu/Al	1.5 to 6 ^[1]	8 to 35		
Torque (Nm)	4	6		

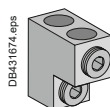
[1] For flexible cables from 1.5 to 4 mm², connection with crimped or self-crimping ferrules.



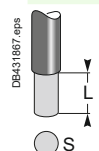
Connection for NSX400 and 630 DC



1-cable connector

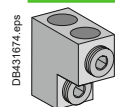


2-cable connector

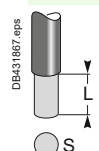


	1-cable connector	2-cable connector
L (mm)	30	30 or 60
S (mm ²) Cu/Al	35 to 300 rigid 240 max. flex.	2 x 35 to 2 x 240 rigid 240 max. flex.
Torque (Nm)	31	31

Connection for NSX630 and 1200 DC



2-cable connector



	2-cable connector
L (mm)	30 or 60
S (mm ²) Cu/Al	2 x 35 to 2 x 240 rigid 240 max. flex.
Torque (Nm)	31

Conductor Materials and Electrodynamic Stresses

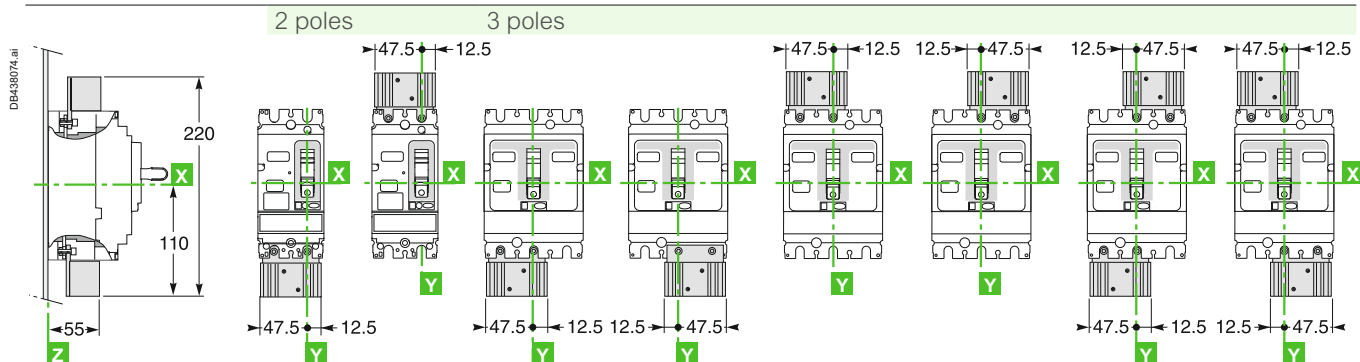
ComPacT NSX DC circuit breakers can be connected indifferently with bare-copper, tinned-copper and tinned-aluminium conductors (flexible or rigid bars, cables).

In the event of a short-circuit, thermal and electrodynamic stresses will be exerted on the conductors. They must therefore be correctly sized and held in place by supports.

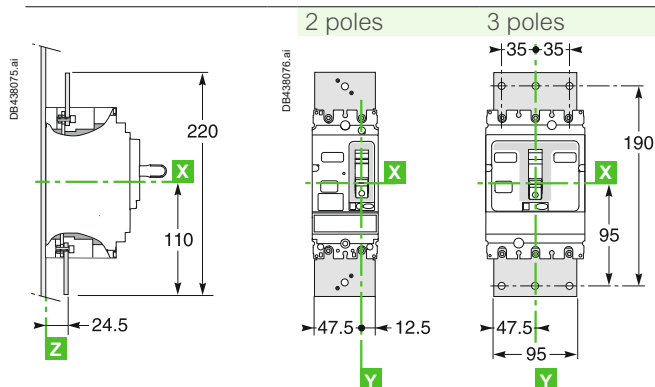
Electrical connection points on switchgear devices (switch-disconnectors, contactors, circuit breakers, etc.) should not be used for mechanical support.

Any partition between upstream and downstream connections of the device must be made of non-magnetic material.

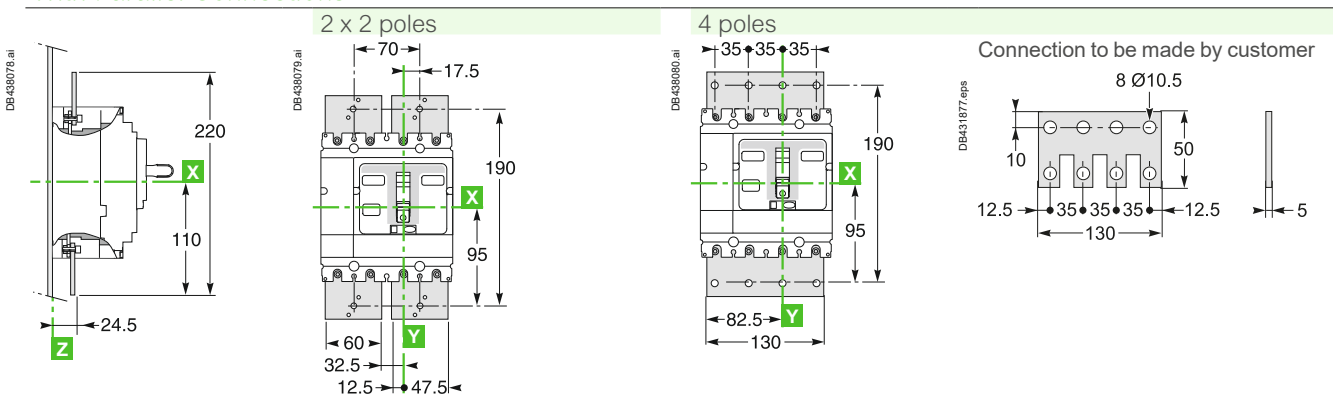
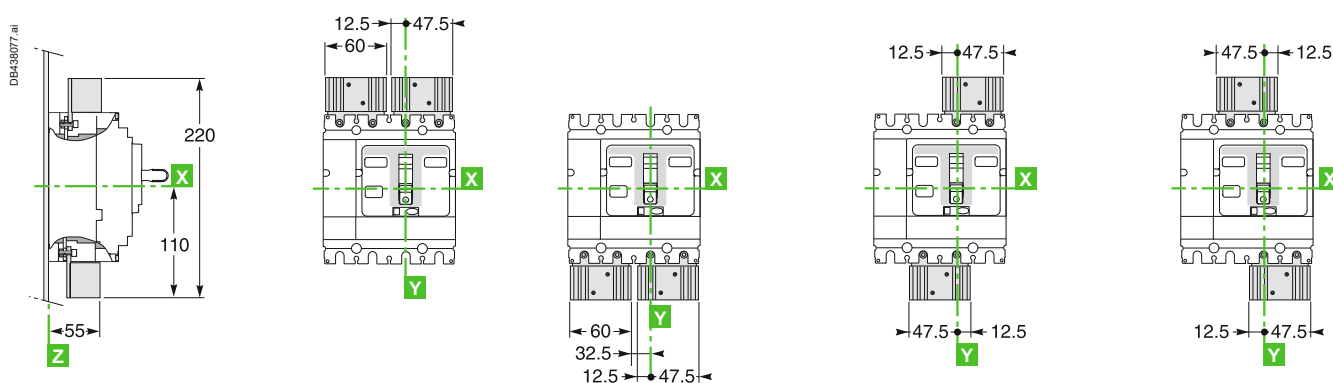
With Series Connections



C

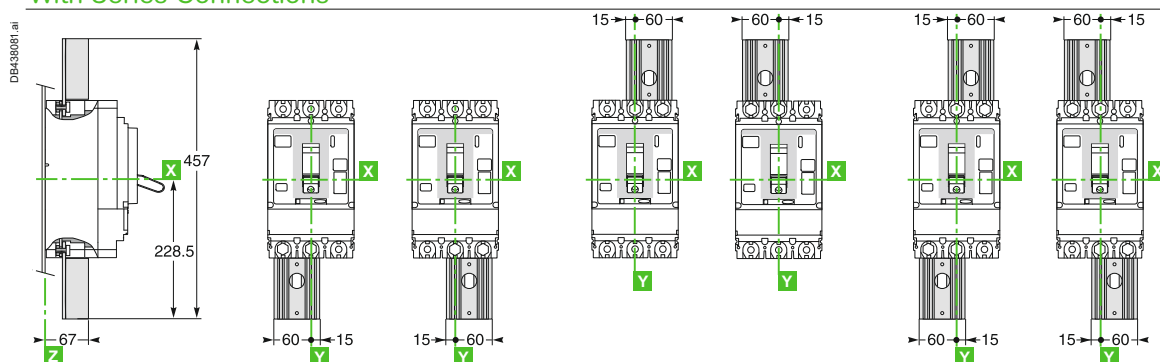


With Series Connections

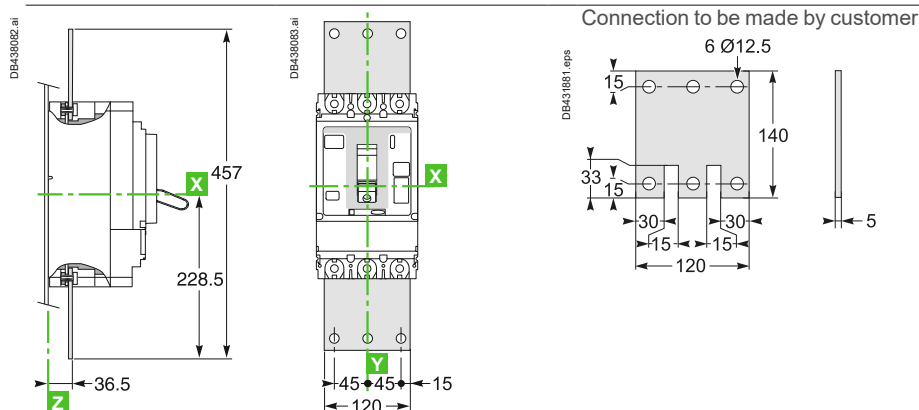


3P Fixed Version (ComPacT NSX400-630 DC)

With Series Connections

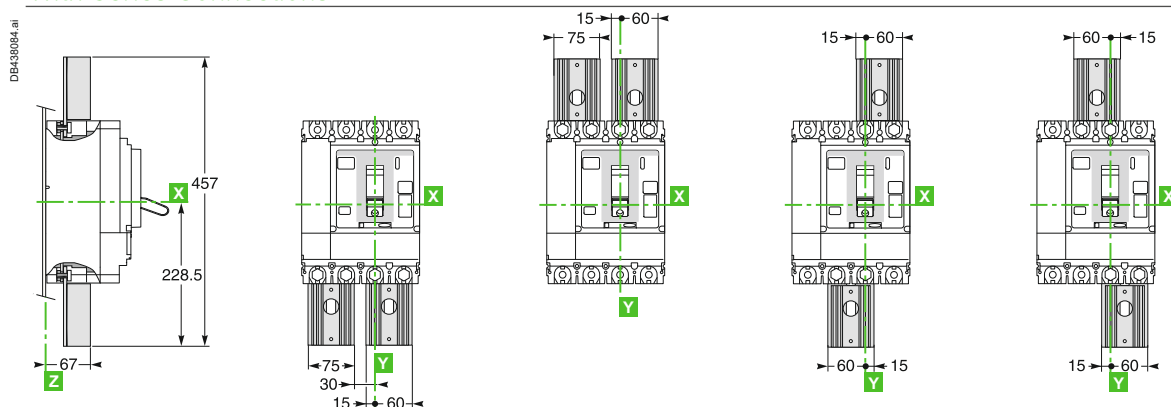


With Parallel Connections

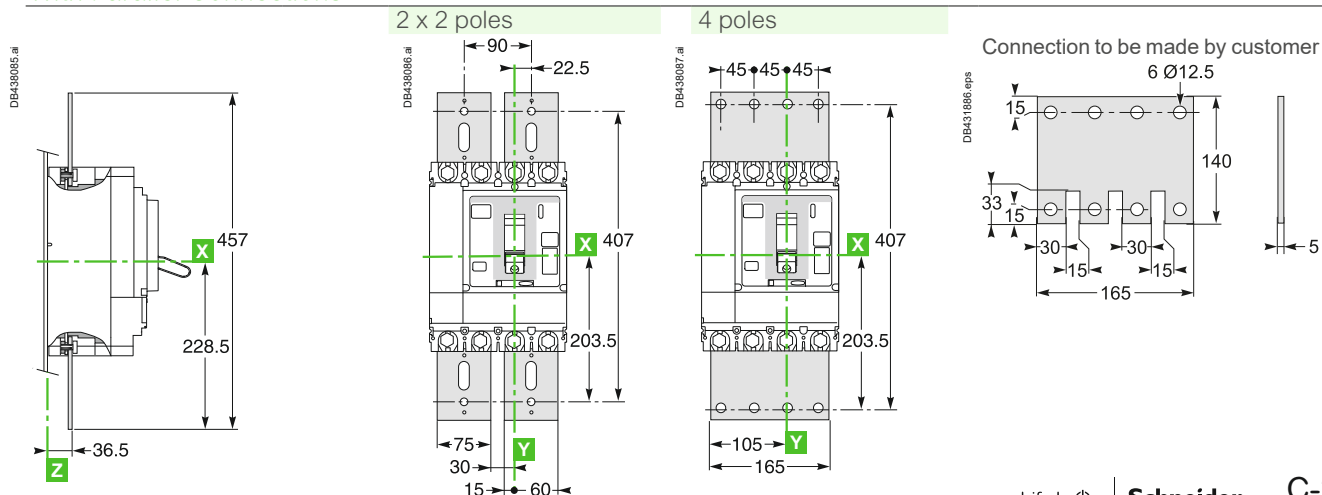


4P Fixed Version (ComPacT NSX400 to NSX630 DC)

With Series Connections



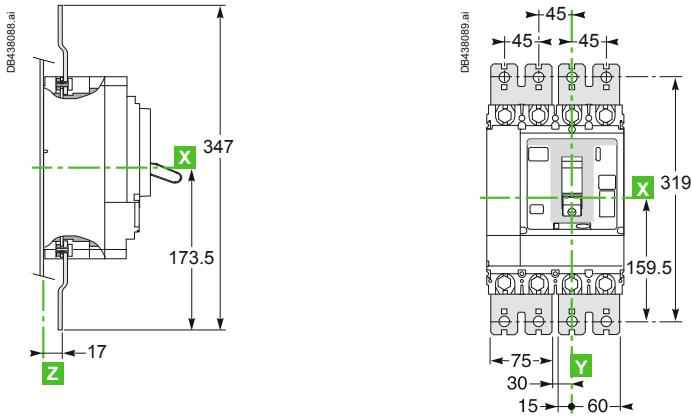
With Parallel Connections



Dimensions and Connection

ComPacT (Fixed Version) 4P
Parallel and Series Connection of Poles
ComPacT NSX630 to NSX1200 DC

4P Fixed Version (ComPacT NSX630 to NSX1200DC)
With Parallel Connections



C

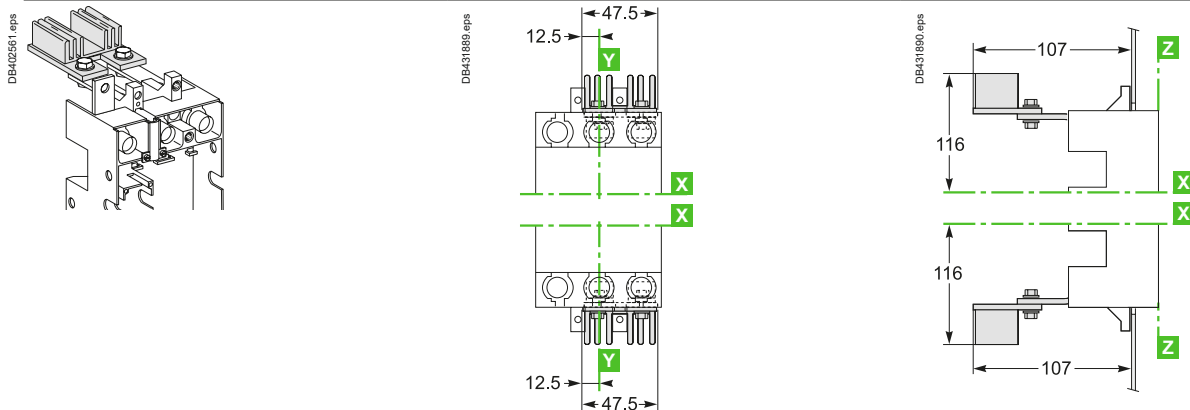
ComPacT (Withdraw. Version) 3P-4P

Parallel and Series Connection of Poles

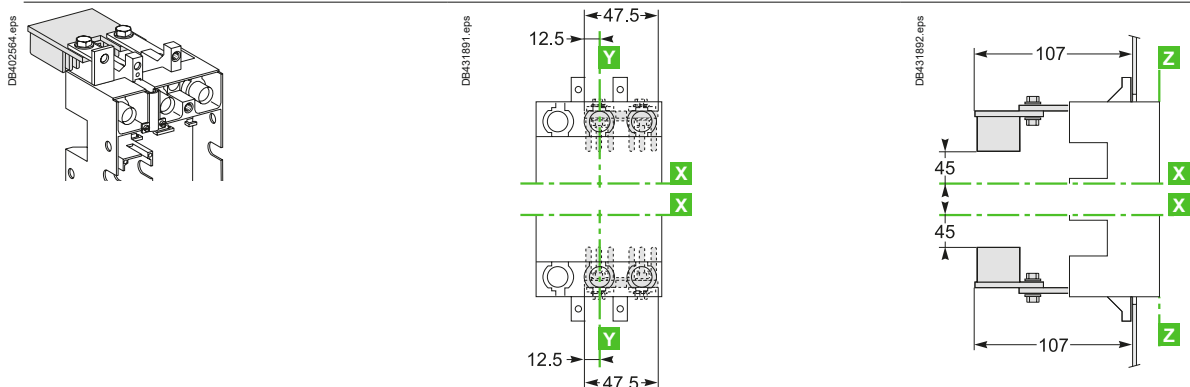
ComPacT NSX100 to NSX250 DC

3P Withdrawable Version

Connections Mounted with Heat Sink Directed Outwards

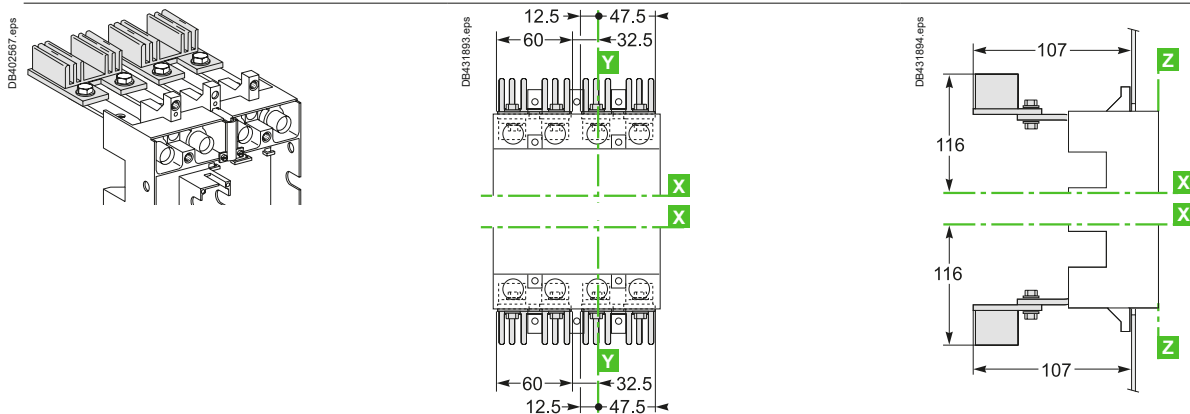


Connections Mounted with Heat Sink Directed Inwards

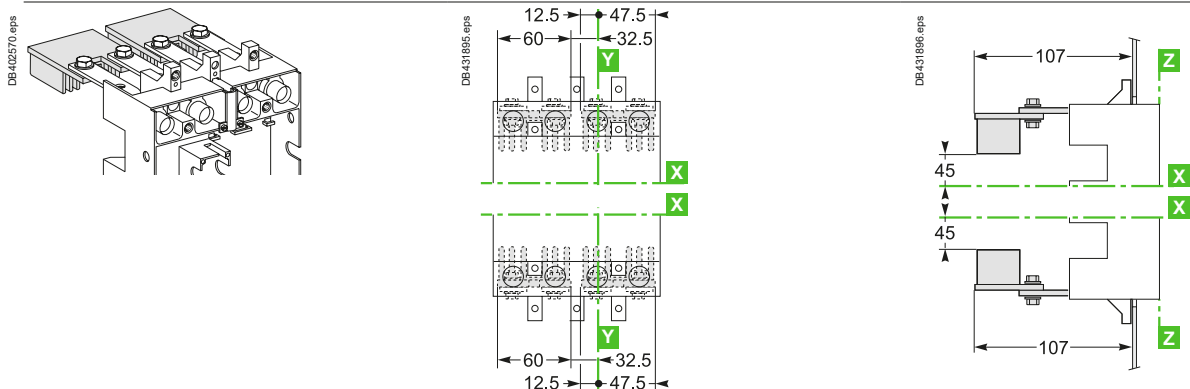


4P Withdrawable Version

Connections Mounted with Heat Sink Directed Outwards



Connections Mounted with Heat Sink Directed Inwards



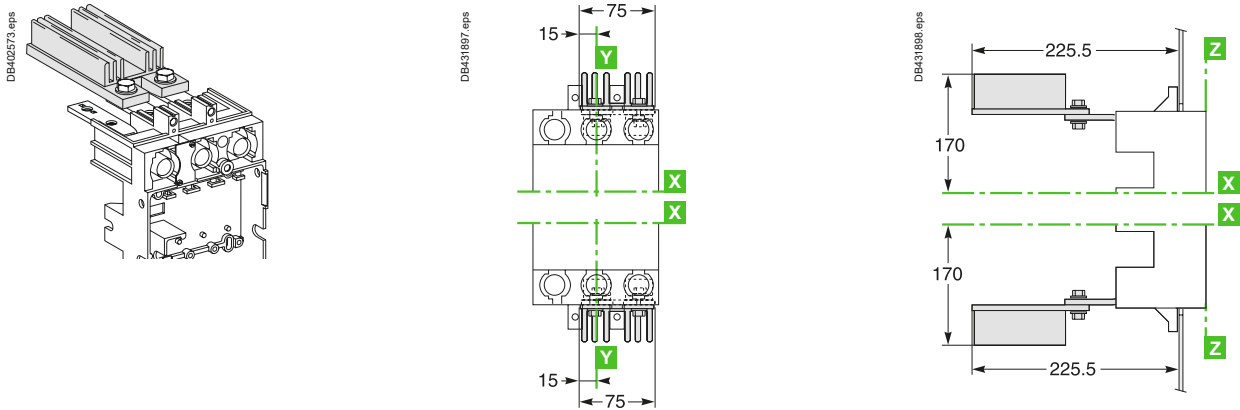
ComPacT (Withdraw. Version) 3P-4P

Parallel and Series Connection of Poles

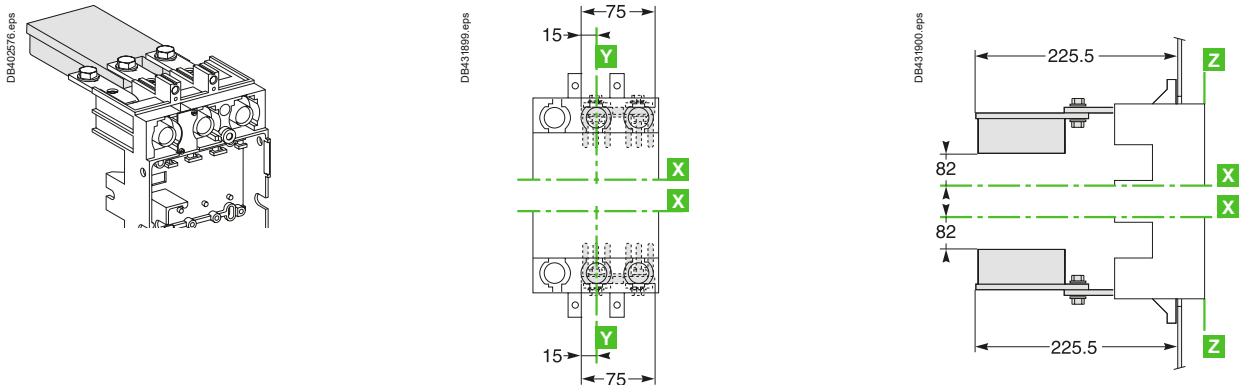
ComPacT NSX400 to NSX630 DC

3P Withdrawable Version

Connections Mounted with Heat Sink Directed Outwards

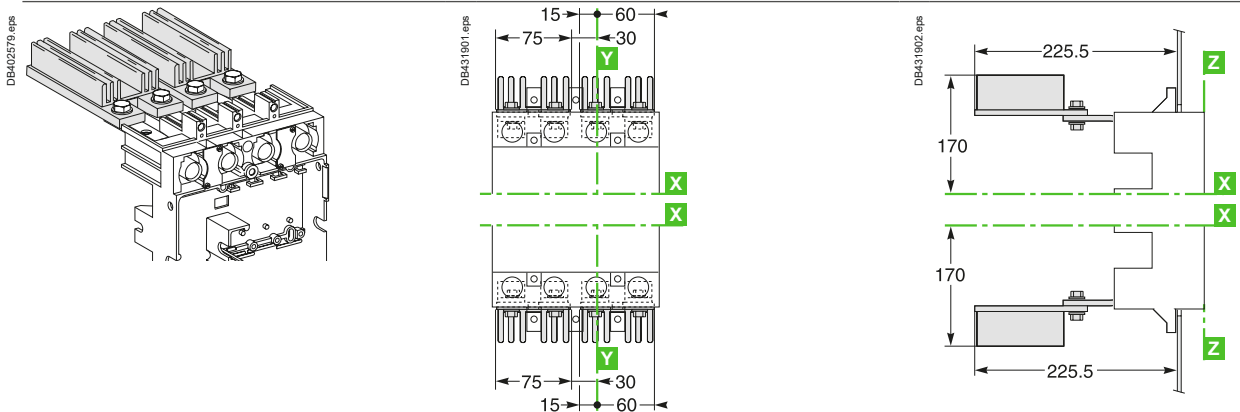


Connections Mounted with Heat Sink Directed Inwards

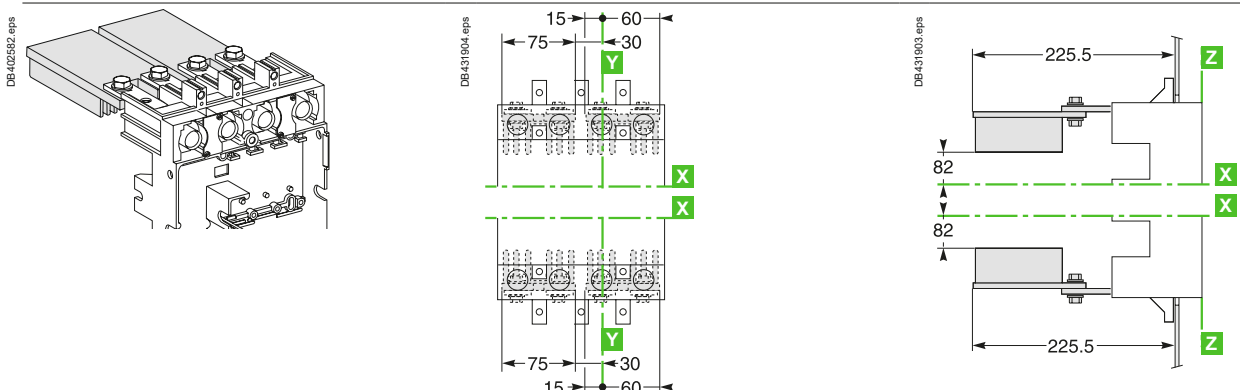


4P Withdrawable Version

Connections Mounted with Heat Sink Directed Outwards



Connections Mounted with Heat Sink Directed Inwards



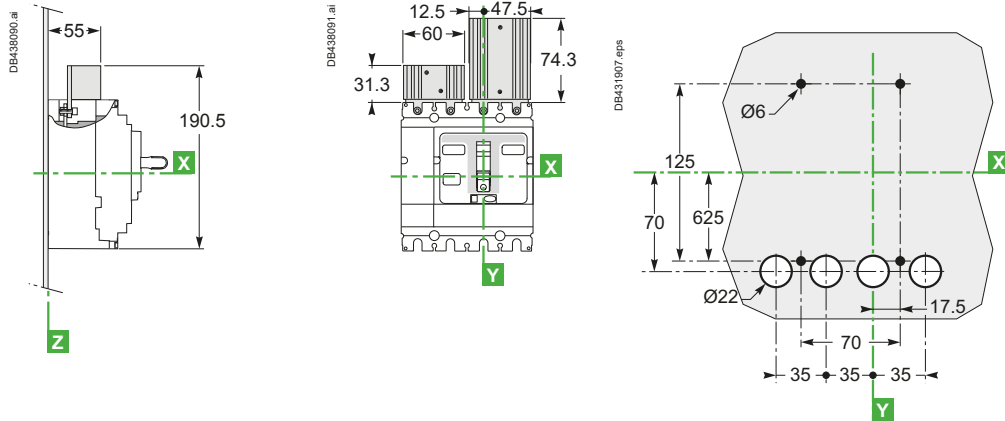
ComPacT (Fixed Version)

4P Connection of Poles, Dimensions and Mounting

ComPacT NSX100 to NSX630 DC PV - DC EP

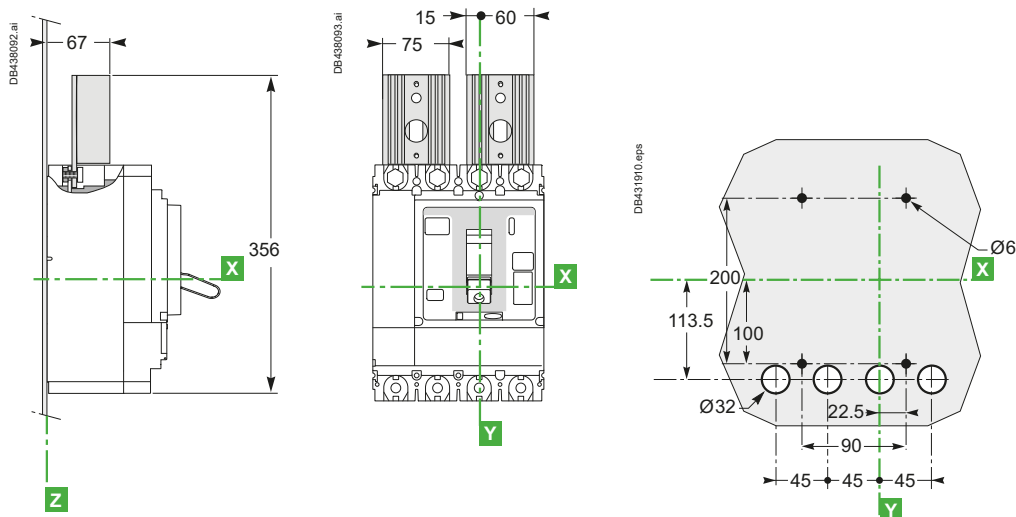
4P Fixed Version (ComPacT NSX100-200 DC PV)

With Series Connections

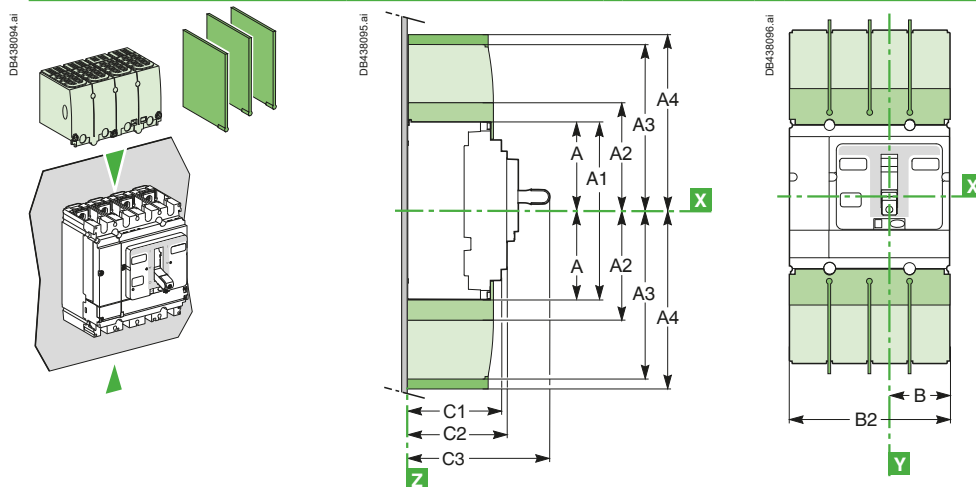


4P Fixed Version (ComPacT NSX250-630 DC PV)

With Series Connections



Dimensions



Interphase barriers
Long terminal shields

Long terminal shields (also available for NSX400/630 DC spreaders with 52.5 mm pitch: B2 = 210 mm)

Type	A	A1	A2	A3	A4	B	B2	C1	C2	C3
NSX100/160/200 DC PV	80.5	161	94	145	178.5	52.5	140	81	86	126
NSX250/630 DC PV	127.5	255	142.5	240	237	70	185	95.5	110	168

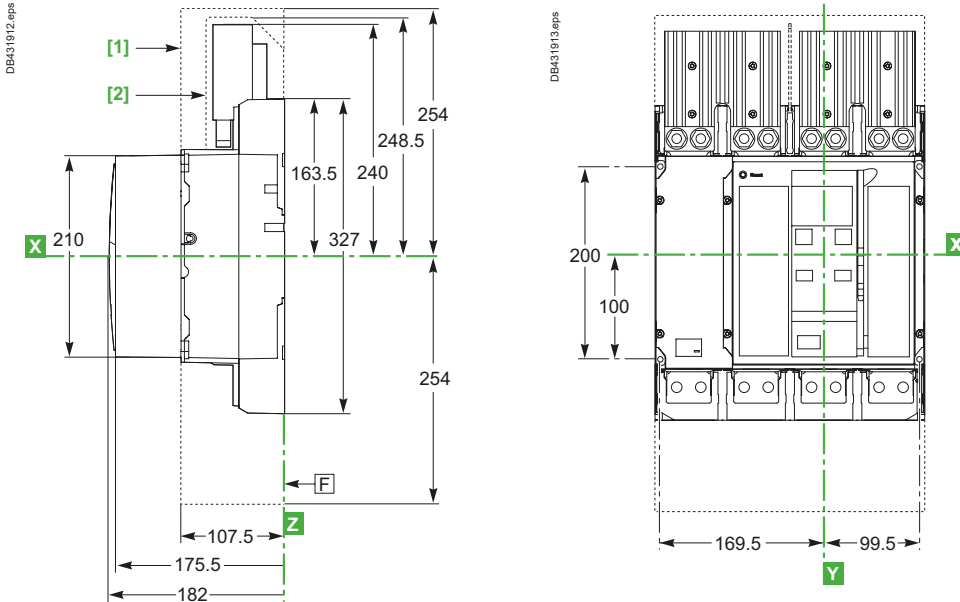
ComPacT (Fixed Version)

4P Connection of Poles, Dimensions

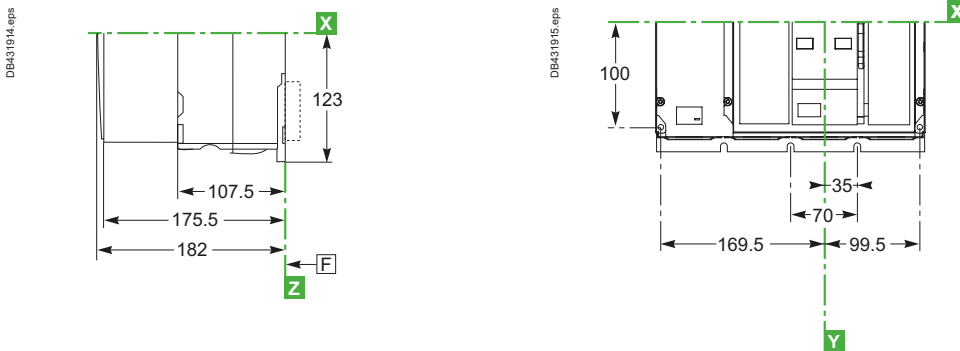
ComPacT NSX630b to 1600 DC PV

Electrical Control

Front Connection

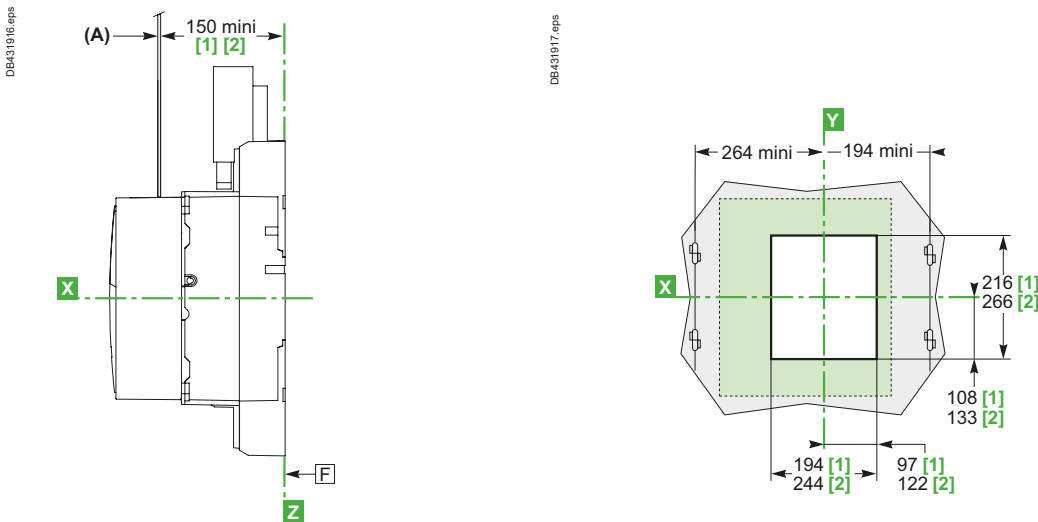


Rear Connection



Front-Panel Cutouts

Door cutout A



F: Datum

[1] Without escutcheon.

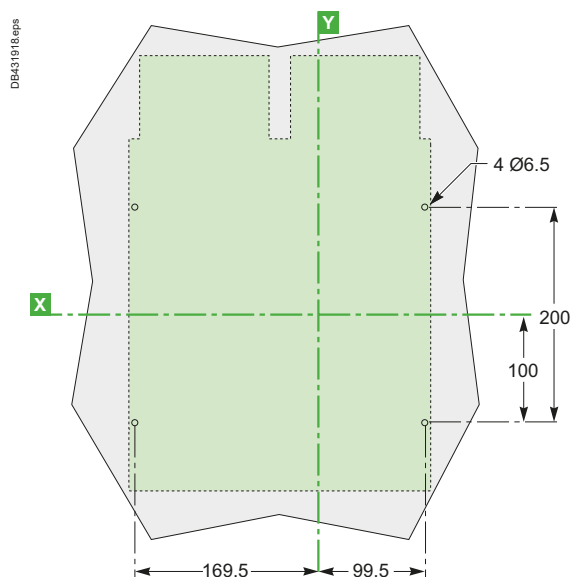
[2] With escutcheon.

ComPacT (Fixed Version)

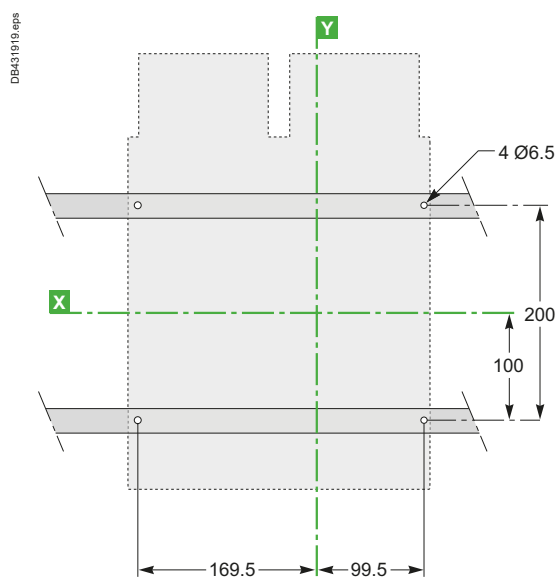
4P Front Connection of Poles, Mounting

ComPacT NSX630b to 1600 DC PV

On Backplate



On Rails



Note: Mounting parameters for electrically operated devices are identical to those for manually operated devices.

X and **Y** are the symmetry planes for a 4-pole device.

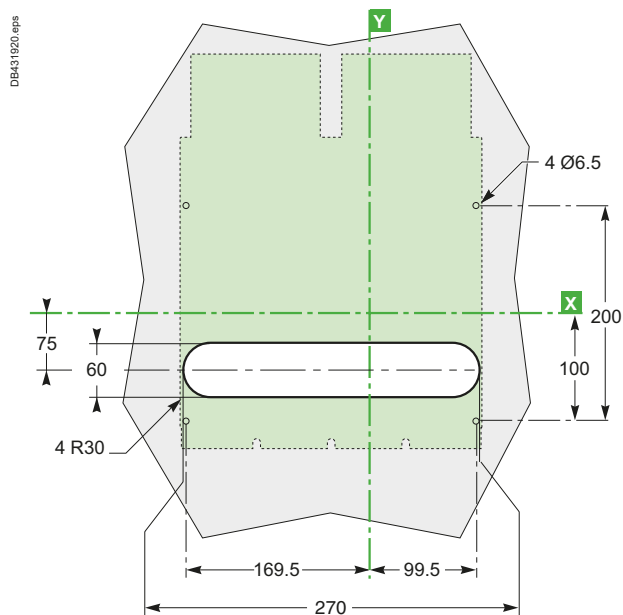
Z is the back plane of the device.

ComPacT (Fixed Version)

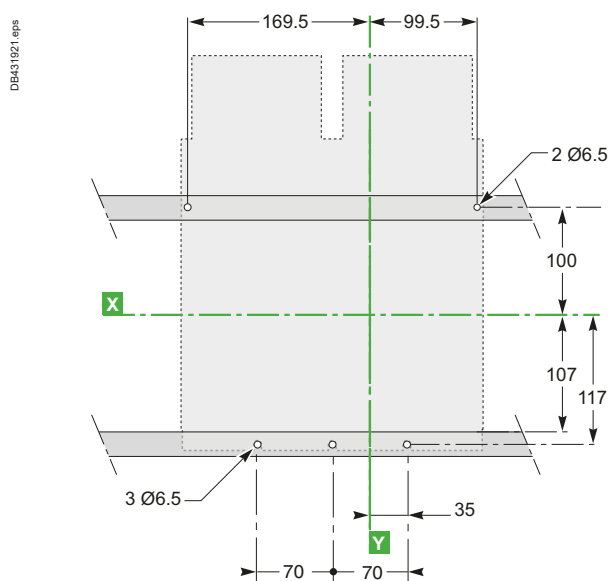
4P Rear Connection of Poles, Mounting

ComPacT NSX630b to 1600 DC PV

On Backplate



On Rails



Note: Mounting parameters for electrically operated devices are identical to those for manually operated devices.

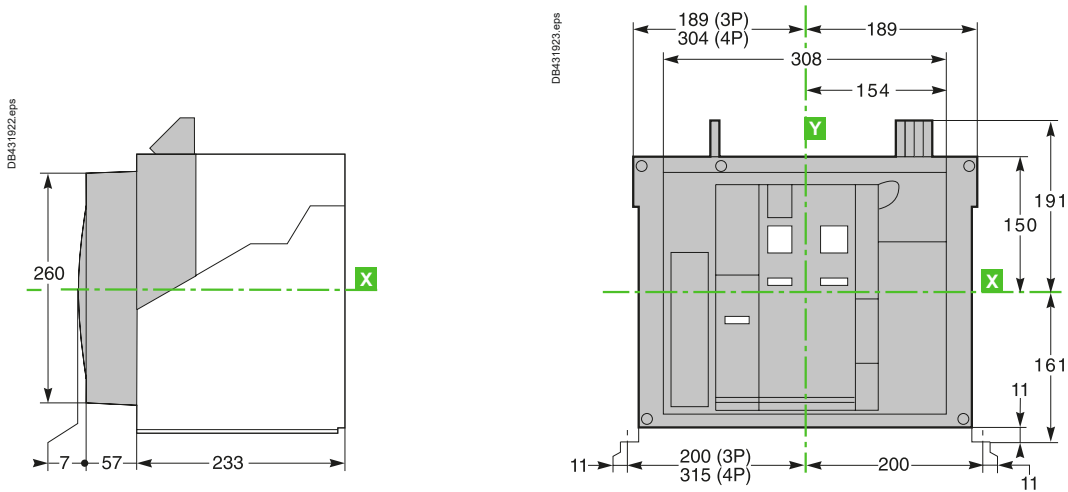
X and Y are the symmetry planes for a 4-pole device.

Z is the back plane of the device.

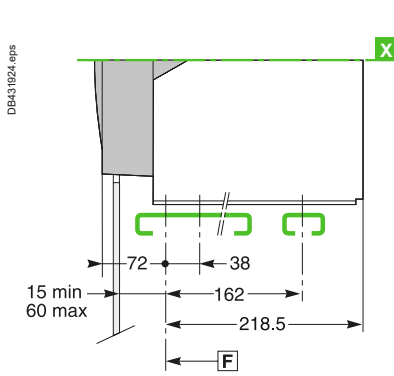
MasterPact (Fixed Device)

NW10 to 40 DC Version C/D (3P),
Version E (4P) NW10 to 40 EPDC, DC PV Version D (3P)

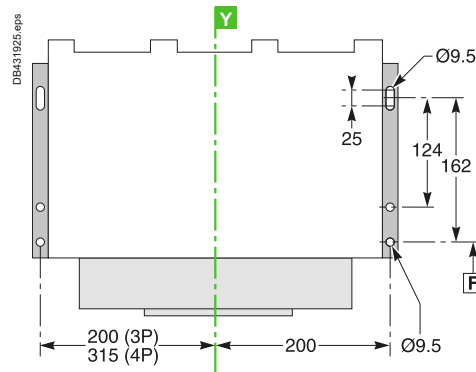
Device



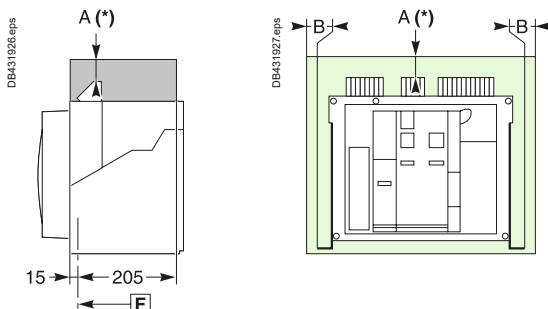
Mounting on Base Plate or Rails



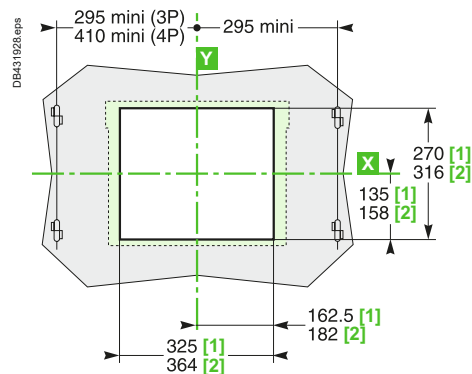
Mounting Detail



Safety Clearances



Door Cutout



	Insulated parts	Metal parts	Energized parts
A	0	0	100
B	0	0	60

Note:

[1] Without escutcheon.

[2] With escutcheon.

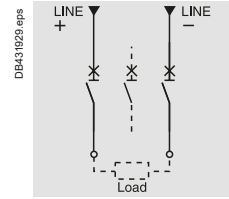
X and Y are the symmetry planes for a 3-pole device.

A[*] An overhead clearance of 110 mm is required to remove the arc chutes.

An overhead clearance of 20 mm is required to remove the terminal block.

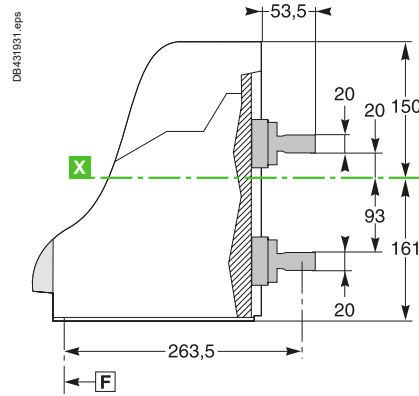
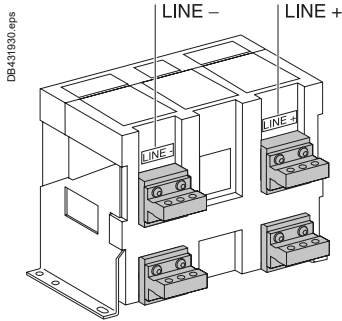
[F]: Datum

MasterPact (Fixed Device) NW10 to 40 DC–Version C

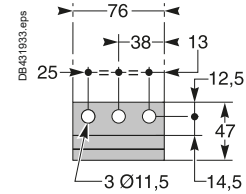
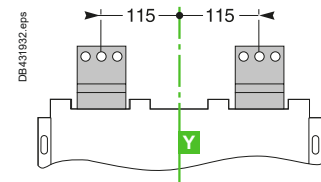


Connections

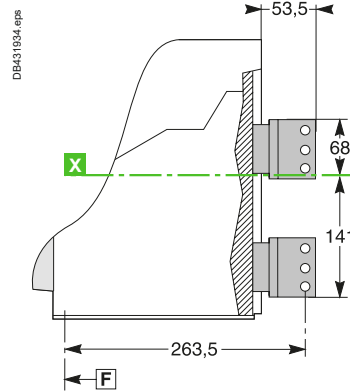
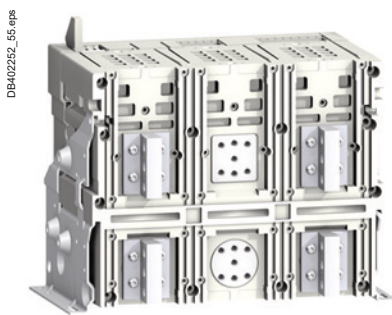
Horizontal Rear Connection (NW10–NW20 DC)



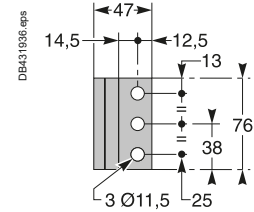
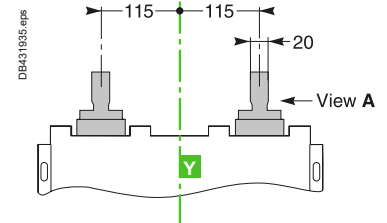
Detail



Vertical Rear Connection (NW10–NW20 DC)

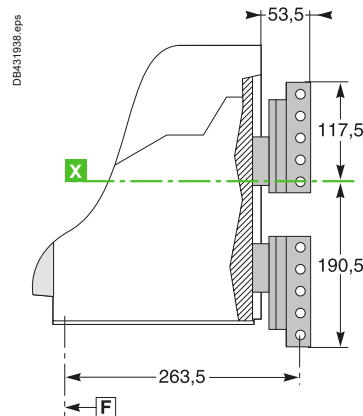
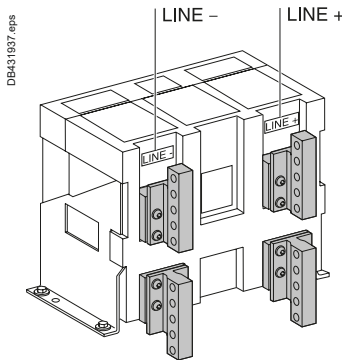


Detail

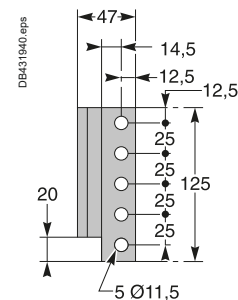
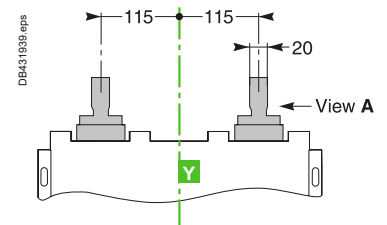


View A detail

Vertical Rear Connection (NW40 DC)



Detail

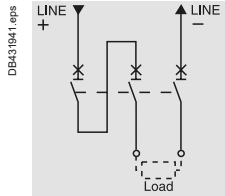


View A detail

Note: Recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.

MasterPact (Fixed Device)

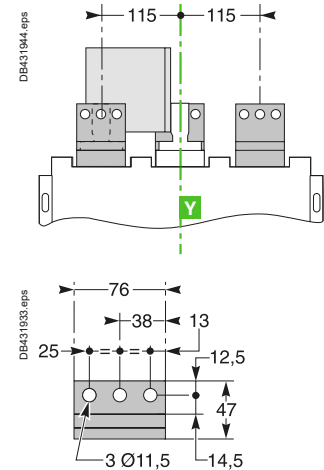
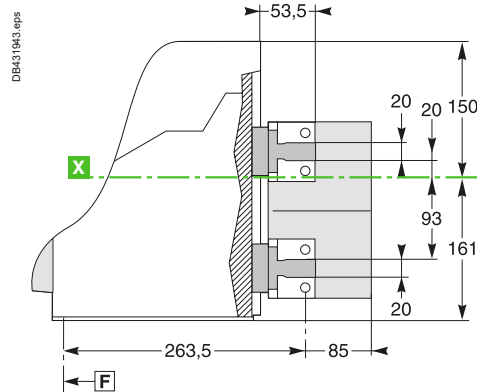
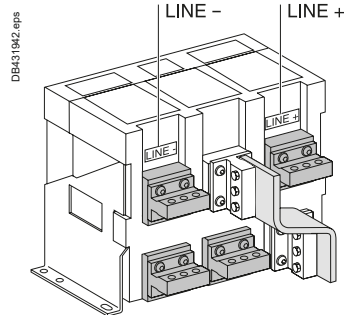
NW10 to 40 DC-DC PV-Version D



Connections

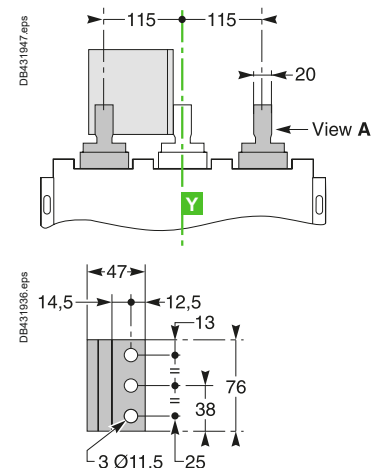
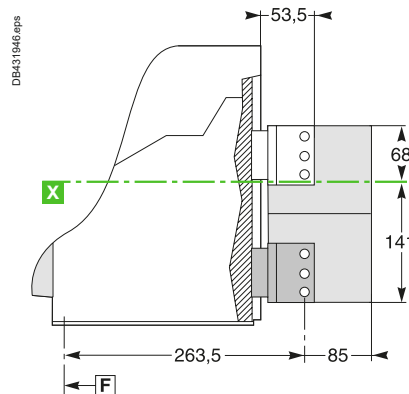
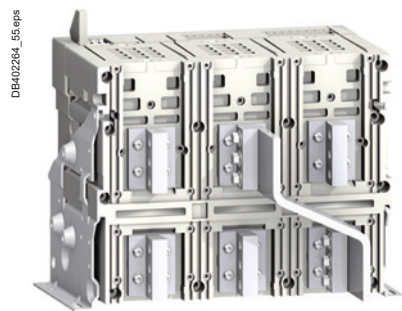
Horizontal Rear Connection (NW10–NW20 DC-DC PV)

Detail



Vertical Rear Connection (NW10–NW20 DC-DC PV)

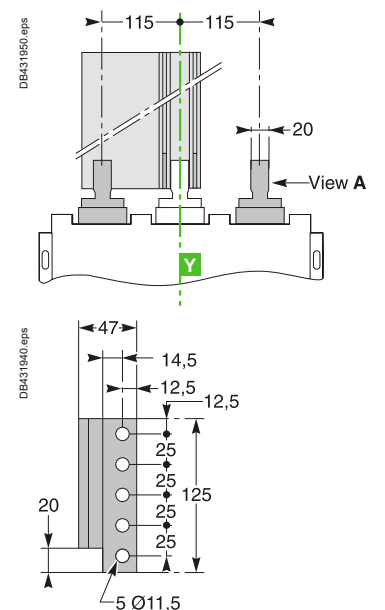
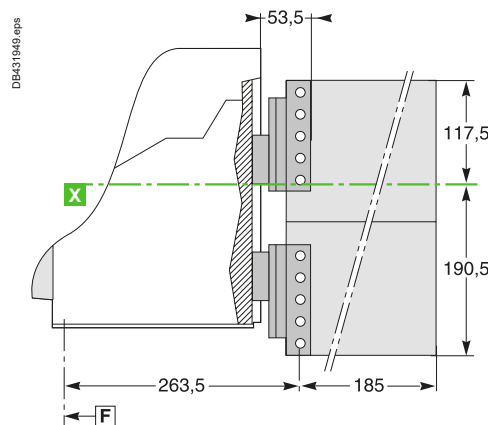
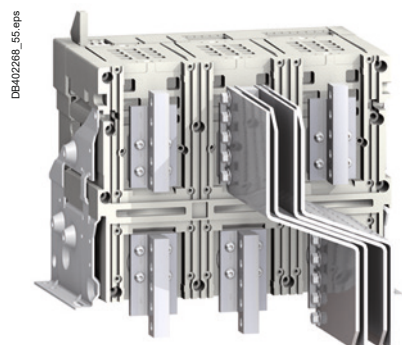
Detail



View A detail

Vertical Rear Connection (NW40 DC-DC PV)

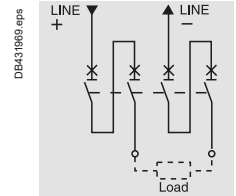
Detail



View A detail

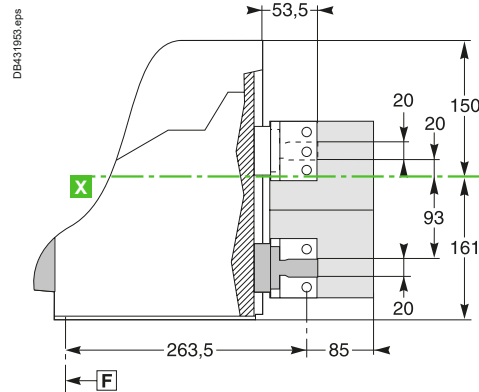
Note: Recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.

MasterPact (Fixed Device) NW10 to 40 DC-Version E

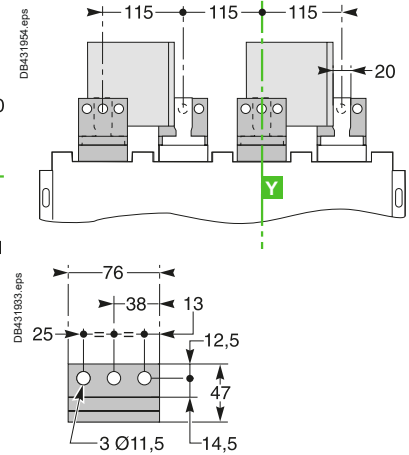


Connections

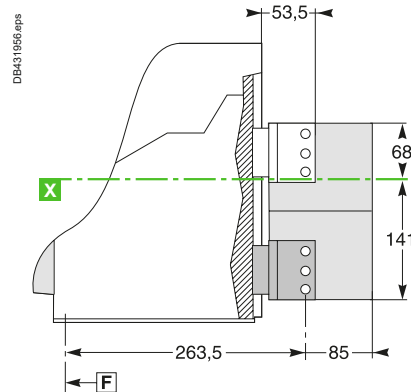
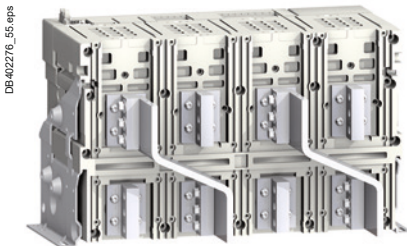
Horizontal Rear Connection (NW10–NW20 DC)



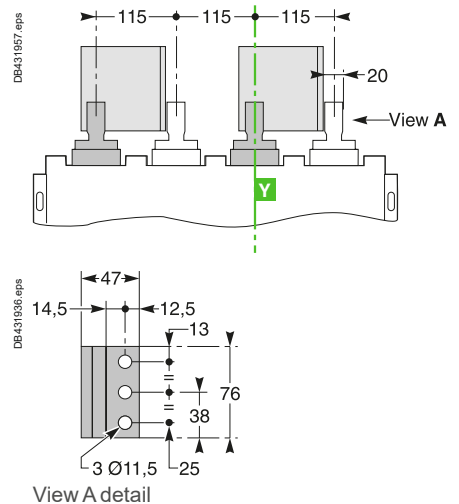
Detail



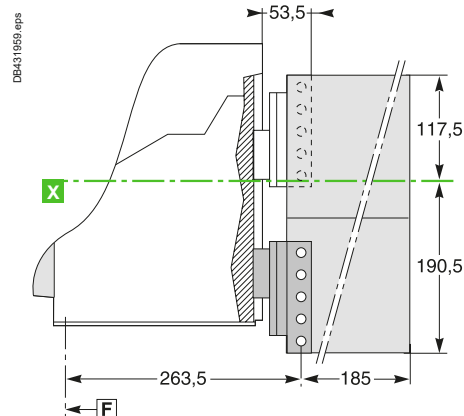
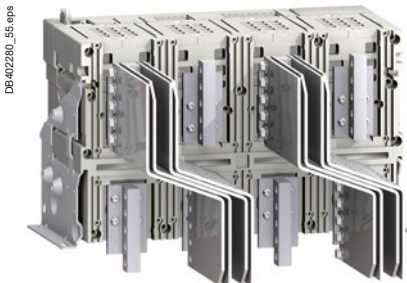
Vertical Rear Connection (NW10–NW20 DC)



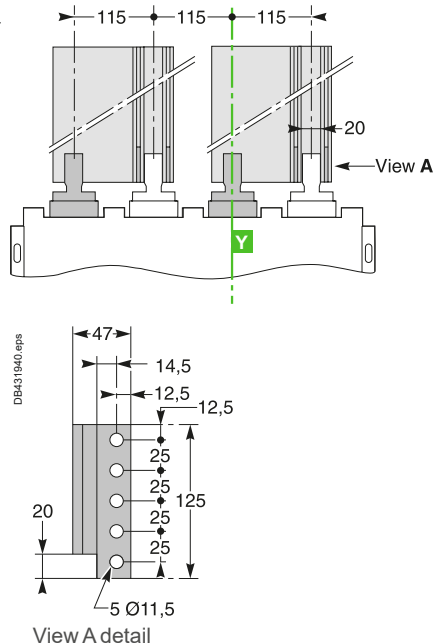
Detail



Vertical Rear Connection (NW40 DC)



Detail

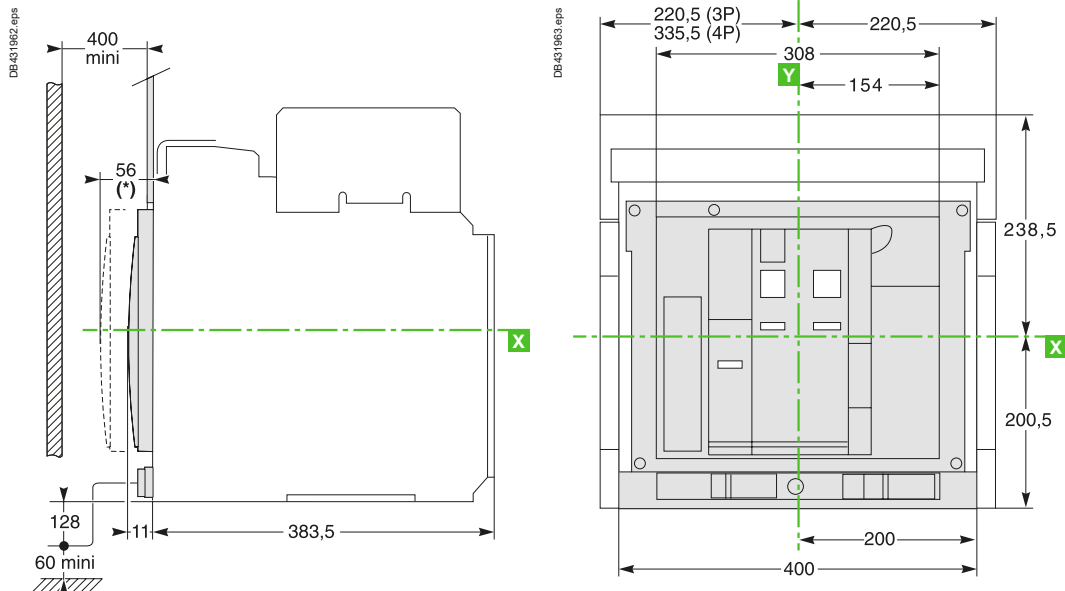


Note: Recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.

MasterPact (Drawout Device)

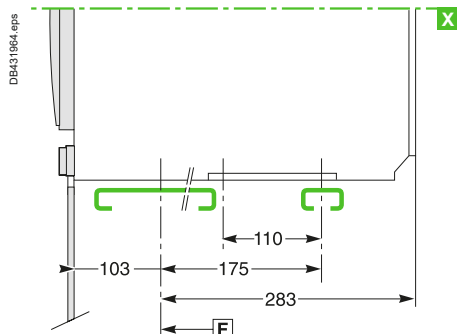
NW10 to 40 DC Version C/D (3P) Version E (4P)
NW10 to 40 DC PV Version D (3P)

Device

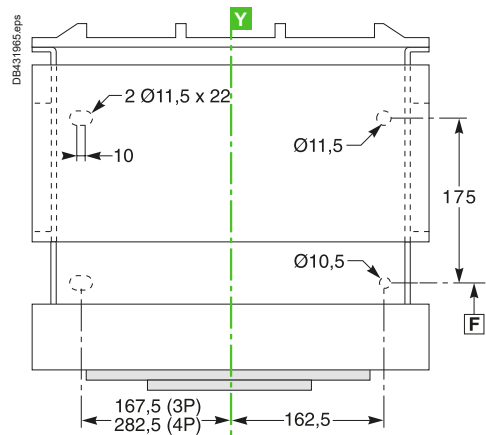


[*] Drawout position.

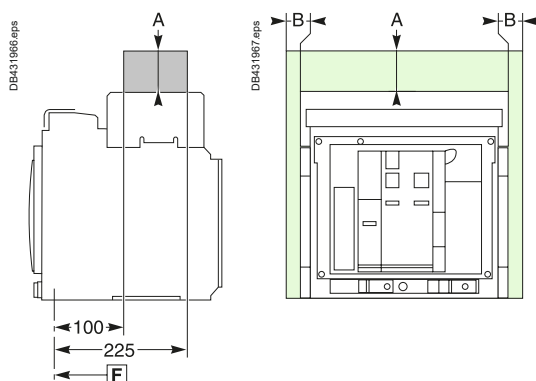
Mounting on Base Plate or Rails



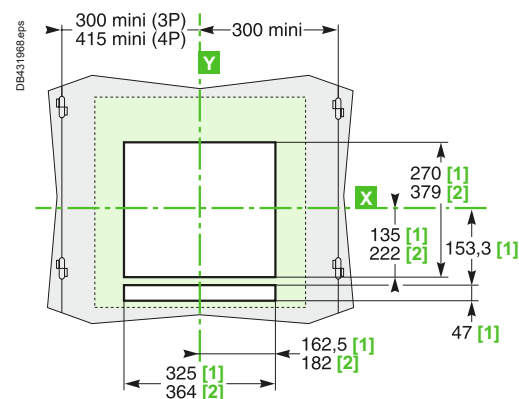
Mounting Detail



Safety Clearances



Door Cutout



	Insulated parts	Metal parts	Energized parts
A	0	0	0
B	0	0	60

[F]: Datum

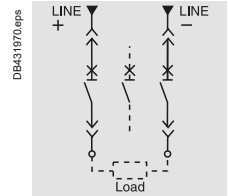
Note:

[1] Without escutcheon

[2] With escutcheon

X and Y are the symmetry planes for a 3-pole device.

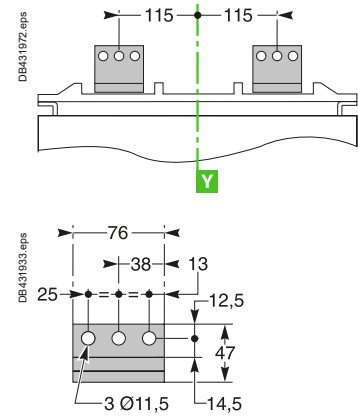
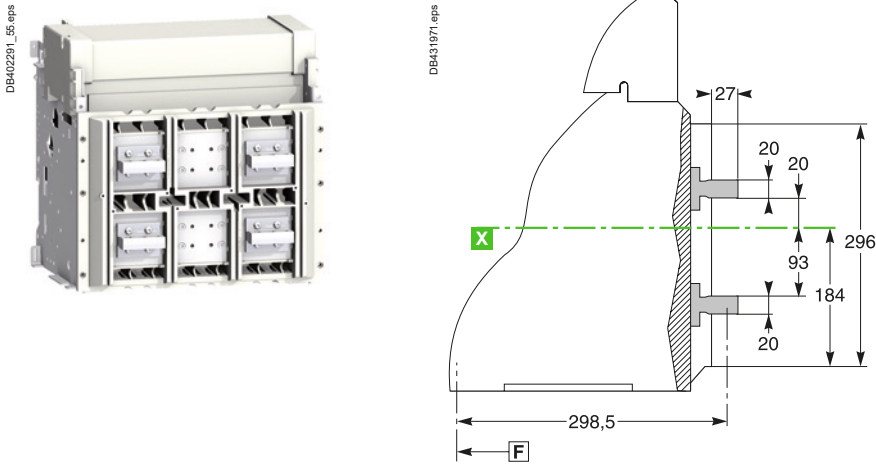
MasterPact (Drawout Device) NW10 to 40 DC-Version C



Connections

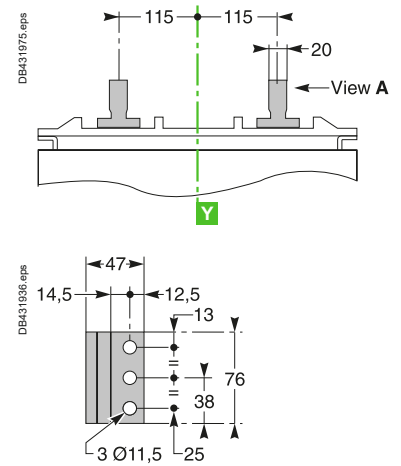
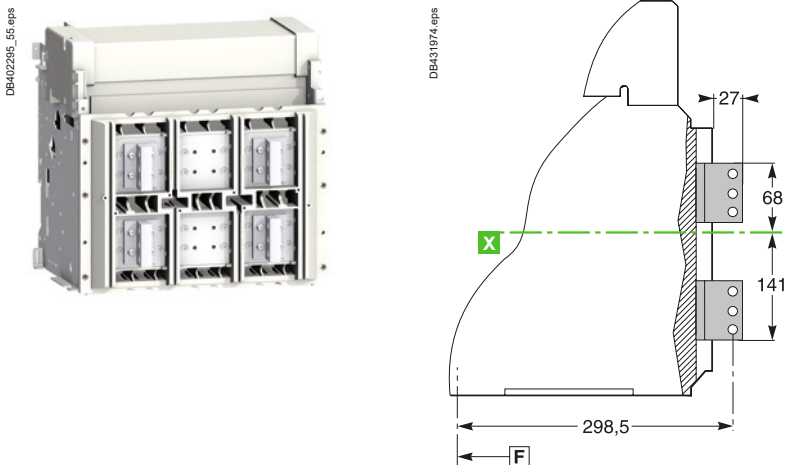
Horizontal Rear Connection (NW10–NW20 DC)

Detail



Vertical Rear Connection (NW10–NW20 DC)

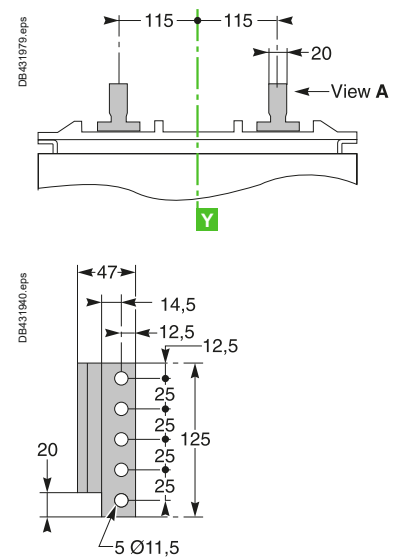
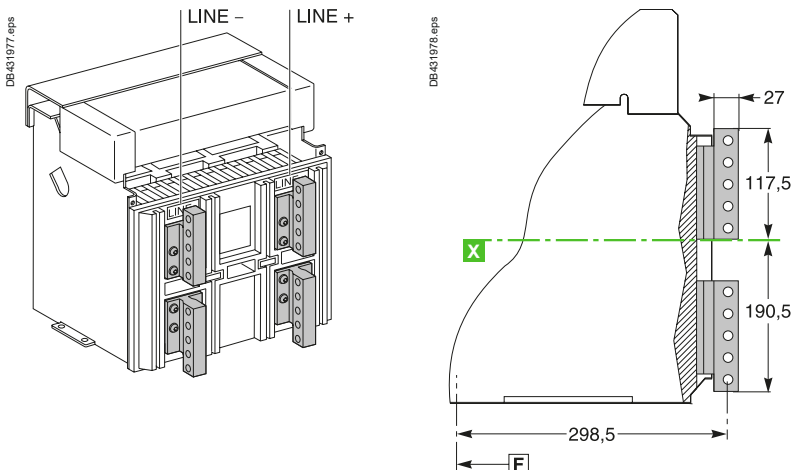
Detail



View A detail

Vertical Rear Connection (NW40 DC)

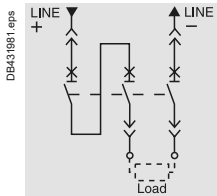
Detail



View A detail

Note: Recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.

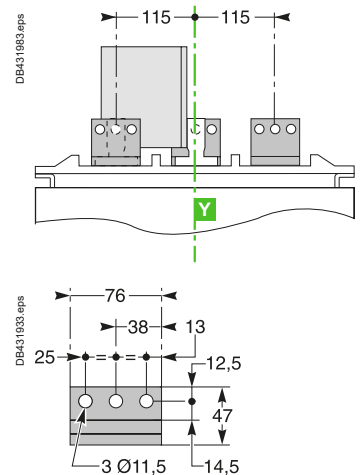
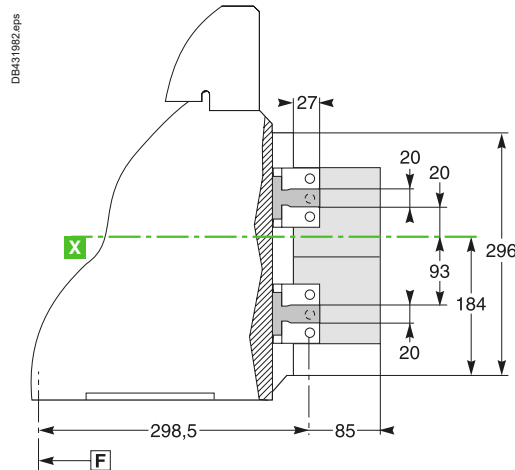
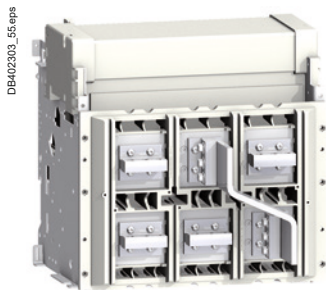
MasterPact (Drawout Device) NW10 to 40 DC, EPDC, DC PV–Version D



Connections

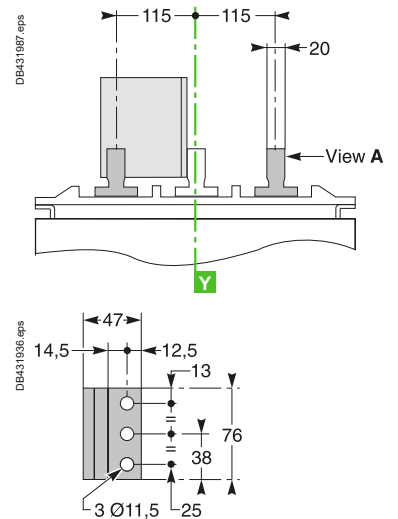
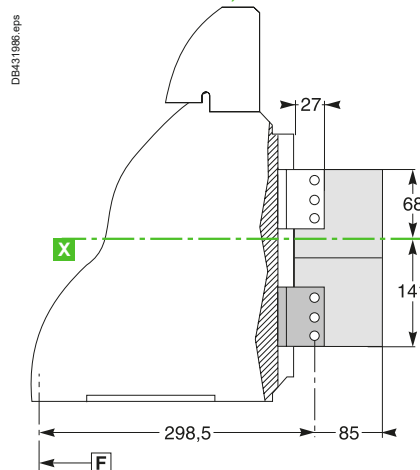
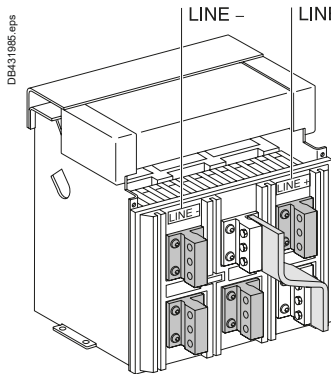
Horizontal Rear Connection (NW10–NW20 DC–DC PV)

Detail



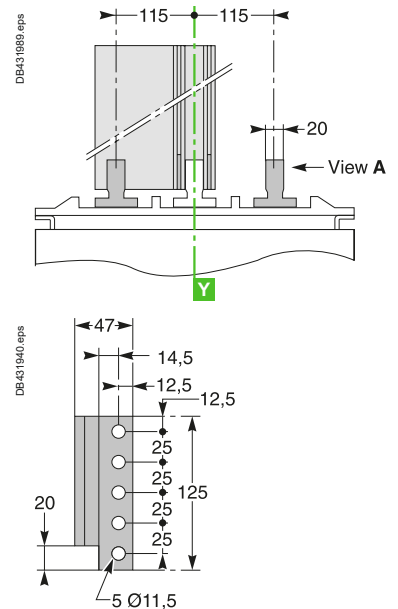
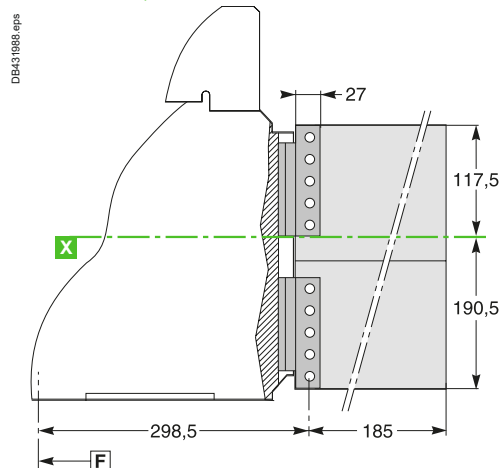
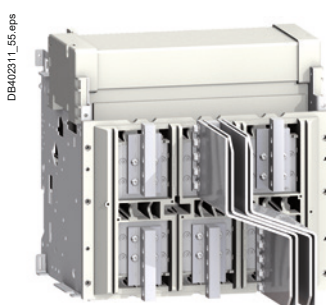
Vertical Rear Connection (NW10–NW20 DC–DC PV)

Detail



Vertical Rear Connection (NW40 DC–DC PV)

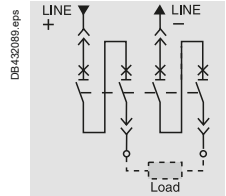
Detail



Note: Recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.

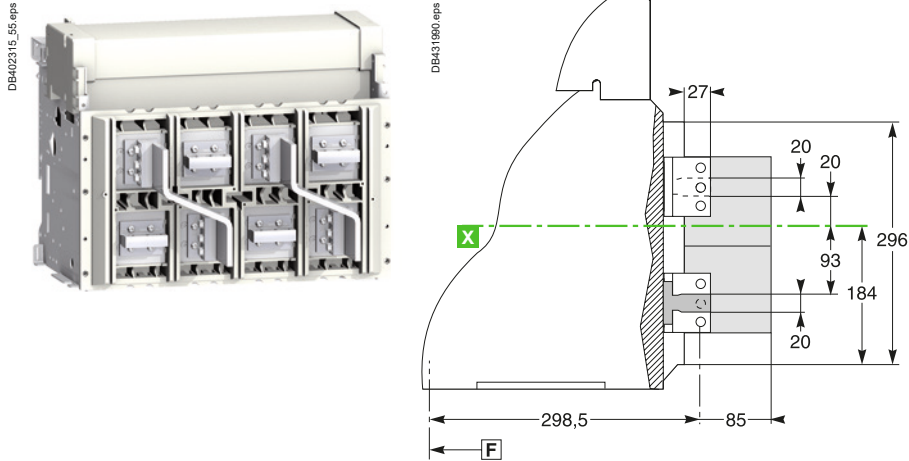
View A detail

MasterPact (Drawout Device) NW10 to 40 DC-Version E

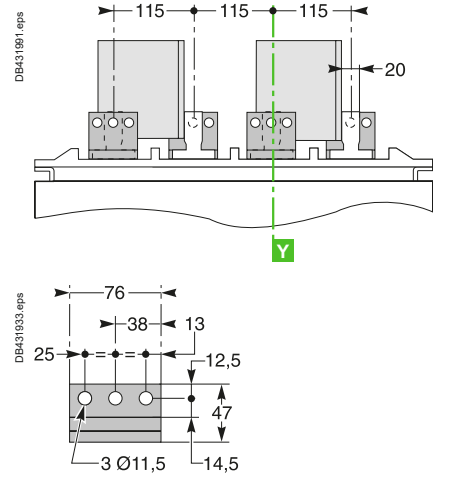


Connections

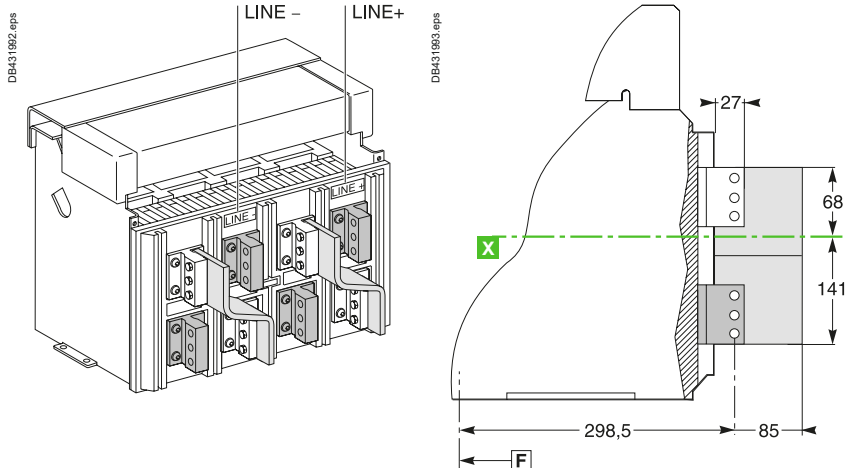
Horizontal Rear Connection (NW10–NW20 DC)



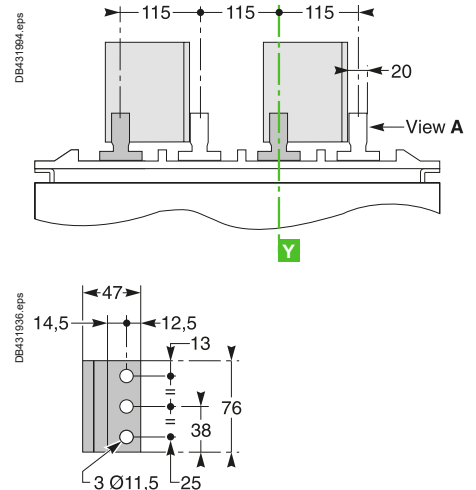
Detail



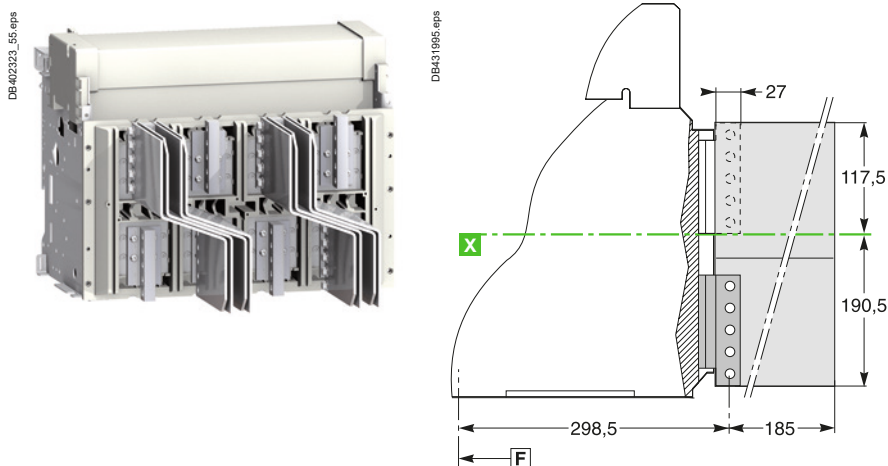
Vertical Rear Connection (NW10–NW20 DC)



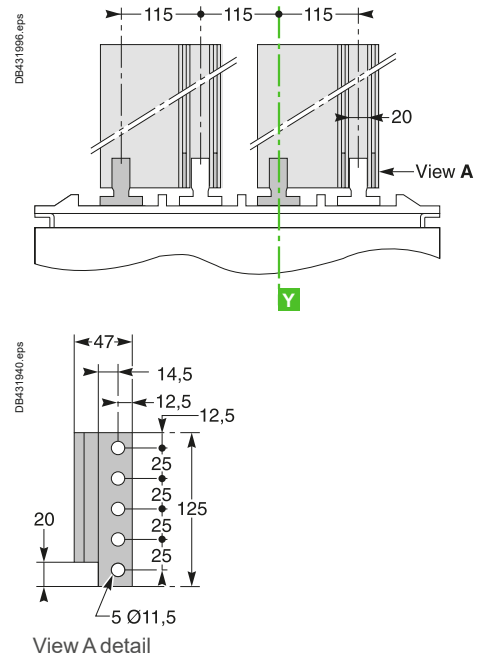
Detail



Vertical Rear Connection (NW40 DC)



Detail

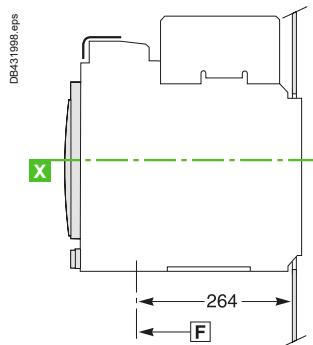
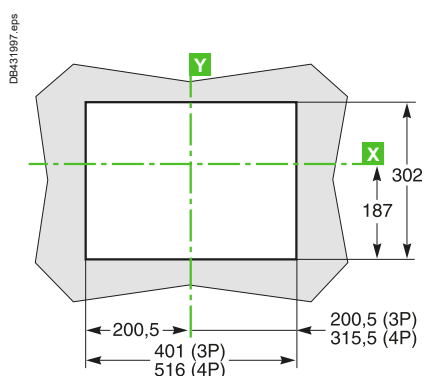


Note: Recommended connection screws: M10 class 8.8.
Tightening torque: 50 Nm with contact washer.

MasterPact NW10 to 40 DC, EPDC, DC PV Accessories

Rear Panel Cutout (Drawout Device)

NW10 to NW40 DC-DC PV

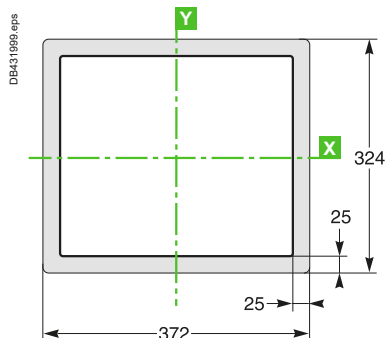


F: Datum

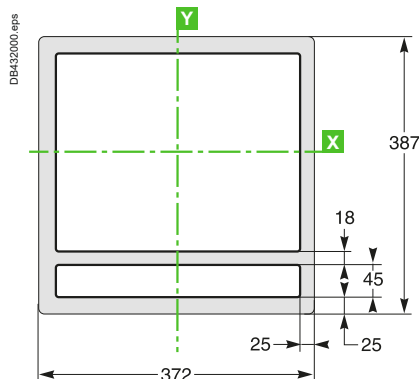
C

Escutcheon

Fixed Device

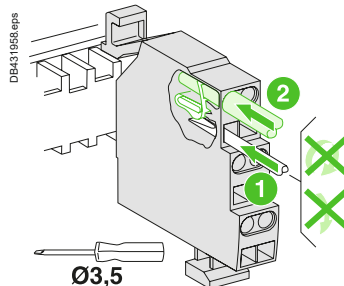
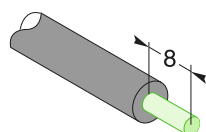
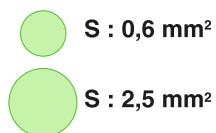


Drawout Device



Connection of Auxiliary Wiring to Terminal Block

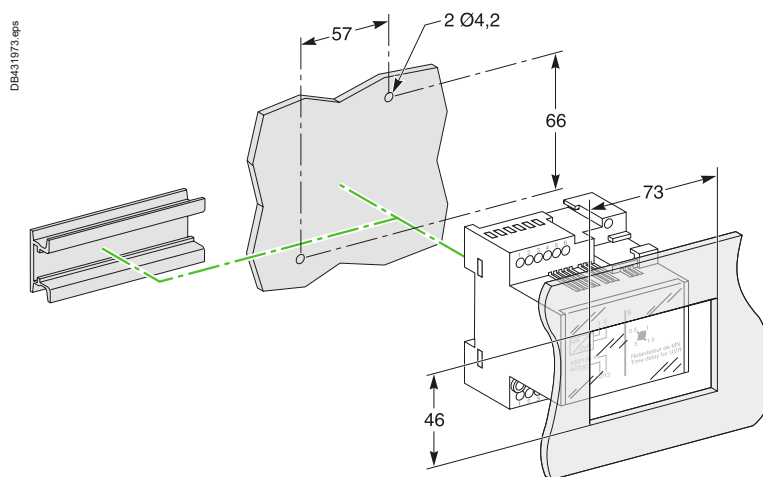
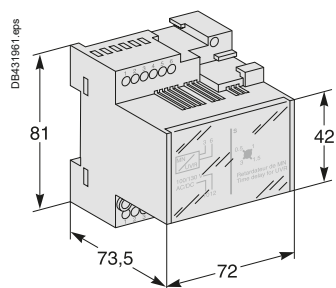
DB431955.eps



One conductor only per connection point

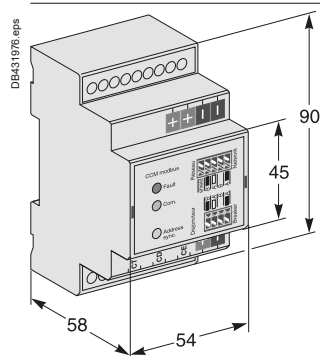
MasterPact NW10 to 40 DC, EPDC, DC PV Accessories

Delay Unit for MN Release



“Chassis” Communication Module

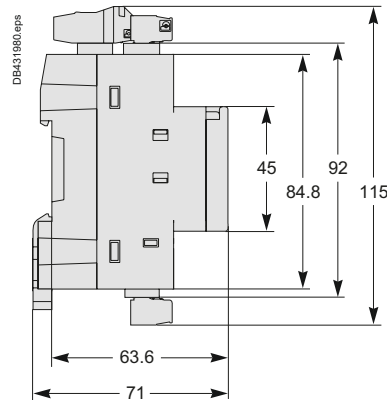
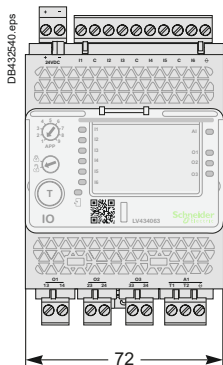
Modbus



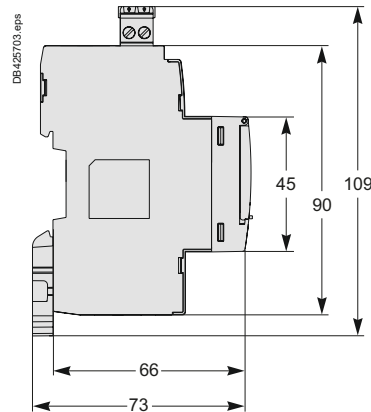
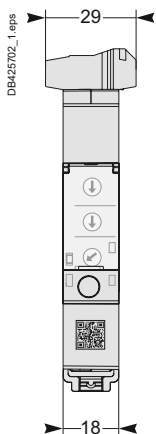
Dimensions and Mounting

External Modules for ComPacT and MasterPact

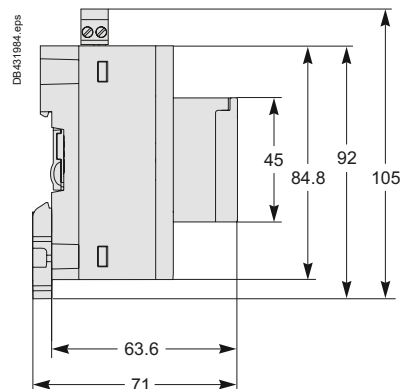
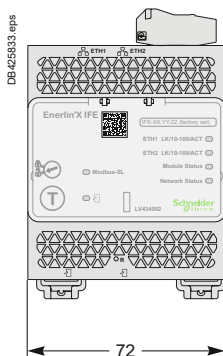
I/O (Input/Output) Application Module



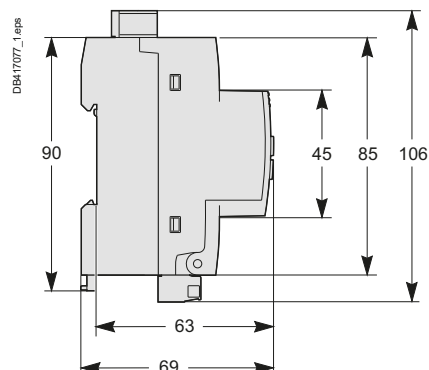
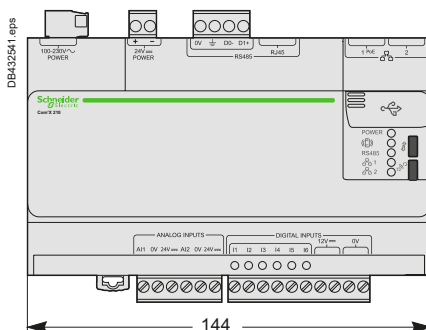
IFM-Modbus-SL Interface



IFE-Ethernet Interface



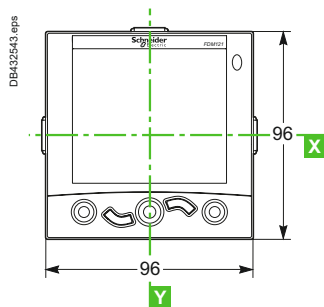
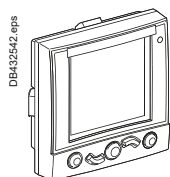
Com'X 210



Dimensions and Mounting

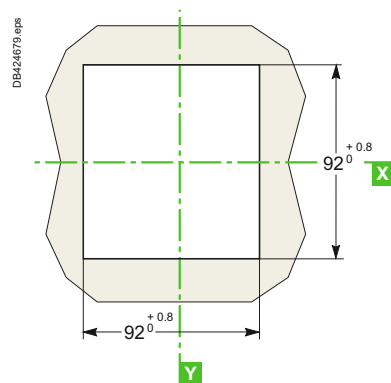
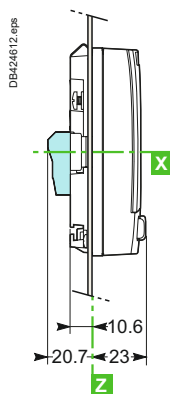
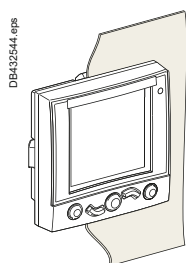
FDM121 Switchboard Display

Dimensions

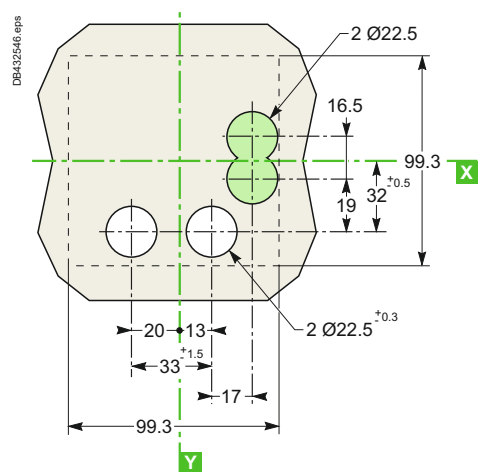
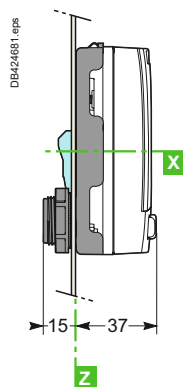
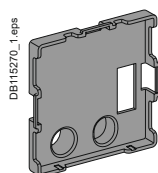
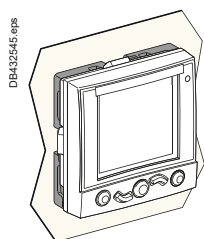


Mounting

Through Panel



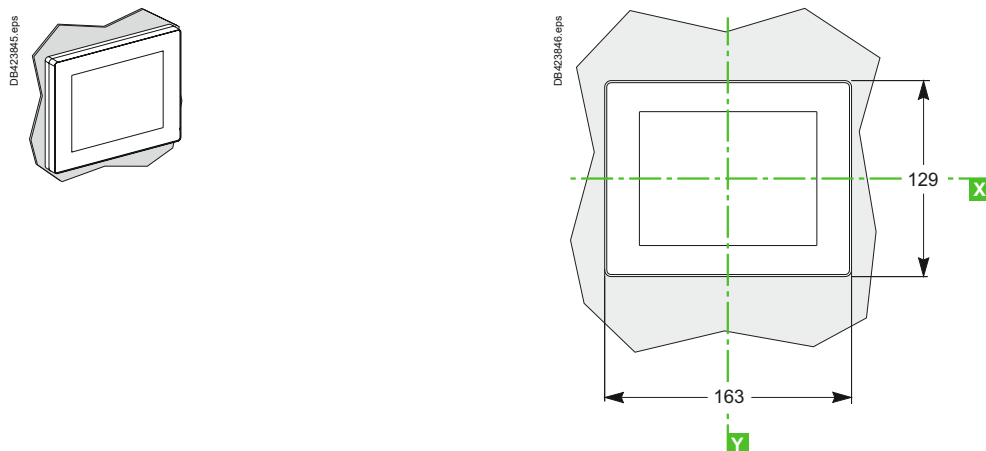
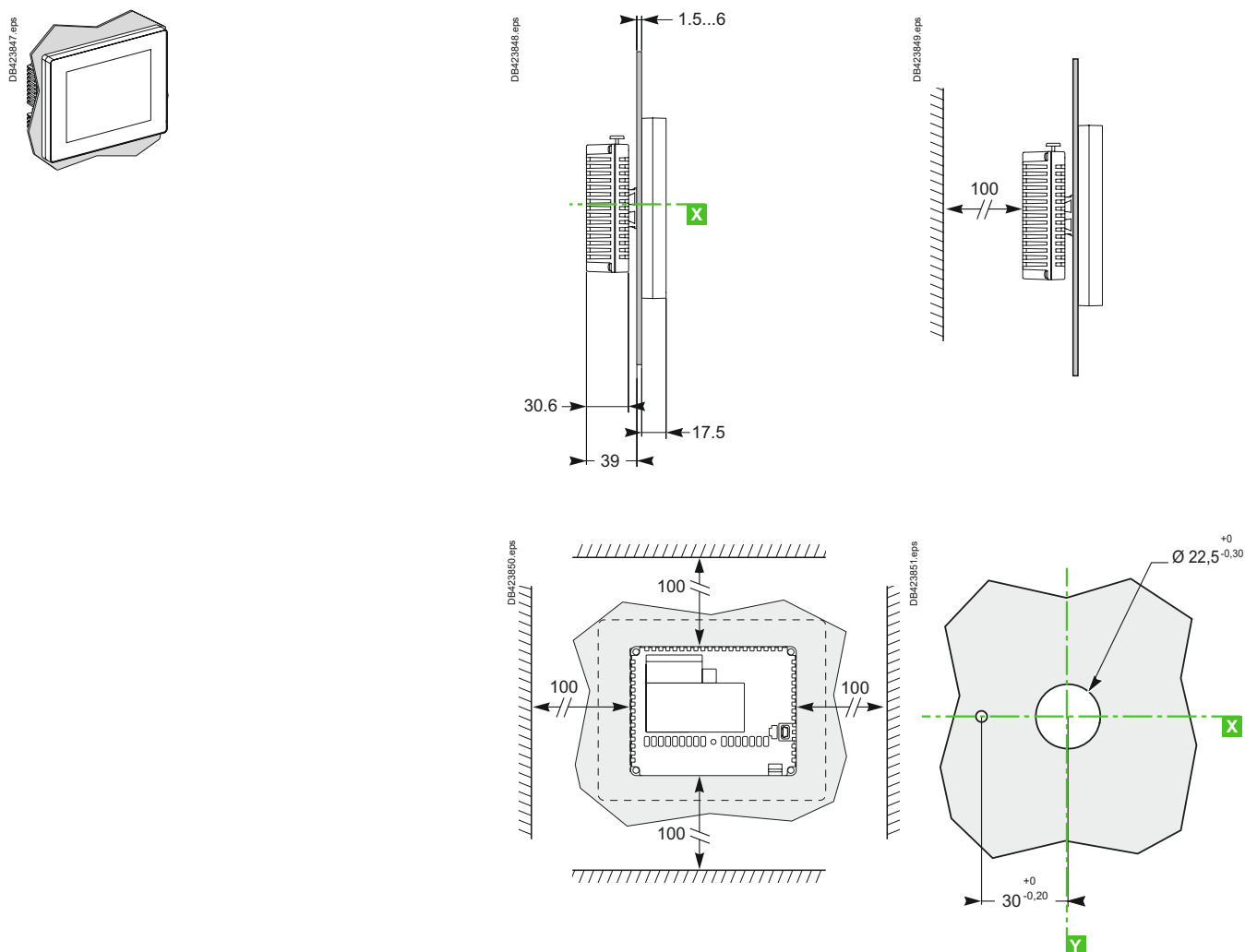
On Panel



Connector (optional)

FDM128 Switchboard Display

Dimensions

Mounting
On Panel



Electrical Diagrams

ComPacT NSX100 to 1200 DC
Fixed Circuit Breakers..... D-2

ComPacT NSX100 to 630 DC
Plug-in/Withdrawable Circuit Breakers..... D-4

ComPacT NSX100 to 630 DC - DC PV
Motor Mechanism D-6
Communication..... D-8

ComPacT NSX630b to NSX1600 DC PV
Fixed Switch-Disconnectors D-10

MasterPact NW10 to NW40 DC - DC PV
Fixed and Drawout Devices..... D-12

MasterPact NW DC - DC PV
Communication..... D-14

Fixed, Electrically Operated MasterPact NW DC - DC PV
Connection to the Communication Interface Module..... D-15

Withdrawable MasterPact NW DC - DC PV
Connection to the I/O and Communication Interface Module D-16

Other Chapters

Presentation2

Functions and Characteristics.....A-1

Installation Recommendations.....B-1

Dimensions and ConnectionC-1

Additional Characteristics.....E-1

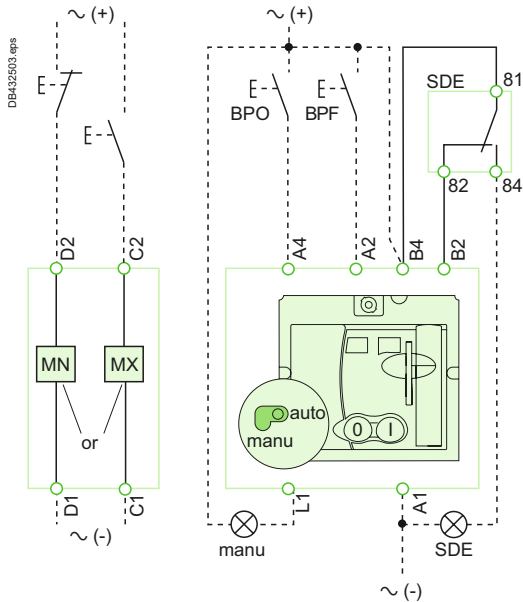
Catalog Numbers and Order FormF-1



ComPacT NSX100 to 1200 DC

Fixed Circuit Breakers

Remote Operation



Motor mechanism (MT)

Remote Operation

MN: undervoltage release

or

MX: shunt release

Motor mechanism (MT)

A4: opening order

A2: closing order

B4, A1: power supply to motor mechanism

L1: manual position (manu)

B2: SDE interlocking (mandatory for correct operation)

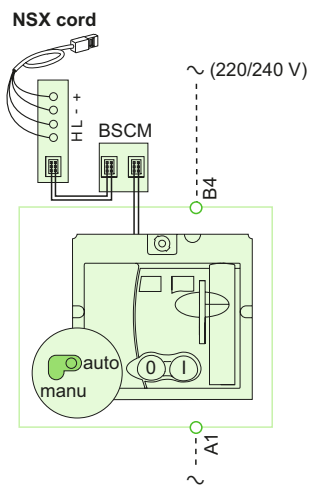
BPO: opening pushbutton

BPF: closing pushbutton

Communicating motor mechanism (MTc) ^[1]

B4, A1: motor mechanism power supply

BSCM: breaker status and control module

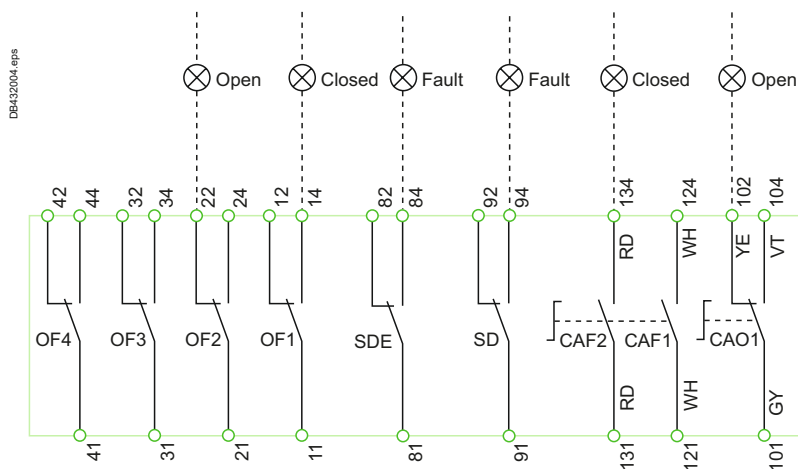


Communicating motor mechanism (MTc)

ComPacT NSX100 to 1200 DC

Fixed Circuit Breakers

Indication Contacts



The diagram is shown with circuits de-energized, all devices open, connected and charged and relays in normal position.

Terminals shown in ● must be connected by the customer.

OF2/OF1:	device ON/OFF indication contacts
OF4/OF3:	device ON/OFF indication contacts (NSX400/630)
SDE:	fault-trip indication contact (short-circuit, overload, ground fault, earth leakage)
SD:	trip-indication contact
CAF2/CAF1:	early-make contact (rotary handle only)
CAO1:	early-break contact (rotary handle only)

Color Code for Auxiliary Wiring

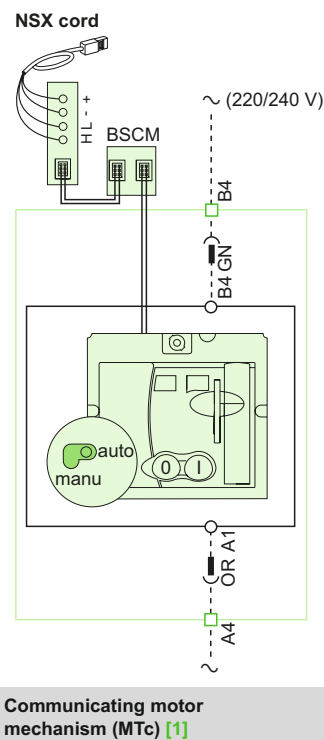
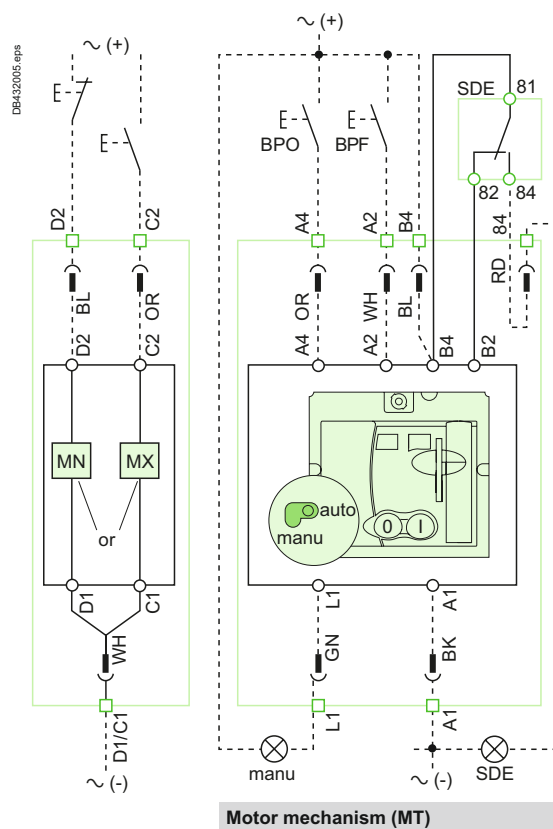
RD: red	VT: violet
WH: white	GY: grey
YE: yellow	OR: orange
BK: black	BL: blue
GN: green	

D

ComPacT NSX100 to 630 DC

Plug-in/Withdrawable Circuit Breakers

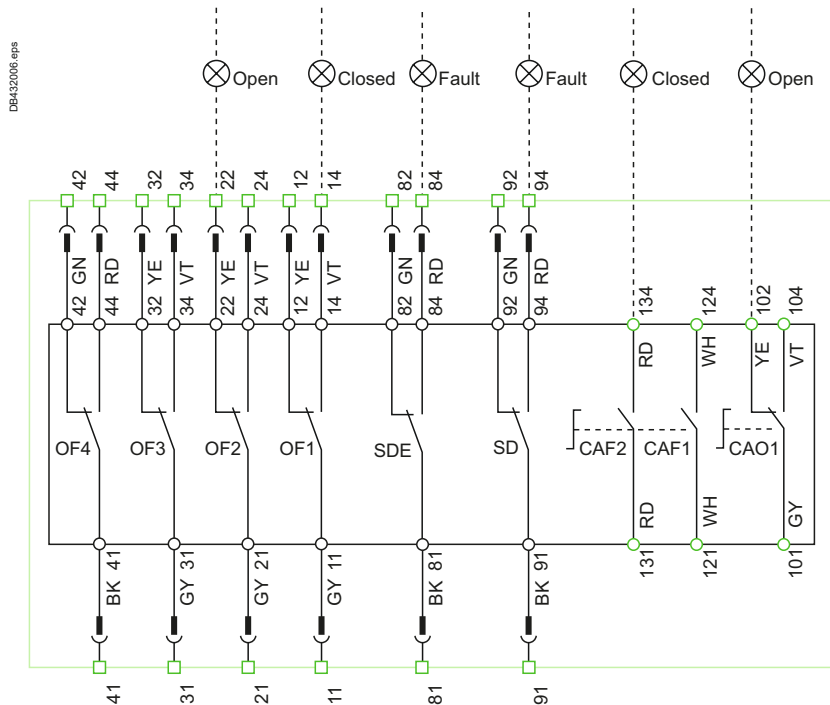
Remote Operation



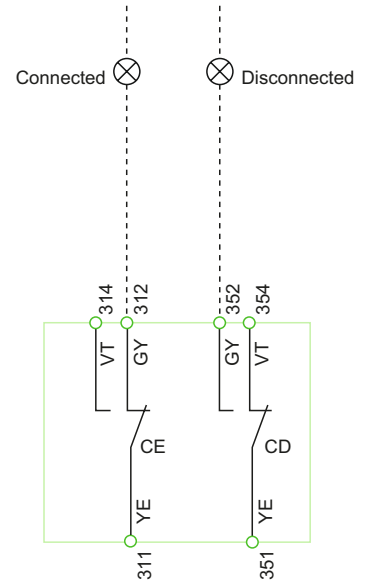
[1] NSX100-250 DC only.

ComPacT NSX100 to 630 DC Plug-in/Withdrawable Circuit Breakers

Indication Contacts



Carriage Switches



D

Remote Operation

MN: undervoltage release

or

MX: shunt release

Motor mechanism (MT)

A4: opening order

A2: closing order

B4, A1: motor mechanism power supply

L1: manual position (manu)

B2: SDE interlocking (mandatory for automatic or remote recharging)

BPO: opening pushbutton

BPF: closing pushbutton

Communicating motor mechanism (MTc)

B4, A1: motor mechanism power supply

BSCM: breaker status and control module

Indication Contacts

OF2/OF1: device ON/OFF indication contacts

OF4/OF3: device ON/OFF indication contacts (NSX400/630)

SDE: fault-trip indication contact

(short-circuit, overload, ground fault, earth leakage)

SD: trip-indication contact

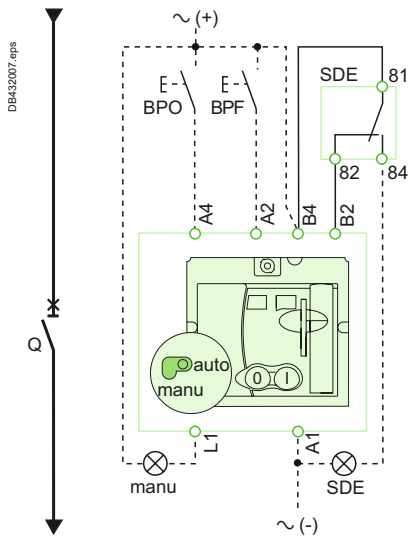
CAF2/CAF1: early-make contact
(rotary handle only)

CAO1: early-break contact
(rotary handle only)

ComPacT NSX100 to 630 DC - DC PV

Motor Mechanism

Motor Mechanism (MT) with Automatic Reset

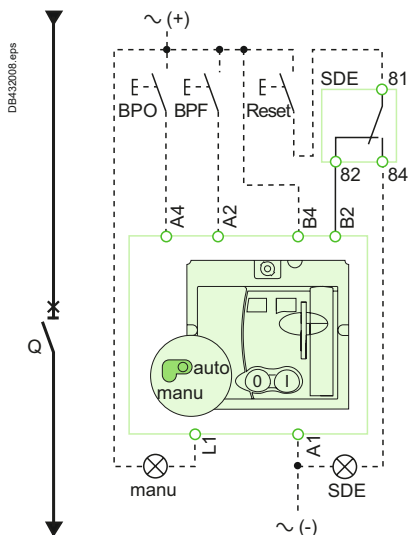


The diagram is shown with circuits de-energized, all devices open, connected and charged and relays in normal position.

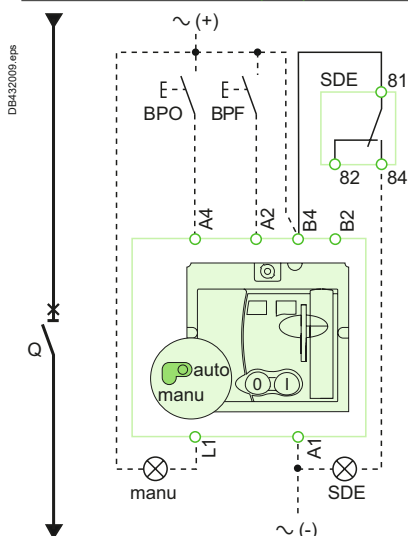
After tripping initiated by the "Push to trip" button or by the undervoltage (MN) release or the shunt (MX) release, device reset can be automatic, remote or manual.

Following tripping due to an electrical fault (with an SDE contact), reset must be carried out manually.

Motor Mechanism (MT) with Remote Reset



Motor Mechanism (MT) with Manual Reset



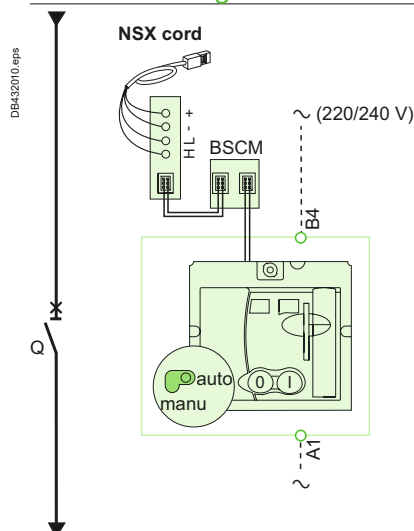
Symbols

- Q:** circuit breaker
- A4:** opening order
- A2:** closing order
- B4, A1:** motor mechanism power supply
- L1:** manual position (manu)
- B2:** SDE interlocking (mandatory for correct operation)
- BPO:** opening pushbutton
- BPF:** closing pushbutton
- SDE:** fault-trip indication contact (short-circuit, overload, ground fault, earth leakage)

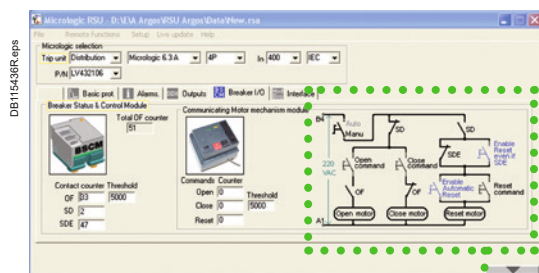
ComPacT NSX100 to 630 DC - DC PV

Motor Mechanism

Communicating Motor Mechanism (MTc) ^[1]

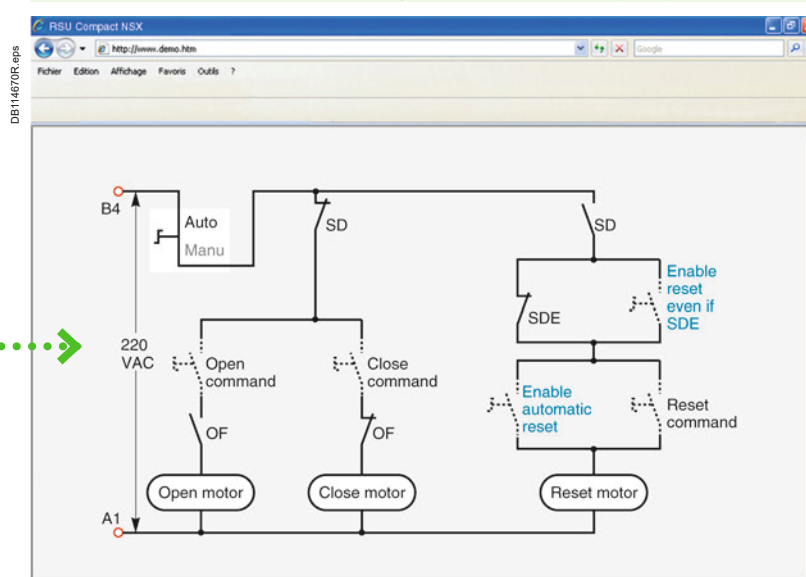


Schematic representation of the communicating motor mechanism (MT).



RSU utility setup screen for the communicating motor mechanism

RSU screen for the communicating motor mechanism (MTc)



Single-line diagram of communicating motor mechanism

Opening, closing and reset orders are transmitted via the communication network. The "Enable automatic reset" and "Enable reset even if SDE" parameters must be set using the RSU software via the screen by clicking the blue text.

"Auto/manu" is a switch on the front of the motor mechanism.

Symbols

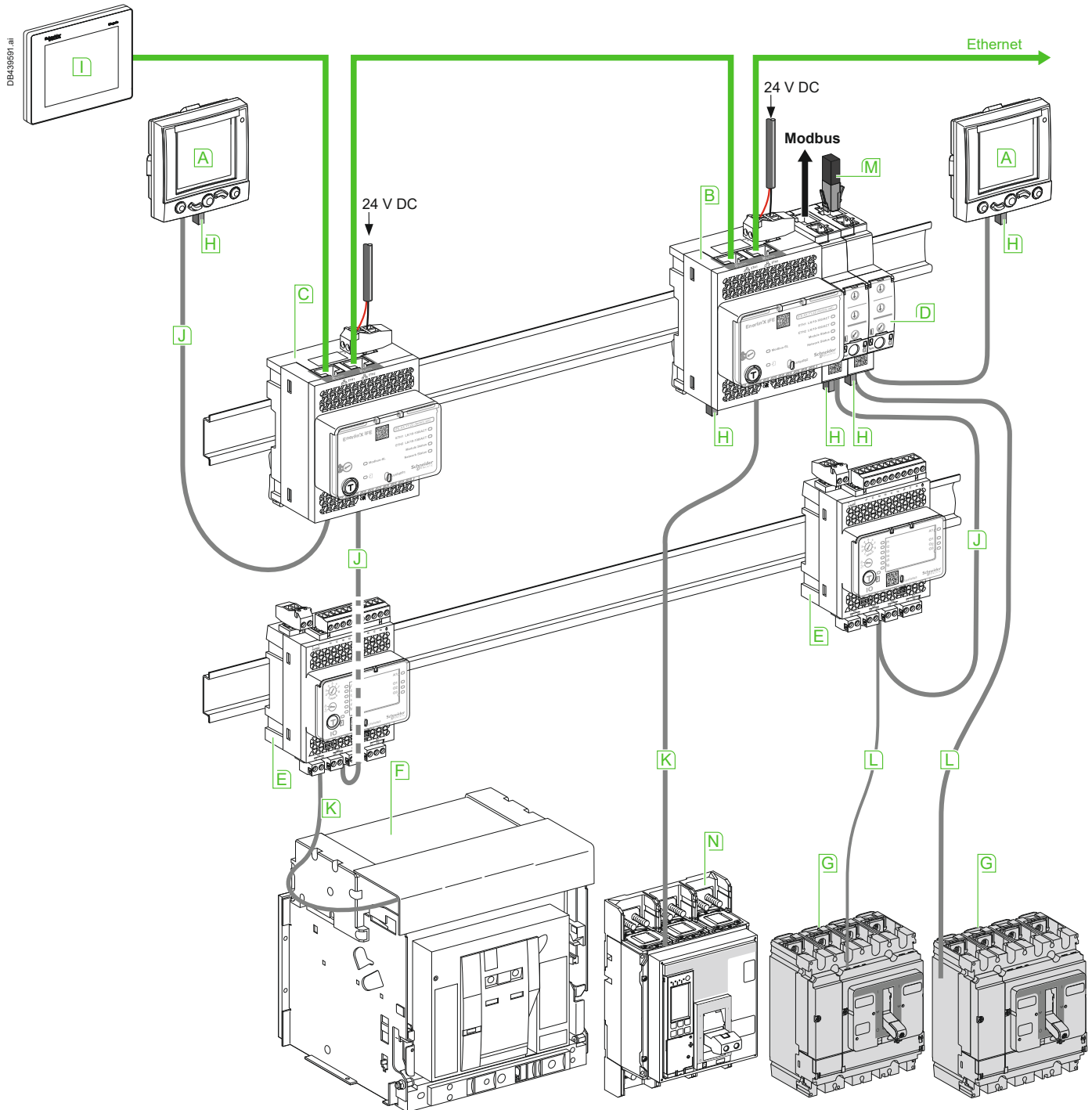
- Q:** circuit breaker
- B4, A1:** motor mechanism power supply
- BSCM:** breaker status and control module

Terminals shown in **O** must be connected by the customer.

^[1] NSX100-250 only.

ComPacT NSX100 to 630 DC - DC PV - DC EP Communication

Connection of Circuit Breakers to the Modbus Communication Network



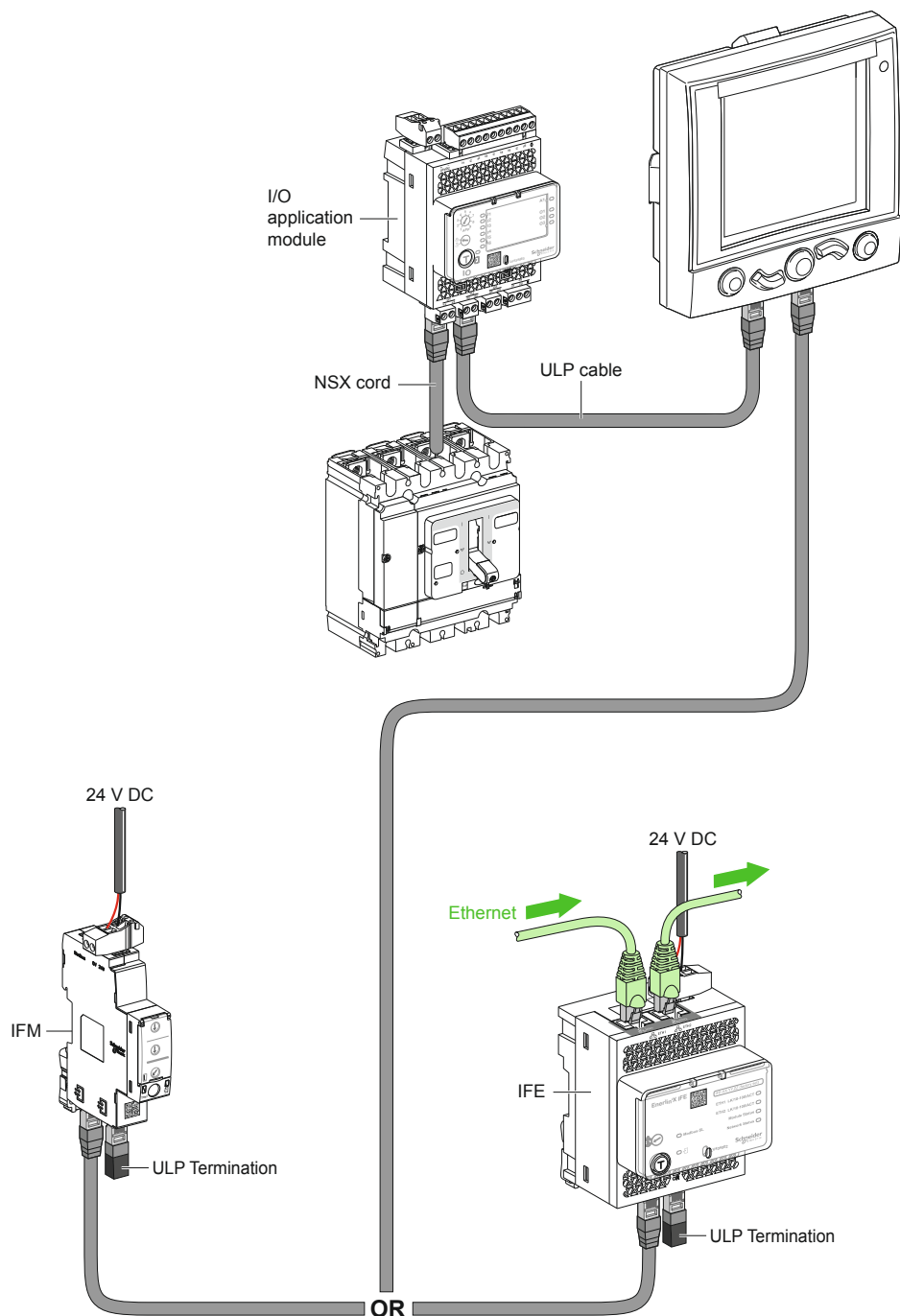
- | | | |
|--------------------------------|--|---|
| A FDM121 (TRV00121) | E I/O application module (LV434063) | I FDM128 (LV434128) |
| B IFE master (LV434002) | F MasterPact NW | M Modbus Termination ^[1] (VW3A8306RC) |
| C IFE (LV434001) | G ComPacT NSX | N ComPacT NS630b-3200 |
| D IFM (LV434000) | H ULP termination (TRV00880) | |

- | |
|---------------------------|
| J ULP cable |
| K Breaker ULP cord |
| L NSX cord |
| Ethernet |
| Modbus |

^[1] Modbus termination is mandatory, see ULP system user guide TRV99101.

ComPacT NSX100 to 630 DC - DC PV - DC EP Communication

DE439133.ai

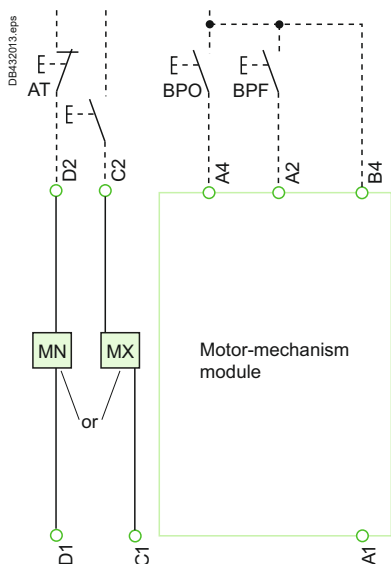


D

ComPacT NSX630b to NSX1600 DC PV Fixed Switch-Disconnectors

The diagram is shown with circuits de-energized, all devices open, connected and charged and relays in the normal position.

Remote Operation



MN : undervoltage release

or

MX : shunt release

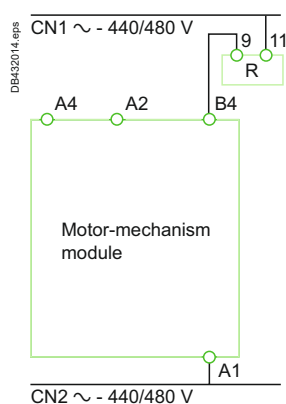
Motor-mechanism module ^[1]

A4 : electrical opening order

A2 : electrical closing order

B4, A1 : power supply for control devices and gear motor

^[1] Spring-charging motor 440/480 V AC (380 V motor + additional resistor).



ComPacT NSX630b to NSX1600 DC PV

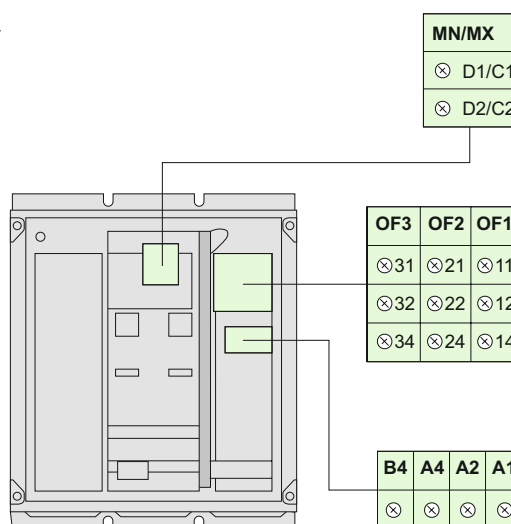
Fixed Switch-Disconnectors

Indication Contacts

OF3/OF2/OF1 : indication contacts

Terminal-Block Marking (Electrical Operation)

DB432015.eps



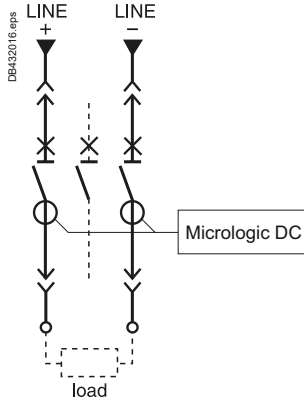
D

MasterPact NW10 to NW40 DC - DC PV

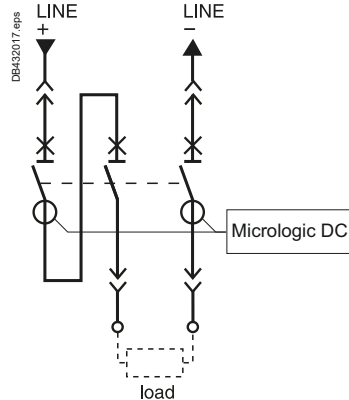
Fixed and Drawout Devices

Diagrams are shown with circuits de-energized,
all devices open, connected and charged and relays in the normal position.

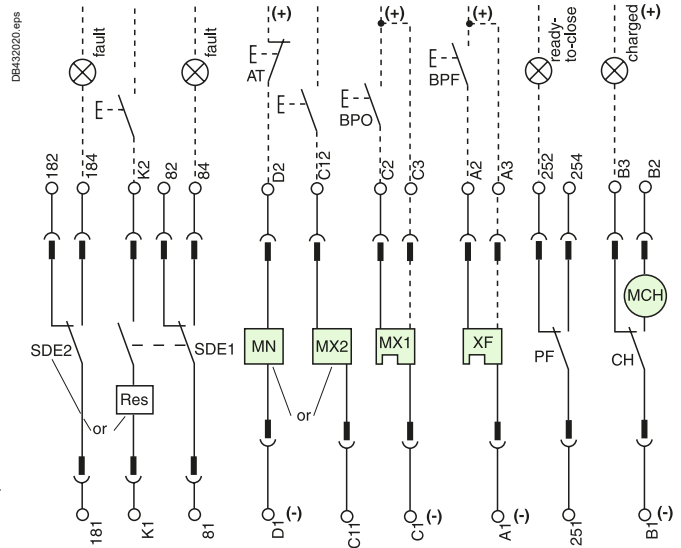
Version C - DC



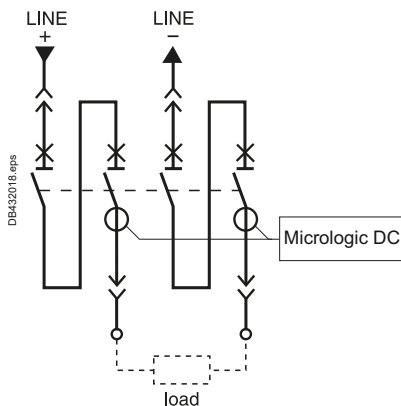
Version D - DC



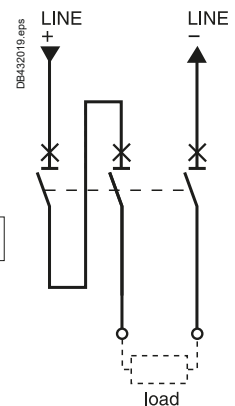
Remote Operation



Version E - DC



Version D - DC PV



Control Unit

Terminal block marking

Com: E1-E6 communication

○ ○
E5 E6
○ ○
E3 E4
○ ○
E1 E2

Remote Operation

SDE2 / Res	SDE1	MN / MX2	MX1	XF	PF	MCH
○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○
184 / K2	84	D2 / C12	C2	A2	254	B2
○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○
182	82	○ ○	C3	A3	252	B3
○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○
181 / K1	81	D1 / C11	C1	A1	251	B1

SDE2: fault-trip indication contact

or

Res: remote reset

SDE1: fault-trip indication contact (supplied as standard)

MN: undervoltage release

or

MX2: shunt release

MX1: shunt release (standard or communicating)

XF: closing release (standard or communicating)

PF: ready-to-close contact

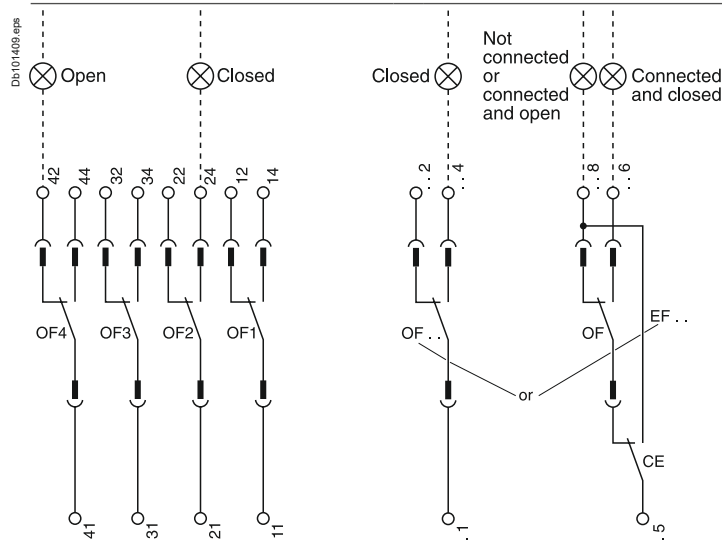
MCH: electric motor

Note: When communicating MX or XF releases are used, the third wire (C3,A3) must be connected even if the communication module is not installed.

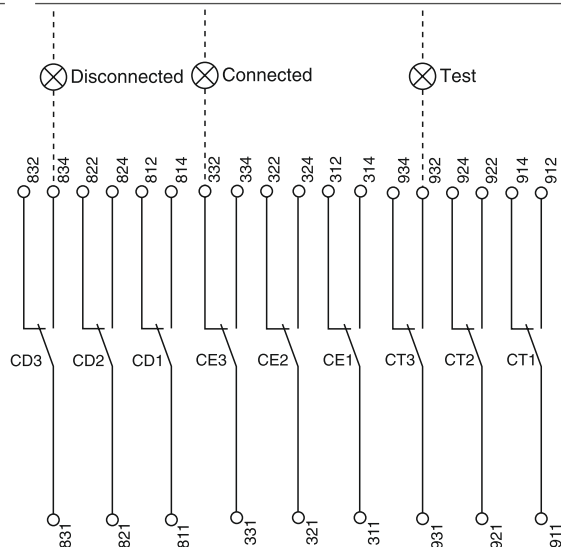
MasterPact NW10 to NW40 DC - DC PV

Fixed and Drawout Devices

Indication Contacts



Chassis Contacts



Indication Contacts

OF4	OF3	OF2	OF1	OF24	OF23	OF22	OF21	OF14	OF13	OF12	OF11
44	34	24	14	244	234	224	214	144	134	124	114
42	32	22	12	242	232	222	212	142	132	122	112
41	31	21	11	241	231	221	211	141	131	121	111
or				or				or			
EF24	EF23	EF22	EF21	EF14	EF13	EF12	EF11	EF24	EF23	EF22	EF21
248	238	228	218	148	138	128	118	248	238	228	218
246	236	226	216	146	136	126	116	246	236	226	216
245	235	225	215	145	135	125	115	245	235	225	215

Chassis Contacts

CD3	CD2	CD1	CE3	CE2	CE1	CT3	CT2	CT1
834	824	814	334	324	314	934	924	914
832	822	812	332	322	312	932	922	912
831	821	811	331	321	311	931	921	911
or			or			or		
CE6	CE5	CE4	CE9	CE8	CE7			
364	354	344	394	384	374			
362	352	342	392	382	372			
361	351	341	391	381	371			

Indication Contacts

OF4	ON/OFF indication contacts	OF24	ON/OFF indication contacts
OF3		or	
OF2		EF24	Combined "connected-closed" indication contacts
OF1			
or			
		OF22 or EF22	
or			
		OF21 or EF21	
or			
		OF14 or EF14	
or			
		OF13 or EF13	
or			
		OF12 or EF12	
or			
		OF11 or EF11	

Chassis Contacts

CD3	Disconnected position contacts	CE3	Connected position contacts	CT3	Test position contacts
CD2		CE2		CT2	
CD1		CE1		CT1	
or					
CE6	Connected position contacts	CE9	Connected position contacts	CE8	Connected position contacts
CE5		CE7		CE7	
CE4					
or					
		CD6	Disconnected position contacts	CD5	Disconnected position contacts
		CD4		CD4	

Legend:

Drawout device only.

SDE1, OF1, OF2, OF3, OF4 supplied as standard.

Interconnected connections (only one wire per connection point).

Communication Achitecture

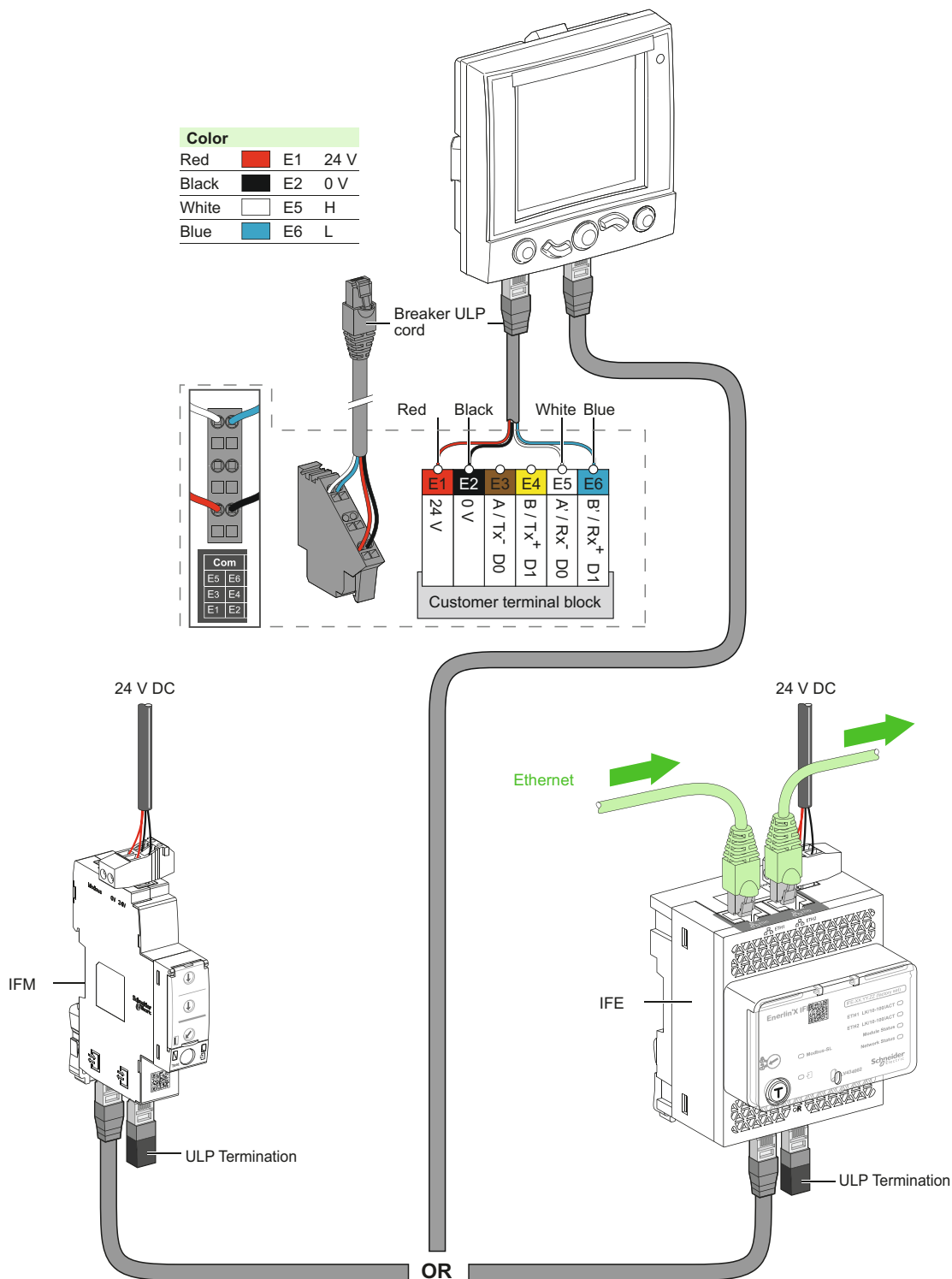


-  **J** ULP cable
-  **K** Breaker ULP cord
-  **L** NSX cord
-  Ethernet
-  Modbus

D-14

Fixed, Electrically Operated MasterPact NW DC - DC PV Connection to the Communication Interface Module

DB432548-01ps

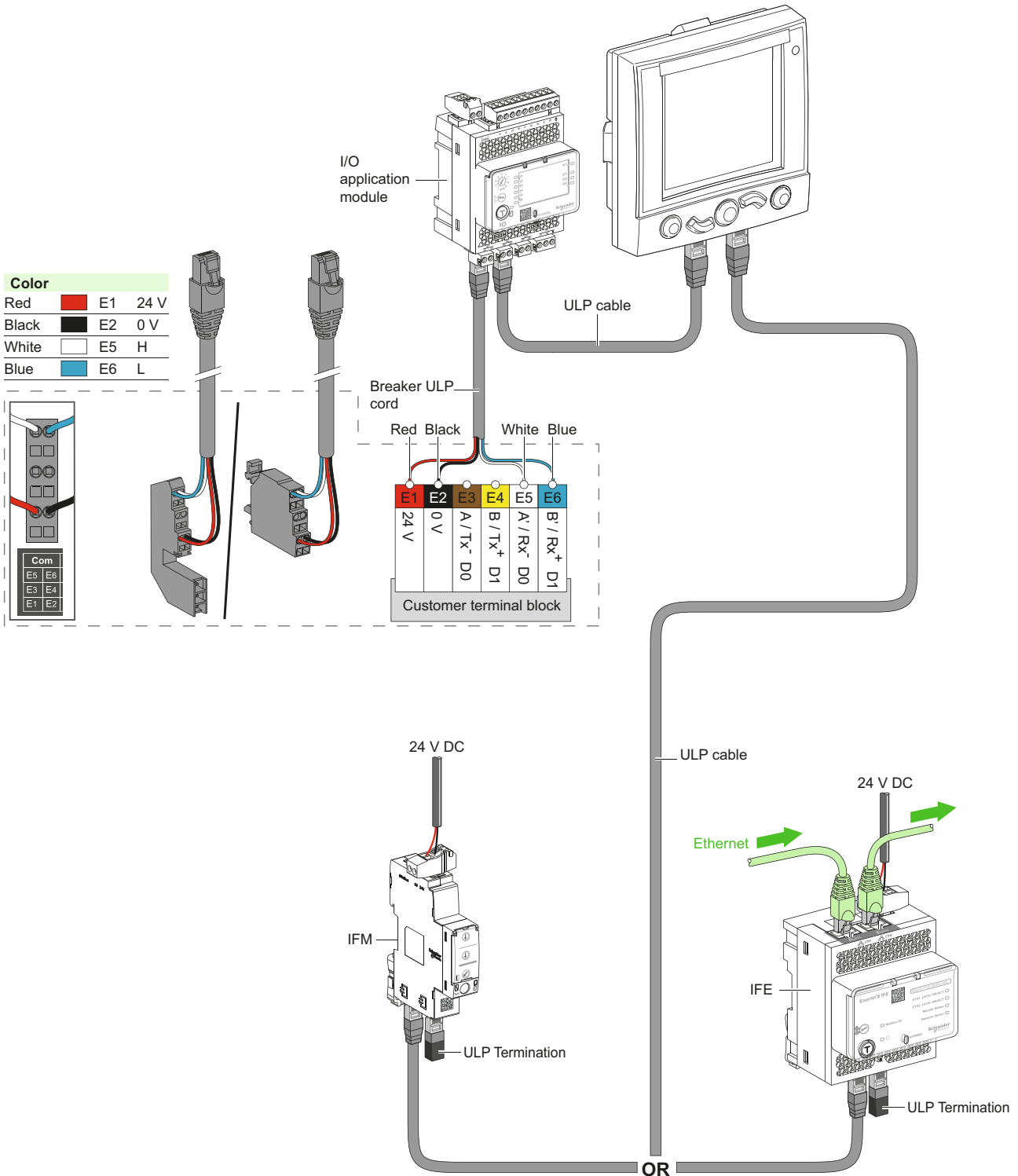


D

Withdrawable MasterPact NW DC - DC PV

Connection to the I/O and Communication Interface Module

DB432576-04ps



Additional Characteristics

ComPact NSX100 to 250 DC	
TM-DC Magnetic Trip Units, Tripping Curves.....	E-2
TMG Magnetic Trip Units, Tripping Curves	E-5
ComPact NSX400 to 630 DC	
TM-DC Trip Units, Tripping Curves.....	E-8
ComPact NSX630 to 1200 DC	
TM-DC Trip Units, Tripping Curves.....	E-10
ComPacT NSX80 to 500 DC PV	
TM-DC PV Magnetic Trip Units, Tripping Curves	E-11
Current and Energy Limiting Curves	
ComPact NSX DC	E-14
ComPacT NSX DC EP.....	E-16
MasterPact NW10 to NW40 DC	
Tripping Curves U = 500 V DC, L/R = 5 Ms	E-18
Tripping Curves U = 750/900 V DC, L/R = 5 Ms	E-19
Tripping Curves U = 500 V DC, L/R = 15 Ms.....	E-20
Tripping Curves U = 750/900 V DC, L/R = 15 Ms.....	E-21
Tripping Curves U = 500/750 V DC, L/R = 30 Ms.....	E-22
Tripping Curves U = 900 V DC, L/R = 30 Ms.....	E-23

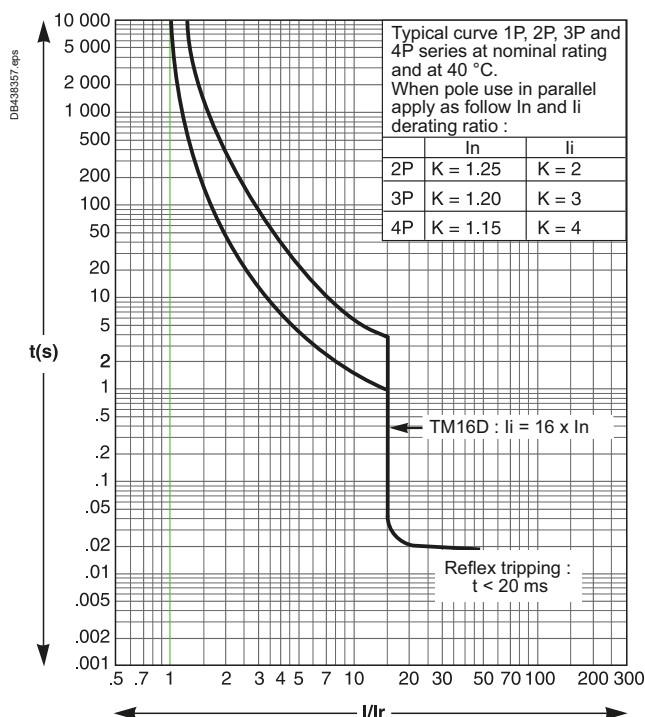
Other Chapters

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Installation Recommendations.....	B-1
Dimensions and Connection	C-1
Electrical Diagrams.....	D-1
Catalog Numbers and Order Form	F-1

ComPact NSX100 to 250 DC

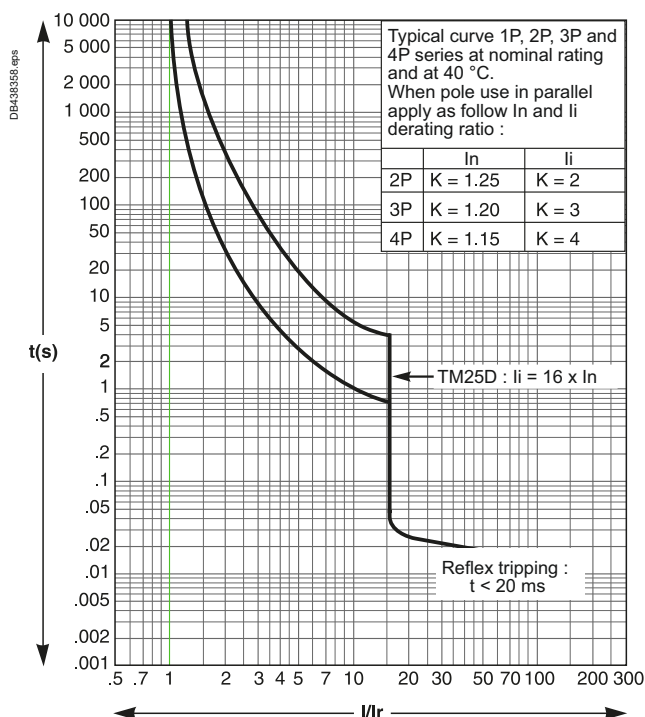
TM-DC Magnetic Trip Units, Tripping Curves

TM-DC 16

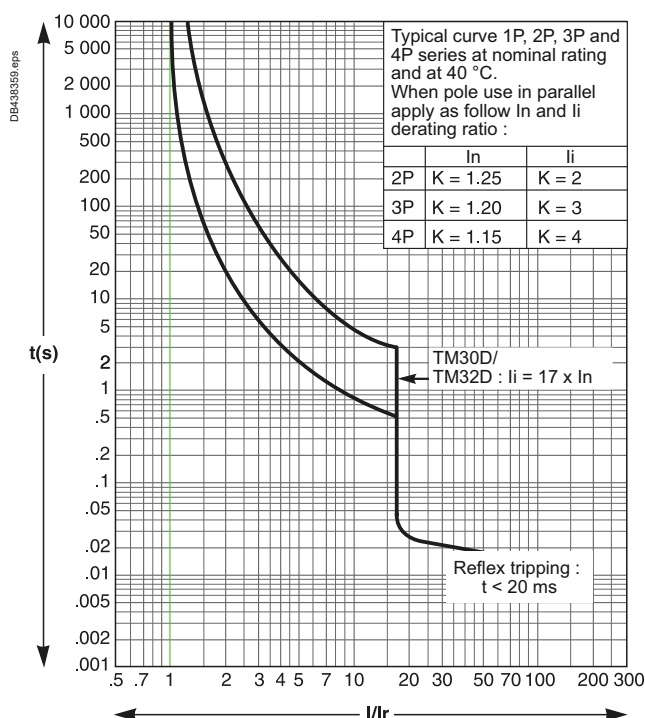


Reflex tripping.

TM-DC 25

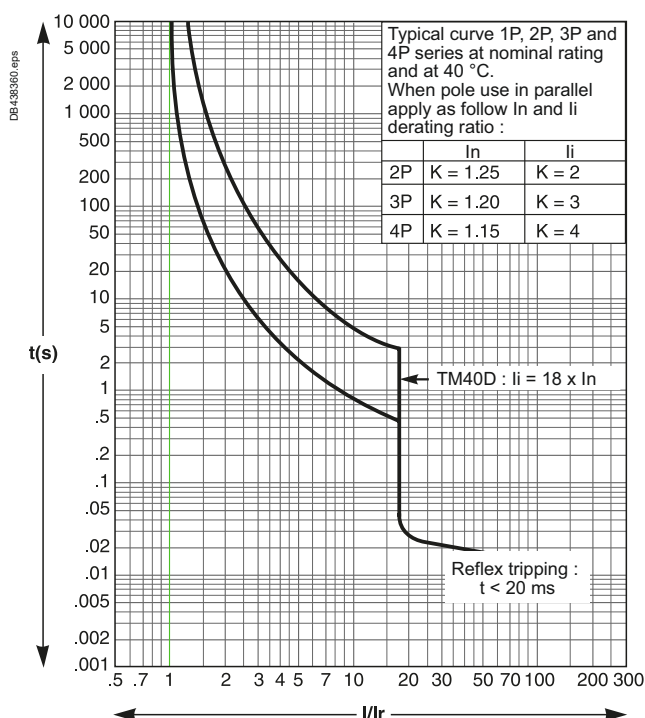


TM-DC 30/TM-DC 32



Reflex tripping.

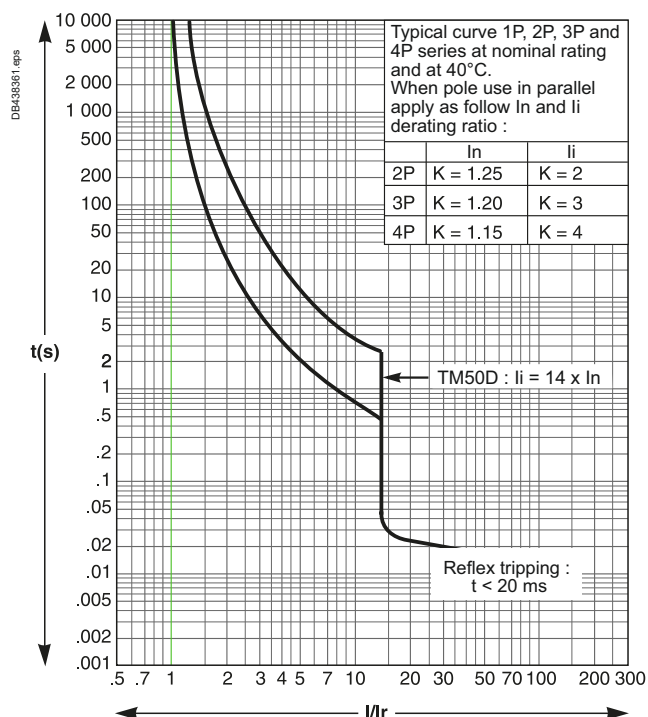
TM-DC 40



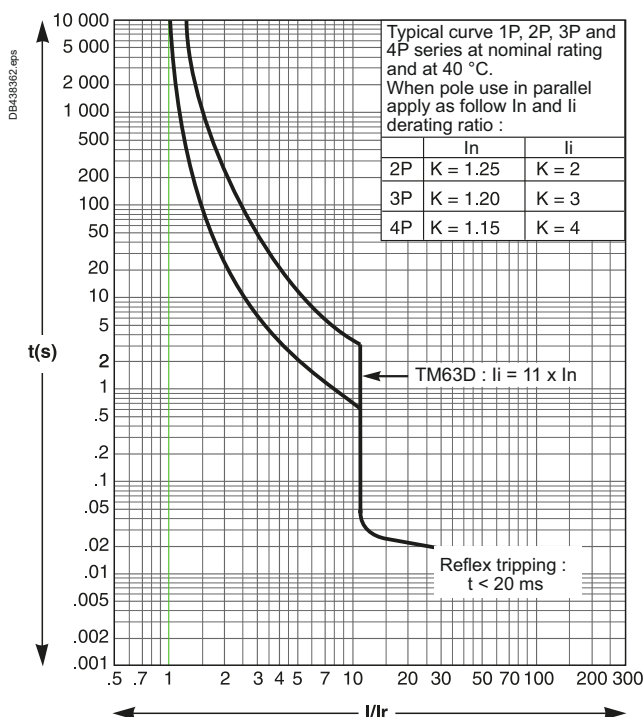
ComPact NSX100 to 250 DC

TM-DC Magnetic Trip Units, Tripping Curves

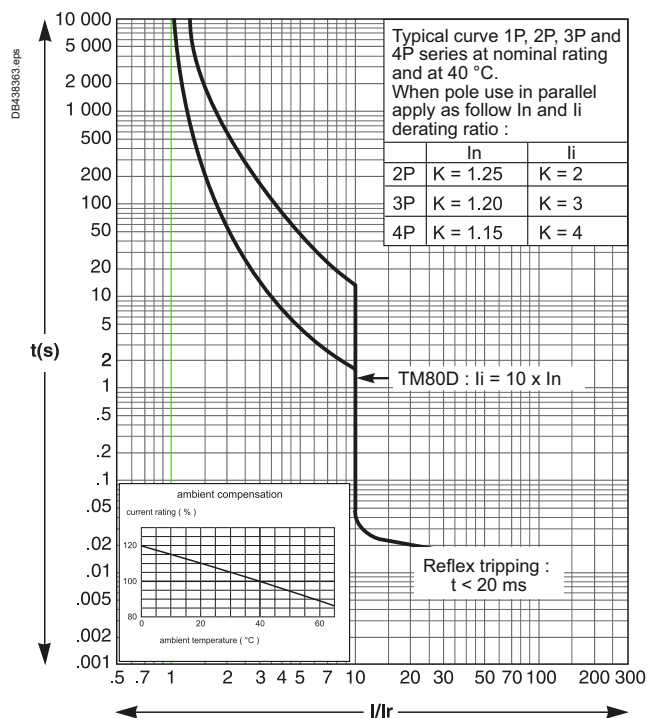
TM-DC 50



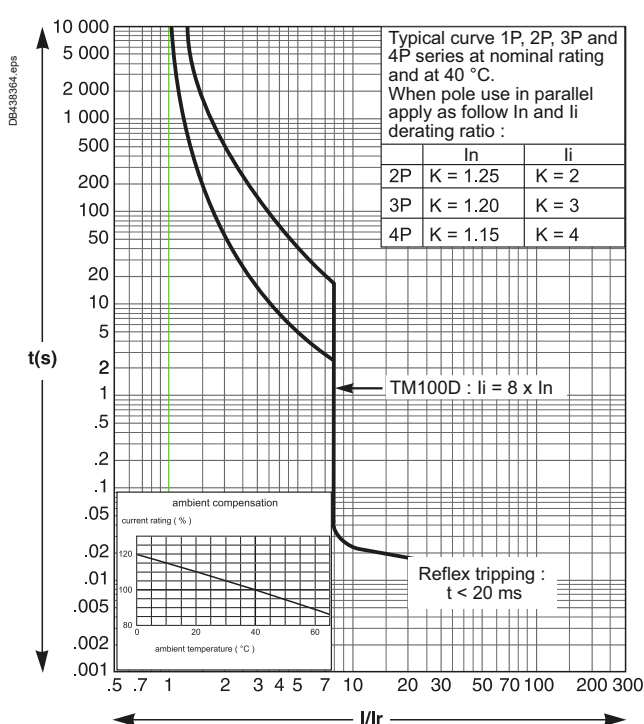
TM-DC 63



TM-DC 80



TM-DC 100

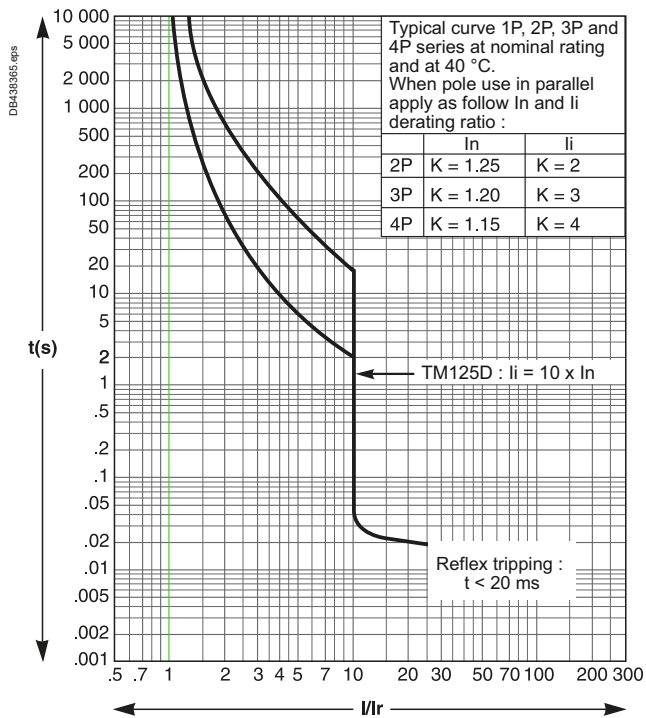


E

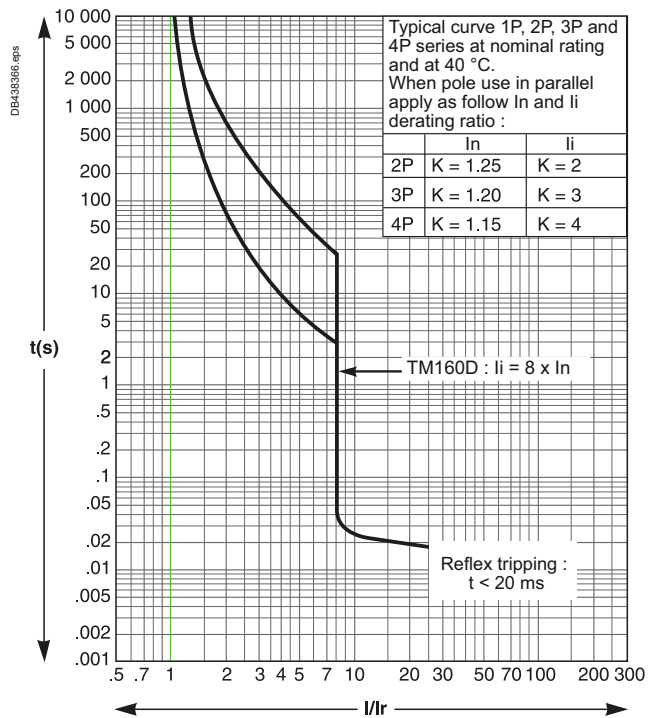
ComPact NSX100 to 250 DC

TM-DC Magnetic Trip Units, Tripping Curves

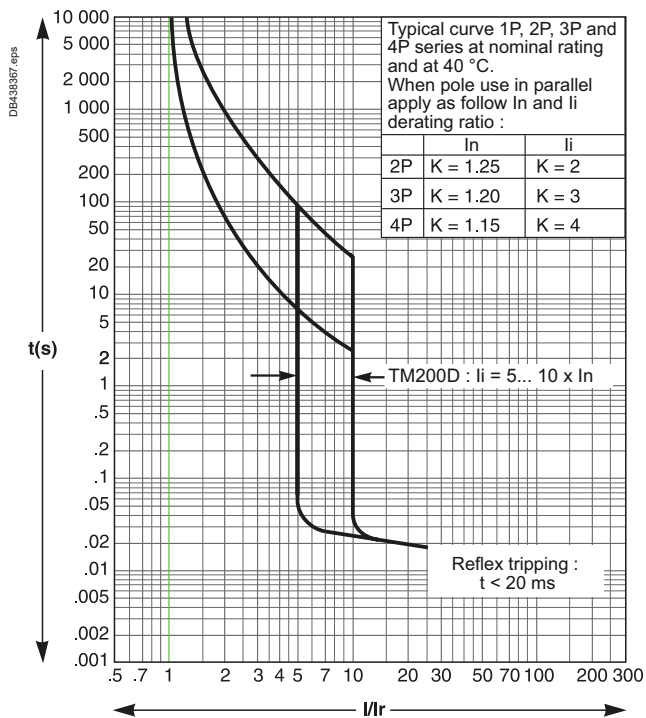
TM-DC 125



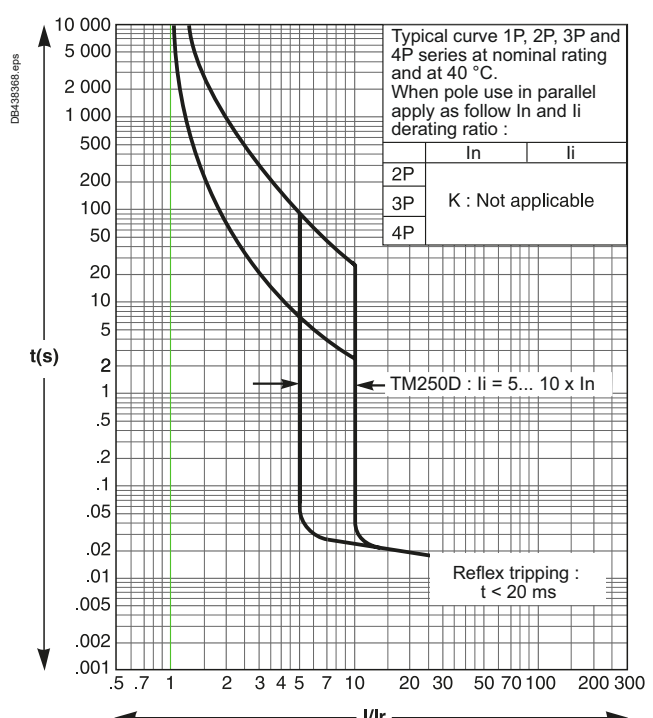
TM-DC 160



TM-DC 200



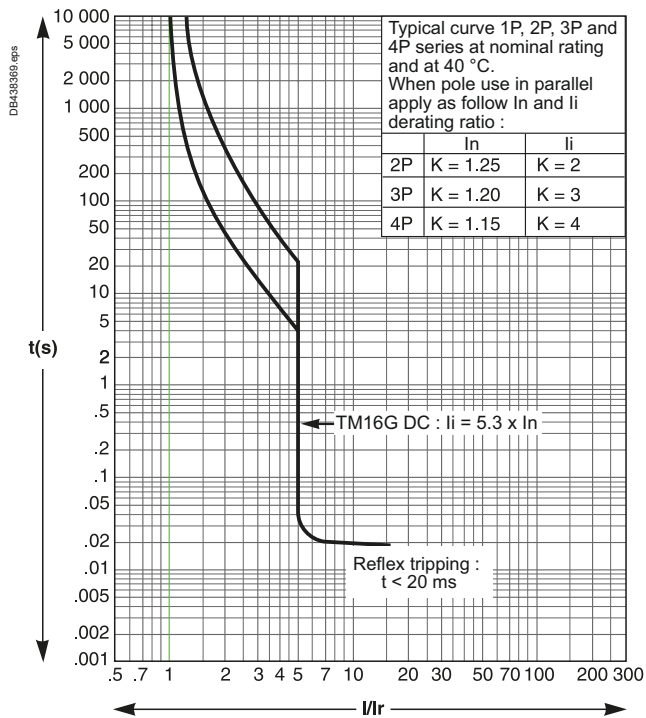
TM-DC 250



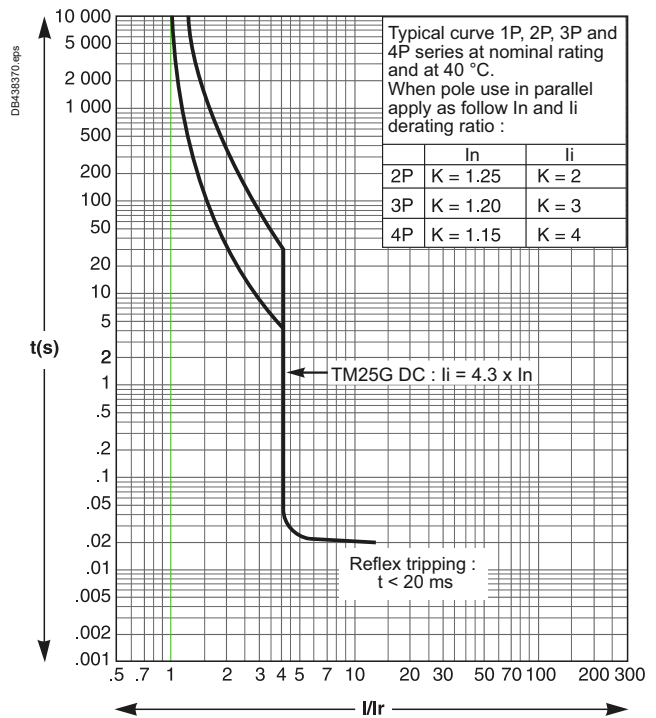
ComPact NSX100 to 250 DC

TMG Magnetic Trip Units, Tripping Curves

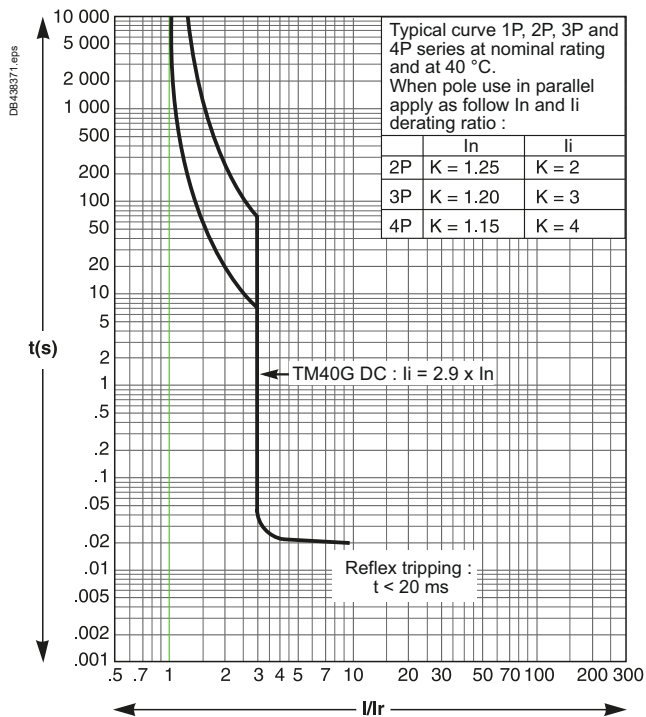
TM16G



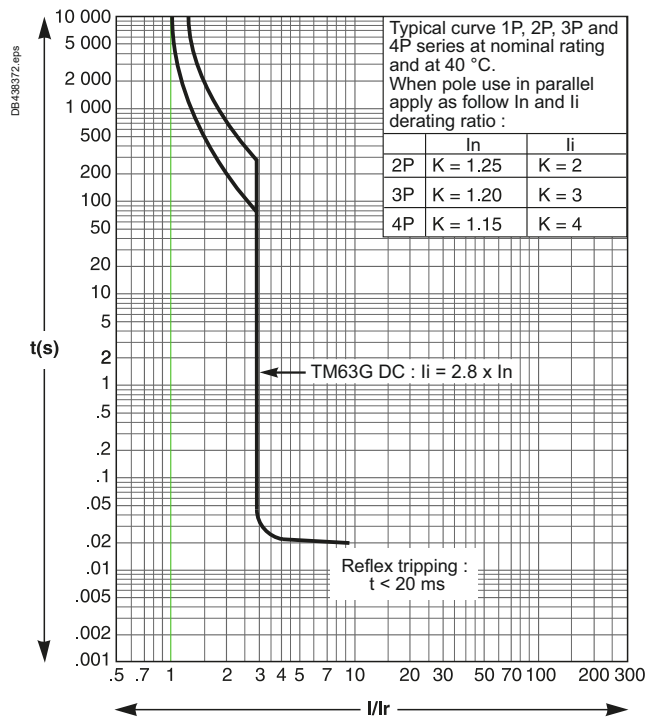
TM25G



TM40G



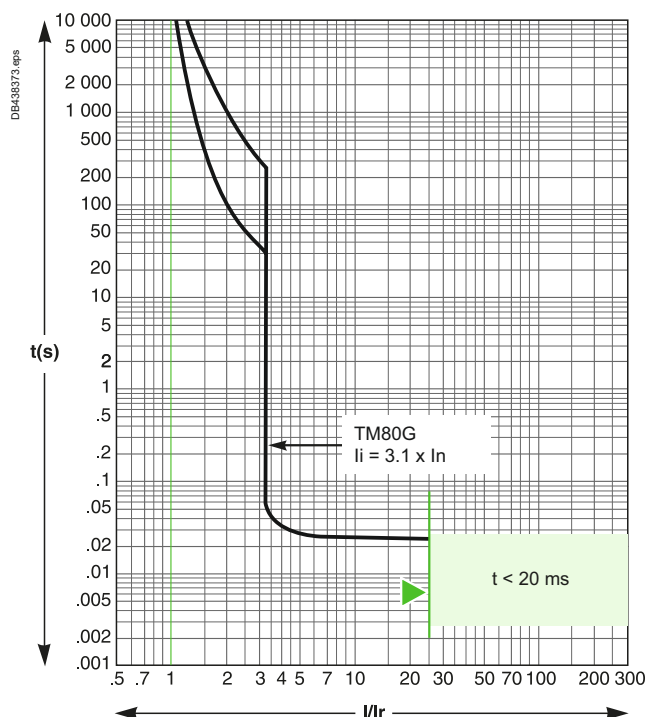
TM63G



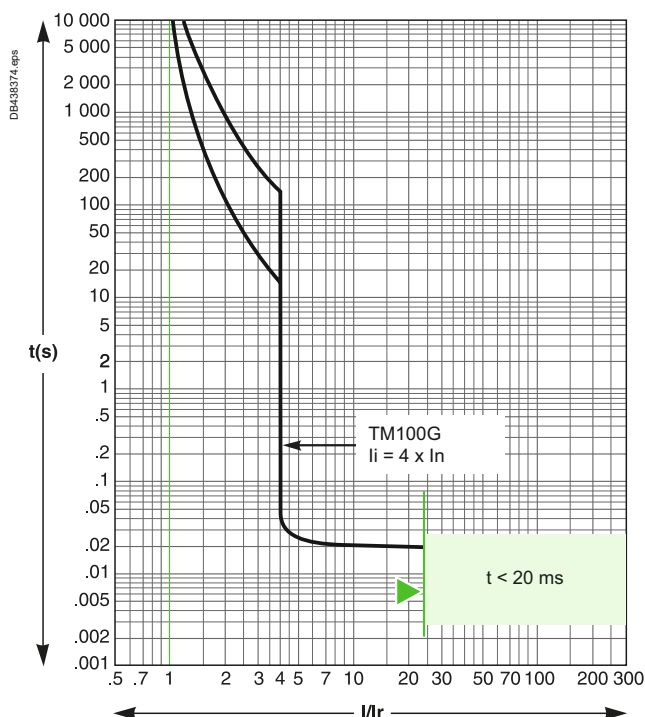
ComPact NSX100 to 250 DC

TMG Magnetic Trip Units, Tripping Curves

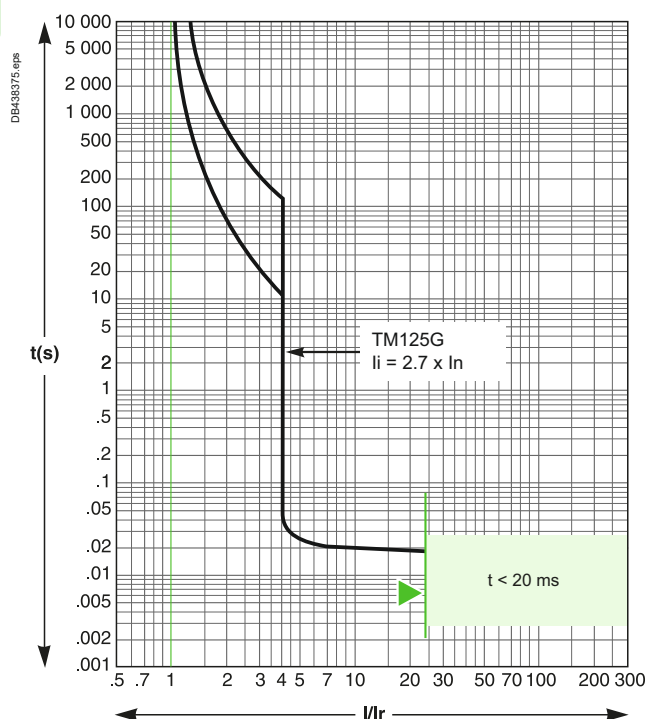
TM80G



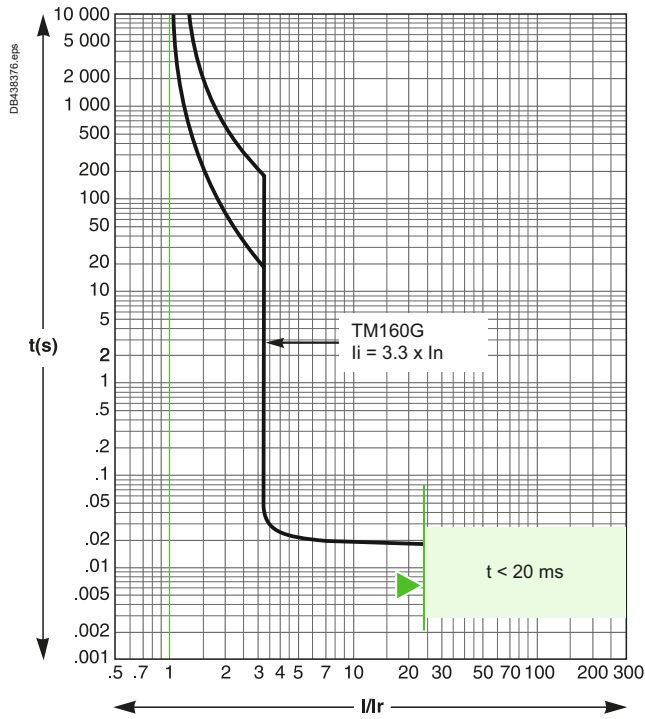
TM100G



TM125G



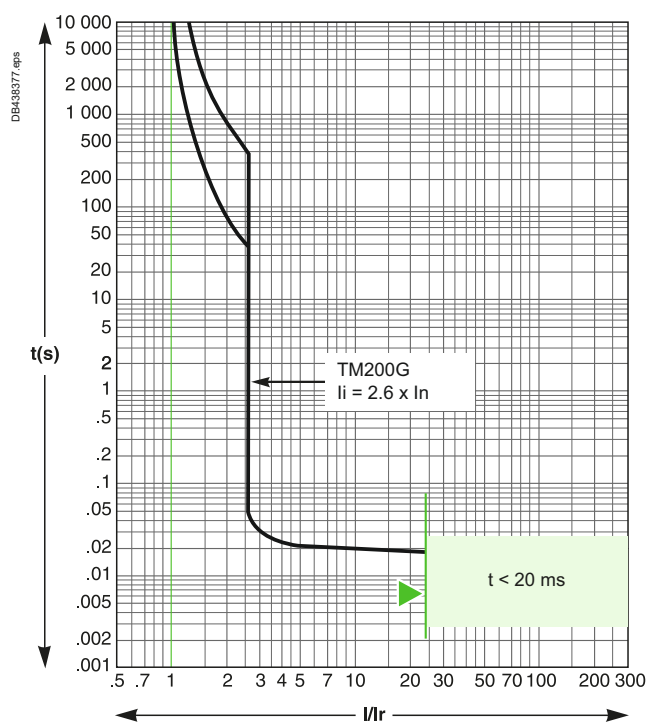
TM160G



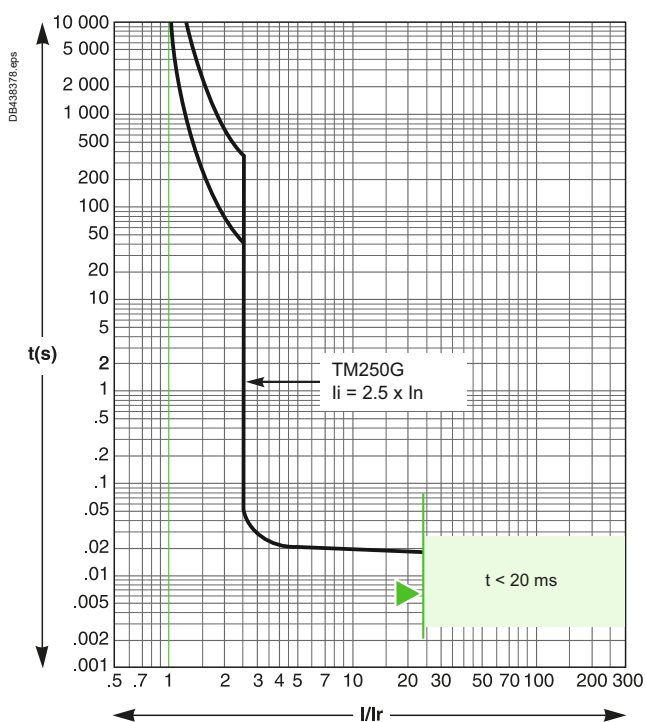
ComPact NSX100 to 250 DC

TMG Magnetic Trip Units, Tripping Curves

TM200G



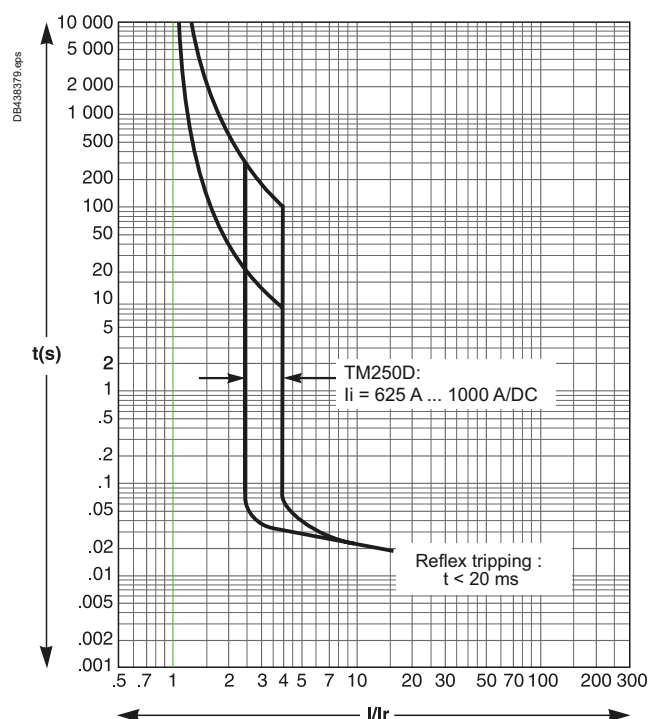
TM250G



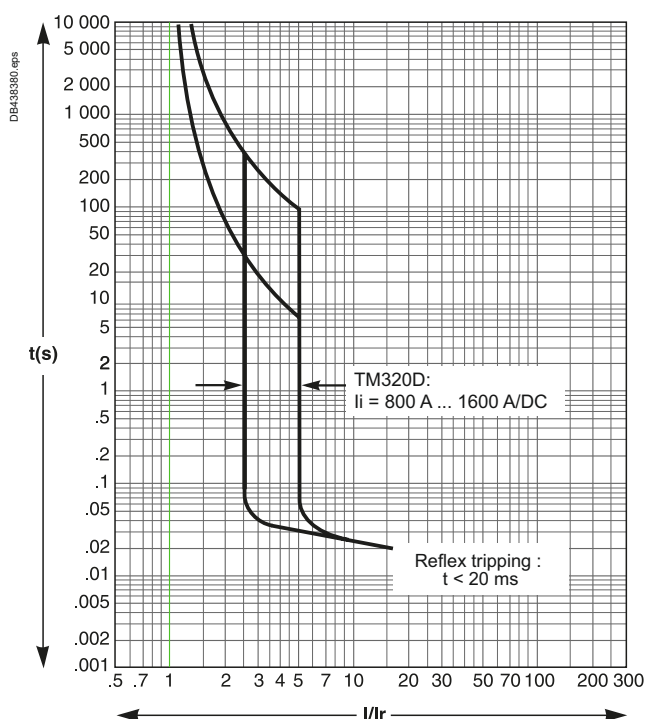
ComPact NSX400 to 630 DC

TM-DC Trip Units, Tripping Curves

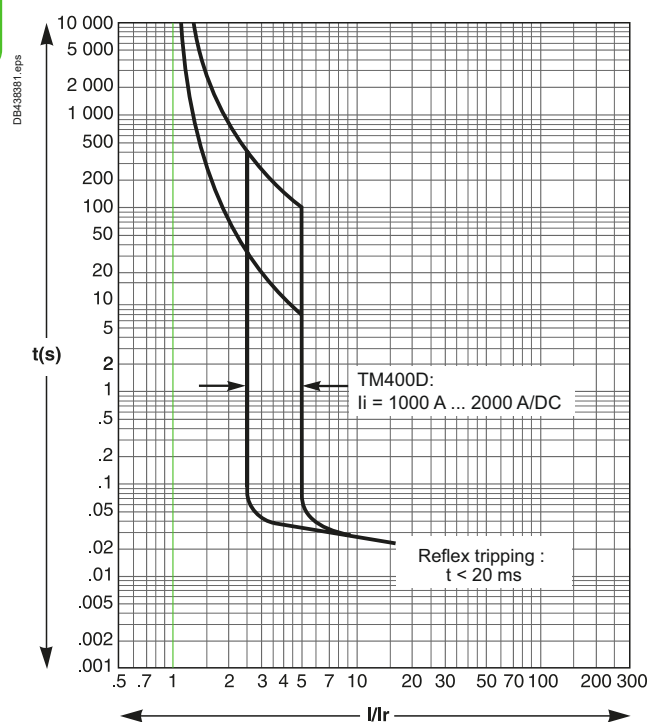
TM-DC 250



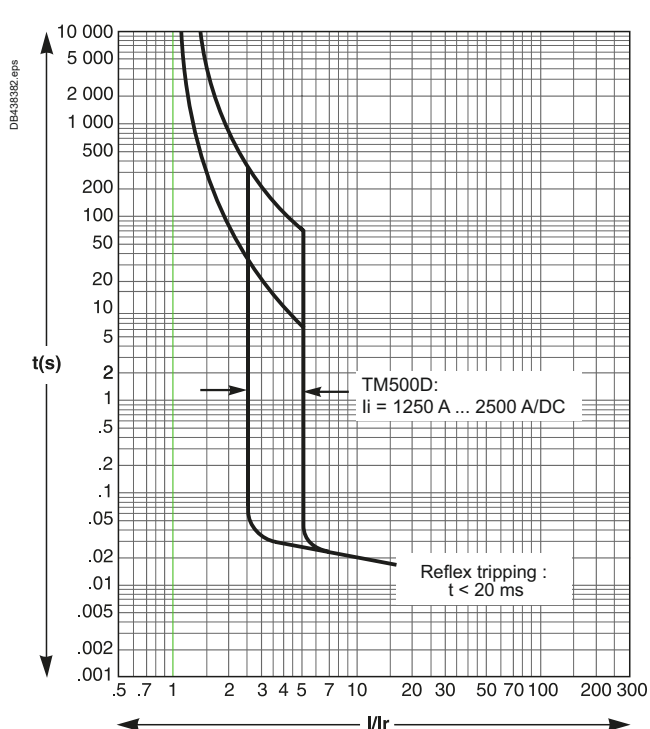
TM-DC 320



TM-DC 400



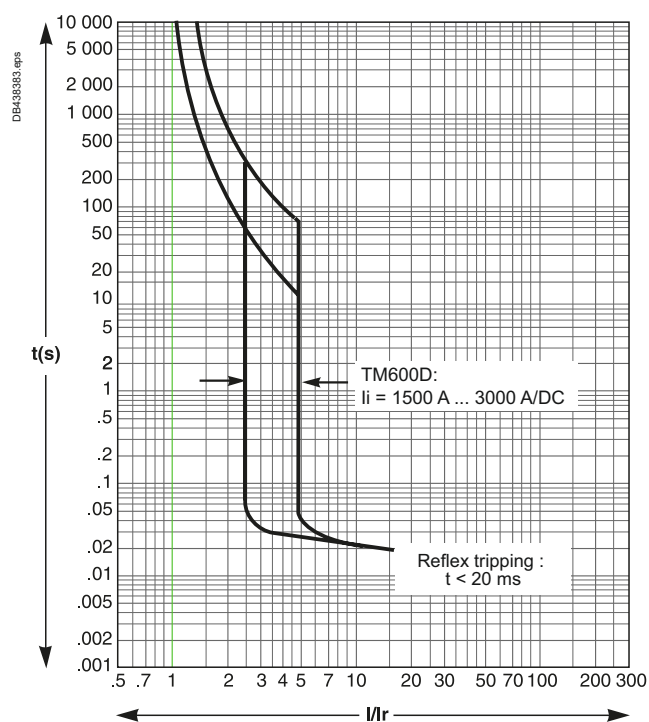
TM-DC 500



ComPact NSX400 to 630 DC

TM-DC Trip Units, Tripping Curves

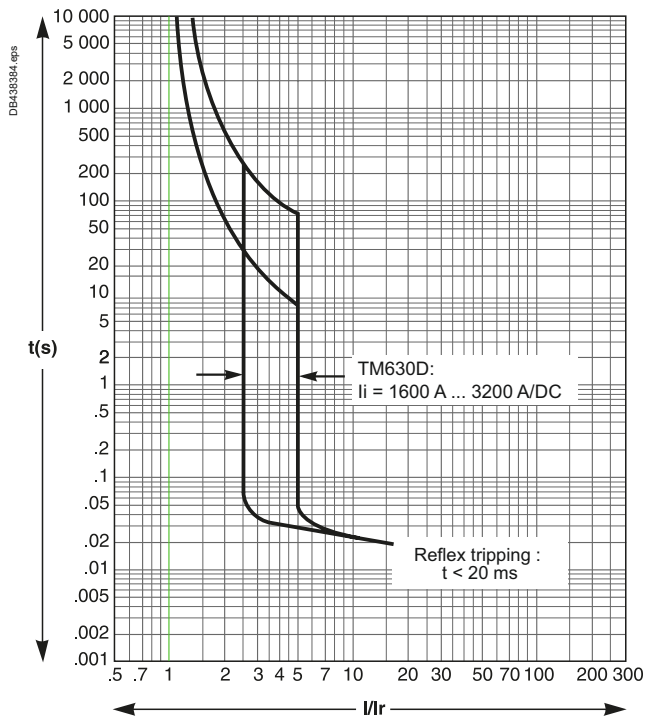
TM-DC 600



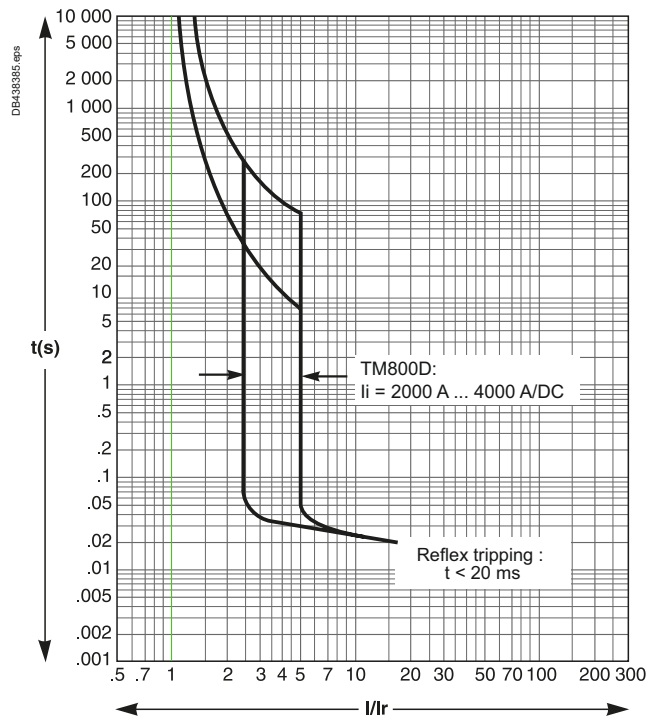
ComPact NSX630 to 1200 DC

TM-DC Trip Units, Tripping Curves

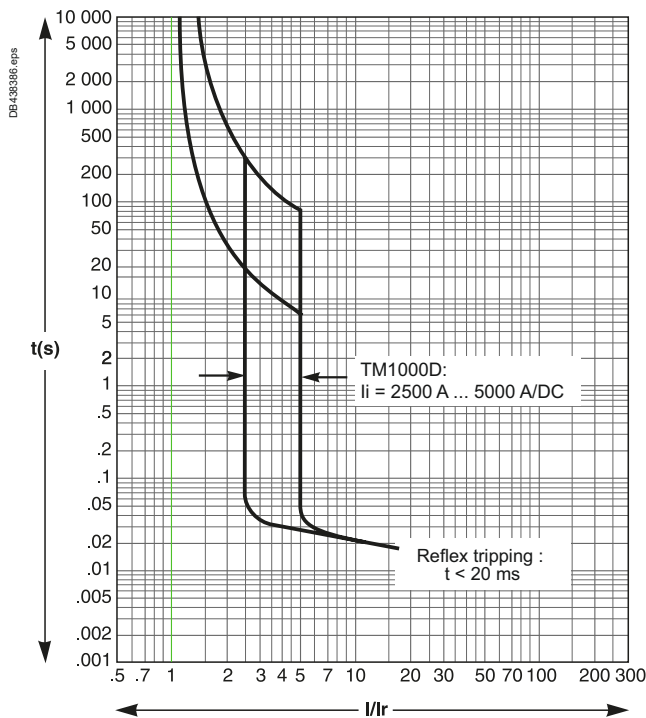
TM-DC 630



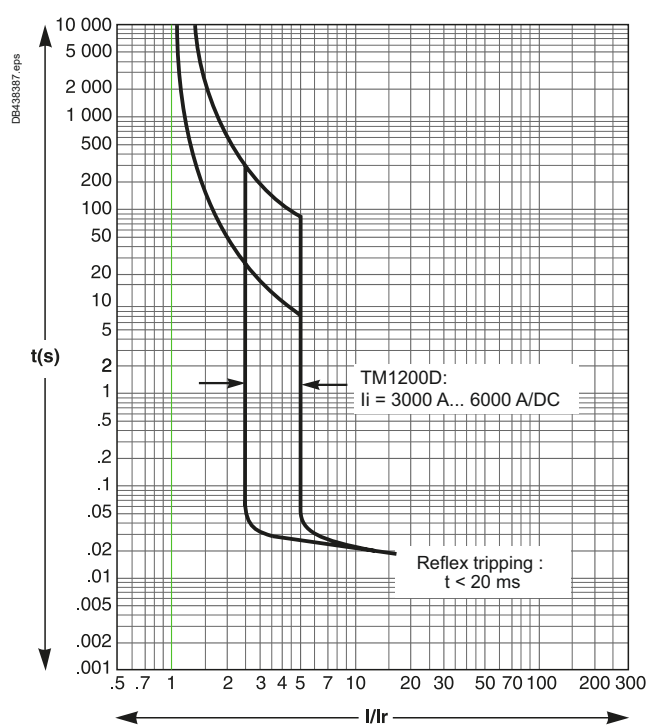
TM-DC 800



TM-DC 1000



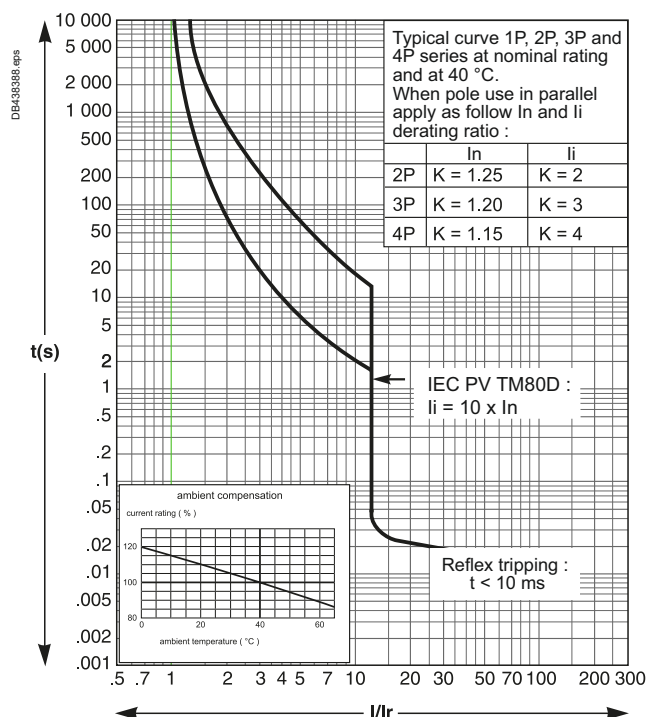
TM-DC 1200



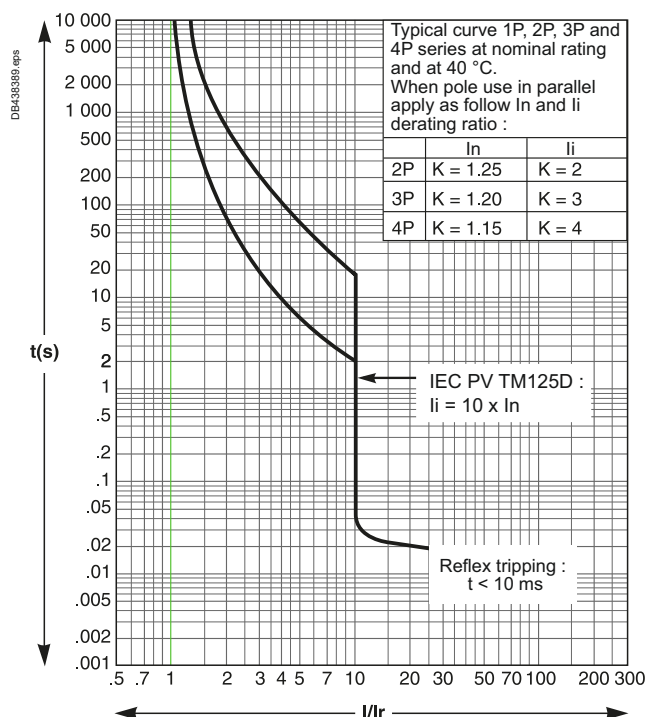
ComPacT NSX80 to 500 DC PV

TM-DC PV Magnetic Trip Units, Tripping Curves

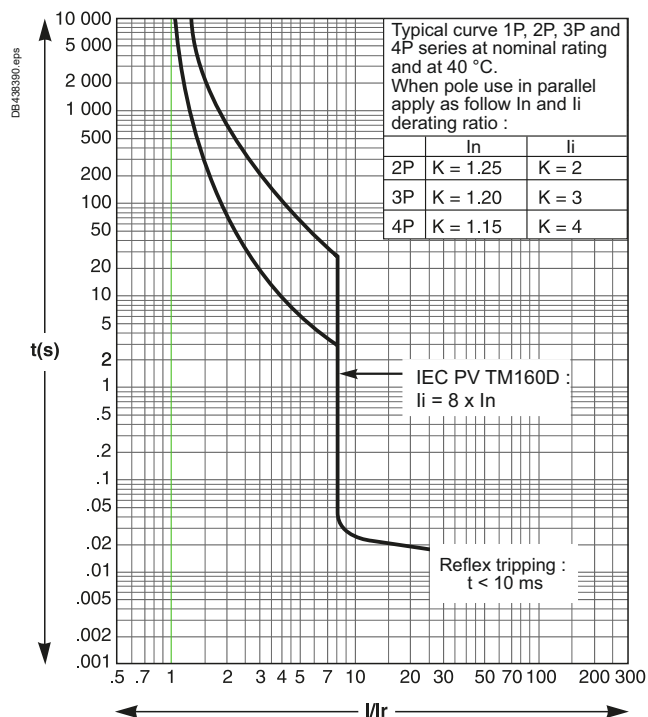
TM-DC PV 80



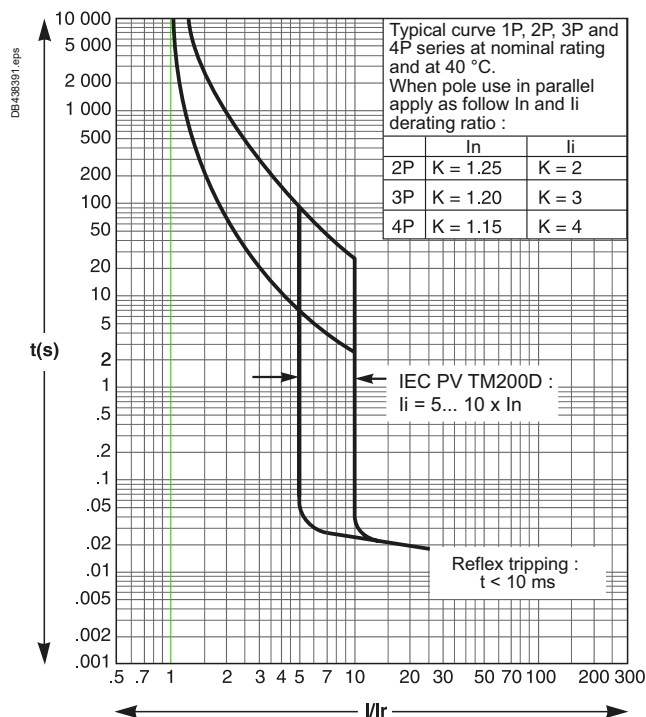
TM-DC PV 125



TM-DC PV 160



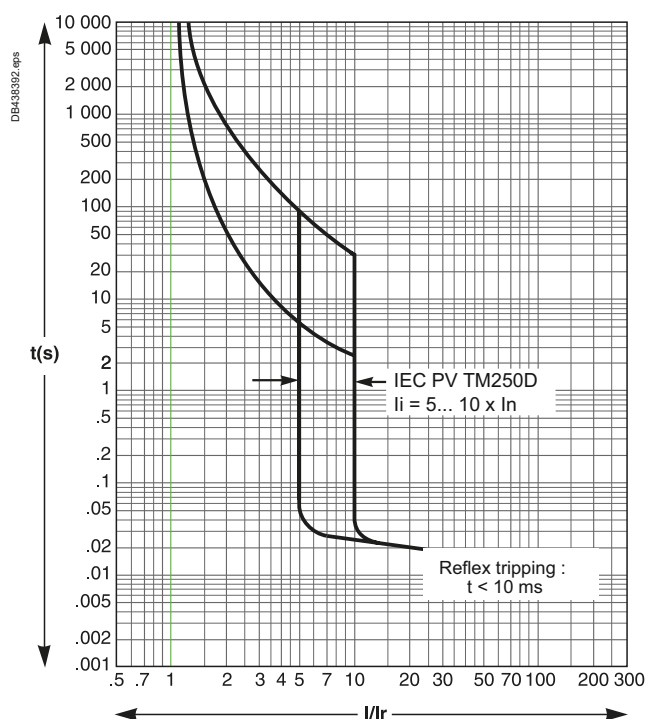
TM-DC PV 200



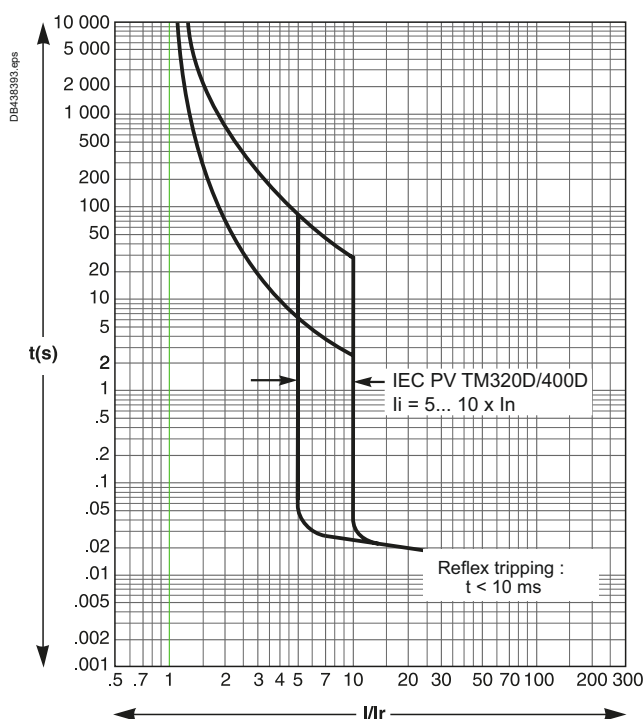
ComPacT NSX80 to 500 DC PV

TM-DC PV Magnetic Trip Units, Tripping Curves

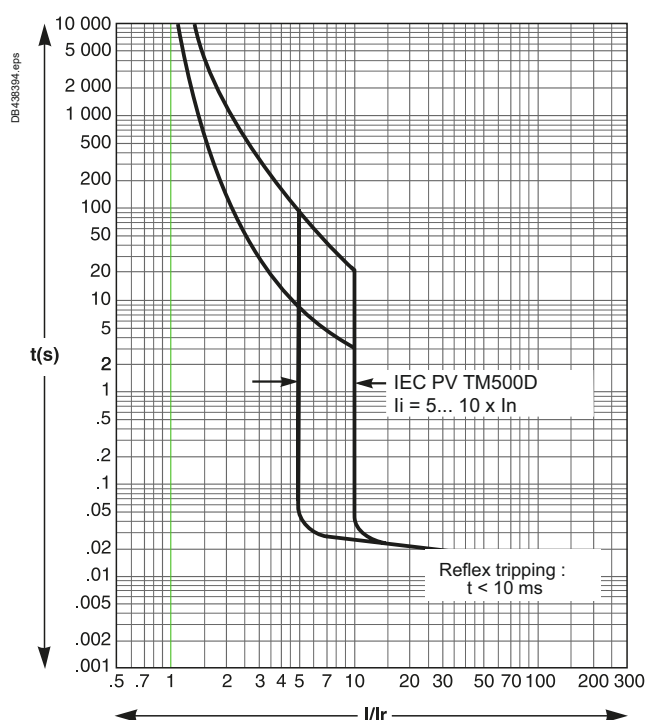
TM-DC PV 250



TM-DC PV 320/400

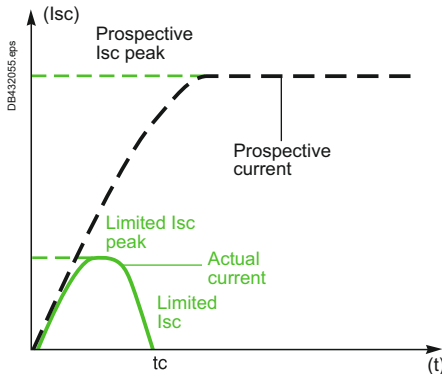


TM-DC PV 500



Current and Energy Limiting Curves

The limiting capacity of a circuit breaker is its aptitude to let through a current, during a short-circuit, that is less than the prospective short-circuit current.



The exceptional limiting capacity of the ComPacT NSX DC range is due to the rotating double-break technique (very rapid natural repulsion of contacts and the appearance of two arc voltages in-series with a very steep wave front).

Ics = 100 % Icu

The exceptional limiting capacity of the ComPacT NSX DC range greatly reduces the forces created by fault currents in devices.

The result is a major increase in breaking performance.

In particular, the service breaking capacity Ics is equal to 100 % of Icu.

The Ics value, defined by IEC standard 60947-2, is ensured by tests comprising the following steps:

- Break three times consecutively a fault current equal to 100 % of Icu
- Check that the device continues to function normally, that is:
 - It conducts the rated current without abnormal temperature rise
 - Protection functions perform within the limits specified by the standard
 - Suitability for isolation is not impaired.

Longer Service Life of Electrical Installations

Current-limiting circuit breakers greatly reduce the negative effects of short-circuits on installations.

Thermal Effects

Less temperature rise in conductors, therefore longer service life for cables.

Mechanical Effects

Reduced electrodynamic forces, therefore less risk of electrical contacts or busbars being deformed or broken.

Electromagnetic Effects

Fewer disturbances for measuring devices located near electrical circuits.

Current and Energy Limiting Curves

The limiting capacity of a circuit breaker is expressed by two curves which are a function of the prospective short-circuit current (the current which would flow if no protection devices were installed):

- The actual peak current (limited current)
- Thermal stress (A^2s), i.e. the energy dissipated by the short-circuit in a conductor with a resistance of 1Ω .

Example

What is the real value of a 150 kA rms prospective short-circuit (i.e. 330 kA peak) limited by an NSX250L DC upstream ?

The answer is 30 kA peak (curve [page E-14](#)).

Maximum Permissible Cable Stresses

The table below indicates the maximum permissible thermal stresses for cables depending on their insulation, conductor (Cu or Al) and their cross-sectional area (CSA). CSA values are given in mm^2 and thermal stresses in A^2s .

CSA		1.5 mm ²	2.5 mm ²	4 mm ²	6 mm ²	10 mm ²
PVC	Cu	2.97 x 10 ⁴	8.26 x 10 ⁴	2.12 x 10 ⁵	4.76 x 10 ⁵	1.32 x 10 ⁶
	Al					5.41 x 10 ⁵
PRC	Cu	4.10 x 10 ⁴	1.39 x 10 ⁵	2.92 x 10 ⁵	6.56 x 10 ⁵	1.82 x 10 ⁶
	Al					7.52 x 10 ⁵
CSA		16 mm ²	25 mm ²	35 mm ²	50 mm ²	
PVC	Cu	3.4 x 10 ⁶	8.26 x 10 ⁶	1.62 x 10 ⁷	3.31 x 10 ⁷	
	Al	1.39 x 10 ⁶	3.38 x 10 ⁶	6.64 x 10 ⁶	1.35 x 10 ⁷	
PRC	Cu	4.69 x 10 ⁶	1.39 x 10 ⁷	2.23 x 10 ⁷	4.56 x 10 ⁷	
	Al	1.93 x 10 ⁶	4.70 x 10 ⁶	9.23 x 10 ⁶	1.88 x 10 ⁷	

Example

Is a Cu/PVC cable with a CSA of 10 mm² adequately protected by an NSX160F.

The table above indicates that the permissible stress is $1.32 \times 10^6 A^2s$.

All short-circuit currents at the point where an NSX160F ($I_{cu} = 35 \text{ kA}$) is installed are limited with a thermal stress less than $6 \times 10^5 A^2s$ (curve [page E-14](#)).

Cable protection is therefore ensured up to the limit of the breaking capacity of the circuit breaker.

Current and energy limiting curves

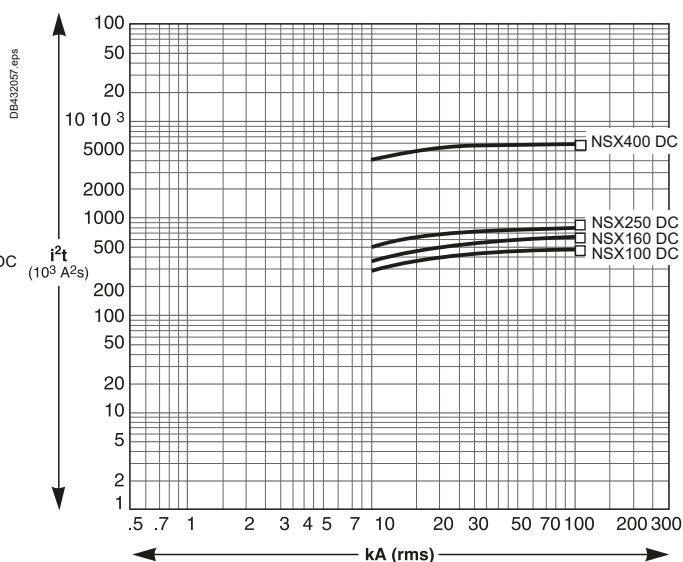
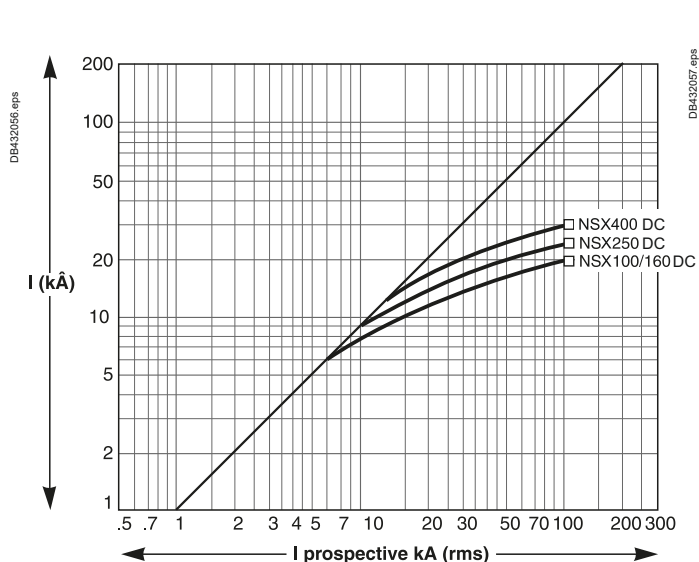
ComPact NSX DC

Current-limiting curves and thermal stress for $L/R = 5\text{ ms}$

Peak current

 $U < 250\text{ V DC}$: 1P $250\text{ V} < U < 500\text{ V DC}$: 2P $500\text{ V} < U < 750\text{ V DC}$: 3P

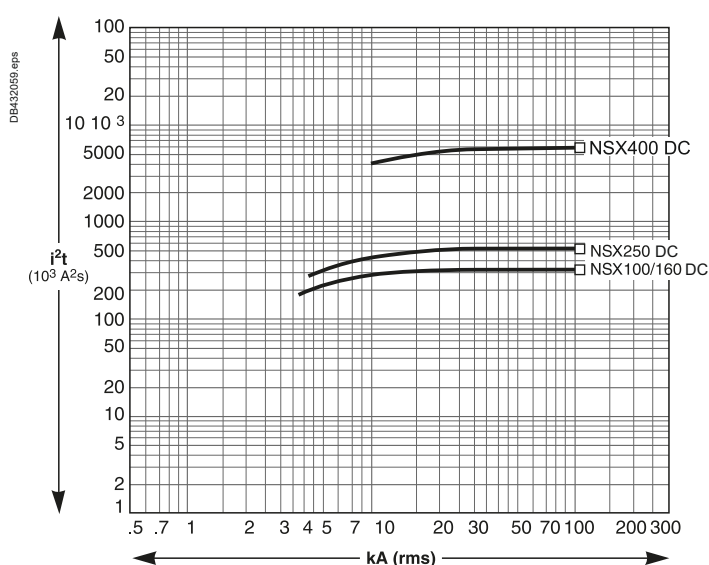
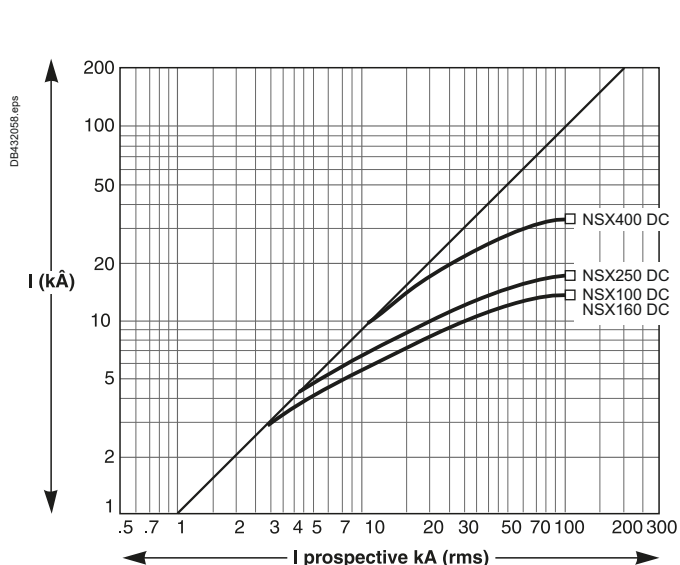
Thermal stress

 $U < 250\text{ V DC}$: 1P $250\text{ V} < U < 500\text{ V DC}$: 2PCurrent-limiting curves and thermal stress for $L/R = 15\text{ ms}$

Peak current

 $U < 250\text{ V DC}$: 1P $250\text{ V} < U < 500\text{ V DC}$: 2P $500\text{ V} < U < 750\text{ V DC}$: 3P

Thermal stress

 $U < 250\text{ V DC}$: 1P $250\text{ V} < U < 500\text{ V DC}$: 2P

Current and energy limiting curves

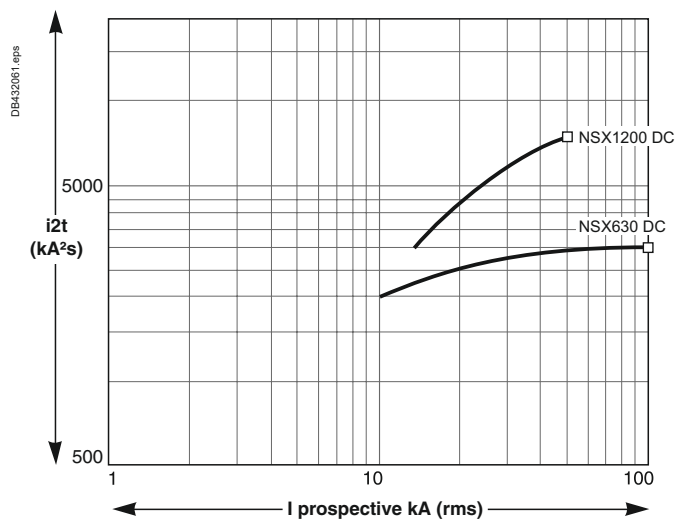
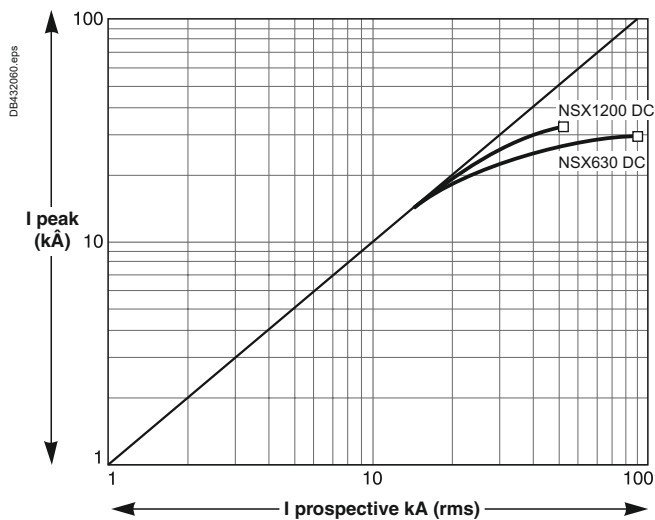
ComPact NSX DC

Current-limiting curves and thermal stress for $L/R = 5\text{ ms}$

Peak current

 $U \leq 250\text{ V DC}$: 1P $250\text{ V} < U < 600\text{ V DC}$: 2P $600\text{ V} < U < 750\text{ V DC}$: 3P

Thermal stress

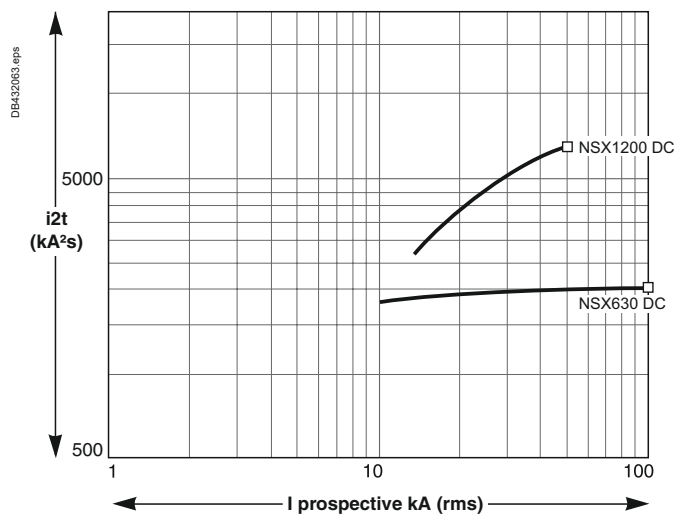
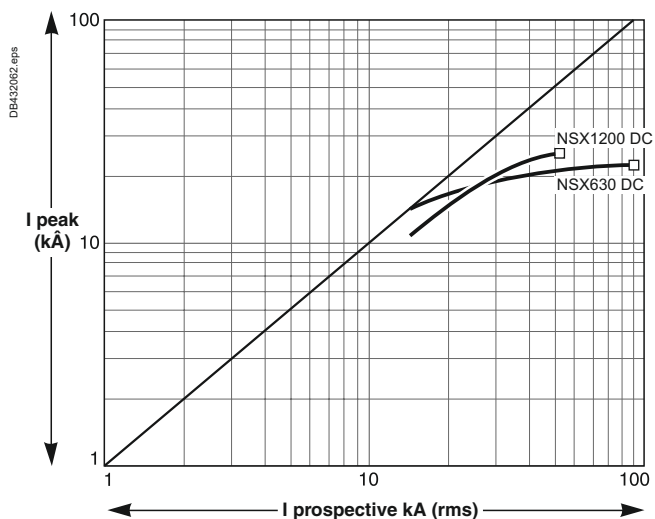
 $U \leq 250\text{ V DC}$: 1P $250\text{ V} < U < 600\text{ V DC}$: 2P

Current-limiting curves and thermal stress for $L/R = 15\text{ ms}$

Peak current

 $U \leq 250\text{ V DC}$: 1P $250\text{ V} < U < 600\text{ V DC}$: 2P $600\text{ V} < U < 750\text{ V DC}$: 3P

Thermal stress

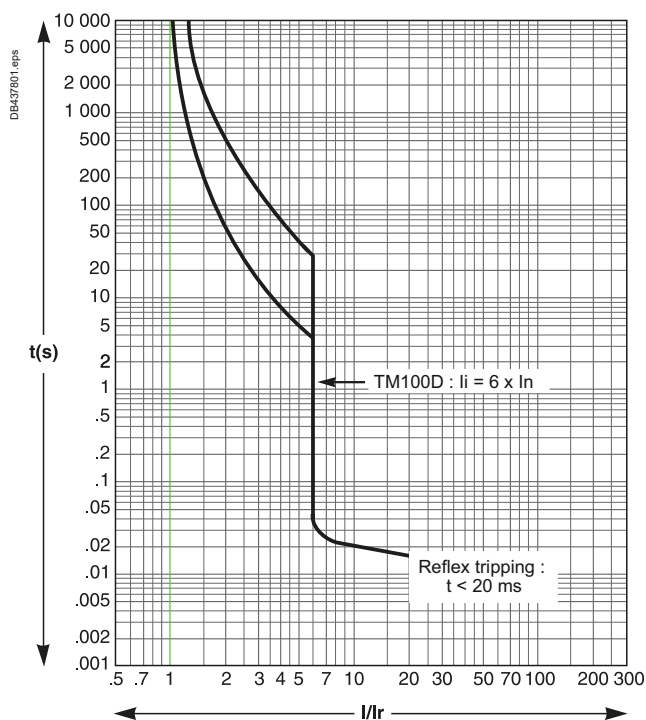
 $U \leq 250\text{ V DC}$: 1P $250\text{ V} < U < 600\text{ V DC}$: 2P

E

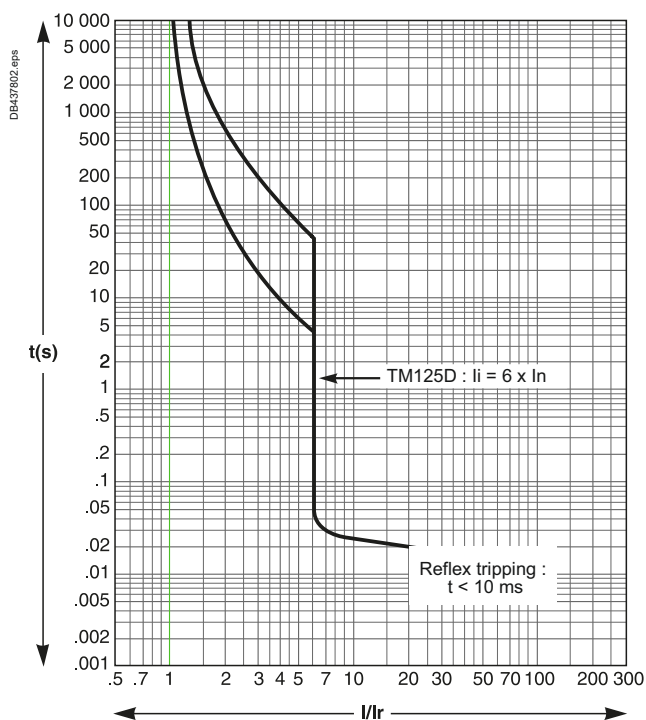
Current and Energy Limiting Curves

ComPacT NSX DC EP

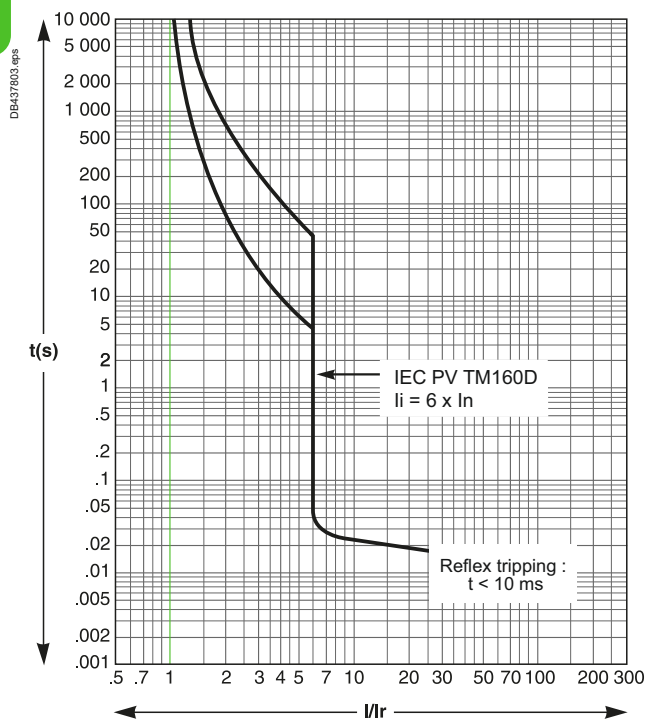
NSX250DC EP TM100D



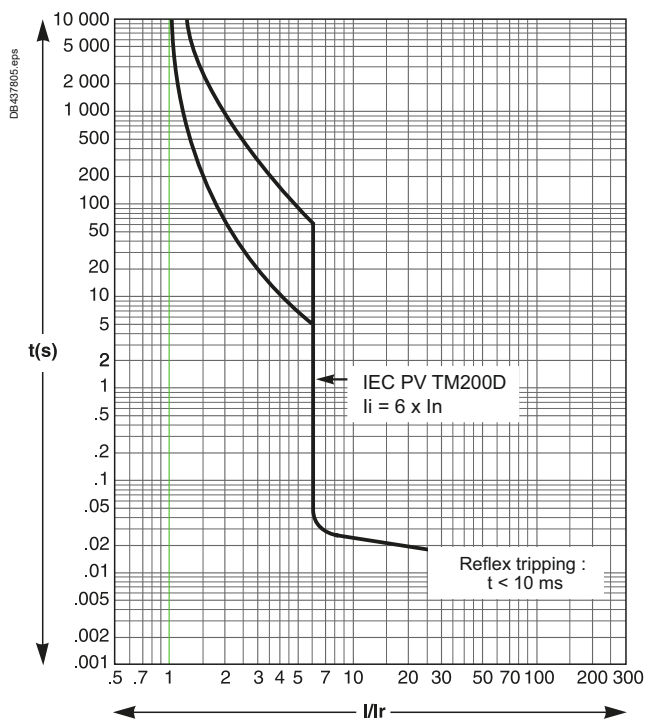
NSX250DC EP TM125D



NSX250DC EP TM160D



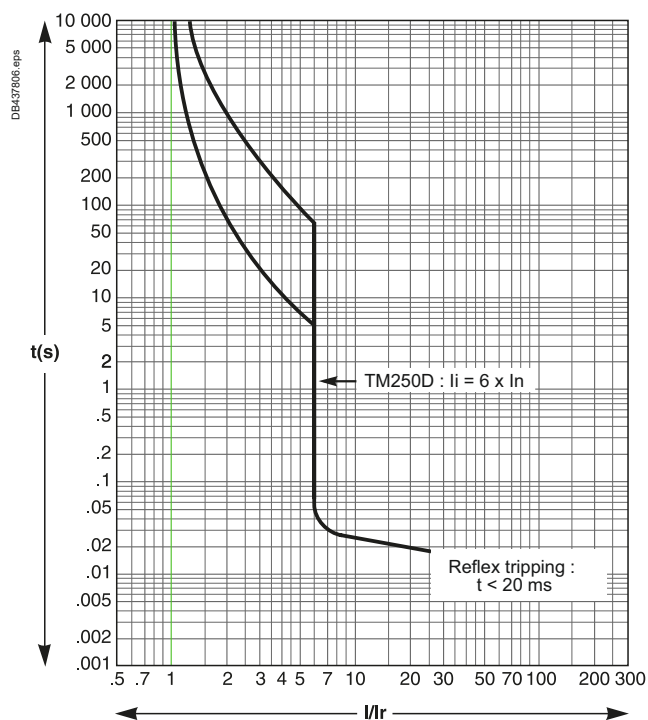
NSX250DC EP TM200D



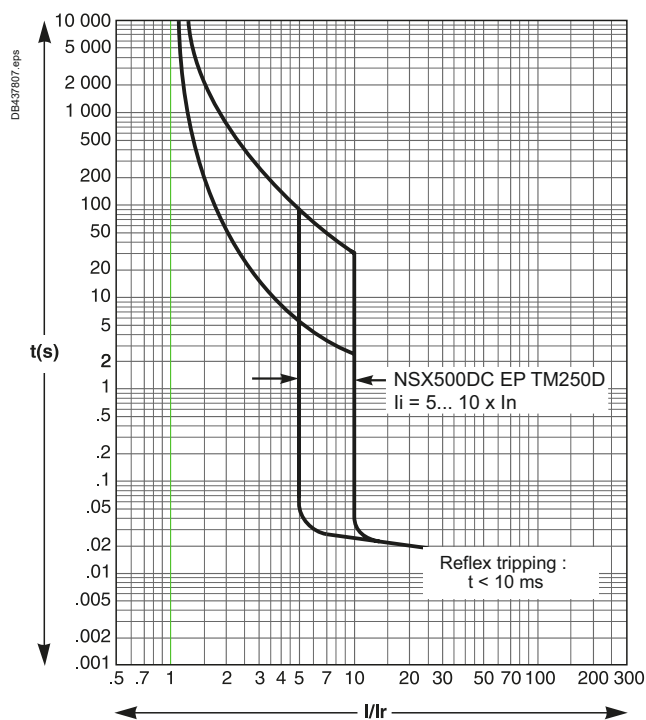
Current and Energy Limiting Curves

ComPacT NSX DC EP

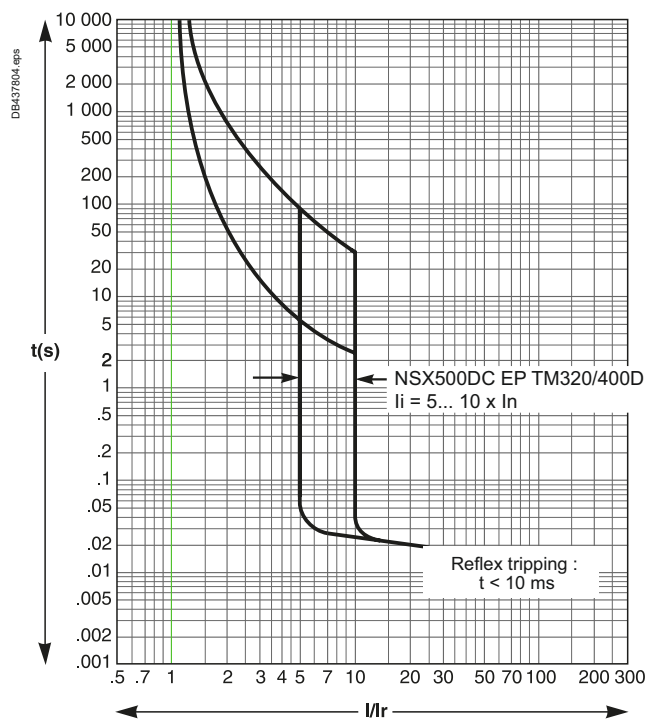
NSX250DC EP TM250D



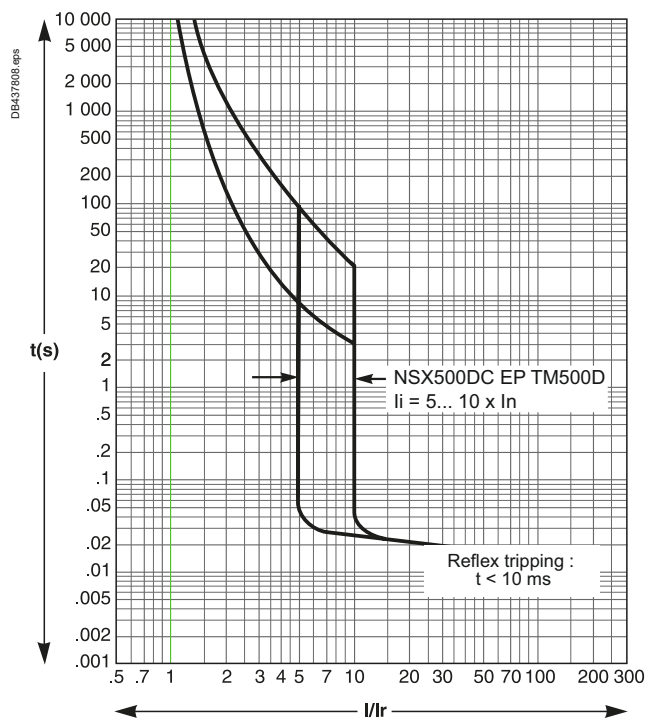
NSX500DC EP TM250D



NSX500DC EP TM320/400D



NSX500DC EP TM500D



E

MasterPact NW10 to NW40 DC

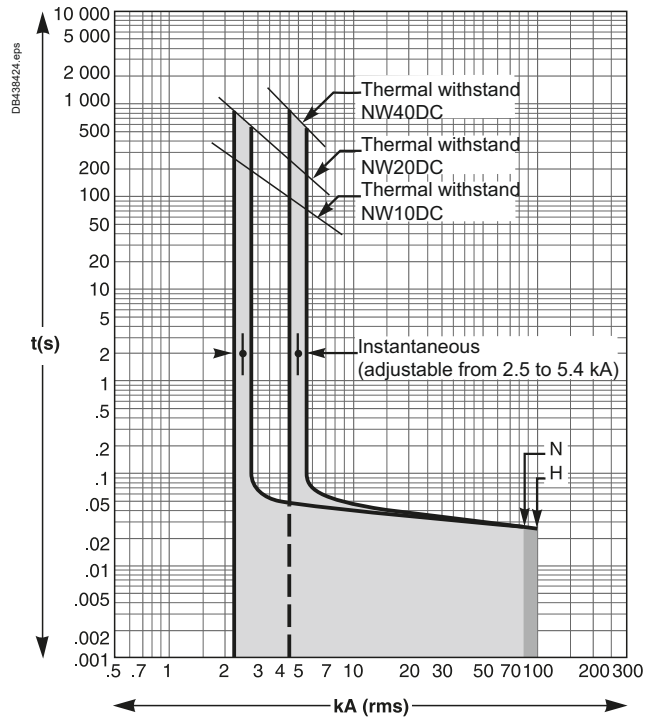
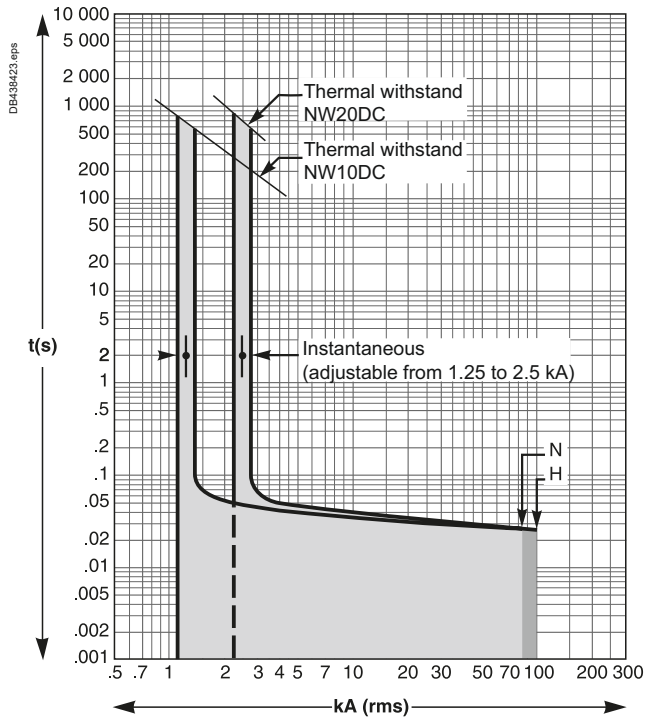
Tripping Curves

 $U = 500 \text{ V DC}, L/R = 5 \text{ Ms}$

MicroLogic DC 1.0 Instantaneous Protection

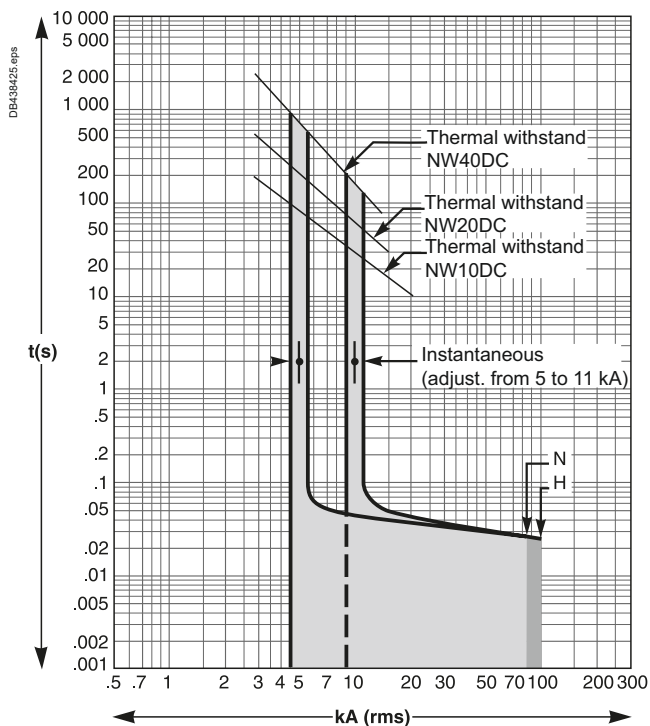
With 1250 - 2500 A Sensors

With 2500 - 5400 A Sensors



E

With 5000 - 11000 A Sensors



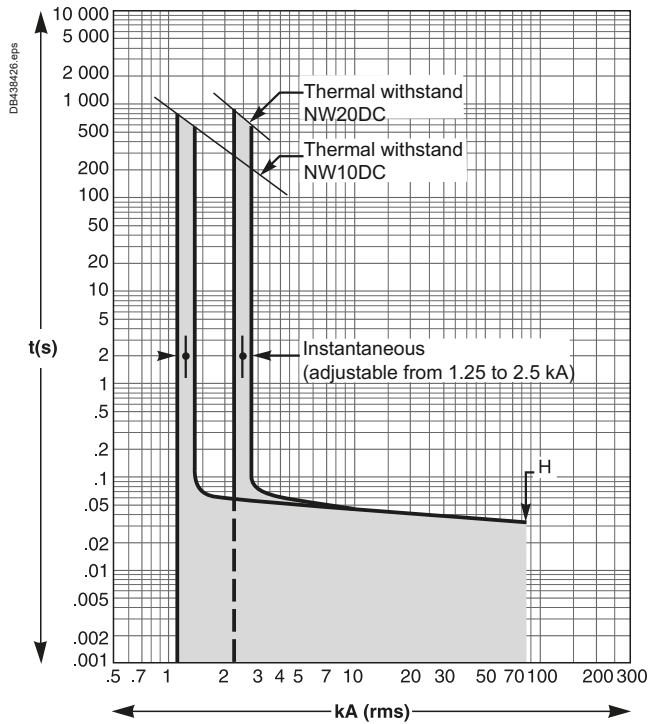
MasterPact NW10 to NW40 DC

Tripping Curves

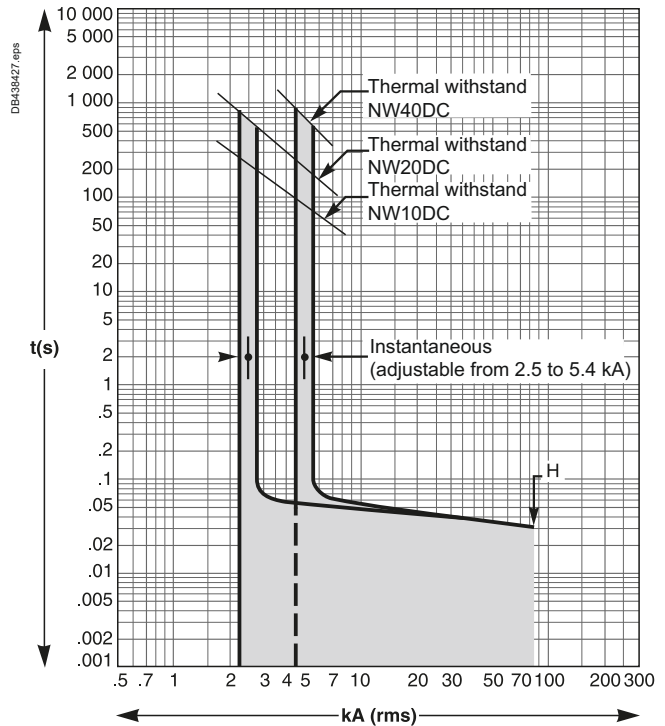
$$U = 750/900 \text{ V DC, } L/R = 5 \text{ Ms}$$

MicroLogic DC 1.0 Instantaneous Protection

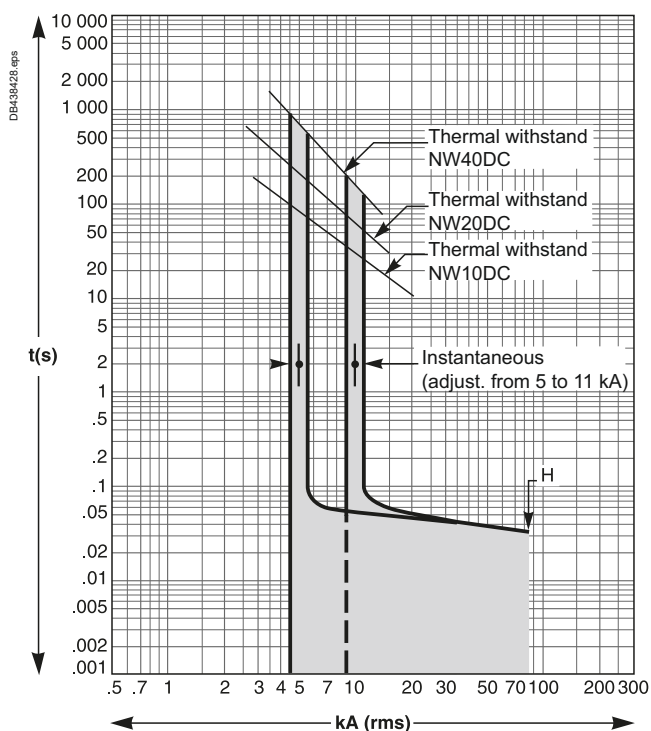
With 1250 - 2500 A Sensors



With 2500 - 5400 A Sensors



With 5000 - 11000 A Sensors



E

MasterPact NW10 to NW40 DC

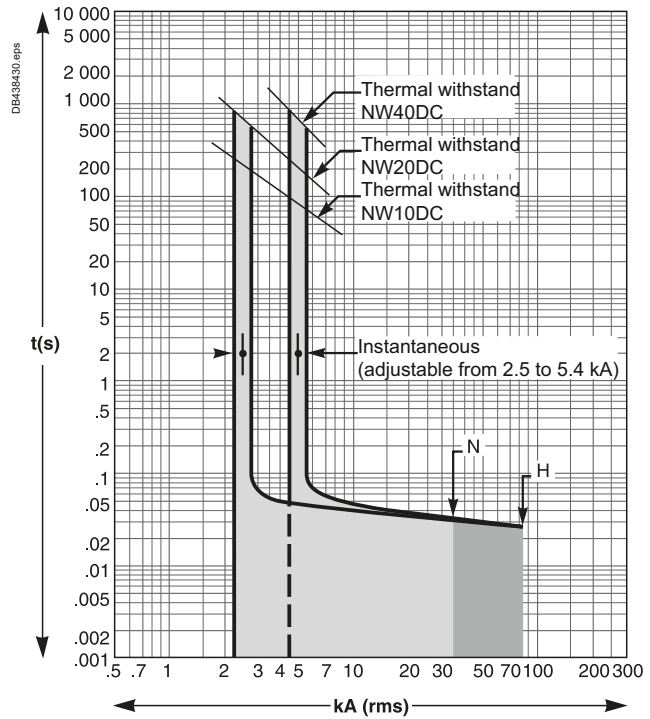
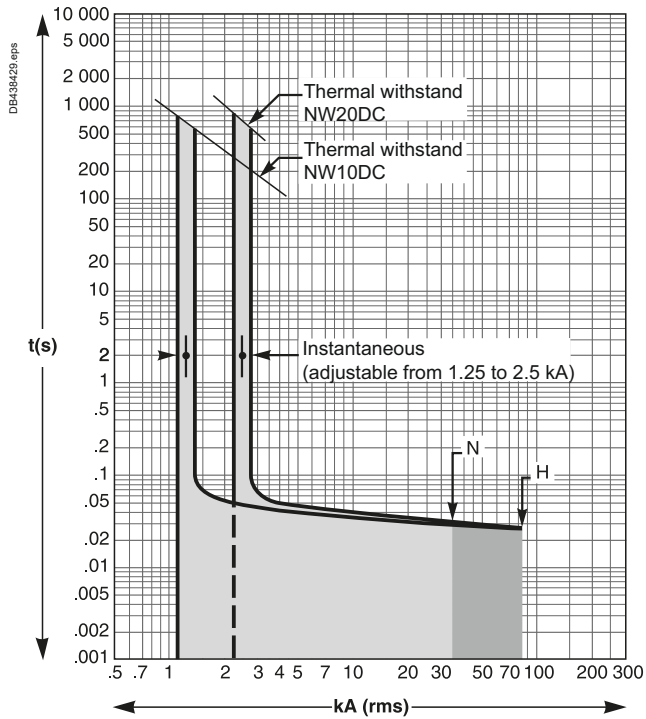
Tripping Curves

U = 500 V DC, L/R = 15 Ms

MicroLogic DC 1.0 Instantaneous Protection

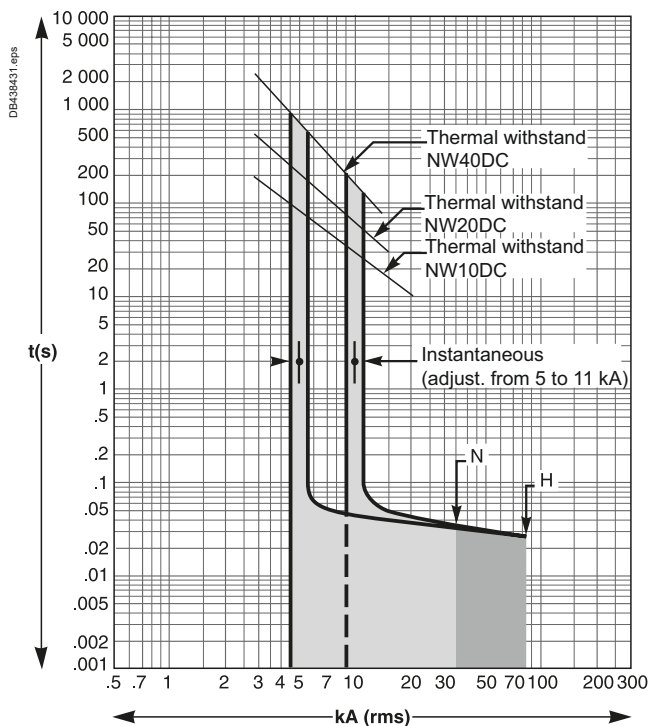
With 1250 - 2500 A Sensors

With 2500 - 5400 A Sensors



E

With 5000 - 11000 A Sensors



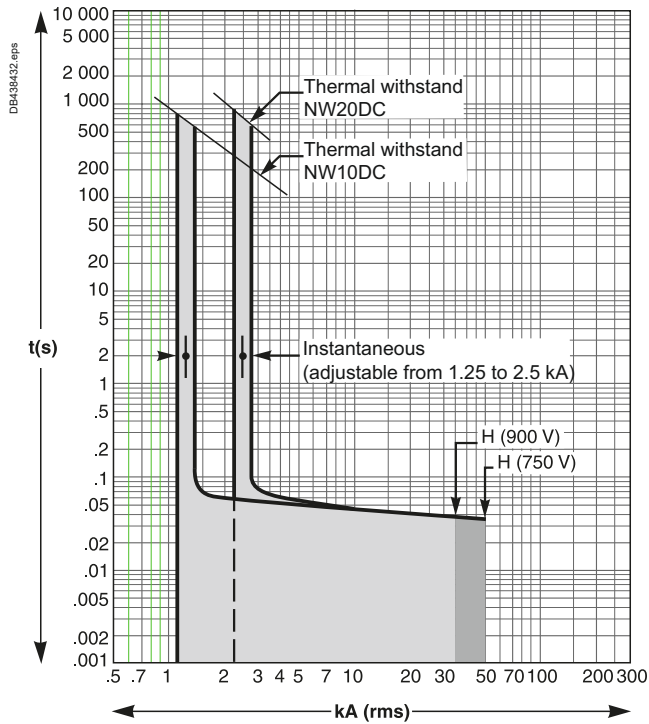
MasterPact NW10 to NW40 DC

Tripping Curves

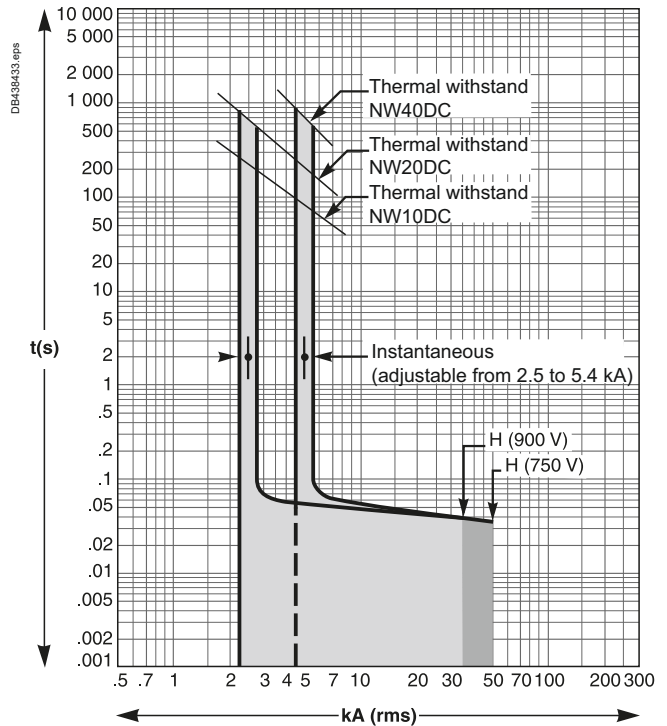
 $U = 750/900 \text{ V DC}$, $L/R = 15 \text{ Ms}$

MicroLogic DC 1.0 Instantaneous Protection

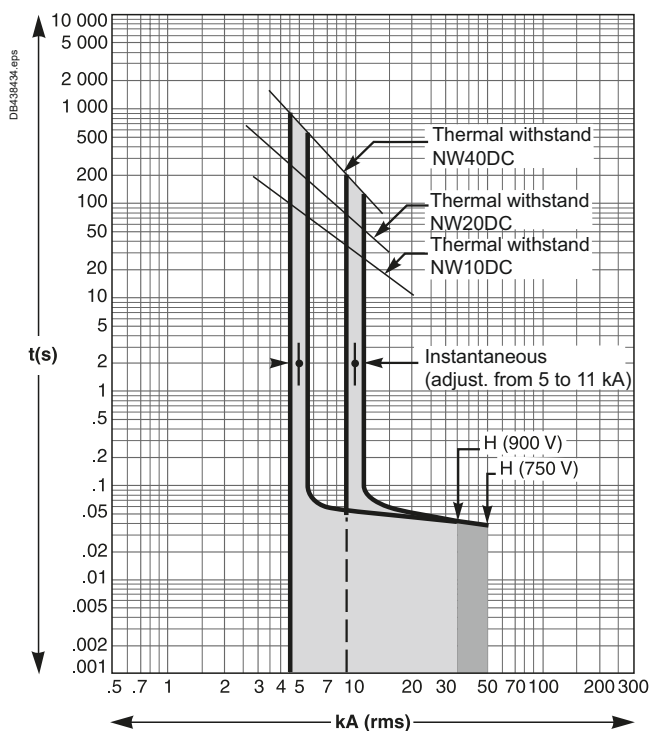
With 1250 - 2500 A Sensors



With 2500 - 5400 A Sensors



With 5000 - 11000 A Sensors



E

MasterPact NW10 to NW40 DC

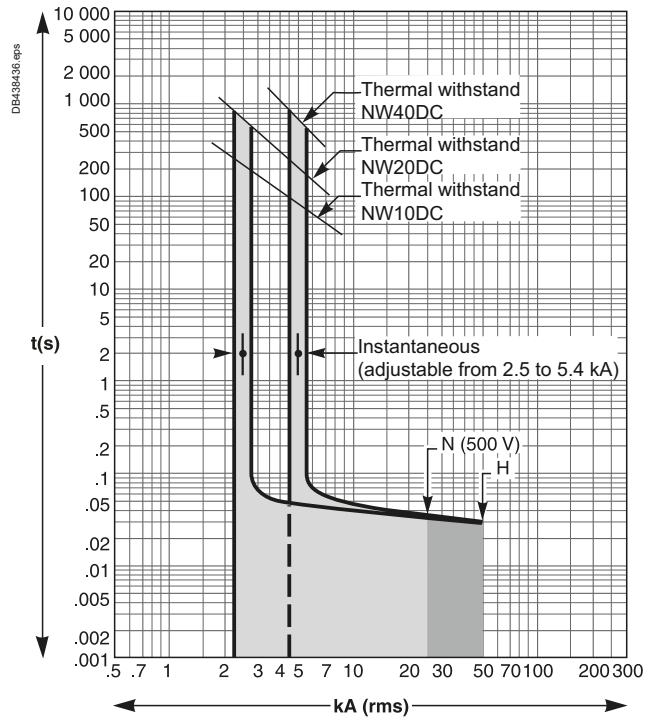
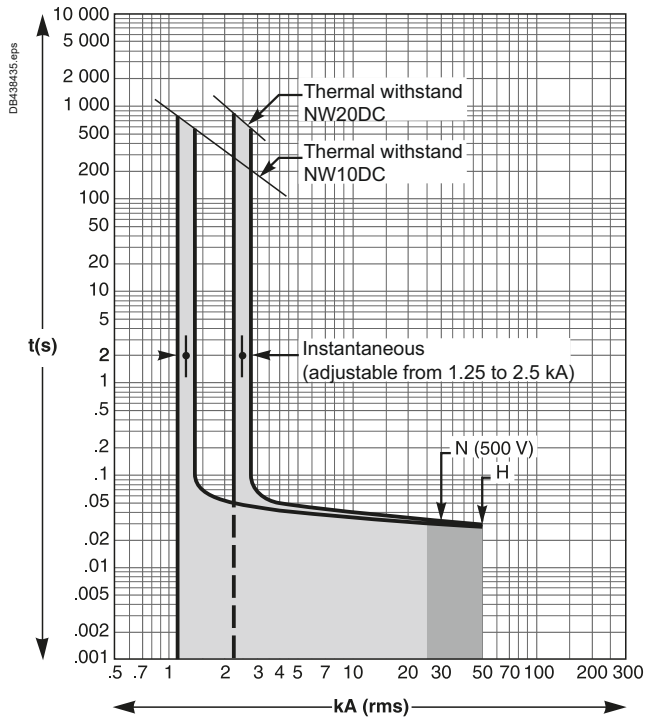
Tripping Curves

U = 500/750 V DC, L/R = 30 Ms

MicroLogic DC 1.0 Instantaneous Protection

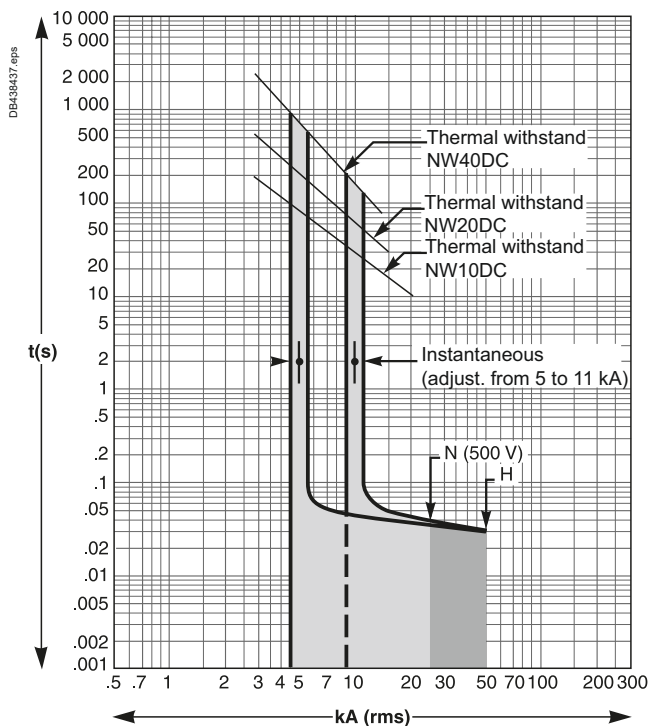
With 1250 - 2500 A Sensors

With 2500 - 5400 A Sensors



E

With 5000 - 11000 A Sensors



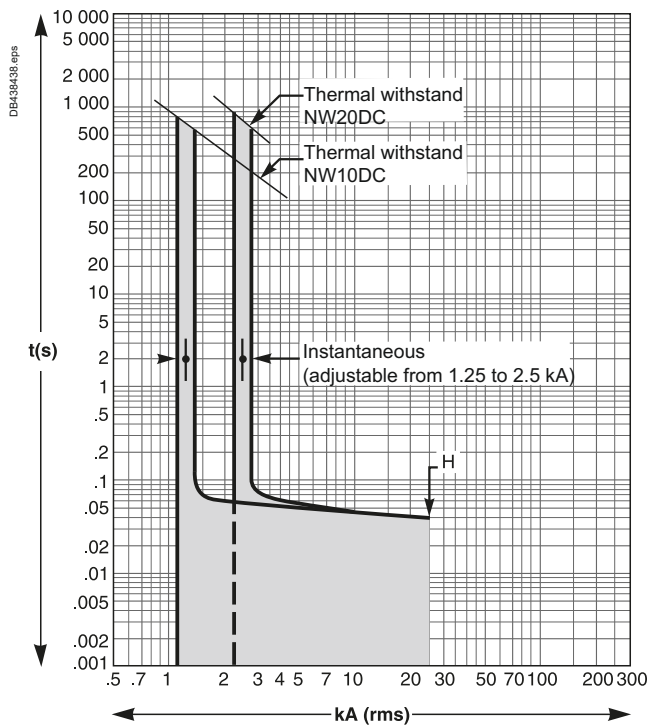
MasterPact NW10 to NW40 DC

Tripping Curves

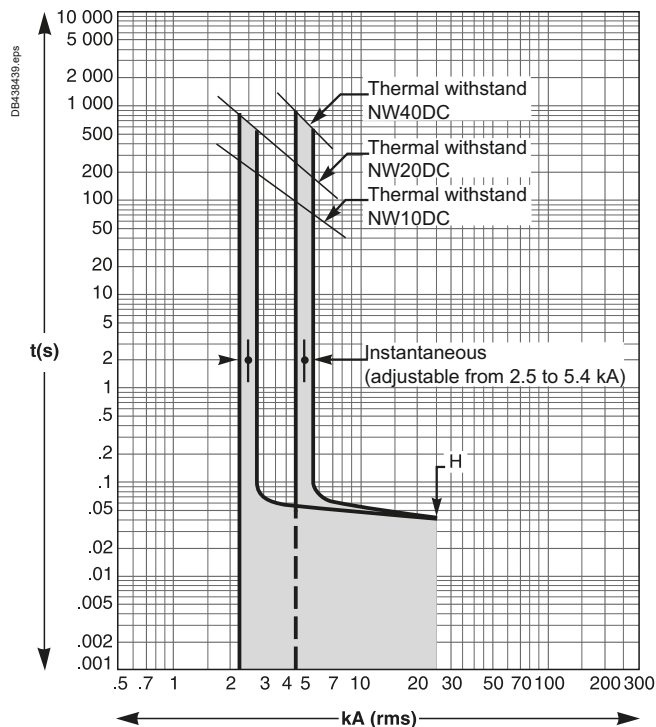
$$U = 900 \text{ V DC, } L/R = 30 \text{ Ms}$$

MicroLogic DC 1.0 Instantaneous Protection

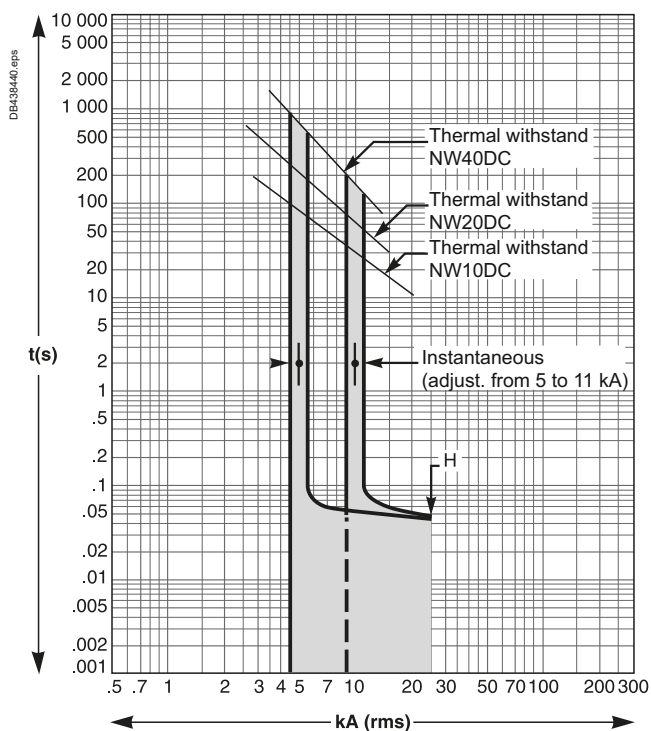
With 1250 - 2500 A Sensors



With 2500 - 5400 A Sensors



With 5000 - 11000 A Sensors



E



Catalog Numbers and Order Form

ComPacT NSX100 DC to NSX630 DC
Choice of Device F-4

**ComPacT NSX100 DC to 1200 DC,
NSX400 NA DC to NSX630 NA DC**
Choice of Device F-5
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Electrical Auxiliaries F-8
Operation and Locking/Interlocking F-10
Installation F-11

ComPacT NSX100 DC to NSX630 DC
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NSX400 NA DC to NSX630 NA DC** F-13

**ComPacT INS DC PV - ComPacT NSX80/500 TM
DC PV to NSX100/500 NA DC PV** F-14
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Installation F-20

**ComPacT NSX630b to 1600 NA
DC PV Fixed Electrically Operated** F-21
Complete Device without Motor Mechanism Module F-21
Device Based on Separate Components with or without Motor
Mechanism Module F-22

ComPacT INS40 to 160 DC
Complete Fixed/FC Device and Accessories F-23
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ComPacT INS250-100 to 630 DC
Complete Fixed/FC Device and Accessories F-26

ComPacT INV100 to 630 DC
Complete Fixed/FC Device and Specific Accessories F-27

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Electrical Diagrams D-1
Additional Characteristics E-1

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and ComPacT INV100 to 250 DC
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ComPacT INS320 to 630 DC
and ComPacT INV320 to 630 DC
AccessoriesF-31

ComPacT INS630b to 2500 DC
Complete Fixed/FC Device and AccessoriesF-33
Complete Fixed/FC Device and Specific AccessoriesF-34

ComPacT INS630b to 2500 DC
and ComPacT INV630b to 2500 DC
AccessoriesF-35

NW10 DC to NW40 DC Fixed and Drawout
Circuit Breakers and Switch-DisconnectorsF-37

NW10 DC to NW40 DC Fixed Circuit Breakers
Indication ContactsF-38
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NW10 DC to NW40 DC Drawout Circuit Breakers
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Installation Recommendations.....B-1

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Spare Parts: MasterPact NW DC, EPDC, DC PV

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Circuit Breaker Locking and Accessories	
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ComPacT NSX100 DC to NSX250 DC

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ComPacT NSX400 DC to NSX630 DC

Circuit Breakers and Switch-Disconnectors.....	F-53
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ComPacT NSX1200 DC Circuit Breakers.....

F-54

ComPacT NSX80/500 TM DC PV

to NSX100/500 NA DC PV

Circuit Breakers and Switch-Disconnectors.....	F-55
--	------

ComPacT NSX250/500 TM DC EP

to NSX250/630 NA DC EP

Circuit Breakers and Switch-Disconnectors.....	F-56
--	------

ComPacT NSX630/1600 NA DC PV 4P,

Fixed Version

Upside: Front Connection, 2 Kit Heatsink, Phase Separator

Are Included.....	F-57
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MasterPact NW DC.....

F-58

Other Chapters

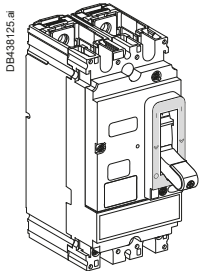
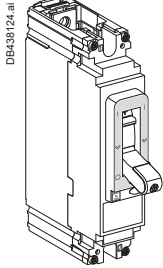
Presentation.....	2
Functions and Characteristics.....	A-1
Installation Recommendations.....	B-1
Dimensions and Connection.....	C-1
Electrical Diagrams.....	D-1
Additional Characteristics.....	E-1

ComPacT NSX100 DC to NSX630 DC

Choice of Device

ComPacT NSX100/160 F/N/M/S 1P/2P

With thermal-magnetic trip unit TM-D



ComPacT NSX100F AC/DC

Rating

TM16D
TM20D
TM25D
TM30D
TM40D
TM50D
TM63D
TM80D
TM100D

1P 1d (Icu = 36 kA 250 V DC)

C10F1TM016
C10F1TM020
C10F1TM025
C10F1TM030
C10F1TM040
C10F1TM050
C10F1TM063
C10F1TM080
C10F1TM100

ComPacT NSX100F AC/DC

Rating

C10F2TM016
C10F2TM020
C10F2TM025
C10F2TM030
C10F2TM040
C10F2TM050
C10F2TM063
C10F2TM080
C10F2TM100

2P 2d (Icu = 36 kA 250 V DC/1P - 500 V DC/2P)

ComPacT NSX160F AC/DC

Rating

TM125D
TM160D

1P 1d (Icu = 36 kA 250 V DC)

C16F1TM125
C16F1TM160

ComPacT NSX160F AC/DC

Rating

C16F2TM125
C16F2TM160

2P 2d (Icu = 36 kA 250 V DC/1P - 500 V DC/2P)

ComPacT NSX100N AC/DC

Rating

TM16D
TM20D
TM25D
TM30D
TM40D
TM50D
TM63D
TM80D
TM100D

1P 1d (Icu = 50 kA 250 V DC)

C10N1TM016
C10N1TM020
C10N1TM025
C10N1TM030
C10N1TM040
C10N1TM050
C10N1TM063
C10N1TM080
C10N1TM100

ComPacT NSX100M AC/DC

Rating

C10M2TM016
C10M2TM020
C10M2TM025
C10M2TM030
C10M2TM040
C10M2TM050
C10M2TM063
C10M2TM080
C10M2TM100

2P 2d (Icu = 85 kA 250 V DC/1P - 500 V DC/2P)

ComPacT NSX160N AC/DC

Rating

TM125D
TM160D

1P 1d (Icu = 50 kA 250 V DC)

C16N1TM125
C16N1TM160

ComPacT NSX160M AC/DC

Rating

C16M1TM125
C16M1TM160

2P 2d (Icu = 85 kA 250 V DC/1P - 500 V DC/2P)

ComPacT NSX100M AC/DC

Rating

TM16D
TM20D
TM25D
TM30D
TM40D
TM50D
TM63D
TM80D
TM100D

1P 1d (Icu = 85 kA 250 V DC)

C10M1TM016
C10M1TM020
C10M1TM025
C10M1TM030
C10M1TM040
C10M1TM050
C10M1TM063
C10M1TM080
C10M1TM100

ComPacT NSX100S AC/DC

Rating

C10S2TM016
C10S2TM020
C10S2TM025
C10S2TM030
C10S2TM040
C10S2TM050
C10S2TM063
C10S2TM080
C10S2TM100

2P 2d (Icu = 100 kA 250 V DC/1P - 500 V DC/2P)

ComPacT NSX160M AC/DC

Rating

TM125D
TM160D

1P 1d (Icu = 85 kA 250 V DC)

C16M1TM125
C16M1TM160

ComPacT NSX160S AC/DC

Rating

C16S2TM125
C16S2TM160

2P 2d (Icu = 100 kA 250 V DC/1P - 500 V DC/2P)

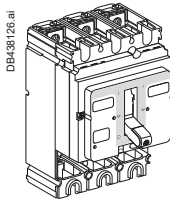
F

ComPacT NSX100 DC to 1200 DC, NSX400 NA DC to NSX630 NA DC

Choice of Device

ComPacT NSX100/160/250 DC

Basic frame



Rating

NSX100F DC
NSX160F DC
NSX250F DC

NSX100S DC
NSX160S DC
NSX250S DC

3P

(Icu = 36 kA 250 V DC/1P - 500 V DC/ 2P - 750 V DC/3P)

C10F3D
C16F3D
C25F3D

4P

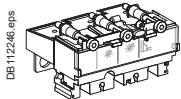
C10F4D
C16F4D
C25F4D

(Icu = 100 kA 250 V DC/1P - 500 V DC/ 2P - 750 V DC/3P)

C10S3D
C16S3D
C25S3D

C10S4D
C16S4D
C25S4D

+ Trip unit



Standard protection: trip unit TM-D/DC

Rating

TM16D
TM25D
TM32D
TM40D
TM50D
TM63D
TM80DC
TM100DC
TM125DC
TM160DC
TM200DC
TM250DC

3P 3d

C103TM016
C103TM025
C103TM032
C103TM040
C103TM050
C103TM063
C103TM080D
C103TM100D
C163TM125D
C163TM160D
C253TM200D
C253TM250D

4P 4d

C104TM016
C104TM025
C104TM032
C104TM040
C104TM050
C104TM063
C104TM080D
C104TM100D
C164TM125D
C164TM160D
C254TM200D
C254TM250D

Type G protection: trip unit TM-G

Rating

TM16G
TM25G
TM40G
TM63G
TM80G
TM100G
TM125G [*]
TM160G [*]
TM200G [*]
TM250G [*]

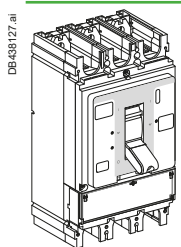
3P 3d

C103MG016
C103MG025
C103MG040
C103MG063
C103MG080
C103MG100
C163MG125D
C163MG160D
C253MG200D
C253MG250D

4P 4d

C104MG016
C104MG025
C104MG040
C104MG063
C104MG080
C104MG100
C164MG125D
C164MG160D
C254MG200D
C254MG250D

ComPacT NSX250/630 F/S DC



Rating

NSX250F TM-DC
NSX320F TM-DC
NSX400F TM-DC
NSX500F TM-DC

NSX600F TM-DC

NSX250S TM-DC
NSX320S TM-DC
NSX400S TM-DC
NSX500S TM-DC

NSX600S TM-DC

3P

(Icu = 36 kA 250 V DC/1P - 500 V DC/ 2P - 750 V DC/3P)

C40F3TM250D
C40F3TM320D
C40F3TM400D
C63F3TM500D

4P

C40F4TM250D
C40F4TM320D
C40F4TM400D
C63F4TM500D

(Icu = 36 kA 250 V DC/1P - 500 V DC/ 2P)

C63F3TM600D

C63F4TM600D

(Icu = 100 kA 250 V DC/1P - 500 V DC/ 2P - 750 V DC/3P)

C40S3TM250D

C40S4TM250D

C40S3TM320D

C40S4TM320D

C40S3TM400D

C40S4TM400D

C63S3TM500D

C63S4TM500D

(Icu = 100 kA 250 V DC/1P - 500 V DC/ 2P)

C63S3TM600D

C63S4TM600D

ComPacT NSX630/1200 DC

Rating

NSX630 TM-DC
NSX800 TM-DC
NSX1000 TM-DC
NSX1200 TM-DC

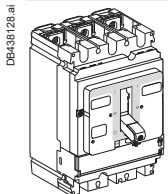
2P (Icu = 50 kA 300 V DC/ 1P - 600 V DC/2P)

without bare cable connector

C1BN2TM630D
C1BN2TM800D
C1BN2TM10HD
C1BN2TM12HD

ComPacT NSX100/160/250 NA ^[1]

With NA switch-disconnector unit



ComPacT NSX100NA

Rating

100

2P

C102100S

3P

C103100S

4P

C104100S

ComPacT NSX160NA

Rating

160

2P

C162160S

3P

C163160S

4P

C164160S

ComPacT NSX250NA

Rating

250

2P

C252250S

3P

C253250S

4P

C254250S

ComPacT NSX400/630 NA DC

ComPacT NSX400 NA DC
ComPacT NSX630 NA DC

3P

C403400DS
C633630DS

4P

C404400DS
C634630DS

[1] See catalog ComPacT NSX LVPED221001EN for order form and configured product.

[*] Adapted products (basic frame and trip unit TMG are not sold separately).

ComPacT NSX100 DC to 1200 DC, NSX400 NA DC to NSX630 NA DC

Connection Accessories

Special Connection Accessories for Parallel or Series Connection

			NSX100-250 DC	NSX400-630 DC	NSX1200 DC
DB43203 eps	Connection accessories				
	Connection accessories for parallel or series connection of 2 poles ^[1]	1 connection plate equipped with heat sink + 1 interphase barrier ^[2]	LV438328	LV438338	
DB42549 eps	Connection plates				
	Connection plates for parallel connection of 3 poles	1 set of 2 connection plates	LV438329	[3]	
	Connection plates for parallel connection of 4 poles		[3]	[3]	
	1P short terminal shields	1 pair	LV438320		
	2P short terminal shields	2 pairs	2 x LV438320		
	3P terminal shields for series connection of poles	1 set	LV438325	LV438291 ^[5]	
				LV438292 ^[5]	
	4P terminal shields for series connection of poles	1 set	LV438326	LV438294 ^[5]	
				LV438295 ^[5]	
	4P terminal shields for parallel connection of poles (2P/4P)	1 set	LV438327	LV438293 ^[5]	LV438293 ^[5]
	1 long terminal shield for breaker or plug-in base	3P	LV429517		
		4P	LV429518		

Connection Accessories (Cu or Al)

			NSX100-250 DC	NSX400-630 DC
Rear connections				
DB11225 eps	2 short		LV429235	LV432475
	2 long		LV429236	LV432476
Bare cable connectors				
DB11226 eps	Steel connectors	1.5 to 95 mm ² ; ≤ 160 A	Set of 2	LV429246
			Set of 3	LV429242
DB11227 eps	Aluminium connectors	25 to 95 mm ² ; ≤ 250 A	Set of 4	LV429243
			Set of 2	LV429255
DB11228 eps		120 to 185 mm ² ; ≤ 250 A	Set of 3	LV429227
			Set of 4	LV429228
DB11229 eps	Clips for connectors		Set of 2	LV429247
			Set of 3	LV429259
DB11227 eps			Set of 4	LV429260
			Set of 10	LV429241
DB11227 eps	Aluminium connectors for 2 cables ^[4] 2 x (50 to 120 mm ²) ; ≤ 250 A		Set of 3 (3P)	LV429218
			Set of 4 (4P)	LV429219
DB11228 eps	Aluminium connectors 1x (35 to 300 mm ²)		Set of 3 (3P)	LV432479
			Set of 4 (4P)	LV432480
DB11228 eps	Aluminium connectors ^[4] for 6 cables 6 x (1.5 to 35 mm ²) ; ≤ 250 A		Set of 3 (3P)	LV429248
			Set of 4 (4P)	LV429249
DB11228 eps	Aluminium connectors for 2 cables 2 x (35 to 300 mm ²)		Set of 3 (3P)	LV432481
			Set of 4 (4P)	LV432482
DB11274 eps	6.35 mm voltage tap for steel or aluminium connectors		Set of 10	LV429348

[1] Series connection: 2 poles = 1 connection plate.
3 poles = 2 connection plates.

4 poles = 3 connection plates.
Parallel connection: 2 poles = 2 connection plates.
3 poles = 1 set of 2 connection plates (29499).
2 x 2 poles = 4 connection plates.

[2] These connection accessories come with an interphase barrier.

[3] To be made by the customer.

[4] Supplied with 2 or 3 interphase barriers.

[5] Refer to page B-5 for details.

ComPacT NSX100 DC to 1200 DC, NSX400 NA DC to NSX630 NA DC

Connection Accessories (Cont.)

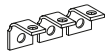
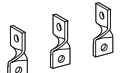
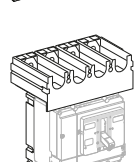
Connection Accessories (Cu or Al)

NSX100-250 DC

NSX400-630 DC

NSX1200 DC

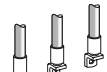
Terminal extensions

 DB43204.eps	Right-angle terminal extensions	Set of 3	LV429261	LV432484	
		Set of 4	LV429262	LV432485	
 DB43205.eps	Straight terminal extensions	Set of 3	LV429263		
		Set of 4	LV429264		
 DB112230.eps	45° terminal extension ^[1]	Set of 3	LV429223		
		Set of 4	LV429224		
 DB112231.eps	Edgewise terminal extensions ^[1]	Set of 3	LV429308	LV432486	
		Set of 4	LV429309	LV432487	
 DB112234.eps	Double-L terminal extensions ^[1]	Set of 3	LV429221		
		Set of 4	LV429222		
 DB112235.eps	Spreaders from 35 to 45 mm pitch ^[1]	3P	LV431563		
		4P	LV431564		
 DB438128.al	One-piece spreader from 35 to 45 mm pitch	3P	LV431060		
		4P	LV431061		
	Front alignment base (for one-piece spreader)	3P/4P	LV431064		

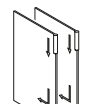
Crimp lugs for copper cable (supplied with 2 or 3 interphase barriers)

 DB112237.eps	For cable 120 mm ²	Set of 3	LV429252		
		Set of 4	LV429256		
	For cable 150 mm ²	Set of 3	LV429253		
		Set of 4	LV429257		
	For cable 185 mm ²	Set of 3	LV429254	LV429254	LV429254
		Set of 4	LV429258	LV429258	LV429258
	For cable 240 mm ²	Set of 3		LV432500	LV432500
		Set of 4		LV432501	LV432501
	For cable 300 mm ²	Set of 3		LV432502	LV432502
		Set of 4		LV432503	LV432503

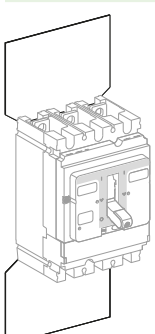
Crimp lugs for aluminium cable (supplied with 2 or 3 interphase barriers)

 DB112238.eps	For cable 150 mm ²	Set of 3	LV429504		
		Set of 4	LV429505		
	For cable 185 mm ²	Set of 3	LV429506	LV429506	LV429506
		Set of 4	LV429507	LV429507	LV429507
	For cable 240 mm ²	Set of 3		LV432504	LV432504
		Set of 4		LV432505	LV432505
	For cable 300 mm ²	Set of 3		LV432506	LV432506
		Set of 4		LV432507	LV432507

Barriers

 DB43206.eps	Interphase barriers	Set of 6	LV429329	LV432570	
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Insulation screen

 DB438130.al	2 insulating screens for breaker (45 mm pitch)	3P	LV429330		
		4P	LV429331		
	2 insulating screens for breaker (70 mm pitch)	3P		LV432578	
		4P		LV432579	

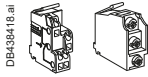
[1] Supplied with 2 or 3 interphase barriers.

ComPacT NSX100 DC to 1200 DC, NSX400 NA DC to NSX630 NA DC

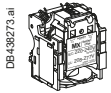
Electrical Auxiliaries

Electrical Auxiliaries

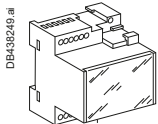
Auxiliary contacts (changeover)



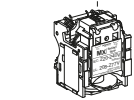
OF or SD or SDE or SDV	29450
OF or SD or SDE or SDV low level	29452
SDE adapter, mandatory for trip unit	LV429451



Voltage releases		MX	MN
AC	24 V 50/60 Hz	LV429384	LV429404
	48 V 50/60 Hz	LV429385	LV429405
	110-130 V 50/60 Hz	LV429386	LV429406
	220-240 V 50/60 Hz 208-277 V 60 Hz	LV429387	LV429407
	380-415 V 50 Hz 440-480 V 60 Hz	LV429388	LV429408
	525 V 50 Hz - 600 V 60 Hz	LV429389	LV429409
DC	12 V	LV429382	LV429402
	24 V	LV429390	LV429410
	30 V	LV429391	LV429411
	48 V	LV429392	LV429412
	60 V	LV429383	LV429403
	125 V	LV429393	LV429413
	250 V	LV429394	LV429414



MN 48 V 50/60 Hz with fixed time delay			
Composed of:	MN 48 V DC		LV429412
	Delay unit 48 V 50/60 Hz		LV429426



MN 220-240 V 50/60 Hz with fixed time delay			
Composed of:	MN 250 V DC		LV429414
	Delay unit of 220-240 V 50/60 Hz		LV429427

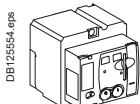
MN 48 V DC/AC 50/60 Hz with adjustable time delay			
Composed of:	MN 48 V DC		LV429412
	Delay unit 48 V DC/AC 50/60 Hz		33680

MN 110-130 V DC/AC 50/60 Hz with adjustable time delay			
Composed of:	MN 125 V DC		LV429413
	Delay unit 100-130 V DC/AC 50/60 Hz		33681

MN 220-250 V DC/AC 50/60 Hz with adjustable time delay			
Composed of:	MN 250 V DC		LV429414
	Delay unit 200-250 V DC/AC 50/60 Hz		33682

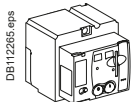
Motor Mechanism

Motor mechanism module supplied with SDE adapter



	Voltage	MT100/160	MT250	MT400-630
AC	48-60 V 50/60 Hz	LV429440	LV431548	LV432639
	110-130 V 50/60 Hz	LV429433	LV431540	LV432640
	220-240 V 50/60 Hz	LV429434	LV431541	LV432641
	208-277 V 60 Hz			
	380-415 V 50/60 Hz	LV429435	LV431542	LV432642
DC	440-480 V 60 Hz			LV432647
	24-30 V	LV429436	LV431543	LV432643
	48-60 V	LV429437	LV431544	LV432644
	110-130 V	LV429438	LV431545	LV432645
	250 V	LV429439	LV431546	LV432646
Operations counter				LV432648

Communicating motor mechanism module supplied with SDE adapter



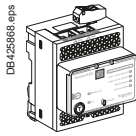
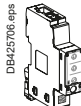
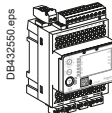
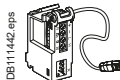
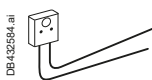
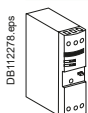
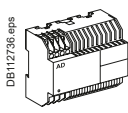
Motor mechanism module	MTc 100/160	220-240 V 50/60 Hz	LV429441
	MTc 250	220-240 V 50/60 Hz	LV431549
	MTc 400/630	220-240 V 50/60 Hz	LV432652

+			
Breaker and Status Communication Module	BSCM		LV434205

+			
NSX cord	Wire length L = 0.35 m		LV434200
	Wire length L = 1.3 m		LV434201
	Wire length L = 3 m		LV434202
	U > 480 V AC wire length L = 0.35 m		LV434204

ComPacT NSX100 DC to 1200 DC, NSX400 NA DC to NSX630 NA DC Electrical Auxiliaries

Communication Option

	IFE	Ethernet interface for LV breaker	LV434001
		Ethernet interface for LV breakers and gateway	LV434002
	IFM Modbus-SL interface module		LV434000
	I/O application module		LV434063
	User guide IFE		DOCA0084EN
	User guide I/O application module		DOCA0055EN
ULP wiring accessories			
	NSX cord L = 0.35 m		LV434200
	NSX cord L = 1.3 m		LV434201
	NSX cord L = 3 m		LV434202
	NSX cord for U > 480 V AC L = 1.3 m		LV434204
	10 stacking connectors for communication interface modules		TRV00217
	2 Modbus line terminators		VW3A8306DRC ^[1]
	RS 485 roll cable (4 wires, length 60 m)		50965
	5 RJ45 connectors female/female		TRV00870
	10 ULP line terminators		TRV00880
	10 RJ45/RJ45 male cord L = 0.3 m		TRV00803
	10 RJ45/RJ45 male cord L = 0.6 m		TRV00806
	5 RJ45/RJ45 male cord L = 1 m		TRV00810
	5 RJ45/RJ45 male cord L = 2 m		TRV00820
	5 RJ45/RJ45 male cord L = 3 m		TRV00830
	1 RJ45/RJ45 male cord L = 5 m		TRV00850
Power supply modules			
	External power supply module 100-240 V AC 110-230 V DC/24 V DC-3 A class 2		ABL8RPS24030 ^[2]
	External power supply module 24 V DC-1 A OVC IV		
	24-30 V DC		54440
	48-60 V DC		54441
	100-125 V AC		54442
	110-130 V AC		54443
	200-240 V AC		54444
	380-415 V AC		54445

^[1] SDE adapter mandatory for trip unit TM, TMG.

^[2] www.schneider-electric.com.

ComPacT NSX100 DC to 1200 DC, NSX400 NA DC to NSX630 NA DC

Operation and Locking/Interlocking

Rotary Handles

NSX100-250 DC

NSX400-1200 DC

Direct rotary handles

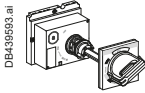


With black handle
With red handle on yellow front
MCC conversion accessory
CNOMO conversion accessory

LV429337T
LV429339T
LV429341T
LV429342T

LV432597T
LV432599T
LV432606T
LV432602T

Extended rotary handle



With black handle
With red handle on yellow front
With telescopic handle for withdrawable device

LV429338T
LV429340T
LV429343T

LV432598T
LV432600T
LV432603T

Accessories

Indication auxiliary

1 early-break contact
2 early-break contacts

LV429345
LV429346

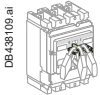
LV432605
LV429346

Locks

NSX100-250 DC

NSX400-1200 DC

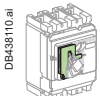
Toggle locking device for 1 to 3 padlocks



By removable device

29370

29370

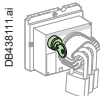


By fixed device for 3P/4P (open or close position)
By fixed device for 3P/4P (open position only)

LV429371
LV429370

LV432631
LV432630

Locking of the rotary handle



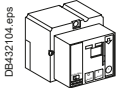
Keylock adapter (keylock not included)
Keylock (keylock adapter not included)

Ronis 1351B.500
Profalux KS5 B24 D4Z

LV429344
41940
42888

LV432604
41940
42888

Locking of the motor mechanism modules



Keylock adapter + Ronis keylock (special)
Keylock (keylock adapter not included)

Ronis 1351B.500
Profalux KS5 B24 D4Z

LV429449
41940
42888

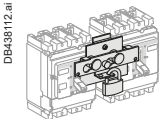
LV432649
41940
42888

Interlocking

NSX100-250 DC

NSX400-1200 DC

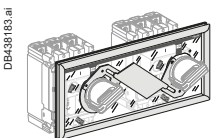
Mechanical interlocking for circuit breakers



With toggles

LV429354T

LV432614T

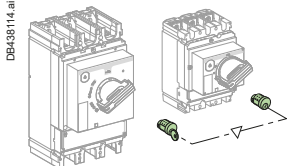


With rotary handles

LV429369T

LV432621T

Interlocking with key (2 keylocks/1 key) for rotary handles



Keylock kit (keylock not included)^[1]
1 set of 2 keylocks
(1 key only, keylock kit not included)

Ronis 1351B.500
Profalux KS5 B24 D4Z

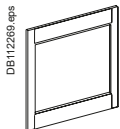
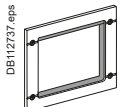
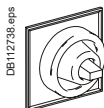
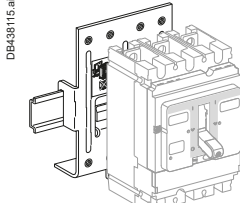
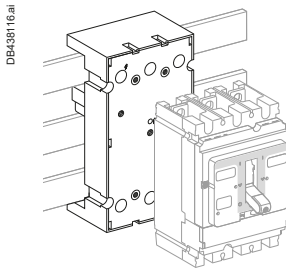
LV429344
41950
42878

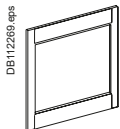
LV432604
41950
42878

[1] NSX100-250 DC only.

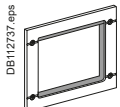
ComPacT NSX100 DC to 1200 DC, NSX400 NA DC to NSX630 NA DC Installation

Installation Accessories

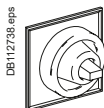
	NSX100-250 DC	NSX400-1200 DC	
Front-panel escutcheons			
 DB112369.eps IP30	IP30 escutcheon for all control types	LV429525	LV432557
	IP30 trip unit access escutcheon for toggle	LV429526	LV432559
 DB112737.eps IP40	IP40 escutcheon for all control types	LV429317	LV432558
	IP43 rubber toggle cover		
 DB112738.eps	1 toggle cover	LV429319	LV432560
Lead-sealing accessories			
 DB115615.eps	Bag of accessories	LV429375	LV429375
Din rail adapter			
 DB438115.ai	1 adapter	LV429305	
60 Mm Plate Busbar Adapter			
 DB438116.ai	3P 60 mm busbar adapter	LV429372	LV432623
	4P 60 mm busbar adapter	LV429373	LV432624



IP30



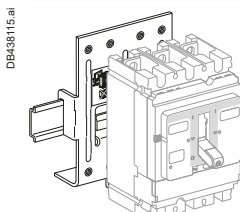
IP40



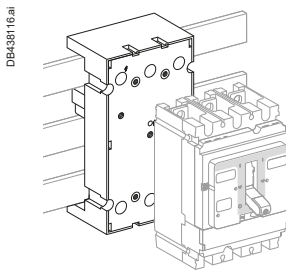
Lead-sealing accessories



Din rail adapter



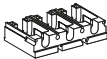
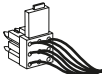
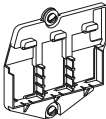
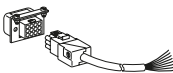
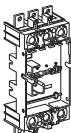
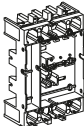
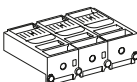
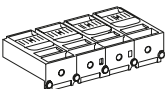
60 Mm Plate Busbar Adapter



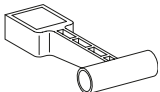
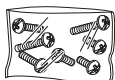
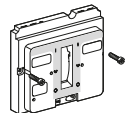
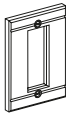
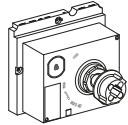
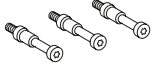
F

ComPacT NSX100 DC to NSX630 DC

Plug-in/Withdrawable Accessories

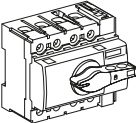
Plug-in/Withdrawable Version Accessories			NSX100-250 DC	NSX400-630 DC
Insulation accessories				
	1 connection adapter for plug-in base	3P	LV429306	LV432584
		4P	LV429307	LV432585
Auxiliary connections				
	1 9-wire fixed connector (for base)		LV429273	LV429273
	1 9-wire moving connector (for circuit breaker)		LV429274	LV432523
	1 support for 2 moving connectors		LV429275	LV432525
	9-wire manual auxiliary connector (fixed + moving)		LV429272	LV429272
Plug-in base accessories				
	2 long insulated right angle terminal extensions	Set of 2	LV429276	LV432526
	2 IP40 shutters for base		LV429271	LV432521
	Base	2P	LV429265	
		3P	LV429266	LV432516
	Base	4P	LV429267	LV432517
	2 power connections	2/3/4P	LV429268	LV432518
	1 short terminal shields	2/3P	LV429515	LV432591
	1 short terminal shields	4P	LV429516	LV432592
	1 safety trip interlock	2/3/4P	LV429270	LV432520
Installation and connection				
	Kit for ComPacT	3P	LV429289 + LV429282 + LV429283	LV432538 + LV432532 + LV432533
		4P	LV429290 + LV429282 + LV429283	LV432539 + LV432532 + LV432533

Spare Parts: ComPacT NSX100 DC to 1200 DC, NSX400 NA DC to NSX630 NA DC

Spare Parts		NSX100-250 DC	NSX400-1200 DC
 DB11563.eps	Additional toggle extension		32595
 DB111430.eps	10 spare toggle extensions (only for ComPacT NSX250)	LV429313	
	5 spare toggle extensions		LV432553
 DB115620.eps	Bag of screws	LV429312	LV432552
 DB111431.eps	12 snap-in nuts (fixed/FC)	M6 for NSX100N/H/L	LV429234
		M8 for NSX160/250N/H/L	LV430554
 DB43817.ai	NS retrofit escutcheon	Small cut-out	LV429528
			LV432571
 DB432106.eps	IP40 toggle escutcheon	ComPacT NS type/small cut-out	29315
			32556
 DB111438.eps	1 set of 10 identification labels	LV429226	LV429226
 DB435119.ai	1 base for extended rotary handle	LV429502	LV432498
 DB111434.eps	Torque limiting screws (set of 12)	3P/4P ComPacT NSX100-630	LV429513
			LV432513
 DB111436.eps	5 transparent covers for trip unit	TM, MA, NA	LV429481

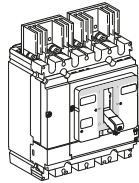
ComPacT INS DC PV - ComPacT NSX80/500 TM DC PV to NSX100/500 NA DC PV

ComPacT INS DC PV - 1 [1]

	ComPacT INS PV - 1 4P	28907
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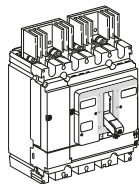
ComPacT NSX TM DC PV 4P Circuit Breaker

Connection and Insulation Accessories Mandatory

	Upstream connection (x2)	Upstream terminal shields	Downstream terminal shields
	connection plate with heatsink	LV438328	LV429518
		LV438328	LV429518
		LV438328	LV429518
		LV438328	LV429518
		LV438338	LV432594
		LV438338	LV432594
		LV438338	LV432594

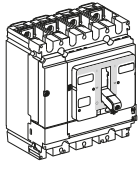
ComPacT NSX NA DC PV 4P Switch Disconnector

Connection and Insulation Accessories Mandatory

	Upstream connection (x2)	Upstream terminal shields	or interphase barrier	Downstream terminal shields	or interphase barrier
	connection plate with heatsink	LV438328	LV429329	LV429518	LV429329
		LV438328	LV429329	LV429518	LV429329
		LV438328	LV429329	LV429518	LV429329
	connection plate with heatsink (long)	LV438339	not available	LV429518	LV429329
	connection plate with heatsink	LV438338	LV432570	LV432594	LV432570
		LV438338	LV432570	LV432594	LV432570

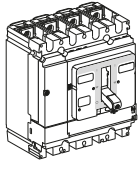
ComPacT NSX TM DC EP 4P Circuit Breaker

Connection and Insulation Accessories Mandatory

	Upstream connection (x2)	Upstream terminal shields	Downstream terminal shields
	connection plate with heatsink	LV438328	LV429518
		LV438328	LV429518
		LV438328	LV429518
		LV438328	LV429518
		LV438328	LV429518
		LV438338	LV432594
		LV438338	LV432594
		LV438338	LV432594

ComPacT NSX NA DC EP 4P Switch Disconnector

Connection and Insulation Accessories Mandatory

	Upstream connection (x2)	Upstream terminal shields	or interphase barrier	Downstream terminal shields	or interphase barrier
	connection plate with heatsink	LV438328	LV429329	LV429518	LV429329
		LV438328	LV429329	LV429518	LV429329
		LV438328	LV429329	LV429518	LV429329
		LV438328	LV429329	LV429518	LV429329
		LV438338	LV432570	LV432594	LV432570
		LV438338	LV432570	LV432594	LV432570
		LV438338	LV432570	LV432594	LV432570
		LV438338	LV432570	LV432594	LV432570

[1] For accessories, see catalog INS/INV page dedicated to INS40 to 160 A.

[2] Please consult Schneider Electric for information on the availability of the product.

ComPacT NSX80/500 TM DC PV to NSX100/500 NA

DC PV

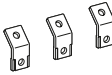
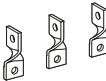
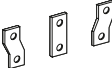
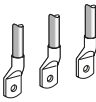
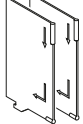
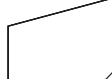
Connection Accessories

Connection Accessories (Cu or Al)				NSX100-250 DC PV	NSX400-630 DC PV
Rear connections					
	2 short			LV429235	LV432475
	2 long			LV429236	LV432476
Terminal shield					
	1 short terminal shield for breaker or plug-in base		4P	LV429516	LV432592
Bare cable connectors					
	Steel connectors	1.5 to 95 mm² ; ≤ 160 A	Set of 2	LV429246	
			Set of 3	LV429242	
			Set of 4	LV429243	
	Aluminium connectors	25 to 95 mm² ; ≤ 250 A	Set of 2	LV429255	
			Set of 3	LV429227	
			Set of 4	LV429228	
		120 to 185 mm² ; ≤ 250 A	Set of 2	LV429247	
			Set of 3	LV429259	
			Set of 4	LV429260	
	Clips for connectors		Set of 10	LV429241	
	Aluminium connectors for 2 cables ^[1] 2 x (50 to 120 mm²) ; ≤ 250 A		Set of 3 (3P)	LV429218	
			Set of 4 (4P)	LV429219	
	Aluminium connectors 1 x (35 to 300 mm²)		Set of 3 (3P)		LV432479
			Set of 4 (4P)		LV432480
	Aluminium connectors ^[1] for 6 cables 6 x (1.5 to 35 mm²) ; ≤ 250 A		Set of 3 (3P)	LV429248	
			Set of 4 (4P)	LV429249	
	Aluminium connectors for 2 cables 2 x (35 to 300 mm²)		Set of 3 (3P)		LV432481
			Set of 4 (4P)		LV432482
	6.35 mm voltage tap for steel or aluminium connectors		Set of 10	LV429348	

[1] Supplied with 2 or 3 interphase barriers.

ComPacT NSX80/500 TM DC PV to NSX100/500 NA DC PV Connection Accessories (Cont.)

Connection Accessories (Cu or Al)

Connection Accessories (Cu or Al)			NSX100-250 DC PV	NSX400-630 DC PV
Terminal extensions				
 DB43204.eps	Right-angle terminal extensions	Set of 2	LV429250	
		Set of 3	LV429261	LV432484
		Set of 4	LV429262	LV432485
 DB43205.eps	Straight terminal extensions	Set of 2	LV429251	
		Set of 3	LV429263	
		Set of 4	LV429264	
 DB11230.eps	45° terminal extension ^[1]	Set of 3	LV429223	
		Set of 4	LV429224	
 DB11231.eps	Edgewise terminal extensions ^[1]	Set of 3	LV429308	LV432486
		Set of 4	LV429309	LV432487
 DB11234.eps	Double-L terminal extensions ^[1]	Set of 3	LV429221	
		Set of 4	LV429222	
 DB11235.eps	Spreaders from 35 to 45 mm pitch ^[1]	3P	LV431563	
		4P	LV431564	
Crimp lugs for copper cable (supplied with 2 or 3 interphase barriers)				
 DB11237.eps	For cable 120 mm²	Set of 3	LV429252	
		Set of 4	LV429256	
	For cable 150 mm²	Set of 3	LV429253	
		Set of 4	LV429257	
	For cable 185 mm²	Set of 3	LV429254	
		Set of 4	LV429258	
For cable 240 mm²	Set of 3		LV432500	
	Set of 4		LV432501	
For cable 300 mm²	Set of 3		LV432502	
	Set of 4		LV432503	
Crimp lugs for aluminium cable (supplied with 2 or 3 interphase barriers)				
 DB11238.eps	For cable 150 mm²	Set of 3	LV429504	
		Set of 4	LV429505	
	For cable 185 mm²	Set of 3	LV429506	
		Set of 4	LV429507	
For cable 240 mm²	Set of 3		LV432504	
	Set of 4		LV432505	
For cable 300 mm²	Set of 3		LV432506	
	Set of 4		LV432507	
Barriers				
 DB43206.eps	Interphase barriers	Set of 6	LV429329	LV432570
Insulation screen				
 DB43130.ai	2 insulating screens for breaker (45 mm pitch)	3P	LV429330	
		4P	LV429331	
	2 insulating screens for breaker (70 mm pitch)	3P		LV432578
		4P		LV432579

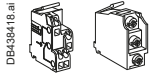
[1] Supplied with 2 or 3 interphase barriers.

Note: Circuit breakers or switch-disconnectors must be in "off" position when fitting the mechanical or electrical accessories.

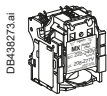
ComPacT NSX80/500 TM DC PV to NSX100/500 NA DC PV Electrical Auxiliaries

Electrical Auxiliaries

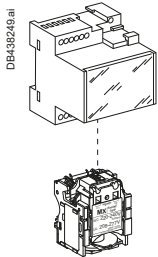
Auxiliary contacts (changeover)



OF or SD or SDE or SDV	29450
OF or SD or SDE or SDV low level	29452
SDE adapter, mandatory for trip unit	LV429451



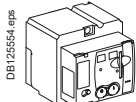
Voltage releases		MX	MN
AC	24 V 50/60 Hz	LV429384	LV429404
	48 V 50/60 Hz	LV429385	LV429405
	110-130 V 50/60 Hz	LV429386	LV429406
	220-240 V 50/60 Hz 208-277 V 60 Hz	LV429387	LV429407
	380-415 V 50 Hz 440-480 V 60 Hz	LV429388	LV429408
	525 V 50 Hz - 600 V 60 Hz	LV429389	LV429409
DC	12 V	LV429382	LV429402
	24 V	LV429390	LV429410
	30 V	LV429391	LV429411
	48 V	LV429392	LV429412
	60 V	LV429383	LV429403
	125 V	LV429393	LV429413
	250 V	LV429394	LV429414



MN 48 V 50/60 Hz with fixed time delay			
Composed of:	MN 48 V DC		LV429412
	Delay unit 48 V 50/60 Hz		LV429426
MN 220-240 V 50/60 Hz with fixed time delay			
Composed of:	MN 250 V DC		LV429414
	Delay unit of 220-240 V 50/60 Hz		LV429427
MN 48 V DC/AC 50/60 Hz with adjustable time delay			
Composed of:	MN 48 V DC		LV429412
	Delay unit 48 V DC/AC 50/60 Hz		33680
MN 110-130 V DC/AC 50/60 Hz with adjustable time delay			
Composed of:	MN 125 V DC		LV429413
	Delay unit 100-130 V DC/AC 50/60 Hz		33681
MN 220-250 V DC/AC 50/60 Hz with adjustable time delay			
Composed of:	MN 250 V DC		LV429414
	Delay unit 200-250 V DC/AC 50/60 Hz		33682

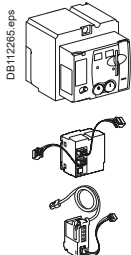
Motor Mechanism

Motor mechanism module supplied with SDE adapter



	Voltage	MT100/160/250	MT400-630
AC	48-60 V 50/60 Hz	LV431548	LV432639
	110-130 V 50/60 Hz	LV431540	LV432640
	220-240 V 50/60 Hz	LV431541	LV432641
	208-277 V 60 Hz		
	380-415 V 50/60 Hz	LV431542	LV432642
	440-480 V 60 Hz		LV432647
DC	24-30 V	LV431543	LV432643
	48-60 V	LV431544	LV432644
	110-130 V	LV431545	LV432645
	250 V	LV431546	LV432646
Operations counter			LV432648

Communicating motor mechanism module supplied with SDE adapter

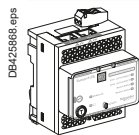


Motor mechanism module	MTc 100/160/250 220-240 V 50/60 Hz	LV431549
	MTc 400/630 220-240 V 50/60 Hz	LV432652
+ Breaker and Status Communication Module	BSCM	LV434205
+ NSX cord	Wire length L = 0.35 m	LV434200
	Wire length L = 1.3 m	LV434201
	Wire length L = 3 m	LV434202
	U > 480 V AC wire length L = 0.35 m	LV434204

ComPacT NSX80/500 TM DC PV to NSX100/500 NA DC PV Electrical Auxiliaries

Communication Option ^[1]

ULP communication module



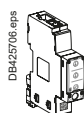
IFE

Ethernet interface for LV breaker

LV434001

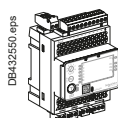
Ethernet interface for LV breakers and gateway

LV434002



IFM Modbus-SL interface module

LV434000



I/O application module

LV434063

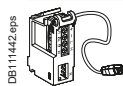
User guide IFE

DOCA0084EN

User guide I/O application module

DOCA0055EN

ULP wiring accessories



NSX cord L = 0.35 m

LV434200

NSX cord L = 1.3 m

LV434201

NSX cord L = 3 m

LV434202

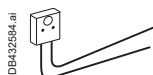
NSX cord for U > 480 V AC L = 1.3 m

LV434204

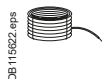


10 stacking connectors for communication interface modules

TRV00217



2 Modbus line terminators

VW3A8306DRC ^[2]

RS 485 roll cable (4 wires, length 60 m)

50965



5 RJ45 connectors female/female

TRV00870



10 ULP line terminators

TRV00880



10 RJ45/RJ45 male cord L = 0.3 m

TRV00803

10 RJ45/RJ45 male cord L = 0.6 m

TRV00806

5 RJ45/RJ45 male cord L = 1 m

TRV00810

5 RJ45/RJ45 male cord L = 2 m

TRV00820

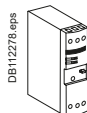
5 RJ45/RJ45 male cord L = 3 m

TRV00830

1 RJ45/RJ45 male cord L = 5 m

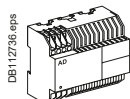
TRV00850

Power supply modules



External power supply module 100-240 V AC 110-230 V DC/24 V DC-3 A class 2

ABL8RPS24030



External power supply module 24 V DC-1 A OVC IV

24-30 V DC

54440

48-60 V DC

54441

100-125 V AC

54442

110-130 V AC

54443

200-240 V AC

54444

380-415 V AC

54445

^[1] NSX80-250 DC PV TM/NA only.

^[2] www.schneider-electric.com.

ComPacT NSX80/500 TM DC PV to NSX100/500 NA DC PV

Operation and Locking/Interlocking

Rotary Handles

**NSX100-250
DC PV**
**NSX400-630
DC PV**

Direct rotary handles

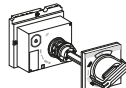
DB438131.ai



With black handle	LV429337	LV432597
With red handle on yellow front	LV429339	LV432599
MCC conversion accessory	LV429341	LV432606
CNOMO conversion accessory	LV429342	LV432602

Extended rotary handle

DB439593.ai



With black handle	LV429338	LV432598
With red handle on yellow front	LV429340	LV432600
With telescopic handle for withdrawable device	LV429343	LV432603

Accessories

Indication auxiliary	1 early-break contact	LV429345	LV432605
	2 early-break contacts	LV429346	LV429346

Locks

**NSX100-250
DC PV**
**NSX400-630
DC PV**

Toggle locking device for 1 to 3 padlocks

DB438109.ai



By removable device	29370	29370
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DB438110.ai



By fixed device (open or close position)	LV429371	LV432631
By fixed device (open position only)	LV429370^[1]	LV432630^[1]

Locking of the rotary handle

DB438111.ai



Keylock adapter (keylock not included)		LV429344	LV432604
Keylock (keylock adapter not included)	Ronis 1351B.500	41940	41940
	Profalux KS5 B24 D4Z	42888	42888

Locking of the motor mechanism modules

DB432104.eps



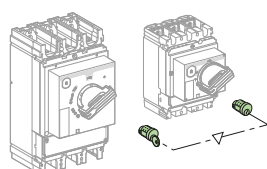
Keylock adapter + Ronis keylock (special)		LV429449	LV432649
Keylock (keylock adapter not included)	Ronis 1351B.500		41940
	Profalux KS5 B24 D4Z		42888

Interlocking

**NSX100-250
DC PV**
**NSX400-630
DC PV**

Interlocking with key (2 keylocks/1 key) for rotary handles

DB438114.ai



Keylock kit (keylock not included) ^[2]		LV429344	LV432604
1 set of 2 keylocks	Ronis 1351B.500	41950	41950
(1 key only, keylock kit not included)	Profalux KS5 B24 D4Z	42878	42878

^[1] Available February 2014.

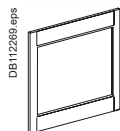
^[2] NSX100-250 DC PV only.

ComPacT NSX80/500 TM DC PV to NSX100/500 NA DC PV Installation

Installation Accessories

NSX100-250
DC PVNSX400-630
DC PV

Front-panel escutcheons



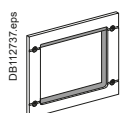
DB11288.eps

IP30

IP30 escutcheon for all control types
IP30 trip unit access escutcheon for toggle

LV429525
LV429526

LV432557
LV432559



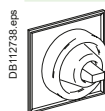
DB112737.eps

IP40

IP40 escutcheon for all control types

LV429317**LV432558**

IP43 rubber toggle cover



DB112738.eps

1 toggle cover

LV429319**LV432560**

Lead-sealing accessories

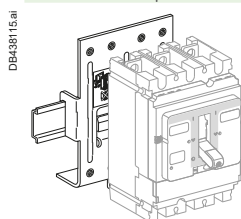


DB115615.eps

Bag of accessories

LV429375**LV429375**

Din rail adapter



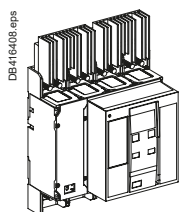
DB438115.ai

1 adapter

LV429305

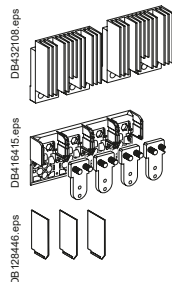
ComPacT NSX630b to 1600 NA DC PV Fixed Electrically Operated Complete Device without Motor Mechanism Module

Complete Molded Case Switch-Disconnecter (without Motor Mechanism Module)



Molded case switch disconnector ComPacT NSX630b NA DC PV 630 A 4P	LV438969
Molded case switch disconnector ComPacT NSX800 NA DC PV 800 A 4P	LV438970
Molded case switch disconnector ComPacT NSX1000 NA DC PV 1000 A 4P	LV438971
Molded case switch disconnector ComPacT NSX1250 NA DC PV 1250 A 4P	LV438972
Molded case switch disconnector ComPacT NSX1600 NA DC PV 1500 A 4P	LV438973

Note: All references above include:



Basic frame	
Heatsink	Kit of 2 (LV438966)
Front connection:	Top (33612)
	Bottom (33613)
Interphase barriers	Kit of 3 (33646)

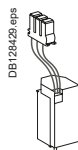
Electrical Auxiliaries for Complete Device

Indication contacts



OF, ON/OFF indication contacts	6 A - 240 V	Low level
Up to 3 OF can be connected.	33108	33109

Instantaneous voltage releases

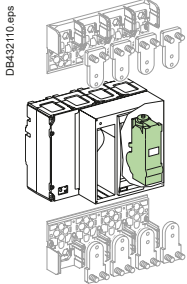


	MX	MN	Delay unit	R (non-adjustable)	Rr (adjustable)
12 V DC	33658				
24/30 V DC	33659	33668			
48/60 V DC	33660	33669	48/60 V DC		33680
100/130 V DC	33661	33670	100/130 V DC	33684	33681
200/250 V DC	33662	33671	200/250 V DC	33685	33682
			380/480 V DC		33683

ComPacT NSX630b to 1600 NA DC PV Fixed Electrically Operated

Device Based on Separate Components with or without Motor Mechanism Module

Basic Frame Molded Case Switch-Disconnecter

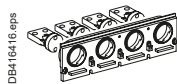
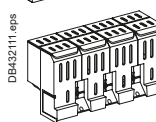
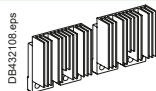
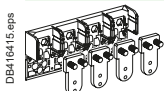


ComPacT NSX type NA

NSX630b NA DC PV	4P
NSX800 NA DC PV	LV453421
NSX1000 NA DC PV	LV453423
NSX1250 NA DC PV	LV453425
NSX1600 NA DC PV	LV453427
NSX1600 NA DC PV	LV453429

Note: The characteristics of the motor mechanism module for electrical operation are specified separately by selecting a part number from the table at the bottom of this page.

Connections for Basic Frame Molded Case Switch-Disconnecters



Front connection

Top	630-1000 A - NA	Kit of 2	4P
Bottom	Heatsink mandatory	Kit of 3	33612
or	interphase barriers*		LV438966
	Terminal shield*		33646
	* interphase barriers or terminal shield is mandatory		LV438968
Front connection	630-1000 A - NA	Bottom	33609
	630-1000 A - L	Bottom	33611
	1600 A - NA	Bottom	33613
Rear connection	Vertical NA	Bottom	33615
	Horizontal NA	Bottom	33617

Electrical Auxiliaries

Indication contacts

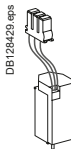


OF, ON/OFF indication contacts
Up to 3 OF can be connected.

6 A - 240 V
33108

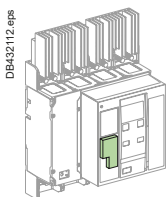
Low level
33109

Instantaneous voltage releases



	MX	MN	Delay unit	R (non-adjustable)	Rr (adjustable)
12 V DC	33658				
24/30 V DC	33659	33668			
48/60 V DC	33660	33669	48/60 V DC		33680
100/130 V DC	33661	33670	100/130 V DC	33684	33681
200/250 V DC	33662	33671	200/250 V DC	33685	33682
			380/480 V DC		33683

Communication Options



For fixed devices
Modbus COM

Electrically operated
33708

Motor Mechanism Module

DC



	Standard	Communicating
24/30 V	33690	33697
48/60 V	33691	33698
100/130 V	33692	33699
200/250 V	33693	33700

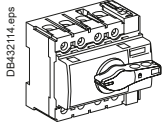
Note: To order a complete device, order:

- A basic frame switch disconnector
- Connections
- Electrical auxiliaries.
- Communication option as required.
- Motor mechanism as required.

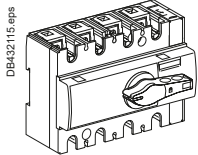
ComPacT INS40 to 160 DC

Complete Fixed/FC Device and Accessories

ComPacT INS40 to 160 Standard Version with Black Handle

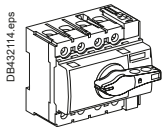


	3P	4P
ComPacT INS40	28900	28901
ComPacT INS63	28902	28903
ComPacT INS80	28904	28905
ComPacT INS80PV - Photovoltaic	-	28907

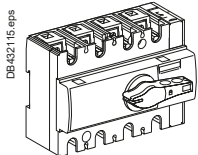


	3P	4P
ComPacT INS100	28908	28909
ComPacT INS125	28910	28911
ComPacT INS160	28912	28913

ComPacT INS40 to 160 with Red Handle and Yellow Front



	3P	4P
ComPacT INS40	28916	28917
ComPacT INS63	28918	28919
ComPacT INS80	28920	28921



	3P	4P
ComPacT INS100	28924	28925
ComPacT INS125	28926	28927
ComPacT INS160	28928	28929

ComPacT INS40 to 160 DC Accessories

Connection Accessories (Cont.)

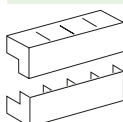
Connectors for bare Cu or Al cables

DB432116.eps 	Snap-in	INS100 to 160 S ≤ 95 mm ²	Set of 3	28947
			Set of 4	28948
DB432117.eps 	Distribution connector for 3 rigid cables up to 16 mm ² or 3 flexible cables up to 10 mm ²	INS40 to 80	Set of 3	19096
			Set of 4	19091
DB432118.eps 	Distribution connector for 4 rigid cables up to 25 mm ² or 4 flexible cables up to 16 mm ²	INS100 to 160	Set of 3	28949
			Set of 4	28950

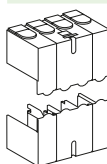
Crimp lugs for copper cables

DB432119.eps 	For 95 mm ² cables with interphase barriers	INS100 to 160	Set of 3	28951
			Set of 4	28952

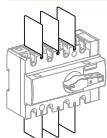
Terminal shrouds

DB432120.eps 	INS40 to 80	3P/4P	Set of 2	28955
	INS100 to 160	3P/4P	Set of 2	28956

Terminal shields

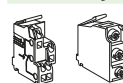
DB432121.eps 	INS40 to 80	3P/4P	Set of 2	28957
	INS100 to 160	3P/4P	Set of 2	28958

Interphase barriers

DB432122.eps 	INS100 to 160	3P/4P	Set of 6	28959
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Electrical Auxiliaries

Auxiliary contacts

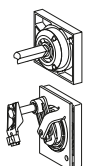
DB436418.ai 	1 CAF/CAO standard (early make or break)	INS40 to 160	29450
	1 CAF/CAO low level (early make or break)	INS40 to 160	29452

Rotary Handles

Direct front control or lateral control

Built-in

Accessories for conversion to extended rotary handles

DB432124.eps 	Front control	Black handle	INS40 to 160	LV428941
		Red handle on yellow front	INS40 to 160	LV428942
DB432125.eps 	Lateral control	Black handle	INS40 to 160	28943
		Red handle on yellow front	INS40 to 160 ^[1]	28944
	Lateral control on PRAGMA F functional enclosure	Black handle	INS40 to 160	28945 ^[2]
		Red handle on yellow front	INS40 to 160 ^[1]	28946

^[1] For red/yellow switch versions only.

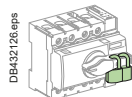
^[2] Not available with Prisma.

ComPacT INS40 to 160 DC

Accessories

Locking and Interlocking

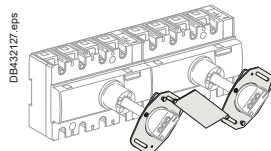
Handle locking



By 1 to 3 padlocks (OFF position), hasp dia. 5 to 8 mm, or by lead seals

Built-in

Interlocking for extended rotary handles



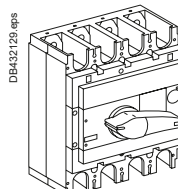
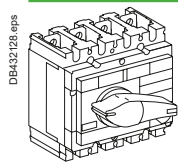
Mechanical

28953

ComPacT INS250-100 to 630 DC

Complete Fixed/FC Device and Accessories

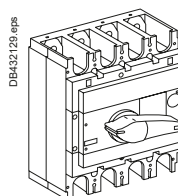
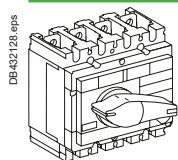
ComPacT INS250 to 630 Standard Version with Black Handle



	3P	4P
ComPacT INS250-100A	31100	31101
ComPacT INS250-160A	31104	31105
ComPacT INS250-200A	31102	31103
ComPacT INS250	31106	31107

	3P	4P
ComPacT INS320	31108	31109
ComPacT INS400	31110	31111
ComPacT INS500	31112	31113
ComPacT INS630	31114	31115

ComPacT INS250 to 630 with Red Handle and Yellow Front



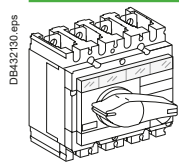
	3P	4P
ComPacT INS250-100A	31120	31121
ComPacT INS250-160A	31124	31125
ComPacT INS250-200A	31122	31123
ComPacT INS250	31126	31127

	3P	4P
ComPacT INS320	31128	31129
ComPacT INS400	31130	31131
ComPacT INS500	31132	31133
ComPacT INS630	31134	31135

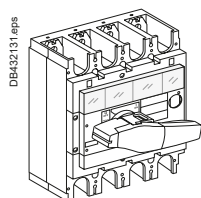
ComPacT INV100 to 630 DC

Complete Fixed/FC Device and Specific Accessories

ComPacT INV100 to 630 Standard Version with Black Handle

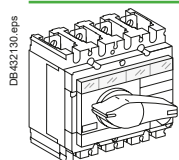


	3P	4P
ComPacT INV100	31160	31161
ComPacT INV160	31164	31165
ComPacT INV200	31162	31163
ComPacT INV250	31166	31167

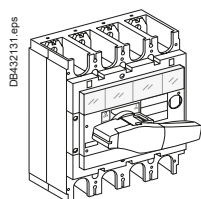


	3P	4P
ComPacT INV320	31168	31169
ComPacT INV400	31170	31171
ComPacT INV500	31172	31173
ComPacT INV630	31174	31175

ComPacT INV100 to 630 with Red Handle and Yellow Front



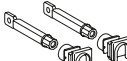
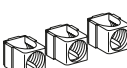
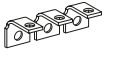
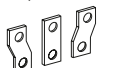
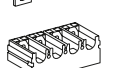
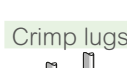
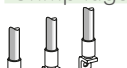
	3P	4P
ComPacT INV100	31180	31181
ComPacT INV160	31184	31185
ComPacT INV200	31182	31183
ComPacT INV250	31186	31187



	3P	4P
ComPacT INV320	31188	31189
ComPacT INV400	31190	31191
ComPacT INV500	31192	31193
ComPacT INV630	31194	31195

ComPacT INS250-100 to 250 DC and ComPacT INV100 to 250 DC Accessories

Connection Accessories

Rear connections				
	Short (1 pair)			LV429235
	Long (1 pair)			LV429236
Cable connectors				
	Snap-on, for cables:	Steel: 1.5 to 95 mm² ; ≤ 160 A	Set of 3	LV429242
			Set of 4	LV429243
		Aluminium: 25 to 95 mm² ; ≤ 250 A	Set of 3	LV429227
			Set of 4	LV429228
		Aluminium: 120 to 185 mm² ; ≤ 250 A	Set of 3	LV429259
			Set of 4	LV429260
	Tab connector for voltage tap on 185 mm² cable connector		Set of 10	LV429348
	Clip for cable connector		Set of 10	LV429241
	Distribution connector for six 1.5 to 35 mm² cables with interphase barriers		Set of 3	LV429248
			Set of 4	LV429249
	Aluminium connectors for 2 cables: 2 x (50 to 120 mm²); ≤ 250 A		Set of 3	LV429218
			Set of 4	LV429219
Linery DX and DP distribution block				
	Linery DX 160 A	For 6 cables (16 mm²) per pole ^[1]	1P	04031
	Linery DP 250 A	For 9 cables (6 x 10 mm² + 3 x 16 mm²) per pole ^[1]	3P	04033
		Additional blocks of 2 x 35 mm² per pole ^[1]	4P	04034
			3P	04155
			4P	04156
Linery DS distribution block				
	Linery DS 250 A	For 14 holes (1 x 15.3 mm² + 1 x 10 mm² + 4 x 6 mm² + 8 x 7.5 mm²)	1P	LG125014
Terminal extensions (supplied with 2 or 3 interphase barriers)				
	Right-angle terminal extensions ^[1]		Set of 3	LV429261
			Set of 4	LV429262
	Straight terminal extensions ^[1]		Set of 3	LV429263
			Set of 4	LV429264
Spreaders (for upstream or downstream connection)				
	Separate for each pole		3P	LV431563
			4P	LV431564
	One-piece Front alignment base for one-piece spreader (when mounting with LV432594 and LV432596, refer chapter dimensions and connection in catalog ComPact INS/INV "LVPED213024EN")		3/4P	LV431061
			3/4P	LV431064
Crimp lugs for copper cables (supplied with 2 or 3 interphase barriers)				
	For 120 mm² cables		Set of 3	LV429252
			Set of 4	LV429256
	For 150 mm² cables		Set of 3	LV429253
			Set of 4	LV429257
	For cable 185 mm² cables		Set of 3	LV429254
			Set of 4	LV429258
Crimp lugs for aluminium cables (supplied with 2 or 3 interphase barriers)				
	For 150 mm² cables		Set of 3	LV429504
			Set of 4	LV429505
	For 185 mm² cables		Set of 3	LV429506
			Set of 4	LV429507

[1] Supplied with 2 or 3 interphase barriers.

ComPacT INS250-100 to 250 DC and ComPacT INV100 to 250 DC Accessories

Connection Accessories

Terminal shields

DB432137 eps	1 Short	3/4 P	LV429516
	1 Long	3/4 P	LV429518

Interphase barriers

DB432139 eps		Set of 6	LV429329
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Special Connection Accessories for INS250-100 to 250DC and INV100 to 250DC

DB432139 eps	Terminal extensions for series or parallel connection of two poles ^[1]	1 terminal ext.	LV438328
DB432140 eps	Terminal extensions for parallel connection of three poles: Parallel connection of: 3 poles = set of 2 terminal extensions		LV438329
DB432137 eps	4P terminal shields for series connection of poles	Set of 1	LV438326
	4P terminal shields for parallel connection of poles (2P/4P)	Set of 1	LV438327

Electrical Auxiliaries

Auxiliary contacts (changeover type)

DB438418 al	CAM (early make or break)	29450
	Low level CAM (early make or break)	29452

Rotary Handles

Front control

DB432124 eps	Direct for INS/INV250	Built-in
	Extended	
	For INS/INV250 with standard rotary handle	LV431050
	For INS/INV250 with red handle on yellow front	^[2] LV431051
	For complete source changeover assembly	31055

Lateral control

DB432125 eps	Direct lateral control for INS/INV250	
	Lateral support	31054
	+ standard lateral control assembly	31057
	or + red and yellow lateral control assembly	^[2] 31058
	Extended lateral control for INS/INV250	
	Standard lateral control assembly	31057
	Red and yellow lateral control assembly	^[2] 31058

- [1]** Series connection of:
- 2 poles = 1 terminal extension
 - 3 poles = 2 terminal extensions
 - 4 poles = 3 terminal extensions
- Parallel connection of:
- 2 poles = 2 terminal extensions
 - 4 poles = 4 terminal extensions

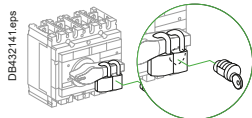
[2] For red/yellow switch versions only.

F

ComPacT INS250-100 to 250 DC and ComPacT INV100 to 250 DC Accessories

Locking and Interlocking for INS/INV and TransferPacT Source Changeover Systems

Locking for INS/INV



Handle locking by 1 to 3 padlocks (in OFF position)

By keylock

Keylocking device

2 x

Built-in

+ Ronis 1351B.500 keylock

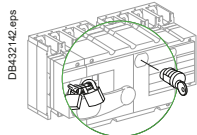
31087

or + Profalux KS5 B24 D4Z keylock

41940

42888

Locking for INS complete TransferPacT source changeover assembly



Handle locking by 1 to 3 padlocks (in OFF position)

By keylock

Keylocking device

Built-in

+ Ronis 1351B.500 keylock

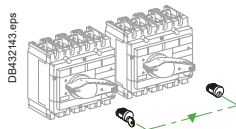
31097

or + Profalux KS5 B24 D4Z keylock

41940

42888

Interlocking with key (2 keylocks/1 key)



By 2 keylocks

INS250 keylocking device

2 x

31087

INS320-630 keylocking device

2 x

31088

+ Ronis 1351B.500 keylock

2 x

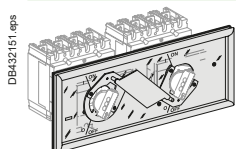
41950

or + Profalux KS5 B24 D4Z keylock

2 x

42878

Interlocking for INS/INV with direct or extended rotary handle



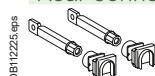
Mechanical interlocking for INS250

31073

ComPacT INS320 to 630 DC and ComPacT INV320 to 630 DC Accessories

Connection Accessories

Rear connections

	Short (1 pair)	LV432475
	Long (1 pair)	LV432476

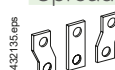
Cable connectors

	For 1 cable, 35 mm ² to 300 mm ²	Set of 3	LV432479 ^[1]
		Set of 4	LV432480 ^[2]
	For 2 cables, 35 mm ² to 240 mm ²	Set of 3	LV432481 ^[1]
		Set of 4	LV432482 ^[2]
	Tab connector for voltage tap on cable connector	Set of 10	LV429348

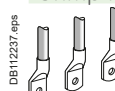
Terminal extensions (supplied with 2 or 3 interphase barriers)

	Right-angle terminal extensions	Set of 3	LV432484
		Set of 4	LV432485
	Edgewise terminal extensions	Set of 3	LV432486
		Set of 4	LV432487

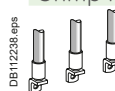
Spreaders (for upstream or downstream connection)

	One-piece	52.5 mm	3P	LV432490
			4P	LV432491
		70 mm	3P	LV432492
			4P	LV432493

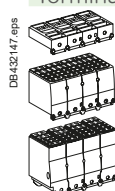
Crimp lugs for copper cables (supplied with 2 or 3 interphase barriers)

	For 240 mm ² cables	Set of 3	LV432500
		Set of 4	LV432501
	For 300 mm ² cables	Set of 3	LV432502
		Set of 4	LV432503

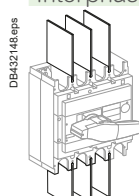
Crimp lugs for aluminium cables (supplied with 2 or 3 interphase barriers)

	For 240 mm ² cables	Set of 3	LV432504
		Set of 4	LV432505
	For 300 mm ² cables	Set of 3	LV432506
		Set of 4	LV432507

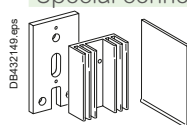
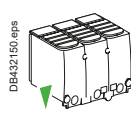
Terminal shields

	1 Short	3/4P	LV432592
	1 Long	3/4P	LV432594
	1 Long for 52.5 mm spreader (supplied with insulating plate)	3/4P	LV432596

Interphase barriers

	Set of 6	LV432570
---	----------	----------

Special connection accessories for INS/INV320 to 630DC

	Terminal extensions for series or parallel connection of two poles ^[3]	1 connection plate equipped with heat sink + 1 interphase barrier	LV438338
	4P terminal shields for series connection of poles	Set of 1	LV438346
	4P terminal shields for parallel connection of poles	Set of 1	LV438337

^[1] Kit comprising 2 interphase barriers.

^[2] Kit comprising 3 interphase barriers.

^[3] Series connection of: 2 poles = 1 terminal extension
3 poles = 2 terminal extensions
4 poles = 3 terminal extensions

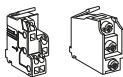
Parallel connection of: 2 poles = 2 terminal extensions
4 poles = 4 terminal extensions

ComPacT INS320 to 630 DC and ComPacT INV320 to 630 DC Accessories

Electrical Auxiliaries

Auxiliary contacts (changeover type)

DB432141 ai



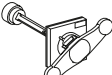
- 1 OF/CAF/CAO (early make or break)
- 1 OF/CAF/CAO low level (early make or break)

29450
29452

Rotary Handles

Extended front control

DB432152 eps



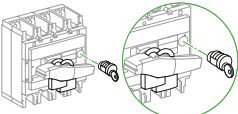
- For INS320/400/630 with standard rotary handle
- For INS320/400/630 with red handle on yellow front
- For complete source changeover assembly

31052
31053
31055

Locking and Interlocking for INS/INV and TransferPacT Source Changeover Systems

Locking for INS/INV

DB432153 eps

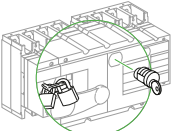


- Handle locking by 1 to 3 padlocks (in OFF position)
- By keylock
- Keylocking device
- + Ronis 1351B.500 keylock
- or + Profalux KS5 B24 D4Z keylock

Built-in
31088
41940
42888

Locking for INS complete TransferPacT source changeover assembly

DB432154 eps

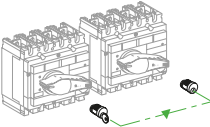


- Handle locking by 1 to 3 padlocks (in OFF position)
- By keylock
- Keylocking device
- + Ronis 1351B.500 keylock
- or + Profalux KS5 B24 D4Z keylock

Built-in
31097
41940
42888

Interlocking with key (2 keylocks/1 key)

DB432143 eps

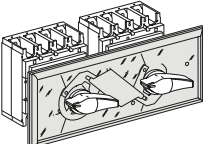


- By 2 keylocks
- INS250 keylocking device
- INS320-630 keylocking device
- + Ronis 1351B.500 keylock
- or + Profalux KS5 B24 D4Z keylock

2 x **31087**
2 x **31088**
2 x **41950**
2 x **42878**

Interlocking for INS/INV with direct or extended rotary handle

DB432155 eps



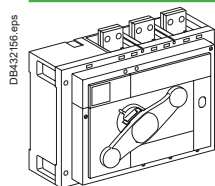
- Mechanical interlocking for INS320/400/630

31074

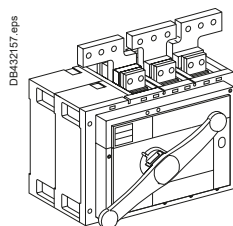
ComPacT INS630b to 2500 DC

Complete Fixed/FC Device and Accessories

ComPacT INS630b to 2500 Standard Version with Black Handle

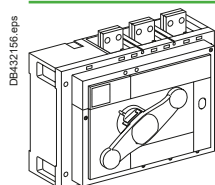


	3P	4P
ComPacT INS630b	31342	31343
ComPacT INS800	31330	31331
ComPacT INS1000	31332	31333
ComPacT INS1250	31334	31335
ComPacT INS1600	31336	31337



ComPacT INS2000	31338	31339
ComPacT INS2500	31340	31341

ComPacT INS800 to 1600 with Red Handle and Yellow Front



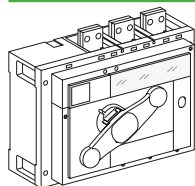
	3P	4P
ComPacT INS800	31344	31345
ComPacT INS1000	31346	31347
ComPacT INS1250	31348	31349
ComPacT INS1600	31350	31351

ComPacT INV630b to 2500 DC

Complete Fixed/FC Device and Specific Accessories

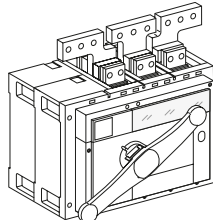
ComPacT INV630b to 2500 Standard Version with Black Handle

DB432/158 eps



	3P	4P
ComPacT INV630b	31370	31371
ComPacT INV800	31358	31359
ComPacT INV1000	31360	31361
ComPacT INV1250	31362	31363
ComPacT INV1600	31364	31365

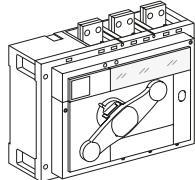
DB432/158 eps



ComPacT INV2000	31366	31367
ComPacT INV2500	31368	31369

ComPacT INV800 to 1600 with Red Handle and Yellow Front

DB432/158 eps

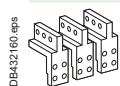


	3P	4P
ComPacT INV800	31372	31373
ComPacT INV1000	31374	31375
ComPacT INV1250	31376	31377
ComPacT INV1600	31378	31379

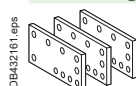
ComPacT INS630b to 2500 DC and ComPacT INV630b to 2500 DC Accessories

Connection Accessories

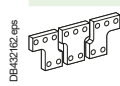
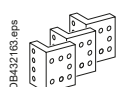
Vertical connection adapters

	INS/INV630b-1600	3P	Set of 3	31301
		4P	Set of 4	31302

Cable lug adapters

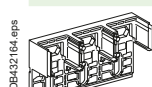
	INS/INV630b-1600	3P	Set of 3	33644
		4P	Set of 4	33645

Busbar connection (not compatible with terminal shield)

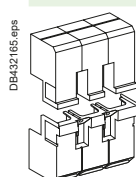
	INS/INV630b-1600	3P	Set of 3	31305
		4P	Set of 4	31306
	Right angle connector for busbar (edgewise) to INS2000/2500			31310

Insulation Accessories

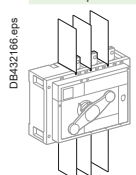
Base for terminal shield (not compatible with interphase barriers)

	INS/INV630b-1600	3P		31307
		4P		31308

Terminal shield

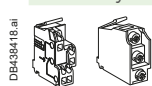
	INS/INV630b-1600	3P		LV433638
		4P		LV433639

Interphase barriers (not compatible with terminal shield and base)

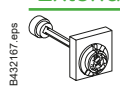
	INS/INV630b-1600	4P	Set of 6	31315
	INS/INV2000/2500	4P	Set of 6	31319

Electrical Auxiliaries

Auxiliary contacts (changeover type) INS/INV630b-2500

	1 OF/CAF/CAO standard (early make or break)			29450
	1 OF/CAF/CAO low level (early make or break)			29452

Extended Front Control

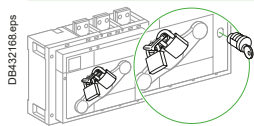
	INS/INV630b-2500	For standard rotary handle		31288
	INS/INV630b-1600	For red handle on yellow front	[1]	31289

[1] For red/yellow switch versions only.

ComPacT INS630b to 2500 DC and ComPacT INV630b to 2500 DC Accessories

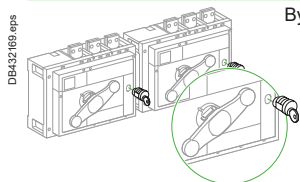
Locking and Interlocking

Locking for INS/INV630b to 2500



Handle locking by 1 to 3 padlocks (in OFF position)		Built-in
By keylock	Keylocking device	31291
	+ Ronis 1351B.500 keylock	41940
	or + Profalux KS5 B24 D4Z keylock	42888

Interlocking for INS/INV630b to 2500



By keylock	Keylocking device	2 x	31291
	+ Ronis 1351B.500 keylock (1 key)	2 x	41950
	or + Profalux KS5 B24 D4Z keylock (1 key)	2 x	42878

NW10 DC to NW40 DC Fixed and Drawout Circuit Breakers and Switch-Disconnectors

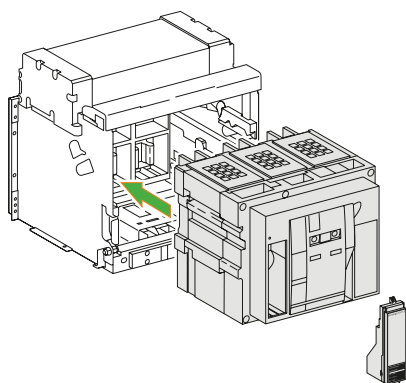
A MasterPact DC circuit breaker is described by 2 catalog numbers corresponding to:

- The basic circuit breaker (fixed or drawout with chassis, including the power connections)
- A control unit.

A MasterPact switch-disconnector is described by 1 catalog number corresponding to:

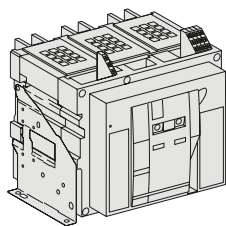
- The switch-disconnector (fixed or drawout with chassis, including the power connections). Vertical connection is standard however the connectors can be rotated for on-site conversion to horizontal connection (except on the NW40). A communication option and various auxiliaries and accessories may also be added.

DB101915.eps



Basic circuit breaker + chassis ≤ 4000 A

DB404313.eps



Switch-disconnector ≤ 4000 A

Basic Circuit Breaker

Type N				
	In (A at 40 °C)	Icu (kA for U = 500 V DC)	Fixed	Drawout
NW10NDC-C	1000	35	48645	48660
NW20NDC-C	2000	35	48646	48661
NW40NDC-C	4000	35	48647	48662
Type H				
	In (A at 40 °C)	Icu (kA for U = 500 V DC)	Fixed	Drawout
NW10HDC-C	1000	85	48648	48663
NW10HDC-D	1000	85	48649	48664
NW10HDC-E	1000	85	48650	48665
NW20HDC-C	2000	85	48651	48666
NW20HDC-D	2000	85	48652	48667
NW20HDC-E	2000	85	48653	48668
NW40HDC-C	4000	85	48654	48669
NW40HDC-D	4000	85	48655	48670
NW40HDC-E	4000	85	48656	48671

Circuit Breaker for Marine Application at 1100 V DC

Type EPCD				
	In (A at 40 °C)	Icu (kA for U = 1100 V DC, L/R = 15 ms)	No Fixed Version	Drawout
NW10 EPDC-D	1000	65		46921
NW20 EPDC-D	2000	65		46922
NW40 EPDC-D	4000	65		46924

DC 1.0 MicroLogic Control Unit

Setting range				
Minimum (A ± 8 %)	Maximum (E ± 10 %)	Type	Fixed	Drawout
1250	2500	N, H type C	65266	65269
2500	5400	N, H type C	65267	65270
5000	11000	N, H type C	65268	65271
1250	2500	H type D	65272	65275
2500	5400	H type D	65273	65276
5000	11000	H type D	65274	65277
1250	2500	H type E	65278	65281
2500	5400	H type E	65279	65282
5000	11000	H type E	65280	65283

Switch-Disconnecter

Type HA				
	In (A at 40 °C)	Icm (kA)	Fixed	Drawout
NW10HADC-C	1000	85	48684	48698
NW10HADC-D	1000	85	48685	48699
NW10HADC-E	1000	85	48879	48882
NW20HADC-C	2000	85	48687	48701
NW20HADC-D	2000	85	48688	48702
NW20HADC-E	2000	85	48880	48883
NW40HADC-C	4000	85	48690	48704
NW40HADC-D	4000	85	48691	48705
NW40HADC-E	4000	85	48881	48884

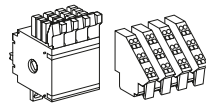
Switch-Disconnecter for PV Application

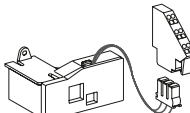
Type HADCD-PV				
	In	Icm (kA)	Fixed	Drawout
NW20HADCD-PV	2000	85	48975	47651
NW40HADCD-PV	4000	85	48977	47652

F

NW10 DC to NW40 DC Fixed Circuit Breakers

Indication Contacts

ON/OFF indication contacts (OF)		
	Block of 4 changeover contacts (6 A - 240 V)	1 block (standard)
	1 additional block of 4 contacts (2 max.)	48198

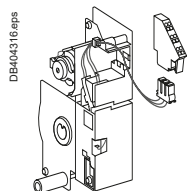
"Fault trip" indication contacts (SDE)		
	Changeover contact (5 A - 240 V)	1 (standard)
	1 additional SDE (5 A - 240 V)	48200
	1 additional low-level SDE	48201

NW10 DC to NW40 DC Fixed Circuit Breakers

Remote Operation

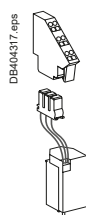
Remote ON/OFF

Gear motor



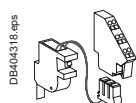
AC 50/60 Hz	48 V	MCH
	100/130 V	48207
	200/240 V	48211
	250/277 V	48212
	380/415 V	48213
	440/480 V	48214
DC	24/30 V	48215
	48/60 V	48206
	100/130 V	48207
	200/250 V	48208
		48209

Instantaneous voltage releases



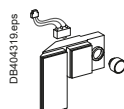
		Closing release	Opening release
Standard	AC 50/60 Hz	XF	MX
	DC		
	12 V DC	47349	47359
	24/30 V DC, 24 V AC	47350	47360
	48/60 V DC, 48 V AC	47351	47361
	100/130 V AC/DC	47352	47362
	200/250 V AC/DC	47353	47363
	277 V AC	47354	47364
Communicating	380/480 V AC	47355	47365
	AC 50/60 Hz	XF com	MX com
	DC		
	12 V DC	47310	47320
	24/30 V DC, 24 V AC	47311	47321
	48/60 V DC, 48 V AC	47312	47322
	100/130 V AC/DC	47313	47323
	200/250 V AC/DC	47314	47324
	277 V AC	47315	47325
	380/480 V AC	47316	47326

“Ready to close” contact (1 max.)



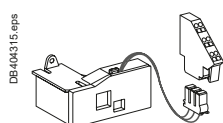
		PF
1 changeover contact (5 A - 240 V)		47342
1 low-level changeover contact		47343

Electrical closing pushbutton



		BPFE
1 pushbutton		48534

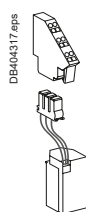
Remote reset after fault trip



		RES
Electrical reset		
110/130 V AC		48202
220/240 V AC		48203
Automatic reset		RAR
Adaptation		47346

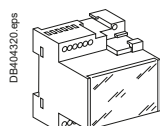
Remote Tripping

Instantaneous voltage release



		2 nd MX	or	MN
AC 50/60 Hz	12 V DC	47369		
	24/30 V DC, 24 V AC	47370		47380
	48/60 V DC, 48 V AC	47371		47381
	100/130 V AC/DC	47372		47382
	200/250 V AC/DC	47373		47383
	277 V AC	47374		
	380/480 V AC	47375		47385

MN delay unit



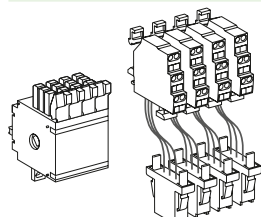
		R (non-adjustable)	Rr (adjustable)
AC 50/60 Hz	48/60 V AC/DC		33680
	100/130 V AC/DC	33684	33681
	200/250 V AC/DC	33685	33682
	380/480 V AC/DC		33683

NW10 DC to NW40 DC Drawout Circuit Breakers

Indication Contacts

ON/OFF indication contacts (OF)

DB404321.eps

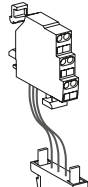


Block of 4 changeover contacts (6 A - 240 V)
1 additional block of 4 contacts (2 max.)

1 block (standard)
48468

Combined closed/connected contacts for use with 1 auxiliary contact

DB404322.eps

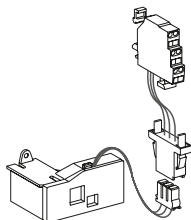


1 contact (5 A - 240 V) (8 max.)
or 1 low-level contact (8 max.)

48477
48478

"Fault trip" indication contacts (SDE)

DB404323.eps

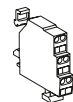


Changeover contact (5 A - 240 V)
1 additional SDE (5 A - 240 V)
or 1 additional low-level SDE

1 (standard)
48475
48476

Carriage switches (connected/disconnected/test position)

DB404324.eps



Changeover contacts (8 A - 240V)

1 connected position contact (3 max.)

33751

1 test position contact (3 max.)

33752

1 disconnected position contact (3 max.)

33753

and/or low-level changeover contacts

1 connected position contact (3 max.)

33754

1 test position contact (3 max.)

33755

1 disconnected position contact (3 max.)

33756

Actuator for additional carriage switches

48560

NW10 DC to NW40 DC Drawout Circuit Breakers (Cont.)

Chassis Locking and Accessories

Chassis Locking

"Disconnected" position locking

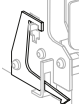
DB404326 eps



By padlocks	VPOC	Standard
By Profalux keylocks		
Profalux	1 lock with 1 key + adaptation kit	48568
	2 locks 1 key + adaptation kit	48569
	2 locks 2 different keys + adaptation kit	48570
1 keylock Profalux (without adaptation kit):	Identical key not identified combination	33173
	Identical key identified 215470 combination	33174
	Identical key identified 215471 combination	33175
By Ronis keylocks		
Ronis	1 lock with 1 key + adaptation kit	48572
	2 locks 1 key + adaptation kit	48573
	2 locks 2 different keys + adaptation kit	48574
1 keylock Ronis (without adaptation kit):	Identical key not identified combination	33189
	Identical key identified EL24135 combination	33190
	Identical key identified EL24153 combination	33191
	Identical key identified EL24315 combination	33192
Optional disconnected/test/connected position locking		33779
Adaptation kit (without keylock):	Adaptation kit Profalux/Ronis	48564
	Adaptation kit Kirk	48565
	Adaptation kit Castell	48566

Door interlock (1 part)

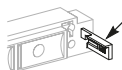
DB404327 eps



Right-hand side of chassis	48579
Left-hand side of chassis	48580

Racking interlock

DB404327 eps



1 part	48582
--------	-------

Racking interlock between crank and OFF pushbutton

1 part	48585
--------	-------

Automatic spring discharge before breaker removal

DB404328 eps



1 part	48554
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Breaker mismatch protection

DB404329 eps

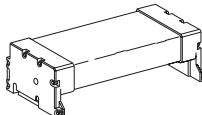


Breaker mismatch protection VDC	33767
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Chassis Accessories

Arc chute cover

DB404330 eps



3P/4P	Standard
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Auxiliary terminal shield (CB)

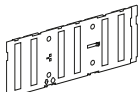
DB404331 eps



1000/4000 A	3P	48595
	4P	48596

Safety shutters + locking block

DB404332 eps



1000/4000 A	3P	Standard
	4P	Standard

Shutter locking block (for replacement)

DB404333 eps



2 parts for 1000/4000 A	48591
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Front face shutter position indication and locking

1000/4000 A	3P/4P	48592
-------------	-------	-------

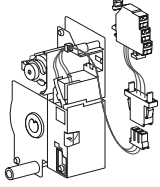
NW10 DC to NW40 DC Drawout Circuit Breakers

Remote Operation

Remote ON/OFF

Gear motor

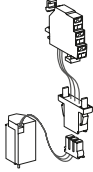
DB404334 eps



AC 50/60 Hz	48 V	MCH
	100/130 V	48522
	200/240 V	48526
	250/277 V	48527
	380/415 V	48528
	440/480 V	48529
DC	24/30 V	48530
	48/60 V	48521
	100/130 V	48522
	200/250 V	48523
		48524

Instantaneous voltage releases

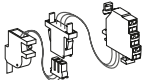
DB404335 eps



		Closing release	Opening release
Standard		XF	MX
AC 50/60 Hz	12 V DC	48480	48490
	24/30 V DC, 24 V AC	48481	48491
	48/60 V DC, 48 V AC	48482	48492
	100/130 V AC/DC	48483	48493
	200/250 V AC/DC	48484	48494
	277 V AC	48485	48495
DC	380/480 V AC	48486	48496
		XF com	MX com
	12 V DC	48448	48457
	24/30 V DC, 24 V AC	48449	48458
	48/60 V DC, 48 V AC	48450	48459
	100/130 V AC/DC	48451	48460
200/250 V AC/DC		48452	48461
	277 V AC	48453	48462
	380/480 V AC	48454	48463

"Ready to close" contact (1 max.)

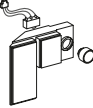
DB404336 eps



		PF
1 changeover contact (5 A - 240 V)		48469
1 low-level changeover contact		48470

Electrical closing pushbutton

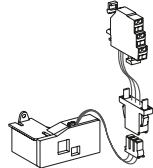
DB404319 eps



		BPFE
1 pushbutton		48534

Remote reset after fault trip

DB404323 eps

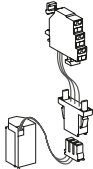


Electrical reset		RES
110/130 V AC		48472
220/240 V AC		48473
Automatic reset		RAR
Adaptation		47346

Remote Tripping

Instantaneous voltage release

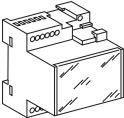
DB404335 eps



		2 nd MX	or	MN
AC 50/60 Hz	12 V DC	48510		
	24/30 V DC, 24 V AC	48511		48501
	48/60 V DC, 48 V AC	48512		48502
	100/130 V AC/DC	48513		48503
	200/250 V AC/DC	48514		48504
	277 V AC	48515		
DC	380/480 V AC	48516		48506

MN delay unit

DB404320 eps

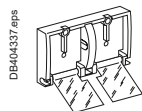


		R (non-adjustable)	Rr (adjustable)
AC 50/60 Hz	48/60 V AC/DC		33680
	100/130 V AC/DC	33684	33681
	200/250 V AC/DC	33685	33682
	380/480 V AC/DC		33683

Accessories for NW10 DC to NW40 DC Fixed and Drawout Circuit Breakers

Circuit Breaker Locking

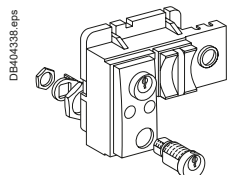
Pushbutton locking device



By padlocks

48536

OFF position locking



By padlocks

VPOC

48539

By Profalux keylocks

Profalux

1 lock with 1 key + adaptation kit

48545

2 locks 1 key + adaptation kit

48546

2 locks 2 different keys + adaptation kit

48547

1 keylock Profalux

Identical key not identified combination

33173

(without adaptation kit)

Identical key identified 215470 combination

33174

Identical key identified 215471 combination

33175

By Ronis keylocks

Ronis

1 lock with 1 key + adaptation kit

48549

2 locks 1 key + adaptation kit

48550

2 locks 2 different keys + adaptation kit

48551

1 keylock Ronis

Identical key not identified combination

33189

(without adaptation kit)

Identical key identified EL24135 combination

33190

Identical key identified EL24153 combination

33191

Identical key identified EL24315 combination

33192

Adaptation kit (without keylock): Adaptation kit Profalux/Ronis

48541

Adaptation kit Kirk

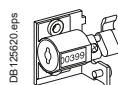
48542

Adaptation kit Castell

48543

Other Circuit Breaker Accessories

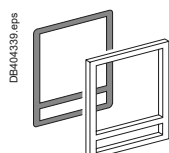
Mechanical operation counter



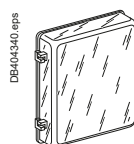
Operation counter CDM

48535

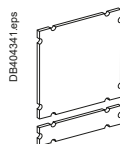
Escutcheon and accessories



Escutcheon



Cover

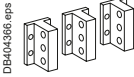


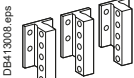
Blanking plate

	Fixed	Drawout
Escutcheon	48601	48603
Transparent cover IP54		48604
Escutcheon blanking plate	48605	48605

Spare Parts: MasterPact NW DC, EPDC, DC PV Connection

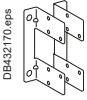
Connection

			C or D type	E type
Fixed or drawout circuit breakers or switches				
Rear connection (vertical or horizontal mounting)/Replacement kit (3 or 4 parts)				
 DB404306 eps	1000/2000 A	Vertical or horizontal Top or bottom	47966	47967
	4000 A	Vertical or horizontal Top or bottom	47968	47969


DB41308 eps

Vertical mounting

Connection Accessories

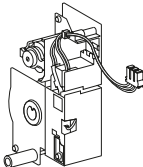
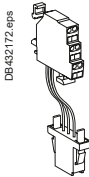
Additional support brackets for mounting on a backplate		
 DB432170 eps	For fixed rear-connected circuit breaker (2 parts)	
	47829	

Spare Parts: MasterPact NW DC, EPDC, DC PV

Remote Operation

Remote Operation

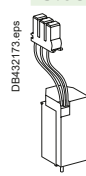
Gear motor

	MCH (1 part)		
	AC 50/60 Hz	48 V	47889
		100/130 V	47893
		200/240 V	47894
		250/277 V	47895
		380/415 V	47896
		440/480 V	47897
DC	24/30 V	47888	
	48/60 V	47889	
	100/125 V	47890	
	200/250 V	47891	
	Terminal block (1 part)	For fixed circuit breaker	47074
		For drawout circuit breaker	47849
	Installation manual		47951

Fixed

Drawout

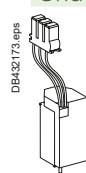
Closing and opening release (XF or MX)

	Standard coil (1 part)		
	AC 50/60 Hz	12 V DC	33658
		24/30 V DC, 24 V AC	33659
	DC	48/60 V DC, 48 V AC	33660
		100/130 V AC/DC	33661
		200/250 V AC/DC	33662
		277 V AC	33663
		380/480 V AC	33664
		Communicating coil (1 part)	
		12 V DC	33032
		24/30 V DC, 24 V AC	33033
		48/60 V DC, 48 V AC	33034
	DC	100/130 V AC/DC	33035
		200/250 V AC/DC	33036
		277 V AC	33037
		380/480 V AC	33038
	Terminal block (1 part)	For fixed circuit breaker	47074
		For drawout circuit breaker	47849
	Installation manual		47951

Fixed

Drawout

Undervoltage release MN

	Undervoltage release (1 part)		
	AC 50/60 Hz	24/30 V DC, 24 V AC	33668
		48/60 V DC, 48 V AC	33669
	DC	100/130 V AC/DC	33670
		200/250 V AC/DC	33671
		380/480 V AC	33673
		Terminal block (1 part)	47074
		For drawout circuit breaker	47849
	Installation manual		47951

Fixed

Drawout

MN delay unit

	MN delay unit (1 part)			
	AC 50/60 Hz DC		R (non-adjustable)	R (adjustable)
		48/60 V AC/DC		33680
		100/130 V AC/DC	33684	33681
		200/250 V AC/DC	33685	33682
		380/480 V AC/DC		33683
	Installation manual		47951	

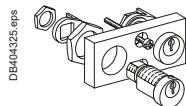
F

Spare Parts: MasterPact NW DC, EPDC, DC PV

Chassis Locking and Accessories

Chassis Locking

"Disconnected" position locking/1 part



By padlocks

VCPO

Standard

By Profalux keylocks

Profalux

1 lock with 1 key + adaptation kit

64934

2 locks 1 key + adaptation kit

64935

2 locks 2 different keys + adaptation kit

64936

1 keylock Profalux

identical key not identified combination

33173

(without adaptation kit):

identical key identified 215470 combination

33174

identical key identified 215471 combination

33175

By Ronis keylocks

Ronis

1 lock with 1 key + adaptation kit

64937

2 locks 1 key + adaptation kit

64938

2 locks 2 different keys + adaptation kit

64939

1 keylock Ronis

identical key not identified combination

33189

(without adaptation kit):

identical key identified EL24135 combination

33190

identical key identified EL24153 combination

33191

identical key identified EL24315 combination

33192

Adaptation kit

adaptation kit Profalux/Ronis

48564

(without keylock):

adaptation kit Kirk

48565

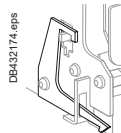
adaptation kit Castell

48566

Installation manual

47952

Door interlock/1 part



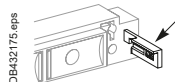
Right and left-hand side of chassis (VPECD or VPECG)

47914

Installation manual

47952

Racking interlock



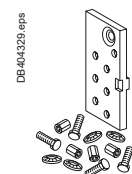
5 parts

64940

Installation manual

47952

Breaker mismatch protection/1 part



Breaker mismatch protection (VDC)

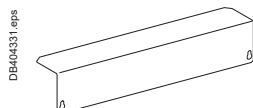
33767

Installation manual

47952

Chassis Accessories

Auxiliary terminal shield (CB)/1 part



800/4000 A

3P

64942

4P

48596

4000b/6300 A

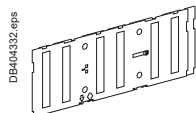
3P

48597

4P

48598

Safety shutters + locking block/1 part



800/4000 A

3P

48721

4P

48723

4000b/6300 A

3P

48722

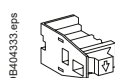
4P

48724

Installation manual

47952

Shutter locking block (for replacement)/1 part



2 parts for 800/4000 A

48591

Installation manual

47952

Earthing Kit for Chassis

3P

4P

Types for N1/H1/NA/HA

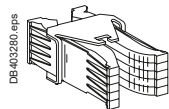
48433

48434

Note: The installation manual is enclosed.

Spare Parts: MasterPact NW DC, EPDC, DC PV Clusters

Clusters



1 disconnecting contact cluster for chassis (see table below) (part 1)

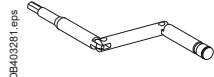
64906

Table: number of clusters required for the different chassis models

Chassis rating (A)	MasterPact NW 3P				MasterPact NW 4P			
	N1	H1/H2	H3	L1	N1	H1/H2	H3	L1
250		12 (H1)						
630	6	12		24	8	16		32
800	6	12		24	8	16		32
1000	6	12		24	8	16		32
1250	6	12		24	8	16		32
1600	12	12		24	16	16		32
2000		24	24	42		32	32	56
2500		24	24			32	32	
3200		36	36			48	48	
4000		42	42			56	56	
4000b		72				96		
5000		72				96		
6300		72				96		

Note: The minimum order is 6 parts.

Racking handle

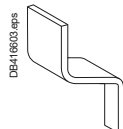


Racking handle

47944

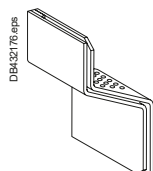
DC Rear Connection

Serial connection kit



For NW10/20 DC

48642



For NW40 DC

48643

Spare Parts: MasterPact NW DC, EPDC, DC PV

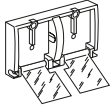
Circuit Breaker Locking and Accessories

Mechanical Interlocking for Source Changeover

Circuit Breaker Locking

Pushbutton locking device/1 part

DB404337 eps



By padlocks

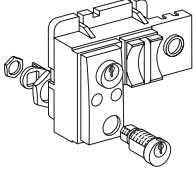
48536

Installation manual

47951

OFF position locking/1 part

DB404411 eps



By padlocks

48539

By Profalux keylocks

Profalux

1 lock with 1 key + adaptation kit

64928

2 locks 1 key + adaptation kit

64929

2 locks 2 different keys + adaptation kit

64930

1 keylock Profalux
(without adaptation kit):

identical key not identified combination

33173

identical key identified 215470 combination

33174

identical key identified 215471 combination

33175

By Ronis keylocks

Ronis

1 lock with 1 key + adaptation kit

64931

2 locks 1 key + adaptation kit

64932

2 locks 2 different keys + adaptation kit

64933

1 keylock Ronis
(without adaptation kit):

identical key not identified combination

33189

identical key identified EL24135 combination

33190

identical key identified EL24153 combination

33191

identical key identified EL24315 combination

33192

Adaptation kit
(without keylock):

adaptation kit Profalux/Ronis

64925

adaptation kit Kirk

64927

adaptation kit Castell

64926

Installation manual

47951

Other Circuit Breaker Accessories

Mechanical operation counter/1 part

DB125617 eps



Operation counter CDM

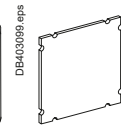
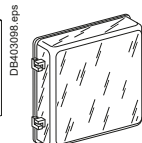
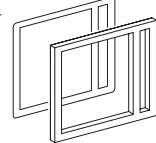
48535

Installation manual

47951

Escutcheon and accessories/1 part

DB432177 eps



F

	Fixed	Drawout
Escutcheon	48601	48603
Transparent cover (IP 54)		48604
Escutcheon blanking plate	48605	48605

Escutcheon

Cover

Blanking plate

Installation manual

47951

Spring charging handle/1 part

DB404413 eps



Spring charging handle

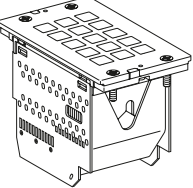
47940

Installation manual

47951

Arc chute for MasterPact NW/1 part

DB432178 eps



Type NW DC	C type	D type	E type
2 x	47934	3 x	47934

Installation manual

47951

Cable-Type Door Interlock

1 complete assembly for MasterPact NW fixed or drawout device

48614

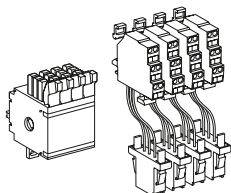
Note: The installation manual is enclosed.

Spare Parts: MasterPact NW DC, EPDC, DC PV Indication Contacts

Indication Contacts

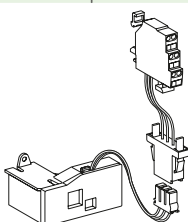
ON/OFF indication contacts (OF)/12 parts

DB432170.eps

1 additional block of 4 contacts **64922**Wiring For fixed circuit breaker **47074**For drawout circuit breaker **47849**Installation manual **47951**

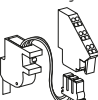
"Fault trip" indication contacts (SDE)/1 part

DB432180.eps

Changeover contact (SDE) 6 A - 240 V **47915**Low-level **47916**Wiring For fixed circuit breaker **47074**For drawout circuit breaker **47849**Installation manual **47951**

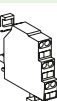
"Ready to close" contact (1 max.)/1 part

DB432181.eps

1 changeover contact (5 A - 240 V) **47080**1 low-level changeover contact **47081**Wiring For fixed circuit breaker **47074**For drawout circuit breaker **47849**Installation manual **47951**

"Connected, disconnected, test position" indication contact (carriage switches)/1 part

DB404324.eps

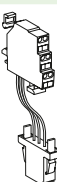
Changeover contacts 6 A - 240 V **33170**CE, CD, CT Low-level **33171**Installation manual **47952**

Set of additional actuators for carriage switches/1 set

1 set **48560**

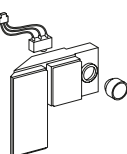
Combined closed/connected contacts for use with 1 auxiliary contact/1 part

DB432172.eps

1 contact (5 A - 240 V) **48477**or 1 low-level contact **48478**Installation manual **47952**

Electrical closing pushbutton/1 part

DB432182.eps

1 pushbutton **BPFE****48534**Installation manual **47951**

Auxiliary terminals for chassis alone

3 wire terminal (1 part) **47849**6 wire terminal (1 part) **47850**Jumpers (10 parts) **47900**

Spare Parts: MasterPact NW DC, EPDC, DC PV

Instructions

Instructions

Chassis accessories	47952
Circuit breaker accessories	47951
Fixed and drawout circuit breaker	47950
User manual NW DC (French)	64923
NW DC (English)	64924
Modbus communication notice for manual	33088



Spare Parts: MasterPact NW DC, EPDC, DC PV Monitoring and Control Converter

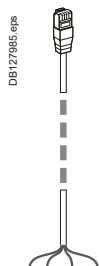
Monitoring and Control

ULP display module

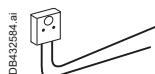


Switchboard front display module FDM121	TRV00121
FDM mounting accessory (diameter 22 mm)	TRV00128

ULP wiring accessories



Breaker ULP cord L = 0.35 m	LV434195
Breaker ULP cord L = 1.3 m	LV434196
Breaker ULP cord L = 3 m	LV434197



2 Modbus line terminators	VW3A8306DRC ^[1]
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5 RJ45 connectors female/female	TRV00870
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10 ULP line terminators	TRV00880
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10 RJ45/RJ45 male cord L = 0.3 m	TRV00803
10 RJ45/RJ45 male cord L = 0.6 m	TRV00806
5 RJ45/RJ45 male cord L = 1 m	TRV00810
5 RJ45/RJ45 male cord L = 2 m	TRV00820
5 RJ45/RJ45 male cord L = 3 m	TRV00830
1 RJ45/RJ45 male cord L = 5 m	TRV00850

[1] www.schneider-electric.com.

ComPacT NSX100 DC to NSX250 DC Circuit Breakers

Check the applicable ☐ and enter the appropriate ☐
square boxes information in the rectangles

Circuit breaker ☐ Quantity ☐
ComPacT type **NSX100/160/250** ☐

Rating **A** ☐

Circuit breaker **F, N, M, S** ☐

Number of poles **1 or 2** ☐

Circuit breaker **DC** ☐

Number of poles **3 or 4** ☐

Number of poles tripped **3d or 4d** ☐

Fixed device Front conn. ☐ Long rear conn. ☐

Short rear conn. ☐

Plug-in/withdr. Plug-in ☐ Withdrawable ☐

Thermal-magnetic trip unit

Thermal-magnetic **TMD** rating (16...63 A) ☐

NSX100 to 250 **TMG** rating (16...250 A) ☐

TMDC rating (80...250 A) ☐

Special connection accessories for parallel or series connection

Series connection 2 poles (1 connection plate) ☐

3 poles (2 connection plates) ☐

4 poles (3 connection plates) ☐

Parallel connection 2 poles (2 connection plates) ☐

3 poles (NSX100 to 250, 1 set of 2 connection plates) ☐

2 x 2 poles (4 connection plates) ☐

Special terminal shields for parallel or series connection

1P short 1 pair ☐

2P short 2 x 1 pair (1P) ☐

3P short for series connection of poles 1 set ☐

4P short for series connection of poles 1 set ☐

4P short for parallel connection of poles (2P/4P) 1 set ☐

Connection

NSX100/250 Steel 1.5° to 95° (< 160 A) ☐

connectors Aluminium 25° to 95° (< 250 A) ☐

Aluminium 120° to 185° (< 250 A) ☐

Voltage measurement For bare cable NSX100/250 ☐

input connector ≤ 185° ☐

Right-angle terminal extensions

Straight extensions NSX100/250 ☐

Double L terminal extension 3P ☐ 4P ☐

Spreader from 35 to 45 mm 3P ☐ 4P ☐

One piece spreader ☐

Front alignment ☐

Cu cable lugs NSX100/250 120° ☐ 150° ☐ 185° ☐

240° ☐ 300° ☐

Al cable lugs NSX100/250 150° ☐ 185° ☐

240° ☐ 300° ☐

Insulation screen 45 mm 3P ☐ 4P ☐

70 mm 3P ☐ 4P ☐

Interphase barriers Set of 6 ☐

Indication and measurements

Auxiliary contact OF ☐ SD ☐ SDE ☐ Standard ☐ Low level ☐

SDE adapter (TM trip unit) ☐

Remote operation

Electrical operation Motor mechanism AC ☐ DC ☐ V ☐

Voltage releases Instantaneous MX AC ☐ DC ☐ V ☐

MN AC ☐ DC ☐ V ☐

Fixed time delay MN AC ☐ DC ☐ V ☐

Adjust. time delay MN AC ☐ DC ☐ V ☐

Rotary handles

Direct Black ☐ Red on yellow front ☐

MCC conversion access. ☐ CNOMO conversion access. ☐

Extended Black ☐ Red on yellow front ☐

Telescopic handle for withdrawable device ☐

Indication auxiliary 1 early-break switch ☐ 2 early-break switches ☐

Wiring accessory for early-make switches ☐

Locking

Toggle (1 to 3 padlocks) Removable ☐ Fixed Open/Close ☐

Fixed Open ☐

Rotary handle Keylock adapter (keylock not included) ☐

Keylock Ronis 1351B.500 ☐ Profalux KS5 B24 D4Z ☐

Motor mechanism Keylock adapter + Keylock Ronis (special) NSX100/250 ☐

Keylock Ronis 1351B.500 ☐ Profalux KS5 B24 D4Z ☐

Interlocking

Mechanical Toggle ☐ Rotary handle ☐

By key (2 Keylocks, 1 key) Keylock adapter (keylock not included) ☐

For rotary handle Keylock Ronis 1351B.500 ☐ Profalux KS5 B24 D4Z ☐

Installation accessories

Front-panel escutcheon Toggle ☐

Rotary handle, motor mechanism, escutcheon collar; IP40 ☐

Toggle cover ☐

Sealing accessories ☐

DIN rail adapter NSX100/250 ☐

Plug-in/Drawout configuration accessories

Auxiliary connections 1 automatic connector fixed part with 9 wires (for base) ☐

1 auto. conn. moving part with 9 wires (for circuit breaker) ☐

1 support for 3 automatic connector moving parts ☐

9-wire manual auxiliary connector (fixed + moving) ☐

Plug-in base accessories Long insulated terminals Set of 3 ☐ Set of 4 ☐

2 IP4 shutters for base ☐

Chassis accessories Escutcheon collar Toggle ☐

Locking kit (keylock not included) ☐

2 carriage switches (conn./disconnected position indication) ☐

Parts of plug-in Plug-in base FC/RC 2P ☐ 3P ☐ 4P ☐

Set of 2 power connections Standard ☐

Safety trip for advanced opening ☐

For 3P/4P chassis Moving part ☐

Fixed part ☐

Communication

NSX Cord L = 0.35 m ☐ NSX Cord L = 1.3 m ☐

NSX Cord U > 480 V AC L = 0.35 m ☐ NSX Cord L = 3 m ☐

BSCM ☐

Communicating motor mechanism 220-240 V ☐

Switchboard front display module FDM121 ☐

FDM mounting accessory ☐

Ethernet interface + gateway ☐

Ethernet interface ☐

Modbus interface ☐

I/O application module Qty 1 ☐ Qty 2 ☐

Stacking accessory ☐

ULP line termination ☐

RJ45 connectors female/female ☐ Wire length RJ45 ☐ Wire length RJ45 ☐

L = 0.3 m L = 0.6 m

Wire length RJ45 ☐ Wire length RJ45 ☐

L = 1 m L = 2 m

Wire length RJ45 ☐ Wire length RJ45 ☐

L = 3 m L = 5 m

ComPacT NSX400 DC to NSX630 DC

Circuit Breakers and Switch-Disconnectors

Check the applicable ☐ and enter the appropriate ☐
square boxes information in the rectangles

Circuit breaker/ Switch-disconnector	Quantity	
ComPacT type	NSX400/630	
switch-disconnector ☐	circuit breaker ☐	
Rating	A	
Circuit breaker	F, S	
	DC	
Number of poles	3 or 4	
Fixed device	Front conn. ☐	Long rear conn. ☐
	Short rear conn. ☐	
Plug-in/withdr.	Plug-in ☐	Withdrawable ☐
Circuit breaker thermal-magnetic trip unit		
Thermal-magnetic	TM-DC rating (250...600 A)	

Special connection accessories for parallel or series connection		
Series connection	2 poles (1 connection plate)	
	3 poles (2 connection plates)	
	4 poles (3 connection plates)	
Parallel connection	2 poles (2 connection plates)	
	2 x 2 poles (4 connection plates)	

Special terminal shields for parallel or series connection		
Terminal shield for front connection		
Terminal shield for rear connection		
	Standard ☐	Short ☐

Connection		
NSX400/630 connectors	1 cable 35 ² to 300 ²	
	2 cables 35 ² to 240 ²	
Voltage measurement input	For bare cable connector	
Right-angle terminal extensions		
Edgewise extensions		
Double L terminal extension	3P ☐	4P ☐
Spreader from 35 to 45 mm	3P ☐	4P ☐
One piece spreader		
Front alignment		
Cu cable lugs	NSX400/630 120 ² ☐	150 ² ☐
		185 ² ☐
		240 ² ☐
Al cable lugs	NSX400/630 150 ² ☐	185 ² ☐
		240 ² ☐
Insulation screen	45 mm 3P ☐	4P ☐
	70 mm 3P ☐	4P ☐
Interphase barriers		Set of 6 ☐

Indication and measurements					
Auxiliary contact	OF ☐	SD ☐	SDE ☐	Standard ☐	Low level ☐
SDE adapter (TM trip unit)					

Remote operation					
Electrical operation	Motor mechanism	AC ☐	DC ☐	V ☐	
Voltage releases	Instantaneous	MX AC ☐	DC ☐	V ☐	
		MN AC ☐	DC ☐	V ☐	
	Fixed time delay	MN AC ☐	DC ☐	V ☐	
	Adjust. time delay	MN AC ☐	DC ☐	V ☐	

Rotary handles			
Direct	Black ☐	Red on yellow front ☐	
	MCC conversion access. ☐	CNOMO conversion access. ☐	
Extended	Black ☐	Red on yellow front ☐	
	Telescopic handle for withdrawable device ☐		
Indication auxiliary	1 early-break switch ☐	2 early-break switches ☐	
	Wiring accessory for early-make switches ☐		

Locking			
Toggle (1 to 3 padlocks)	Removable ☐	Fixed Open/Close ☐	
		Fixed Open ☐	
Rotary handle	Keylock adapter (keylock not included) ☐	Profalux KS5 B24 D4Z ☐	
	Keylock Ronis 1351B.500 ☐	Profalux KS5 B24 D4Z ☐	
Motor mechanism	Keylock adapter (keylock not included) ☐	NSX400/630 ☐	
	Keylock Ronis 1351B.500 ☐	Profalux KS5 B24 D4Z ☐	

Interlocking			
Mechanical	Toggle ☐	Rotary handle ☐	
By key (2 Keylocks, 1 key)	Keylock adapter (keylock not included) ☐		
For rotary handle	Keylock Ronis 1351B.500 ☐	Profalux KS5 B24 D4Z ☐	

Installation accessories	
Front-panel escutcheon	Toggle ☐
	Rotary handle, motor mechanism, escutcheon collar; IP40 ☐

Toggle cover	
Sealing accessories	

Plug-in/Drawout configuration accessories			
Auxiliary connections	1 automatic connector fixed part with 9 wires (for base) ☐		
	1 auto. conn. moving part with 9 wires (for circuit breaker) ☐		
	1 support for 3 automatic connector moving parts ☐		
	9-wire manual auxiliary connector (fixed + moving) ☐		
Plug-in base accessories	Long insulated terminals	Set of 3 ☐	Set of 4 ☐
	2 IP4 shutters for base ☐		
Chassis accessories	Escutcheon collar	Toggle ☐	
	Locking kit (keylock not included) ☐		
	2 carriage switches (conn./disconnected position indication) ☐		
Parts of plug-in	Plug-in base FC/RC	2P ☐	3P ☐
	Set of 2 power connections	Standard ☐	
	Safety trip for advanced opening ☐		
	For 3P/4P chassis		
		Moving part ☐	
		Fixed part ☐	

Communication			
	NSX Cord L = 0.35 m ☐	NSX Cord L = 1.3 m ☐	
	NSX Cord U > 480 V AC L = 0.35 m ☐	NSX Cord L = 3 m ☐	

BSCM		
Communicating motor mechanism 220-240 V		
Switchboard front display module FDM121		
FDM mounting accessory		
Ethernet interface + gateway		
Ethernet interface		
Modbus interface		
I/O application module	Qty 1 ☐	
Stacking accessory		
ULP line termination		
RJ45 connectors female/female ☐	Wire length RJ45 L = 0.3 m ☐	Wire length RJ45 L = 0.6 m ☐
	Wire length RJ45 L = 1 m ☐	Wire length RJ45 L = 2 m ☐
	Wire length RJ45 L = 3 m ☐	Wire length RJ45 L = 5 m ☐

ComPacT NSX1200 DC Circuit Breakers

Check the applicable ☐ and enter the appropriate ☐
square boxes information in the rectangles

Circuit breaker ☐ Quantity ☐
Rating **630A, 800 A, 1000 A, 1200 A**

Fixed device ☐ Without bare cable connector ☐
With bare cable connector ☐

Connection

Voltage ☐ For bare cable
measurement input connector ☐

Indication auxiliaries

Auxiliary contact OF ☐ SD ☐ SDE ☐ Standard ☐ Low level ☐

SDE adapter (TM trip unit) ☐

Remote operation

Electrical operation	Motor mechanism	AC	☐	DC	☐	V	☐
Voltage releases	Instantaneous	MX	AC	☐	DC	☐	V
		MN	AC	☐	DC	☐	V
	Fixed time delay	MN	AC	☐	DC	☐	V
	Adjust. time delay	MN	AC	☐	DC	☐	V

Rotary handles

Direct	Black	☐	Red on yellow front	☐
	MCC conversion access.	☐	CNOMO conversion access.	☐
Extended	Black	☐	Red on yellow front	☐
	Telescopic handle for withdrawable device ☐			
Indication auxiliary	1 early-break switch	☐	2 early-break switches	☐
	Wiring accessory for early-make switches ☐			

Locking

Toggle (1 to 3 padlocks)	Removable	☐	Fixed Open/Close	☐
			Fixed Open	☐
Rotary handle	Keylock adapter (keylock not included)	☐	Profalux KS5 B24 D4Z	☐
	Keylock Ronis 1351B.500	☐	Profalux KS5 B24 D4Z	☐
Motor mechanism	Keylock adapter (keylock not included)	☐	NSX400/630	☐
	Keylock Ronis 1351B.500	☐	Profalux KS5 B24 D4Z	☐

Interlocking

Mechanical	Toggle	☐	Rotary handle	☐
By key (2 Keylocks, 1 key)	Keylock adapter (keylock not included)	☐		
For rotary handle	Keylock Ronis 1351B.500	☐	Profalux KS5 B24 D4Z	☐

Installation accessories

Front-panel escutcheon	Toggle	☐
	Rotary handle, motor mechanism, escutcheon collar; IP40	☐
Toggle cover		☐
Sealing accessories		☐

Communication

NSX Cord L = 0.35 m	☐	NSX Cord L = 1.3 m	☐
NSX Cord U > 480 V AC L = 0.35 m	☐	NSX Cord L = 3 m	☐

BSCM

Communicating motor mechanism 220-240 V	☐
Switchboard front display module FDM121	☐
FDM mounting accessory	☐
Ethernet interface + gateway	☐
Ethernet interface	☐
Modbus interface	☐
I/O application module	Qty 1 ☐ Qty 2 ☐
Stacking accessory	☐
ULP line termination	☐

RJ45 connectors female/female	☐	Wire length RJ45 L = 0.3 m	☐	Wire length RJ45 L = 0.6 m	☐
		Wire length RJ45 L = 1 m	☐	Wire length RJ45 L = 2 m	☐
		Wire length RJ45 L = 3 m	☐	Wire length RJ45 L = 5 m	☐

ComPacT NSX80/500 TM DC PV to NSX100/500 NA DC PV Circuit Breakers and Switch-Disconnectors

Check the applicable ☐ and enter the appropriate ☐
square boxes information in the rectangles

Circuit breaker ComPacT		Quantity
NSX250-100 TM DC EP	NSX80 TM DC PV	
NSX250-125 TM DC EP	NSX125 TM DC PV	
NSX250-160 TM DC EP	NSX160 TM DC PV	
NSX250-200 TM DC EP	NSX200 TM DC PV	
NSX250-250 TM DC EP	NSX250 TM DC PV	
NSX500-250 TM DC EP	NSX320 TM DC PV	
NSX500-320 TM DC EP	NSX400 TM DC PV	
NSX500-400 TM DC EP	NSX500 TM DC PV	
NSX500-500 TM DC EP		

Special connection and insulation accessories for circuit breakers (mandatory)

Upstream	connection plates with heatsink (x2)	
	special terminal shields	
Downstream	standard long terminal shields	
	or rear connections short	
	long	
	+ short terminal shields	

Switch-disconnector ComPacT		Quantity
NSX250-100 NA DC EP	NSX100 NA DC PV	
NSX250-160 NA DC EP	NSX160 NA DC PV	
NSX250-200 NA DC EP	NSX200 NA DC PV	
NSX250-250 NA DC EP	(160 A)	
NSX630-320 NA DC EP	NSX200 NA DC PV	
NSX630-400 NA DC EP	(200 A)	
NSX630-500 NA DC EP	NSX400 NA DC PV	
NSX630-630 NA DC EP	NSX500 NA DC PV	

Special connection and insulation accessories for switch-disconnectors (mandatory)

Upstream ≤ 200 A at 40 °C	connection plates with heatsink (x2)	
	special terminal shields	
	or interphase barriers	
Upstream = 200 A at 55 °C	connection plates with heatsink (x2)	
	(long)	
Upstream ≥ 400 A	interphase barriers	
	connection plates with heatsink (x2)	
	special terminal shields	
Downstream	or interphase barriers	
	standard long terminal shields	
	or rear connections short	
	long	
	+ short terminal shields	
	or interphase barriers	

Connection

NSX100/250 connectors	Steel 1.5° to 95° (< 160 A)	
	Aluminium 25° to 95° (< 250 A)	
	Aluminium 120° to 185° (< 250 A)	
NSX400/630 connectors	1 cable 35° to 300°	
	2 cables 35° to 240°	
Voltage measurement input	For bare cable connector NSX100/250 ≤ 185°	
	For bare cable connector NSX400/630	

Right-angle terminal extensions			
Straight extensions		NSX100/250	
Edgewise extensions		NSX400/630	
Double L terminal extension		3P	4P
Spreader from 35 to 45 mm		3P	4P
Cu cable lugs	NSX100/250 120°	150°	185°
	NSX400/630	240°	300°
Al cable lugs	NSX100/250	150°	185°
	NSX400/630	240°	300°
Insulation screen	45 mm	3P	4P
	70 mm	3P	4P
Interphase barriers		Set of 6	

Indication auxiliaries

Auxiliary contact	OF	☐	SD	☐	SDE	☐	Standard	☐	Low level	☐
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SDE adapter (TM trip unit)

Remote operation

Electrical operation	Motor mechanism		AC	☐	DC	☐	V	☐
	Instantaneous		MX	☐	DC	☐	V	☐
Voltage releases			MN	☐	DC	☐	V	☐
	Fixed time delay		MN	☐	DC	☐	V	☐
	Adjust. time delay		MN	☐	DC	☐	V	☐

Rotary handles

Direct	Black	☐	Red on yellow front	☐
	MCC conversion access.	☐	CNOMO conversion access.	☐
Extended	Black	☐	Red on yellow front	☐
	Telescopic handle for withdrawable device			
Indication auxiliary	1 early-break switch		☐	2 early-break switches
	Wiring accessory for early-make switches			

Locking

Toggle (1 to 3 padlocks)	Removable	☐	Fixed Open/Close	☐
			Fixed Open	☐
Rotary handle	Keylock adapter (keylock not included)			
	Keylock Ronis 1351B.500	☐	Profalux KS5 B24 D4Z	☐
Motor mechanism	Keylock adapter + Keylock Ronis (special)		NSX100/250	
	Keylock adapter (keylock not included)		NSX400/630	
	Keylock Ronis 1351B.500	☐	Profalux KS5 B24 D4Z	☐

Interlocking

Mechanical	Toggle	☐	Rotary handle	☐
By key (2 keylocks, 1 key)	Keylock adapter (keylock not included)			
For rotary handle	Keylock Ronis 1351B.500	☐	Profalux KS5 B24 D4Z	☐

Installation accessories

Front-panel escutcheon	Toggle	☐
	Rotary handle, motor mechanism, escutcheon collar; IP40	☐
Toggle cover		☐
Sealing accessories		☐
DIN rail adapter	NSX100/250	☐

Communication

NSX Cord L = 0.35 m	☐	NSX Cord L = 1.3 m	☐
	NSX Cord U > 480 V AC L = 0.35 m	☐	NSX Cord L = 3 m

BSCM

Communicating motor mechanism 220-240 V				
Switchboard front display module FDM121				
FDM mounting accessory				
Ethernet interface + gateway				
Ethernet interface				
Modbus interface				
I/O application module		Qty 1	☐	Qty 2
Stacking accessory				
ULP line termination				
RJ45 connectors female/female	☐	Wire length RJ45 L = 0.3 m	☐	Wire length RJ45 L = 0.6 m
		Wire length RJ45 L = 1 m	☐	Wire length RJ45 L = 2 m
		Wire length RJ45 L = 3 m	☐	Wire length RJ45 L = 5 m

ComPacT NSX250/500 TM DC EP to NSX250/630 NA DC EP Circuit Breakers and Switch-Disconnectors

Check the applicable ☐ and enter the appropriate ☐
square boxes information in the rectangles

Circuit breaker	Quantity
ComPacT type	
NSX250-100 TM DC EP	
NSX250-125 TM DC EP	
NSX250-160 TM DC EP	
NSX250-200 TM DC EP	
NSX250-250 TM DC EP	
NSX500-250 TM DC EP	
NSX500-320 TM DC EP	
NSX500-400 TM DC EP	
NSX500-500 TM DC EP	

Special connection and insulation accessories for circuit breakers (mandatory)

Upstream	connection plates with heatsink (x2)	
	special terminal shields	
Downstream	standard long terminal shields	
	or rear connections short	
	long	
	+ short terminal shields	

Switch-disconnector	Quantity
ComPacT type	
NSX250-100 NA DC EP	
NSX250-160 NA DC EP	
NSX250-200 NA DC EP	
NSX250-250 NA DC EP	
NSX630-320 NA DC EP	
NSX630-400 NA DC EP	
NSX630-500 NA DC EP	
NSX630-630 NA DC EP	

Special connection and insulation accessories for switch-disconnectors (mandatory)

Upstream	connection plates with heatsink (x2)	
≤ 200 A at 40 °C	special terminal shields	
	or interphase barriers	
Upstream	connection plates with heatsink (x2)	
= 200 A at 55 °C	(long)	
	interphase barriers	
Upstream	connection plates with heatsink (x2)	
≥ 400 A	special terminal shields	
	or interphase barriers	
Downstream	standard long terminal shields	
	or rear connections short	
	long	
	+ short terminal shields	
	or interphase barriers	

Connection	
NSX100/250 connectors	Steel 1.5° to 95° (< 160 A)
	Aluminium 25° to 95° (< 250 A)
	Aluminium 120° to 185° (< 250 A)
NSX400/630 connectors	1 cable 35° to 300°
	2 cables 35° to 240°
Voltage measurement input	For bare cable connector NSX100/250 ≤ 185°
	For bare cable connector NSX400/630

Right-angle terminal extensions	
Straight extensions NSX100/250	
Edgewise extensions NSX400/630	
Double L terminal extension	3P 4P
Spreader from 35 to 45 mm	3P 4P
Cu cable lugs	NSX100/250 120° 150° 185°
	NSX400/630 240° 300°
Al cable lugs	NSX100/250 150° 185°
	NSX400/630 240° 300°
Insulation screen	45 mm 3P 4P
	70 mm 3P 4P
Interphase barriers	Set of 6

Indication auxiliaries	
Auxiliary contact	OF ☐ SD ☐ SDE ☐ Standard ☐ Low level ☐
SDE adapter (TM trip unit)	

Remote operation	
Electrical operation	Motor mechanism AC ☐ DC ☐ V ☐
Voltage releases	Instantaneous MX AC ☐ DC ☐ V ☐
	MN AC ☐ DC ☐ V ☐
	Fixed time delay MN AC ☐ DC ☐ V ☐
	Adjust. time delay MN AC ☐ DC ☐ V ☐

Rotary handles	
Direct	Black ☐ Red on yellow front ☐
	MCC conversion access. ☐ CNOMO conversion access. ☐
Extended	Black ☐ Red on yellow front ☐
	Telescopic handle for withdrawable device ☐
Indication auxiliary	1 early-break switch ☐ 2 early-break switches ☐
	Wiring accessory for early-make switches ☐

Locking	
Toggle (1 to 3 padlocks)	Removable ☐ Fixed Open/Close ☐
	Fixed Open ☐
Rotary handle	Keylock adapter (keylock not included) ☐
	Keylock Ronis 1351B.500 ☐ Profalux KS5 B24 D4Z ☐
Motor mechanism	Keylock adapter + Keylock Ronis (special) NSX100/250 ☐
	Keylock adapter (keylock not included) NSX400/630 ☐
	Keylock Ronis 1351B.500 ☐ Profalux KS5 B24 D4Z ☐

Interlocking	
Mechanical	Toggle ☐ Rotary handle ☐
By key (2 keylocks, 1 key)	Keylock adapter (keylock not included) ☐
For rotary handle	Keylock Ronis 1351B.500 ☐ Profalux KS5 B24 D4Z ☐

Installation accessories	
Front-panel escutcheon	Toggle ☐
	Rotary handle, motor mechanism, escutcheon collar; IP40 ☐
Toggle cover	
Sealing accessories	
DIN rail adapter	NSX100/250 ☐

Communication	
	NSX Cord L = 0.35 m ☐ NSX Cord L = 1.3 m ☐
	NSX Cord U > 480 V AC L = 0.35 m ☐ NSX Cord L = 3 m ☐

BSCM	
Communicating motor mechanism 220-240 V	
Switchboard front display module FDM121	
FDM mounting accessory	
Ethernet interface + gateway	
Ethernet interface	
Modbus interface	
I/O application module	Qty 1 ☐ Qty 2 ☐
Stacking accessory	
ULP line termination	
RJ45 connectors female/female	☐ Wire length RJ45 L = 0.3 m ☐ Wire length RJ45 L = 0.6 m ☐
	Wire length RJ45 L = 1 m ☐ Wire length RJ45 L = 2 m ☐
	Wire length RJ45 L = 3 m ☐ Wire length RJ45 L = 5 m ☐

ComPacT NSX630/1600 NA DC PV 4P, Fixed Version

Upside: Front Connection, 2 Kit Heatsink, Phase Separator Are Included

Name of customer:

Address for delivery:

Requested delivery date:

Customer order no:

To indicate your choices,

Check the applicable square boxes ☐ and enter the appropriate information in the rectangles

Switch-disconnector ☐ Quantity

Rating A

Communication

COM module Device (BCM-ULP) ☐ with Ethernet interface ☐

☐ with Ethernet interface + gateway ☐

☐ with Modbus interface ☐

Front Display Module (FDM121) ☐ Mounting accessory ☐

Breaker ULP Cord L = 0.35 m ☐

L = 1.3 m ☐

L = 3 m ☐

AD - external power-supply module ☐ V

NSX630b/1600 DC PV connection

Horizontal rear connections Bottom ☐

Vertical rear connections Bottom ☐

Front connections Bottom ☐

4 x 240° + bare cable connectors + shields Bottom ☐

Vertical-connection adapters Bottom ☐

Cable-lug adapters Bottom ☐

Long connection shields ^[1] Top ☐ Bottom ☐

or interphase barriers Bottom ☐

^[1] Bottom long connection shield or Bottom interphase barriers kit is mandatory.

Indication contacts

OF - ON/OFF indication contacts (maximum 3)

6 A-240 V AC qty Low level qty

Remote operation

Electrical operation Standard ☐ Communicating ☐

(NSX 630b/1600 DC PV) Power supply AC ☐ DC ☐ V

Voltage releases MX AC ☐ DC ☐ V

MN AC ☐ DC ☐ V

MN delay unit Adjustable ☐ Non-adjustable ☐

Locking

For electrically operated devices (NSX630b/1600 DC PV) **VBP** - ON/OFF pushbutton locking (by transparent cover + padlocks) ☐

OFF position locking:

VCPO - by padlocks ☐

VSPO - by keylocks: ☐

Keylock kit (w/o keylock) Profalux ☐ Ronis ☐

1 keylock Profalux ☐ Ronis ☐

2 identical keylocks, 1 key Profalux ☐ Ronis ☐

Accessories

CDM - mechanical operation counter ☐

CDP - escutcheon ☐

CP - transparent cover for escutcheon ☐

OP - blanking plate for escutcheon ☐

MasterPact NW DC

Name of customer:

Address for delivery:

Requested delivery date:

Customer order no.:

To indicate your choices, check the applicable square boxes
and enter the appropriate information in the rectangles

Circuit breaker or switch-disconnector		
Qty		
MasterPact type	NW10	
	NW20	
	NW40	
Circuit breaker	N, H (up to 900 V DC), EPDC (1000 V DC)	
Special PV switch-disconnectors	HADCD-PV (NW20 or NW40 1000 V DC)	
	HADCD-PV2 (NW32-1500 V DC FIXED)	
Switch-disconnector	HA	
Sensor version	1250 to 2500 A	
	2500 to 5400 A	
	5000 to 11000 A	
Version	C, D, E	
Type of equipment	Fixed	
	Drawout chassis	

Communication	
COM module	
Device (BCM-ULP)	☐ with Ethernet interface ☐ Cradle management with I/O application module (Chassis)
	☐ with Ethernet interface + gateway ☐ with Modbus interface

Front Display Module FDM121		Mounting accessory	
Breaker ULP Cord	L = 0.35		
	L = 1.3		
	L = 3 m		

Connection			
Vertical	Standard version	Top	Bottom
Horizontal	Vertical connection is standard however the connectors can be rotated on-site conversion to horizontal connection (except on the NW40)		

Indication contacts

OF - ON/OFF indication contacts

Standard	4 OF 10 A/240 V AC and low level		
Additional	1 block of 4 OF	Max. 2	Qty

EF - combined "connected/closed" contacts

	1 EF 6 A/240 V AC	Max. 8	Qty
	1 EF low level	Max. 8	Qty

SDE - "fault-trip" indication contact

Standard	1 SDE 6 A/240 V AC		
Additional	1 SDE 6 A/240 V AC	1 SDE low level	

Carriage switches

	Low level	6 A/240 V AC	
CE - "connected" position	Max. 3		Qty
CD - "disconnected" position	Max. 3		Qty
CT - "test" position	Max. 3		Qty

AC - NW actuator for 6 CE - 3 CD - 0 CT additional carriage switches

			Qty
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Remote operation

Electrical operation	MCH - gear motor	V	
	XF - closing voltage release	V	
	MX - opening voltage release	V	
	PF - "ready to close" contact	Low level	
		6 A/240 V AC	
	BPFE - electrical closing pushbutton		
	RES - electrical reset option	V	
	RAR - automatic reset option		
Remote tripping	MN - undervoltage release	V	
	R - delay unit (non-adjustable)		
	Rr - adjustable delay unit		
	2° MX - shunt release	V	

Locking

VBP - ON/OFF pushbutton locking (by transparent cover + padlocks)

OFF position locking:

VCPO - by padlocks			
VSPO - by keylocks	Keylock kit (w/o keylock)	Profalux	Ronis
	1 keylock	Profalux	Ronis
	2 identical keylocks, 1 key	Profalux	Ronis
	2 keylocks, different keys	Profalux	Ronis

Chassis locking in "disconnected" position:

VSPO - by keylocks	Keylock kit (w/o keylock)	Profalux	Ronis
		Kirk	Castell
	1 keylock	Profalux	Ronis
	2 identical keylocks, 1 key	Profalux	Ronis
	2 keylocks, different keys	Profalux	Ronis
	Optional connected/disconnected/test position locking		

VPEC - door interlock	On right-hand side of chassis	
	On left-hand side of chassis	

VPOC - racking interlock

IPA - cable-type door interlock

VDC - mismatch protection

VIVC - shutter position indication and locking

IBPO - racking interlock between crank and OFF pushbutton for NW

DAE - automatic spring discharge before breaker removal for NW

Accessories

VO - safety shutters on chassis

CDM - mechanical operation counter

CB - auxiliary terminal shield for chassis

CDP - escutcheon

CP - transparent cover for escutcheon

OP - blanking plate for escutcheon

KMT - Grounding kit



Green Premium™



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*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)



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