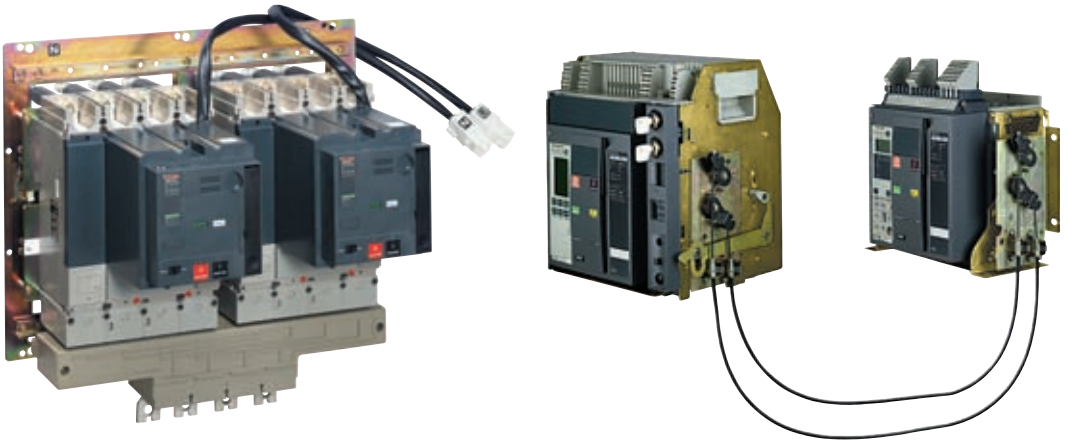
Low Voltage

Source changeover systems

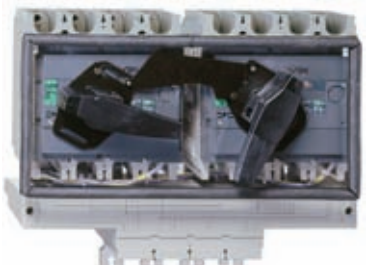
Compact, Interpact and Masterpact

Catalogue
2008



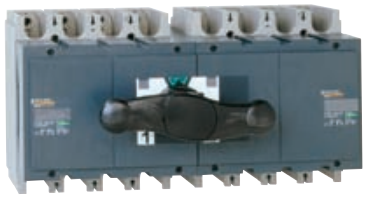
Schneider Electric

PB100839



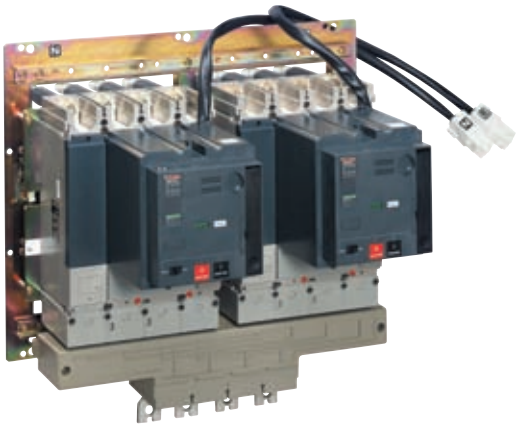
Interlocking of two Interpact switch-disconnectors via rotary handles.

PB100840



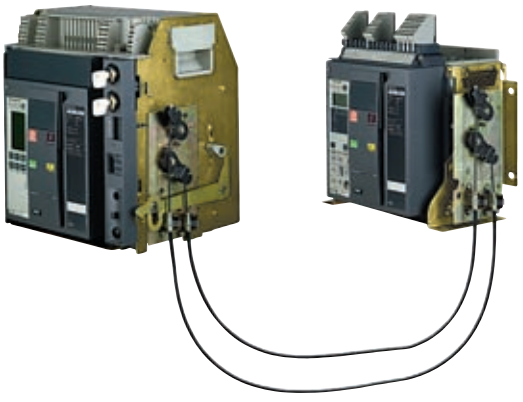
Complete source-changeover assembly with two Interpact switch-disconnectors.

PB100930-68



Interlocking of two Compact NS circuit breakers on a base plate.

PB100842



Interlocking of two Masterpact NT and NW circuit breakers using cables.

To ensure a continuous supply of electrical power, certain installations are connected to two sources:
- *a normal source N*
- *a replacement source R used to supply the installation when the normal source is unavailable.*

A source-changeover system switches the load between these two sources. It can be automated to manage transfers according to external conditions. A source-changeover system includes two or three circuit breakers or switch-disconnectors.

With Interpact INS, Compact NS and Masterpact NT and NW, new installation solutions are available to optimise the size of the switchboard and simplify installation.

General content

Presentation 3

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Electrical diagrams C-1

Catalogue numbers and order forms D-1

For maximum continuity of service ...

PB103937

PB103936

Commercial and service sector:
- *operating rooms in hospitals*
- *safety systems for tall buildings*
- *computer rooms (banks, insurance companies, etc.)*
- *lighting systems in shopping centres…*

PB103934

Industry:
- *assembly lines*
- *engine rooms on ships*
- *critical auxiliaries in thermal power stations…*

PB103935

Infrastructures:
- *port and railway installations*
- *runway lighting systems*
- *control systems on military sites…*

Manual source-changeover system

This is the most simple type. It is controlled manually by an operator and consequently the time required to switch from the normal to the replacement source can vary.
A manual source-changeover system is made up of two or three mechanically interlocked manually-operated circuit breakers or switch-disconnectors.

Remote-operated source-changeover system

This is the most commonly employed system for devices with high ratings (above 400 A). No human intervention is required. Transfer from the normal to the replacement source is controlled electrically.
A remote-controlled source-changeover system is made up of two or three circuit breakers or switch-disconnectors linked by an electrical interlocking system that may have different configurations. In addition, a mechanical interlocking system protects against electrical malfunctions or incorrect manual operations.

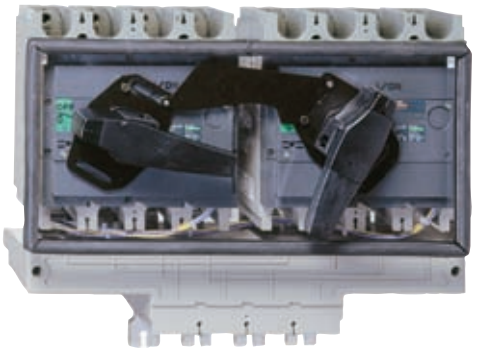
Automatic source-changeover systems

An automatic controller may be added to a remote-operated source-changeover system for automatic source control according to programmable operating modes. This solution ensures optimum energy management:
- transfer to a replacement source according to external requirements
- management of power sources
- regulation
- emergency source replacement, etc.

The automatic controller may be fitted with an option for communication with a supervisor.

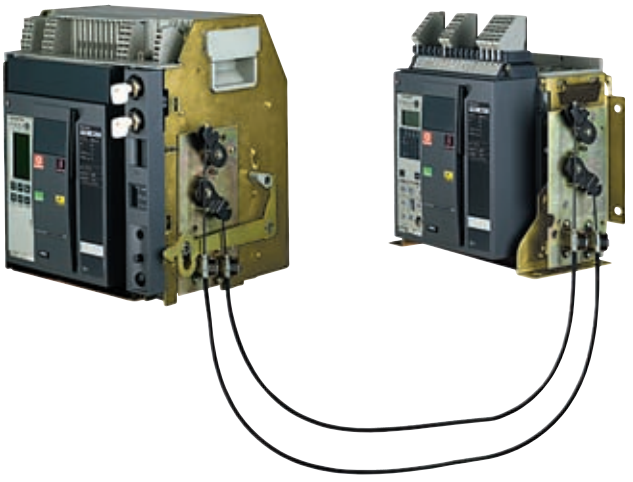
... in a wide range of applications

PB100839



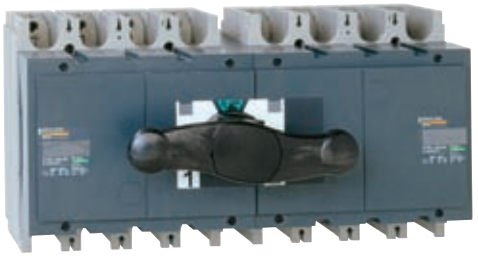
Interlocking of two Interpact switch-disconnectors via rotary handles.

PB100842



Interlocking of two Masterpact NT and NW circuit breakers using cables.

PB100840



Complete source-changeover assembly with two Interpact switch-disconnectors.

PB100957-62

Interlocking of two Compact NS circuit breakers on a base plate.

PB100849

Interlocking of two Masterpact NT or NW circuit breakers using connecting rods.

PB100850

Interlocking of three Masterpact NW circuit breakers using cables.

Other source-changeover systems: Telemecanique products

PB100848

See LC2-D series.

PB100851

See LC2-F series.

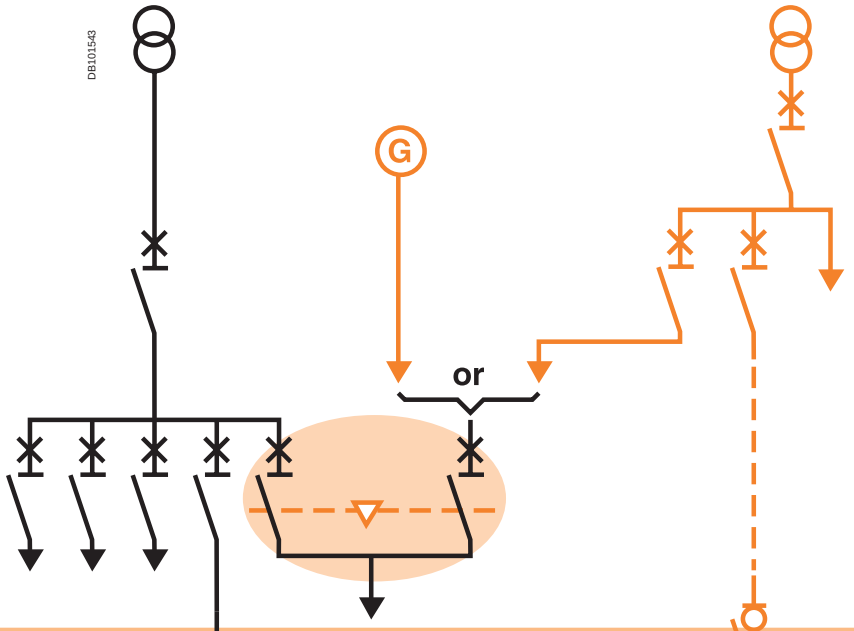
For maximum continuity of service...

Incoming feeders and main LV switchboards

PB100853

Currents
From 630 to 6300 A.

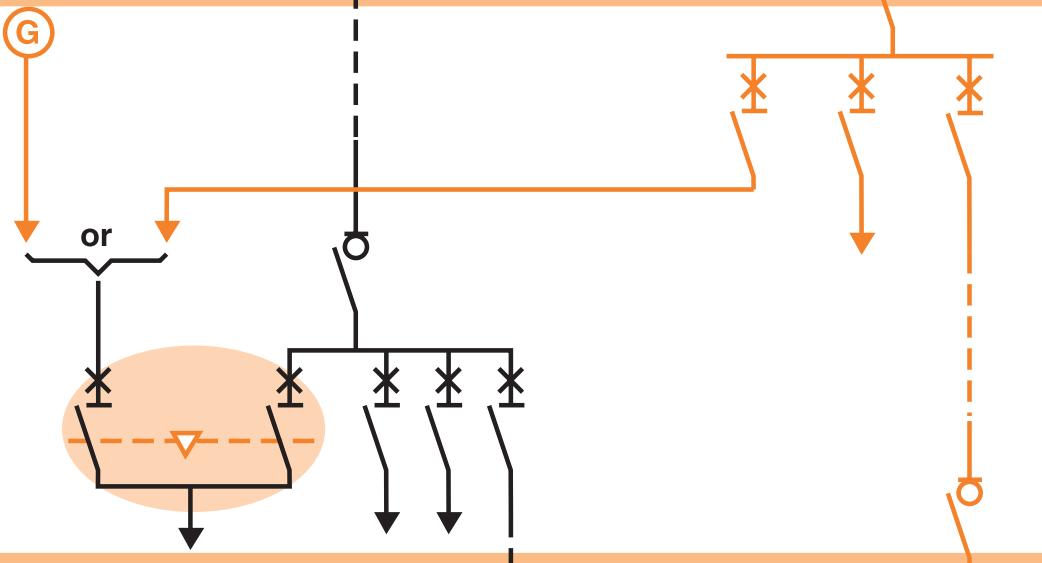
DB101543



Power distribution

PB100852

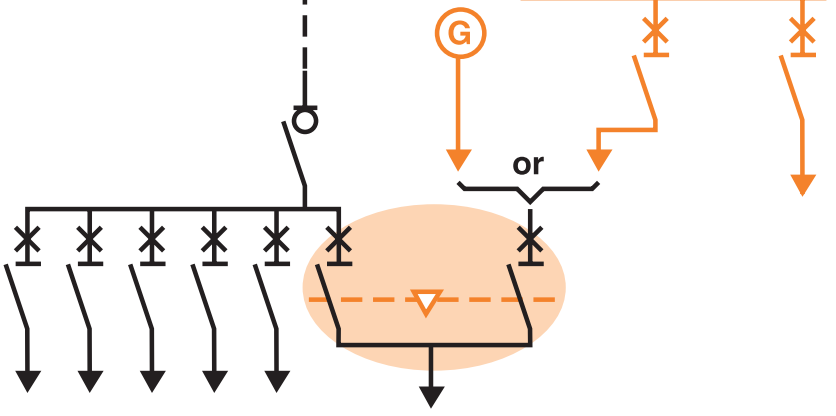
Currents
From 250 to 3200 A.



Loads

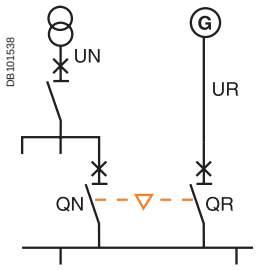
PB100854

Currents
From 40 to 400 A.



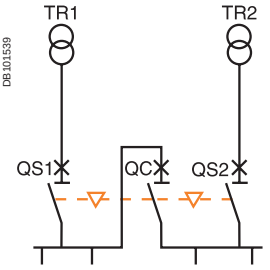
... in a wide range of applications

1 normal source
1 replacement source



QN	QR
0	0
1	0
0	1

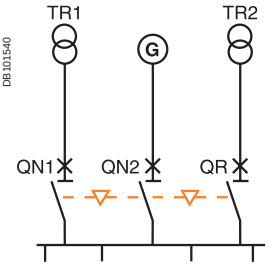
2 sources with coupler on busbars



QS1	QC	QS2
0	0	0
1	0	1
1	1	0
0	1	1
1	0	0 (1)
0	0	1 (1)

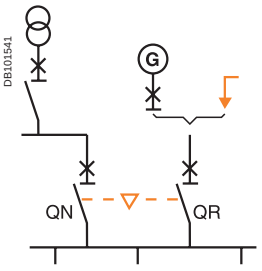
***(1)** possible by forcing operation.*

2 normal sources
1 replacement source



QN1	QN2	QR
0	0	0
1	1	0
0	0	1
1	0	0
0	1	0

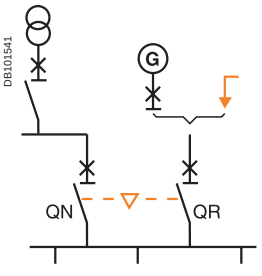
Generator or permanent source



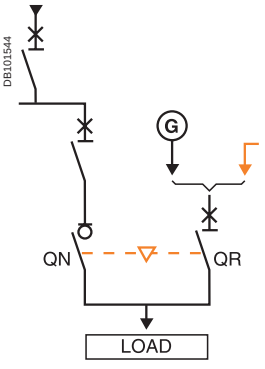
QN	QR
0	0
1	0
0	1

Typical applications:
- continuous production processes
- operating rooms
- computer rooms...

Generator or permanent source



Generator or permanent source



QN	QR
0	0
1	0
0	1

Typical applications:
- large electrical installations (e.g. airports)
- refrigeration units
- special electricity tariffs
- pumping stations...

TOOLS

schneider-electric.com

This international site allows you to access all the Schneider Electric products in just 2 clicks via comprehensive range data-sheets, with direct links to:

- complete library: technical documents, catalogs, FAQs, brochures…
- selection guides from the e-catalog.
- product discovery sites and their Flash animations.

You will also find illustrated overviews, news to which you can subscribe, the list of country contacts…

The technical guide

These technical guides help you comply with installation standards and rules i.e.: the electrical installation guide, the protection guide, the switchboard implementation guide, the technical booklets and the co-ordination tables all form genuine reference tools for the design of high performance electrical installations.
For example, the LV protection co-ordination guide - discrimination and cascading - optimises choice of protection and connection devices while also increasing markedly continuity of supply in the installations.

Functions and characteristics

Presentation *2*

Overview of solutions **A-2**
Manual source-changeover systems Interpact INS and Compact NS 40 A to 630 A A-2
Manual source-changeover systems Compact NS and Masterpact NT/NW 630 A to 6300 A A-3
Remote-operated source-changeover systems Compact NS100/1600 100 A to 1600 A A-4
Remote-operated source-changeover systems Masterpact NT/NW 630 A to 6300 A A-5

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COM communications option **A-28**

Dimensions *B-1*
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Catalogue numbers and order forms *D-1*

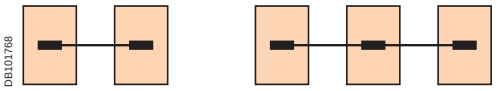
Overview of solutions

Manual source-changeover systems
Interpact INS and Compact NS 40 A to 630 A

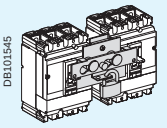
Range	Interpact		Compact
Models	INS40 to INS80 INS100 to INS160	INS250 to INS630 INV250 to INV630	NS100 to NS250 NS400 to NS630
Rating (A)	40 to 160	100 to 630	100 to 630
Type of device	Switch-disconnectors with extended handles	Switch-disconnectors	N/H/L circuit breakers NA switch-disconnectors

Manual source-changeover systems

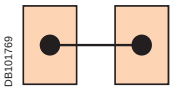
Interlocking via toggles



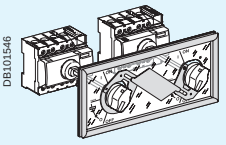
2 devices side-by-side *3 devices side-by-side*

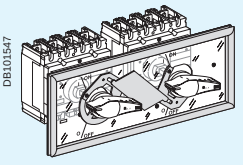


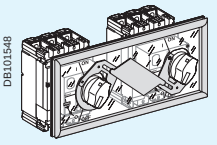
Interlocking via rotary handles



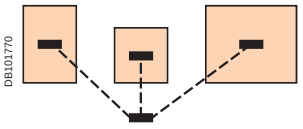
2 devices side-by-side



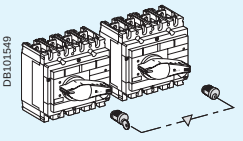


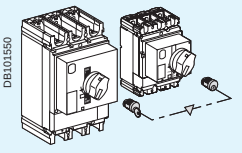


Interlocking via keylocks with captive keys

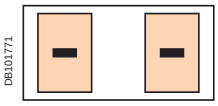


A number of different devices

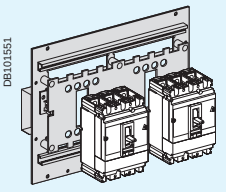




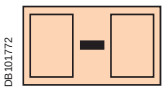
Interlocking on a base plate



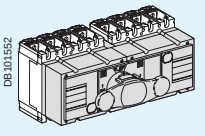
2 devices side-by-side



Complete source-changeover assemblies



2 devices side-by-side



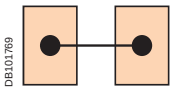
Overview of solutions

Manual source-changeover systems
Compact NS and Masterpact NT/NW
630 A to 6300 A

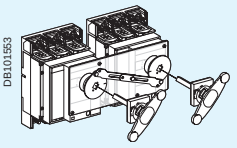
Range	Compact	Masterpact	
Models	NS630b to NS1600	NT06 to NT16	NW08 to NW63
Rating (A)	630 to 1600	630 to 1600	800 to 6300
Type of device	N/H/L circuit breakers NA switch-disconnectors	H1/L1 circuit breakers HA switch-disconnectors	N1/H1/H2/H3/L1 circuit breakers NA/HA/HF switch-disconnectors

Manual source-changeover systems

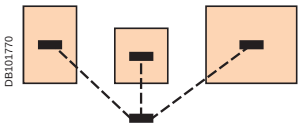
Interlocking via extended rotary handles



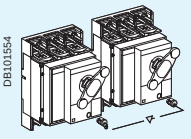
2 devices side-by-side

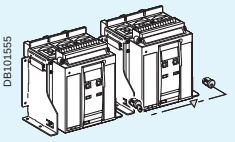


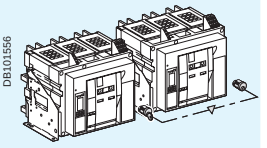
Interlocking via keylocks with captive keys



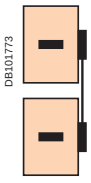
A number of different devices



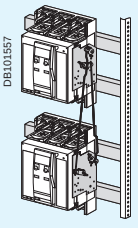




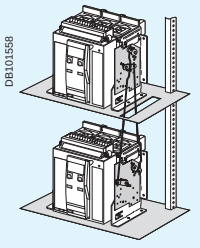
Mechanical interlocking using connecting rods

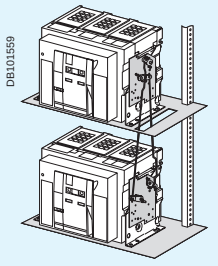


2 devices one above the other

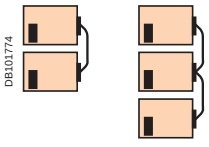


(1)

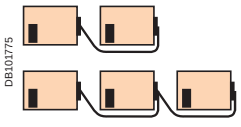




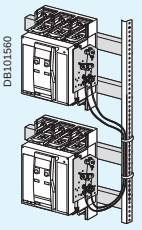
Mechanical interlocking using cables



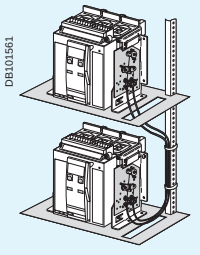
2 or 3 devices one above the other

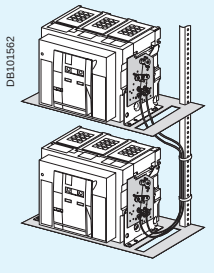


2 or 3 devices side-by-side

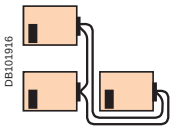


(1)
(2)





For this case and other cases, please consult us



(1) Implemented with NS630b to NS1600 electrically-operated devices only.
(2) For source-changeover systems using cables, always respect the installation conditions specified on page A-13.

Overview of solutions

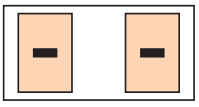
Remote-operated source-changeover systems Compact NS100/1600 100 A to 1600 A

Range	Compact	
Models	NS100 to NS630	NS630b to NS1600
Rating (A)	100 to 630	630 to 1600
Type of device	N/H/L circuit breakers NA switch-disconnectors	N/H/L circuit breakers NA switch-disconnectors

Remote-operated source-changeover system

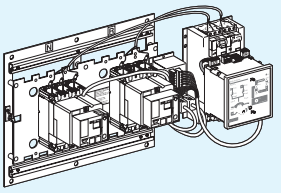
Mechanical interlocking on base plate + electrical interlocking

DB101771



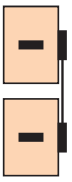
2 electrically-operated devices side-by-side combined with an electrical interlocking system

DB101563



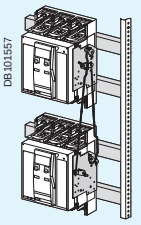
Mechanical interlocking using connecting rods + electrical interlocking

DB101773



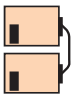
2 electrically-operated devices one above the other combined with an electrical interlocking system

DB101557



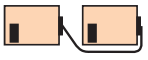
Mechanical interlocking using cables + electrical interlocking

DB101777



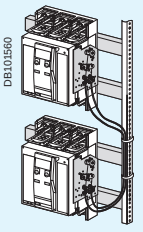
2 electrically-operated devices one above the other combined with an electrical interlocking system

DB101776



2 electrically-operated devices side-by-side combined with an electrical interlocking system

DB101560

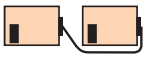


(2)

Automatic source-changeover systems

Remote-operated source-changeover system combined with an automatic-control system

DB101777



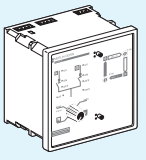
The automatic controller operates the devices depending on external parameters.

***BA**: Simple controller that manages the changeover function.*

***UA**: Controller that also manages engine generator sets.*

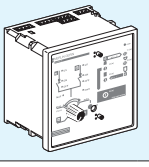
***UA150**: UA controller with a communication option.*

DB101564



BA controller

DB101565



UA and UA150 controller

(2) For source-changeover systems using cables, always respect the installation conditions specified on page A-13.

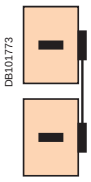
Overview of solutions

Remote-operated source-changeover systems Masterpact NT/NW 630 A to 6300 A

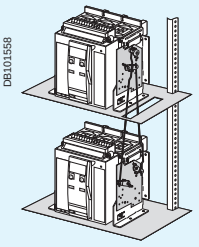
Range	Masterpact	
Models	NT06 to NT16	NW08 to NW63
Rating (A)	630 to 1600	800 to 6300
Type of device	H1/L1 circuit breakers HA switch-disconnectors	N1/H1/H2/H3/L1 circuit breakers NA/HA/HF switch-disconnectors

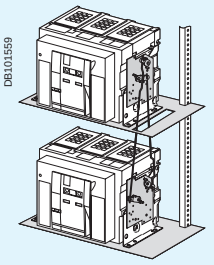
Remote-operated source-changeover system

Mechanical interlocking using connecting rods + electrical interlocking

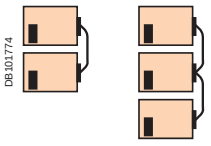


2 electrically-operated devices side-by-side combined with an electrical interlocking system

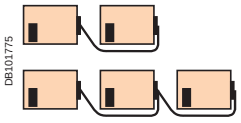




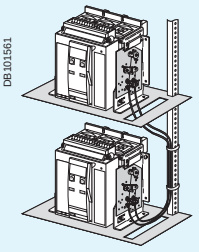
Mechanical interlocking using cables + electrical interlocking



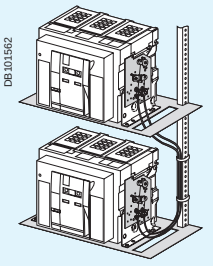
2 or 3 electrically-operated devices one above the other combined with an electrical interlocking system (1)



2 or 3 electrically-operated devices side-by-side combined with an electrical interlocking system (1)

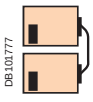


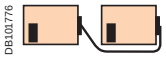
(2)



Automatic source-changeover systems

Remote-operated source-changeover system combined with an automatic-control system



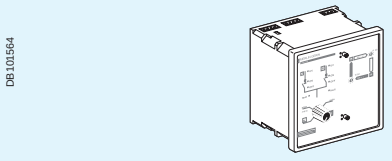


The automatic controller operates the devices depending on external parameters.

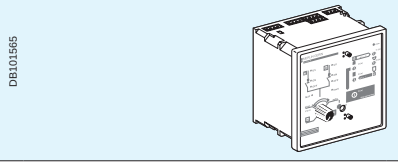
***BA**: Simple controller that manages the changeover function.*

***UA**: Controller that also manages engine generator sets.*

***UA150**: UA controller with a communication option.*



BA controller



UA and UA150 controller

(1) Three devices with Masterpact NW only.
(2) For source-changeover systems using cables, always respect the installation conditions specified on page A-13. For other cases, please consult us.

Manual source-changeover systems
Possible combinations

A manual source-changeover system can be installed on two or three manually-operated and mechanically interlocked circuit breakers or switch-disconnectors. Interlocks prevent connection to both sources at the same time, even momentarily.

All possibilities for manual source-changeover systems

Type of device	Type of interlocking for two devices			
	Complete assembly	Keylock	Direct rotary handle	Extended rotary handle
Interpact switch-disconnectors				
INS40 to INS160				■
INS250-100 to INS630	■	■	■ ▲	■ ▲
INV100 to 630		■	■ ▲	■ ▲▲
INS/INV630b to 2500		■		

Legend:
▲ *Possible but visible break function disabled.*
▲ *250 A and 630 A ratings can be mixed by using INS320/630 rotary handle interlocking system.*

Type of device	Type of interlocking for two devices					
	Toggle	Keylock	Direct rotary handle	Extended rotary handle	On base plate (toggle or direct extended rotary control)	On base plate (motor mechanism)
Compact fixed or withdrawable circuit breakers						
NS100 to 250	■ ■	■ ■ ●	■ ■	■ ■	■ ■ ■	■ ■ ■
NS400 to NS630	■ ■	■ ■ ●	■ ■	■ ■	■ ■ ■	■ ■ ■
NS100 to 630		■ ■ ●	■ ■ ●	■ ■ ●	■ ■ ■ ●	■ ■ ■ ●
NS630b to 1600 with rotary handle		■ ■ ●	■ ■	■ ■		

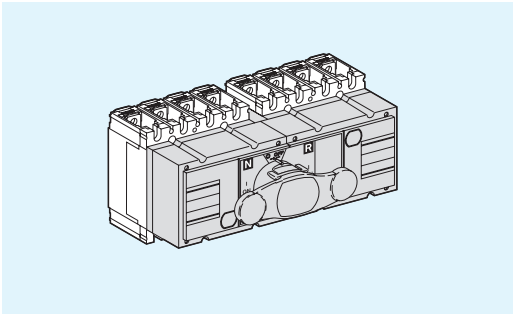
Legend:
■ *Fixed devices only.*
■ *Fixed or withdrawable devices.*
■ *Devices must be either both fixed or both withdrawable.*
● *With NS400/630 rotary handle interlocking system.*
● *Possible with NS400/630 base plate + NS100-250 adaptation kit.*
● *Devices equipped with rotary handles.*

Type of device	Type of interlocking for either all fixed or all withdrawable devices					
	Keylock	Cable-type, 2 devices side-by-side	Cable-type, 3 devices side-by-side	Cable-type, 2 devices one above the other	Cable-type, 3 devices one above another	Rod-type, 3 devices one above another
Compact fixed or withdrawable circuit breakers or swith-disconnectors, with motor mechanism						
NS630b to 1600	■	■		■		■
Masterpact fixed or withdrawable circuit breakers or swith-disconnectors, manual operation or with motor mechanism						
NT06 to 16	■	■		■		■
NW08 to 63	■	■	■	■	■	■
NT06 to NW63	■	■		■		

Manual source-changeover systems
Possible combinations

All possibilities for manual source-changeover systems

DB101571



Complete source-changeover assembly for two Interpact INS switch-disconnectors.

Complete source-changeover assembly for two switch-disconnectors

These assemblies provide an easy way to implement source changeover functions with:

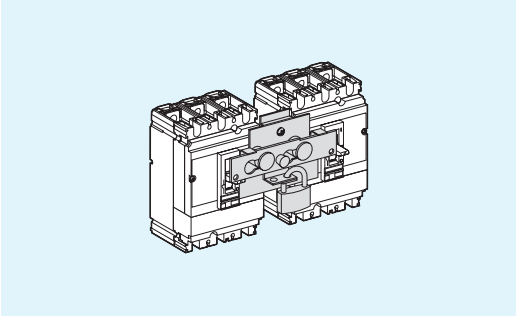
- a single 3-position rotary handle that controls the two switch-disconnectors (Normal source ON, OFF, Replacement source ON)
- a smaller size, taking up less room in the switchboard.

A complete source changeover assembly can be ordered with a single catalogue number.

"Normal N"	"Replacement" R							
	INS250-100	INS250-160	INS200-200	INS250-250	INS320	INS400	INS500	INS630
INS250-100								
Ratings 100 A	■							
INS250-160								
Ratings 160 A		■						
INS200-200								
Ratings 200 A			■					
INS250-250								
Ratings 250 A				■				
INS320								
Ratings 320 A					■			
INS400								
Ratings 400 A						■		
INS500								
Ratings 500 A							■	
INS630								
Ratings 630 A								■

Possible combinations of "Normal" and "Replacement" source circuit breakers

DB101566



Interlocking of two toggle-controlled devices.

Interlocking of two or three toggle-controlled devices

Two devices can be interlocked using this system. Two identical interlocking systems can be used to interlock three devices installed side by side, in which case one device is in the ON position and the two others are in the OFF position. Devices must all have the same configuration, i.e. fixed, plug-in, withdrawable or drawout.
The system is locked using one or two padlocks (shackle diameter 5 to 8 mm).
Two interlocking system models are available for:

- Compact NS100 to 250
- Compact NS400 to 630.

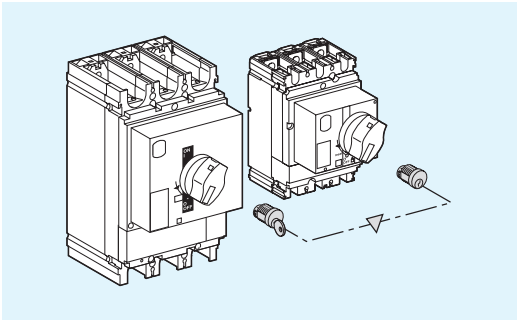
"Normal N"	"Replacement" R				
	NS100	NS160	NS250	NS400	NS630
NS100					
Ratings 16... 100 A	■	■	■	■	■
NS160					
Ratings 80...160 A	■	■	■	■	■
NS250					
Ratings 125...250 A	■	■	■	■	■
NS400					
Ratings 150... 400 A	■	■	■	■	■
NS630					
Ratings 630 A	■	■	■	■	■

Manual source-changeover systems
Possible combinations

Combination of “Normal” and “Replacement” devices

All Interpact, Compact and Masterpact circuit breakers and switch-disconnectors from 100 to 6300 A with rotary handles or motor mechanisms can be interlocked.

DB101569



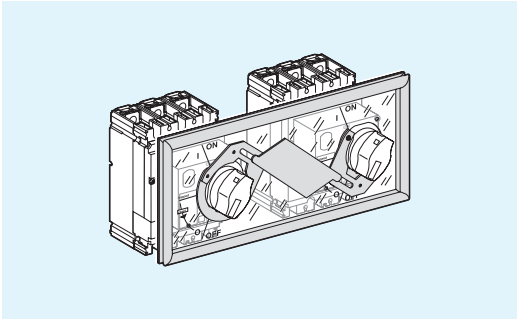
Keylock-type interlocking of two circuit breakers with rotary handles or motor mechanisms.

Interlocking of a number of devices using keylocks (captive keys)

Interlocking is based on two identical keylocks with a single key and a keylock adapter (different for each device). This solution enables interlocking between two devices that are physically distant or that have very different characteristics, for example between a low and a medium-voltage device, or between Compact NS circuit breakers and switch-disconnectors.
A system of wall-mounted captive key boxes makes possible a large number of combinations between many devices.

Possible combinations of “Normal” and “Replacement” source circuit breakers

DB101568



Interlocking of two Compact NS circuit breakers with rotary handles.

Interlocking of two devices with rotary handles

The direct or extended rotary handles are padlocked with the devices in the OFF position. The mechanism prevents simultaneous closing of the devices, but allows them to be opened.

“Normal N”	“Replacement” R				
Compact NS100/630 (1)	**NS100**	**NS160**	**NS250**	**NS400**	**NS630**
NS100					
Ratings 16... 100 A	■	■	■	□	□
NS160					
Ratings 80...160 A	■	■	■	□	□
NS250					
Ratings 125...250 A	■	■	■	□	□
NS400					
Ratings 160... 400 A	□	□	□	■	■
NS630					
Ratings 630 A	□	□	□	■	■

□ *250 A and 630 A ratings can be mixed by using NS400/630 rotary handle interlocking system.*

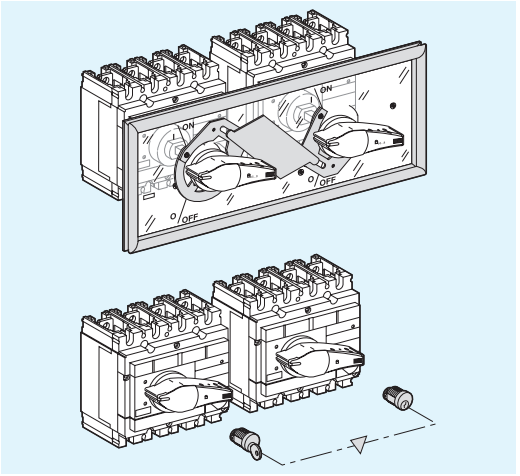
“Normal N”	“Replacement” R				
Compact NS630/1600 (1)	**NS630b**	**NS800**	**NS1000**	**NS1200**	**NS1600**
NS630b					
Ratings 250... 630 A	■	■	■	■	■
NS800					
Ratings 320... 800 A	■	■	■	■	■
NS1000					
Ratings 400... 1000 A	■	■	■	■	■
NS1200					
Ratings 480... 1200 A	■	■	■	■	■
NS1600					
Ratings 640... 1600 A	■	■	■	■	■

(1) When mixing NS100/250 and NS400/630 circuit breakers, use the NS400/630 interlocking system.

Manual source-changeover systems
Possible combinations

Possible combinations of “Normal” and “Replacement” source switch-disconnectors

DB107742



Interlocking of two Interpact switch-disconnectors with direct rotary handles.

Interlocking of two devices with rotary handles

The direct or extended rotary handles are padlocked with the devices in the OFF position. The mechanism prevents simultaneous closing of the devices, but allows them to be opened.

“Normal N”	“Replacement” R					
Interpact INS (1)	**INS40**	**INS63**	**INS80**	**INS100**	**INS125**	**INS160**
INS40						
Ratings 40 A	■	■	■	■	■	■
INS63						
Ratings 63 A	■	■	■	■	■	■
INS80						
Ratings 80 A	■	■	■	■	■	■
INS100						
Ratings 100 A	■	■	■	■	■	■
INS125						
Ratings 125 A	■	■	■	■	■	■
INS160						
Ratings 160 A	■	■	■	■	■	■

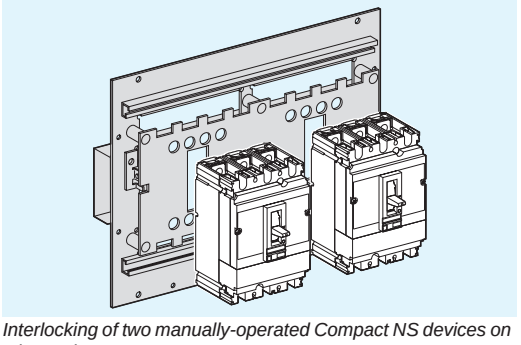
(1) With extended rotary handles only.
(2) Possible with INV, but visible-break function is significantly impaired.

“Normal N”	“Replacement” R							
Interpact INS /INV (2)	**INS250-100/ INV100**	**INS250-160/ INV160**	**INS250-200/ INV200**	**INS250-250/ INV250**	**INS320/ INV320**	**INS400/ INV400**	**INS500/ INV500**	**INS630/ INV630**
INS250-100/INV100								
Ratings 100 A	■	■	■	■	□	□	□	
INS250-160/INV160								
Ratings 160 A	■	■	■	■				
INS250-200/INV200								
Ratings 200 A	■	■	■	■				
INS250-250/INV250								
Ratings 250 A	■	■	■	■	□			□
INS320/INV320								
Ratings 320 A	□			□	■	■	■	■
INS400/INV400								
Ratings 400 A					■	■	■	■
INS500/INV500								
Ratings 500 A					■	■	■	■
INS630/INV630								
Ratings 630 A	□			□	■	■	■	■

□ *250 A and 630 A ratings can be mixed by using INS320/630 rotary handle interlocking system.*

Possible combinations of Compact “Normal” and “Replacement” source circuit breakers

DB101570



Interlocking of two manually-operated Compact NS devices on a base plate.

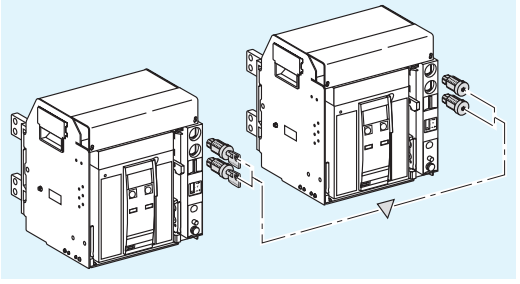
Interlocking of two devices on a base plate

A base plate is available for mechanical interlocking of two manually-operated Compact circuit breakers or switch-disconnectors.

“Normal N”	“Replacement” R				
	NS100	**NS160**	**NS250**	**NS400**	**NS630**
NS100					
Ratings 16... 100 A	■	■	■	■	■
NS160					
Ratings 80... 160 A	■	■	■	■	■
NS250					
Ratings 125... 250 A	■	■	■	■	■
NS400					
Ratings 150... 400 A	■	■	■	■	■
NS630					
Ratings 630 A	■	■	■	■	■

Combination of Masterpact devices

DB101903



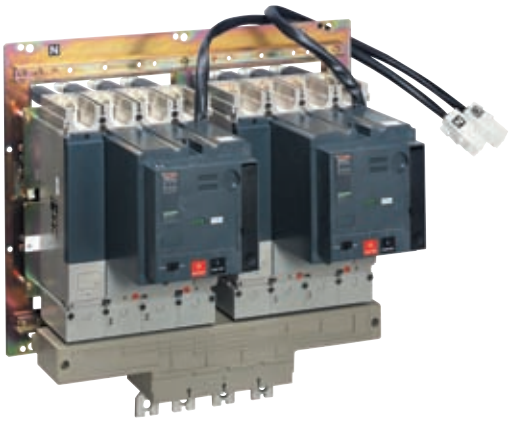
Interlocking of a number of devices using keylocks (captive keys)

Interlocking uses two identical keylocks with a single key. This solution enables interlocking between two devices that are physically distant or that have significantly different characteristics.

Remote-operated source-changeover systems
Mechanical interlocking

Electrical interlocking of two or three devices is used to create a remote-operated source-changeover system. A basic mechanical interlocking system enhances the reliability of system operation.

PB100930-67



Interlocking of two electrically-operated Compact NS circuit breakers using a base plate.

Interlocking of two Compact NS100 to 630 devices using a base plate

A base plate designed for two Compact circuit breakers can be installed horizontally or vertically on a mounting rail. Interlocking is carried out on the base plate by a mechanism located behind the breakers. Access to the circuit breaker controls and trip units is conserved. Circuit breakers must be fixed or plug-in versions, with or without earth-leakage protection or measurement modules. The base plate and the circuit breakers are supplied separately.

■ **base plate for Compact NS100 to 250 devices**

This base plate is intended for two Compact NS100 to 250 devices.

■ **base plate for Compact NS400 to 630 devices**

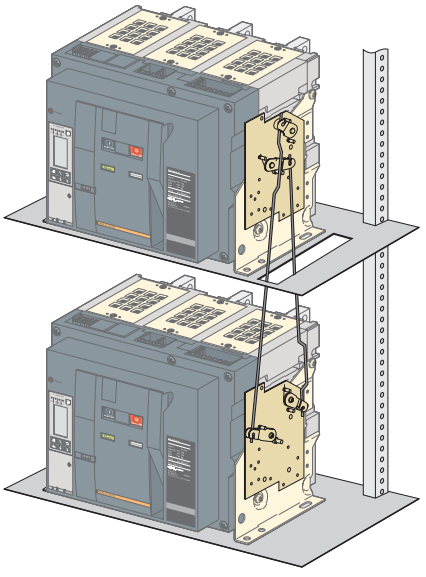
This base plate is intended for two Compact NS400 to 630 devices. It may also be used, without any modifications, to interlock a fixed Compact NS100 to 250 with a Compact NS400 or 630 device.

An adapter kit is required for plug-in versions of the Compact NS100 to 250 devices. Compact NS100 to 250 devices, in both fixed and plug-in versions, may be equipped with spreaders.

Possible combinations of "Normal" and "Replacement" Compact source circuit breakers

"Normal N"	"Replacement" R				
	NS100	NS160	NS250	NS400	NS630
NS100					
Ratings 12,5... 100 A	■	■	■	■	■
NS160					
Ratings 12,5...160 A	■	■	■	■	■
NS250					
Ratings 12,5...250 A	■	■	■	■	■
NS400					
Ratings 160... 400 A	■	■	■	■	■
NS630					
Ratings 250... 630 A	■	■	■	■	■

DB101572



Interlocking of two Masterpact NT or NW circuit breakers using connecting rods.

Interlocking of two Compact NS630b to 1600 or two Masterpact NT and NW devices using connecting rods

The two devices must be mounted one above the other (either 2 fixed or 2 withdrawable/drawout devices).

Combinations are possible between Compact NS630b to NS1600 devices and between Masterpact NT and Masterpact NW devices.

Installation

This function requires:

■ an adaptation fixture on the right side of each circuit breaker or switch-disconnector

■ a set of connecting rods with no-slip adjustments.

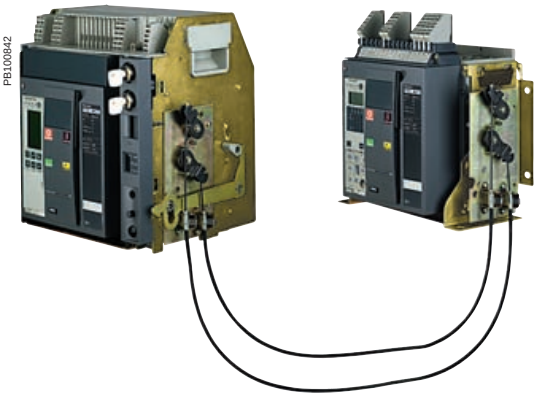
The adaptation fixtures, connecting rods and circuit breakers or switch-disconnectors are supplied separately, ready for assembly by the customer.

The maximum vertical distance between the fixing planes is 900 mm.

Possible combinations of "Normal" and "Replacement" source circuit breakers

"Normal N"	"Replacement" R			
	NS630b to NS1600	NT06 to NT16	NW08 to NW40	NW40b to NW63
NS630b to NS1600				
Ratings 250... 1600 A	■			
NT06 to NT16				
Ratings 250... 1600 A		■	■	■
NW08 to NW40				
Ratings 320... 4000 A		■	■	■
NW40b to NW63				
Ratings 4000... 6300 A		■	■	■

Remote-operated source-changeover systems
Mechanical interlocking



Interlocking of two Masterpact circuit breakers using cables.

Interlocking of two Compact NS630b to 1600 or two Masterpact NT/NW or up to three Masterpact NW devices using cables

For cable interlocking, the circuit breakers may be mounted one above the other or side-by-side.
The interlocked devices may be fixed or drawout, three-pole or four-pole, and have different ratings and sizes.

Interlocking between two devices (Compact NS630b to 1600 or Masterpact NT and NW)

This function requires:
- an adaptation fixture on the right side of each device
- a set of cables with no-slip adjustments.

The maximum distance between the fixing planes (vertical or horizontal) is 2000 mm.

Interlocking between three devices (Masterpact NW only)

This function requires:
- a specific adaptation fixture for each type of interlocking, installed on the right side of each device
- two or three sets of cables with no-slip adjustments.

The maximum distance between the fixing planes (vertical or horizontal) is 1000 mm.

Installation

The adaptation fixtures, sets of cables and circuit breakers or switch-disconnectors are supplied separately, ready for assembly by the customer.

Installation conditions for cable interlocking systems:
- cable length: 2.5 m
- radius of curvature: 100 mm
- maximum number of curves: 3.

Possible combinations of "Normal" and "Replacement" source circuit breakers

"Normal N"	"Replacement" R			
	NS630b to NS1600	NT06 to NT16	NW08 to NW40	NW40b to NW63
NS630b to NS1600				
Ratings 250... 1600 A	■			
NT06 to NT16				
Ratings 250... 1600 A		■	■	■
NW08 to NW40				
Ratings 320... 4000 A		■	■	■
NW40b to NW63				
Ratings 4000... 6300 A		■	■	■

It is not possible to combine Compact NS630b to 1600 and Masterpact NT (or Masterpact NW) devices.
All combinations of two Masterpact NT and Masterpact NW devices are possible, whatever the rating or size of the devices.

Possible combinations of three device

"Normal N"	"Replacement" R			
	NS630b to NS1600	NT06 to NT16	NW08 to NW40	NW40b to NW63
NS630b to NS1600				
Ratings 250... 1600 A				
NT06 to NT16				
Ratings 250... 1600 A				
NW08 to NW40				
Ratings 320... 4000 A			■	■
NW40b to NW63				
Ratings 4000... 6300 A			■	■

Only Masterpact NW may be used for three-device combinations.

Types of mechanical interlocking and combinations

See page A-4 to page A-9.

Remote-operated source-changeover systems
General characteristics

Range			Compact	
Types of devices			NS100 to NS250	NS400 to NS630
Types of circuit breakers			N / H / L	N / H / L
Switch-disconnector version			NA	NA
Mixing possibilities			all devices NS100 to NS250 N/H/L/NA fixed or plug-in	all devices NS100 to NS630 N/H/L/NA fixed or plug-in
Electrical characteristics				
Rating			15 to 250 A	15 to 630 A
Insulating voltage Ui (V AC)			750	750
Positive break indication			■	■
Number of poles (N and R devices must have the same number of poles)			3, 4	
Electrical durability			See page A-14	
Operating temperature			–25 °C to +70 °C (50 °C for 440 V - 60 Hz)	
Control characteristics				
Control voltage		AC	48 to 415 V - 50/60 Hz 440 V - 60 Hz	
		DC	24-250 V	
Maximum consumption		AC	500 VA	500 VA
		DC	500 W	500 W
Minimum switching time			800 ms	800 ms
Interlocking				
Mechanical (see page A-10)				
Electrical	by diagram (without IVE)		■	■
	with IVE unit		■	■
	auxiliary contacts used by circuit breaker		1 OF + 1 SDE	1 OF + 1 SDE
Protection and measurement				
Overload protection		long time	■	■
Short-circuit protection		short time	■	■
		instantaneous	■	■
Earth-fault protection				■
Zone selective interlocking (ZSI)				■
Earth-leakage protection	by Vigi module		■	■
	by control unit			
	by add-on Vigirex relay		■	■
Current measurements Voltage, frequency, power measurements, etc.				
Indication and control auxiliaries				
Available auxiliary indication contacts			OF + SD (+ SDV)	2 OF + SD (+ SDV)
Voltage releases	MX shunt		■	■
	MN undervoltage		■	■
Voltage presence indicator			■	■
Voltage transformer			■	■
Ammeter module			■	■
Insulation monitoring module			■	■
Source-changeover controller				
With permanent replacement source			■ BA controller	
With standby generator set			■ UA controller	
Remote communication via bus				
Device status indications			■	■
Device remote control				
Transmission of settings				
Indication and identification of protection status and alarms				
Transmission of measurements				
Installation and connection				
Fixed front connected				
Fixed rear connected			■ (long rear connections)	■ (long rear connections)
Withdrawable, plug-in or drawout			■ (plug-in on base)	■ (plug-in on base)
Installation and connection accessories				
Downstream coupling accessory			■	■
Bare-cable connectors			■	■
Terminal extensions			■	■
Terminal shields and inter-phase barriers				■
Locking	by padlock		■	■
	by keylock		■	■
Front panel escutcheons			■	■

Remote-operated source-changeover systems
General characteristics

	Masterpact	
NS630b to NS1600	NT06 to 16	NW08 to 63
N / H / L	N1 / H1 / H2 / H3 / L1	N1 / H1 / H2 / H3 / L1
NA	NA / HA / HF	NA / HA / HF
all devices NS630b to 1600 N/H/L/NA fixed or plug-in	all mixing possibilities (fixed, drawout or fixed + drawout) N1/H1/H2/H3/L1/NA/HA/HF	all mixing possibilities (fixed, drawout or fixed + drawout) N1/H1/H2/H3/L1/NA/HA/HF
250 to 1600 A	600 to 1600 A	800 to 6300 A
750	1000	1000
	■	■
	3, 4	
See page A-14		
	–25 °C to +70 °C (50 °C for 440 V - 60 Hz)	
	48 to 415 V - 50/60 Hz 440 V - 60 Hz	
	24-250 V	
180 VA 180 W	180 VA 180 W	180 VA 180 W
800 ms	800 ms	800 ms
■	■	■
■	only with UA or BA	only with UA or BA
1 OF + 1 CE (+ SDE)	1 OF + 1 CE + 1 PF	1 OF + 1 CE + 1 PF
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
	■	■
2 OF + SD	2 OF + SD	2 OF + SD
■	■	■
■	■	■
	■	■
	■	■
	■	■
	■	■
	■ BA controller	
	■ UA controller	
■	■	■
■	■	■
■	■	■
■	■	■
■ (vertical or horizontal)	■ (vertical or horizontal)	■ (vertical or horizontal)
■ (drawout)	■ (drawout)	■ (drawout)
■		
■		
■	■	■
■	■	■
■	■	■

Remote-operated source-changeover systems
Mechanical and electrical durability

Interpact INS switch-disconnectors

			INS250-100		INS250-160		INS250-200		INS250	
Number of poles			3, 4		3, 4		3, 4		3, 4	
Conventional thermal current (A)	Ith	At 60 °C	100		160		200		250	
Rated operational current (A)	Ie	**Electrical AC, 50/60 Hz**	**AC22A**	**AC23A**	**AC22A**	**AC23A**	**AC22A**	**AC23A**	**AC22A**	**AC23A**
		440-480 V	100	100	160	160	200	200	250	250
		660-690 V	100	100	160	160	200	200	250	250
Durability (category A) (O_N-C_R-O_R-C_N cycles)		Mechanical	15000		15000		15000		15000	
		Electrical AC, 50/60 Hz	**AC22A**	**AC23A**	**AC22A**	**AC23A**	**AC22A**	**AC23A**	**AC22A**	**AC23A**
		440-480 V	1500	1500	1500	1500	1500	1500	1500	1500
		660-690 V	1500	1500	1500	1500	1500	1500	1500	1500

			INS320		INS400		INS500		INS630	
Number of poles			3, 4		3, 4		3, 4		3, 4	
Conventional thermal current (A)	Ith	at 60 °C	320		400		500		630	
Rated operational current (A)	Ie	**Electrical AC, 50/60 Hz**	**AC22A**	**AC23A**	**AC22A**	**AC23A**	**AC22A**	**AC23A**	**AC22A**	**AC23A**
		440-480 V	320	320	400	400	500	500	630	630
		660-690 V	320	320	400	400	500	500	630	630
Durability (category A) (O_N-C_R-O_R-C_N cycles)		Mechanical	10000		10000		10000		10000	
		Electrical AC, 50/60 Hz	**AC22A**	**AC23A**	**AC22A**	**AC23A**	**AC22A**	**AC23A**	**AC22A**	**AC23A**
		440-480 V	1500	1500	1500	1500	1500	1500	1500	1500
		660-690 V	1500	1500	1500	1500	1500	1500	1500	1500

Compact NS100-NS1600

	NS100-250	NS400-630	NS630b-NS1600
Number of poles	3, 4	3, 4	3, 4
Rated current In (A)	100 to 250	400 to 630	630 to 1600
Mechanical durability (O_N-C_R-O_R-C_N cycles)	10000	8000	8000
Electrical durability at In (O_N-C_R-O_R-C_N cycles) for ≤ 440 V and 480 V NEMA (2)	10000	3000	2000
Electrical durability at In (O_N-C_R-O_R-C_N cycles) for U = 500 V to 690 V (2)	1500	1500	1500

Masterpact NT06-NT16/NW08-NW63 (1)

	NT06-NT10	NT12-NT16	NW08-NW16	NW20	NW25-NW40	NW50-NW63
Number of poles	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4
Rated current In (A)	630 to 1600	1250 to 1600	800 to 1600	2000	2500 to 4000	5000 to 6300
Mechanical durability (O_N-C_R-O_R-C_N cycles)	8000	8000	10000	10000	10000	5000
Electrical durability at In (O_N-C_R-O_R-C_N cycles) for ≤ 440 V and 480 V NEMA (2)	6000	6000 NT16: 3000	10000	8000	5000	1500
Electrical durability at In (O_N-C_R-O_R-C_N cycles) for U = 500 V to 690 V (2)	3000	2000 NT16: 1000	10000	6000	2500	1500

(1) Mechanical and electrical durability not applicable to Masterpact H3 and L versions.
(2) Electrical durability tests carried out with a power factor of 0.8 as per IEC 947-2.

Note:
O_N: opening of Normal source
C_R: closing of Replacement source
O_R: opening of Replacement source
C_N: closing of Normal source

Remote-operated
Connection and insulation accessories for Compact NS and INS ⩽ 630 A

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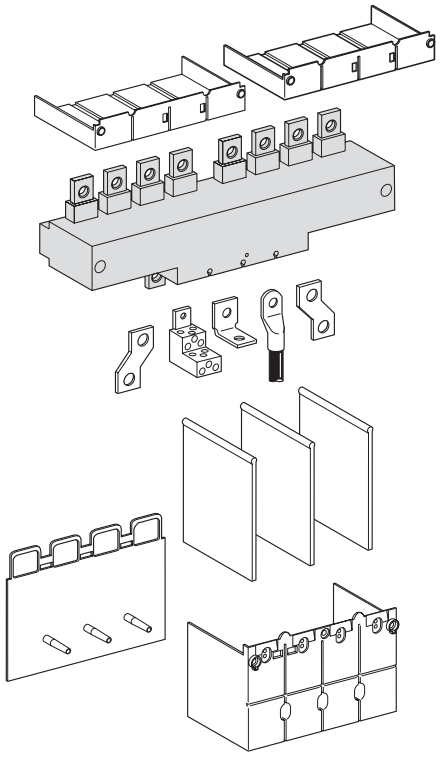


Downstream coupling accessory

This accessory simplifies connection to bars and cables with lugs.
It may be used to couple two circuit breakers (Compact NS100 to 630) or switch-disconnectors (Interpact INS/INV100 to 630) of the same size.
Pitch between outgoing terminals:

- Interpact INS250 and INV100 to 250: 35 mm
- Interpact INS/INV320 to 630: 52.5 mm
- Compact NS100 to 250: 35 mm
- Compact NS400 to 630: 52.5 mm.

For Compact NS circuit-breakers, the downstream coupling accessory can be used only with **fixed versions**.

Connection and insulation accessories

The coupling accessory can be fitted with the same connection and insulation accessories as the circuit breakers and switch-disconnectors.

Possible uses	Downstream coupling	
	Possible	Outgoing pitch (mm)
Manual source-changeover systems		
INS250 (100 to 250 A) with rotary handle	■	35
NS100/250 with rotary handle	■	35
NS100/250 on base plate with toggle control	■	35
INS400/630 (320 to 630 A) with rotary handle	■	52.5
NS400/630 with rotary handle	■	52.5
NS400/630 on base plate with toggle control	■	52.5
Complete source-changeover assembly		
INS250 (100 to 250 A)	■	35
INS400/630 (320 to 630 A)	■	52.5
Remote-operated source-changeover systems		
NS100/250	■	35
NS400/630	■	52.5

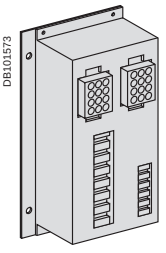
Remote-operated source-changeover systems
Electrical interlocking

Electrical interlocking is used with the mechanical interlocking system. It electrically interlocks the two circuit breakers and implements the time delays required for proper operation of the system.
An automatic controller may be added to take into account information from the distribution system.

Electrical interlocking is carried out by an electrical control device.
For Compact NS up to 630 A, electrical interlocking is implemented by the IVE unit integrating control circuits and an external terminal block. The integrated control circuits implement the time delays required for correct source transfer.
For Compact NS630b to 1600 and Masterpact, this function can be implemented in one of two ways:
- using the IVE unit
- by an electrician based on the diagrams presented in the “Electrical diagrams” part of this catalogue.

Characteristics of the IVE unit
- external connection terminal block:
  - inputs: circuit breaker control signals
  - outputs: status of the SDE contacts on the “Normal” and “Replacement” source circuit breakers
- 2 connectors for the two “Normal” and “Replacement” source circuit breakers:
  - inputs:
    - status of the OF contacts on each circuit breaker (ON or OFF)
    - status of the SDE contacts on the “Normal” and “Replacement” source circuit breakers
  - outputs: power supply for operating mechanisms
- control voltage:
  - 24 to 250 V DC
  - 48 to 415 V 50/60 Hz - 440 V 60 Hz.

The IVE unit control voltage must be same as that of the circuit breaker operating mechanisms.



IVE unit.

Necessary equipment
For Compact NS100 to 630, each circuit breaker must be equipped with:
- a motor mechanism
- an OF contact
- an SDE contact.

The components are supplied ready for assembly and the circuit breakers prewired. The prewiring must not be modified.

For Compact NS630b to 1600, each circuit breaker must be equipped with:
- a motor mechanism
- an available OF contact
- a CE connected-position contact (carriage switch) on withdrawable circuit breakers
- an SDE contact.

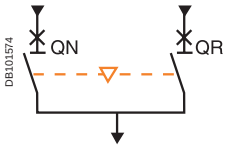
For Masterpact NT and NW, each circuit breaker must be equipped with:
- a remote-operation system made up of:
  - MCH gear motor
  - MX or MN opening release
  - XF closing release
  - PF “ready to close” contact
- an available OF contact
- one to three CE connected-position contacts (carriage switches) on drawout circuit breakers (depending on the installation).

Remote-operated source-changeover systems
Standard configurations

Compact NS, Masterpact NT and NW

Types of mechanical interlocking

2 devices



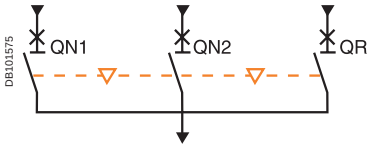
QN	QR
0	0
1	0
0	1

Typical electrical diagrams	Diagram no.
Compact NS100 to 630:	
■ electrical interlocking without emergency power off (EPO) auxiliaries:	**51201177**
□ with EPO by MN	**51201178**
□ with EPO by MX	**51201179**
Compact NS630b to 1600:	
■ electrical interlocking with lockout after fault:	
□ permanent replacement source (without IVE)	**51201180**
□ with EPO by MX (without IVE)	**51201181**
□ with EPO by MN (without IVE)	**51201182**
□ permanent replacement source (with IVE)	**51201183**
□ with EPO by MX (with IVE)	**51201184**
□ with EPO by MN (with IVE)	**51201185**
■ automatic control without lockout after fault:	
□ permanent replacement source (without IVE)	**51201186**
□ engine generator set (without IVE)	**51201187**
Masterpact NT and NW:	
■ electrical interlocking with lockout after fault:	
□ permanent replacement source (without IVE)	**51201139**
□ with EPO by MX (without IVE)	**51201140**
□ with EPO by MN (without IVE)	**51201141**
□ permanent replacement source (with IVE)	**51201142**
□ with EPO by MX (with IVE)	**51201143**
□ with EPO by MN (with IVE)	**51201144**
■ automatic control without lockout after fault:	
□ permanent replacement source (without IVE)	**51156226**
□ engine generator set (without IVE)	**51156227**
■ automatic control with lockout after fault:	
□ permanent replacement source (with IVE)	**51156904**
□ engine generator set (with IVE)	**51156905**
■ BA/UA controller (with IVE)	**51156903**

Masterpact NW only

Types of mechanical interlocking

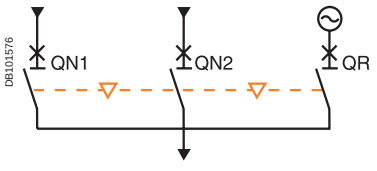
3 devices: 2 “Normal” sources and 1 “Replacement” source



QN1	QN2	QR
0	0	0
1	1	0
0	0	1

Typical electrical diagrams	Diagram no.
■ electrical interlocking:	
□ without lockout after fault	**51156906**
□ with lockout after fault	**51156907**

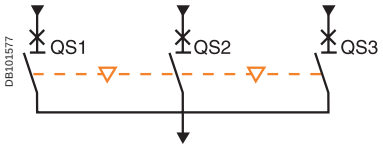
3 devices: 2 “Normal” sources and 1 “Replacement” source with source selection



QN1	QN2	QR
0	0	0
1	0	0
0	0	1
1	1	0
0	1	0

Typical electrical diagrams	Diagram no.
■ automatic control with engine generator set:	
□ without lockout after fault (with MN)	**51156908**
□ with lockout after fault (with MN)	**51156909**

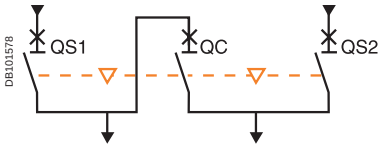
3 devices: 3 sources, only one device



QS1	QS2	QS3
0	0	0
1	0	0
0	1	0
0	0	1

Typical electrical diagrams	Diagram no.
■ electrical interlocking:	
□ without lockout after fault	**51156910**
□ with lockout after fault	**51156911**

3 devices: 2 sources + 1 coupling



QS1	QC	QS2	
0	0	0	
1	0	1	
1	1	0	
0	1	1	
1	0	0	(1)
0	0	1	(1)

(1) possible by forcing operation

Typical electrical diagrams	Diagram no.
■ electrical interlocking:	
□ without lockout after fault	**51156912**
□ with lockout after fault	**51156913**
■ automatic control with lockout after fault	**51156914**

“Lockout after fault” option. This option makes it necessary to manually reset the device following fault tripping.

Associated controllers
Controller selection

By combining a remote-operated source-changeover system with an integrated BA or UA automatic controller, it is possible to automatically control source transfer according to user-selected sequences.
These controllers can be used on source-changeover systems comprising 2 circuit breakers.
For source-changeover systems comprising 3 circuit breakers, the automatic control diagram must be prepared by the installer as a complement to to diagrams provided in the “electrical diagrams” section of this catalogue.

PB100855

BA controller.

PB100856

UA controller.

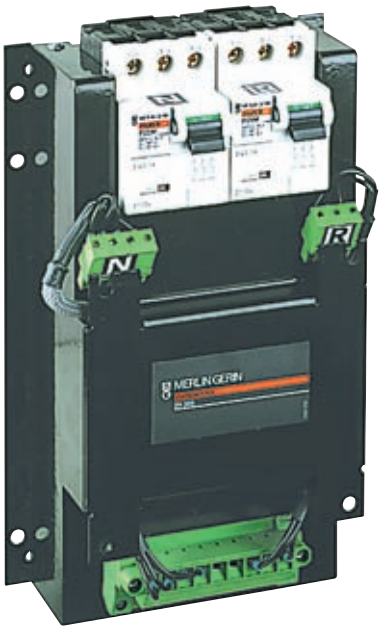
Controller		BA	UA
Compatible circuit breakers		All Compact NS and Masterpact circuit breakers	
4-position switch			
Automatic operation		■	■
Forced operation on “Normal” source		■	■
Forced operation on “Replacement” source		■	■
Stop (both “Normal” and “Replacement” sources off)		■	■
Automatic operation			
Monitoring of the “Normal” source and automatic transfer		■	■
Generator set startup control			■
Delayed shutdown (adjustable) of generator set			■
Load shedding and reconnection of non-priority circuits			■
Transfer to the “Replacement” source if one of the phases of the “Normal” phase is absent			■
Test			
By opening the P25M circuit breaker supplying the controller		■	
By pressing the test button on the front of the controller			■
Indications			
Circuit breaker status indication on the front of the controller: on, off, fault trip		■	■
Automatic mode indicating contact		■	■
Other functions			
Selection of type of “Normal” source (single-phase or three-phase) (1)			■
Voluntary transfer to “Replacement” source (e.g. energy management commands)		■	■
During peak-tariff periods (energy management commands) forced operation on “Normal” sourceif “Replacement” source not operational			■
Additional contact (not part of controller). Transfer to “Replacement” source only if contact is closed. (e.g. used to test the frequency of UR).		■	■
Setting of maximum startup time for the replacement source			■
Options			
Communication option			
Power supply			
Control voltages (2)	110 V	■	■
	220 to 240 V 50/60 Hz	■	■
	380 to 415 V 50/60 Hz and 440 V 60 Hz	■	■
Operating thresholds			
Undervoltage	0.35 Un ⩽ voltage ⩽ 0.7 Un	■	■
Phase failure	0.5 Un ⩽ voltage ⩽ 0.7 Un		■
Voltage presence	voltage ⩾ 0.85 Un	■	■
IP degree of protection (EN 60529) and IK degree of protection against external mechanical impacts (EN 50102)			
Front	IP40	■	■
Side	IP30	■	■
Connectors	IP20	■	■
Front	IK07	■	■
Characteristics of output contacts (dry, volt-free contacts)			
Rated thermal current (A)	8		
Minimum load	10 mA at 12 V		
Output contacts:			
Position of the Auto/Stop switch		■	■
Load shedding and reconnection order			■
Generator set start order.			■

		AC				DC	
Utilisation category (IEC 947-5-1)		AC12	AC13	AC14	AC15	DC12	DC13
Operational current (A)	24 V	8	7	5	5	8	2
	48 V	8	7	5	5	2	-
	110 V	8	6	4	4	0.6	-
	220/240 V	8	6	4	3	-	-
	250 V	-	-	-	-	0.4	-
	380/415 V	5	-	-	-	-	-
	440 V	4	-	-	-	-	-
	660/690 V	-	-	-	-	-	-

(1) For example, 220 V single-phase or 220 V three-phase.
(2) The controller is powered by the ACP auxiliaries control plate. The same voltage must be used for the ACP plate, the IVE unit and the circuit-breaker operating mechanisms. If this voltage is the same as the source voltage, then the “Normal” and “Replacement” sources can be used directly for the power supply. If not, an isolation transformer must be used.

Associated controllers
Controller installation

PB100857



ACP auxiliaries control plate.

ACP auxiliaries control plate

The auxiliaries control plate provides in a single unit:
- protection for the BA or UA controller with two highly limiting P25M circuit breakers (infinite breaking capacity) for power drawn from the AC source
- control of circuit-breaker ON and OFF functions via two relay contactors
- connection of the circuit breakers to the BA or UA controller via a built-in terminal block.

Control voltages
- 110 V 50/60 Hz
- 220 to 240 V 50/60 Hz
- 380 to 415 V 50/60 Hz and 440 V 60 Hz.

The same voltage must be used for the ACP plate, the controller and the circuit-breaker operating mechanisms.

Installation

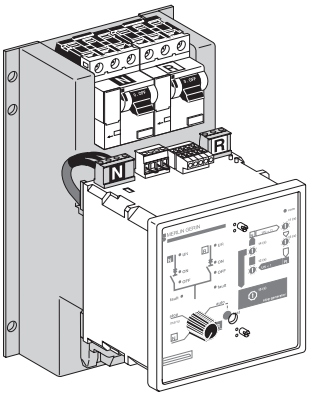
Connection between the ACP auxiliaries control plate and the IVE electrical-interlocking unit may use:
- wiring done by the installer
- prefabricated wiring (optional).

Installation of the BA and UA controllers

The BA and UA controllers may be installed in one of two manners:
- directly mounted on the ACP auxiliaries control plate
- mounted on the front panel of the switchboard.

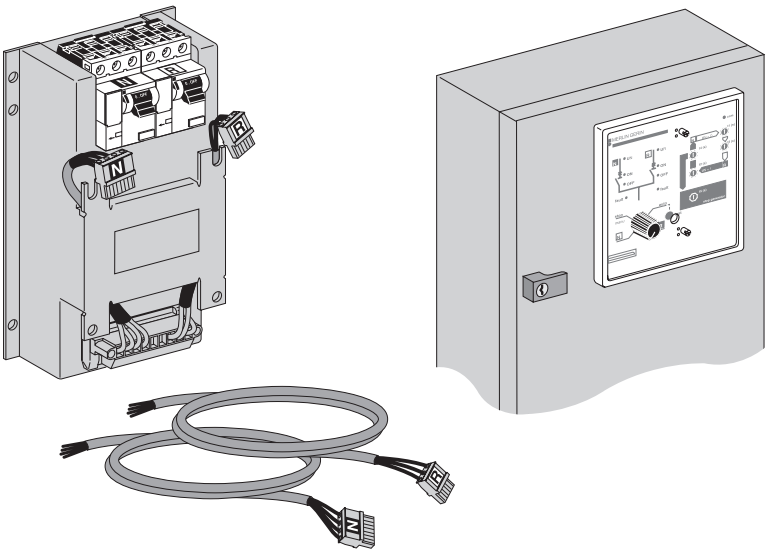
The length of the connection between the ACP plate and the controller must not exceed two metres. Wiring is done by the installer.

DB101579



Mounting on the ACP plate.

DB101580



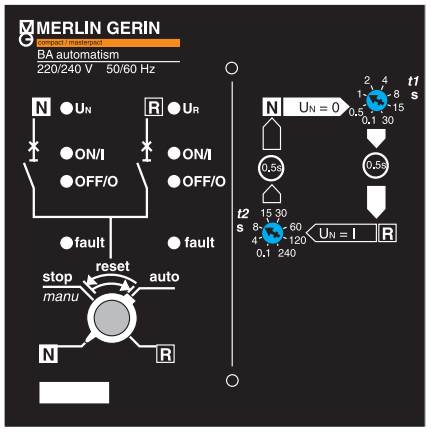
Mounting on the front panel of the switchboard.

Associated controllers
BA controller

The BA controller is used to create simple source-changeover systems that switch from one source to another depending on the presence of voltage UN on the “Normal” source.
It is generally used to manage two permanent sources and can control Compact NS and Masterpact NT/NW circuit breakers and switch-disconnectors.

PB100858

DB101779



Front of the BA controller.

Operating modes
A four-position switch may be used to select:
- automatic operation
- forced operation on the “Normal” source
- forced operation on the “Replacement” source
- stop (both “Normal” and “Replacement” sources off).

Setting the time delays
Time delays are set on the front of the controller.
t1. delay between detection that the “Normal” source has failed and the transmission of the order to open the “Normal” source circuit breaker (adjustable from 0.1 to 30 seconds).
t2. delay between detection that the “Normal” source has returned and the transmission of the order to open the “Replacement” source circuit breaker (adjustable from 0.1 to 240 seconds).

Circuit breaker commands and status indications
The status of the circuit breakers is indicated on the front of the controller.
- ON, OFF, fault.

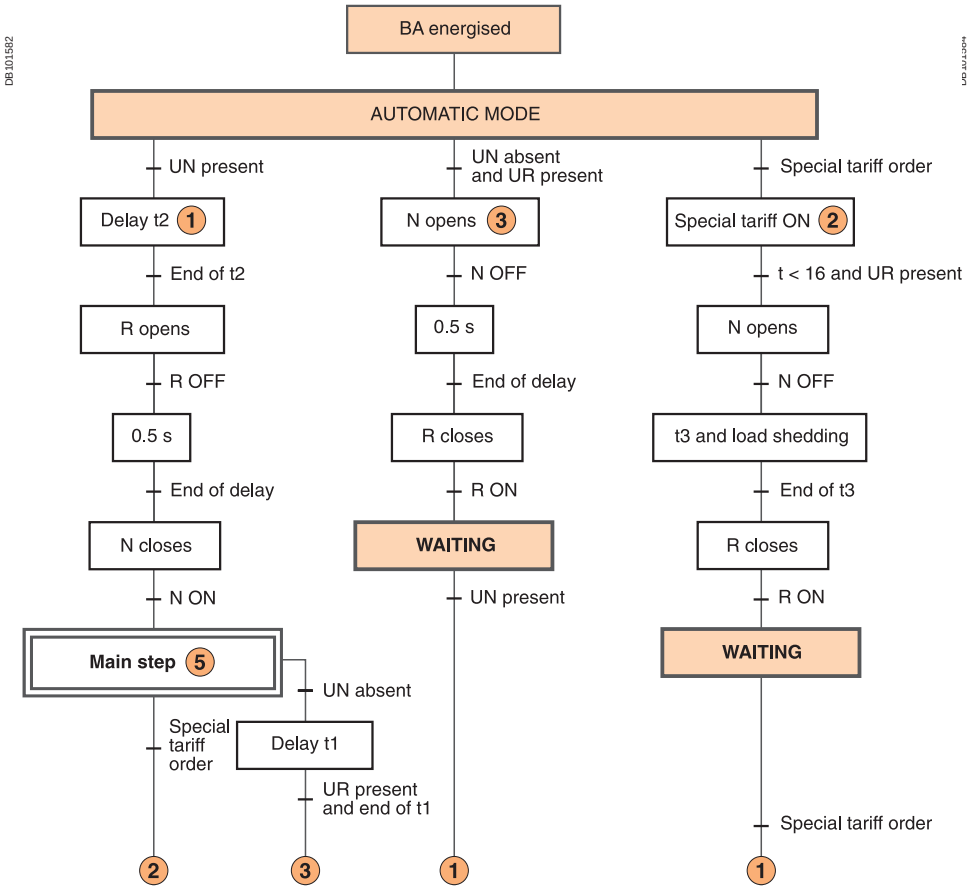
A built-in terminal block may be used to connect the following input/output signals:
- inputs:
  - voluntary order to transfer to source R (e.g. for special tariffs, etc.)
  - additional control contact (not part of the controller). Transfer to the “Replacement” source takes place only if the contact is closed (e.g. used to test the frequency of UR, etc.)
- outputs:

indication of operation in automatic or stop mode via changeover contacts.

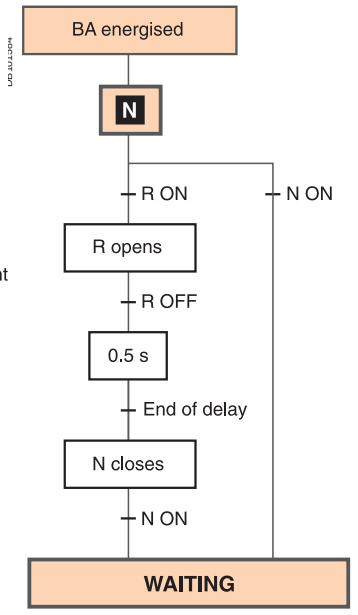
Test
It is possible to test the operation of the BA controller by turning OFF (opening) the P25M circuit breaker for the “Normal” source and thus simulating a failure of voltage UN.

Associated controllers
BA controller operating sequences

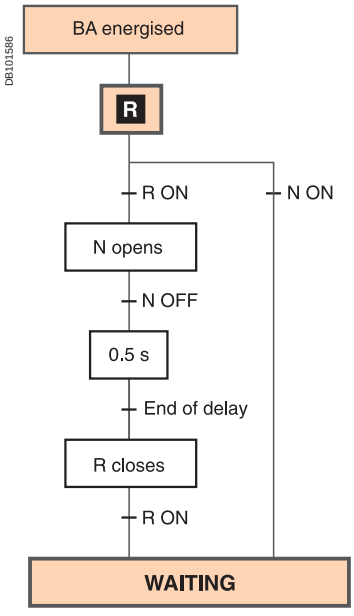
Switch set to Auto (automatic operation and special-tariff mode)



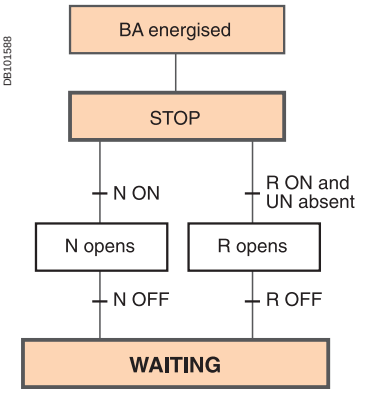
Switch set to the “N” position (forced operation on the “Normal” source)



Switch set to the “R” position (forced operation on the “Replacement” source)



Switch set to the “Stop” position



Key
UN : “Normal” source voltage
UR : “Replacement” source voltage
N : “Normal” source circuit breaker
R : “Replacement” source circuit breaker

1 *The number sends to the indicated step when the condition is true.*

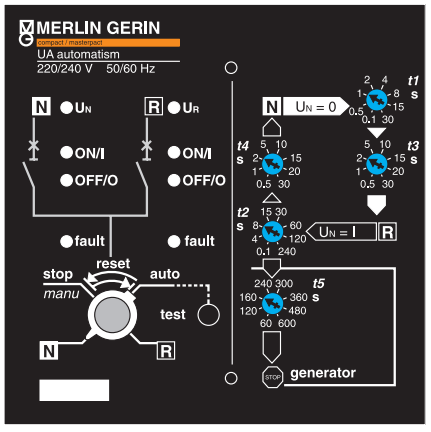
WAITING The system exits this mode when the operating mode is modified or when an external event occurs (e.g. failure or return of UN).

Associated controllers
UA controller

The UA controller is used to create a source-changeover system integrating the following automatic functions:
■ transfer from one source to another depending on the presence of voltage UN on the “Normal” source
■ startup of an engine generator set
■ shedding and reconnection of non-priority circuits
■ transfer to the “Replacement” source if one of the phases on the “Normal” source fails.
The UA controller can control Compact NS and Masterpact NT/NW devices.

PB100858

DB101778



Front of the UA controller.

Operating modes
A four-position switch may be used to select:
■ automatic operation
■ forced operation on the “Normal” source
■ forced operation on the “Replacement” source
■ stop (both “Normal” and “Replacement” sources off, then manual operation).

Setting the time delays
Time delays are set on the front of the controller.
t1. delay between detection that the “Normal” source has failed and the transmission of the order to open the “Normal” source circuit breaker (adjustable from 0.1 to 30 seconds).
t2. delay between detection that the “Normal” source has returned and the transmission of the order to open the “Replacement” source circuit breaker (adjustable from 0.1 to 240 seconds).
t3. delay following opening of QN with load shedding and before closing of QR (adjustable from 0.5 to 30 seconds).
t4. delay following opening of QR with load reconnection and before closing of QN (adjustable from 0.5 to 30 seconds).
t5. delay for confirmation that UN is present before shutting down the engine generator set (adjustable from 60 to 600 seconds).
t6. delay before startup of the engine generator set (120 or 180 seconds).

Commands and indications
Circuit breaker status indications on the front of the controller:
■ ON, OFF, fault.
A built-in terminal block may be used to connect the following input/output signals:
■ inputs:
□ voluntary order to transfer to source R (e.g. for special tariffs, etc.)
□ additional control contact (not part of the controller). Transfer to the “Replacement” source takes place only if the contact is closed (e.g. used to test the frequency of UR, etc.)
■ outputs:
□ control of an engine generator set (ON / OFF)
□ shedding of non-priority circuits
□ indication of operation in automatic mode via changeover contacts.

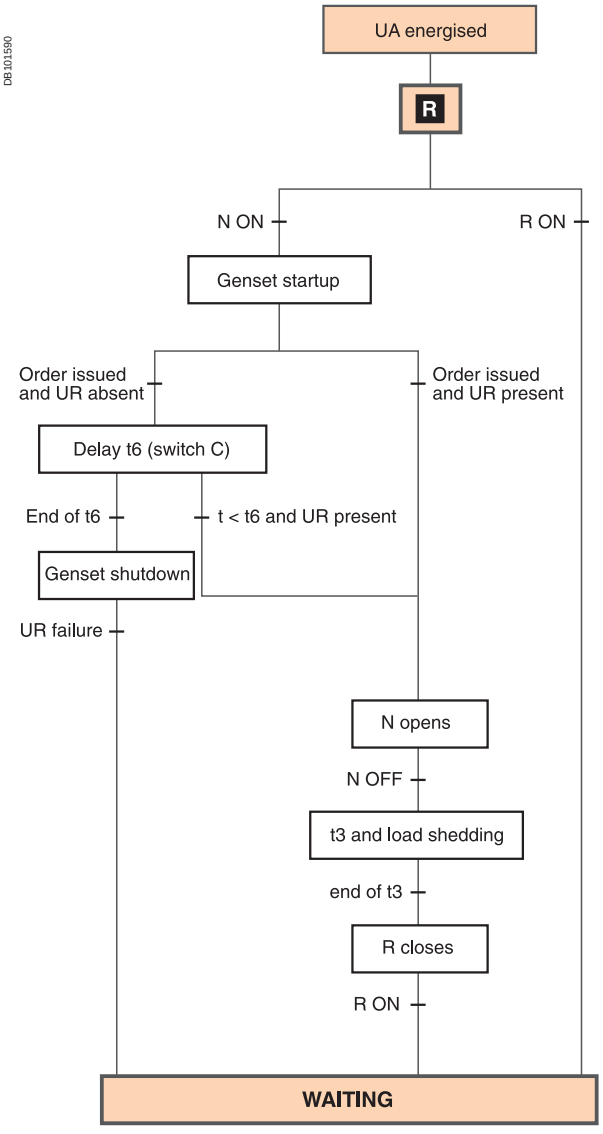
Distribution-system settings
Three switches are used to:
■ select the type of “Normal” source, whether single-phase or three-phase (e.g. 240 V single-phase or 240 V three-phase)
■ select whether to remain (or not) on the “Normal” source if the “Replacement” source is not operational during operation on special tariffs
■ select the maximum permissible startup time for the engine generator set during operation on special tariffs (120 or 180 seconds).

Test
A pushbutton on the front of the controller may be used to test transfer from the “Normal” source to the “Replacement” source, then the return to the “Normal” source. The test lasts approximately three minutes.

COM communications option
Using the internal bus protocol, this option may be used to remote the following information:
■ circuit breaker status (ON, OFF, fault trip)
■ presence of the “Normal” and “Replacement” voltages
■ presence of an order for forced operation (e.g. special tariffs)
■ settings and configuration information
■ status of non-priority circuits (loads shed or not)
■ position of the switch (stop, auto, forced operation on the “Normal” source, forced operation on the “Replacement” source).

Associated controllers
UA controller operating sequences

Switch set to the “R” position (forced operation on the “Replacement” source)

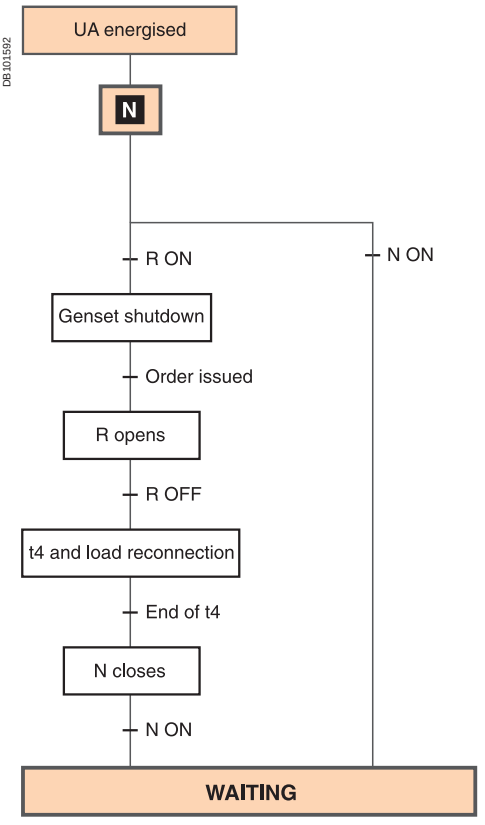


WAITING The system exits this mode when the operating mode is modified or when an external event occurs (e.g. failure or return of UN).

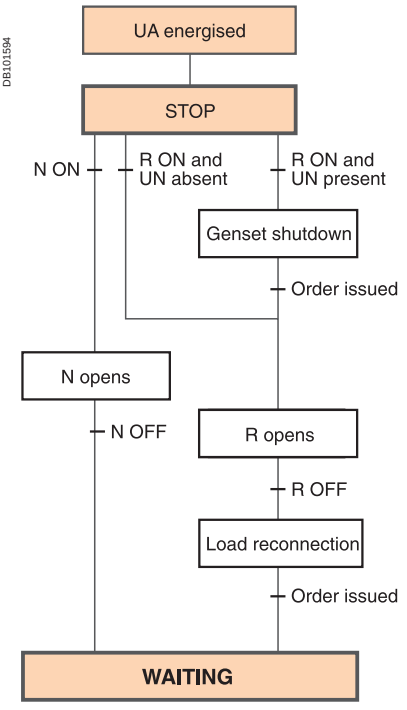
When the UA controller is not energised, the output for generator set startup is activated).

Key
UN : “Normal” source voltage
UR : “Replacement” source voltage
N : “Normal” source circuit breaker
R : “Replacement” source circuit breaker

Switch set to the “N” position (forced operation on the “Normal” source)



Switch set to the “Stop” position



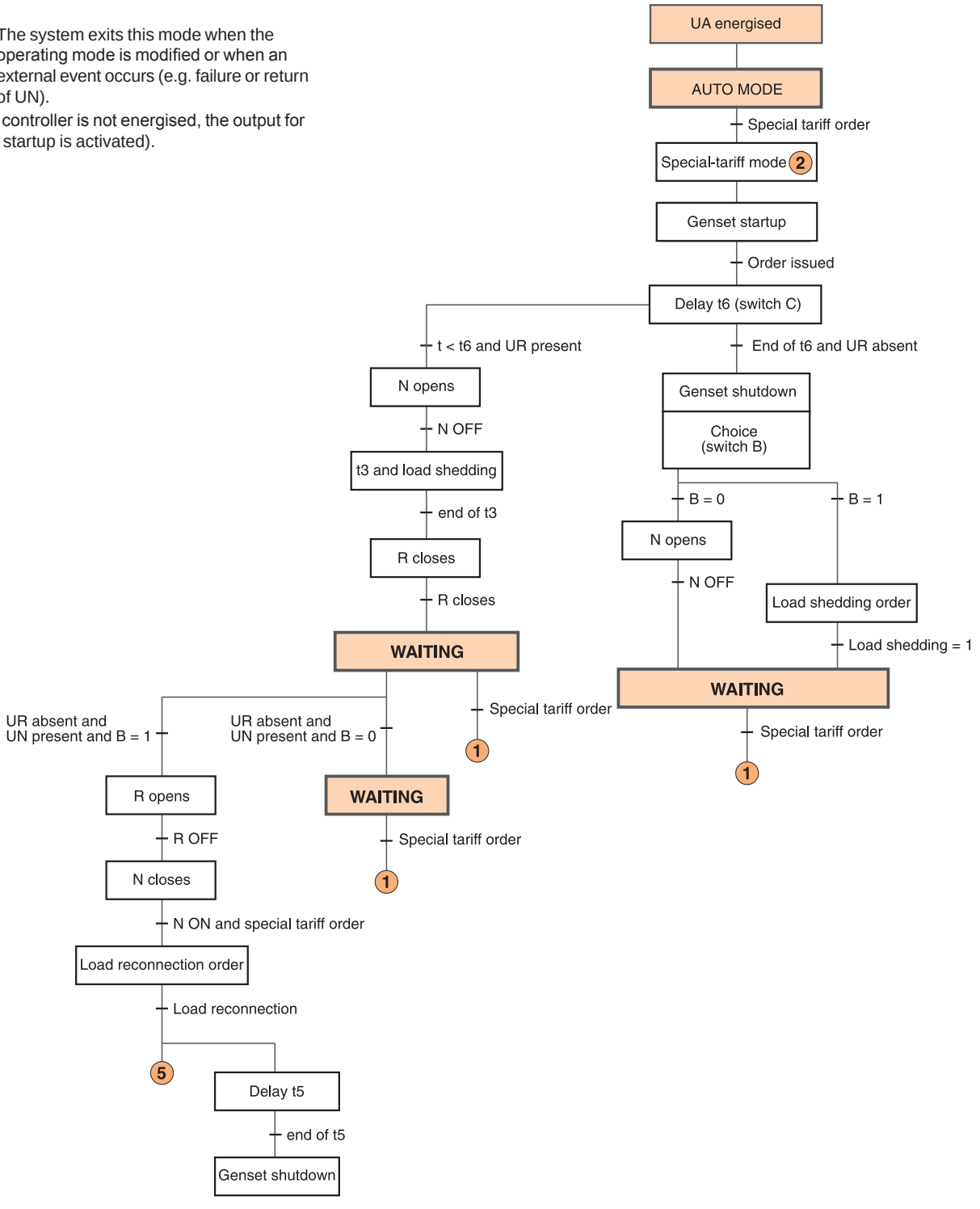
Associated controllers
UA controller
Operating sequences

Switch set to the “Auto” position (special-tariff mode)

DB117634

WAITING The system exits this mode when the operating mode is modified or when an external event occurs (e.g. failure or return of UN).

When the UA controller is not energised, the output for generator set startup is activated).



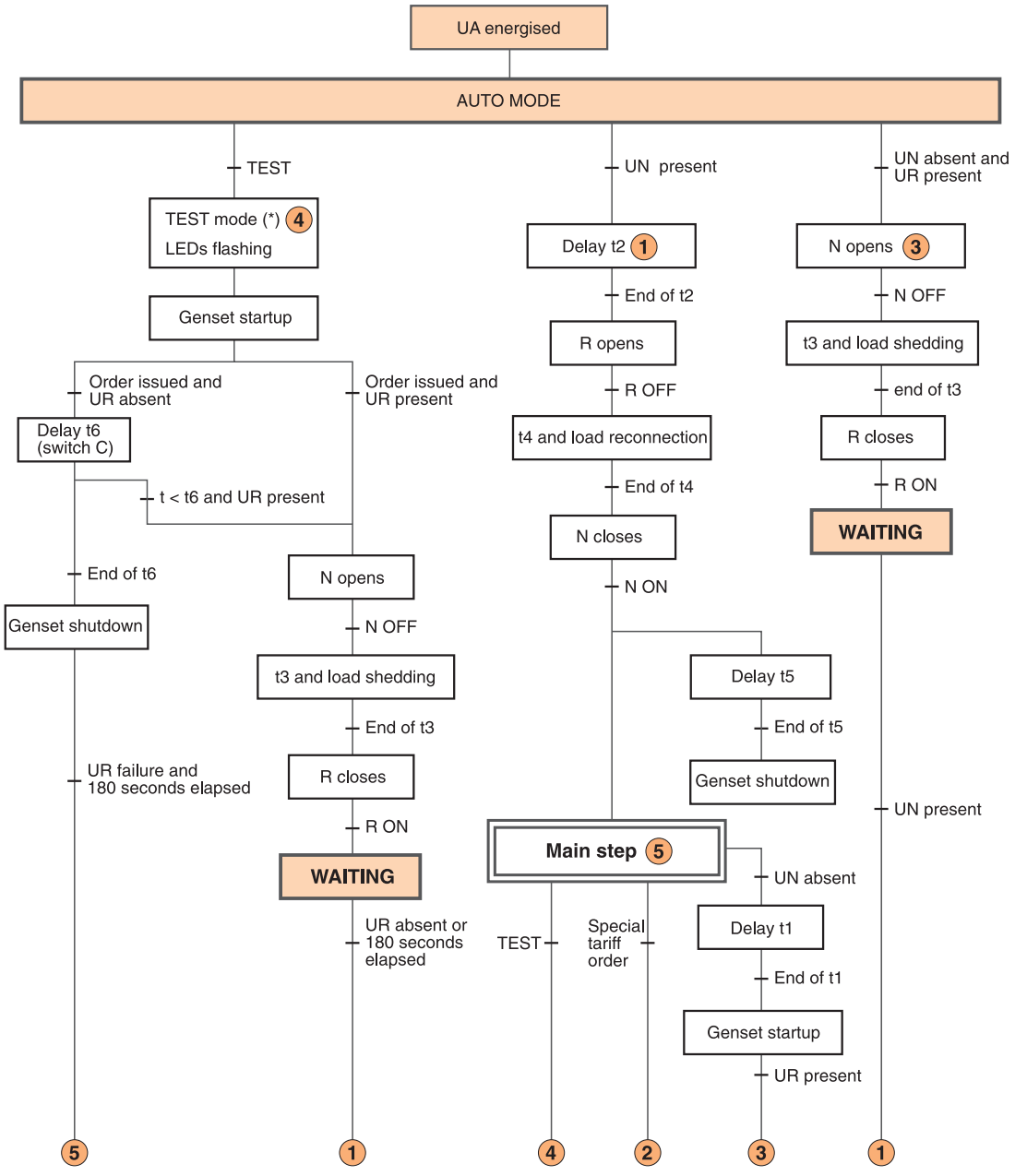
Key
UN : “Normal” source voltage
UR : “Replacement” source voltage
N : “Normal” source circuit breaker
R : “Replacement” source circuit breaker
B : Penalties accepted (N ON), i.e. B = 1

(1) *The number sends to the indicated step when the condition is true.*

Associated controllers
UA controller
Operating sequences

Switch set to the "Auto" position (automatic operation and test mode).

DB101598



WAITING The system exits this mode when the operating mode is modified or when an external event occurs (e.g. failure or return of UN).

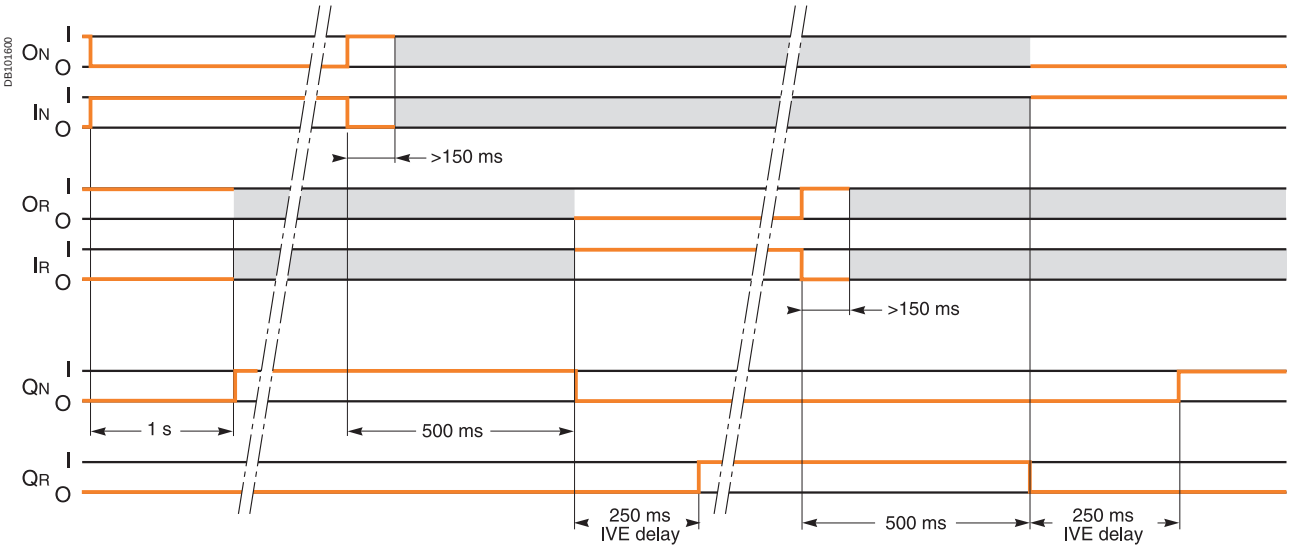
When the UA controller is not energised, the output for generator set startup is activated).

Key
UN : "Normal" source voltage
UR : "Replacement" source voltage
N : "Normal" source circuit breaker
R : "Replacement" source circuit breaker
B : Penalties accepted (N ON), i.e. B = 1
(*) The test lasts 180 seconds.

1 *The number sends to the indicated step when the condition is true.*

Operating sequences

IVE unit



Symbols

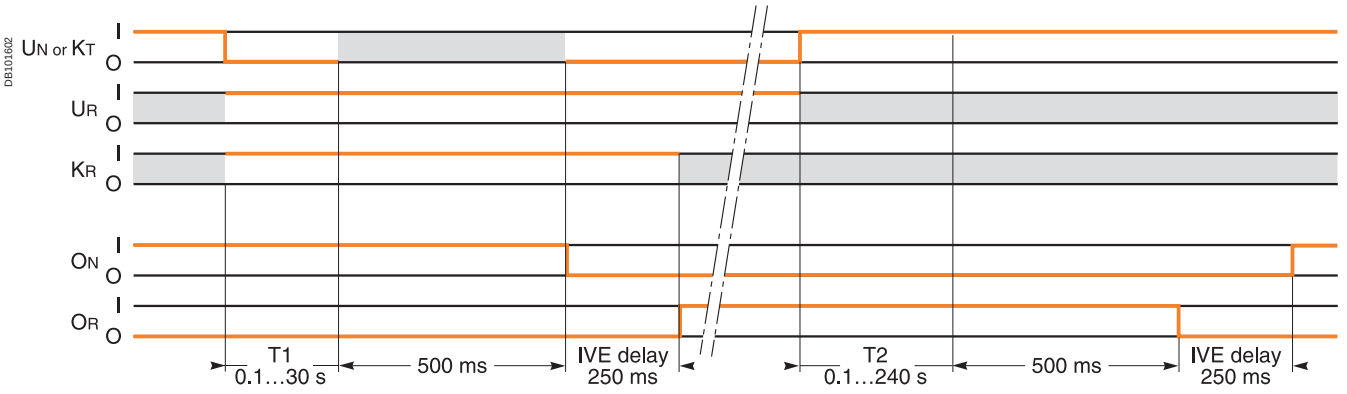
QN : "Normal" Compact C circuit breaker equipped for remote operation (motor mechanism)
QR : "Replacement" Compact C circuit breaker equipped for remote operation (motor mechanism)
ON : Circuit breaker QN opening order
OR : Circuit breaker QR opening order
IN : Circuit breaker QN closing order
IR : Circuit breaker QR closing order
L1 : Faulty "Normal" indication LED
L2 : Faulty "Replacement" indication LED

Key
O: OFF (circuit open)
I: ON (circuit closed
: either ON or OFF.

Note:
Following all trips (overload, short-circuit, earth-leakage fault, voluntary trip), a manual reset on the front of the motor mechanism is required.

Operating sequences

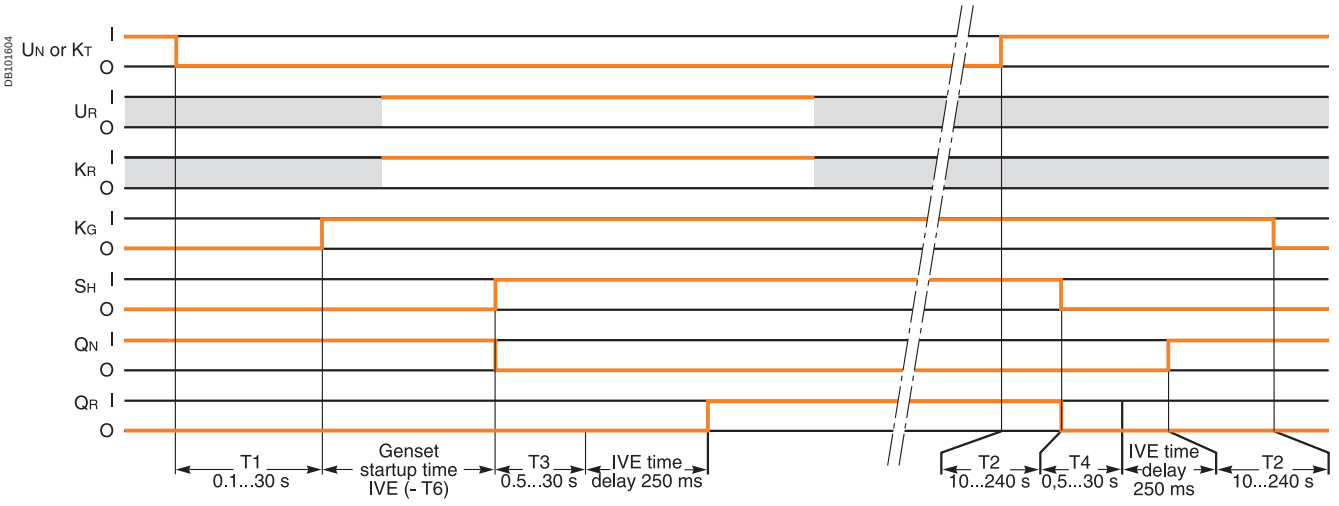
BA controller



Inputs
UN : "Normal" source voltage
UR : "Replacement" source voltage
KT : order for forced-operation on R
KR : additional check before transfer

Outputs
QN : "Normal" source circuit breaker
QR : "Replacement" source circuit breaker

UA controller



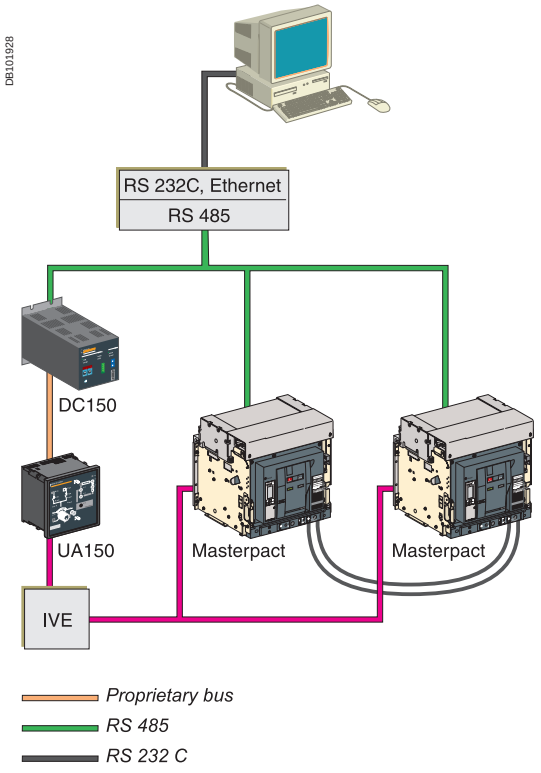
Inputs
UN : "Normal" source voltage
UR : "Replacement" source voltage
KT : order for forced-operation on R
KR : additional check before transfer

Outputs
KG : order to the genset
SH : load-shedding order
QN : "Normal" source circuit breaker
QR : "Replacement" source circuit breaker

Key
O: OFF (circuit open)
I: ON (circuit closed
: either ON or OFF.

Important
If UR is not ON when the transfer order is issued (KT or UN), the sequence is not carried out.
If KR status is not ON when the transfer order is issued (KT or UN), the transfer sequence is carried out later when KR status becomes I.

COM communications option



Communications option for Compact NS and Masterpact NT/NW

The COM communications option is compatible with all the source-changeover systems for Compact NS100 to 1600 and Masterpact NT/NW circuit breakers and switch-disconnectors.
It can be used to remote status information. It may not be used to operate the circuit breakers (only possible locally on the front of the UA150 controller).
Masterpact and Compact NS630b to 1600 circuit breakers and switch-disconnectors are compatible with the Modbus ECO COM option.
Depending on the trip units or control units used, the COM option may also be used to analyse distribution-system parameters required for the operating and maintenance assistance.

Circuit breaker communication

	Switch-disconnector	Circuit breaker
Compact NS100/1600 status indications		
ON / OFF	■	■
Fault trip		■
Connected / disconnected position	■	■
Masterpact NT/NW status indications		
ON / OFF	■	■
Fault trip		■
Connected / disconnected position	■	■

Operating and maintenance assistance

STR53UE trip unit for Compact NS400/630

Current readings						
Phase and neutral rms currents					■	
Current on the most heavily loaded phase					■	
Alarm readings						
Overload					■	
Tripping cause (overload, short-circuit, etc.)					■	
Positions of setting dials					■	
Operating and maintenance aids	**Digipact**			**Modbus**		
Measurement						
Current	A	P	H	A	P	H
Voltages, frequency, power, etc.		P	H		P	H
Power quality: fundamental, harmonics						H
Programming of demand metering					P	H
Fault readings						
Type of fault				A	P	H
Interrupted current					P	H
Waveform capture						
On faults						H
On demand or programmed						H
Histories and logs						
Trip history					P	H
Alarm history					P	H
Event logs					P	H
Indicators						
Counter operation	A	P	H	A	P	H
Contact wear					P	H
Maintenance register					P	H

Note:
see the description of the Micrologic control units for further details on protection and alarms, measurements, waveform capture, histories, logs and maintenance indicators.

COM communications option

Automatic source-changeover controller

	UA150
Status indications	
“Normal” source	
ON / OFF	■
Circuit breaker ON	■
Fault trip (SDE)	■
Voltage presence	■
“Replacement” source	
Circuit breaker ON	■
Fault trip (SDE)	■
Voltage presence	■
Status of R voltage contact	■
Controller	
Automatic mode	■
“Normal” mode	■
“Replacement” mode	■
Stop mode	■
Testing	■
“Replacement” engine generator set	
Genset failure	■
Genset OFF	■
Genset ON	■
Shedding of non-priority circuits	■
Reconnection of non-priority circuits	■
Settings	
Time delay t1 for validation of UN absence	■
Time delay t2 for validation of UN return	■
Time delay t3 for wait between opening of N and closing of R	■
Time delay t4 for wait between opening of R and closing of N	■
Time delay t5 for wait between return of UN and order for genset shutdown	■
Time delay t6 for wait before declaring genset failure	■
Penalties accepted to avoid special tariff transfer	■

TOOLS

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This international site allows you to access all the Schneider Electric products in just 2 clicks via comprehensive range data-sheets, with direct links to:

- complete library: technical documents, catalogs, FAQs, brochures…
- selection guides from the e-catalog.
- product discovery sites and their Flash animations.

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CAD software and tools

The CAD software and tools enhance productivity and safety. They help you create your installations by simplifying product choice through easy browsing in the Schneider Electric offers.
Last but not least, they optimise use of our products while also complying with standards and proper procedures.

Dimensions

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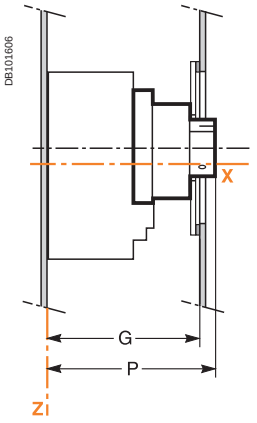
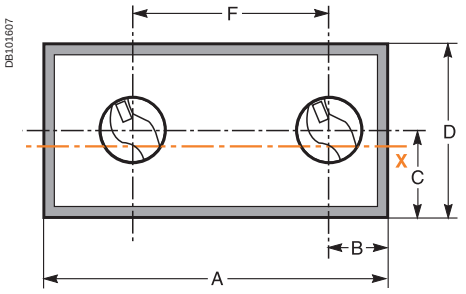
Manual source-changeover systems
Interlocking of direct rotary handles

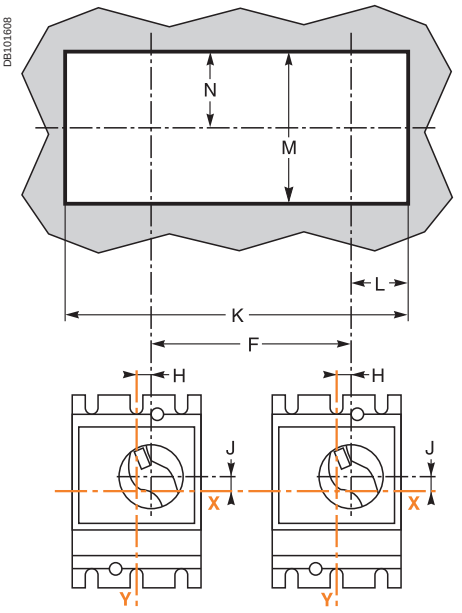
Compact NS100 to 1600

Dimensions





Front-panel cutout

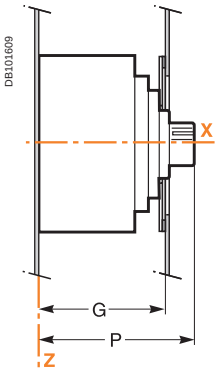


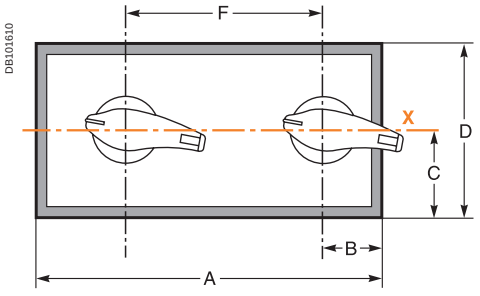
Dimensions (mm)

	A	B	C	D	F	G	H	J	K	L	M	N	P
NS100/160/250N/H/L	325	90	87.5	175	156	133	9.25	9	295	75.5	150	75	155
NS400/630N/H/L	416	115	100	200	210	157	5	24.6	386	100	175	74.5	179

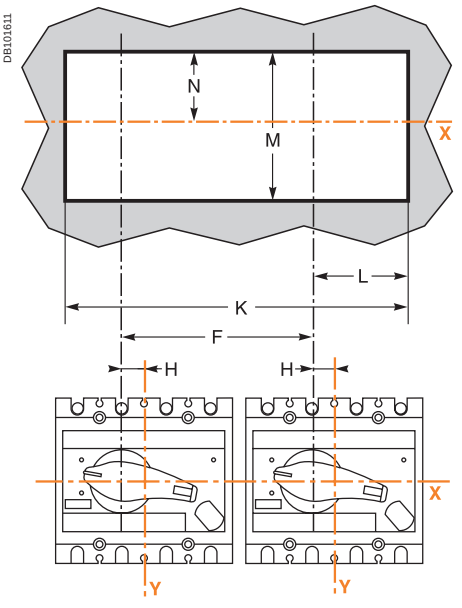
Interpact INS/INV250 100 to 250 A / Interpact INS/INV320/400/500/630

Dimensions





Front-panel cutout



Dimensions (mm)

Type	A	B	C	D	F	G	H	K	L	M	N	P
INS/INV250 100/160/250 A	325	90	87.5	175	156	106	17.5	295	75.5	150	75	131
INS/INV320/400/500/630	416	115	100	200	210	130	22.5	386	100	175	74.5	160.4

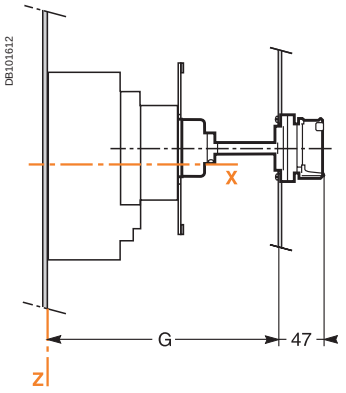
Note: X et Y are the symmetry planes for a 3-pole device.

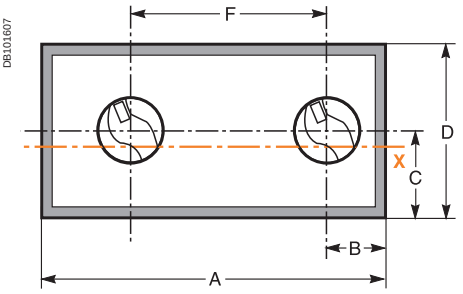
Manual source-changeover systems

Interlocking of extended rotary handles

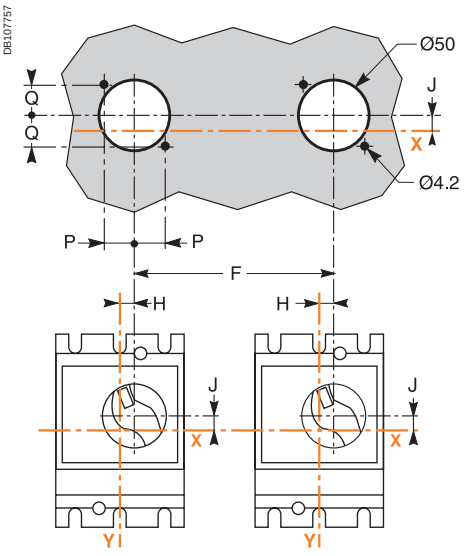
Compact NS100 to 630

Dimensions





Front-panel cutout

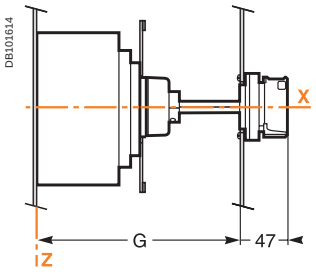


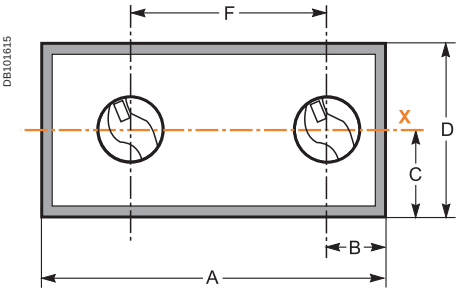
Dimensions (mm)

Type	A	B	C	D	F	G min	G max	H	J	P	Q
NS100/160/250N/H/L	325	90	87.5	175	156	185	600	9.25	9	25.5	25.5
NS400/630N/H/L	416	115	100	200	210	204	600	5	24.6	30.8	30.8

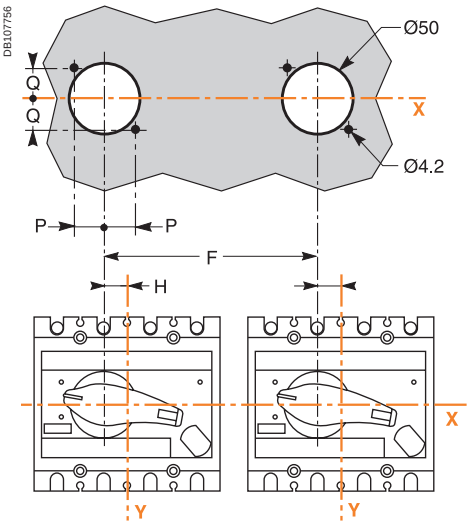
Interpact INS40/63/80/100/125/160 / Interpact INS/INV250 100 to 250 A / Interpact INS/INV320/400/500/630

Dimensions





Front-panel cutout



Dimensions (mm)

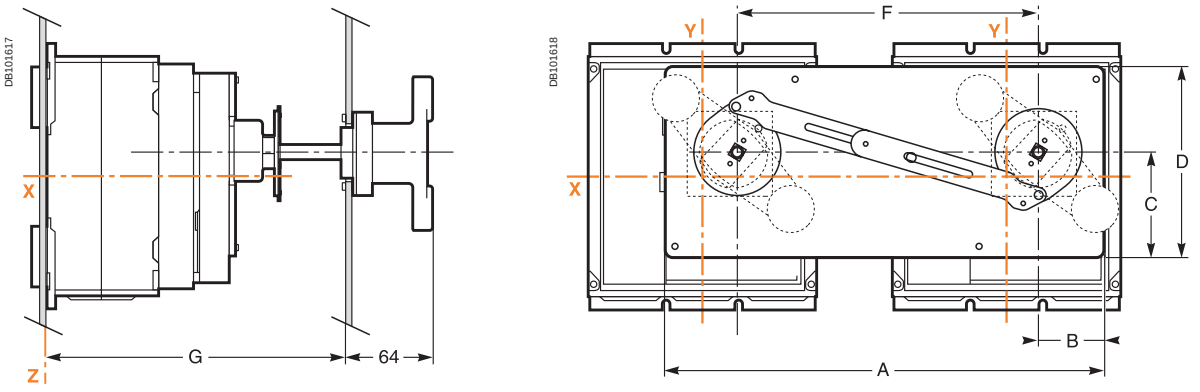
Type	A	B	C	D	F	G min	G max	H	P	Q
INS40/63/80	325	90	87.5	175	156	155	396	0	25.5	25.5
INS100/125/160	325	90	87.5	175	156	200	441	0	25.5	25.5
INS/INV250 100/160/250 A	325	90	87.5	175	156	185	600	17.5	25.5	25.5
INS320/400/500/630	416	115	100	200	210	204	600	22.5	30.8	30.8

Manual source-changeover systems

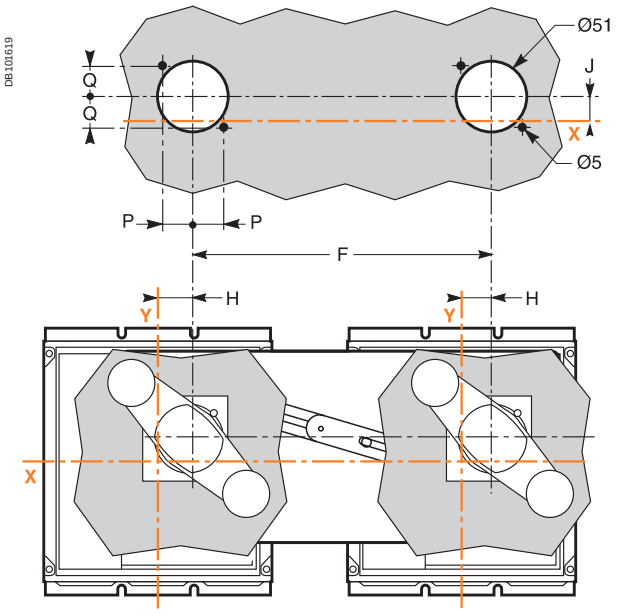
Interlocking of extended rotary handles

Compact NS630b to 1600

Dimensions



Front-panel cutout



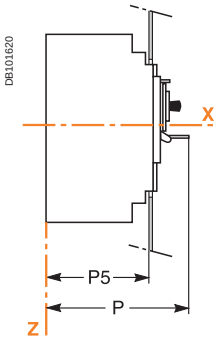
Dimensions (mm)

Type	A	B	C	D	F	G min	G max	H	J	P	Q	R
NS630b/800/1000/1200/1600	411	63.5	98	175	280	218	605	25	24	25.5	25.5	64

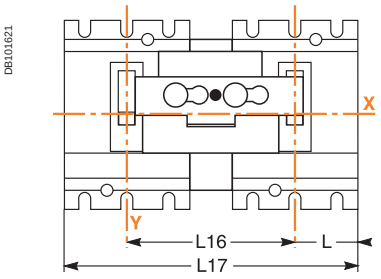
Manual source-changeover systems
Interlocking of toggles

Compact NS100 to 630

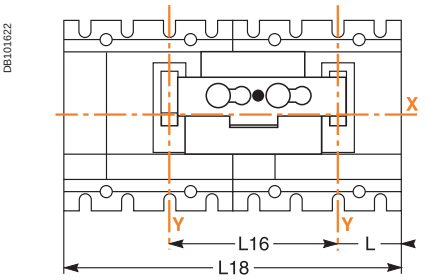
Dimensions



3 poles

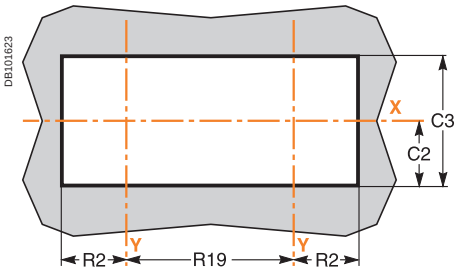


4 poles

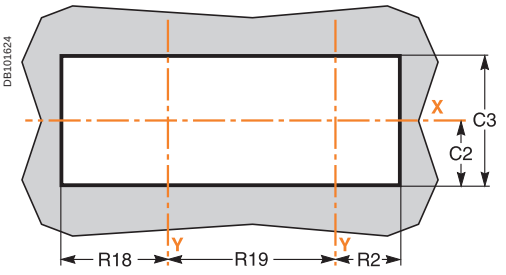


Front-panel cutout

3 poles on left



4 poles on left



Dimensions (mm)

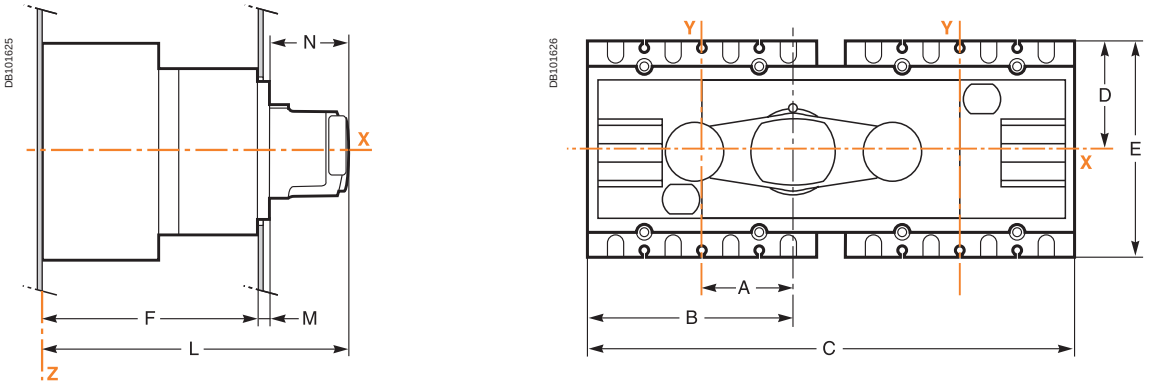
Type	C2	C3	L	L16	L17	L18	R2	R18	R19	P5	P
NS100/160/250N/H/L	54	108	52.5	140	245	280	54	89	140	83	115
NS400/630N/H/L	92.5	184	70	185	325	370	71.5	116.5	185	107	144

Manual source-changeover systems

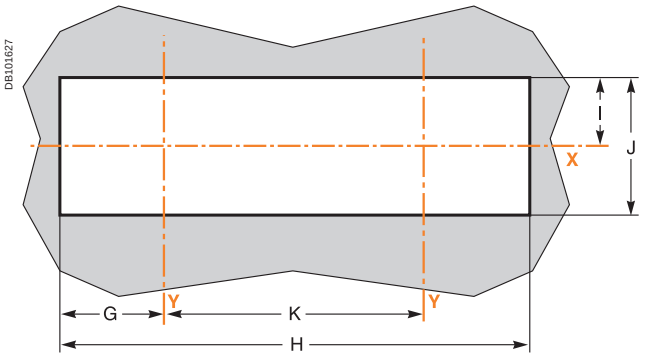
Complete source-changeover assembly

Assembly for INS250 100 to 250 A / Assembly for INS320/400/500/630

Dimensions



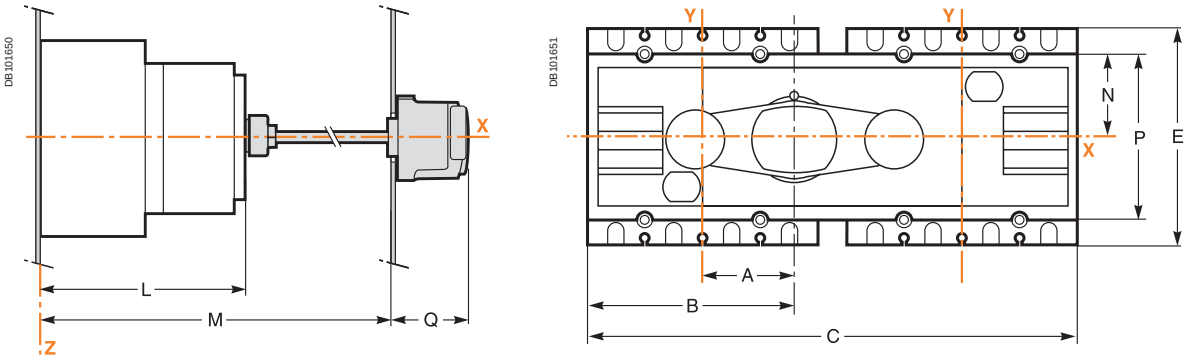
Front-panel cutout

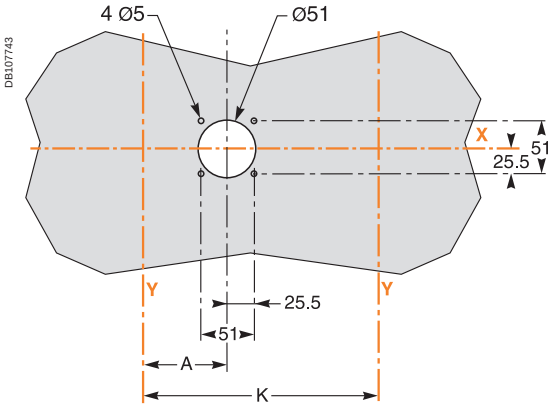


Dimensions (mm)

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N
INS250	60.4	130.4	296	68	136	131	61.8	279.3	42	84	156	186.5	5.5	50
INS320/630	82.5	175	395	102.5	205	155	87	383.7	64	128	210	213	8	50

Dimensions of the complete source-changeover assembly with an extended handle





Dimensions (mm)

Type	A	B	C	E	K	L	M	N
INS250 INV100/250	60.4	130.4	295	136	156	138.5	631	50
INS320/630 INV320/630	82.5	175	395	205	210	162.5	658	75

Dimensions (mm)

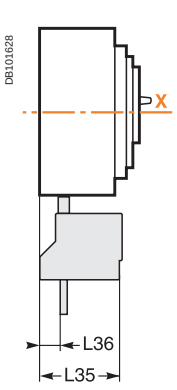
Type	P	Mmax	Mmin	Q
INS250 INV100/250	100	567.5	195	64
INS320/630 INV320/630	150	593	220.5	64

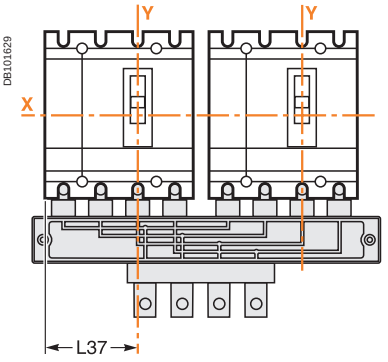
Note: Lines X and Y indicate the axes of symmetry of the switch-disconnector. Reference plane Z corresponds to the back of the switch-disconnector.

Manual source-changeover systems
Downstream coupling accessory

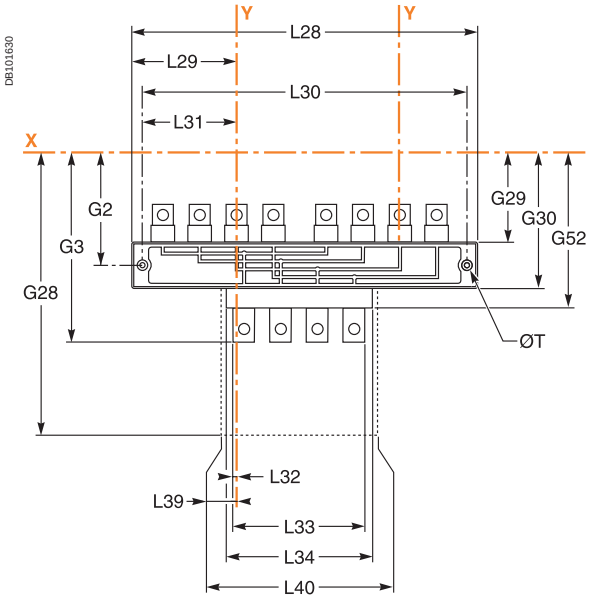
Compact NS100 to NS630 (only for Compact NS fixed devices)

Dimensions

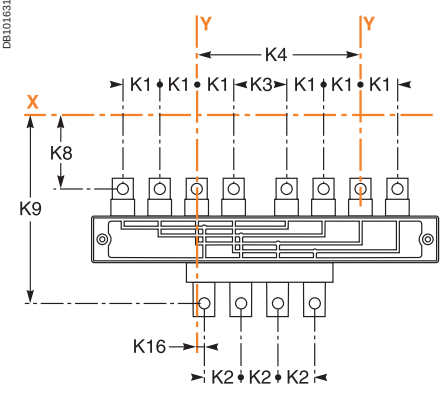




Dimensions



Connection



Dimensions (mm)

Type	G2	G3	G28	G29	G30	G52	K1	K2	K3	K4	K8	K9	K16
NS100/160/250	118	181.5	238	96	140	156	35	35	51	156	70	170	8
NS400/630	165.9	265.7	339.5	143.5	188.5	227.5	45	52.5	75	210	113.5	250.7	3.75

Dimensions (mm)

Type	L28	L29	L30	L31	L32	L33	L34	L35	L36	L37	L39	L40	ØT
NS100/160/250	320	99.5	300	89.5	1	123	139.5	74.5	19.5	87.5	9.5	140	6
NS400/630	420	127.5	400	117.5	11.2	187.5	-	96.5	26	115	22.5	210	6

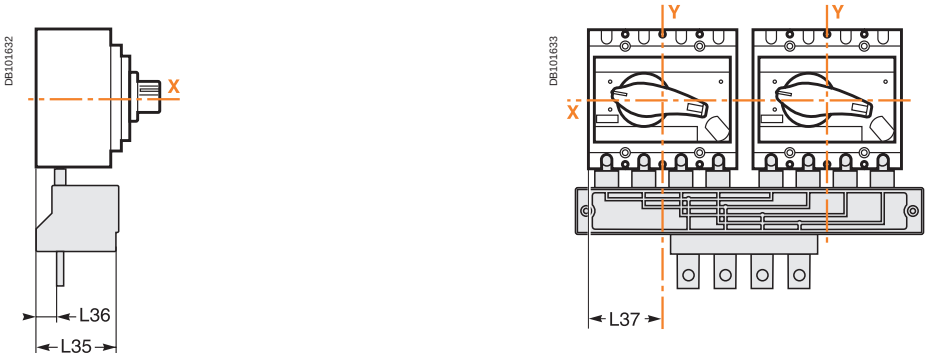
Note: coupling accessory: only for changeover systems using fixed versions of Compact NS circuit breakers.

Manual source-changeover systems

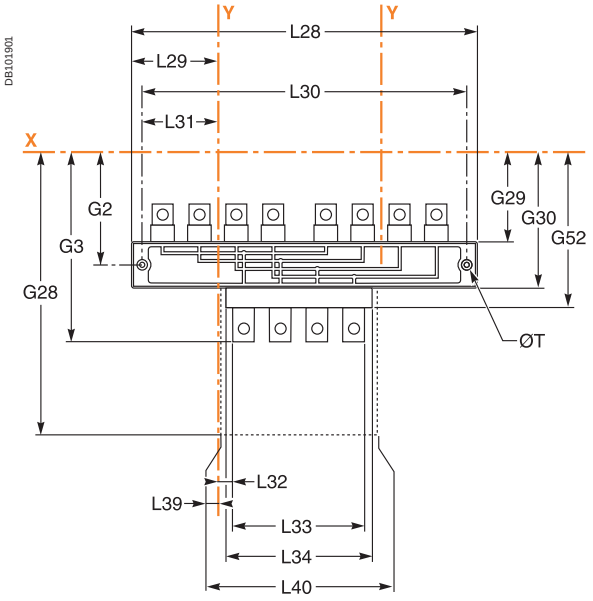
Downstream coupling accessory

Interpact INS250 100 to 250 A / Interpact INS320/400/500/630

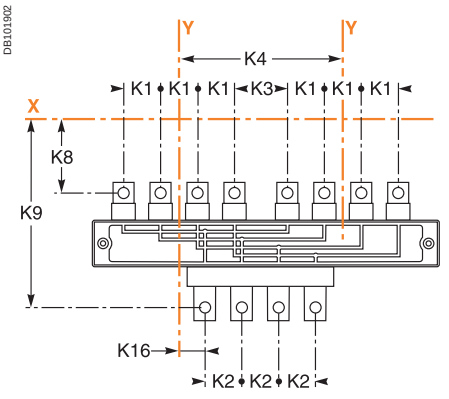
Dimensions



Dimensions



Connection



Dimensions (mm)

Type	G2	G3	G28	G29	G30	G52	K1	K2	K3	K4	K8	K9	K16
INS250-100/160/200/250	105.5	169	225.5	83.5	127.5	143.5	35	35	51	156	57.5	157.5	25.5
INS320/400/500/630	141	240.7	315	119	163.5	202.5	45	52.5	75	210	88.5	225.7	26.25

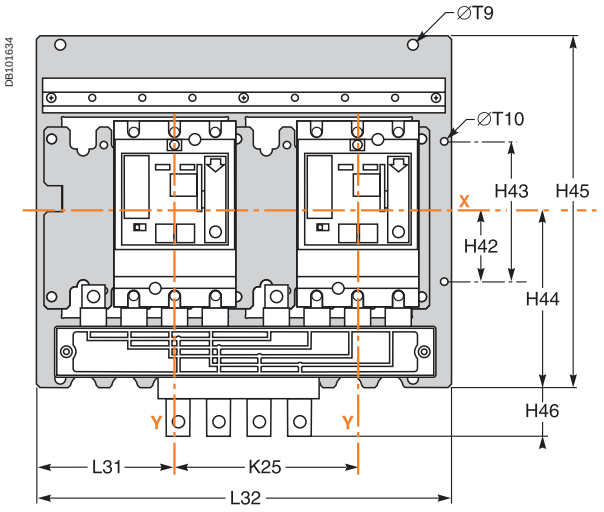
Dimensions (mm)

Type	L28	L29	L30	L31	L32	L33	L34	L35	L36	L37	L39	L40	ØT
INS250-100/160/200/250	320	82	300	72	16.5	123	139.5	74.5	21.5	70	8.5	140	6
INS320/400/500/630	420	105	400	95	11.2	187.5	-	98.5	26	92.5	0	210	6

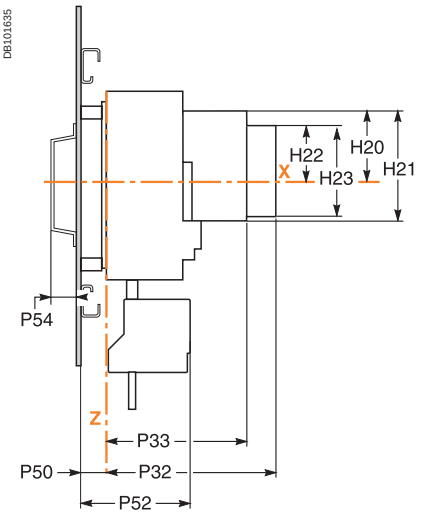
Remote-operated source-changeover systems
Interlocking on a base plate

Compact NS100 to 250

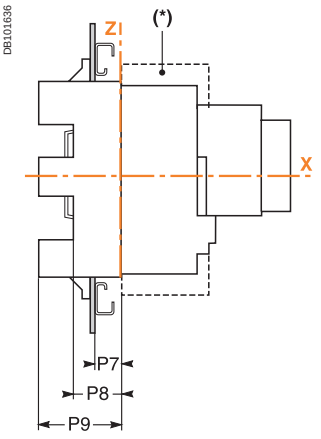
Dimensions, 3 or 4 poles



Fixed device

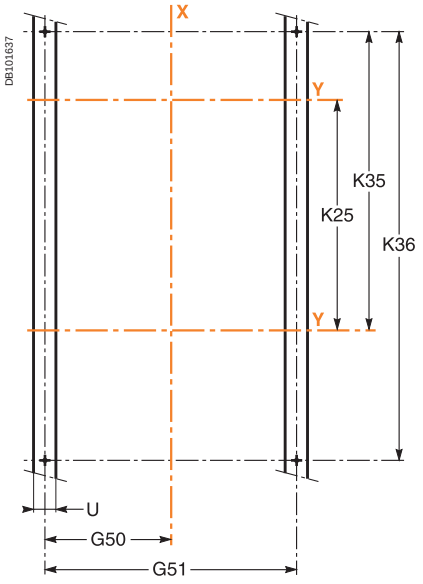


Withdrawable device

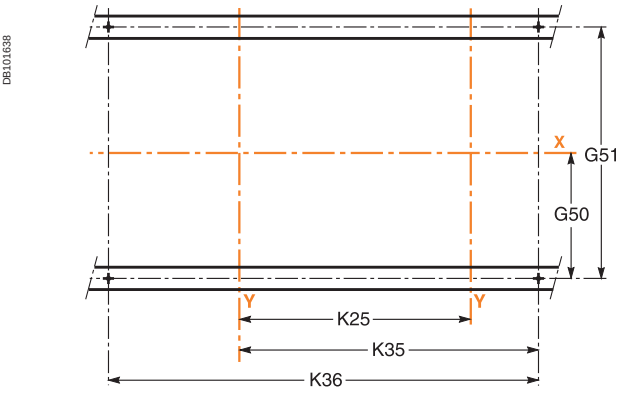


(*) Short terminal shields are mandatory.

Vertical mounting



Horizontal mounting



Dimensions (mm)

Type	G50	G51	H20	H21	H22	H23	H42	H43	H44	H45	H46	K25	K35	K36
NS100/160/250N/H/L	137.5	285	62.5	97	45.5	73	60	120	144.5	300	37	156	210.5	300
NS400/630N/H/L	180	360	100	152	83	123	60	120	189	378	77	210	282.5	400

Dimensions (mm)

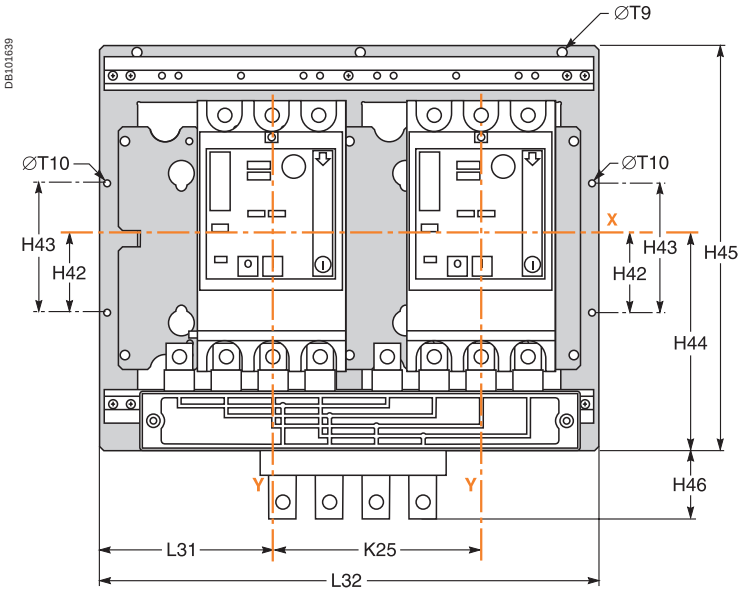
Type	L31	L32	P7	P8	P9	P32	P33	P50	P52	P54	ØT9	ØT10	U
NS100/160/250N/H/L	110.5	354	25	45	75	178	143	25	99.5	21	9	6	⩽ 32
NS400/630N/H/L	150.5	466	25	45	100	250	215	25	123	21	9	6	⩽ 32

Note: *coupling accessory: only for changeover systems using fixed versions of Compact NS circuit breakers.*

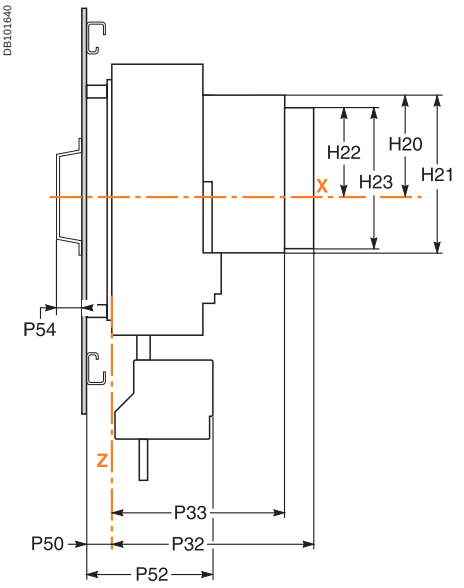
Remote-operated source-changeover systems
Interlocking on a base plate

Compact NS400 to 630

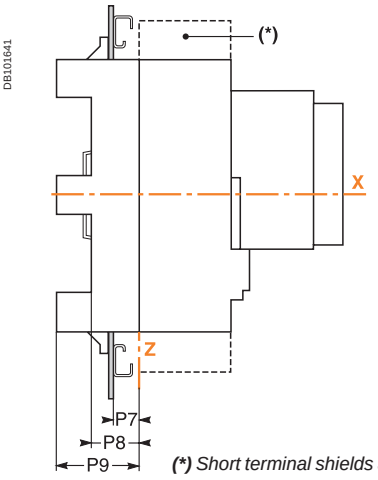
Dimensions, 3 or 4 poles



Fixed device



Withdrawable device

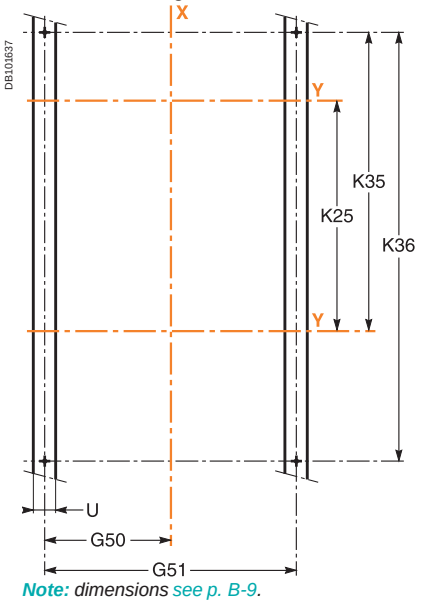


(*) Short terminal shields are mandatory.

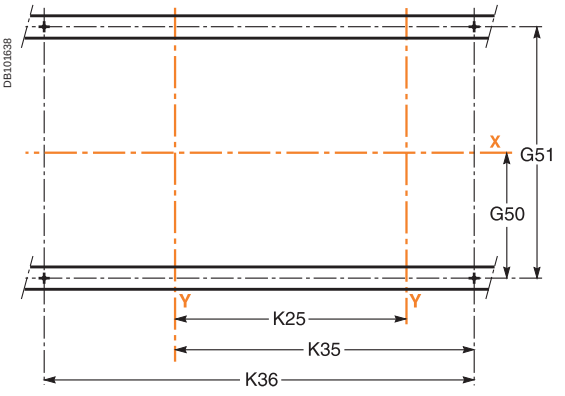
Note: *coupling accessory: only for changeover systems using fixed versions of Compact NS circuit breakers.*

Dimensions

Vertical mounting



Horizontal mounting

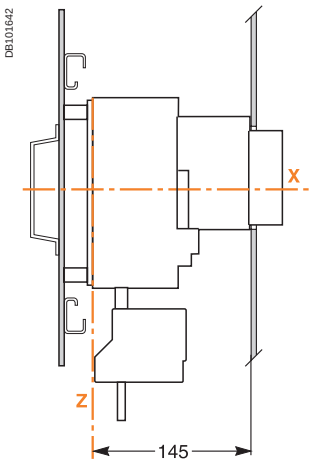


Note: *dimensions* *see p. B-9*.

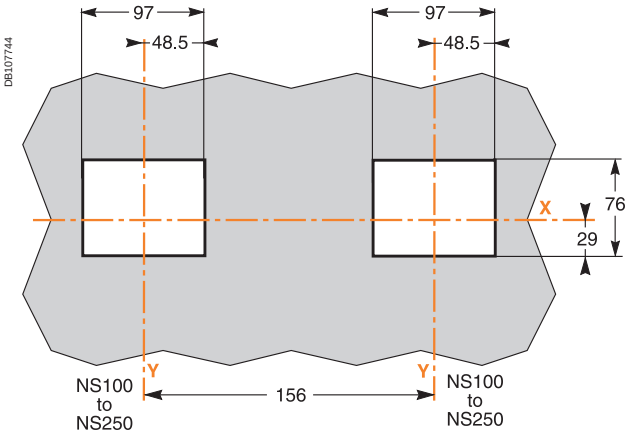
Remote-operated source-changeover systems
Interlocking on a base plate

"Normal" and "Replacement" source devices: NS100 to NS250

Dimensions

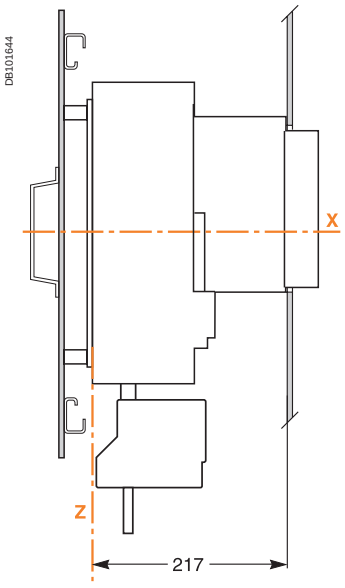


Front-panel cutout

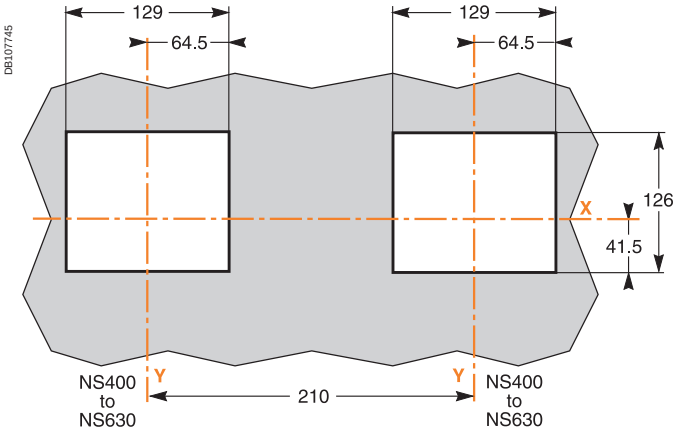


"Normal" and "Replacement" source devices: NS400 to NS630

Dimensions



Front-panel cutout

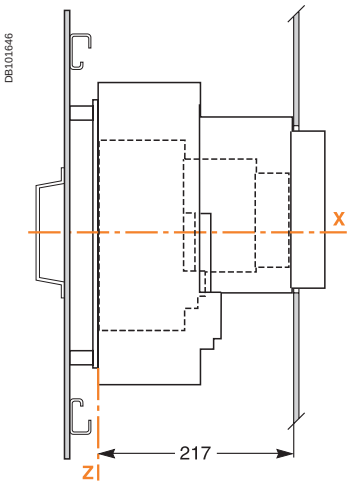


Note for Compact NS:
For dimensions with the accessories (IP40 escutcheons and Vigi escutcheon protection collars), see Catalogue Compact.

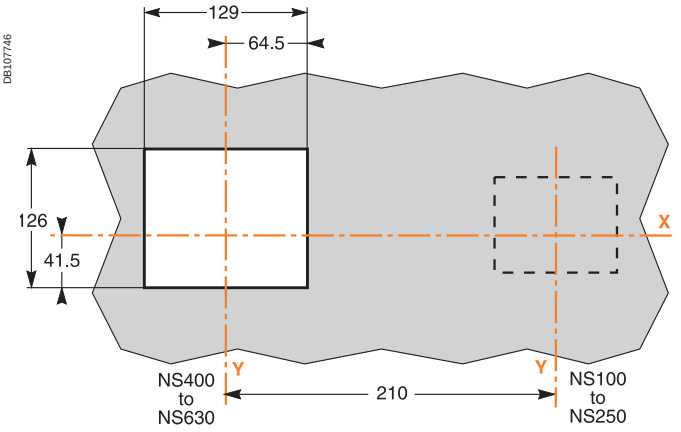
Remote-operated source-changeover systems
Interlocking on a base plate

NS400 to NS630 as the “Normal” device, NS100 to NS250 as the “Replacement” device

Dimensions



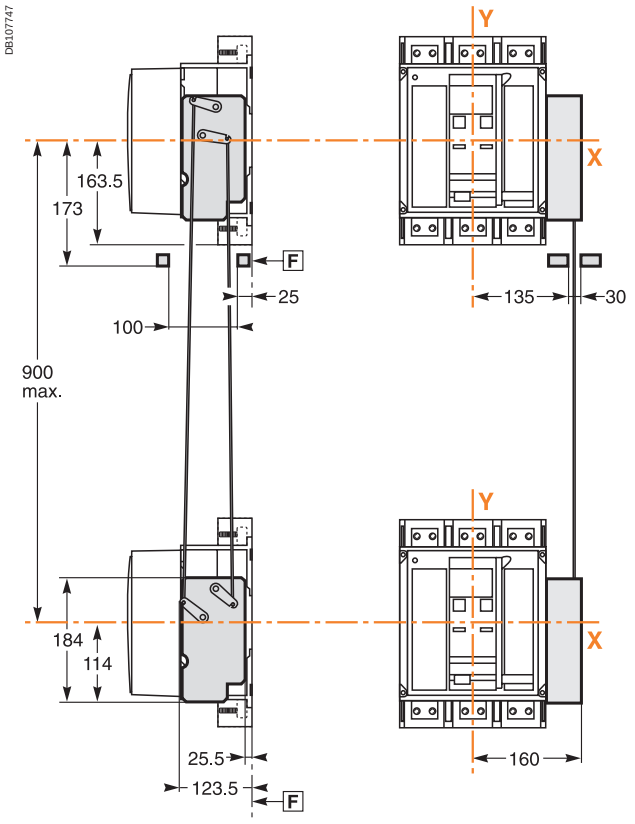
Front-panel cutout



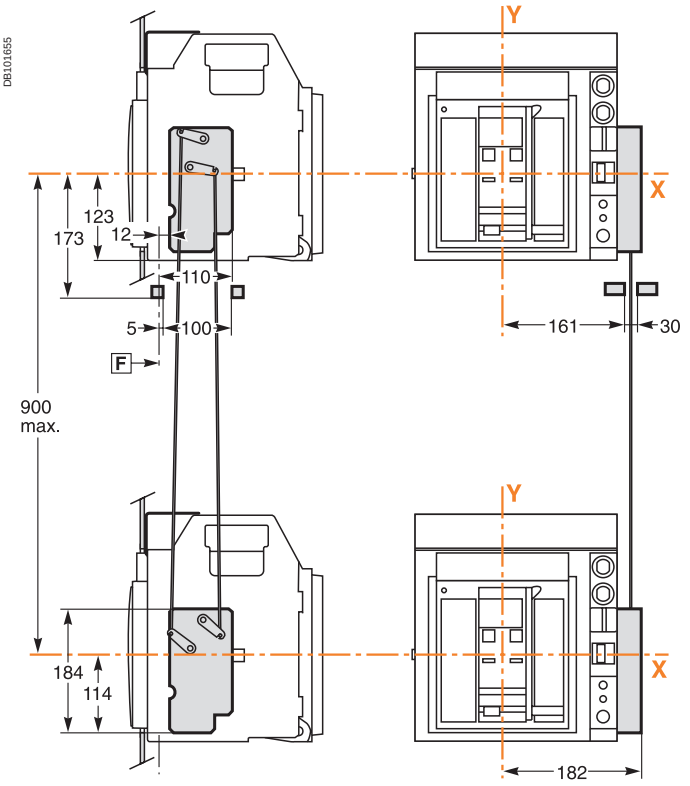
Remote-operated source-changeover systems
Interlocking using connecting rods

Two Compact NS630b to NS1600 devices one above the other

Fixed devices

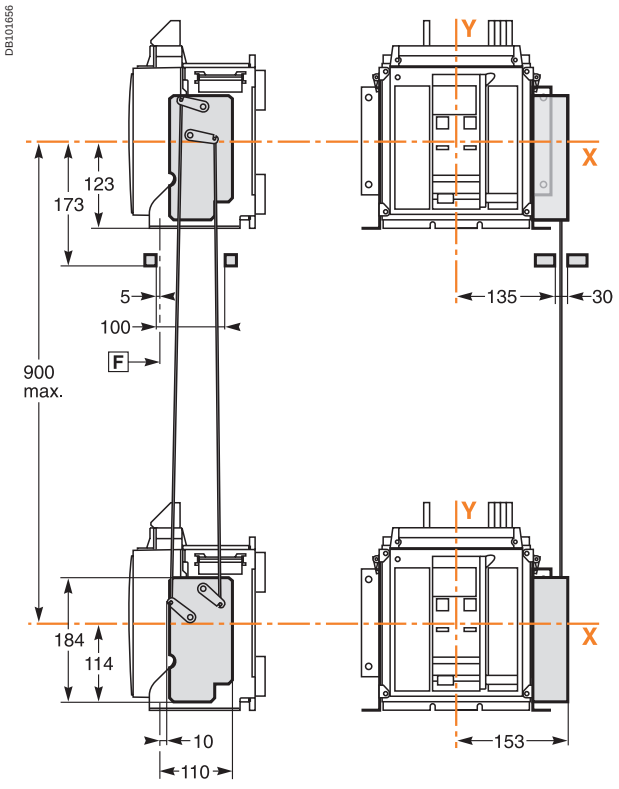


Withdrawable devices

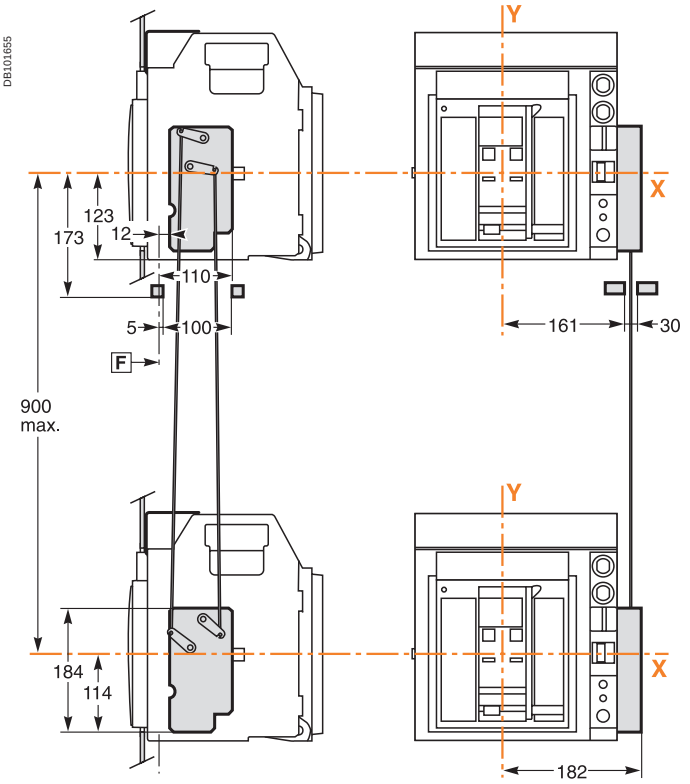


Two Masterpact NT devices one above the other

Fixed devices



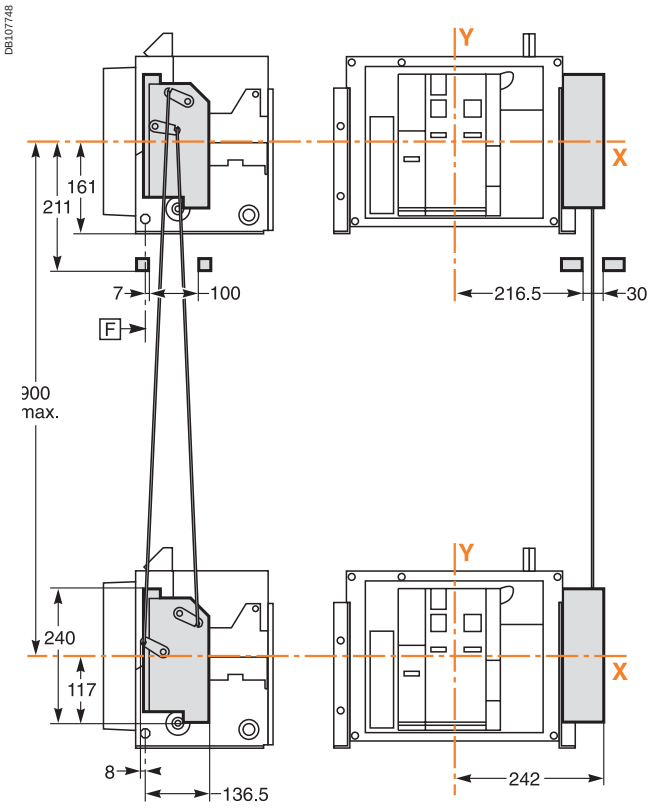
Withdrawable devices



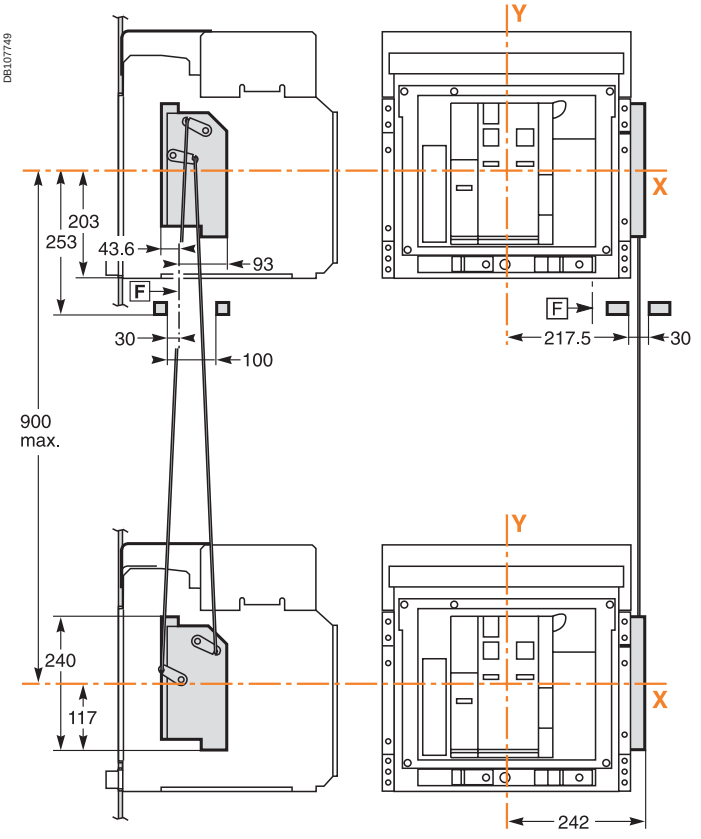
Remote-operated source-changeover systems
Interlocking using connecting rods

Two Masterpact NW devices one above the other

Fixed devices



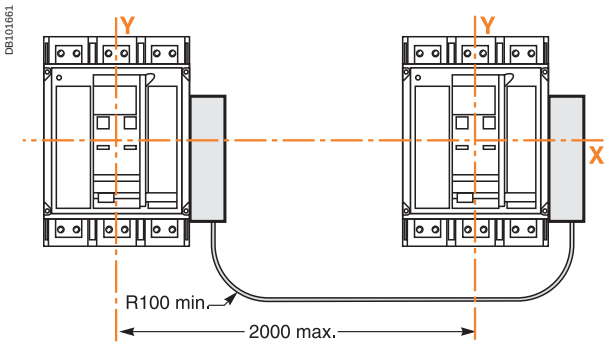
Withdrawable devices



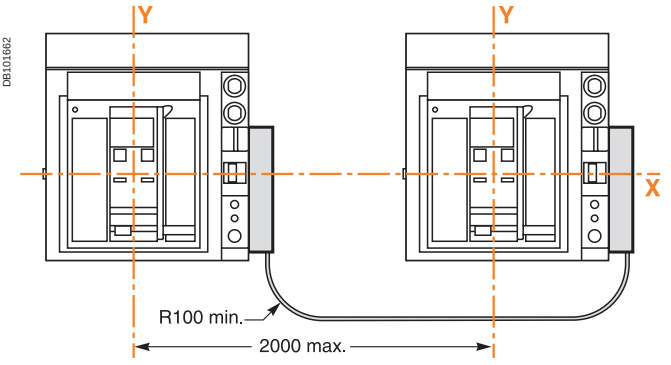
Remote-operated source-changeover systems
Interlocking using cables

Two Compact NS630b to NS1600 devices side-by-side

Fixed devices

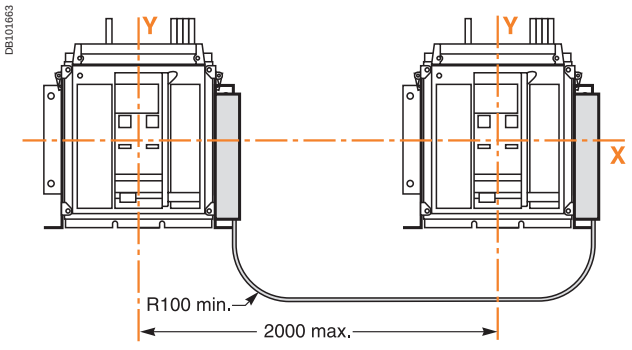


Withdrawable devices

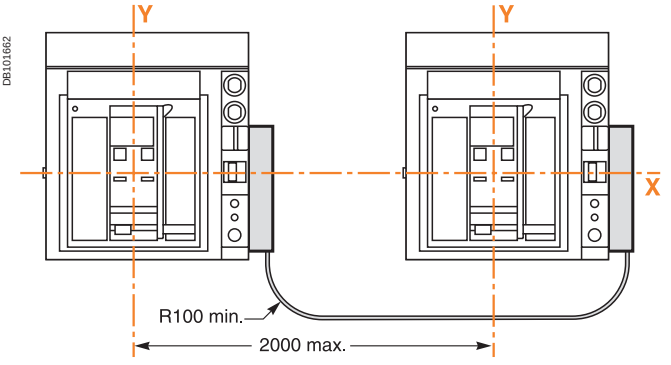


Two Masterpact NT devices side-by-side

Fixed devices

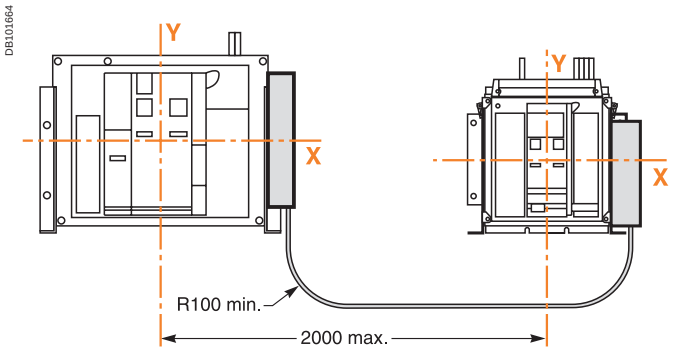


Drawout devices

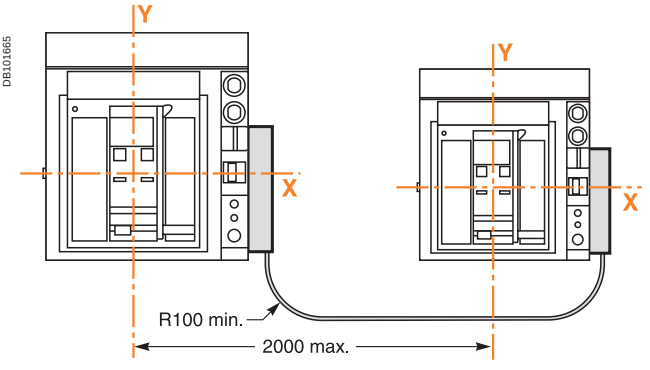


Combination of two Masterpact NT and NW devices side-by-side

Fixed devices



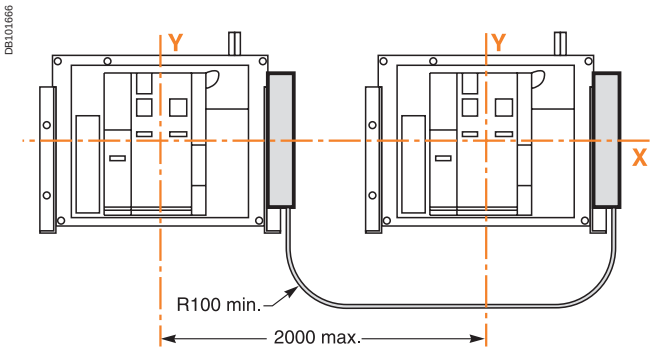
Drawout devices



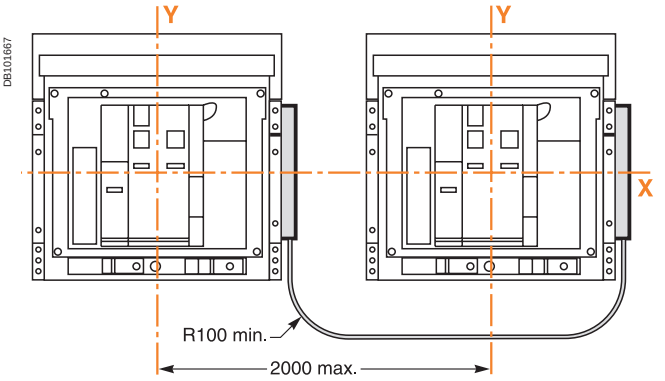
Remote-operated source-changeover systems
Interlocking using cables

Two Masterpact NW devices side-by-side

Fixed devices

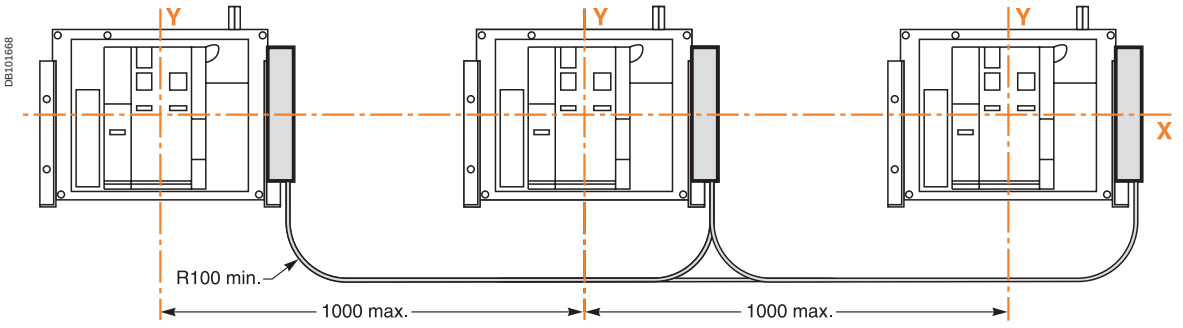


Drawout devices

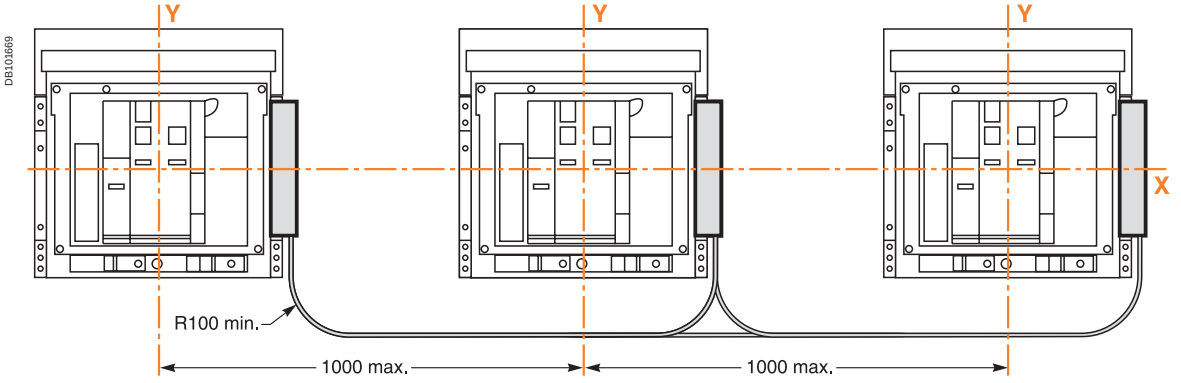


Three Masterpact NW devices side-by-side

Fixed devices



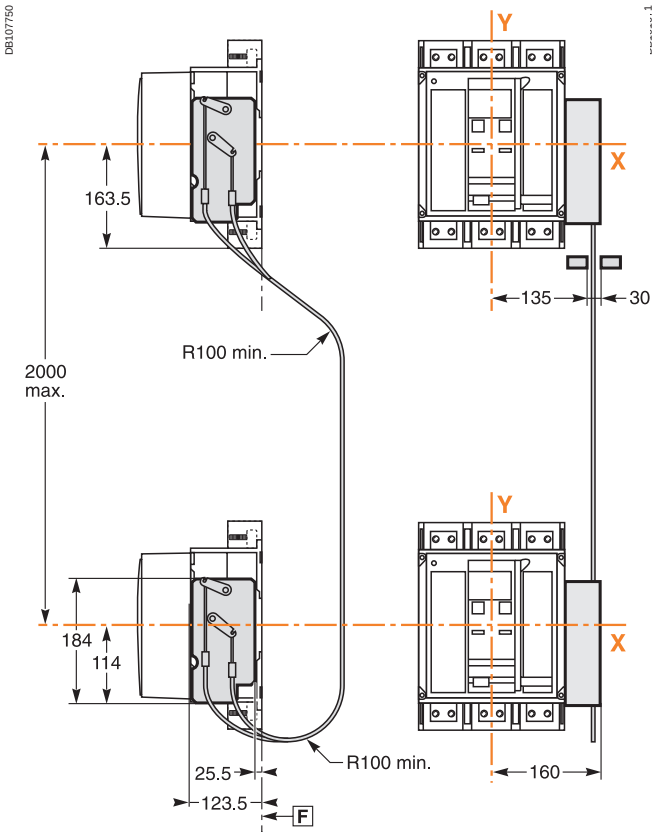
Drawout devices



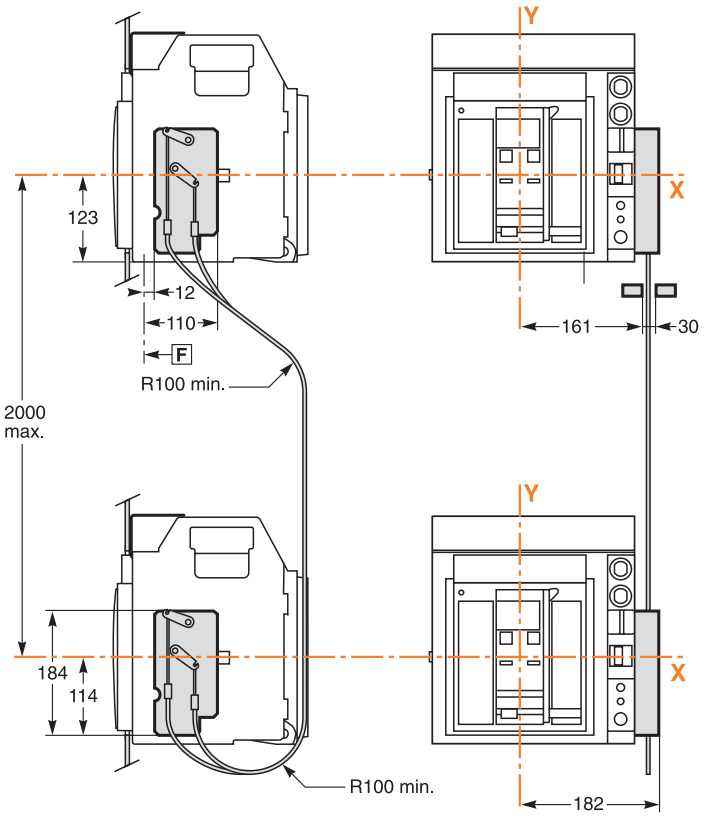
Remote-operated source-changeover systems
Interlocking using cables

Two Compact NS630b to NS1600 devices one above the other

Fixed devices

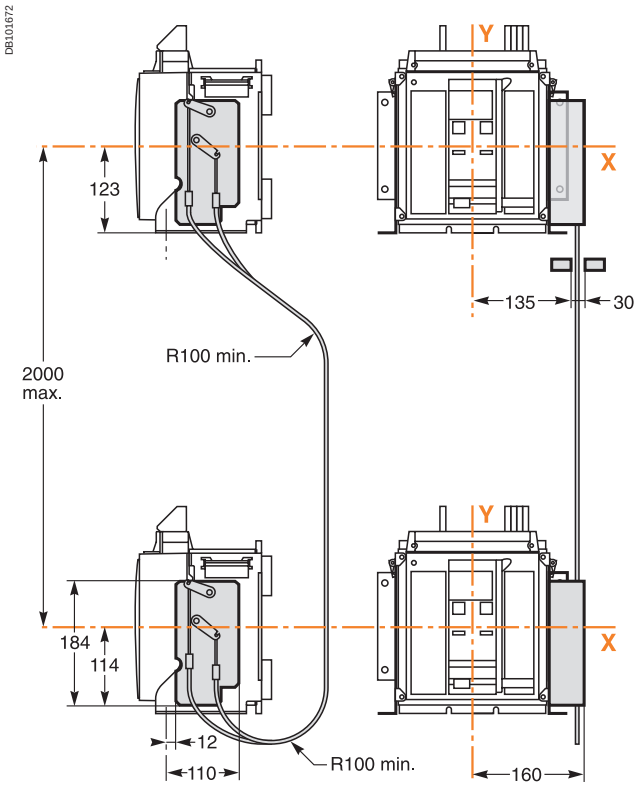


Withdrawable devices

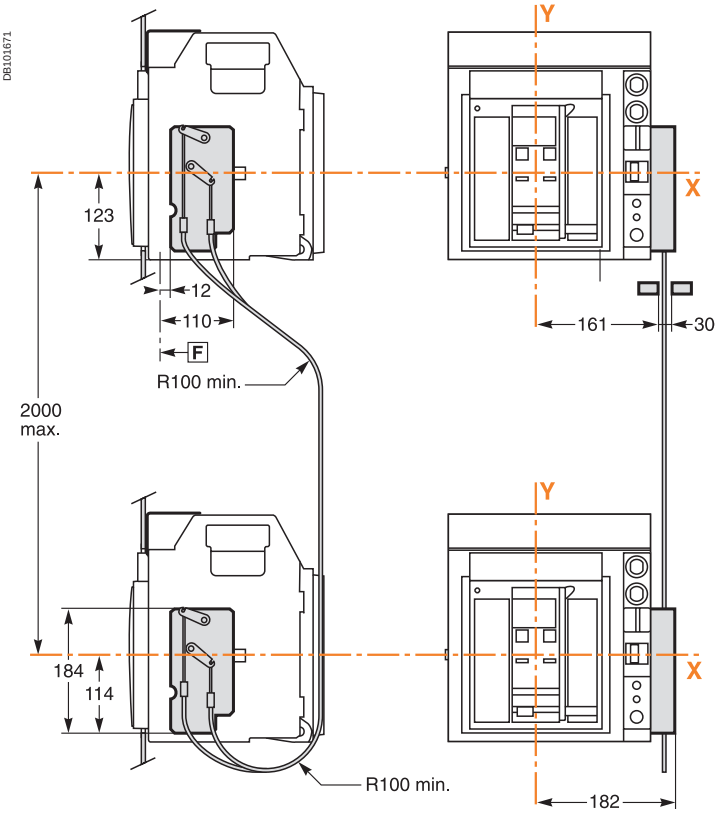


Two Masterpact NT devices one above the other

Fixed devices



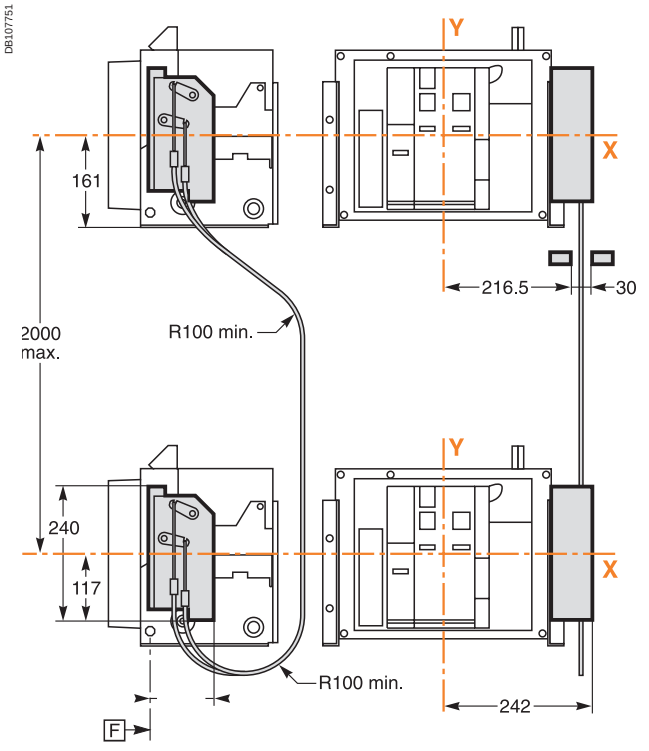
Drawout devices



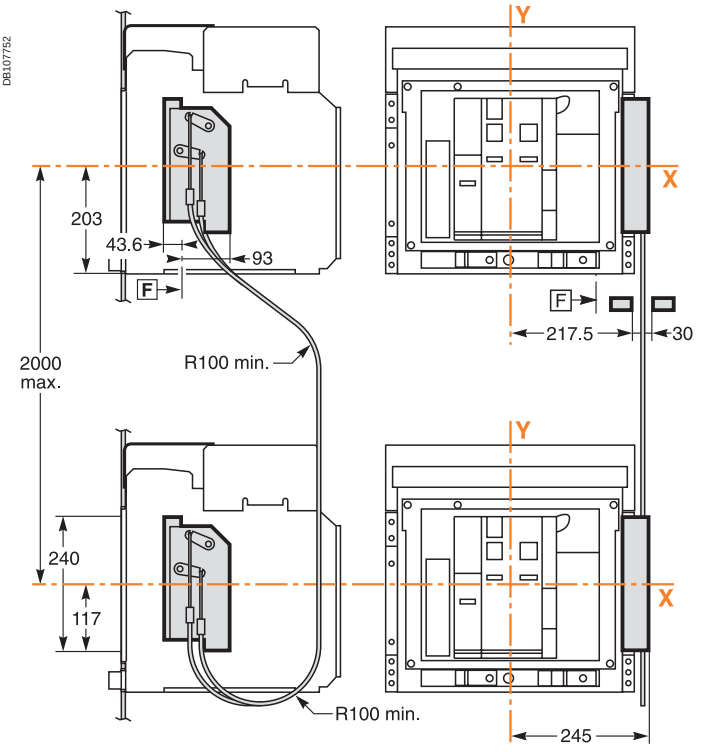
Remote-operated source-changeover systems
Interlocking using cables

Two Masterpact NW devices one above the other

Fixed devices

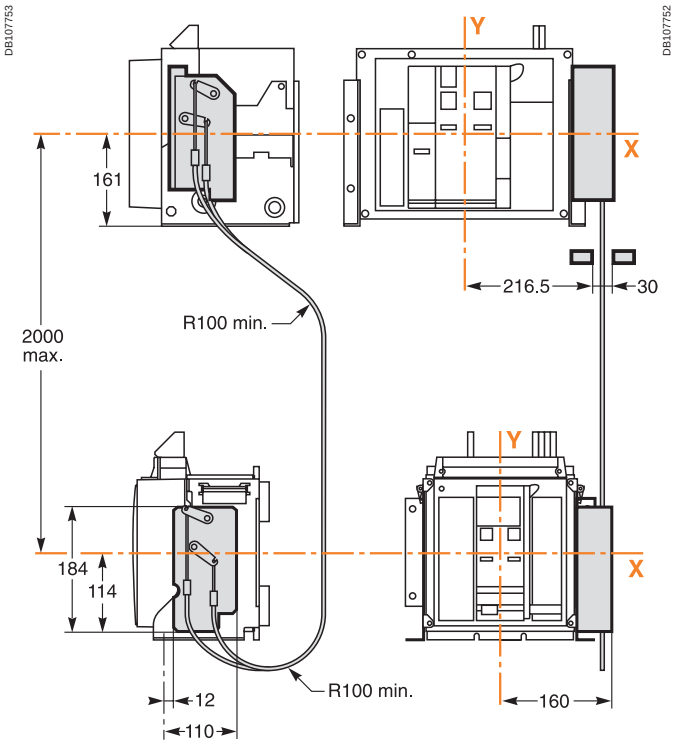


Drawout devices

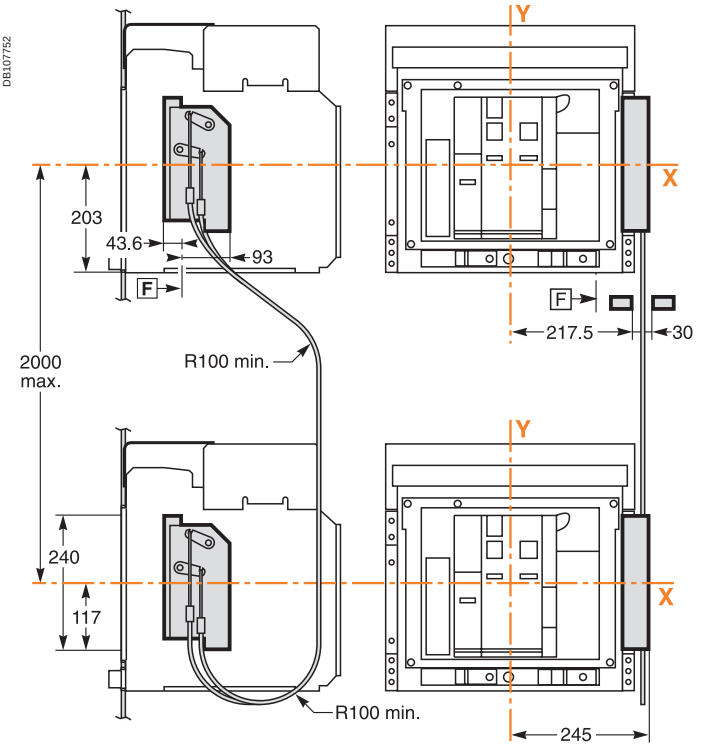


Two Masterpact NT and NW devices one above the other

Fixed devices



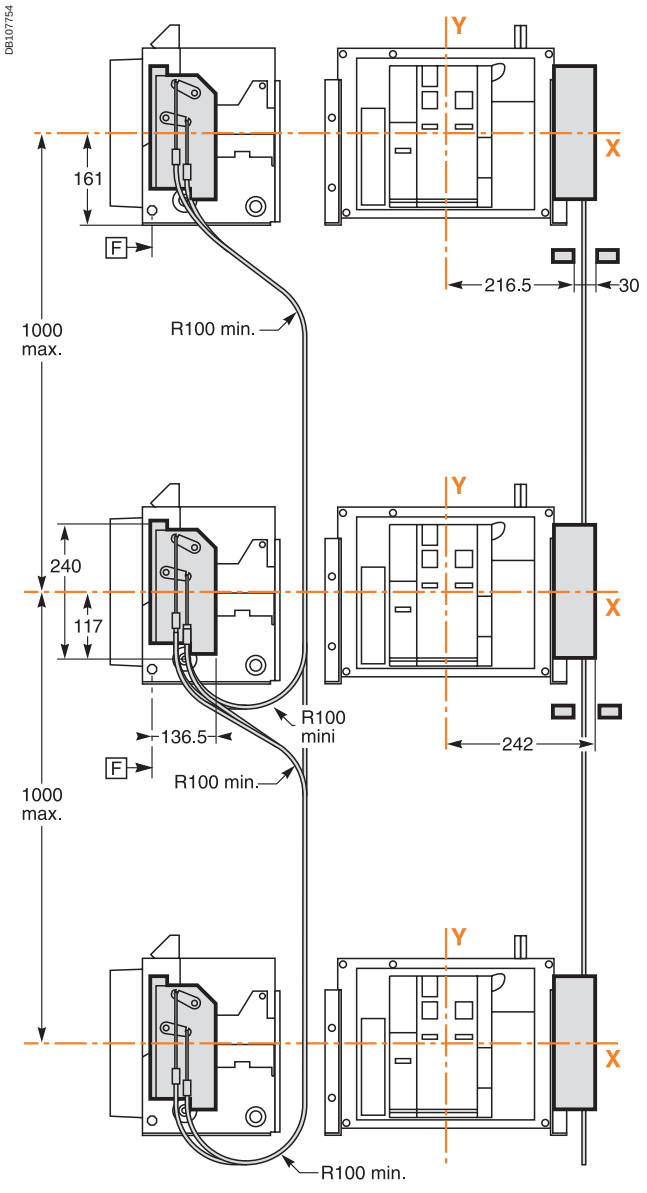
Drawout devices



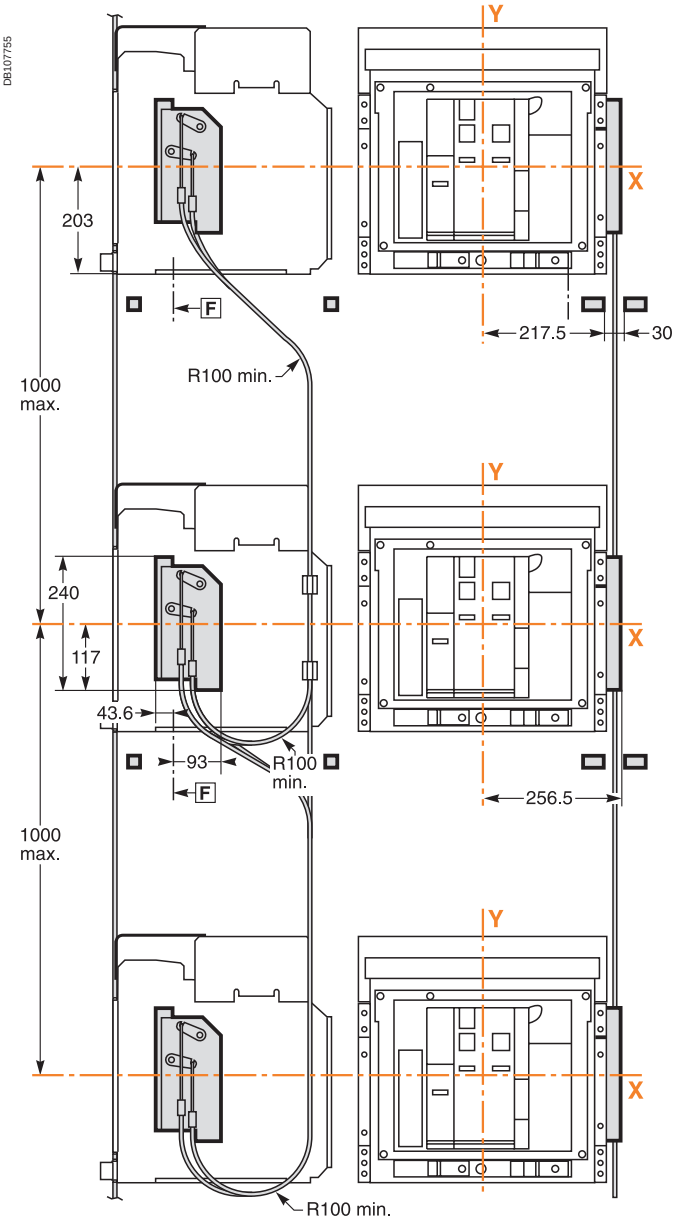
Remote-operated source-changeover systems
Interlocking using cables

Three Masterpact NW devices one above the other

Fixed devices



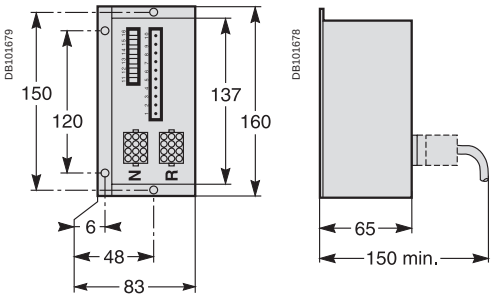
Drawout devices



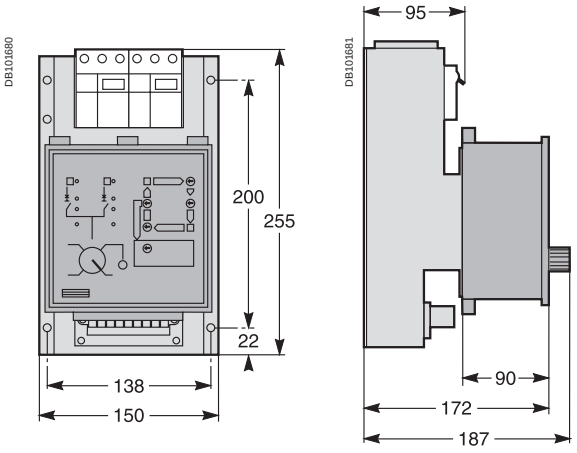
Remote-operated source-changeover systems

IVE electrical-interlocking unit
BA and UA automatic controllers

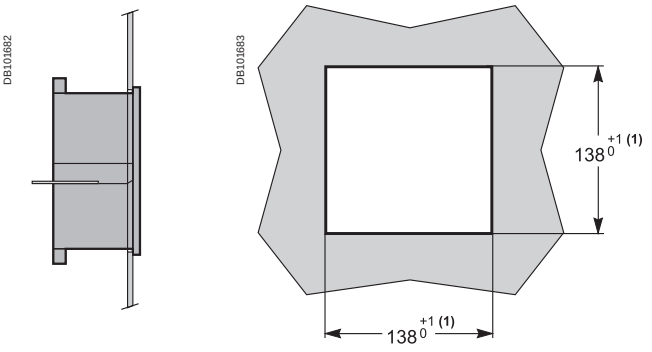
IVE electrical-interlocking unit



ACP auxiliaries control plate and BA/UA controller



Door cutout for BA/UA controllers



(1) *Cutout according DIN 43700 standard.*

TOOLS

schneider-electric.com

This international site allows you to access all the Schneider Electric products in just 2 clicks via comprehensive range data-sheets, with direct links to:

- complete library: technical documents, catalogs, FAQs, brochures…
- selection guides from the e-catalog.
- product discovery sites and their Flash animations.

You will also find illustrated overviews, news to which you can subscribe, the list of country contacts…

Training

Training allows you to acquire the Schneider Electric expertise (installation design, work with power on, etc.) for increased efficiency and a guarantee of improved customer service.
The training catalogue includes beginner's courses in electrical distribution, knowledge of MV and LV switchgear, operation and maintenance of installations, design of LV installations to give but a few examples.

Electrical diagrams

Presentation *2*
Functions and characteristics *A-1*
Dimensions *B-1*

Remote-operated source-changeover systems **C-2**
2 Compact NS100/1600 or Masterpact NT/NW devices C-2
2 Compact NS100/630 devices C-3
2 Compact NS630b/1600 devices C-6
2 Masterpact NT or NW devices C-14
3 Masterpact NW devices C-24

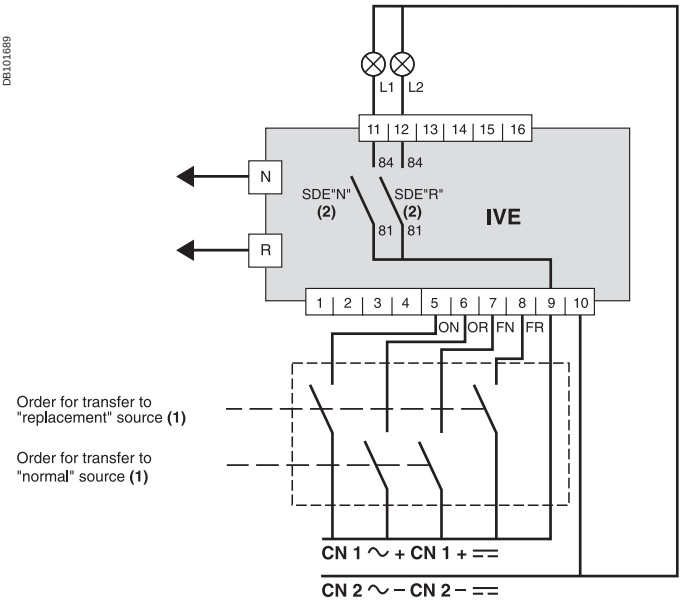
Source-changeover systems with automatic controllers **C-33**
2 Compact NS100/1600 or Masterpact NT/NW devices C-33
2 Masterpact NT or NW devices C-36

Catalogue numbers and order forms *D-1*

Remote-operated source-changeover systems
2 Compact NS100/1600 or Masterpact NT/NW devices

Electrical interlocking by the IVE unit

Recommended electrical control system



(1) The "normal" and "replacement" source transfer orders must be interlocked electrically.
(2) Operating diagram: the SDE "fault-trip" signals are transmitted to the IVE unit. The SDE auxiliary contacts are mounted in the circuit breakers.

Legends
ON *"Normal" source opening order*
OR *"Replacement" source opening order*
FN *"Normal" source closing order*
FR *"Replacement" source closing order*
L1 *"Normal" source "fault-trip" signal*
L2 *"Replacement" source "fault-trip" signal*
N *"Normal" source auxiliary wiring connector*
R *"Replacement" source auxiliary wiring connector*

Note:
diagram shown with circuits de-energised, circuit breakers open and relays in normal position.

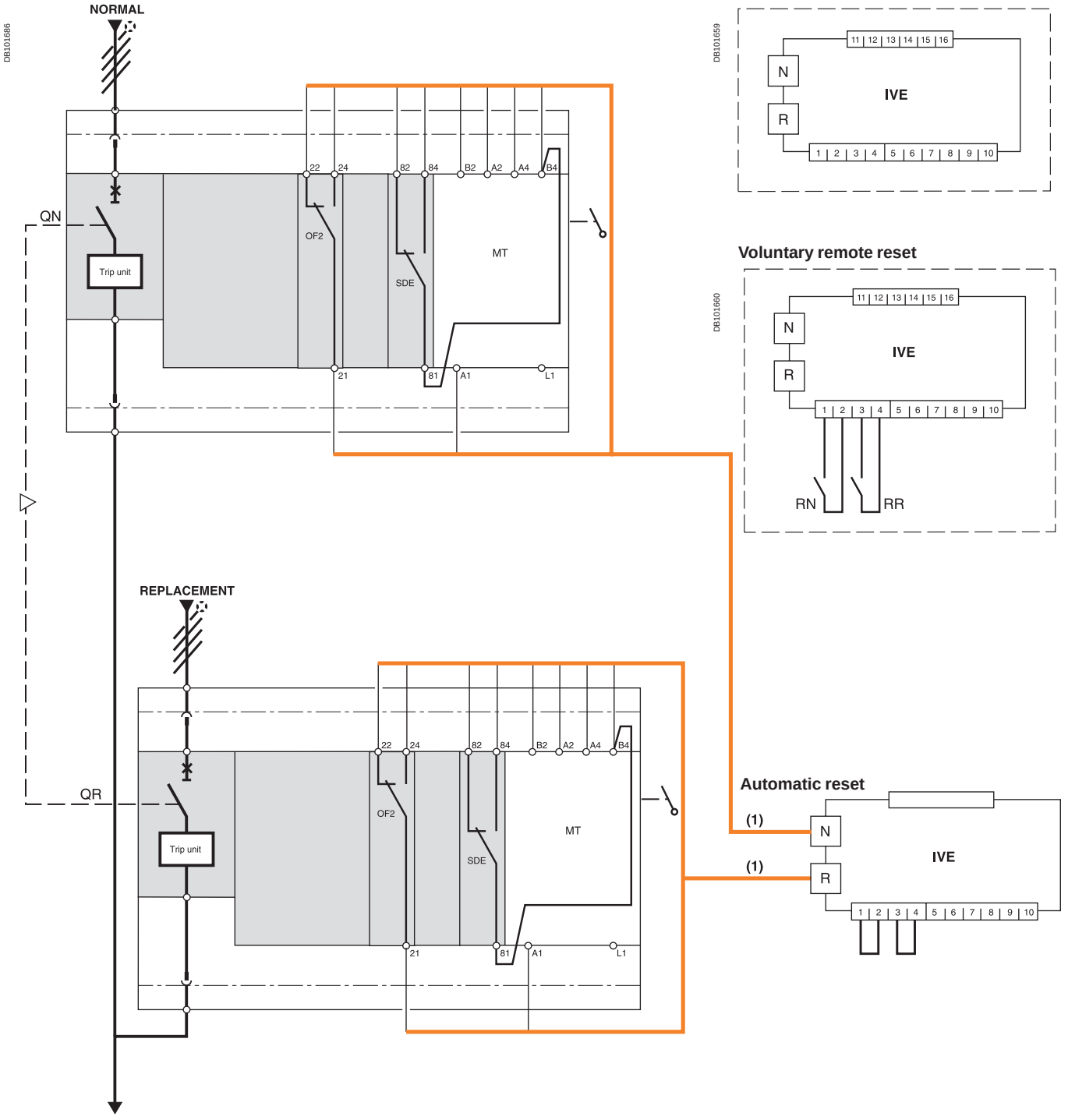
Remote-operated source-changeover systems

2 Compact NS100/630 devices

Diagram no. 51201177

Source-changeover system without automatic-control system

Without auxiliaries for emergency off



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, reverse the wires connected to terminals 82 and 84.**

Legends

QN *Normal" source Compact NS equipped with motor mechanism*
QR *"Replacement" source Compact NS equipped with motor mechanism*
SDE *"fault-trip" indication contact*
IVE *electrical interlocking and terminal block unit*
MT *motor mechanism*
OF2 *breaker ON/OFF indication contact*
RN *reset order for breaker QN*
RR *reset order for breaker QR*

(1) Prefabricated wiring: cannot be modified.

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

Note:
diagram shown with circuits de-energised, circuit breakers open and relays in normal position.

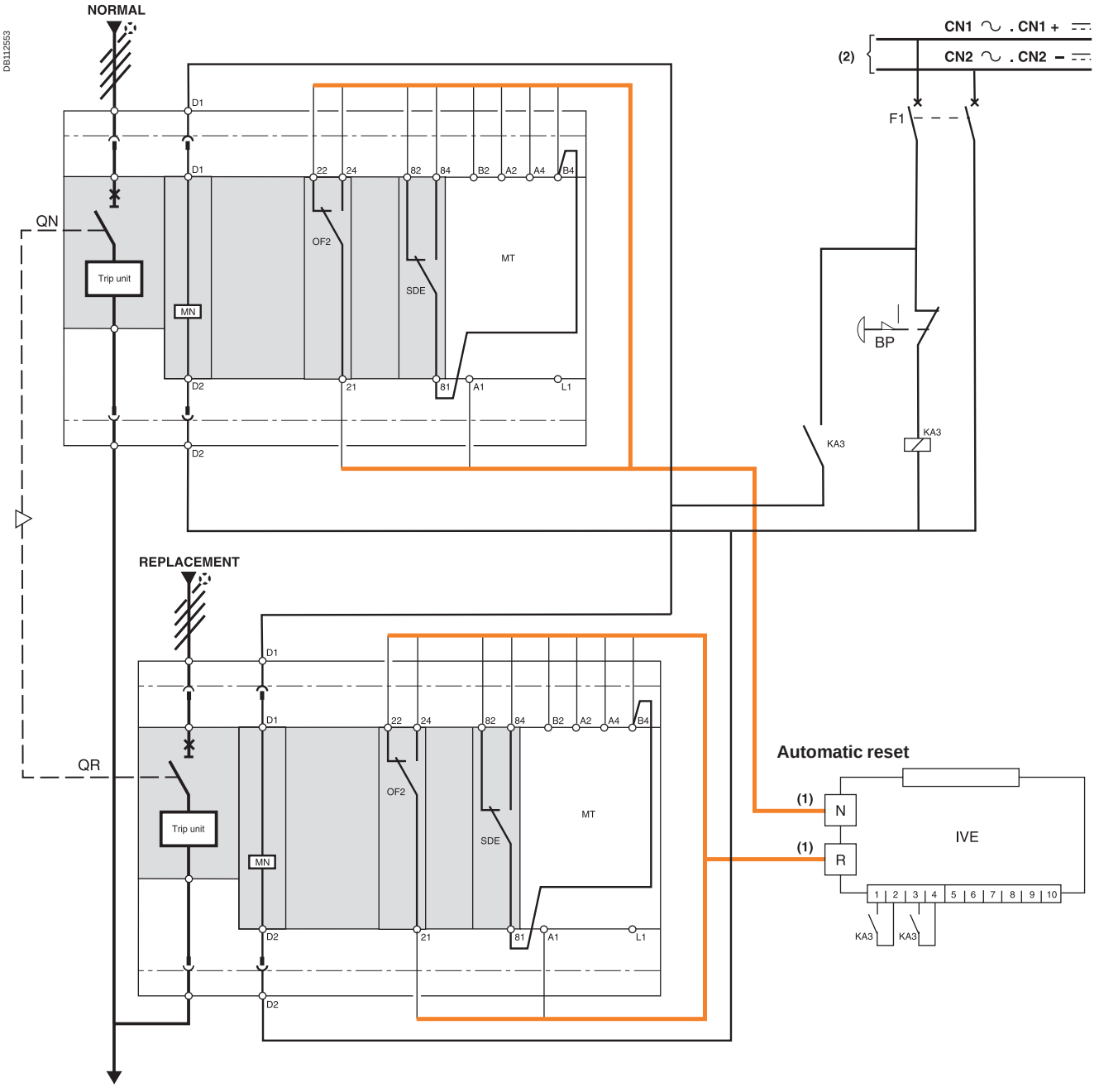
Remote-operated source-changeover systems

2 Compact NS100/630 devices

Diagram no. 51201178

Source-changeover system without automatic-control system

With emergency off by MN release and automatic reset



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, reverse the wires connected to terminals 82 and 84.**

(1) Prefabricated wiring supplied.
(2) Independent auxiliary source.

Legends

- ***QN*** *Normal" source Compact NS equipped with motor mechanism*
- ***QR*** *"Replacement" source Compact NS equipped with motor mechanism*
- ***MN*** *undervoltage release*
- ***OF2*** *breaker ON/OFF indication contact*
- ***SDE*** *"fault-trip" indication contact*
- ***MT*** *motor mechanism*
- ***IVE*** *electrical interlocking and terminal block unit*
- ***BP*** *emergency off button with latching*
- ***KA3*** *auxiliary relay*
- ***F1*** *auxiliary power supply circuit breaker*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuits de-energised, circuit breakers open and relays in normal position.

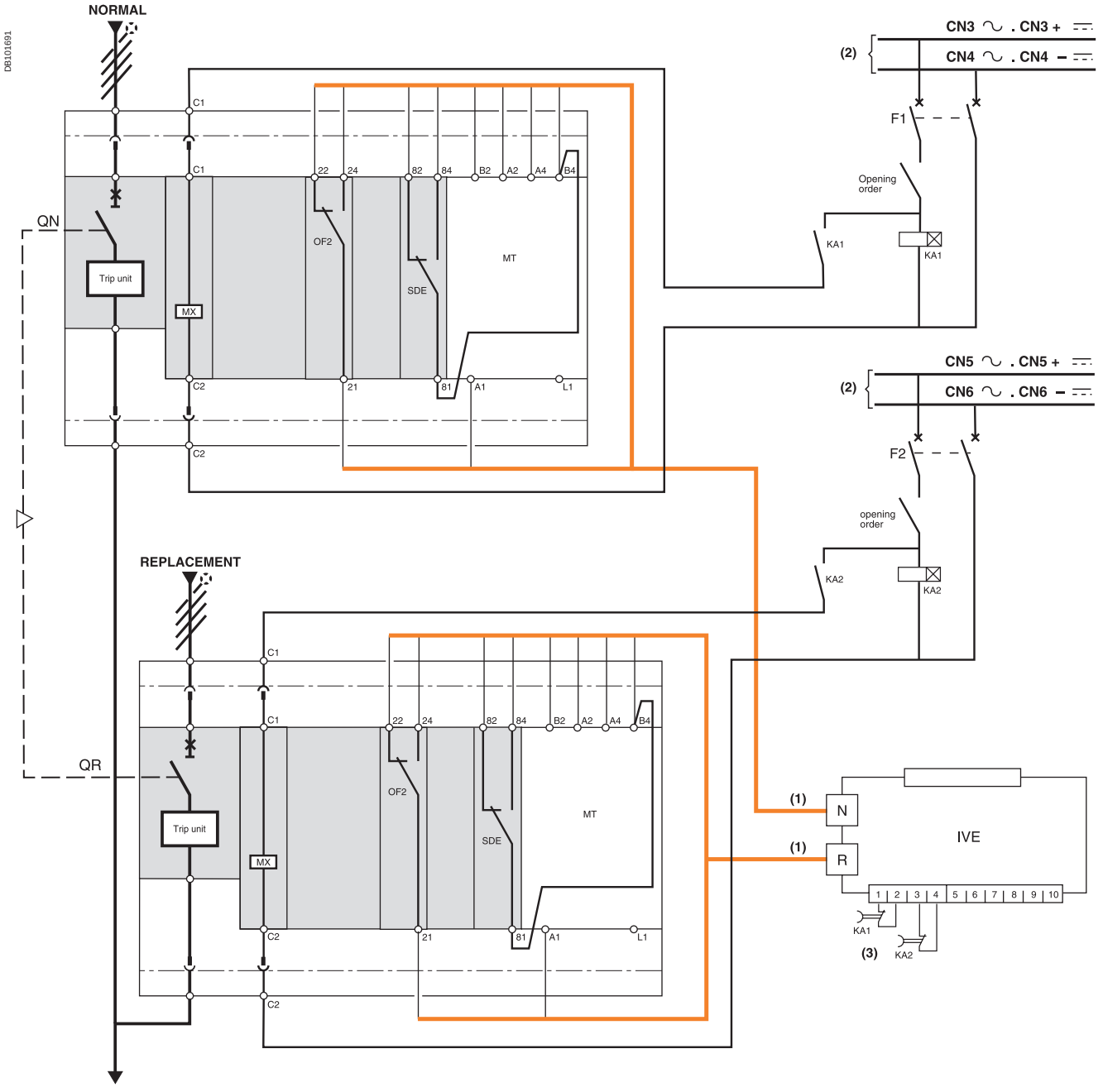
Remote-operated source-changeover systems

2 Compact NS100/630 devices

Diagram no. 51201179

Source-changeover system without automatic-control system

With emergency off by MX release and automatic reset



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, reverse the wires connected to terminals 82 and 84.**

Legends

QN *"Normal" source Compact NS equipped with motor mechanism*
QR *"Replacement" source Compact NS equipped with motor mechanism*
SDE *"fault-trip" indication contact*
OF2 *breaker ON/OFF indication contact*
MX *shunt release*
MT *motor mechanism*
IVE *electrical interlocking and terminal block unit*
KA1 *time-delayed auxiliary relays*
KA2 *time-delayed auxiliary relays*
F1 *auxiliary power supply circuit breaker*
F2 *auxiliary power supply circuit breaker*

(1) Prefabricated wiring supplied
(2) This source can be:
- *the source present in the case of voltage monitoring*
- *an independent source.*

In this case, the MX release must be protected.
(3) The reset orders must be delayed by 0.3 seconds.

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

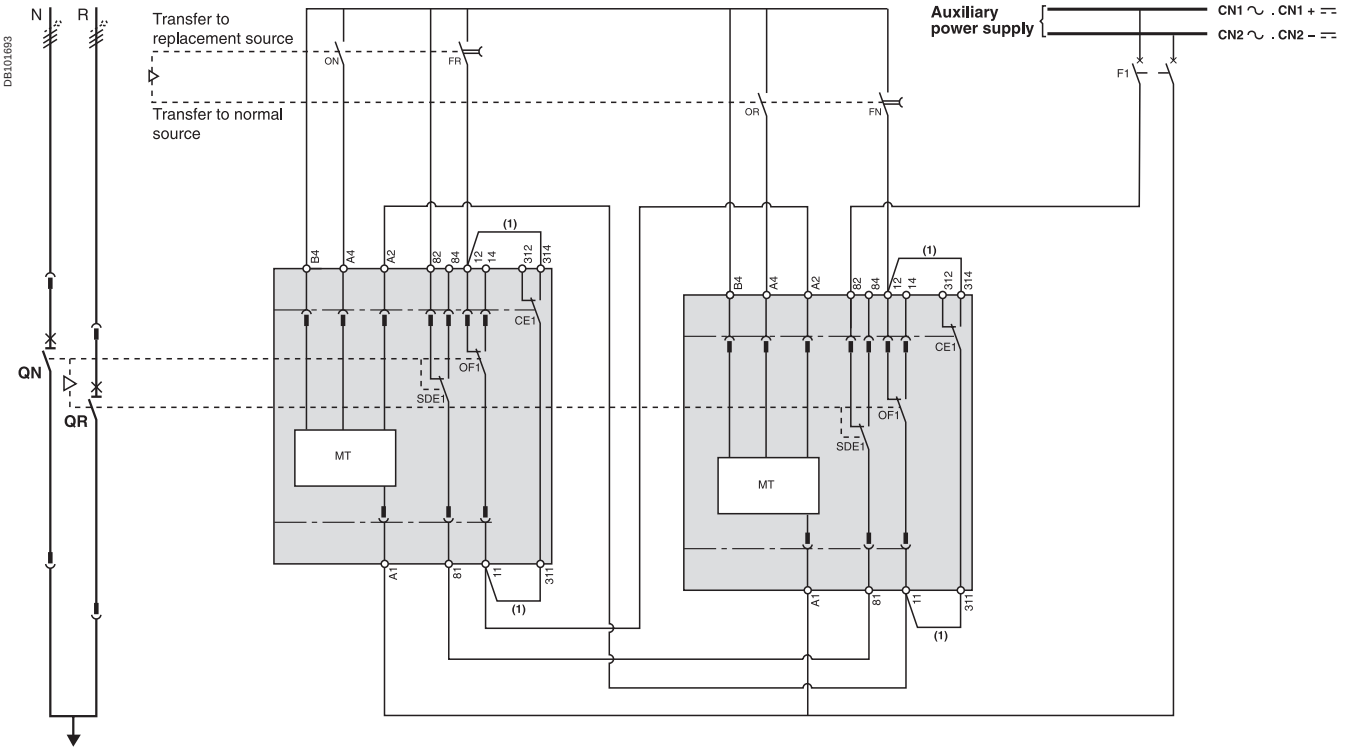
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuits de-energised, circuit breakers open and relays in normal position.

Remote-operated source-changeover systems

2 Compact NS630b/1600 devices

Diagram no. 51201180

Electrical interlocking



ATTENTION

The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN *"Normal" source Compact NS630b to 1600*
QR *"Replacement" source Compact NS NS630b to 1600*
OF... *breaker ON/OFF indication contact*
SDE1 *"fault-trip" indication contact*
CE1 *"connected-position" indication contact (carriage switch)*
F1 *auxiliary power supply circuit breaker*
ON *"Normal" source opening order*
OR *"Replacement" source opening order*
FN *"Normal" source closing order (0.25 second delay)*
FR *"Replacement" source closing order (0.25 second delay)*
MT *Motor Mechanism*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

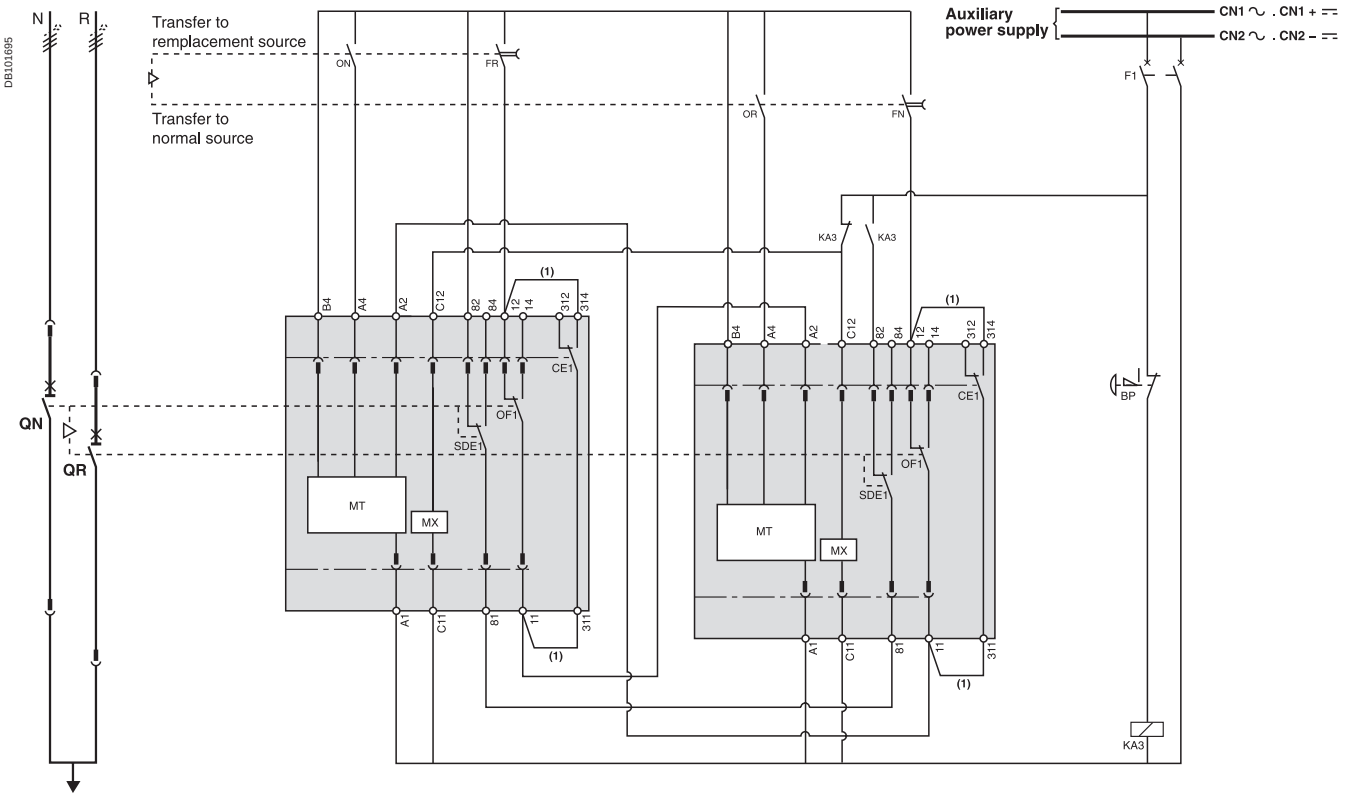
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Compact NS630b/1600 devices

Diagram no. 51201181

Electrical interlocking with emergency off by shunt release



ATTENTION

The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN *"Normal" source Compact NS630b to 1600*
QR *"Replacement" source Compact NS NS630b to 1600*
OF.. *breaker ON/OFF indication contact*
SDE1 *"fault-trip" indication contact*
CE1 *"connected-position" indication contact (carriage switch)*
F1 *auxiliary power supply circuit breaker*
MX *shunt release*
BP *emergency off button with latching*
KA3 *auxiliary relay*
ON *"Normal" source opening order*
OR *"Replacement" source opening order*
FN *"Normal" source closing order (0.25 second delay)*
FR *"Replacement" source closing order (0.25 second delay)*
MT *Motor Mechanism*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

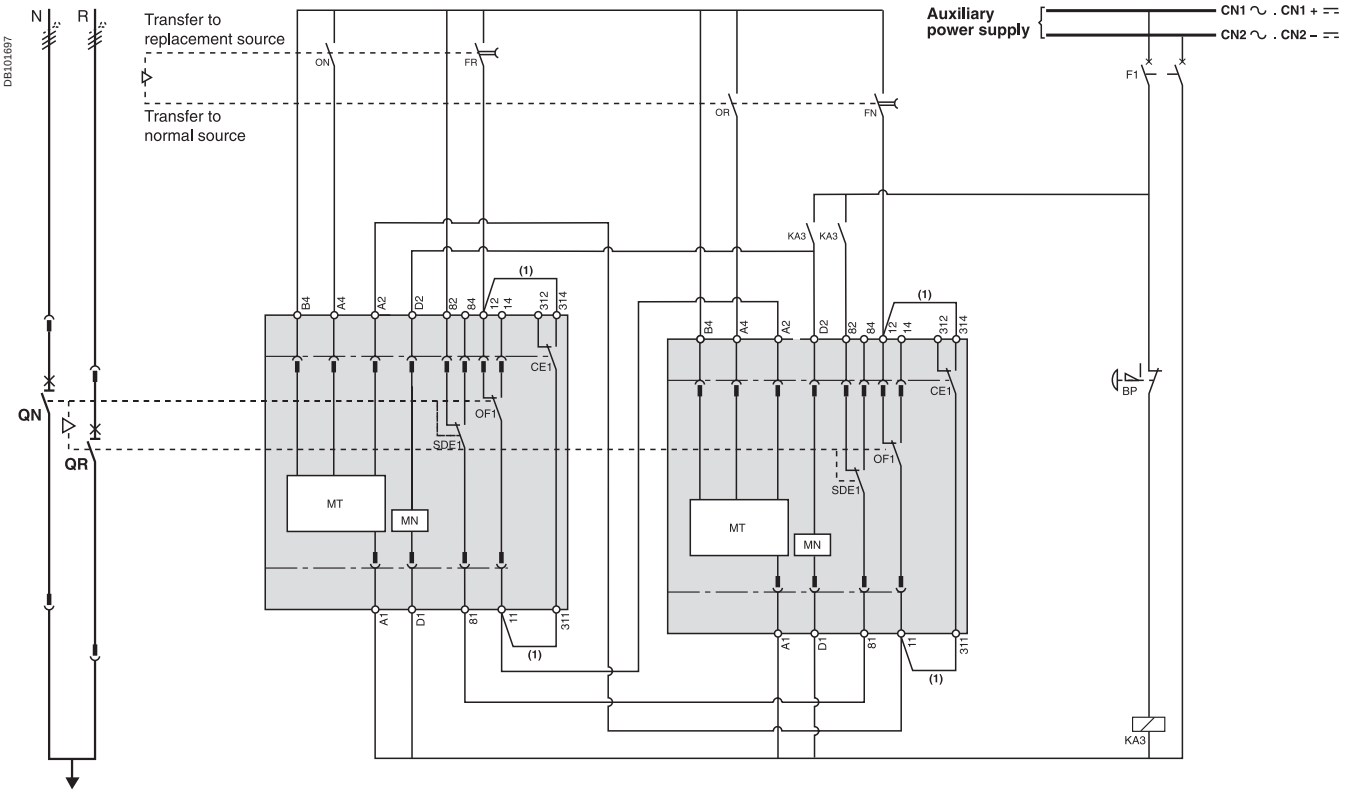
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Compact NS630b/1600 devices

Diagram no. 51201182

Electrical interlocking with emergency off by undervoltage



ATTENTION

The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN *"Normal" source Compact NS630b to 1600*
QR *"Replacement" source Compact NS NS630b to 1600*
OF.. *breaker ON/OFF indication contact*
SDE1 *"fault-trip" indication contact*
CE1 *"connected-position" indication contact (carriage switch)*
F1 *auxiliary power supply circuit breaker*
MN *undervoltage release*
BP *emergency off button with latching*
KA3 *auxiliary relay*
ON *"Normal" source opening order*
OR *"Replacement" source opening order*
FN *"Normal" source closing order (0.25 second delay)*
FR *"Replacement" source closing order (0.25 second delay)*
MT *Motor Mechanism*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

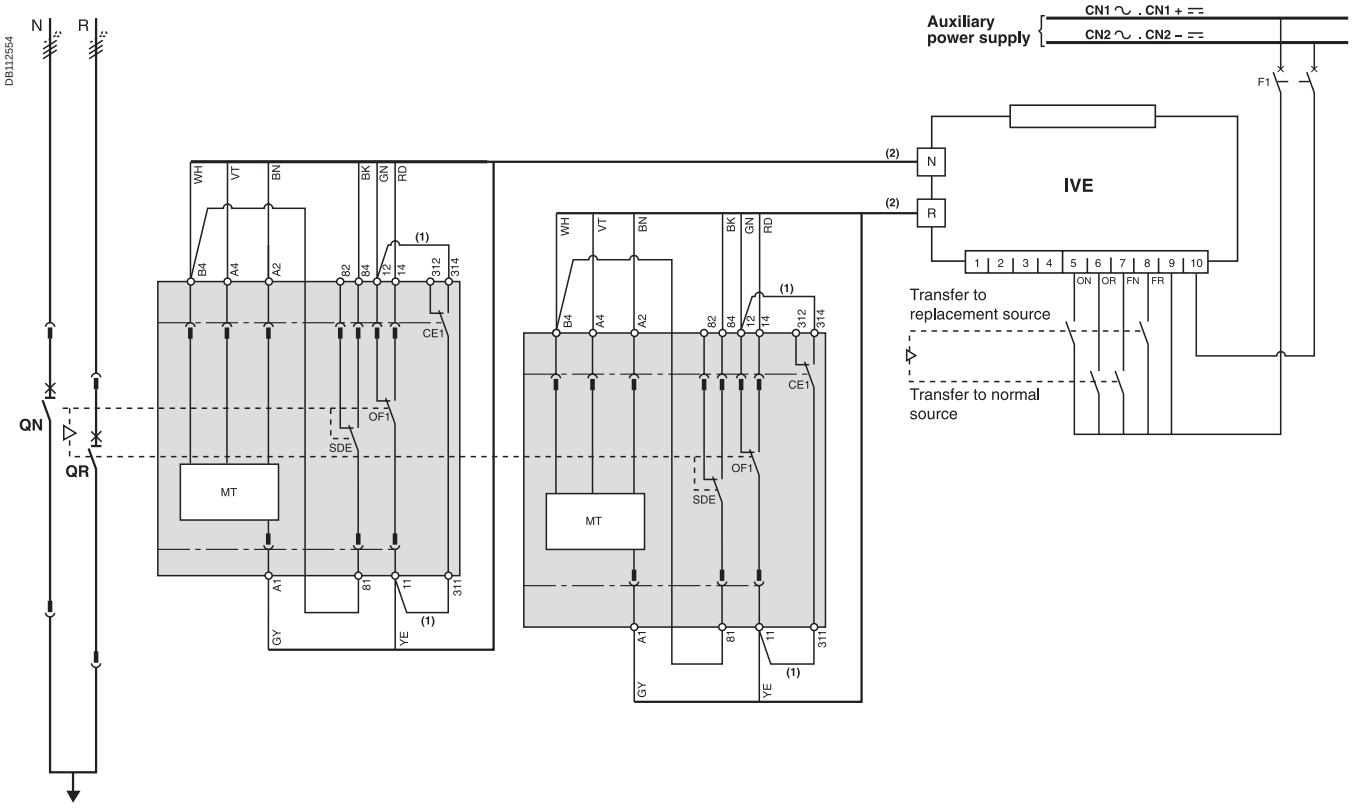
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Compact NS630b/1600 devices

Diagram no. 51201183

Electrical interlocking by IVE



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired on fixed version.
(2) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Compact NS630b to 1600*
QR	*"Replacement" source Compact NS NS630b to 1600*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
CE1	*"connected-position" indication contact (carriage switch)*
F1	*auxiliary power supply circuit breaker*
IVE	*electrical interlocking and terminal block unit*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*
MT	*Motor Mechanism*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

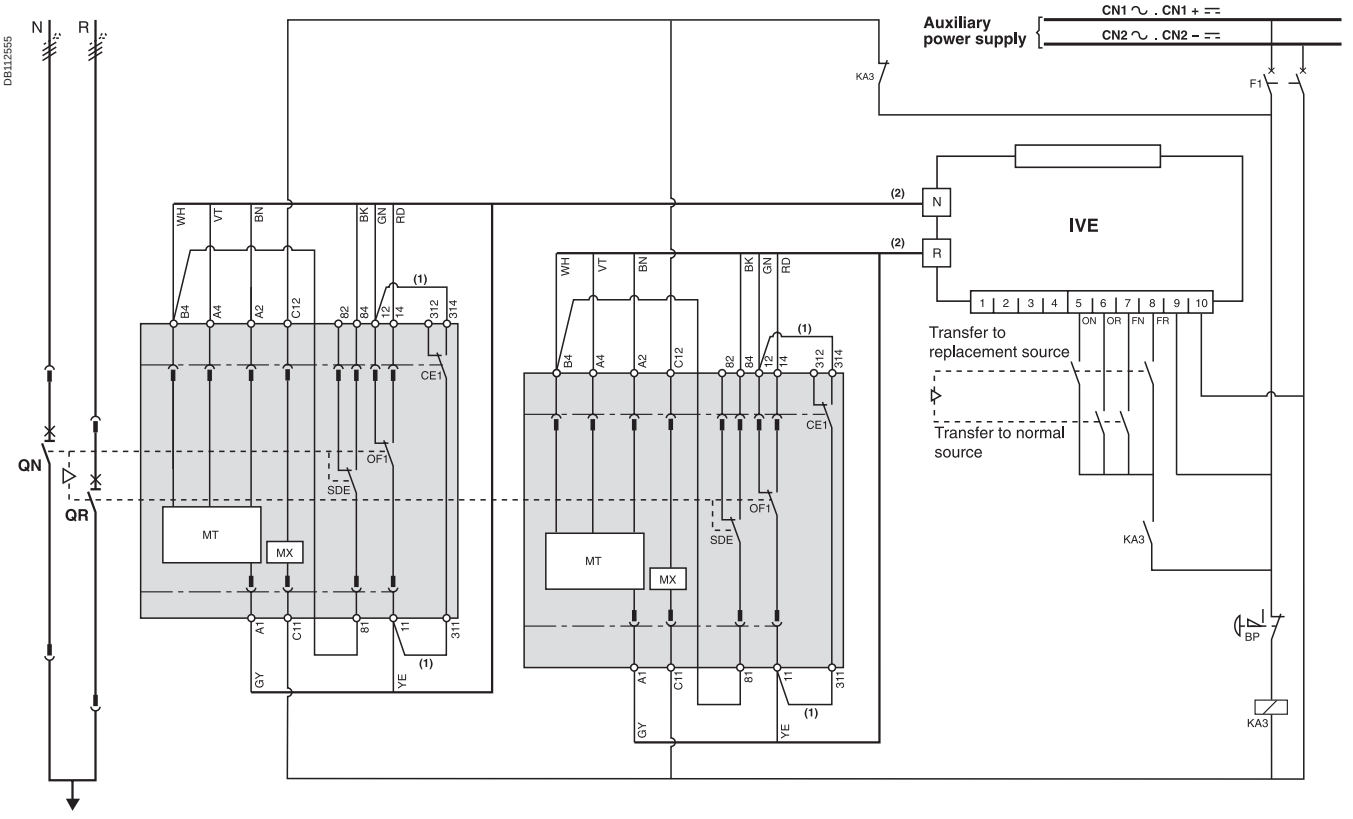
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Compact NS630b/1600 devices

Diagram no. 51201184

Electrical interlocking by IVE with emergency off by shunt release



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired on fixed version.
(2) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Compact NS630b to 1600*
QR	*"Replacement" source Compact NS NS630b to 1600*
OF..	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
CE1	*"connected-position" indication contact (carriage switch)*
F1	*auxiliary power supply circuit breaker*
IVE	*electrical interlocking and terminal block unit*
MX	*shunt release*
BP	*emergency off button with latching*
KA3	*auxiliary relay*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*
MT	*Motor Mechanism*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

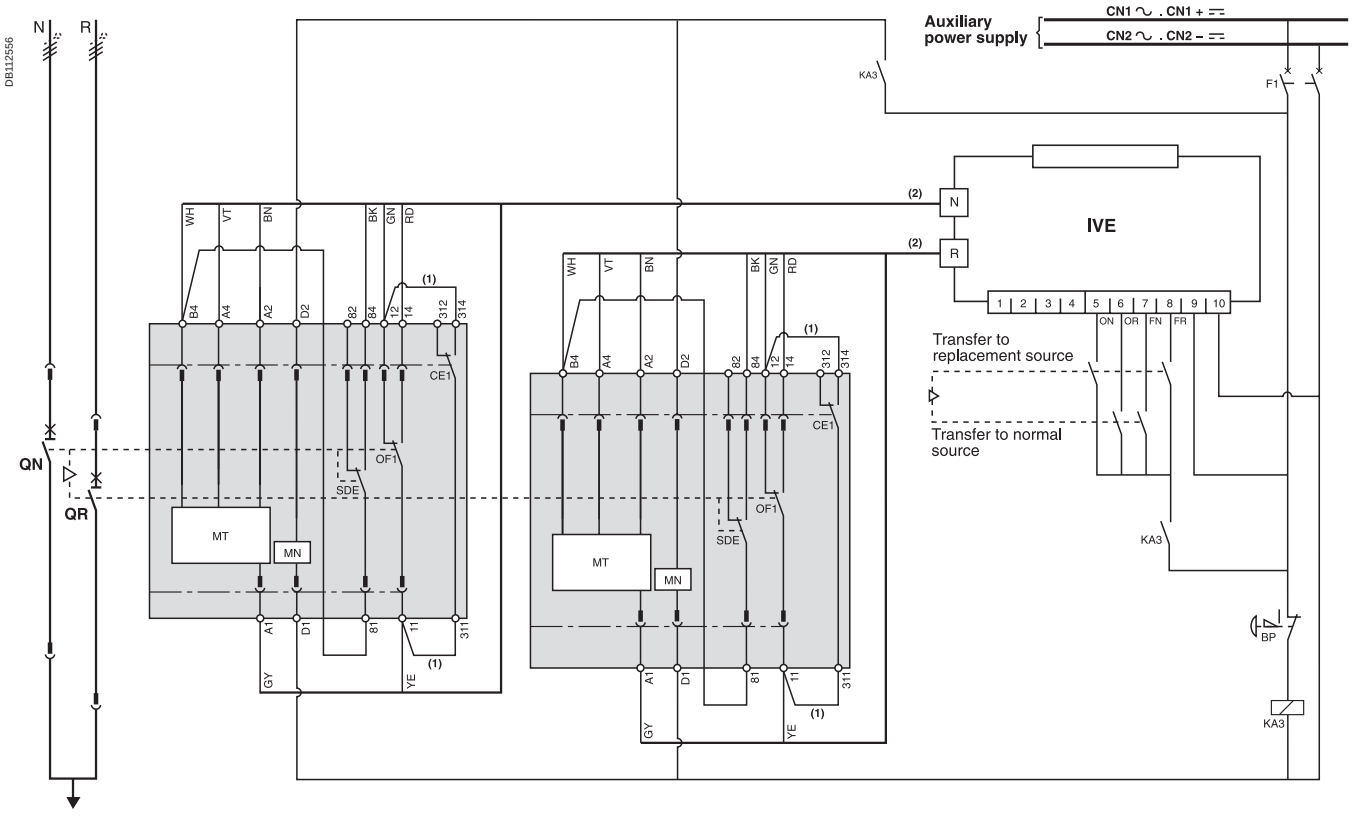
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Compact NS630b/1600 devices

Diagram no. 51201185

Electrical interlocking by IVE with emergency off by undervoltage release



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired on fixed version.
(2) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Compact NS630b to 1600*
QR	*"Replacement" source Compact NS NS630b to 1600*
MCH	*spring-charging motor*
MX	*standard opening release*
XF	*standard closing release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
CE1	*"connected-position" indication contact (carriage switch)*
F1	*auxiliary power supply circuit breaker*
IVE	*electrical interlocking and terminal block unit*
MN	*undervoltage release*
BP	*emergency off button with latching*
KA3	*auxiliary relay*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*
MT	*Motor Mechanism*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

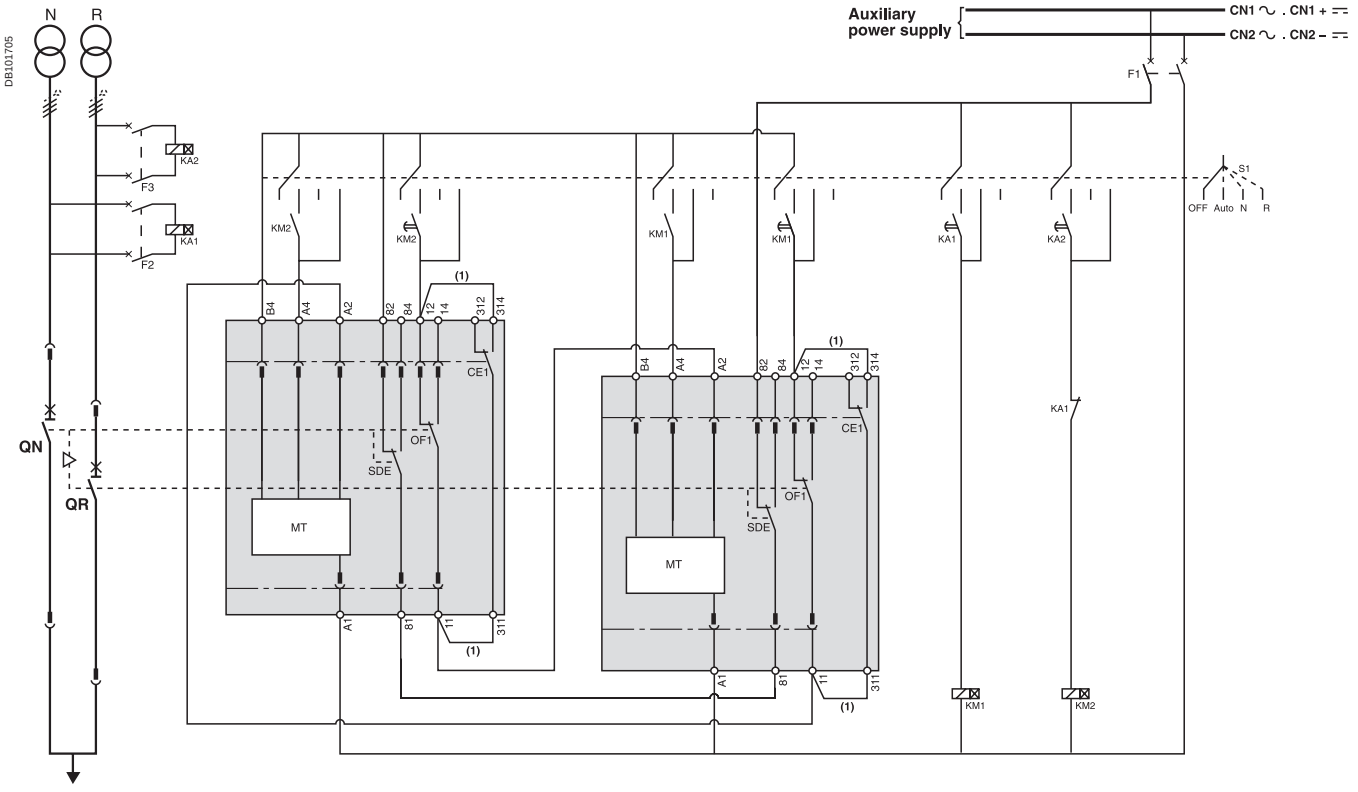
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Compact NS630b/1600 devices

Diagram no. 51201186

Automatic-control system without IVE for permanent replacement source



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN	*Normal" source Compact NS630b to 1600*
QR	*"Replacement" source Compact NS NS630b to 1600*
OF..	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
CE1	*"connected-position" indication contact (carriage switch)*
F1	*auxiliary power supply circuit breaker*
F2/F3	*circuit breaker (high breaking capacity)*
S1	*control switches*
KA1	*auxiliary relays - UN presence detection*
KA2	*auxiliary relays - UR presence detection*
KM1	*contactors with 0.25 second delay (for transfer to "Replacement" source)*
KM2	*contactors with 0.25 second delay (for transfer to "Normal" source)*
MT	*Motor Mechanism*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

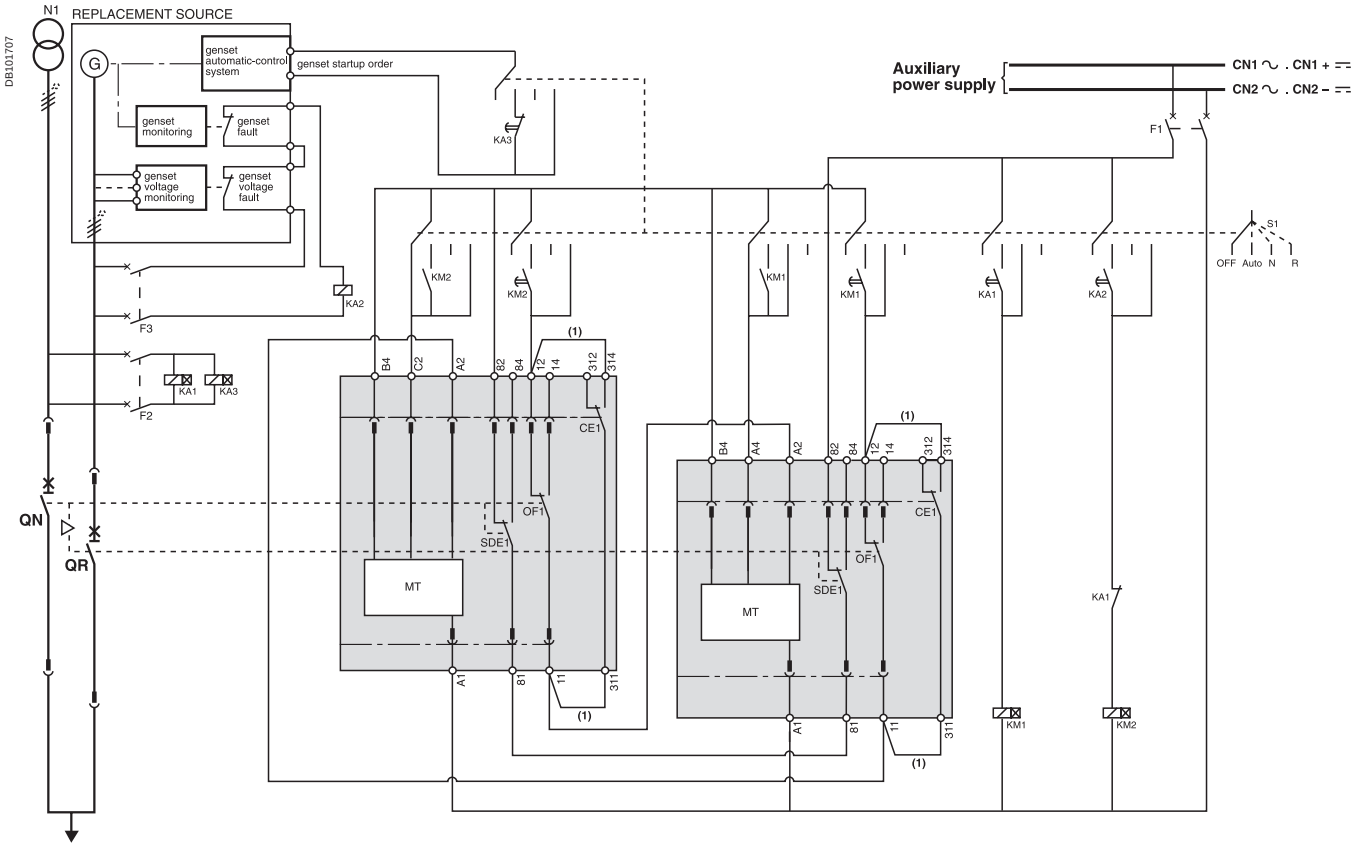
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Compact NS630b/1600 devices

Diagram no. 51201187

Automatic-control system for replacement source generator set



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN	*"Normal" source Compact NS630b to 1600*
QR	*"Replacement" source Compact NS NS630b to 1600*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
CE1	*"connected-position" indication contact (carriage switch)*
F1	*auxiliary power supply circuit breaker*
F2/F3	*circuit breaker (high breaking capacity)*
S1	*control switches*
KA1	*auxiliary relays - UN presence detection*
KA2	*auxiliary relays - UR presence detection*
KA3	*auxiliary relays - generator set startup if UN absent*
KM1	*contactors with 0.25 second delay (for transfer to "Replacement" source)*
KM2	*contactors with 0.25 second delay (for transfer to "Normal" source)*
MT	*Motor Mechanism*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

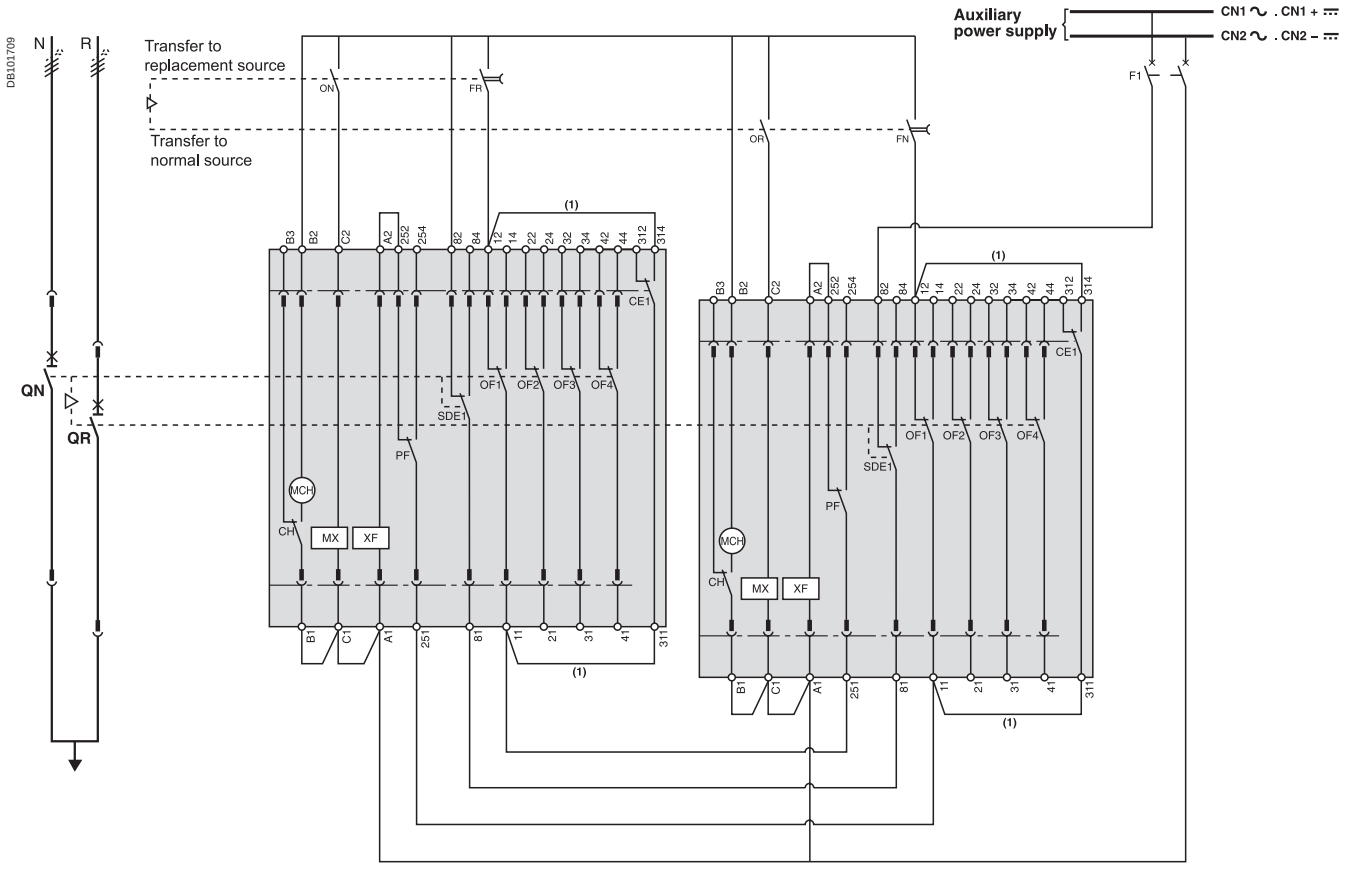
Note:
after a fault trip, the breaker must be reset manually by pressing its reset button.
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51201139

Electrical interlocking with lockout after a fault



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

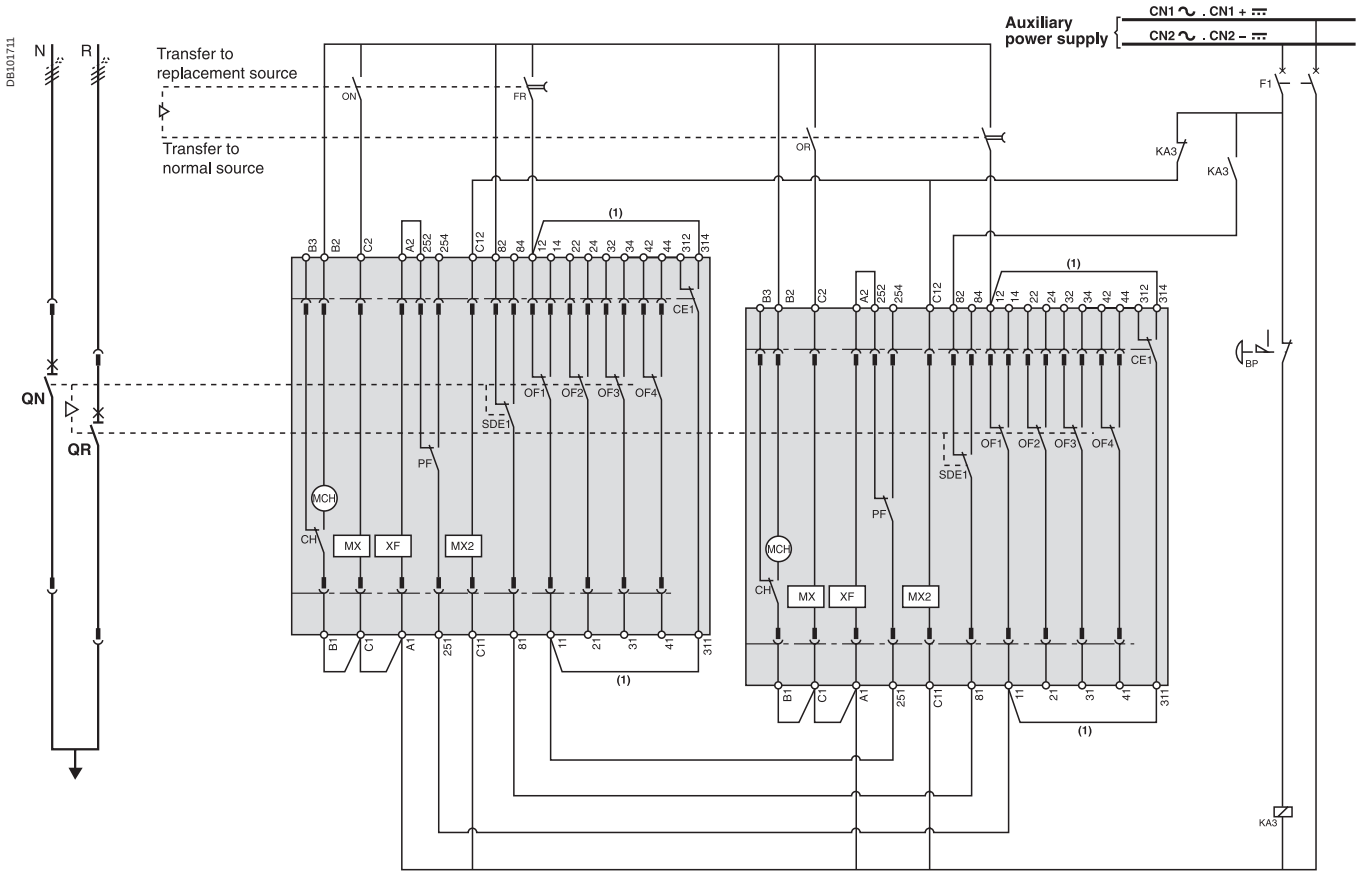
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51201140

Electrical interlocking with lockout after a fault and emergency off by shunt release



ATTENTION

The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

KA3	*time delay for genset startup order to avoid starting the genset for transient UN disturbances*
QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
MX2	*shunt release*
BP	*emergency off button with latching*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*
BP	*emergency off button with latching*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

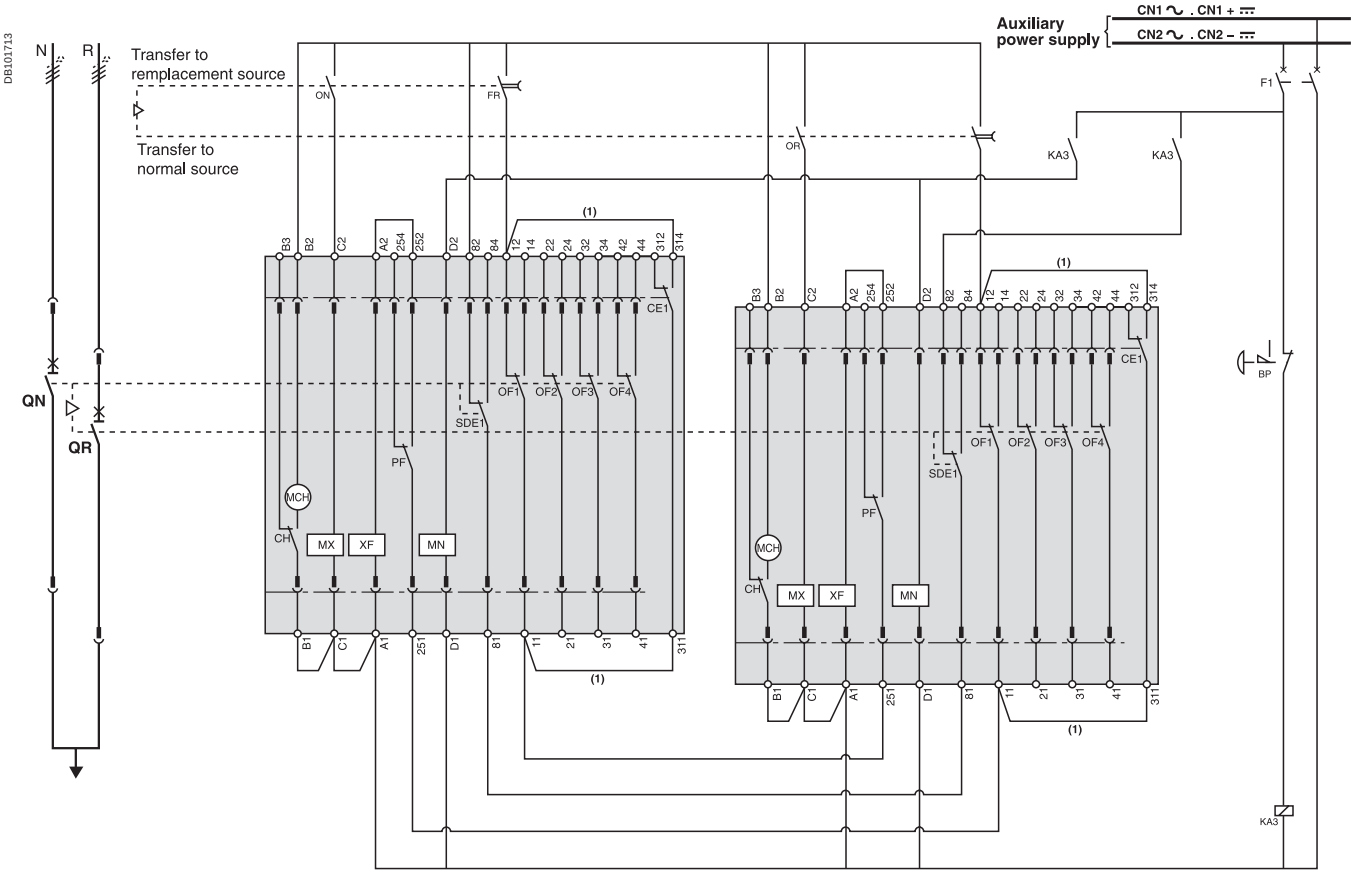
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51201141

Electrical interlocking with lockout after a fault and emergency off by undervoltage release



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
MN	*undervoltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
BP	*emergency off button with latching*
S1	*control switches*
KA3	*auxiliary relay*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

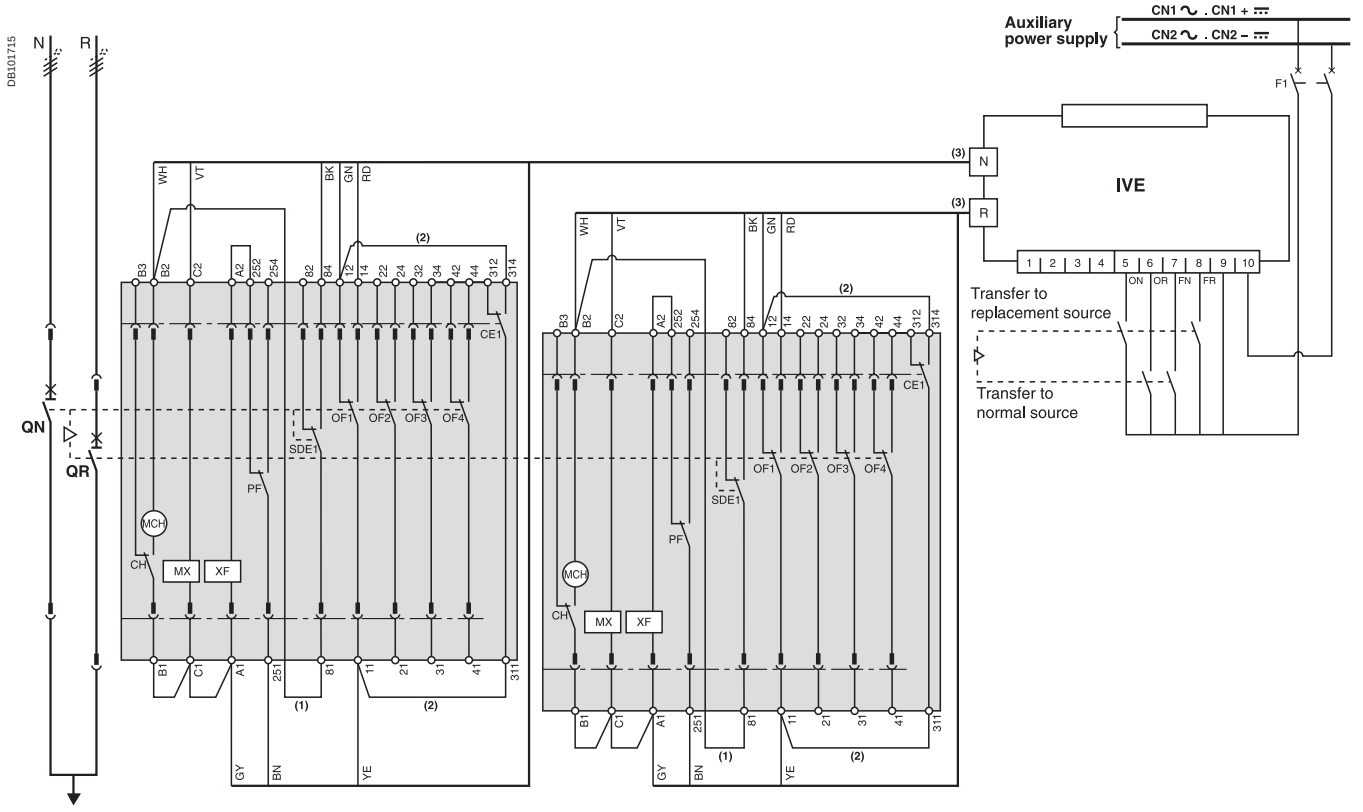
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51201142

Electrical interlocking by IVE with lockout after a fault



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired for the "without lockout after a fault" solution.
(2) Not to be wired on fixed version.
(3) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
IVE	*electrical interlocking and terminal block unit*
F1	*auxiliary power supply circuit breaker*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

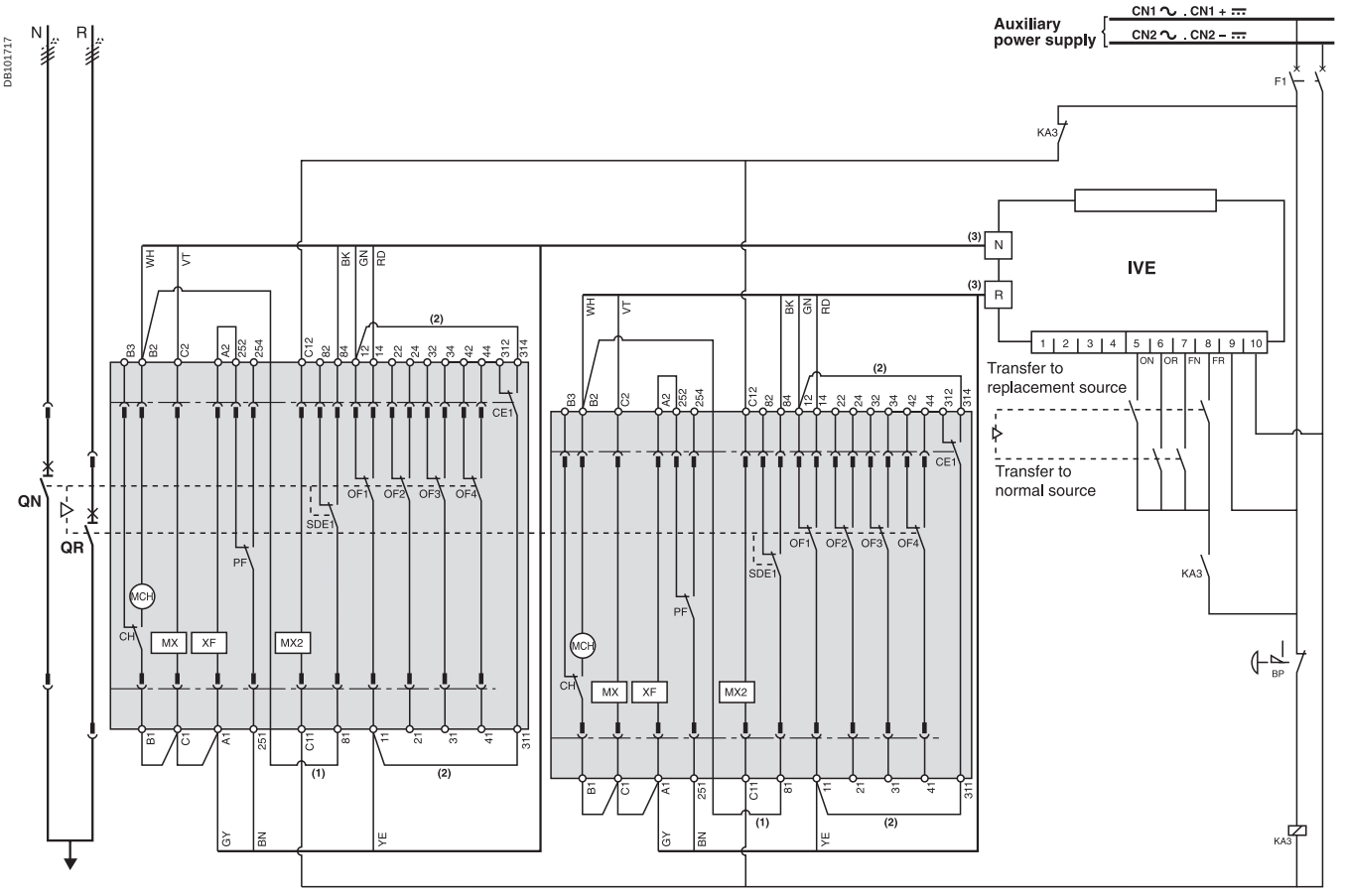
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51201143

Electrical interlocking by IVE with lockout after a fault and emergency off by shunt release



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired for the "without lockout after a fault" solution.
(2) Not to be wired on fixed version.
(3) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF..	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
IVE	*electrical interlocking and terminal block unit*
F1	*auxiliary power supply circuit breaker*
BP	*emergency off button with latching*
KA3	*auxiliary relay*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

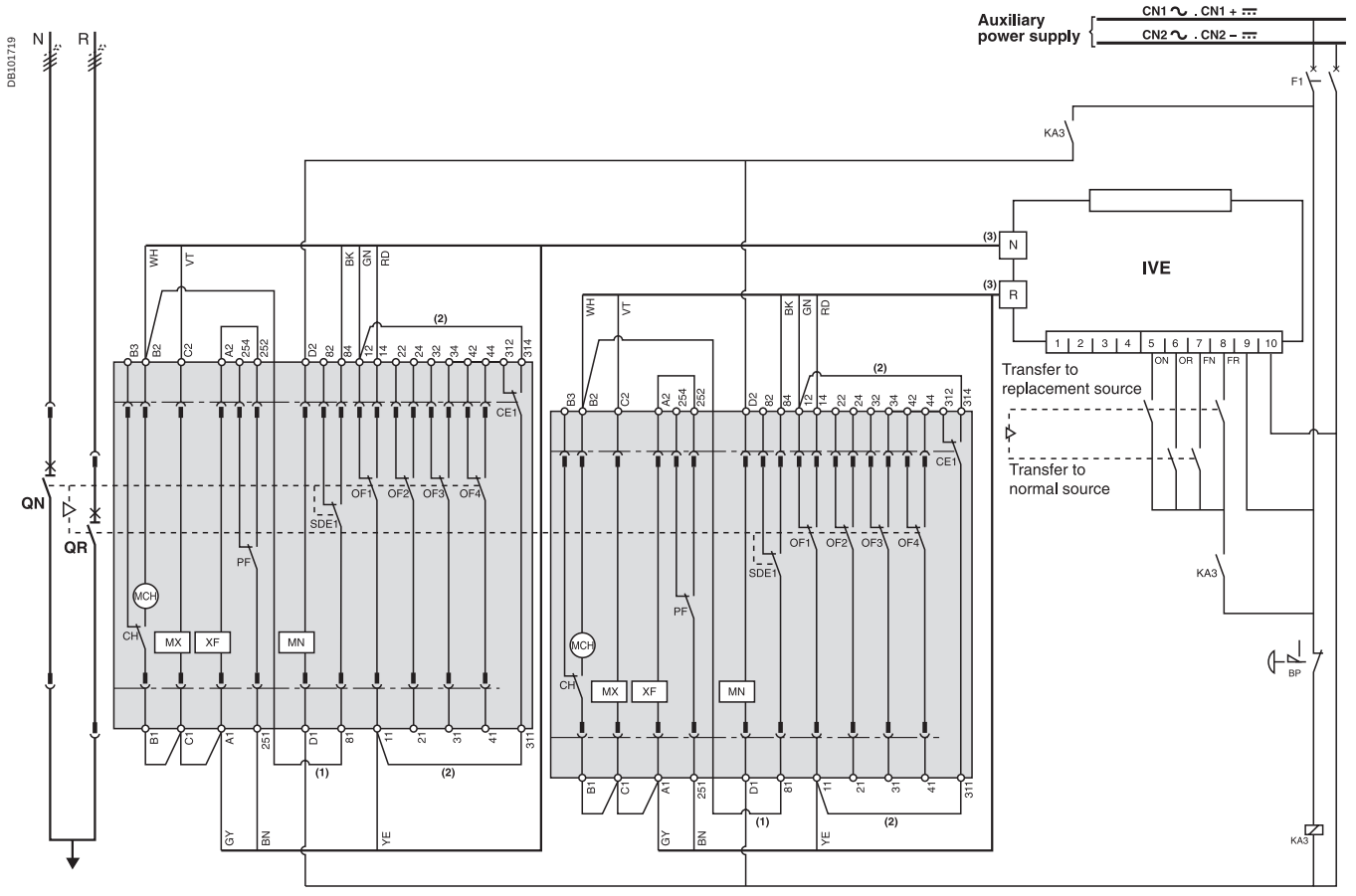
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51201144

Electrical interlocking by IVE with lockout after a fault and emergency off by undervoltage release



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired for the "without lockout after a fault" solution.
(2) Not to be wired on fixed version.
(3) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
MN	*undervoltage release*
OF..	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
IVE	*electrical interlocking and terminal block unit*
F1	*auxiliary power supply circuit breaker*
BP	*emergency off button with latching*
S1	*control switches*
KA3	*auxiliary relay*
ON	*"Normal" source opening order*
OR	*"Replacement" source opening order*
FN	*"Normal" source closing order (0.25 second delay)*
FR	*"Replacement" source closing order (0.25 second delay)*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

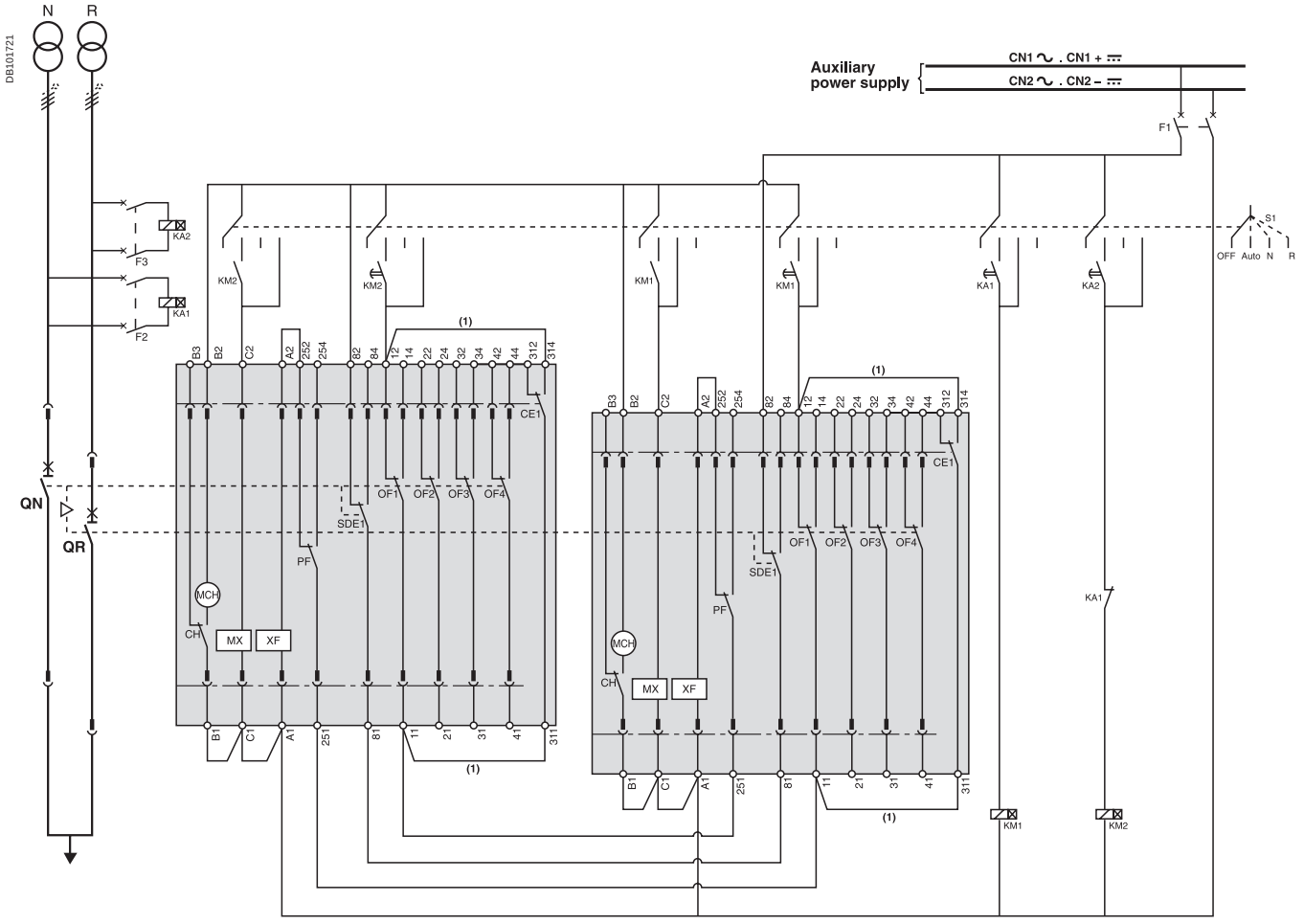
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51156226

Automatic-control system without IVE for permanent replacement source with lockout after a fault



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF..	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
F2/F3	*circuit breaker (high breaking capacity)*
S1	*control switches*
KA1	*auxiliary relays - UN presence detection*
KA2	*auxiliary relays - UR presence detection*
KM1	*contactors with 0.25 second delay (for transfer to "Replacement" source)*
KM2	*contactors with 0.25 second delay (for transfer to "Normal" source)*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

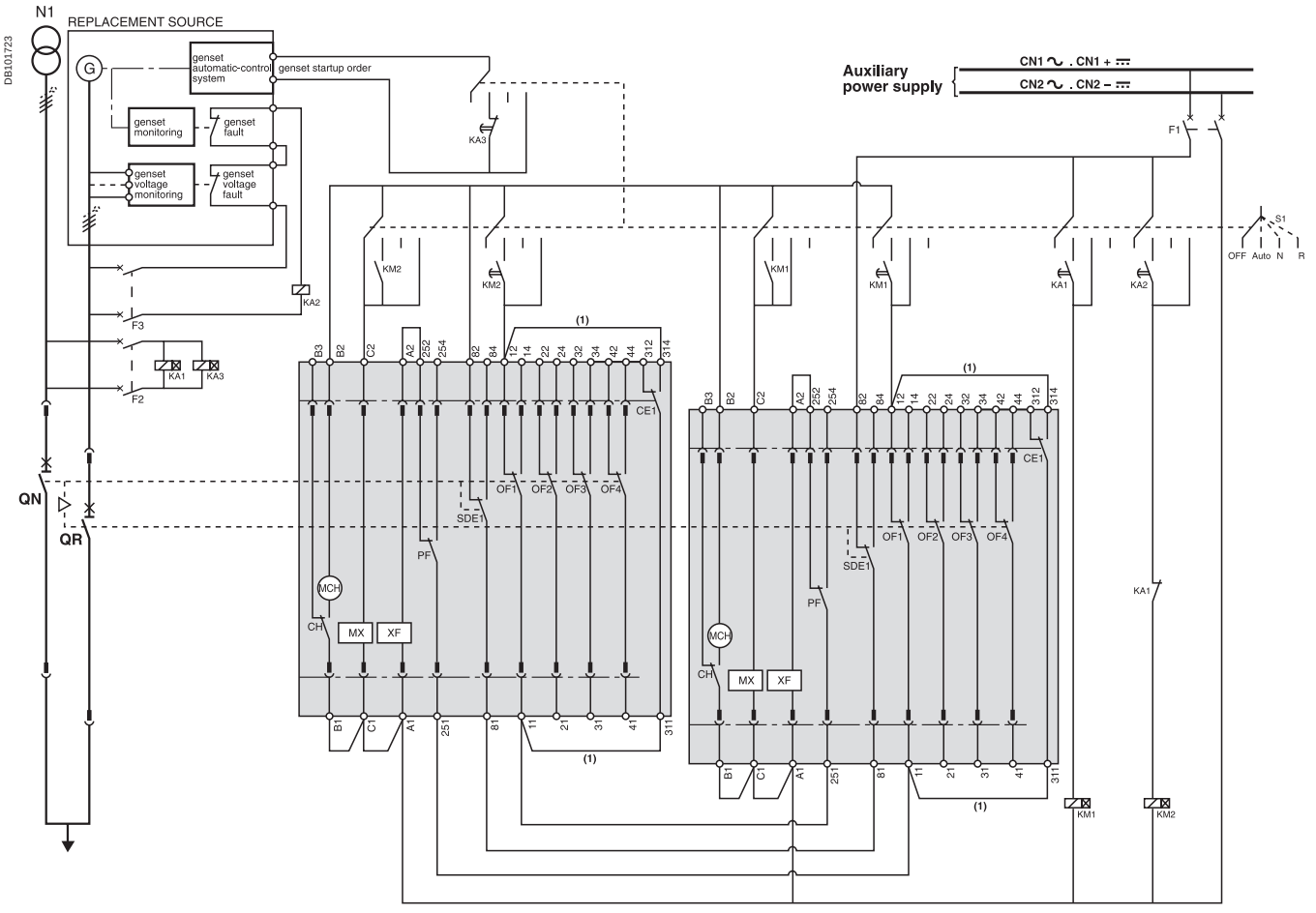
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51156227

Automatic-control system for replacement source generator set with lockout after a fault



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

(1) Not to be wired on fixed version.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
F2/F3	*circuit breaker (high breaking capacity)*
S1	*control switches*
KA1	*auxiliary relays - UN presence detection*
KA2	*auxiliary relays - UR presence detection*
KA3	*auxiliary relays - generator set startup if UN absent*
KM1	*contactors with 0.25 second delay (for transfer to "Replacement" source)*
KM2	*contactors with 0.25 second delay (for transfer to "Normal" source)*

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

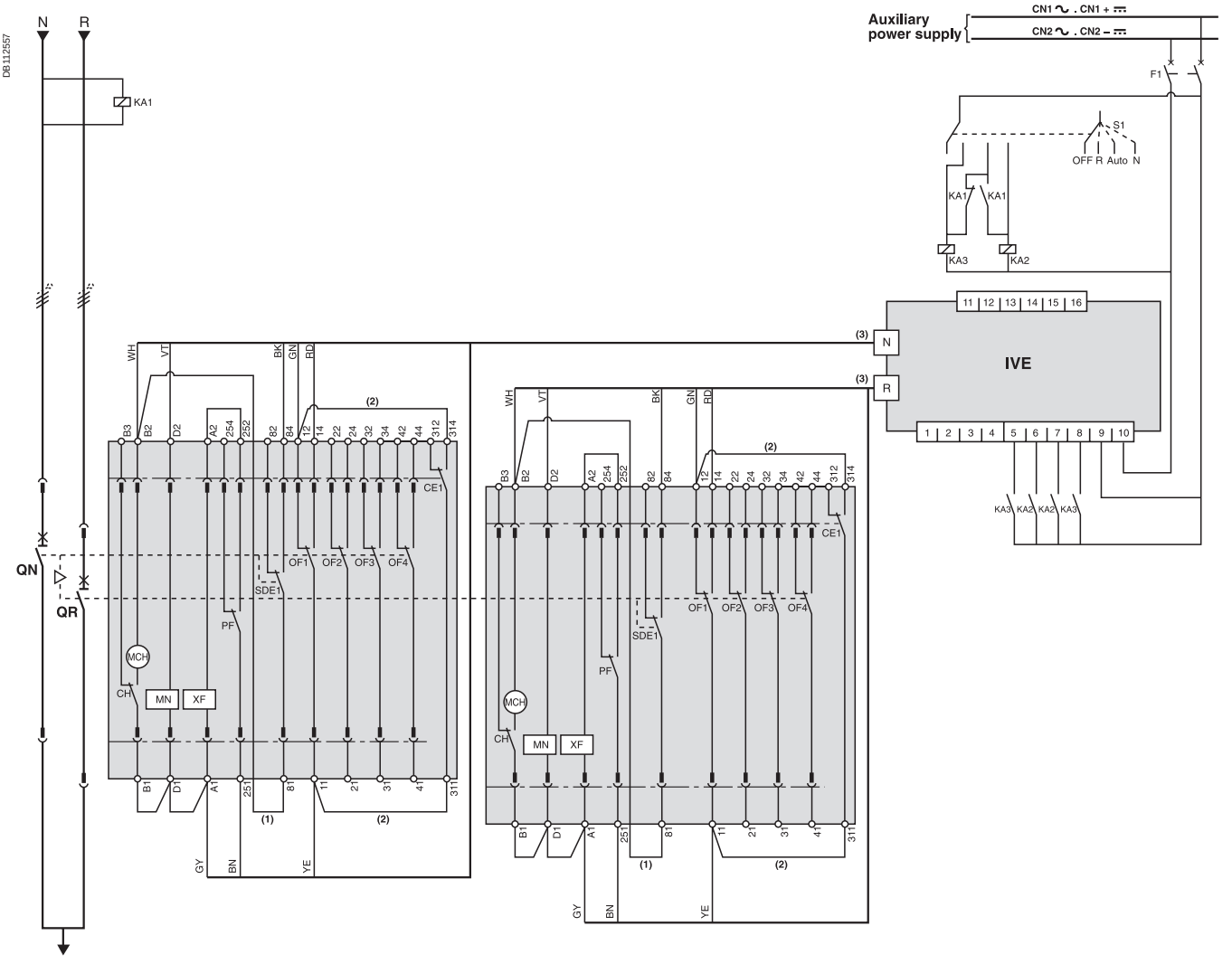
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...)
= supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51156904

Automatic-control system for permanent replacement source with lockout after a fault (with MN)



ATTENTION
The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired for the "without lockout after a fault" solution.
(2) Not to be wired on fixed version.
(3) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
XF	*standard closing voltage release*
MN	*undervoltage release*
OF..	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
IVE	*electrical interlocking and terminal block unit*
F1	*auxiliary power supply circuit breaker*
F2	*circuit breaker (high breaking capacity)*
S1	*control switches*
KA1	*auxiliary relays*
KA2	*auxiliary relays*
KA3	*auxiliary relays*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

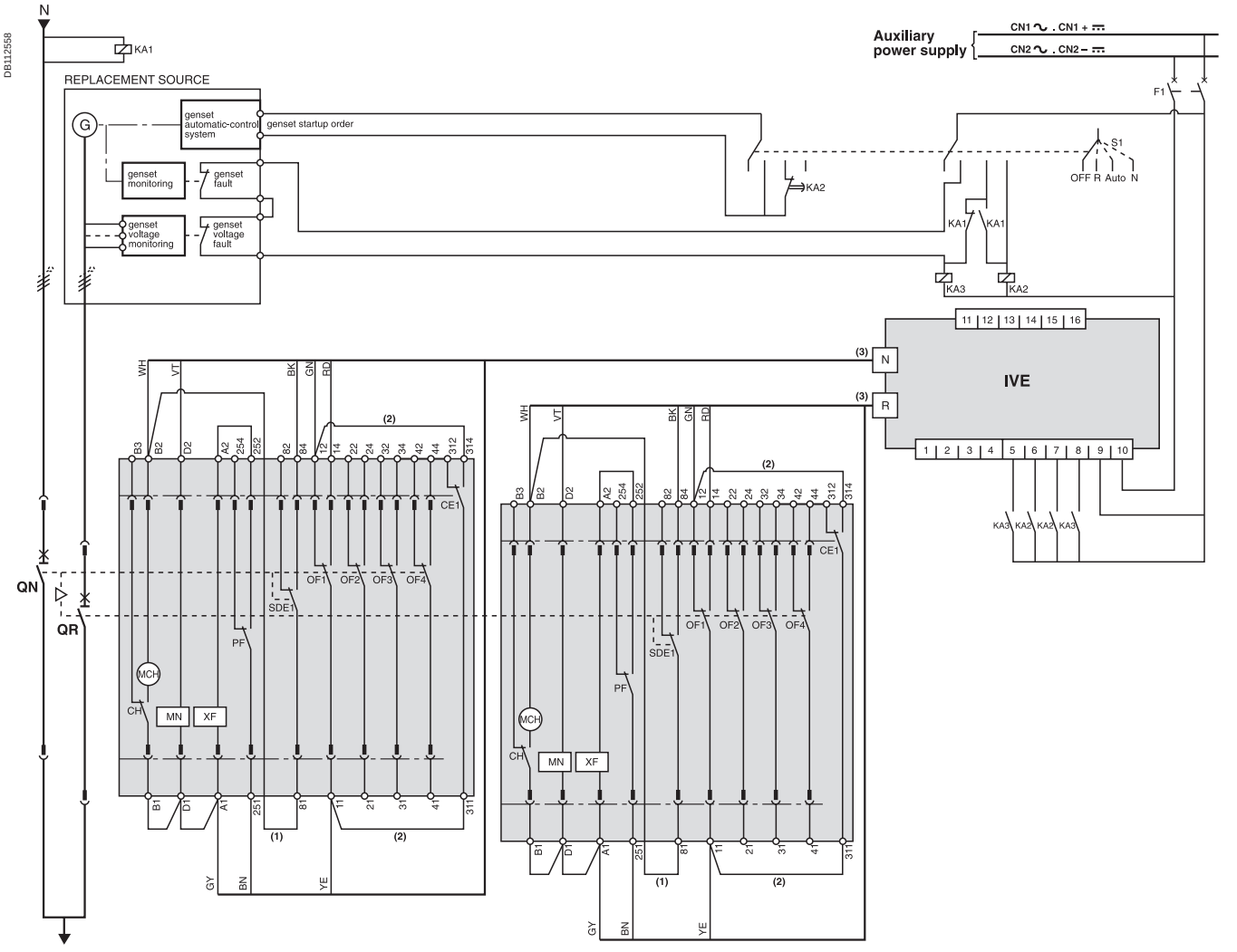
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

2 Masterpact NT or NW devices

Diagram no. 51156905

Automatic-control system for replacement source generator set with lockout after a fault (with MN)



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired for the "without lockout after a fault" solution.
(2) Not to be wired on fixed version.
(3) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
XF	*standard closing voltage release*
MN	*undervoltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
IVE	*electrical interlocking and terminal block unit*
F1	*auxiliary power supply circuit breaker*
F2	*circuit breaker (high breaking capacity)*
S1	*control switches*
KA1	*auxiliary relay*
KA2	*time delay for genset startup order to avoid starting the genset for transient UN disturbances*
KA3	*auxiliary relay*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

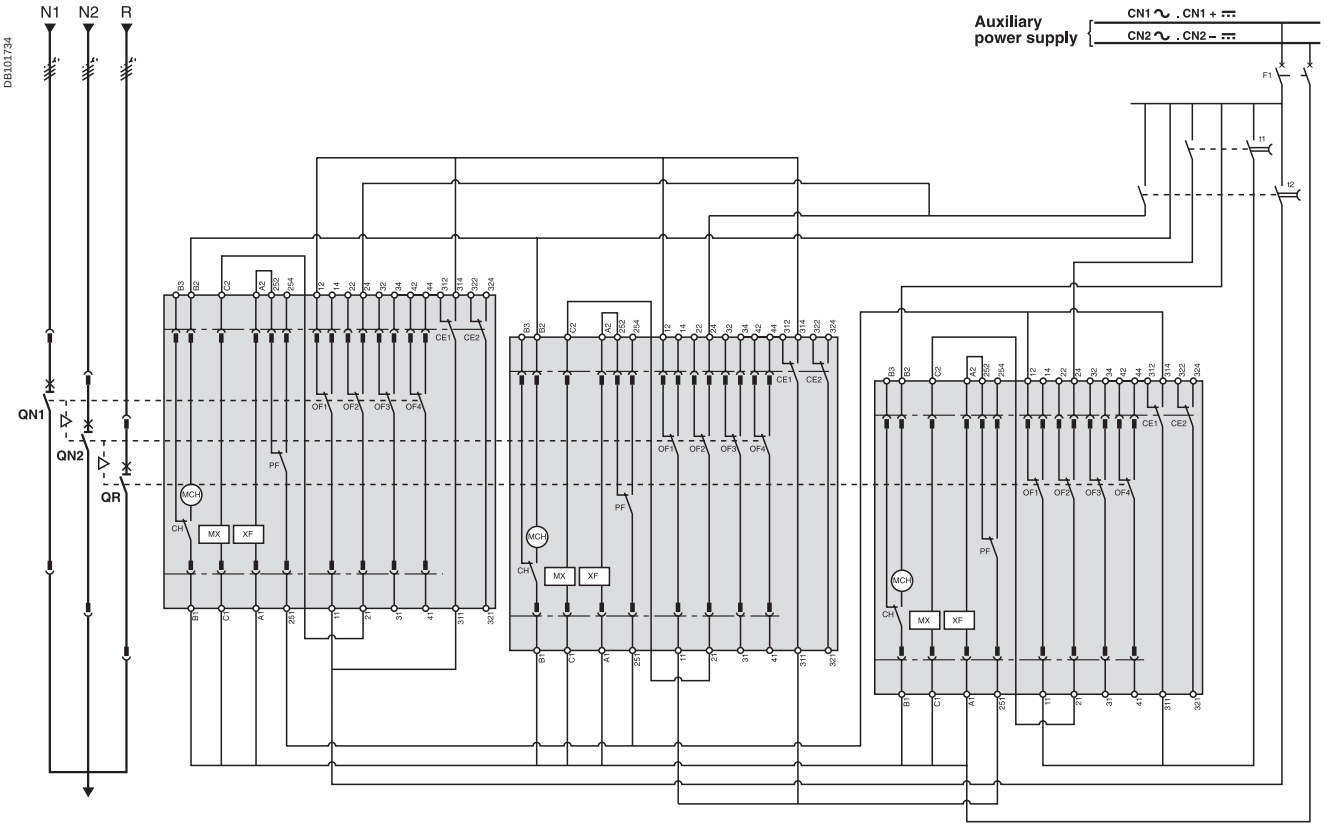
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156906

2 Normal sources and 1 Replacement source: electrical interlocking without lockout after a fault



Legends

QN...	*"Normal" source Masterpact NW*
QR	*"Replacement" source Masterpact NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF..	*breaker ON/OFF indication contact*
PF	*"ready-to-close" contact*
CE	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
t1	*order for transfer from "R" to "N1 + N2" (QN1 and QN2 closing time delay = 0.25 sec. minimum)*
t2	*order for transfer from "N1 + N2"to "R" (QR closing time delay = 0.25 sec. minimum)*

States permitted by mechanical interlocking system

Normal 1	Normal 2	Replacement
0	0	0
1	1	0
0	0	1
1	0	0
0	1	0

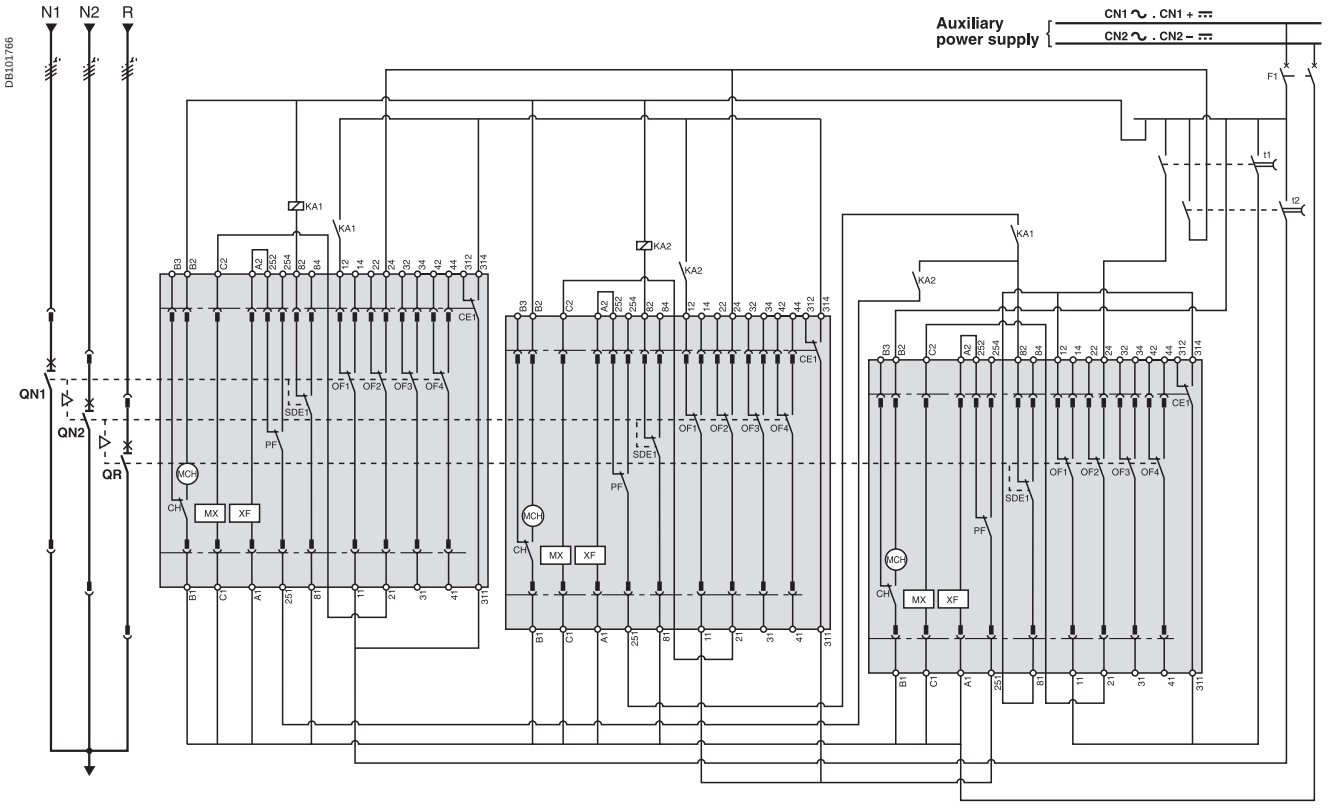
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156907

2 Normal sources and 1 Replacement source: electrical interlocking with lockout after a fault



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

Legends

QN...	*"Normal" source Masterpact NW*
QR	*"Replacement" source Masterpact NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
S1	*control switches*
S2	*source selection switches*
t1	*order for transfer from "R" to "N1 + N2" (QN1 and QN2 closing time delay = 0.25 sec. minimum)*
t2	*order for transfer from "N1 + N2"to "R" (QR closing time delay = 0.25 sec. minimumm)*

States permitted by mechanical interlocking system

Normal 1	Normal 2	Replacement
0	0	0
1	1	0
0	0	1
1	0	0
0	1	0

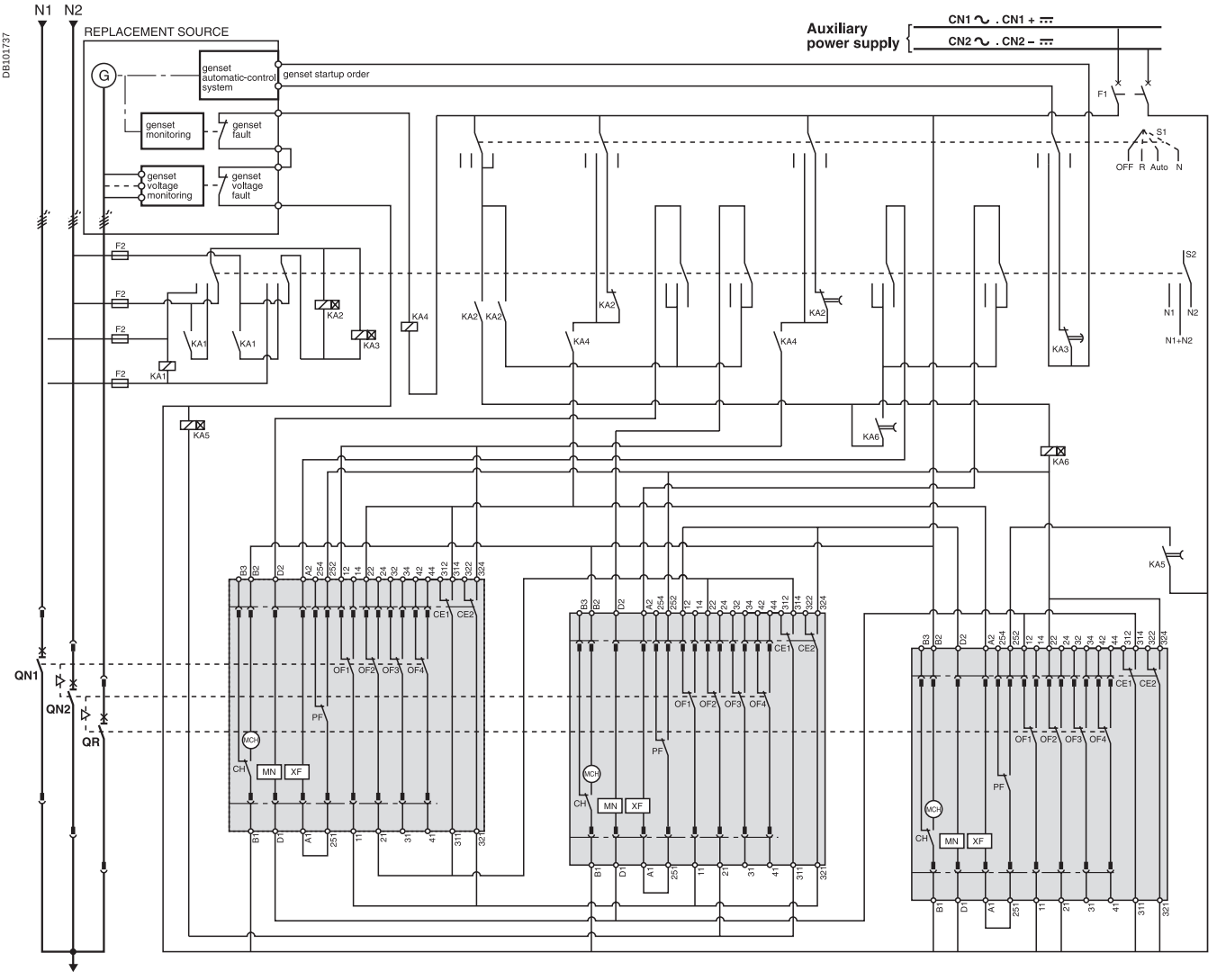
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156908

2 Normal sources and 1 Replacement source: automatic-control system for generator set without lockout after a fault (with MN)



Legends

QN...	*"Normal" source Masterpact NW*
QR	*"Replacement" source Masterpact NW*
MCH	*spring-charging motor*
XF	*standard closing voltage release*
MN	*undervoltage release*
OF...	*breaker ON/OFF indication contact*
PF	*"ready-to-close" contact*
CE...	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
F2/F3	*circuit breaker (high breaking capacity)*
S1	*control switches*
S2	*source selection switches*
KA1	*auxiliary relay*
KA2	*auxiliary relays with 10 to 180 sec. time delay*
KA3	*auxiliary relays with 0.1 to 30 sec. time delay*
KA4	*auxiliary relay*
KA5	*auxiliary relays with 0.25 sec. time delay*
KA6	*auxiliary relays with 0.25 sec. time delay*

States permitted by mechanical interlocking system and with associated automatism

Normal 1	Normal 2	Replacement
0	0	0
1	1	0
0	0	1
1	0	0
0	1	0

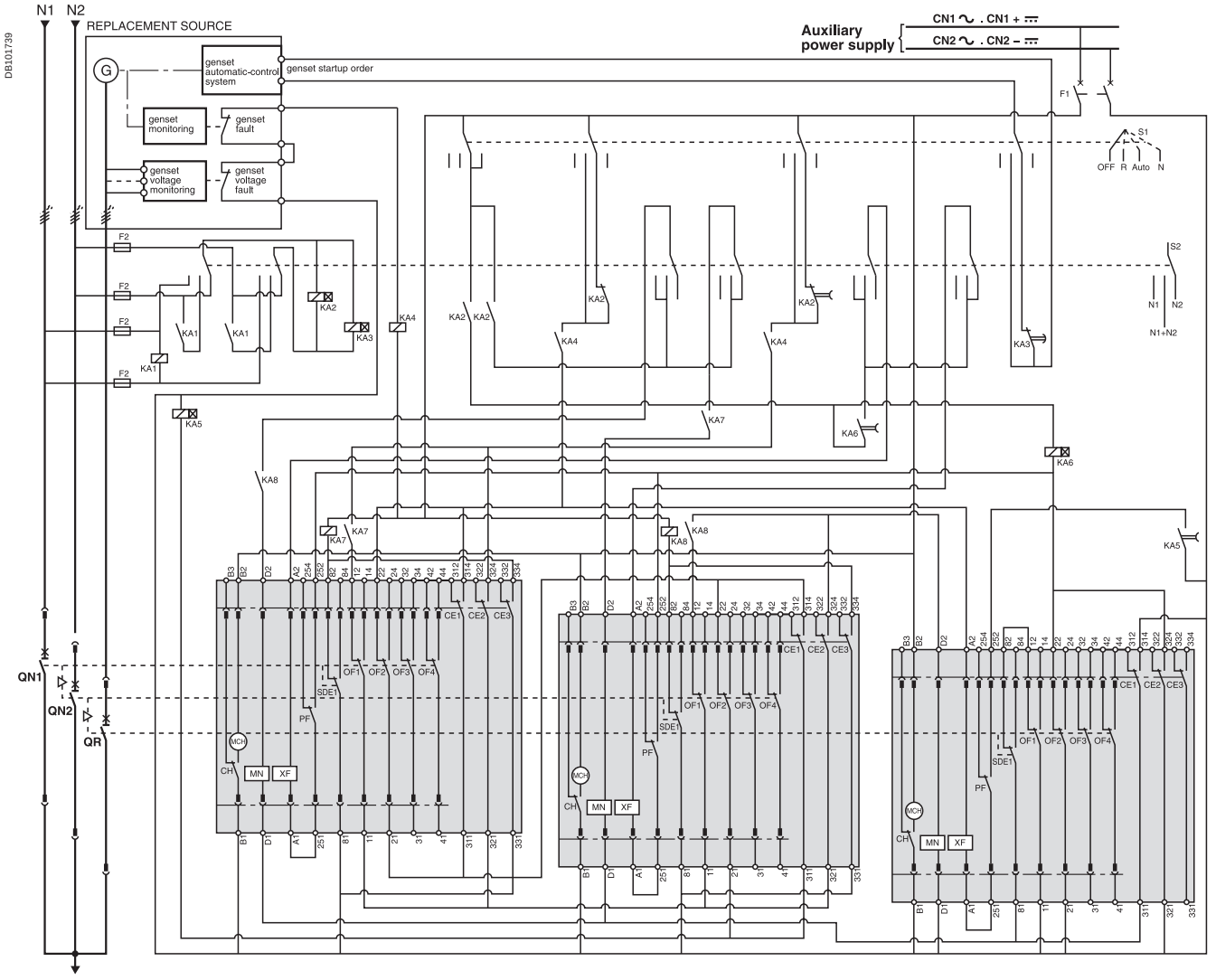
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156909

2 Normal sources and 1 Replacement source: automatic-control system for generator set with lockout after a fault (with MN)



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

Legends

QN...	*"Normal" source Masterpact NW*
QR	*"Replacement" source Masterpact NW*
MCH	*spring-charging motor*
XF	*standard closing voltage release*
MN	*undervoltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE...	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
F2/F3	*circuit breaker (high breaking capacity)*
S1	*control switches*
S2	*source selection switches*
KA1	*auxiliary relay*
KA2	*auxiliary relays with 10 to 180 sec. time delay*
KA3	*auxiliary relays with 0.1 to 30 sec. time delay*
KA4	*auxiliary relay*
KA5	*auxiliary relays with 0.25 sec. time delay*
KA6	*auxiliary relays with 0.25 sec. time delay*
KA7	*auxiliary relay*
KA8	*auxiliary relay*

States permitted by mechanical interlocking system and with associated automatism

Normal 1	Normal 2	Replacement
0	0	0
1	1	0
0	0	1
1	0	0
0	1	0

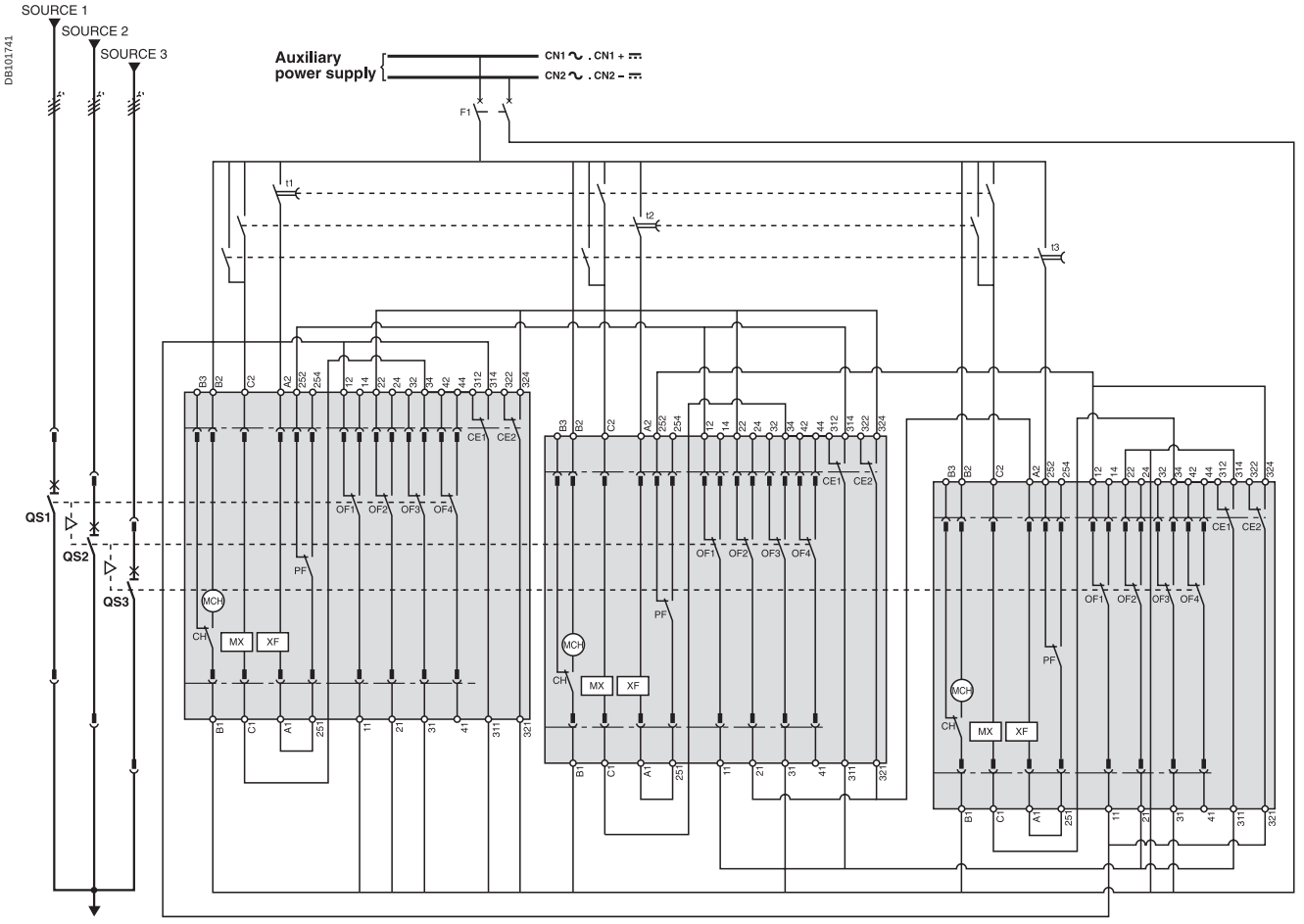
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156910

3 sources with only 1 device closed: electrical interlocking without lockout after a fault



Legends

QS...	*"Source" Masterpact NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
PF	*"ready-to-close" contact*
CE...	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
t1	*order for transfer to "Source 1" (QS1 closing time delay = 0.25 sec. minimum)*
t2	*order for transfer to "Source 2" (QS2 closing time delay = 0.25 sec. minimum)*
t3	*order for transfer to "Source 3" (QS3 closing time delay = 0.25 sec. minimum)*

States permitted by mechanical interlocking system

Source 1	Source 2	Source 3
0	0	0
1	0	0
0	1	0
0	0	1

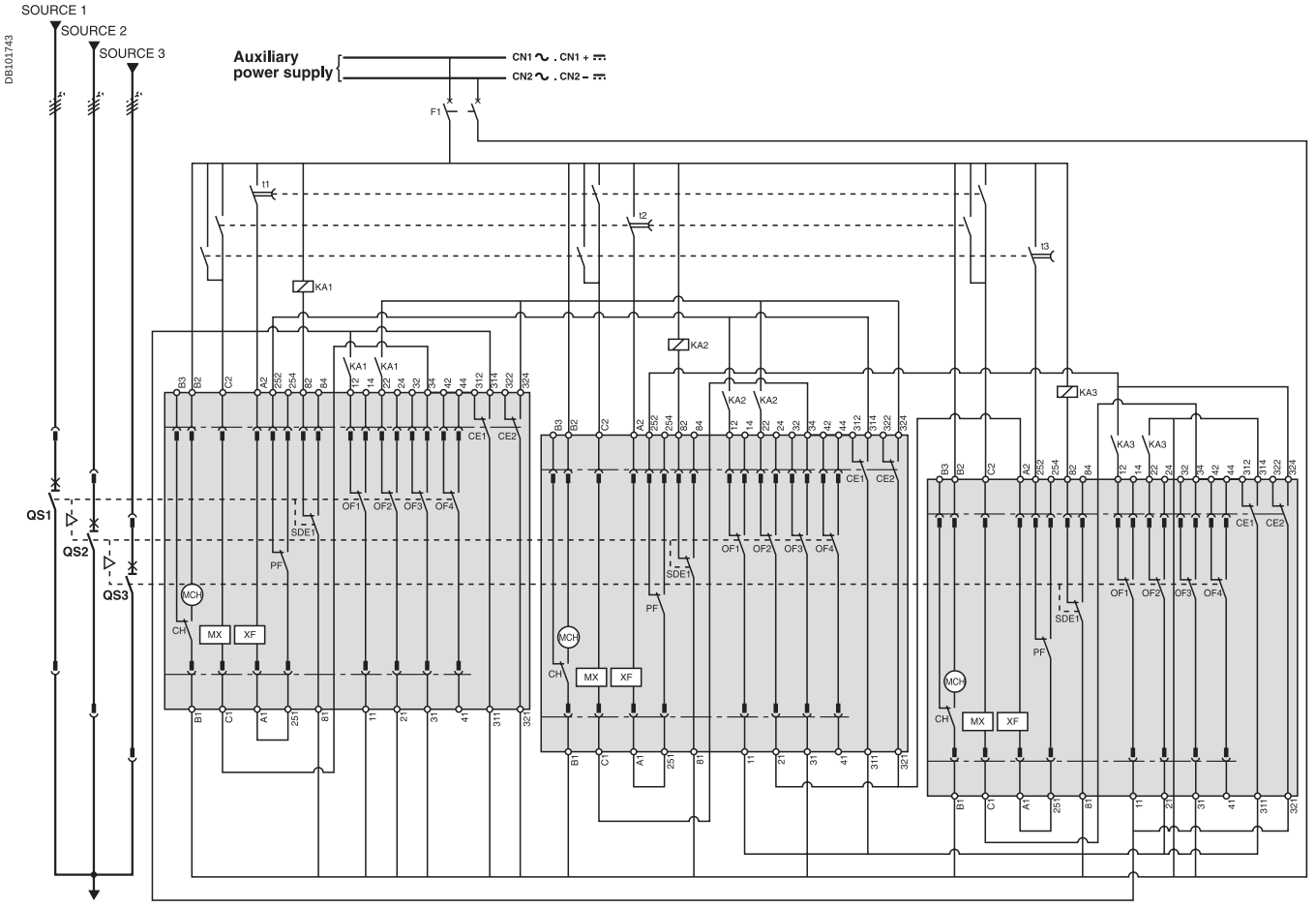
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156911

3 sources with only 1 device closed: electrical interlocking with lockout after a fault



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

Legends

QS...	*"Source" Masterpact NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE...	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
t1	*order for transfer to "Source 1" (QS1 closing time delay = 0.25 sec. minimum)*
t2	*order for transfer to "Source 2" (QS2 closing time delay = 0.25 sec. minimum)*
t3	*order for transfer to "Source 3" (QS3 closing time delay = 0.25 sec. minimum)*
KA1	*auxiliary relays*
KA2	*auxiliary relays*
KA3	*auxiliary relays*

States permitted by mechanical interlocking system

Source 1	Source 2	Source 3
0	0	0
1	0	0
0	1	0
0	0	1

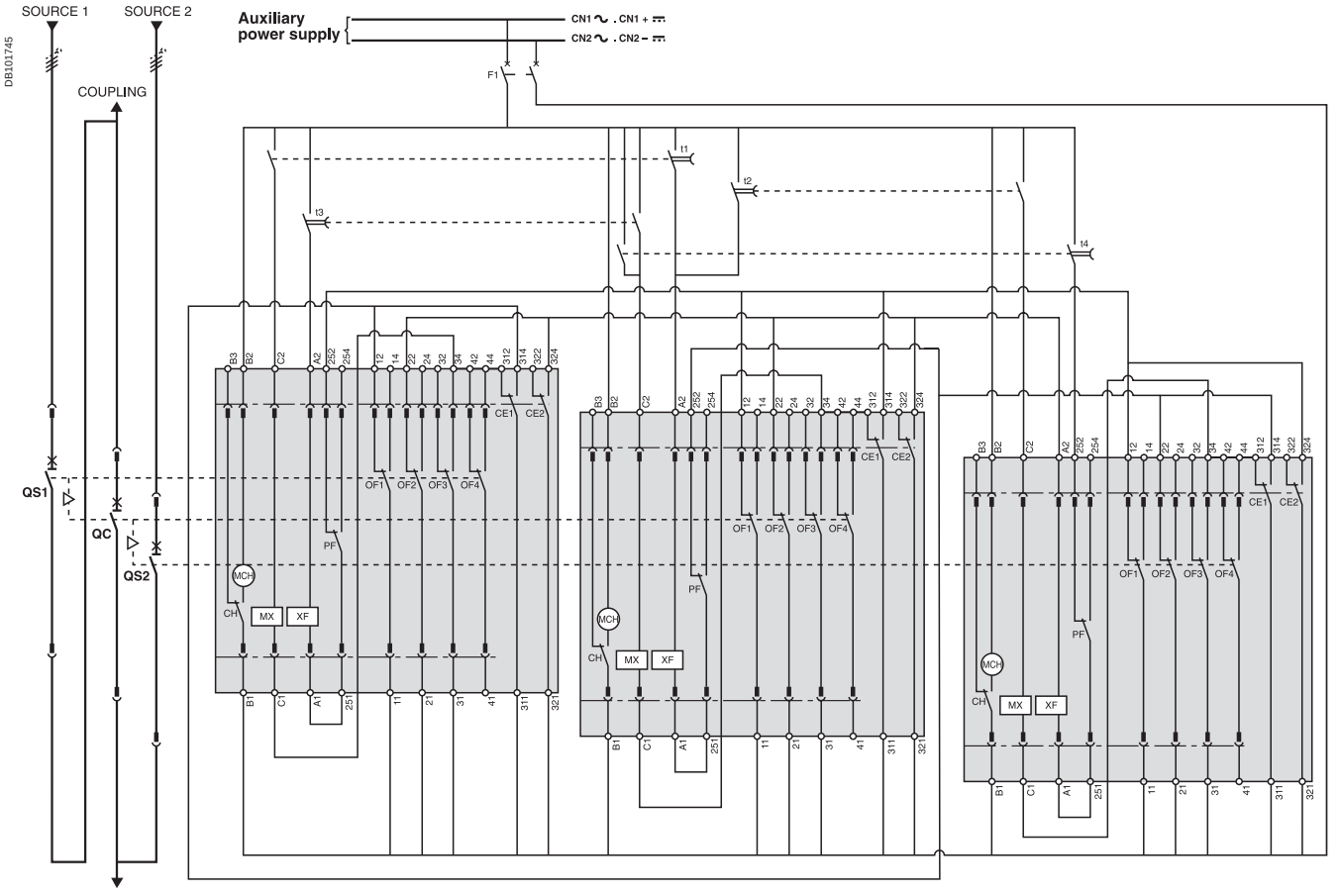
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156912

2 sources and 1 coupling: electrical interlocking without lockout after a fault



Legends

QS...	*"Source" Masterpact NW*
QC	*"Coupling" Masterpact NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
PF	*"ready-to-close" contact*
CE...	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
t1	*coupling order for "Source 1 failure" (QC closing time delay = 0.25 sec. minimum)*
t2	*coupling order for "Source 2 failure" (QC closing time delay = 0.25 sec. minimum)*
t3	*coupling order for "Source 1 restored" (QS1 closing time delay = 0.25 sec. minimum)*
t4	*coupling order for "Source 2 restored " (QS2 closing time delay = 0.25 sec. minimum)*

States permitted by mechanical interlocking system

Source 1	Source 2	Coupling
0	0	0
1	1	0
1	0	1
0	1	1
1	0	0
0	1	0
0	0	1

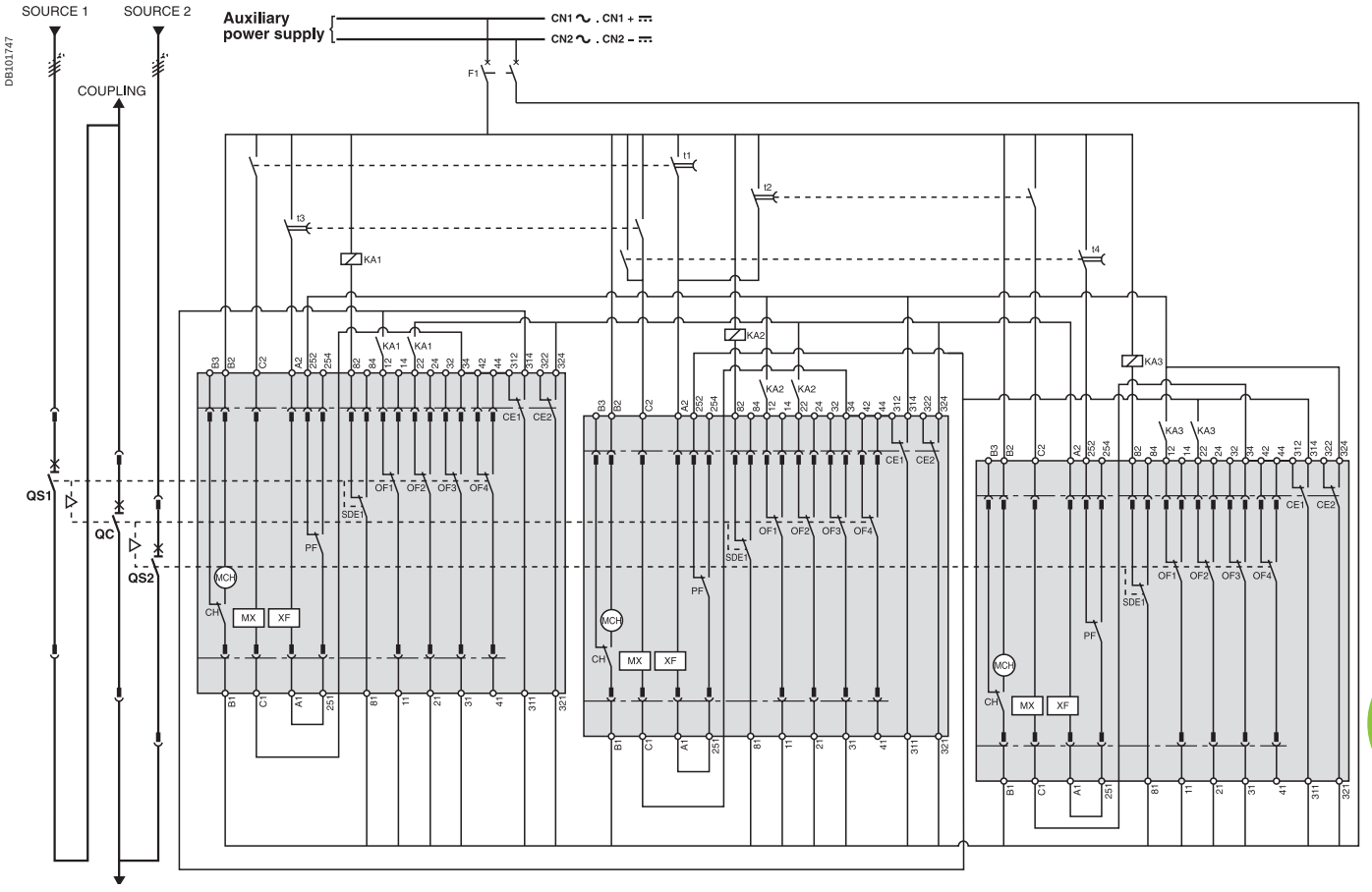
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156913

2 sources and 1 coupling: electrical interlocking with lockout after a fault



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

Legends

QS...	*"Source" Masterpact NW*
QC	*"Coupling" Masterpact NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE...	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
t1	*coupling order for "Source 1 failure" (QC closing time delay = 0.25 sec. minimum)*
t2	*coupling order for "Source 2 failure" (QC closing time delay = 0.25 sec. minimum)*
t3	*coupling order for "Source 1 restored" (QS1 closing time delay = 0.25 sec. minimum)*
t4	*coupling order for "Source 2 restored " (QS2 closing time delay = 0.25 sec. minimum)*
KA1	*auxiliary relays*
KA2	*auxiliary relays*
KA3	*auxiliary relays*

States permitted by mechanical interlocking system

Source 1	Source 2	Coupling
0	0	0
1	1	0
1	0	1
0	1	1
1	0	0
0	1	0
0	0	1

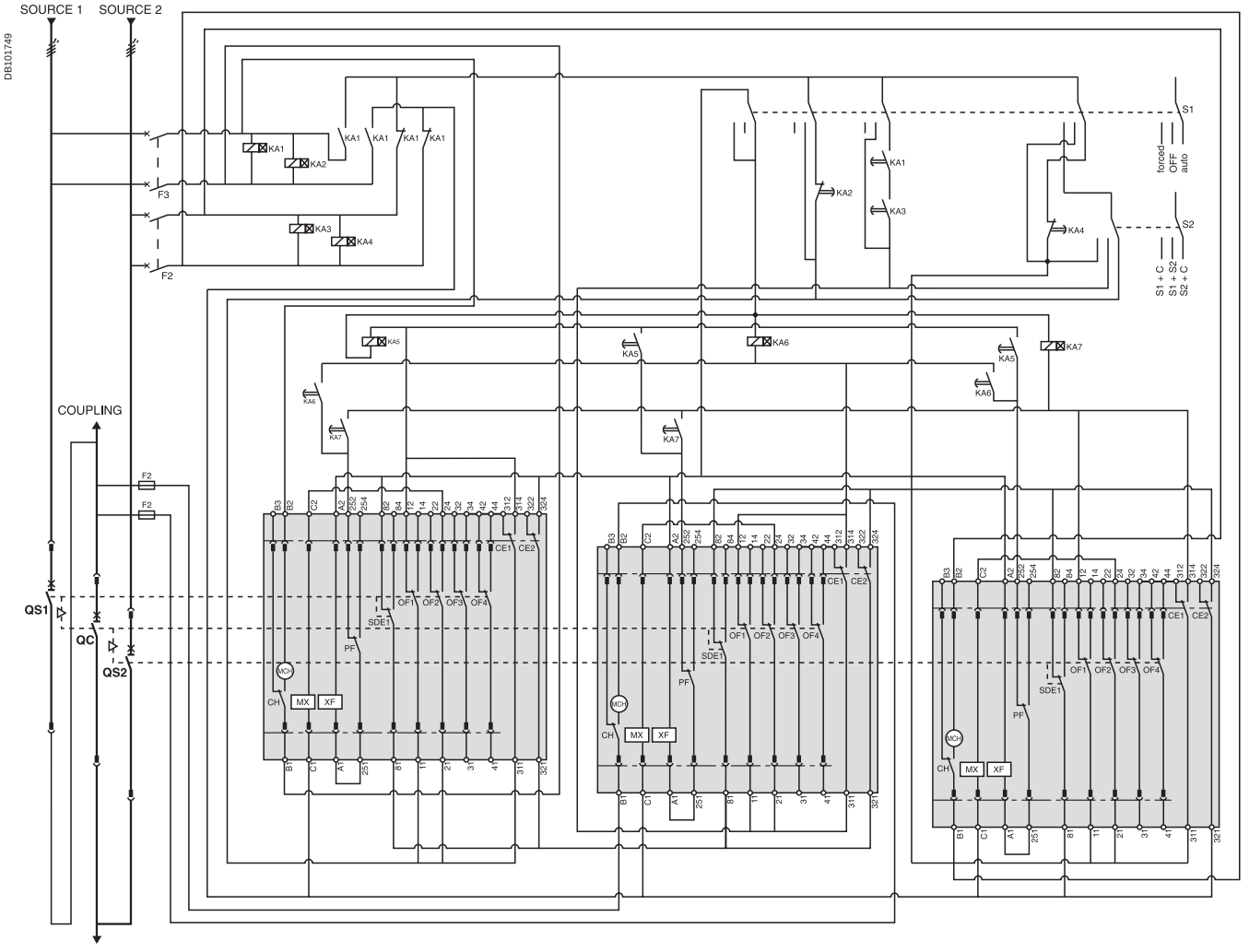
Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

Remote-operated source-changeover systems

3 Masterpact NW devices

Diagram no. 51156914

2 sources and 1 coupling: automatic-control system with lockout after a fault



ATTENTION

The diagram shows the electrical wiring for circuit breakers.
When wiring the SDE with **switch-disconnectors, connect the SDE to terminals 81 and 84.**

Legends

QS...	*"Source" Masterpact NW*
QC	*"Coupling" Masterpact NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF...	*breaker ON/OFF indication contact*
SDE1	*"fault trip" indication contact*
PF	*"ready-to-close" contact*
CE...	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
F1	*auxiliary power supply circuit breaker*
F2/F3	*circuit breaker (high breaking capacity)*
S1	*control switches*
S2	*source selection switches*
KA1	*auxiliary relays with 10 to 180 sec. time delay*
KA2	*auxiliary relays with 0.1 to 30 sec. time delay*
KA3	*auxiliary relays with 10 to 180 sec. time delay*
KA4	*auxiliary relays with 0.1 to 30 sec. time delay*
KA5	*auxiliary relays with 0.25 sec. time delay*
KA6	*auxiliary relays with 0.25 sec. time delay*
KA7	*auxiliary relays with 0.25 sec. time delay*

States permitted by mechanical interlocking system and with associated automatism

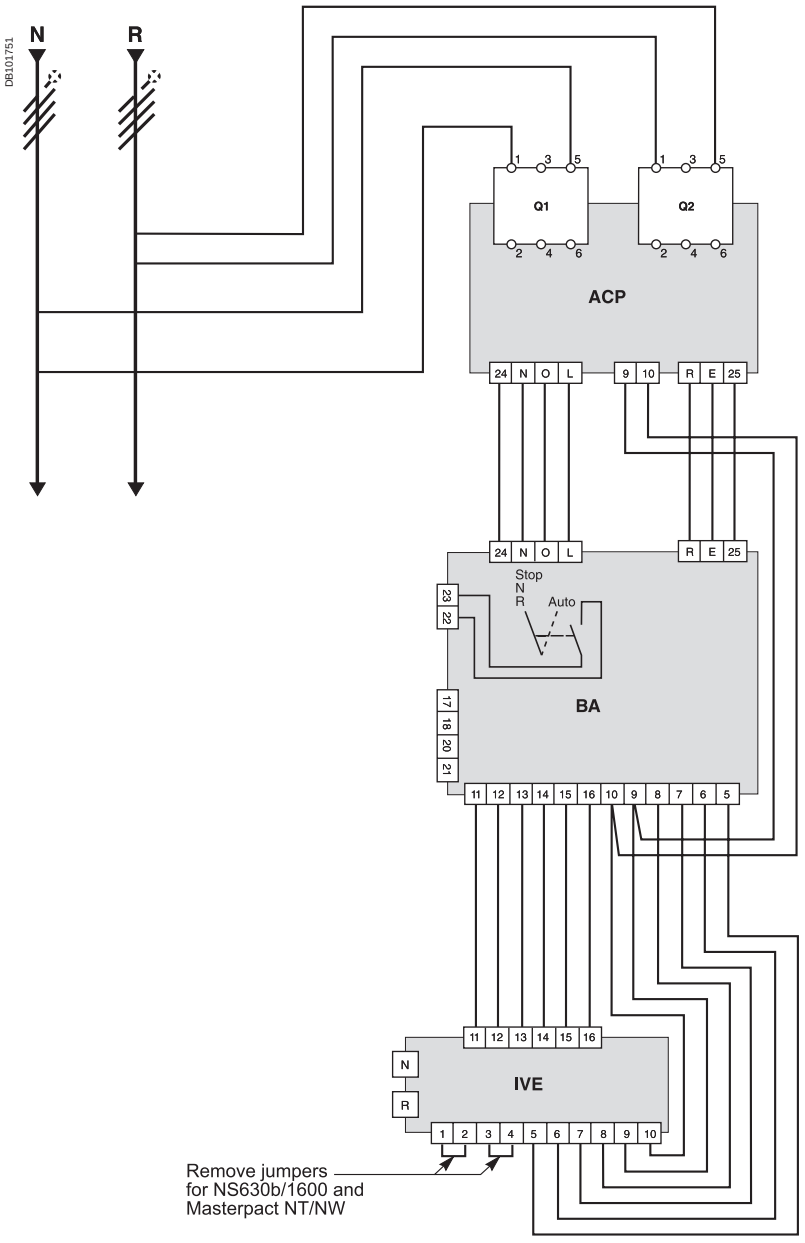
Source 1	Source 2	Coupling
0	0	0
1	1	0
1	0	1
0	1	1
1	0	0
0	1	0
0	0	1

Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (electrical operation, MCH, MX, MN...).

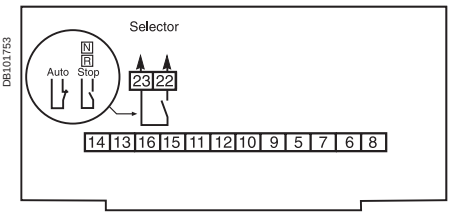
Source-changeover systems with automatic controllers

2 Compact NS100/1600 or Masterpact NT/NW devices

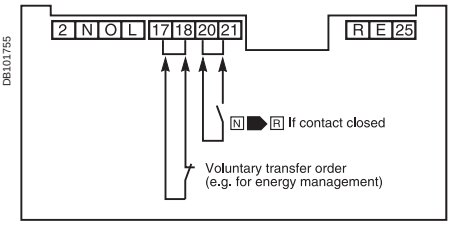
Source-changeover system with BA controller



Coupling



Transfer conditions



Terminals 20 and 21:
additional control contact (not part of controller).

Tests on "Normal" and "Replacement" source voltages
The single-phase check for UN and UR is implemented across terminals 1 and 5 of circuit breakers Q1 and Q2.

Legends

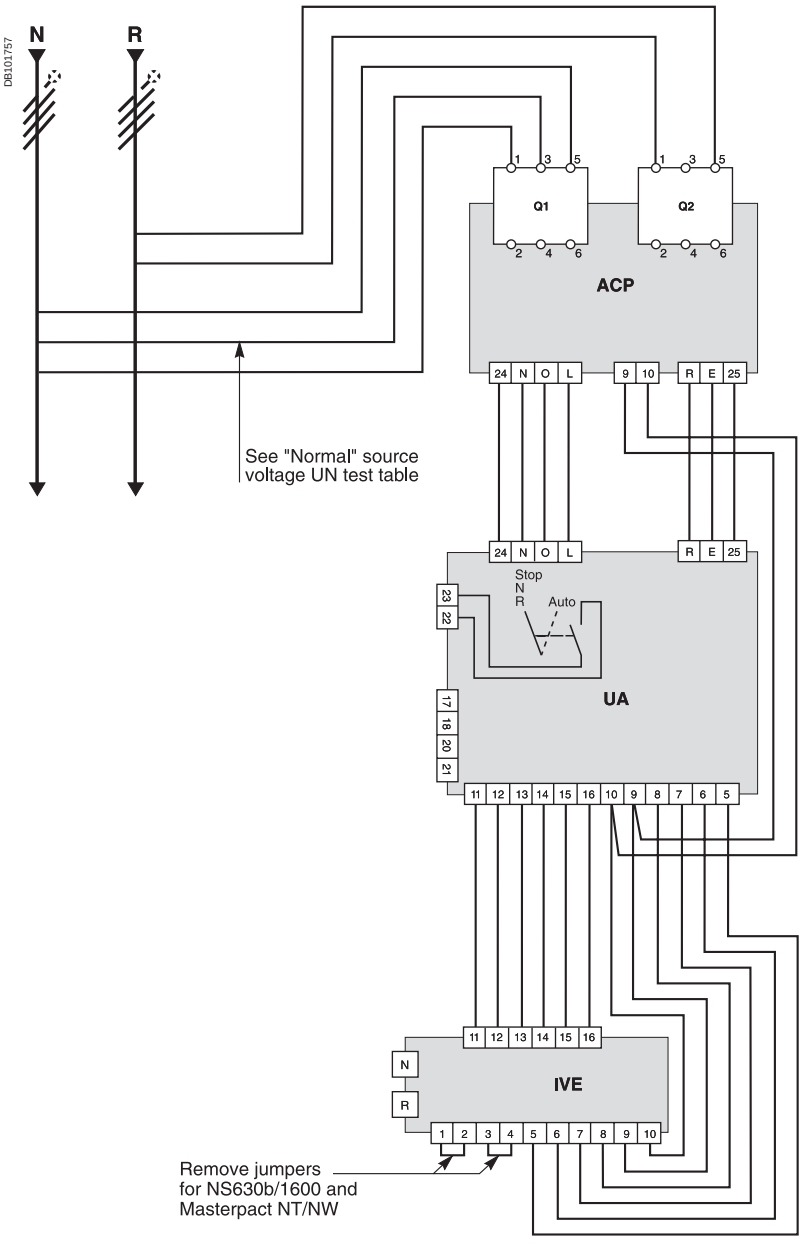
Q1	*circuit breaker supplying and protecting the automatic-control circuits for the "Normal" source*
Q2	*circuit breaker supplying and protecting the automatic-control circuits for the "Replacement" source*
ACP	*auxiliaries control plate*
BA	*automatic controller*
IVE	*electrical interlocking and terminal block unit*

Note:
diagram shown with circuits de-energised, circuit breakers open and relays in normal position.

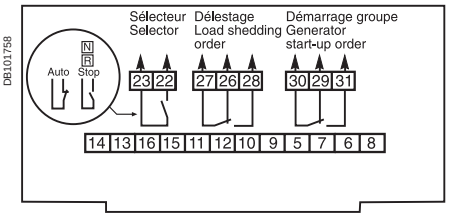
Source-changeover systems with automatic controllers

2 Compact NS100/1600 or Masterpact NT/NW devices

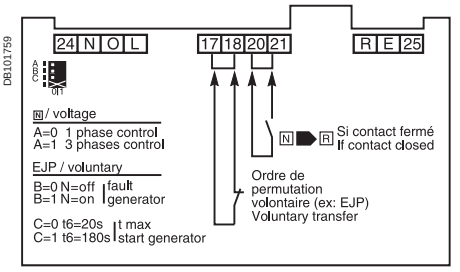
Source-changeover system with UA controller



Load shedding and genset management



Transfer conditions

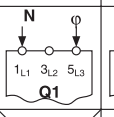
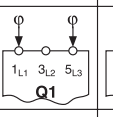
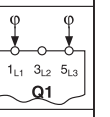
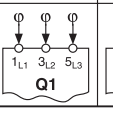
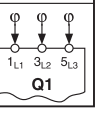


Terminals 20 and 21:
additional control contact (not part of controller).

Tests on "Normal" and "Replacement" source voltages

"Normal" source voltage UN test

DB101761

Ref. UA UA150	29472 29474	29472 29474	29473 29475
Supply voltage / Switch position	N / φ 220/240VAC 50/60Hz	φ / φ 220/240VAC 50/60Hz	φ / φ 380/415VAC 50/60Hz 440V - 60Hz
A = 0			
A = 1			

"Replacement" source voltage UR test
The single-phase check for UR is implemented across terminals 1 and 5 of circuit breaker Q2.

Legends

Q1	*circuit breaker supplying and protecting the automatic-control circuits for the "Normal" source*
Q2	*circuit breaker supplying and protecting the automatic-control circuits for the "Replacement" source*
ACP	*auxiliaries control plate*
UA	*automatic controller*
IVE	*electrical interlocking and terminal block unit*

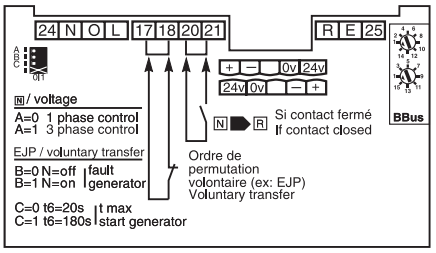
Note:
diagram shown with circuits de-energised, circuit breakers open and relays in normal position.

Source-changeover systems with automatic controllers

2 Compact NS100/1600 or Masterpact NT/NW devices

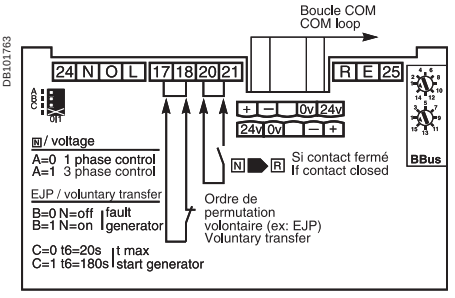
Controller settings

DB101762



Using communication functions

DB101763



Tests on “Normal” source voltage

A = 0 single-phase test,

A = 1 three-phase test.

Voluntary transfert (e.g. for energy management)

■ action in the event of genset failure

B = 0 circuit breaker N opens,

B = 1 circuit breaker N remains closed.

■ maximum permissible genset startup time (T6)

C = 0 T = 120 s,

C = 1 T = 180 s.

After this time has elapsed, the genset is considered to have failed.

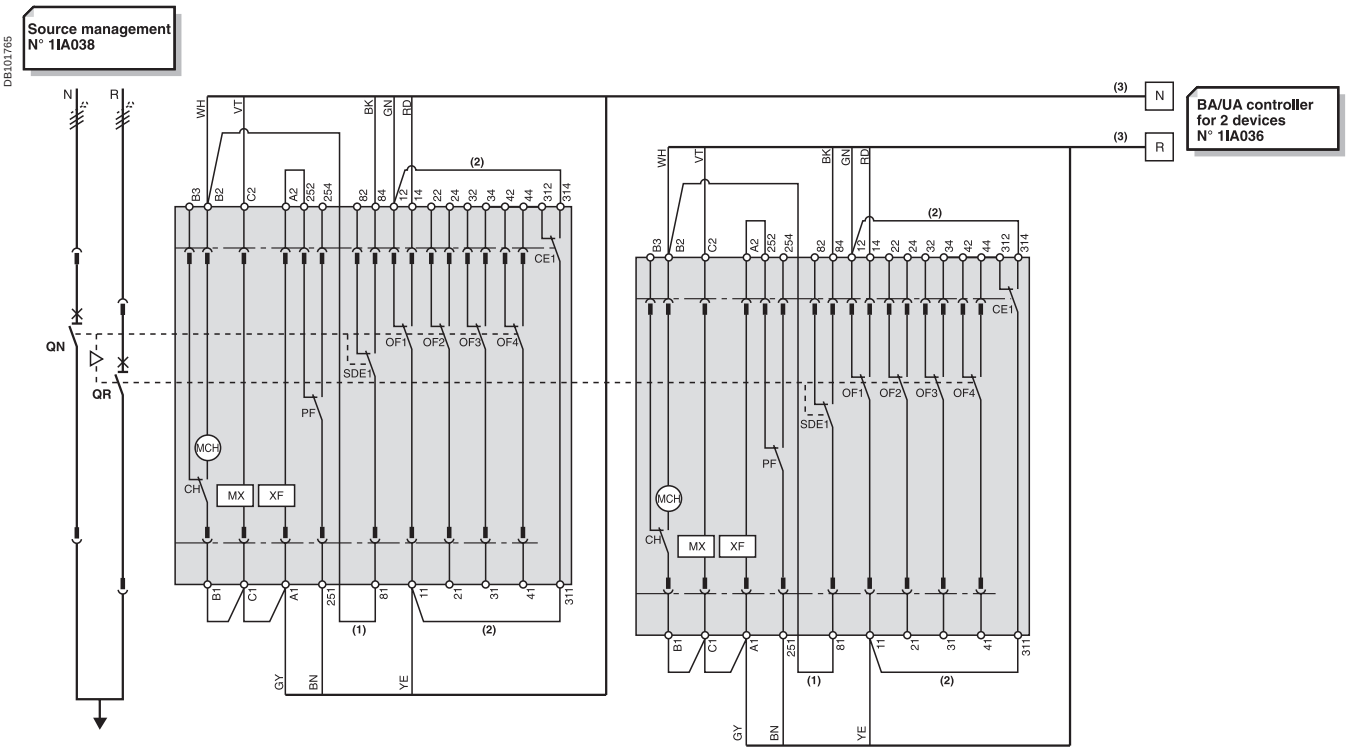
The address of the UA controller is set using the two BBus dials.

Source-changeover systems with automatic controllers

2 Masterpact NT or NW devices

Diagram no. 51156903

Electrical interlocking with lockout after a fault



ATTENTION

The diagram shows the electrical wiring for circuit breakers. When wiring the SDE with **switch-disconnectors, connect wire BK to terminal 82.**

(1) Not to be wired for the "without lockout after a fault" solution.
(2) Not to be wired on fixed version.
(3) Prefabricated wiring supplied.

Legends

QN	*"Normal" source Masterpact NT or NW*
QR	*"Replacement" source Masterpact NT or NW*
MCH	*spring-charging motor*
MX	*standard opening voltage release*
XF	*standard closing voltage release*
OF..	*breaker ON/OFF indication contact*
SDE1	*"fault-trip" indication contact*
PF	*"ready-to-close" contact*
CE1	*"connected-position" indication contact (carriage switch)*
CH	*"springs charged" indication contact*
IVE	*electrical interlocking and terminal block unit*

Wiring colour codes

RD	GN	BK	VT	YE	GY	WH	BN
red	green	black	violet	yellow	grey	white	brown

States permitted by mechanical interlocking system

Normal	Replacement
0	0
1	0
0	1

Note:
diagram shown with circuit breakers in connected position, open, charged, and ready to close.

TOOLS

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- all the components
- of an installation from a global point of view
- all the IEC standards modifications
- all the fundamental electrotechnical knowledge
- all the design stages, from medium to low voltage.

Catalogue numbers and order forms

Presentation *2*
Functions and characteristics *A-1*
Dimensions *B-1*
Electrical diagrams *C-1*

Source-changeover systems for 2 devices **D-2**
Interpact INS40 to INS2500 and INV100 to INV2500 D-2
Compact NS100 to NS630 D-3
Compact NS630b to NS1600 circuit breakers and switch-disconnectors D-5
Masterpact NT circuit breakers and switch-disconnectors D-7

Source-changeover systems for 2 or 3 devices **D-8**
Masterpact NW circuit breakers and switch-disconnectors D-8

Source-changeover systems for 2 devices **D-10**
Interpact INS40 to INS630 Switch-disconnectors D-10
Compact NS100 to NS630 / Circuit breakers and switch-disconnectors D-12
Compact NS630b to NS1600 / Circuit breakers and switch-disconnectors D-14
Masterpact NT or NW / Circuit-breakers and switch-disconnectors D-16

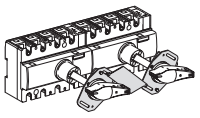
Source-changeover systems for 3 devices **D-18**
Masterpact NW / Circuit breakers and switch-disconnectors D-18

Source-changeover systems for 2 devices

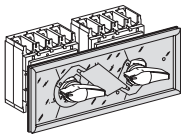
Interpact INS40 to INS2500 and INV100 to INV2500

Manual source-changeover systems Interpact INS40 to INS630 and INV100 to INV630

Interlocking for rotary handle

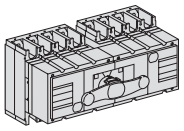

DB107710

	3/4P
Mechanical device for INS40 to INS160 equipped with an extended rotary handle	28953


E89624

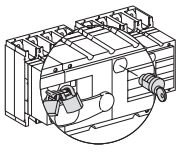
Mechanical device for INS250-100 to INS250/INV100 to INV250 equipped with a direct or extended rotary handle	31073
Mechanical device for INS/INV320 to INS/INV630 equipped with a direct or extended rotary handle	31074

Complete assembly source-changeover systems Interpact INS250 to INS630


E89638

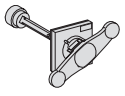
	3P	4P
With Interpact INS250-100A	31140	31141
With Interpact INS250-160A	31144	31145
With Interpact INS250-200A	31142	31143
With Interpact INS250	31146	31147
With Interpact INS320	31148	31149
With Interpact INS400	31150	31151
With Interpact INS500	31152	31153
With Interpact INS630	31154	31155

Locking for INS complete source changeover assembly


DB107711

Handle locking by 1 to 3 padlocks (in OFF position)		Built in
By keylock	Keylocking device	31097
	+ Ronis 1351B.500 keylock	41940
	or + Profalux KS5 B24 D4Z keylock	42888

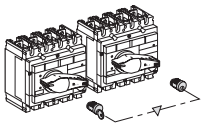
Rotary handle


E89617

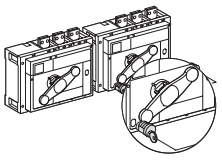
Extended front control for complete source changeover assembly	31055

Manual source-changeover systems Interpact INS250 to INS2500 and INV250 to INV2500 by keylock

Interlocking


DB101549

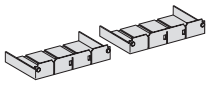
		3/4P
Locking device for Ronis/Profalux keylocks on INS250-100 to INS250/INV100 to INV250	2x	31087
Locking device for Ronis/Profalux keylocks on INS/INV320 to INS/INV630	2x	31088

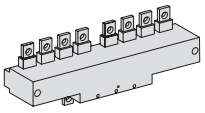

E89626

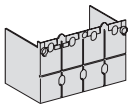
Locking device for Ronis/Profalux keylocks on INS/INV630b to INS/INV2500	2x	31291
+ Ronis 1351B.500 keylock (2 keylocks / 1 key)		41950
or + Profalux KS5 B24 D4Z keylock (2 keylocks / 1 key)		42878

Connection accessories

Downstream coupling accessories


DB101062


E50998

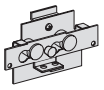

DB101063

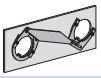
		3P	4P
Short terminal shields	INS250 (1 pair)	29322	29322
	INS320 to INS630 (1 pair)	32563	32563
"Normal" source / "replacement" source	INS250	29358	29359
	INS320 to INS630	32619	32620
Long terminal shields	INS250 (1 pair)	29324	29324
	INS320 to INS630 (1 pair)	32583	32583

Source-changeover systems for 2 devices (cont.)
Compact NS100 to NS630

Manual source changeover

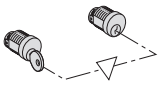
Mechanical interlocking

E21288


E18780


For toggle controlled circuit breakers	NS100...250	**29354**
	NS400...630	**32614**
For rotary handled circuit breakers	NS100...250	**29369**
	NS400...630	**32621**

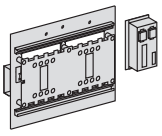
Key lock interlocking

E23851


For rotary handled or remote controlled circuit breakers		
2 locks, 1 key	Ronis 1351B.500	**41950**
	Profalux KS5 B24 D4Z	**42878**

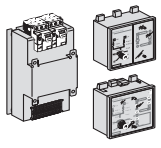
Remote controlled source changeover

Plate + IVE

E33419


Source “normal”/source “replacement” (identical voltages)		24 to 250 V DC	48 to 415 V AC 50/60 Hz 440 V 60 Hz
NS100...250/NS100...250			
Plate + IVE [1]		**29351**	**29350**
Plate		**29349**	**29349**
IVE		**29356**	**29352**
Auxiliary switches 2 OF + 2 SDE	4 x	**29450**	4 x **29450**
Spare wiring system (device/IVE)		**29365**	**29365**
Back sockets option add:	Only long RC	[2]	[2]
Plug in base option add:	Plug in kit	[2]	[2]
NS400...630/NS100...630			
Plate + IVE [1]		**32611**	**32610**
Plate		**32609**	**32609**
IVE		**29356**	**29352**
Auxiliary switches 2 OF + 2 SDE	4 x	**29450**	4 x **29450**
Spare wiring system (device/IVE)		**29365**	**29365**
Back sockets option add:	Only long RC	[2]	[2]
Plug in base option add:	Plug in kit	[2]	[2]
	Adaptator kit for NS100...250 1 x	**32618**	1 x **32618**

Control unit option

E33420


	110/127 V AC 50/60 Hz	220/240 V AC 50/60 Hz	380/415 V AC 50/60 Hz 440 V 60 Hz
ACP + control unit BA [1]		**29470**	**29471**
Plate ACP		**29363**	**29364**
Control unit BA		**29376**	**29377**
ACP + control unit UA [1]	**29448**	**29472**	**29473**
Plate ACP	**29447**	**29363**	**29364**
Control unit UA	**29446**	**29378**	**29380**
ACP + control unit UA150 [1] (communication option)		**29474**	**29475**
Plate ACP		**29363**	**29364**
Control unit UA150		**29379**	**29381**

Wiring cable between BA/UA and ACP/IVE

	29368	**29368**

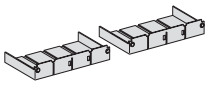
(1) The supply voltages BA/UA control unit, ACP plate, IVE and the remote control must be identical whatever the source changeover type.
(2) See products pages.

Source-changeover systems for 2 devices (cont.)
Compact NS100 to NS630 (cont.)

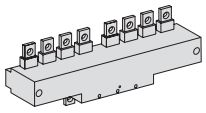
Connection accessories

Downstream coupling accessories

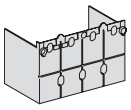
DB101062



E50998



DB101063

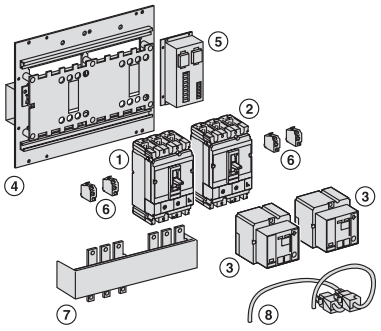


		3P	4P
Short terminal shields (1 pair)	NS100...250/NS100...250	**29321**	**29322**
	NS400...630/NS400...630	**32562**	**32563**
Source “normal”/source “replacement”	NS100...250/ NS100...250 250 A	**29358**	**29359**
	NS400...630/ NS400...630 630 A	**32619**	**32620**
Long terminal shields (1 pair)	NS100...250/NS100...250		**29324**
	NS400...630/NS400...630		**32565**

Typical composition of remote controlled source changeover

Remote controlled source changeover

E33422

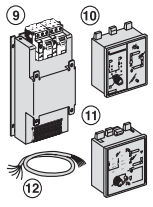


1 normal device N (1)
+ 1 replacement device R (2)
+ 2 remote controls (3)
+ 1 plate with interlocking (4) with IVE (5) and its wiring (8)
+ 2 plug-in kits (if plug-in version)
+ 1 adaptor kit for NS100...250 plug-in (if NS400...630 with NS100...250)
+ auxilary switches (6)
2 x (1 OF + 1 SDE) for Compact NS100...630
+ 1 downstream coupling accessory (7) for Compact NS100...630 (option)
+ long RC (if back connection)

IVE voltages and remote controls are identical.

Associated control unit

E33423



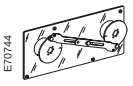
1 source changeover without associated control unit
+ 1 ACP (9) with BA control unit (10)
Or + 1 ACP (9) with UA control unit (11)
Or + 1 ACP (9) with UA150 control unit (11)
+ extension (12) for remote UA/BA connection on front of switchboard

IVE voltages + remote control + ACP + BA or UA are identical.

Source-changeover systems for 2 devices (cont.)
Compact NS630b to NS1600 circuit breakers and switch-disconnectors

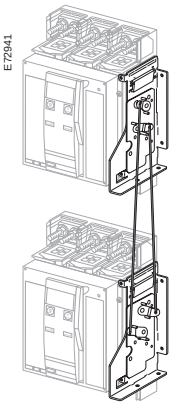
Interlocking for source-changeover systems

Mechanical interlocking


E70744

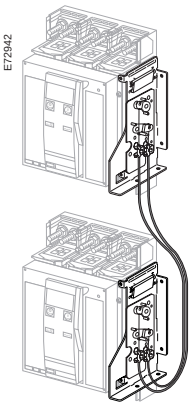
For 2 devices with extended rotary handles	**33890**

Interlocking using connecting rods for Compact electrically-operated devices


E72941

Complete assembly with 2 adaptation fixtures + rods	
2 Compact fixed devices	**33910**
2 Compact withdrawable devices	**33913**

Interlocking using cables for Compact electrically-operated devices


E72942

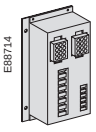
Complete assembly with 2 adaptation fixtures + cables	
2 Compact fixed devices	**33911**
2 Compact withdrawable devices	**33914**
1 Compact fixed + 1 Compact withdrawable device	**33915**

Source-changeover systems for 2 devices (cont.)
Compact NS630b to NS1600 circuit breakers and switch-disconnectors (cont.)

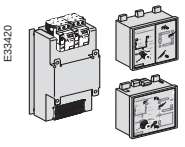
Associated controller

The automatic-control option includes:
- an IVE electrical-interlocking unit
- an ACP auxiliaries control plate
- a BA or UA controller, depending on the required functions
- a UA/BA adapter kit.

Note: *the circuit breaker auxiliaries (MCH, MX, XF) and the automatic-control components (IVE, ACP, UA or BA) must have the same voltages.*


E88714

IVE electrical-interlocking unit	48/415 V AC 50/60 Hz 440 V 60 Hz
For 2 devices	**29352**
Wiring kit for connection of 2 fixed/withdrawable devices to the IVE unit	**54655**


E33420

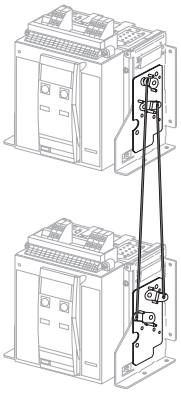
Control unit option	110/127 V AC 50/60 Hz	220/240 V AC 50/60 Hz	380/415 V AC 50/60 Hz 440 V 60 Hz
ACP + control unit BA (1)		**29470**	**29471**
Plate ACP		**29363**	**29364**
Control unit BA		**29376**	**29377**
ACP + control unit UA (1)	**29448**	**29472**	**29473**
Plate ACP	**29447**	**29363**	**29364**
Control unit UA	**29446**	**29378**	**29380**
ACP + control unit UA150 (1) (communication option)		**29474**	**29475**
Plate ACP		**29363**	**29364**
Control unit UA150		**29379**	**29381**

(1) *The supply voltages of the BA/UA controller, ACP plate, IVE unit and circuit breaker operating mechanism must be identical whatever the type of source-changeover system.*

Source-changeover systems for 2 devices (cont.)
Masterpact NT circuit breakers and switch-disconnectors

interlocking for source-changeover systems

Interlocking using connecting rods


E47760

Complete assembly with 2 adaptation fixtures + rods	
2 Masterpact NT fixed devices	**33912**
2 Masterpact NT drawout devices	**33913**

Interlocking using cables (*)

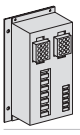
Choose 2 adaptation fixtures (1 for each breaker + 1 set of cables)	
1 adaptation fixture for Masterpact NT fixed devices	**33200**
1 adaptation fixture for Masterpact NT drawout devices	**33201**
1 set of 2 cables	**33209**

(*) *Can be used with any combination of NT or NW, fixed or drawout devices.*

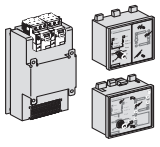
Associated controller

The automatic-control option includes:
- an IVE electrical-interlocking unit
- an ACP auxiliaries control plate
- a BA or UA controller, depending on the required functions
- a UA/BA adapter kit.

Note: *the circuit breaker auxiliaries (MCH, MX, XF) and the automatic-control components (IVE, ACP, UA or BA) must have the same voltages.*


E88714

IVE electrical-interlocking unit	48/415 V AC 50/60 Hz 440 V 60 Hz
for 2 devices	**29352**
wiring kit for connection of 2 fixed/drawout devices to the IVE unit	**54655**


E33420

Control unit option	110/127 V AC 50/60 Hz	220/240 V AC 50/60 Hz	380/415 V AC 50/60 Hz 440 V 60 Hz
ACP + control unit BA (1)		**29470**	**29471**
Plate ACP		**29363**	**29364**
Control unit BA		**29376**	**29377**
ACP + control unit UA (1)	**29448**	**29472**	**29473**
Plate ACP	**29447**	**29363**	**29364**
Control unit UA	**29446**	**29378**	**29380**
ACP + control unit UA150 (1) (communication option)		**29474**	**29475**
Plate ACP		**29363**	**29364**
Control unit UA150		**29379**	**29381**

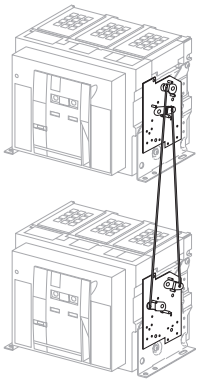
(1) *The supply voltages of the BA/UA controller, ACP plate, IVE unit and circuit breaker operating mechanism must be identical whatever the type of source-changeover system.*

Source-changeover systems for 2 or 3 devices

Masterpact NW circuit breakers and switch-disconnectors

Interlocking for source-changeover systems for 2 devices

Interlocking of 2 devices using connecting rods


E47762

Complete assembly with 2 adaptation fixtures + rods	
2 Masterpact NW fixed devices	**48612**
2 Masterpact NW drawout devices	**48612**

Can be used with 1 NW fixed + 1 NW drawout.

Interlocking of 2 devices using cables (*)

Choose 2 adaptation fixtures (1 for each breaker + 1 set of cables)	
1 adaptation fixture for Masterpact NW fixed devices	**47926**
1 adaptation fixture for Masterpact NW drawout devices	**47926**
1 set of 2 cables	**33209**

(*) *Can be used with any combination of NT or NW, fixed or drawout devices.*

Associated controller for 2 devices

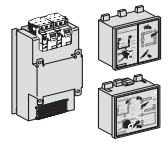
The automatic-control option includes:
- an IVE electrical-interlocking unit
- an ACP auxiliaries control plate
- a BA or UA controller, depending on the required functions
- a UA/BA adapter kit.

Note: *the circuit breaker auxiliaries (MCH, MX, XF) and the automatic-control components (IVE, ACP, UA or BA) must have the same voltages.*

IVE electrical-interlocking unit	**48/415 V AC 50/60 Hz 440 V 60 Hz**
for 2 devices	**29352**
wiring kit for connection of 2 fixed/drawout devices to the IVE unit	**54655**


E88714

Control unit option	**110/127 V AC 50/60 Hz**	**220/240 V AC 50/60 Hz**	**380/415 V AC 50/60 Hz 440 V 60 Hz**
ACP + control unit BA (1)		**29470**	**29471**
Plate ACP		**29363**	**29364**
Control unit BA		**29376**	**29377**
ACP + control unit UA (1)	**29448**	**29472**	**29473**
Plate ACP	**29447**	**29363**	**29364**
Control unit UA	**29446**	**29378**	**29380**
ACP + control unit UA150 (1) (communication option)		**29474**	**29475**
Plate ACP		**29363**	**29364**
Control unit UA150		**29379**	**29381**


E33420

(1) *The supply voltages of the BA/UA controller, ACP plate, IVE unit and circuit breaker operating mechanism must be identical whatever the type of source-changeover system.*

Interlocking for source-changeover systems for 3 devices

Interlocking of 3 devices using cables

Choose 3 adaptation fixtures (1 complete set with 3 adaptation fixtures + cables)	
3 sources, only 1 device closed, fixed or drawout devices	**48610**
2 sources, 1 coupling, fixed or drawout devices	**48609**
2 normal, 1 replacement source, fixed or drawout devices	**48608**

Source-changeover systems for 2 devices

Interpact INS40 to INS630 Switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.

Mechanical interlocking of two INS40 to INS630 devices				
Devices with front rotary handles, mounted side by side				
	Two devices with direct rotary handles			
	INS250	☐	INS320/400/500/630	☐
	Two devices with extended rotary handles			
	INS40/63/80	☐	INS100/125/160	☐
	INS250	☐	INS320/400/500/630	☐
Downstream coupling accessory	INS250	☐	INS320/400/500/630	☐
Long terminal shields	INS250	☐	INS320/400/500/630	☐
Complete source-changeover assembly				
	INS250-100 A	☐	INS250-160 A	☐
	INS250-200 A	☐	INS250-250 A	☐
	INS320	☐	INS400	☐
	INS500	☐	INS630	☐

Source-changeover systems for 2 devices

Interpact INS40 to INS630 Switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.
(one sheet per device, make copies if necessary)

Device identification:

Q 1 - NORMAL SOURCE ☐

Q 2 - REPLACEMENT SOURCE ☐

Switch-disconnector

Interpact type	**INS40/63/80**	☐
	INS100/125/160	☐
	INS250	☐
	INS320/400/500/630	☐
Rating	**A**	☐
Number of poles	**3 or 4**	☐

Connections

Front connection	Standard			
Rear connection	2 short ☐		2 long ☐	
INS40/80 connectors	Distribution 3x16² rigid/10² flexible			☐
INS100/160 connectors	Snap-on ⩽ 95²			☐
	Distribution 4x25² rigid/16² flexible			☐
INS250 connectors	Snap-on 1.5² to 95² (< 160 A)			☐
	Snap-on 10² to 185² (< 250 A)			☐
	Voltage tap connector for 185² connector			☐
	Clips for connectors		Set of 10	☐
	Distribution 6x1.5² to 35² rigid with interphase barriers			☐
INS320/630 connectors	1 cable 35² to 300²			☐
	2 cables 35² to 240²			☐
	Voltage tap connector for 185² connector			☐
Distribution blocks	"Distribloc"	125 A ☐	160 A	☐
	Multi-stage	125 A ☐	160 A	☐
	"Polybloc"	160 A ☐	250 A	☐
Rt-angle extension	Set of 3 or 4	250 A ☐	630 A	☐
Straight extension	INS250			☐
Edgewise ext.	INS630			☐
Spreader	INS250 (45 mm)			☐
	Front alignment base			☐
	INS320/630	52.5 mm ☐	70 mm	☐
	One-piece	INS250 ☐	INS630	☐
CU cable lugs supplied with 2 or 3 inter-phase barriers	INS100/160	For 95² cable		☐
	INS250	For 120² cable		☐
		For 150² cable		☐
		For 185² cable		☐
	INS320/630	For 240² cable		☐
		For 300² cable		☐
AL cable lugs supplied with 2 or 3 inter-phase barriers	INS250	For 150² cable		☐
		For 185² cable		☐
	INS320/630	For 240² cable		☐
		For 300² cable		☐
Terminal shrouds	INS40/63/80 ☐	INS100/125/160		☐
Terminal shields	INS40/63/80 ☐	INS100/125/160		☐
	INS250	Short ☐	Long	☐
	INS320/630	Short ☐	Long	☐
	Long for 52.5 mm spreaders			☐
Interphase barriers	INS100/160		Set of 6	☐
	INS250		Set of 6	☐
	INS320/630		Set of 6	☐

Indication and measurements

4P ammeter module	For INS250	Rating	100 A	☐
			150 A	☐
			250 A	☐
	Adaptation kit required for direct handles			☐
	For INS320/630	Rating	400 A	☐
			600 A	☐
4P current-transformer module	For INS250	Rating	100 A	☐
			150 A	☐
			250 A	☐
	For INS320/630	Rating	400 A	☐
			600 A	☐
Auxiliary contact	For INS40/160	1OF/CAF/CAO	Standard	☐
			Low level	☐
	For INS250/630	1 OF/CAM	Standard	☐
			Low level	☐

Rotary handles

Extended front handles	INS40 to INS160	Black ☐	Red on yellow front	☐
	INS250	Black ☐	Red on yellow front	☐
	INS320 to INS630	Black ☐	Red on yellow front	☐
	For complete changeover assembly		INS250	☐
			INS320/630	☐

Locking of rotary handles

Padlocking	1 to 3 padlocks (in OFF position)		☐
Keylocking	Keylock adapter (keylock not included)		☐
	Keylocks Ronis 1351B.500 ☐	Profalux KS5 B24 D4Z	☐

Installation accessories

Front-panel escutcheon	For switch-disconnectors	☐
	For ammeter module, IP40	☐

Source-changeover systems for 2 devices

Compact NS100 to NS630 / Circuit breakers and switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.

Diagram for two Compact NS devices

Without automatic control, without emergency off auxiliaries	(no. 51201177)	☐
Without automatic control, with emergency off by MN	(no. 51201178)	☐
Without automatic control, with emergency off by MX	(no. 51201179)	☐

Mechanical interlocking of two NS100 to NS630 devices

(fixed, plug-in or withdrawable)

Manually operated devices, mounted side by side:

Two devices with toggles	☐
Two devices with rotary handles	☐

Mechanical and electrical interlocking of two NS100 to NS630 devices

(fixed or plug-in)

Electrically operated devices, mounted side by side:

Select 1 base plate + IVE, the 4 auxiliary contacts and the options / accessories

Base plate + IVE	Identical voltages:		48 to 415 V AC 50/60 Hz	
	24 to 250 V DC	☐	440/480 V AC 60 Hz	☐
	"Normal" NS100/250	☐	"Replacement" NS100/250	☐
	"Normal" NS400/630	☐	"Replacement" NS400/630	☐
	"Normal" NS400/630	☐	"Replacement" NS100/250	☐
	Adapter kit for NS400/630 with NS100/250 (plug-in)			☐
Auxiliary contacts	2 OF + 2 SDE (mandatory)		Quantity	4
Options	Long rear connections	☐	Plug-in base	☐
Downstream coupling accessory	3P	☐	NS100/250	☐
	4P	☐	NS400/630	☐
Prefabricated wiring	Between device and IVE		Quantity	▭

Automatic-control option

Power supply 220/240 V - 50/60 Hz:	ACP + BA controller	☐
	ACP + UA controller	☐
	ACP + UA150 controller	☐
Power supply 380/415 V - 50/60 Hz and 440 V - 60 Hz:	ACP + BA controller	☐
	ACP + UA controller	☐
	ACP + UA150 controller	☐

Source-changeover systems for 2 devices

Compact NS100 to NS630 / Circuit breakers and switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.
(one sheet per device, make copies if necessary)
Device identification:

Q 1 - NORMAL SOURCE ☐
Q 2 - REPLACEMENT SOURCE ☐

Circuit breaker or switch-disconnector

Compact type	**NS100/160/250**			☐
	NS400/630			☐
Rating	**A**			☐
Circuit breaker	**N, H, L**			☐
Switch-disconnector	**NA**			☐
Number of poles	**2, 3 or 4**			☐
Number of poles tripped	**2d, 3d, 3dN/2 or 4d**			☐
Fixed device	Front connections	☐	Long rear conn.	☐
	Short rear conn.	☐	Mixed rear conn.	☐
Plug-in/withdr.	Plug-in	☐	Withdrawable	☐
Earth-leakage protection	**ME, MH, MB, MHM**			☐
	Voltage **V**			☐
	4p **MB** option on 3p NS			☐

Thermal-magnetic or electronic trip unit

Thermal-mag.	**TMD rating (16 … 250 A)**					☐
	TMG rating (16 … 63 A)					☐
	MA rating (2.5 … 220 A)					☐
Electronic	STR22	**SE** ☐	**GE** ☐		**ME** ☐	
	STR23	**SE** ☐	**SV** ☐			
	STR53 (basic)		**UE F** ☐		**SV F** ☐	
	STR53UE	**FT** ☐	**FI** ☐		**FTI** ☐	
	ZSI wiring					
	Option **T** (rating 150…630 A)				**A**	☐
	STR43ME		**F** ☐		**FI** ☐	
	Option **STDAM**	110/240 V AC/DC				☐
		24/48 V AC/24/72 V DC				☐
	COM wiring					☐
	Spare battery for STR43 and STR53					☐

Connections

Rear-connect. kit	Short	☐	Mixed	☐		
Plug-in kit	Compact	☐	Vigicompact	☐		
Withdrawable kit	Compact	☐	Vigicompact	☐		
Long terminal-shield kit for plug-in or withdr. NS400/630						☐
Interphase-barrier kit for plug-in or withdr. NS400/630						☐
NS100/250 connectors	Snap-on 1.5² to 95² (< 160 A)					☐
	Snap-on 10² to 185² (< 250 A)					☐
	Distribution 6 x 1.5² to 35²					☐
NS1400/630 connectors	1 cable 35² to 300²					☐
	2 cables 35² to 240²					☐
Right-angle terminal extensions						☐
Straight extensions	NS100/250					☐
Edgewise extensions	NS400/630					☐
Spreader	NS100/250 (one piece)		(45 mm)			☐
	NS400/630 (52.5 mm)		(70 mm)			☐
CU cable lugs	NS100/250	120² ☐	150² ☐		185² ☐	
	NS400/630	240² ☐	300² ☐			
AL cable lugs	NS100/250	150² ☐	185² ☐			
	NS400/630	240² ☐	300² ☐			
Voltage measurement input for connector	for lugs NS100/250 ≤ 185²					☐
	for lugs NS400/630					☐
Terminal shields	NS100/250		Short ☐	Long		☐
	NS400/630		Short ☐	Long		☐
	Long for 52.5 mm spreaders					☐
Interphase barriers					Set of 6	☐
Insulation kit > 600 V NS400/630	Without spreaders					☐
	With 52.5 mm spreaders					☐
2 insulating screens:	NS100/250					☐
	NS400/630	52.5 pitch ☐	70 pitch			☐

Communication

Communicating OF, SD, SDE or SDV auxiliary contacts				☐
Connected/disconnected position indication contacts				☐
Motor mechanism + communicating OF, SD, SDE contacts			220-240 V 50/60 Hz	☐

Indication and measurements

Ammeter module	standard	3P ☐	4P	☐
	I max	3P ☐		
Current-transformer module		3P ☐	4P	☐
Insulation-monitoring module		3P ☐	4P	☐
Voltage-presence indicator				☐
Auxiliary contact	OF, SD, SDE or SDV	Standard ☐	Low level	☐
SDE adapter (TM or MA trip units)				☐

Remote operation

Electrical operation	Motor mechanism		AC ☐	DC ☐	V	▭
Voltage releases	Instantaneous	MX	AC ☐	DC ☐	V	▭
		MN	AC ☐	DC ☐	V	▭
	Delayed	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	☐
Rotary handle	Keylock adapter (keylock not included)			☐
	Keylocks Ronis 1351B.500 ☐		Profalux KS5 B24 D4Z	☐
Motor mechanism	Keylock adapter + Keylocks Ronis (special)		NS100/250	☐
	Keylock adapter (keylock not included)		NS400/630	☐
	Keylocks Ronis 1351B.500 ☐		Profalux KS5 B24 D4Z	☐

Installation accessories

Front-panel escutcheon	Toggle			☐
	Rotary handle, motor mechanism, escutcheon collar; IP40			☐
	Vigi module or ammeter IP40 ☐		Vigi module	☐
Toggle cover				☐
Sealing accessories				☐
DIN rail adapter NS100/250				☐

Plug-in / withdrawable 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 ☐	Vigi	☐
	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 two power connections	Standard ☐	Vigi	☐
	Safety trip for advanced opening			☐
	For 3P/4P chassis		Moving part	☐
			Fixed part	☐

Source-changeover systems for 2 devices

Compact NS630b to NS1600 / Circuit breakers and switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.

Diagram for two Compact NS devices

Electrical interlocking with lockout after fault:

Permanent replacement source (without IVE)	(no. 51201180)	☐
With emergency off by MX (without IVE)	(no. 51201181)	☐
With emergency off by MN (without IVE)	(no. 51201182)	☐
Permanent replacement source (with IVE)	(no. 51201183)	☐
With emergency off by MX (with IVE)	(no. 51201184)	☐
With emergency off by MN (with IVE)	(no. 51201185)	☐

Automatic control without lockout after fault:

Permanent replacement source (without IVE)	(no. 51201186)	☐
Engine generator set (without IVE)	(no. 51201187)	☐

Interlocking using connecting rods between two NS630b to NS1600 devices

Manually operated devices installed side-by-side:

	For two fixed NS devices with extended rotary handles	☐

Electrically operated devices installed one above the other:

Select a complete set including two adaptation fixtures and the connecting rods

Complete set for:	2 fixed NS devices	☐
	2 withdrawable NS devices	☐

Interlocking using cables between two NS630b to NS1600 devices

Electrically operated devices installed one above the other or side-by-side:

Select a complete set including two adaptation fixtures and the cables

Complete set for:	2 fixed NS devices	☐
	2 withdrawable NS devices	☐
	1 fixed NS device + 1 withdrawable NS device	☐

Electrical interlocking between two NS630b to NS1600 devices

1 IVE unit 48/415 V - 50/60 Hz and 440 V - 60 Hz	☐
1 wiring kit for connection between 2 fixed / withdrawable devices to the IVE unit	☐

Automatic-control option

Power supply 110 V - 50/60 Hz:	ACP + BA controller	☐
	ACP + UA controller	☐
	ACP + UA150 controller	☐
Power supply 220/240 V - 50/60 Hz:	ACP + BA controller	☐
	ACP + UA controller	☐
	ACP + UA150 controller	☐
Power supply 380/415 V - 50/60 Hz and 440 V - 60 Hz:	ACP + BA controller	☐
	ACP + UA controller	☐
	ACP + UA150 controller	☐

Source-changeover systems for 2 devices

Compact NS630b to NS1600 / Circuit breakers and switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.
(one sheet per device, make copies if necessary)
Device identification:

Q 1 - NORMAL SOURCE ☐
Q 2 - REPLACEMENT SOURCE ☐

Circuit breaker or switch-disconnector

Compact type	**NS630b to NS1600**	▭
Rating	**A**	▭
Circuit breaker	**N, H, L**	▭
Switch-disconnector	**NA**	▭
Number of poles	**3 or 4**	▭
Device	Fixed	☐
	Withdr. chassis	☐
	Withdr. without chassis (moving part only)	☐
Chassis alone without connections		☐

Micrologic control unit

Basic protection **2.0** ☐ **5.0** ☐

A - ammeter

2.0 ☐ **5.0** ☐ **6.0** ☐ **7.0** ☐

AD - external power-supply module **V** ▭

TCE - external sensor (CT) for neutral protection ☐

Rectangular sensor	280 x 115 mm	☐

TCW - external sensor for SGR protection ☐

LR - long-time rating plug	Standard 0.4 to 1 Ir	☐
	Low setting 0.4 to 0.8 Ir	☐
	High setting 0.8 to 1 Ir	☐
	LT OFF	☐

Communication

COM module	Jbus/ Modbus	Manual operation	☐
		Electrical operation	☐
	Digipact	Manual operation	☐
		Electrical operation	☐

Modbus Eco COM module (for switchboard display units) ☐

Connections

Horizontal rear connections	Top	☐	Bottom	☐
Vertical rear connections	Top	☐	Bottom	☐
Front connections	Top	☐	Bottom	☐
4x240□ bare cable connectors + shields	NS - FC fixed			☐
Long connection shields	NS - FC fixed			☐
Vertical-connection adapters	NS - FC fixed, withdr.			☐
Cable-lug adapters	NS - FC fixed, withdr.			☐
Arc chute screen	NS - FC fixed			☐
Interphase barriers	NS - FC fixed, withdr.			☐
Spreaders	NS - FC fixed, withdr.			☐
VO - safety shutters on chassis	NS - FC fixed			☐

Indication contacts

SD trip indication (maximum 1)					
	6 A-240 V AC	☐	Low level		☐
SDE fault-trip indication (maximum 1) (SDE integrated in electrically operated devices)					
	6 A-240 V AC	☐	Low level		☐
OF ON/OFF indication contacts (maximum 3)					
	6 A-240 V AC	qty ▭	Low level		qty ▭
Carriage switches (possible combinations: 3 CE, 2 CD, 1 CT)					
CE - "connected" position	6 A-240 V AC	qty ▭	Low level		qty ▭
CD - "disconnected" position	6 A-240 V AC	qty ▭	Low level		qty ▭
CT - "test" position	6 A-240 V AC	qty ▭	Low level		qty ▭
Auxiliary terminals for chassis alone			Jumpers (set of 10)		☐
	3-wire terminal (30 parts)	☐	6-wire terminal (10 parts)		☐

Remote operation

Electrical operation	Standard	☐	Communicating		☐
	Power supply	AC ☐	DC ☐		**V** ▭
Voltage releases	MX	AC ☐	DC ☐		**V** ▭
	MN	AC ☐	DC ☐		**V** ▭
	MN delay unit		Adjustable ☐	Non-adjustable	☐

Rotary handles for fixed and withdrawable device

Direct	Black	Red on yellow front	☐
		CNOMO conversion access.	☐
Extended	Black	Red on yellow front	☐
	Telescopic handle for withdrawable device		☐
Indication auxiliary	6 A-240 V AC	2 early-make switches	☐
		2 early-break switches	☐

Locking

Toggle (1 to 3 padlocks)	Removable system	☐	Fixed system	☐
Rotary handle using a keylock	OFF position	☐	ON and OFF positions	☐
	Ronis 1351B.500	☐	Profalux KS5 B24 D4Z	☐
	Keylock kit (without keylock)			☐
For electrically operated devices	**VBP** - ON/OFF pushbutton locking			☐
	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	☐
Chassis locking in "disconnected" position:				
VSPD - 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				☐
VDC - mismatch protection				☐

Accessories

CDM - mechanical operation counter				☐
CDP - escutcheon				☐
CP - transparent cover for escutcheon				☐
OP - blanking plate for escutcheon				☐
Mounting brackets for fixed NS		for mounting on horizontal plane		☐
Test kits	Mini test kit	☐	Portable test kit	☐

Source-changeover systems for 2 devices

Masterpact NT or NW / Circuit breakers and switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.

Diagram for 2 Masterpact NT/NW devices

Electrical interlocking with lockout after fault:

Permanent replacement source (without IVE)	(no. 51201139)	☐
With emergency off by MX (without IVE)	(no. 51201140)	☐
With emergency off by MN (without IVE)	(no. 51201141)	☐
Permanent replacement source (with IVE)	(no. 51201142)	☐
With emergency off by MX (with IVE)	(no. 51201143)	☐
With emergency off by MN (with IVE)	(no. 51201144)	☐

Automatic control without lockout after fault:

Permanent replacement source (without IVE)	(no. 51156226)	☐
Engine generator set (without IVE)	(no. 51156227)	☐

Automatic control with lockout after fault:

Permanent replacement source (with IVE)	(no. 51156904)	☐
Engine generator set (with IVE)	(no. 51156905)	☐
BA/UA controller (with IVE)	(no. 51156903)	☐

Interlocking using connecting rods (NT/NW devices one above the other)

Select a complete set including two adaptation fixtures and the connecting rods

Complete set for:	2 drawout NT devices	☐	2 fixed NT devices	☐
	2 drawout NW devices	☐	2 fixed NW devices	☐
	1 fixed NT device + 1 fixed NW devices			☐
	1 drawout NT device + 1 drawout NW device			☐

Interlocking using cables (NT/NW devices one above the other or side-by-side)

Select two adaptation fixtures (one for each device) and a set of two cables

Adaptation fixture for: (NT/NW fixed and drawout devices may be mixed)	1 fixed NT device	qty	▭
	1 drawout NT device	qty	▭
	1 fixed NW device	qty	▭
	1 drawout NW device	qty	▭
	1 set of 2 cables (for two devices)		☐

Electrical interlocking 2 appareils NT/NW

1 IVE unit 48/415 V - 50/60 Hz and 440 V - 60 Hz	☐
1 wiring kit for connection between 2 fixed / withdrawable devices to the IVE unit	☐

Automatic-control option

Power supply 220/240 V - 50/60 Hz:	ACP + BA controller	☐
	ACP + UA controller	☐
	ACP + UA150 controller	☐
Power supply 380/415 V - 50/60 Hz and 440 V - 60 Hz:	ACP + BA controller	☐
	ACP + UA controller	☐
	ACP + UA150 controller	☐

Source-changeover systems for 2 devices

Masterpact NT or NW / Circuit breakers and switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.
(one sheet per device, make copies if necessary)
Device identification:

Q 1 - NORMAL SOURCE ☐
Q 2 - REPLACEMENT SOURCE ☐

Circuit breaker or switch-disconnector

Masterpact type	**NT** ☐	**NW** ☐	
Rating	**A**		▭
Sensor rating	**A**		▭
Circuit breaker	**N1, H1, H2, H3, L1**		▭
Switch-disconnector	**NA, HA, HF, ES, HA10 (NW)**		▭
Number of poles	**3 or 4**		▭
Option: neutral on right side			☐
Device	Fixed		☐
	Withdr. chassis		☐
	Withdr. without chassis (moving part only)		☐
Chassis alone without connections			☐

Micrologic control unit

A - ammeter	**2.0** ☐	**5.0** ☐	**6.0** ☐	**7.0** ☐
P - power meter		**5.0** ☐	**6.0** ☐	**7.0** ☐
H - harmonic meter		**5.0** ☐	**6.0** ☐	**7.0** ☐
AD - external power-supply module				**V** ▭
TCE - external sensor (CT) for neutral protection				☐
Rectangular sensor for earth-leakage protection	NT (280 x 115 mm)			☐
	NW (470 x 160 mm)			☐
LR - long-time rating plug	Standard 0.4 to 1 Ir			☐
	Low setting 0.4 to 0.8 Ir			☐
	High setting 0.8 to 1 Ir			☐
	LT OFF			☐
PTE - external voltage measurement input (required for reverse supply)				☐
BAT - battery module				☐

Communication

Eco COM module (for switchboard display units)	Modbus		☐

Connections

Horizontal	Top ☐	Bottom	☐
Vertical	Top ☐	Bottom	☐
Front	Top ☐	Bottom	☐
Vertical-connection adapters	NT - FC fixed, draw.		☐
Cable-lug adapters	NT - FC fixed, draw.		☐
Arc chute screen	NT - FC fixed		☐
Interphase barriers	NT, NW fixed, draw.		☐
Spreaders	NT fixed, drawout		☐
Disconnectable front connection adapter	NW fixed		☐
Lugs for 240□ or 300□ cables	NT fixed, draw.		☐
VO - safety shutters on chassis	NT, NW		X
VIVC - shutter position indication and locking	NW		☐

Indication contacts

OF - ON/OFF indication contacts			
Standard	4 OF 6 A-240 V AC (10 A-240 V AC and low-level for NW)		
Additional	1 block of 4 OF for NW	max. 2	qty ▭
EF - combined "connected/closed" contacts			
	1 EF 6 A-240 V AC for NW	max. 8	qty ▭
	1 EF low-level for NW	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	☐
Programmable contacts	2 M2C contacts ☐	6 M6C contacts	☐
Carriage switches	6 A-240 V AC ☐	Low level	☐
CE - "connected" position	max. 3 for NW / NT		qty ▭
CD - "disconnected" position	max. 3 for NW, 2 for NT		qty ▭
CT - "test" position	max. 3 for NW, 1 for NT		qty ▭
AC - NW actuator for 6 CE - 3 CD - 0 CT additionnal carriage switches			qty ▭

Remote operation

Remote ON/OFF	**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		☐
	2nd 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	☐
		Kirk ☐	Castell	☐
	1 keylock	Profalux ☐	Ronis	☐
	2 identical keylocks, 1 key	Profalux ☐	Ronis	☐
	2 keylocks, different keys (NW)	Profalux ☐	Ronis	☐
Chassis locking in "disconnected" position:				
VSPD - 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				☐
IBPO - racking interlock between crank and OFF pushbutton for NW				☐
DAE - automatic spring discharge before breaker removal for NW				☐
VDC - mismatch protection				☐

Accessories

CDM - mechanical operation counter			☐
CB - auxiliary terminal shield for chassis			☐
CDP - escutcheon			☐
CP - transparent cover for escutcheon			☐
OP - blanking plate for escutcheon			☐
Brackets for mounting NW fixed		on backplates	☐
Test kits	Mini test kit ☐	Portable test kit	☐

Source-changeover systems for 3 devices

Masterpact NW / Circuit breakers and switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ☐.

Diagram for 3 Masterpact NW devices		
2 “Normal” sources + 1 “Replacement” source:		
Electrical interlocking without lockout after fault	(no. 51156906)	☐
Electrical interlocking with lockout after fault	(no. 51156907)	☐
2 “Normal” sources + 1 “Replacement” source with source selection:		
Automatic control w/ engine generator set w/o lockout after fault	(no. 51156908)	☐
Automatic control w/ engine generator set w/ lockout after fault	(no. 51156909)	☐
3 sources, only 1 device ON:		
Electrical interlocking without lockout after fault	(no. 51156910)	☐
Electrical interlocking with lockout after fault	(no. 51156911)	☐
2 “Normal” sources + 1 coupling:		
Electrical interlocking without lockout after fault	(no. 51156912)	☐
Electrical interlocking with lockout after fault	(no. 51156913)	☐
Automatic control with lockout after fault:	(no. 51156914)	☐
Interlocking using cables (NW devices one above the other or side-by-side)		
Select a complete set including three adaptation fixtures and the cables		
1 complete set for:	3 sources / 1 device ON, fixed or drawout	☐
	2 sources + 1 coupling, fixed or drawout	☐
	2 sources + 1 replacement source, fixed or drawout	☐

Source-changeover systems for 3 devices

Masterpact NW / Circuit breakers and switch-disconnectors

To indicate your choices, check the applicable square boxes ☐ and enter the appropriate information in the rectangles ▭.
(one sheet per device, make copies if necessary)

Device identification:

Q 1 - NORMAL SOURCE ☐
Q 2 - REPLACEMENT SOURCE ☐

Circuit breaker or switch-disconnector

Masterpact type		**NW** ☐
Rating	**A**	▭
Sensor rating	**A**	▭
Circuit breaker	**N1, H1, H2, H3, L1**	▭
Switch-disconnector	**NA, HA, HF**	▭
Number of poles	**3 or 4**	▭
Option: neutral on right side		☐
Device	Fixed	☐
	Drawout with chassis	☐
	Drawout without chassis (moving part only)	☐
Chassis alone without connections		☐

Micrologic control unit

A - ammeter
2.0 ☐ **5.0** ☐ **6.0** ☐ **7.0** ☐

P - power meter	**5.0** ☐	**6.0** ☐	**7.0** ☐
H - harmonic meter	**5.0** ☐	**6.0** ☐	**7.0** ☐
AD - external power-supply module			**V** ▭
TCE - external sensor (CT) for neutral protection			☐
Rectangular sensor for earth-leakage protection	470 x 160 mm		☐
TCW - external sensor for SGR protection			☐
LR - long-time rating plug	Standard 0.4 to 1 Ir		☐
	Low setting 0.4 to 0.8 Ir		☐
	High setting 0.8 to 1 Ir		☐
	LT OFF		☐
PTE - external voltage measurement input (required for reverse supply)			☐
BAT - battery module			☐

Communication

Eco COM module (for switchboard display units)	Modbus	☐

Connections

Horizontal	Top ☐	Bottom ☐	
Vertical	Top ☐	Bottom ☐	
Front	Top ☐	Bottom ☐	
Interphase barriers	Fixed, drawout		☐
Disconnectable front connection adapter	Fixed		☐
VO - safety shutters on chassis			☒
VIVC - shutter position indication and locking			☐

Indication contacts

OF - ON/OFF indication contacts

Standard	4 OF 6 A-240 V AC (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	☐
Programmable contacts	2 M2C contacts ☐	6 M6C contacts	☐
Carriage switches	6 A-240 V AC ☐	Low level	☐
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 additionnal carriage switches			qty ▭

Remote operation

Remote ON/OFF	**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		☐
	2eme 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	☐
		Kirk	☐	Castell	☐
	1 keylock	Profalux	☐	Ronis	☐
	2 identical keylocks, 1 key	Profalux	☐	Ronis	☐
	2 keylocks, different keys (NW)	Profalux	☐	Ronis	☐

Chassis locking in "disconnected" position:

VSPD - 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					☐
IBPO - racking interlock between crank and OFF pushbutton for NW					☐
DAE - automatic spring discharge before breaker removal for NW					☐
VDC - mismatch protection					☐

Accessories

CDM - mechanical operation counter			☐
CB - auxiliary terminal shield for chassis			☐
CDP - escutcheon			☐
CP - transparent cover for escutcheon			☐
OP - blanking plate for escutcheon			☐
Brackets for mounting NW fixed		on backplates	☐
Test kits	Mini test kit ☐	Portable test kit	☐

Notes

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

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