### Source-changeover systems

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- Compact NS100 to 1600 or Masterpact NW
- Compact NS100 to 630
- Compact NS630b to 1600
- Masterpact NW

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

Electrical interlocking by the IVE unit
Recommended electrical control system

Legend:
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.
Source-changeover system without automatic-control system

Without auxiliaries for emergency off

Local reset

Voluntary remote reset

Automatic reset

States permitted by mechanical interlocking system

(1): Prefabricated wiring: cannot be modified

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

Note:
Diagram shown with circuits de-energised, circuit breakers open and relays in normal position.
Source-changeover system without automatic-control system

With emergency off by MN release and automatic reset

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

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.

States permitted by mechanical interlocking system

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(1): Prefabricated wiring supplied
(2): Independent auxiliary source
Electrical diagrams

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 / automatic reset

(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.

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

States permitted by mechanical interlocking system

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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 with lockout after a fault

![Electrical diagram]

(1) Not to be wired on fixed version

Legends
- **ON** “Normal” source Compact NS630b to 1600
- **QR** “Replacement” source Compact 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
- **FN** “Normal” source opening order
- **FR** “Replacement” source opening order (0.25 second delay)
- **QN** “Normal” source Compact NS630b to 1600
- **QR** “Replacement” source Compact NS630b to 1600

States permitted by mechanical interlocking system

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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...).

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 lockout after a fault and emergency off by shunt release

(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)

States permitted by mechanical interlocking system

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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 Compact NS630b/1600 devices
Diagram no. 51201182

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

(1) Not to be wired on fixed version

Legends
QN  “Normal” source Compact NS630b to 1600
QR  “Replacement” source Compact 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)

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

States permitted by mechanical interlocking system

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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 Compact NS630b/1600 devices
Diagram no. 51201183

Electrical interlocking by IVE with lockout after a fault

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

Legends
QN “Normal” source Compact NS630b to 1600
QR “Replacement” source Compact 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)

Wiring colour codes
RD red
GN green
BK black
VT violet
YE yellow
GY grey
WH white
BN 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 Compact NS630b/1600 devices

Electrical diagrams

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

Légende
QN "Normal" source Compact NS630b to 1600
QR "Replacement" source Compact 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)

Wiring colour codes
RD red
GN green
BK black
VT violet
YE yellow
GY grey
WH white
BN 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…).

(1) Not to be wired on fixed version
(2) Prefabricated wiring supplied
Remote-operated source-changeover systems
2 Compact NS630b/1600 devices
Diagram no. 51201185

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

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...).

States permitted by mechanical interlocking system

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

Legend:
QN “Normal” source Compact NS630b to 1600
QR “Replacement” source Compact 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)

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

(1) Not to be wired on fixed version
(2) Prefabricated wiring supplied
Remote-operated source-changeover systems
2 Compact NS630b/1600 devices
Diagram no. 51201186

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

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)

States permitted by mechanical interlocking system

<table>
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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 Compact NS630b/1600 devices
Diagram no. 51201187

Automatic-control system for replacement source generator set without lockout after a fault

(1) Not to be wired on fixed version

Legends
QN  "Normal" source Compact NS630b to 1600
QR  "Replacement" source Compact 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)

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

States permitted by mechanical interlocking system
<table>
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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...).
Electrical diagrams

Remote-operated
source-changeover systems
2 Masterpact NW devices
Diagram no. 51201139

Electrical interlocking with lockout after a fault

Legend:
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
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

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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 (MCH, MX, MN..).
Electrical interlocking with lockout after a fault and emergency off by shunt release

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
MX2 shunt release
BP emergency off button with latching
KA3 time delay for genset startup order to avoid starting the genset for transient UN disturbances
S1 control switches
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

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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 (MCH, MX, MN...).
Remote-operated source-changeover systems
2 Masterpact NW devices
Diagram no. 51201141

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

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
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)

(1) Not to be wired on fixed version

Note:
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...).
Auxiliary power supply = supply voltage of electrical auxiliaries (MCH, MX, MN...).
Remote-operated source-changeover systems
2 Masterpact NW devices
Diagram no. 51201142

Electrical interlocking by IVE with 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
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  red
GN  green
BK  black
VT  violet
YE  yellow
GY  grey
WH  white
BN  brown

States permitted by mechanical interlocking system

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

(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
Remote-operated source-changeover systems
2 Masterpact NW devices
Diagram no. 51201143

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

(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 NW
QR  “Replacement” source Masterpact NW
MCH spring-charging motor
MX standard opening voltage release
XF standard closing voltage release
OFxi breaker ON/OFF indication contact
SDE1 “fault-trip” indication contact
PF  “ready-to-close” contact
CE1  “connected-position” indication contact (carriage switch)
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 red
GN green
BK black
VT violet
YE yellow
GY grey
WH white
BN brown

States permitted by mechanical interlocking system

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Note:
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA...).
Remote-operated source-changeover systems
2 Masterpact NW devices
Diagram no. 51201144

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

Electrical diagrams

Legend:
QN “Normal” source Masterpact NW
QR “Replacement” source Masterpact NW
MCH spring-charging motor
MX standard opening voltage release
XF standard closing voltage release
MN undervoltage release
OFF 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 red
GN green
BK black
VT violet
YE yellow
GY grey
WH white
BN brown

Transfer to
replacement source
Transfer to
normal source

Auxiliary power supply

States permitted by mechanical interlocking system

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<th>Replacement</th>
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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 (MCH, MX, MN...).
Remote-operated source-changeover systems
2 Masterpact NW devices
Diagram no. 51156226

Automatic-control system without IVE for permanent replacement source 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
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)

(1) Not to be wired on fixed version

States permitted by mechanical interlocking system

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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 (MCH, MX, MN...).
Remote-operated source-changeover systems
2 Masterpact NW devices
Diagram no. 51156227

Automatic-control system for replacement source generator set without lockout after a fault

Electrical diagrams

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 (MCH, MX, MN...).

(1) Not to be wired on fixed version

States permitted by mechanical interlocking system

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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
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

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

Wiring colour codes
- RD: red
- BK: black
- VT: violet
- YE: yellow
- GY: grey
- WH: white
- SN: brown

Note:
- Not to be wired for the “without lockout after a fault” solution
- Not to be wired on fixed version
- Prefabricated wiring supplied
Remote-operated source-changeover systems
2 Masterpact NW devices
Diagram no. 51156905

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

Electrical diagrams

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
CE1 “connected-position” indication contact (carriage switch)
CH “springs charged” indication contact
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 red
GN green
BK black
VT violet
YE yellow
GY grey
WH white
BN brown

(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

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 (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

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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 (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

**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. minimum)

**States permitted by mechanical interlocking system**

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**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 (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

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Note:
Diagram shown with circuit breakers in connected position, open, charge.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (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)

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

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Note:
Diagram shown with circuit breakers in connected position, open, charge.
Auxiliary power supply = supply voltage of auxiliary relays (KA...).
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

Auxiliary power supply

Legend:
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
11 order for transfer to “Source 1”
(QS1 closing time delay = 0.25 sec. minimum)
12 order for transfer to “Source 2”
(QS2 closing time delay = 0.25 sec. minimum)
13 order for transfer to “Source 3”
(QS3 closing time delay = 0.25 sec. minimum)

States permitted by mechanical interlocking system

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Note:
Diagram shown with circuit breakers in connected position, open, charge.
Auxiliary power supply = supply voltage of auxiliary relays (KA...); supply voltage of electrical auxiliaries (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

**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**

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<th>Source 1</th>
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**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 (MCH, MX, MN,...).
Electrical diagrams

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
I1 coupling order for “Source 1 failure”
  (QC closing time delay = 0.25 sec. minimum)
I2 coupling order for “Source 2 failure”
  (QC closing time delay = 0.25 sec. minimum)
I3 coupling order for “Source 1 restored”
  (QS1 closing time delay = 0.25 sec. minimum)
I4 coupling order for “Source 2 restored”
  (QS2 closing time delay = 0.25 sec. minimum)

States permitted by mechanical interlocking system

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Note:
Diagram shown with circuit breakers in connected position, open, charge.
Auxiliary power supply = supply voltage of auxiliary relays (KA...).
Auxiliary power supply = supply voltage of electrical auxiliaries (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

States permitted by mechanical interlocking system

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Note:
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.
Auxiliary power supply = supply voltage of auxiliary relays (KA..., KA1, KA2, KA3).
Auxiliary power supply = supply voltage of auxiliary relays (MCH, MX, MN...).
2 sources and 1 coupling: automatic-control system with 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
- **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

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**Note:**
Diagram shown with circuit breakers in connected position, open, charge.
Auxiliary power supply = supply voltage of auxiliary relays (KA...) = supply voltage of electrical auxiliaries (MCH, MX, MN...).
Source-changeover systems with automatic controllers
2 Compact NS100/1600 or Masterpact NW devices

Source-changeover system with BA controller

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

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.

Note:
Diagram shown with circuits de-energised, circuit breakers open and relays in normal position.
Source-changeover system with automatic controllers
2 Compact NS100/1600 or
Masterpact NW devices

Source-changeover system with UA controller

Load shedding and genset management

Contacts shown with normal supply healthy; normal breaker in ON position.

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
"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.
Controller settings

Tests on “Normal” source voltage

A = 0  single-phase test,
A = 1  three-phase test.

Voluntary transfer (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.

Using communication functions

The address of the UA controller is set using the two BBus dials.
Electrical diagram Source-changeover systems with automatic controllers
2 Masterpact NW devices
Diagram no. 51156903

Electrical interlocking with lockout after a fault

(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 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
IVE electrical interlocking and terminal block unit

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

States permitted by mechanical interlocking system
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Note:
Diagram shown with circuit breakers in connected position, open, charged, and ready to close.