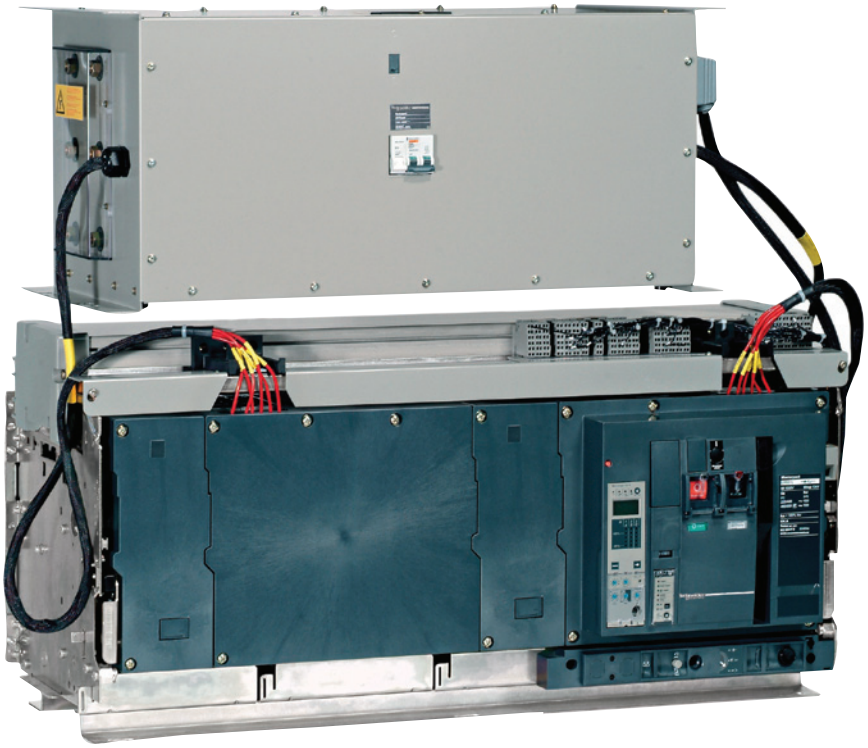
Low voltage electrical distribution

Masterpact UR

User manual
02/2012



Schneider Electric

User manual for
circuit breakers
Masterpact UR16-60

Table of content

About this manual

Purpose of this document

The goal of this manual is to provide users, installers and maintenance personnel with the technical information required for initial start-up, operation and basic repairs on Masterpact UR circuit breakers.

Scope

The information and illustrations in this document are not contractually binding. Products may be modified without notice in compliance with our continuous development policy. The information in this document may be modified without notice and is in no way binding on Schneider Electric.

Document history

Index	List of modifications
1	Initial edition
2	Addition of Micrologic E Power supply of the UR Power module in 240 V AC only instead of 130 or 240 V AC.

Reference documents

Title	Document no.
Micrologic user manuals	
2.0A to 7.0A and 2.0E to 6.0E	33080
5.0P to 7.0P	33083
5.0H to 7.0H	33086
Catalogue	
Masterpact UR	LVPED208004EN

These documents may be downloaded from the internet site www.schneider-electric.com

Product warning

All applicable, local safety regulations must be observed during installation and use of the product. For safety reasons and to ensure conformity with documented product data, only the manufacturer is authorised to carry out repairs on the product or parts thereof.

Rating plate

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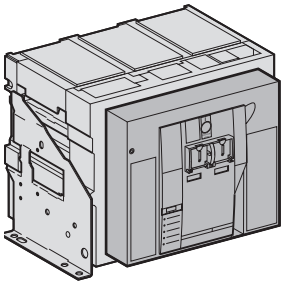

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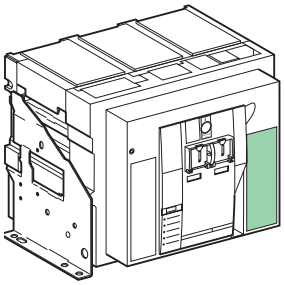

Masterpact UR circuit breakers have rated currents ranging from 1600 to 6000 A and the following breaking capacities:
- 150 kA at 440 V
- 100 kA at 690 V.

Please contact us for information on the availability of 1600 A and 3000 A ratings.

Masterpact UR rating plate

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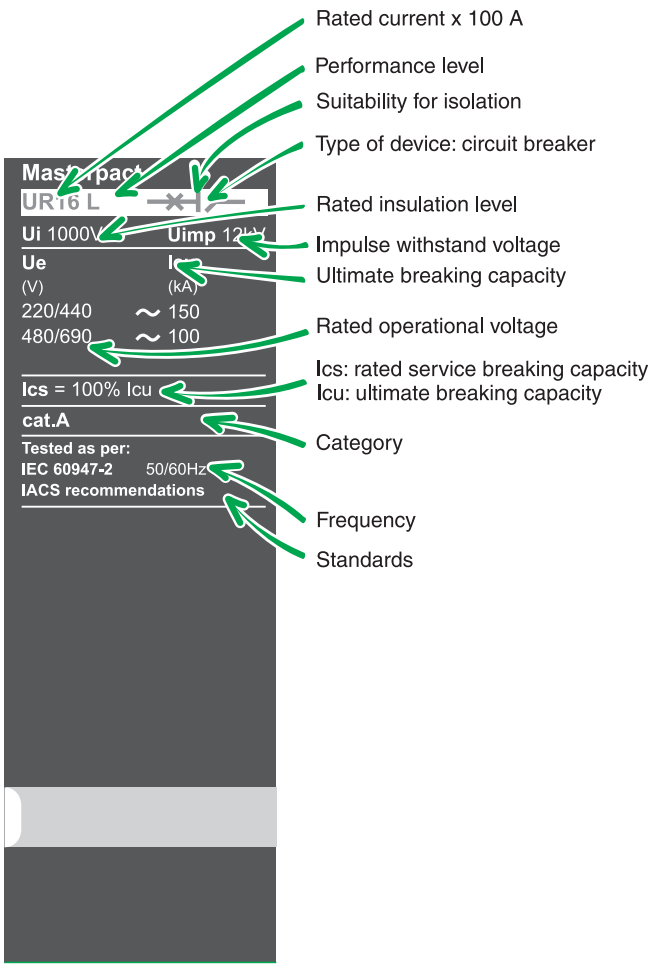

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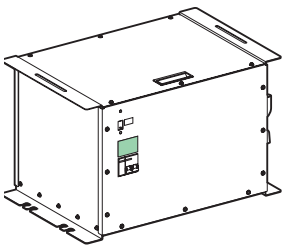

"UR Power" rating plate

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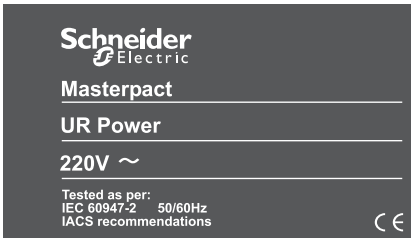
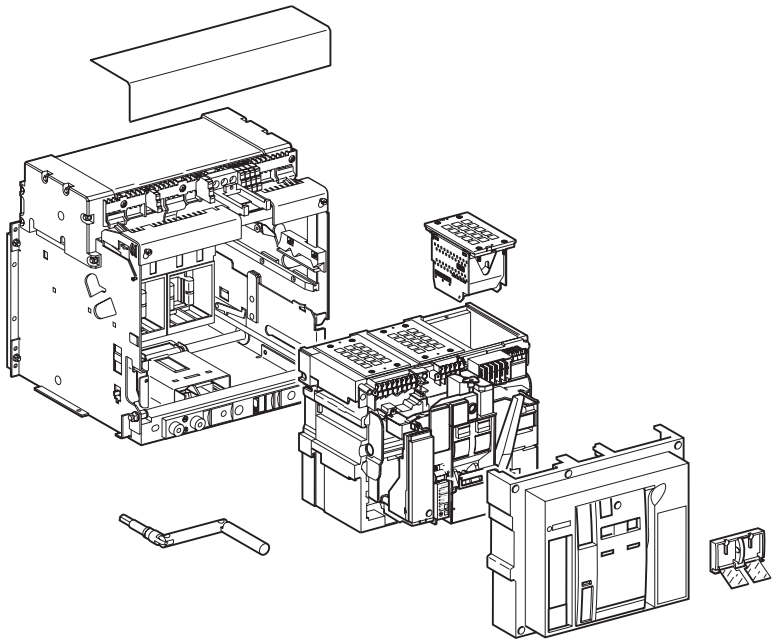


Rating plate

Your Masterpact UR is a drawout version.
It is mounted on a chassis.

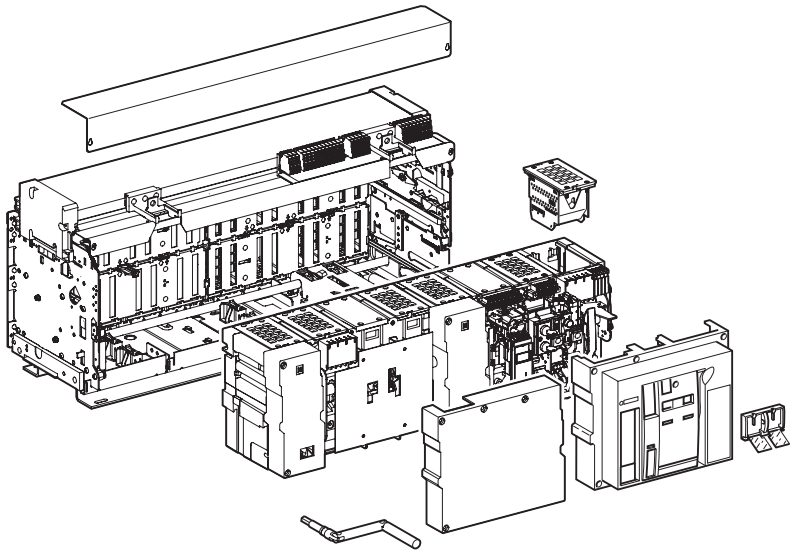
Drawout device 16-30 (3/4 poles)

DB127102.eps



Drawout device 50 (3/4 poles)
Drawout device 60 (3 poles)

DB127101.eps



Components

Chassis

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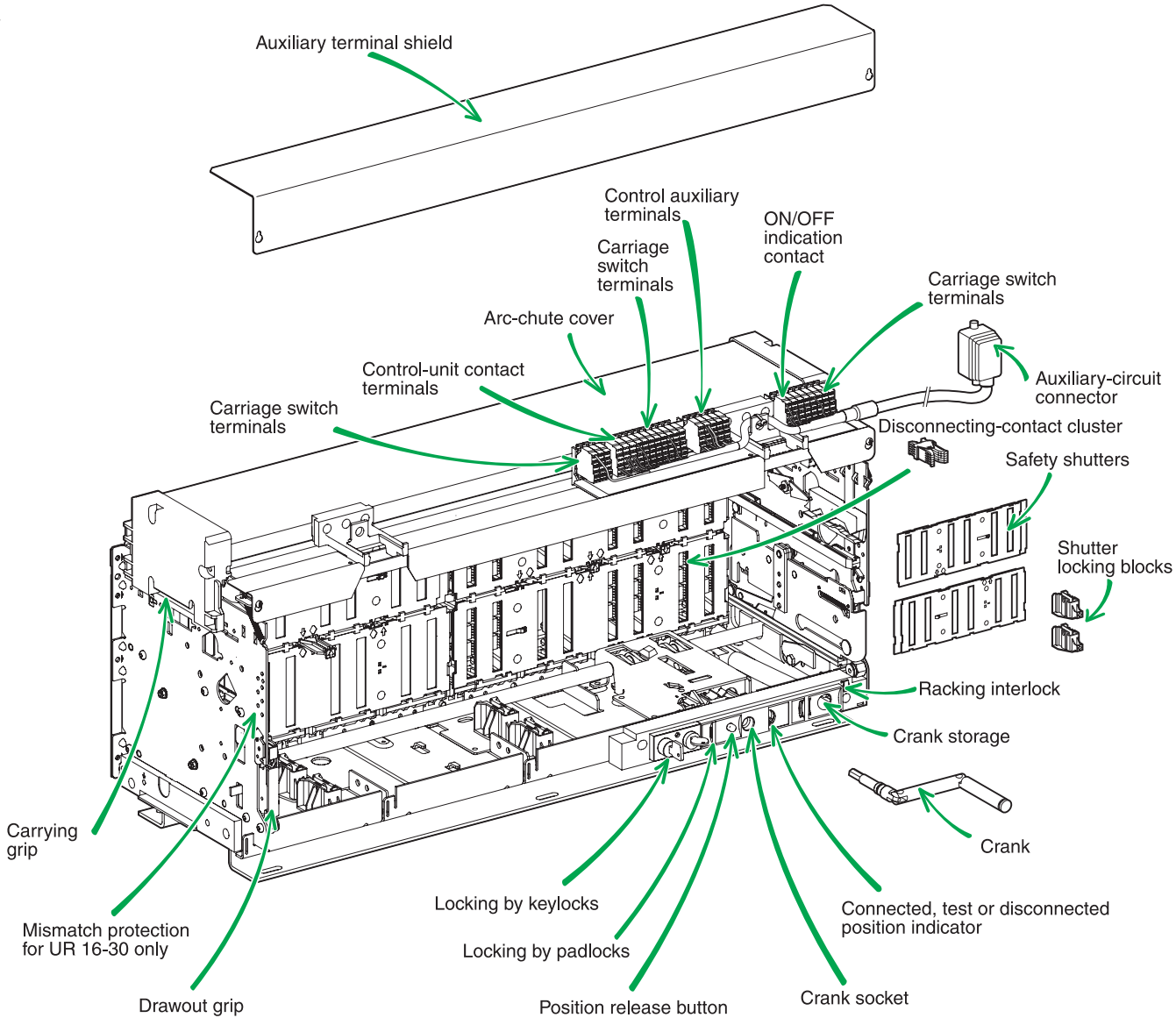

Components

Circuit breaker

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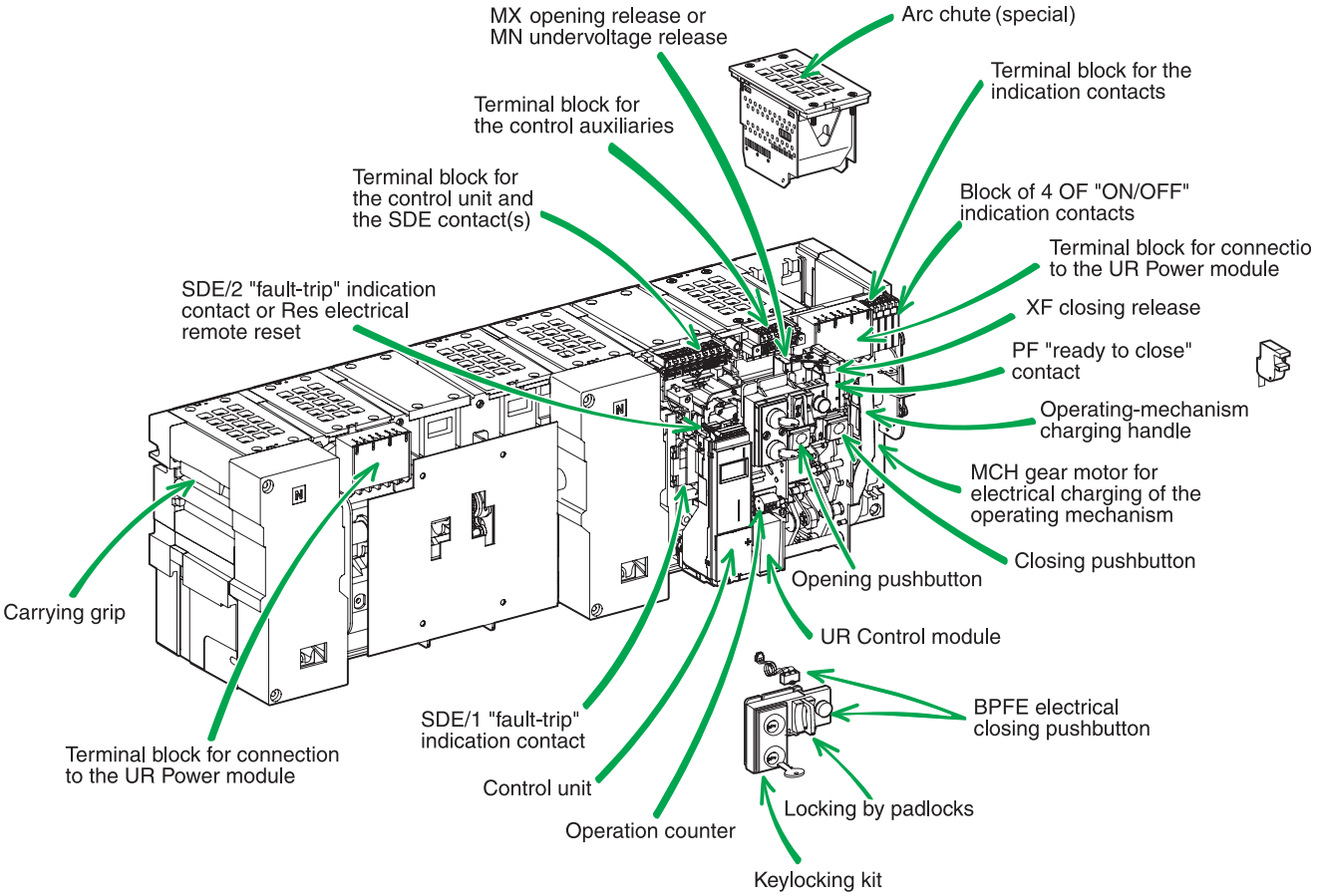

Components

Front

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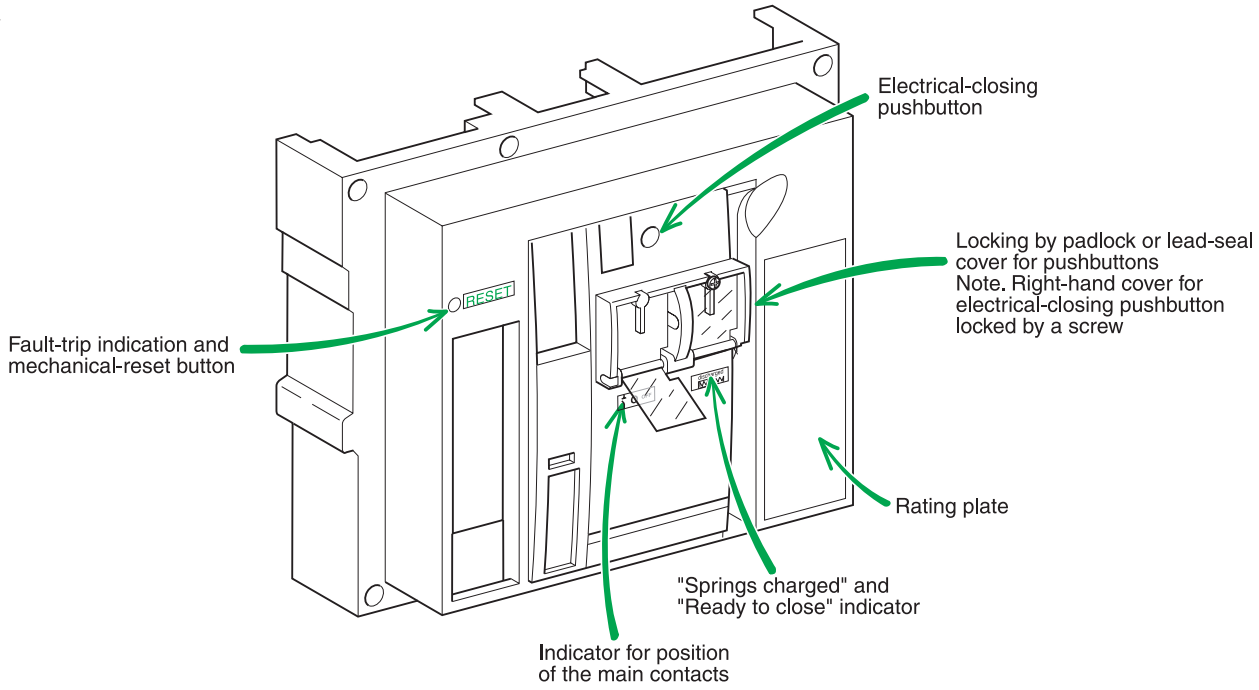

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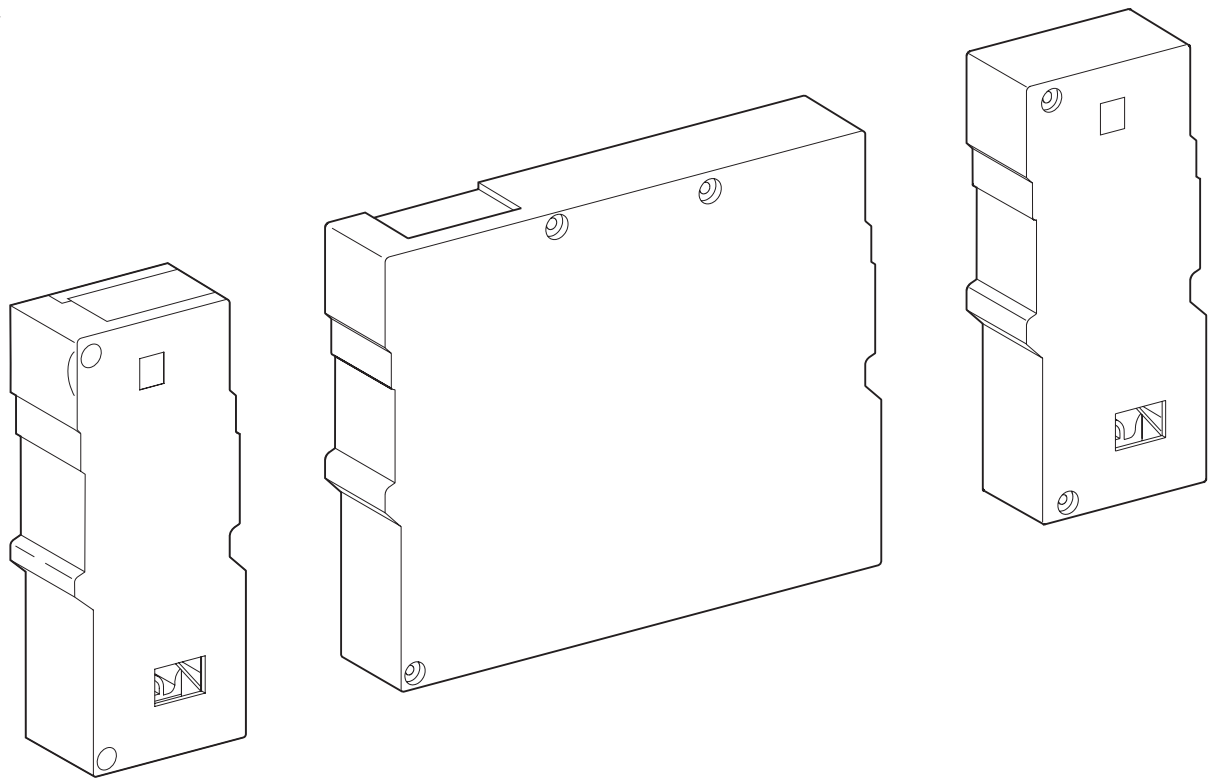

Components

"UR Control" module

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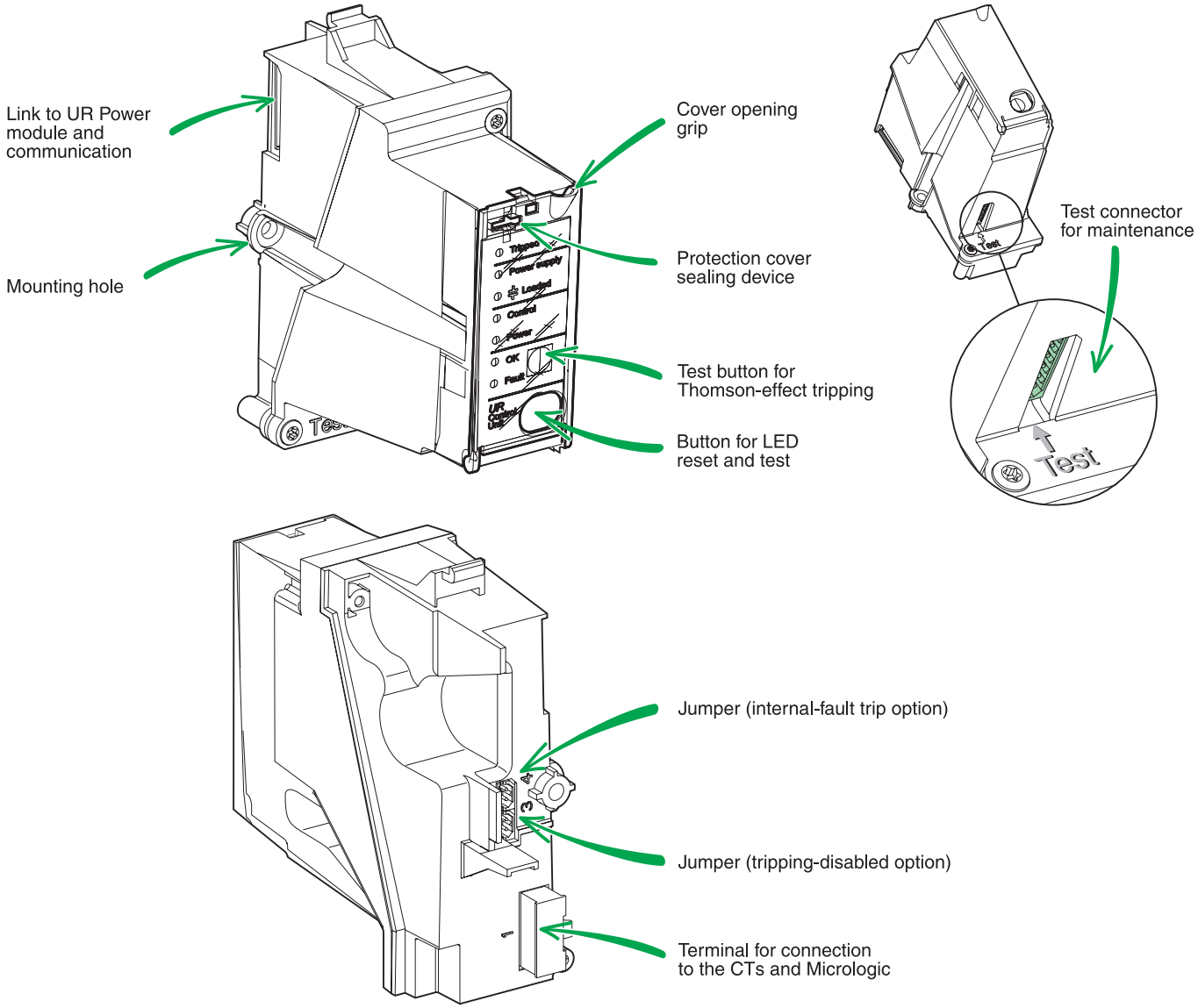

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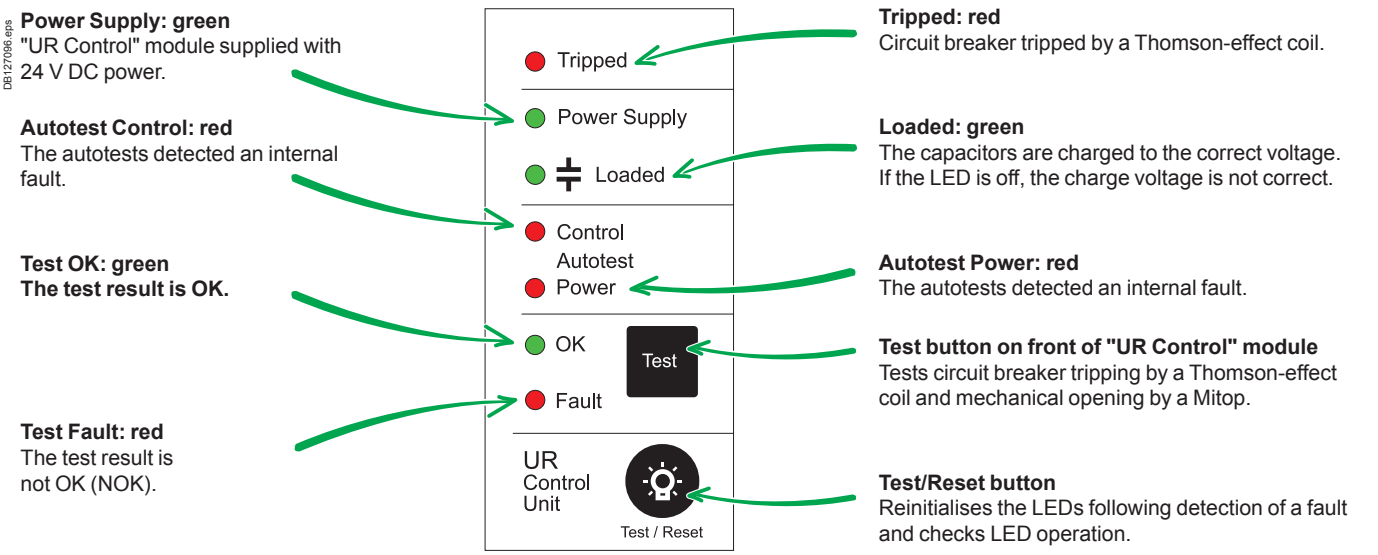
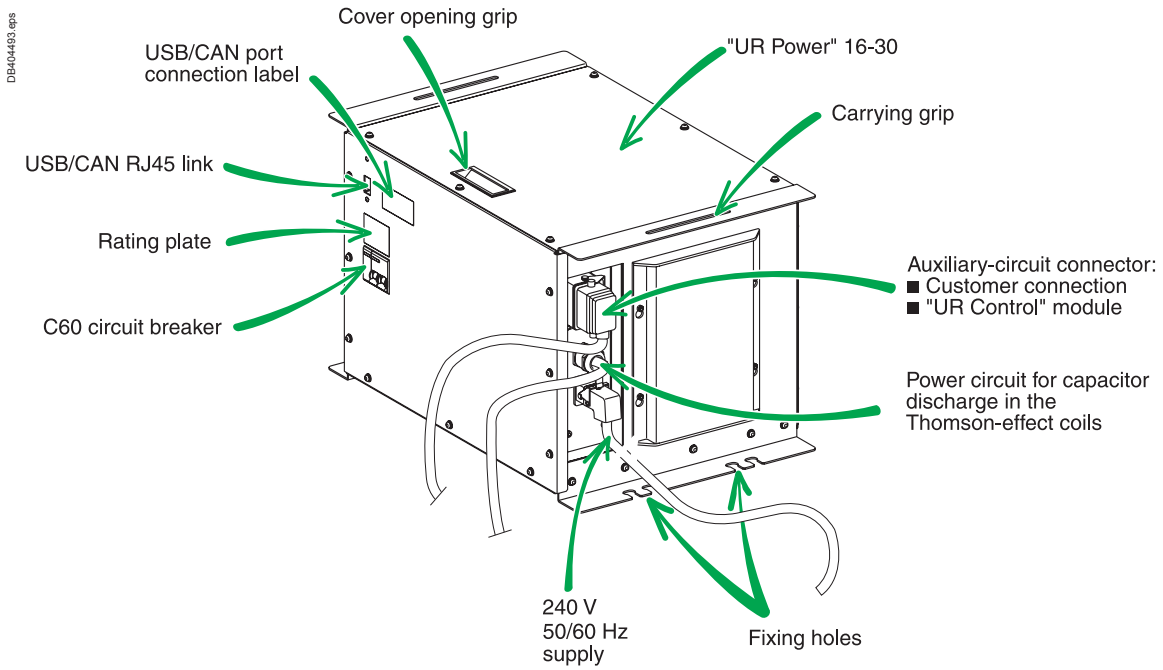
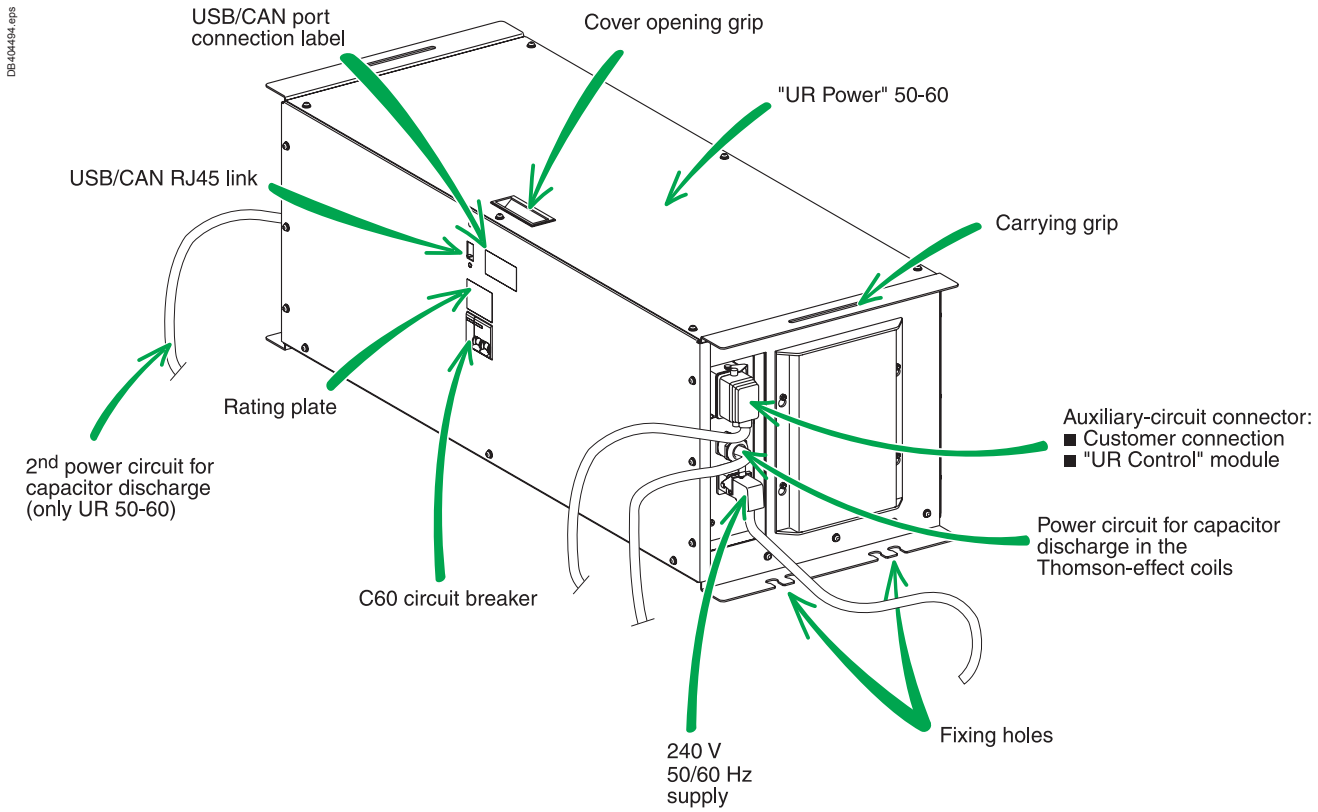


Components

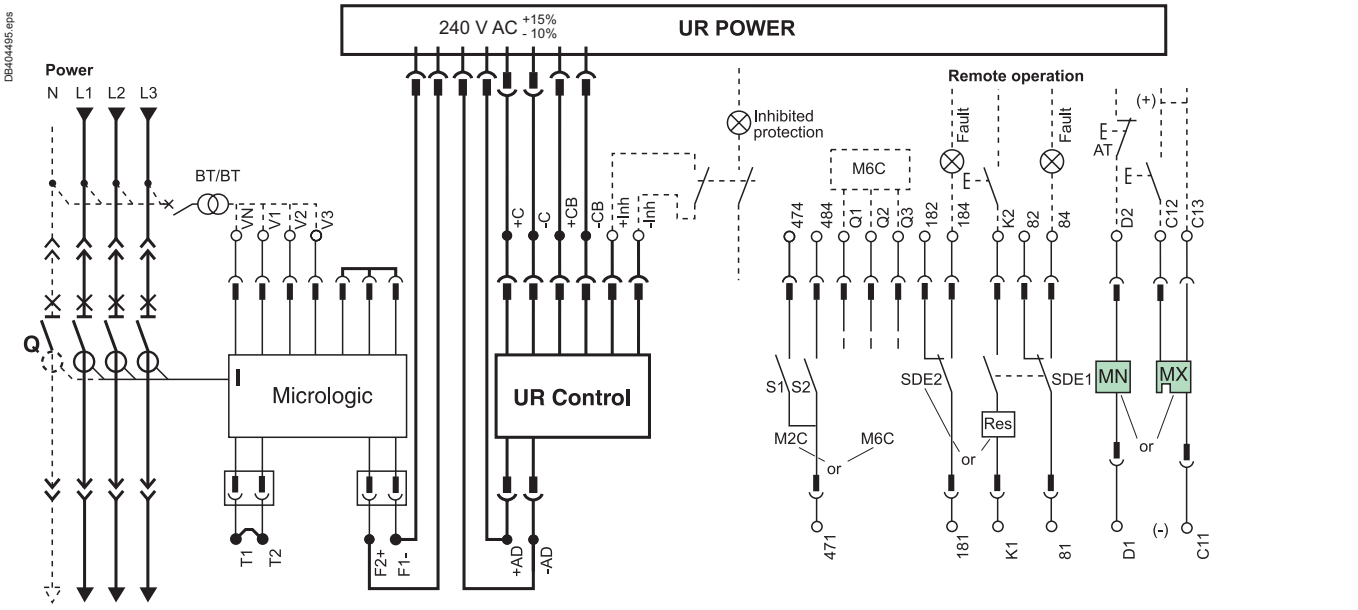
"UR Power" module





Electrical diagram

The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.



Terminal block marking	Control unit										Remote operation									
	Com		UC1		UC2		UC3	UC4	M2C / M6C		SDE2 / Res		SDE1	MN / MX		XF	PF	MCH		
	E5	E6			+Inh	-Inh	F2+	V3	484 / Q3		184	K2	84	D2	C12	A2	254	B2		
	E3	E4	+C	-C	+CB	-CB	VN	V2	474 / Q2		182		82		C13	A3	252	B3		
	E1	E2	+AD	-AD	T1	T2	F1 –	V1	471 / Q1		181	K1	81	D1	C11	A1	251	B1		

A	E	P	H	Control unit
■	■	■	■	**Com:** E1-E6 communication
■	■		■	**UC1:** +C, -C : Output CAN +AD, -AD "UR control" 24 V DC power supply
■		■	■	**UC2:** +Inh, -Inh : Inhibition tripping on electrical defect (indication)
■		■	■	+ CB, -CB : Input Thomson tripping
■	■	■	■	T1, T2
■	■	■	■	**UC3:** F2+, F1- "Micrologic" 24 V DC power supply
		■	■	VN external neutral voltage connector (must be connected to the neutral with a 3P circuit breaker)
		■	■	**UC4:** V1, V2, V3 external voltage connector (must be connected by user)
	■	■	■	**M2C:** 2 programmable contacts (internal relay) 24 V DC supplyed by Micrologic
				or
		■	■	**M6C:** 6 programmable contacts (external module) 24 V DC power supply required.

Remote operation

SDE2: fault-trip indication contact
or
Res: remote reset

SDE1: fault-trip indication contact (supplied as standard)

MN: undervoltage release
or
MX shunt release

XFcom: communicating closing release in series by PF, PFC and PFUR

PF: ready-to-close contacts in series by PFC, PFUR and XF release

MCH: electric motor

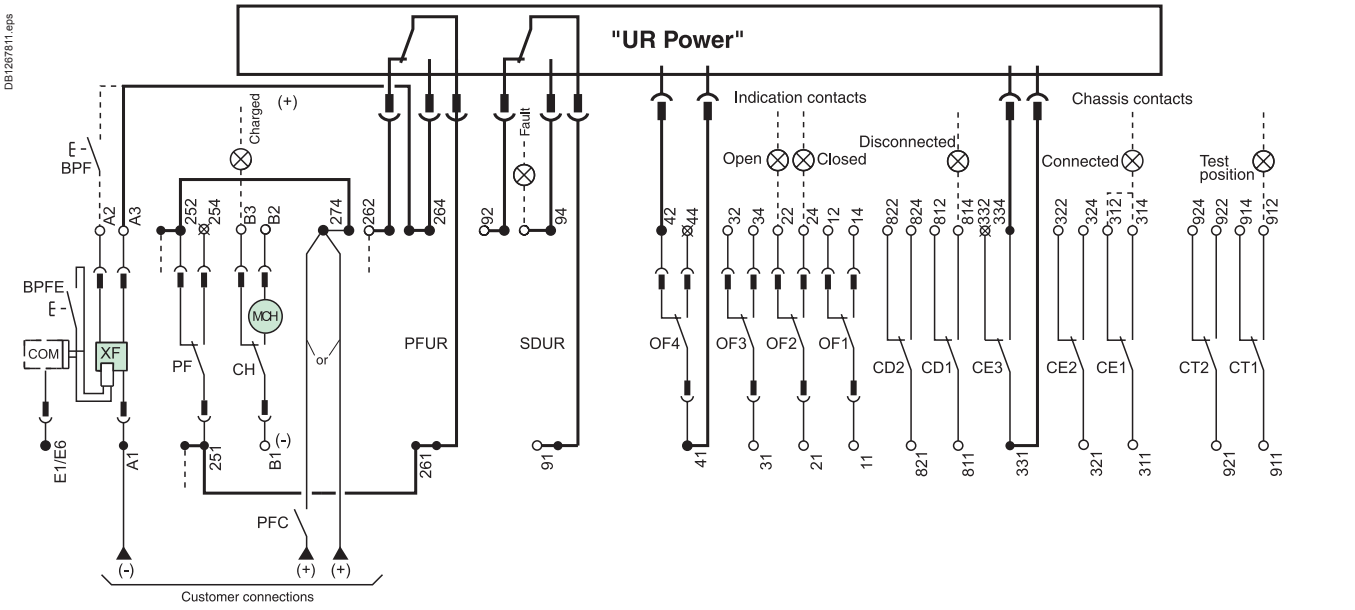
Note: *when communicating MX release is used, the third wire (C13) must be connected even if the communication is not installed.*

***A**: digital ammeter.*
***E**: energy.*
***P**: A + power meter + additional protection.*
***H:** P + harmonics.*

Electrical diagram

Indication contacts

Chassis contacts



Indication contacts

OF4	OF3	OF2	OF1
44	34	24	14
42	32	22	12
41	31	21	11

Customer connection terminals

PFC	PFUR	SDUR
274	264	94
	262	92
	261	91

Chassis contacts

CD2	CD1	CE3	CE2	CE1	CT2	CT1
824	814	334	324	314	924	914
822	812	332	322	312	922	912
821	811	331	321	311	921	911

or

CE8	CE7
384	374
382	372
381	371

Indication contacts

OF4 ON/OFF indication
OF3 contact
OF2
OF1

(**OF4**: Reserved for "UR Power" only)

PFC : Customer "Ready to close"
PFUR : "UR Power" and "UR Control" ready to close

SDUR : Indication that "UR Power" tripped by Thomson effect

Chassis contacts

CD2 "Disconnected **CD1** position " contacts

CE3: "Connected **CE2** position" **CE1** contacts

(**CE3**: Reserved for "UR Power" only)

CT2: "Test- **CT1** position" contacts

or

CE8: "Connected- **CE7** position" contacts

Key:

XXX *Standard supply*

Interconnected connections (only one wire per connection point)

Use forbidden

Factory mounted

Assignment of connection terminals

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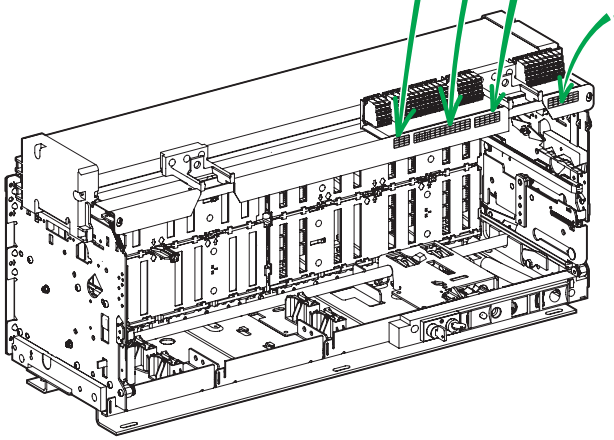


PFC	CD2	CD1
274	824	814
	822	812
	821	811

Com		UC1		UC2		UC3	UC4	M2C/M6C	SDE2/Res.	SDE1	CE3	CE2	CE1
E5	E6			+Inh	-Inh	F2 +	V3	484/Q3	184/K2	84	334	324	314
E3	E4	+C	-C	+CB	-CB	VN	V2	474/Q2	182	82		322	312
E1	E2	+AD	-AD	T1	T2	F1 -	V1	471/Q1	181/K1	81	331	321	311

MN/MX	PFUR	XF	PF	MCH
D2/C12	264	A2		B2
/C13	262	A3	252	B3
D1/C11	261	A1	251	B1

SDUR	OF4	OF3	OF2	OF1		CT2	CT1
94		34	24	14		924	914
92	42	32	22	12		922	912
91	41	31	21	11		921	911

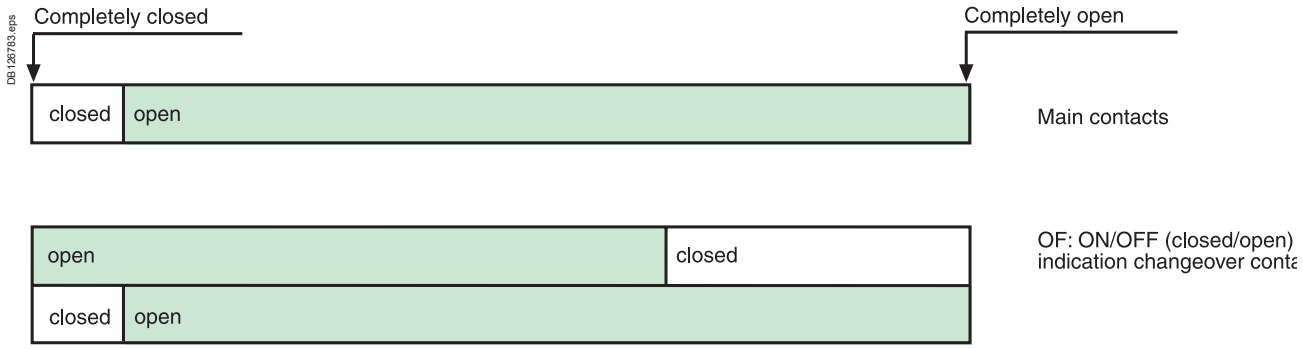
ou

CE8	CE7
384	374
382	372
381	371

Operation of auxiliaries

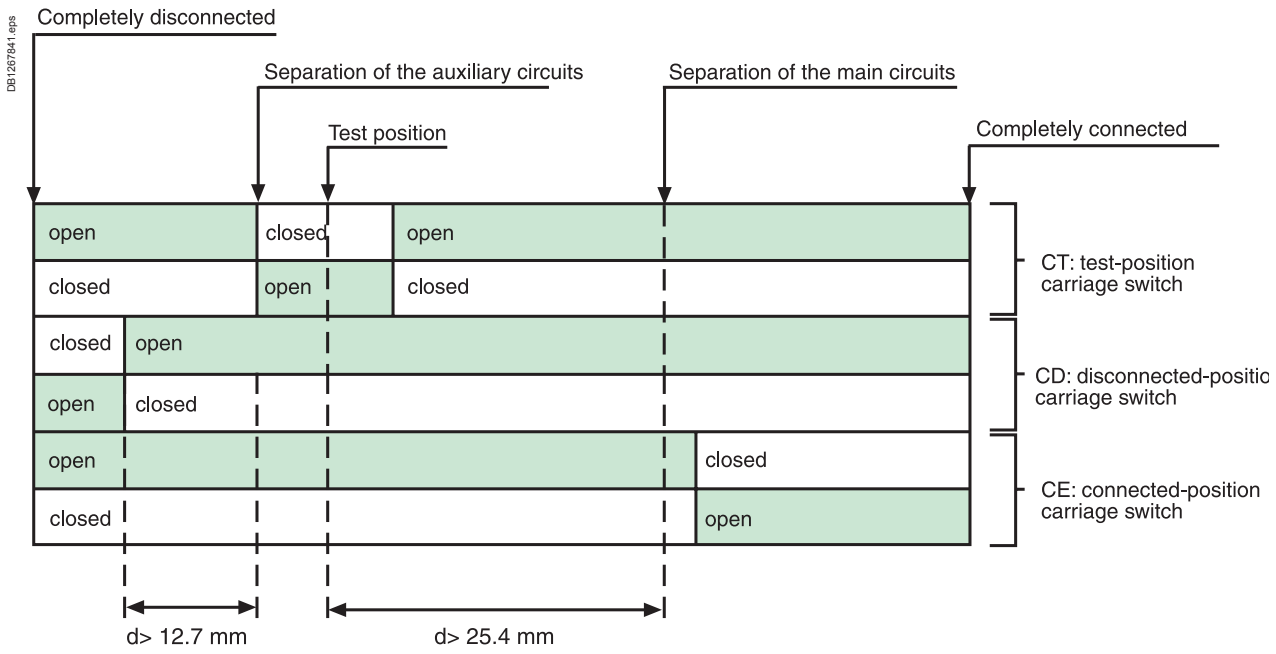
Circuit breaker

The ON/OFF indication contacts signal the status of the device main contacts by the opening mechanism.



Chassis

The carriage switches indicate the connected, test and disconnected positions.



General check

These operations must be carried out in particular before using a Masterpact device for the first time.
In Appendix 2, there is a check list to assist in starting up the installation.

A general check of the circuit breaker takes only a few minutes and avoids any risk of mistakes due to errors or negligence.
A general check must be carried out:
- prior to initial use
- following an extended period during which the circuit breaker is not used.

A check must be carried out with the entire switchboard de-energised. In switchboards with compartments, only those compartments that may be accessed by the operators must be de-energised.

Electrical tests

Insulation and dielectric-withstand tests must be carried out immediately after delivery of the switchboard. These tests are precisely defined by international standards and must be directed and carried out by a qualified expert.

Prior to running the tests, it is absolutely necessary to:
- disconnect all the electrical auxiliaries of the circuit breaker (MCH, MX, XF, MN, Res electrical remote reset)
- remove the long-time rating plug for the 5.0 P, 6.0 P, 5.0 H, 6.0 H control units. This disconnects the voltage measurement inputs.
- disconnect the two connectors of the "UR Power" module.

Switchboard inspection

Check that the circuit breakers are installed in a clean environment, free of any installation scrap or items (tools, electrical wires, broken parts or shreds, metal objects, etc.).

Conformity with the installation diagram

Check that the devices conform with the installation diagram:
- breaking capacities indicated on the rating plates
- identification of the control unit (type, rating)
- presence of any optional functions (remote ON/OFF with motor mechanism, auxiliaries, measurement and indication modules, etc.)
- protection settings (long time, short time, instantaneous, earth fault)
- identification of the protected circuit marked on the front of each circuit breaker.

Condition of connections and auxiliaries

Check device mounting in the switchboard and the tightness of power connections.
Check that all auxiliaries and accessories are correctly installed:
- electrical auxiliaries
- terminal blocks
- connections of auxiliary circuits.

Checking the electrical connections

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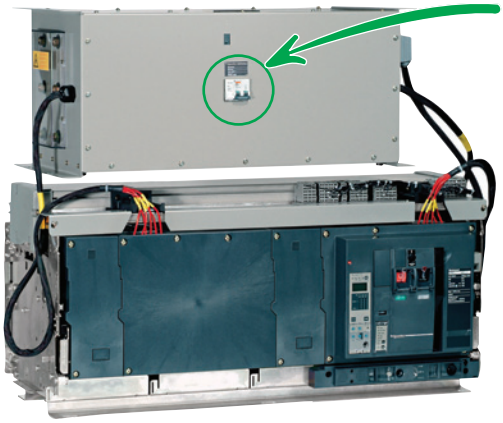

■ Check that the miniature circuit breaker of the "UR Power" module is OFF (open).

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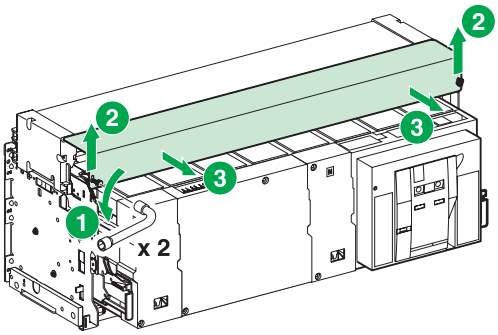
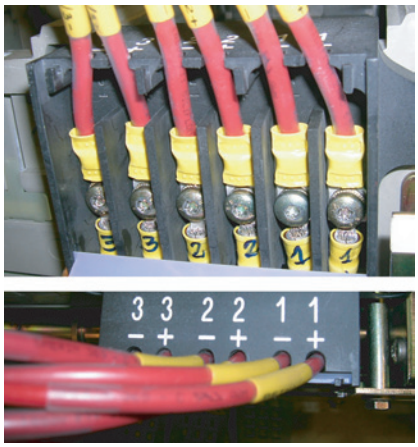


■ Remove the auxiliary terminal shield on the chassis.

DB127114.eps



■ Check that the capacitor-discharge cables (Thomson-effect coils) correspond to the markings and check the tightening torque (7 Nm).

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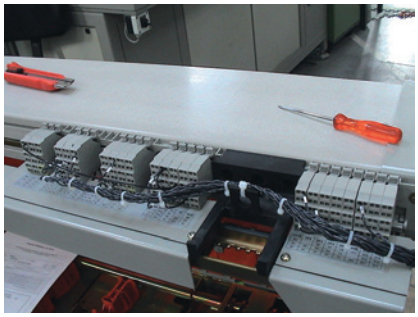

■ Check the connections of the "UR Power" auxiliary wiring (prefabricated cable):
□ pull lightly on each wire
□ if it disconnects, reconnect it.

■ Check the connections of the auxiliary circuits (MX or MN, XF, MCH) on the chassis terminal blocks and their supply voltage.

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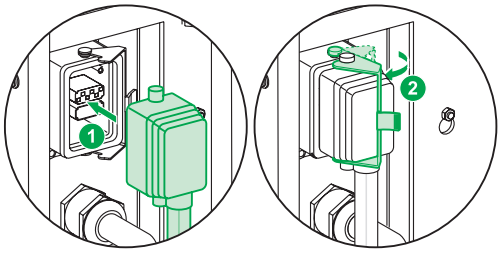


■ Check that the connector is correctly inserted and locked.

Checking the electrical connections

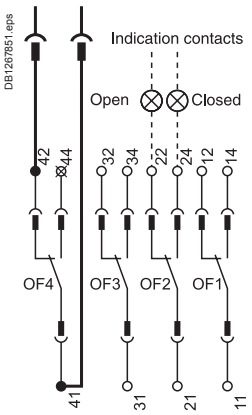
■ Caution: Certain terminals are not accessible (⊠) to avoid connection errors.

PFC	CD2	CD1
274	824	814
	822	812
	821	811

Com		UC1		UC2		UC3	UC4	M2C / M6C	SDE2 / Res	SDE1	CE3	CE2	CE1
E5	E6			+Inh	-Inh	F2+	V3	484 / Q3	184 / K2	84	334	324	314
E3	E4	+C	-C	+CB	-CB	VN	V2	474 / Q2	182	82	332	322	312
E1	E2	+AD	-AD	T1	T2	F1-	V1	471 / Q1	181 / K1	81	331	321	311

MN / MX	PFUR	XF	PF	MCH
D2 / C12	264	A2	254	B2
/ C13	262	A3	252	B3
D1 / C11	261	A1	251	B1

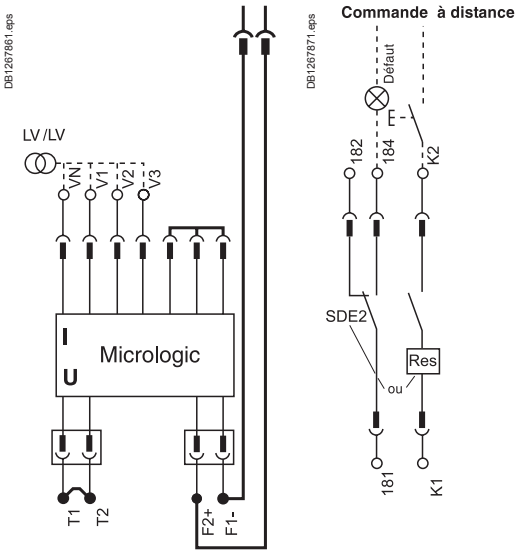
SDUR	OF4	OF3	OF2	OF1	CT2	CT1
94	44	34	4	14	924	914
92	42	32	22	12	922	912
91	41	31	21	11	921	911



■ Caution: Check that OF4 is correctly connected to terminals 41 and 42. It prevents nuisance tripping by a Thomson-effect coil when the circuit breaker is OFF (open).

Tripping under these conditions could do irreparable damage to the circuit breaker.

OF4	OF3	OF2	OF1
44	34	4	14
42	32	22	12
41	31	21	11

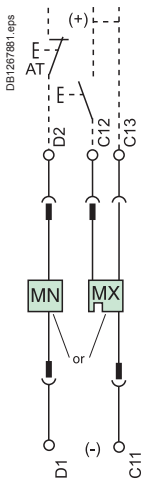


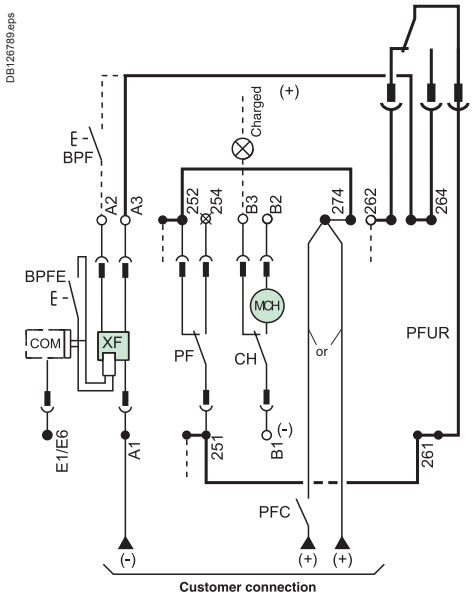
■ Caution: Check that the wires for the UC4 voltage measurement connector (optional) and the supply wires for the SDE2/Res electrical reset (optional) are correctly connected to their respective terminals and NOT to the M2C/M6C terminals.

Connection errors could do irreparable damage to the electronic boards.

UC4	M2C / M6C	SDE2 / Res
Q3	484 / Q3	184 / K2
V2	474 / Q2	182
V1	471 / Q1	181 / K1

Checking the electrical connections





■ Caution: Check that the supply wires for the MN/MX, XF and MCH auxiliaries are correctly connected to their respective terminals and NOT to the PF and PFUR terminals.

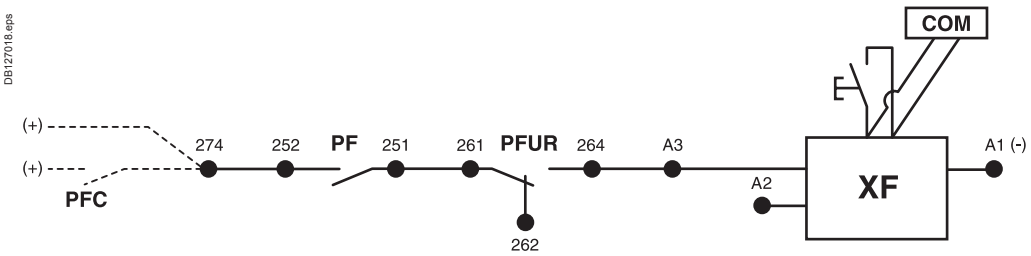
Connection errors could do irreparable damage to these two contacts and make device closing impossible.

MN / MX	PFUR	XF	PF	MCH
D2 / C12	264	A2	254	B2
/ 182	262	A3	252	B3
D1 / C11	261	A1	251	B1

"Ready to close" function

Closing conditions

Device closing is subject to three conditions represented by the in-series connection of three contacts.



■ The PFC (Customer ready to close) contact corresponds to an operating condition in the system or network that is determined by the customer (optional).

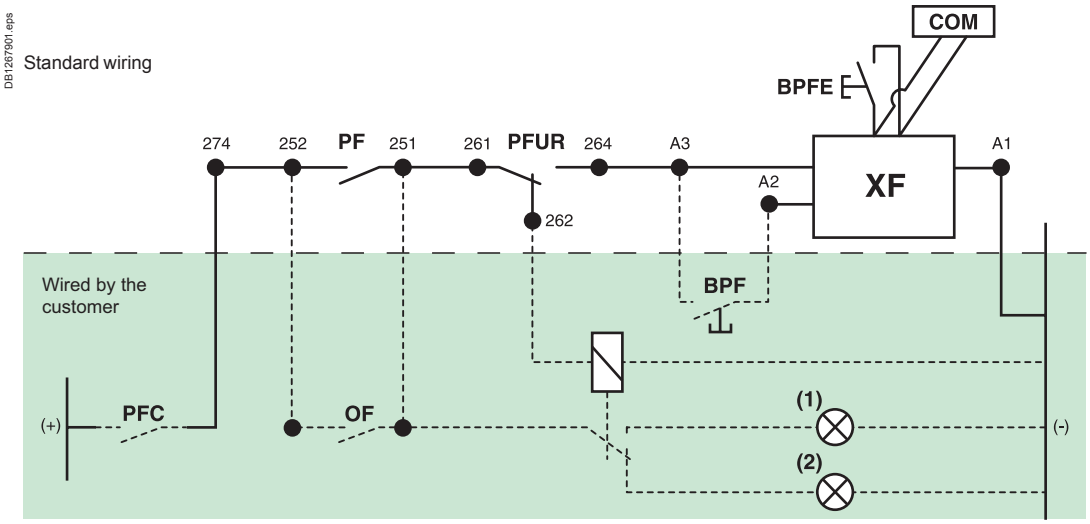
Note: *the PFC contact must be wired by the customer to terminal 274.*
If this contact is not installed, the supply for the XF auxiliary must be connected directly to terminal 274 (see the electrical diagram).

■ The PF ("Ready to close") contact, a standard component, indicates that all the following conditions have been met:
□ the device is open
□ the spring mechanism is charged
□ the following conditions are not present:
- MX supplied
- trip caused by a fault
- remote-tripping order (MN not supplied)
- device not completely racked in
- device locked in the open position.

■ The PFUR ("Ready to close") contact for "UR Power" and "UR Control", a standard component, indicates:
□ that the "UR Power" and "UR Control" modules are supplied
□ that the capacitors are charged
□ and the results of the autotests are OK.
It is possible to remote the status of the PFUR contact using the diagram below (wiring by customer).

Remote the status of the PFUR contact

Note*: the diagram is shown with:*
■ *the circuit breaker open*
■ *the spring mechanism not charged*
■ *the UR Power module not supplied*
■ *all LEDs off.*



PF contact ("Ready to close")
PFC: Customer
PF: Mechanical
PFUR: "UR Control" and "UR Power" modules

(1) Red (fault)
(2) Green

Correctly supplying the "UR Power" module

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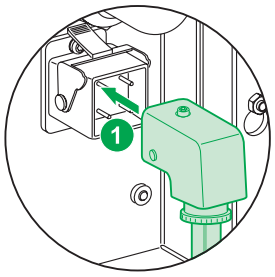
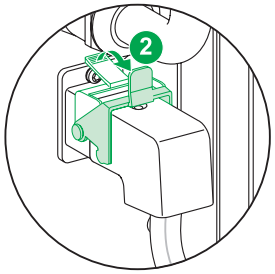




■ Check that the circuit breaker is "open" and that it is in the "test" or "connected position".
■ Connect the supply cable for the "UR Power" module to the 50/60 Hz network.

240 V, -15 % to +10 %

Note:

Below 204 V (240 V - 15 %), the capacitors do not charge.

Above 264 V (240 V + 10 %).
The electronic circuits may be destroyed.

Electrical characteristics

"UR Power" Supply	Start	After 30 sec.	Operation	Autotest sequence during operation	
240 V	10 A	1 A	400 mA	0.8 A	30 sec.

Note: *it is recommended to supply the "UR Power" module via a LV/LV isolating transformer or a UPS.*

Checking the PF ("Ready to close") function

■ Check that the manual reset button is pushed in.
■ Supply the auxiliary circuit (XF, MX or MN, MCH).
□ the gear motor MCH charges the spring mechanism
□ the PF (Ready to close) contact is closed.

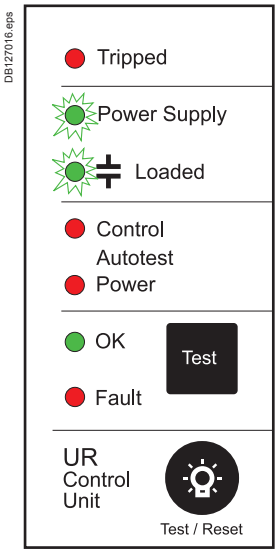
Note: *this condition can be checked on the front of the circuit breaker via the "OFF" and "charged OK" indications.*

■ Close the miniature circuit breaker of the "UR Power" module:
□ the green Power Supply LED on the "UR Control" module goes on (and remains on as long as the miniature circuit breaker is closed).

Note: *if the LEDs flash, see the next page on interpreting LED signals.*

□ the green Loaded LED goes on automatically when the capacitors are fully charged (~ 30 seconds at the rated voltage).

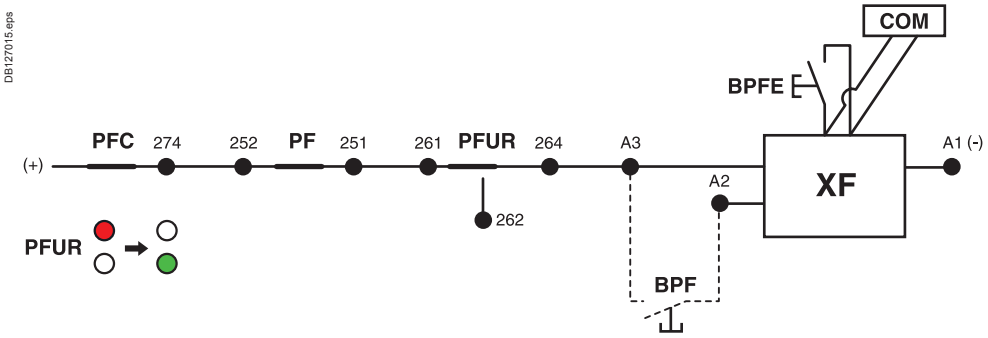
Note: *during operation, the capacitors are charged continuously.*



□ following capacitor charging, an autotest on the "UR Power" and "UR Control" modules is automatically run.
□ at the end of the autotest (~ 50 sec), if no internal faults were detected, the PFUR ("UR Power" ready to close) contact, connected in series with the XF release, closes.

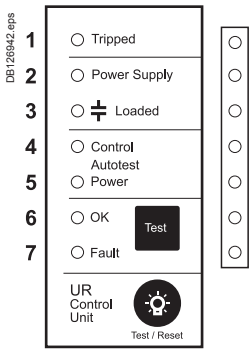
Note: *see the next page for the list of the autotests carried out.*

□ the circuit breaker can be closed by BPF or BPFE or COM.



LEDs and autotests after energising

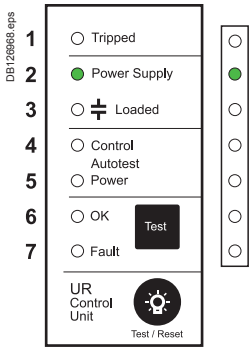
All the LEDs are off.
The system does not start.



Note: *if the LEDs flash, contact Schneider Electric after-sales support.*

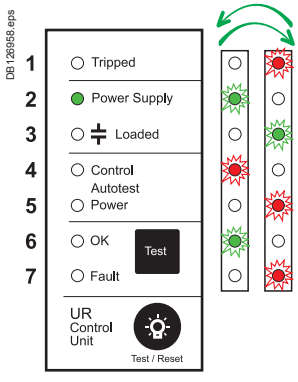
- No 24 V DC voltage supplied to the "UR Control" module.

The Power Supply LED **(2)** goes on, but the Loaded LED **(3)** remains off. The system does not start.

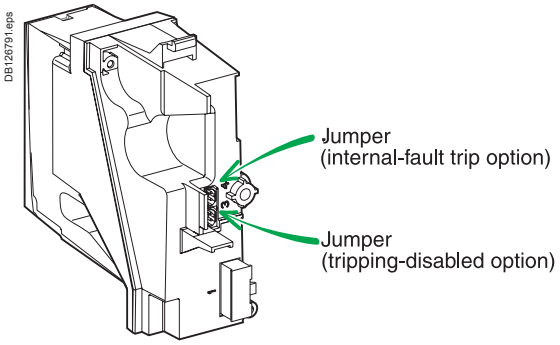


- System calibration was not carried out or an error was made on the user interface. The CALIBRATION_DONE variable is set to FALSE.
- The supply voltage for the "UR Power" module is outside tolerances (< -15 %).
- The ambient temperature is less than 15 °C.
- Failure of the 20 V power (Mitop supply).

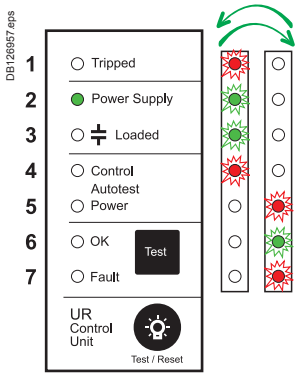
Even and odd LEDs flash alternately.



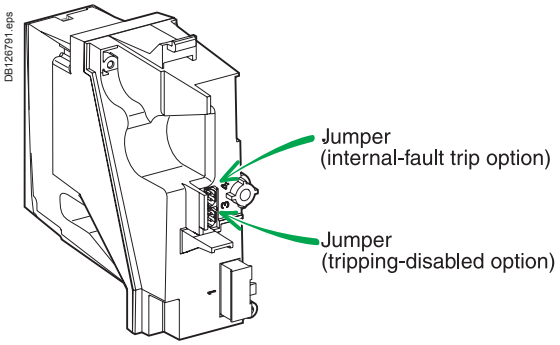
- There is an inconsistency in the configuration of the option (internal-fault trip) between the programming for the "UR Control" module and the presence or absence of the jumper on terminal 4 of the "UR Control" module.



First four LEDs and last three LEDs flash alternately.

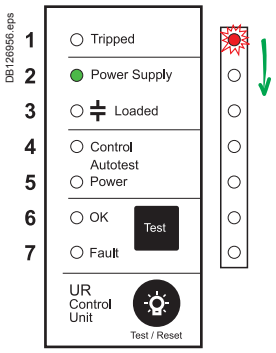


- There is an inconsistency in the configuration of the option (tripping disabled) between the programming for the "UR Control" module and the presence or absence of the jumper on terminal 3 of the "UR Control" module.



LEDs and autotests after energising

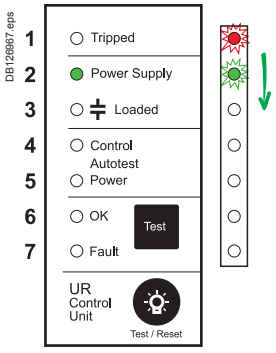
LEDs flash one after the other (first LED 1, then LED 2, etc.).



■ There is an inconsistency in the configuration between the rating of the "UR Power" module ("Basic model Ti1 board, Ti2 board" variable) and the number of connection ribbon cables (between the interface boards and the Ti boards).

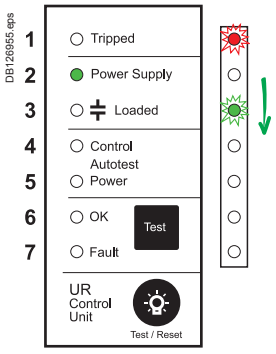
Ti1 → 1 ribbon cable for 3000 A.
Ti2 → 2 ribbon cables for 6000 A.

Pairs of adjacent LEDs flash one after the other (LEDs 1&2, then 2&3, etc.).



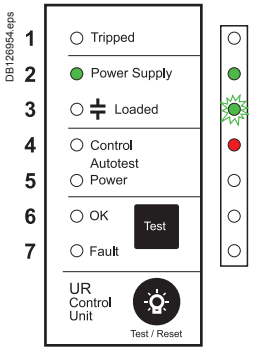
■ The tripping curve for the "UR Control" module is incorrect.

Pairs of non-adjacent LEDs flash one after the other (LEDs 1&3, then 2&4, etc.).



■ Incorrect pairing between the "UR Power" and "UR Control" modules.

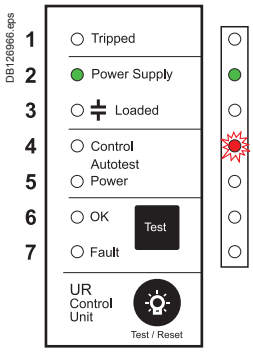
LED 3 flashes, LED 4 remains on.



■ The capacitors are outside tolerances (+20 %, -20 %).

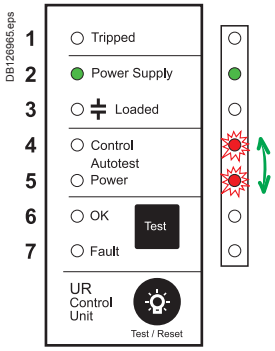
LEDs and autotests after energising

LED 4 flashes.



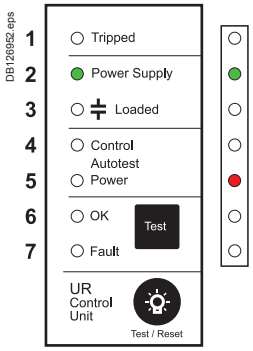
■ The battery is not OK.

LEDs 4 and 5 flash alternately.



■ Configuration parameters lost (serial no., association no., pairing data).

"Autotest Power" LED goes on red.



■ Fault in power-circuit continuity.

For more information, see the section on "troubleshooting and solutions".

After clearing the fault, press the Test/Reset button to turn off all the LEDs on the "UR Control" module.

Checking the selected options

Two options are available.

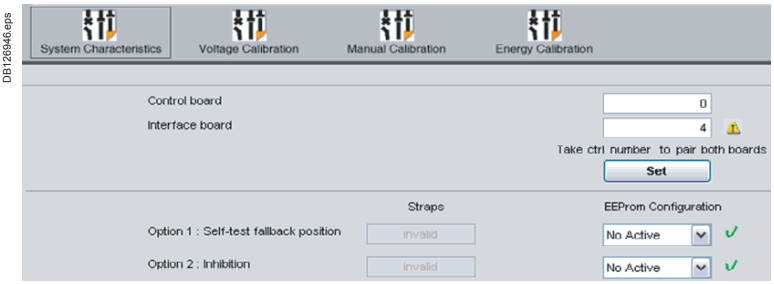
Option 1:
Tripping for internal faults in the "UR Control" and "UR Power" modules
If this option is not selected, internal faults are indicated, but do not result in device tripping.

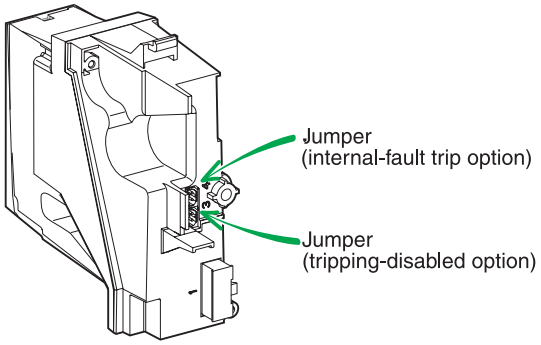
Option 2:
Disable electrical-fault trip
(When the disable contact is v oluntarily closed, the device must not open for short-circuits and internal faults.)

Caution: device opening is possible locally by pushing the OFF button and remotely by the MX or MN auxiliary.

If this option is not selected, the device trips when an electrical fault is detected.
- Connect the PC to the CAN port on the "UR Power" module.
- Run the Masterpact UR utility.
- Check via the Set menu and System characteristics t he status of the jumper and the configuration selected.
- Check compliance with the order.

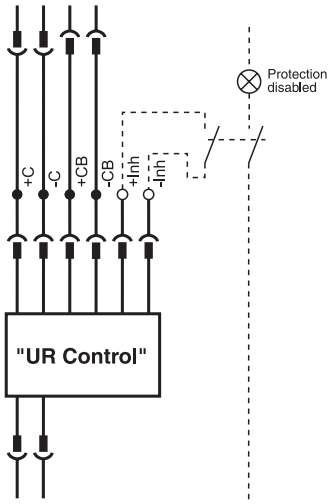
Note: *option 3, Arc detection, is not configured.*





If option 1 for tripping for internal faults in the "UR Control" and "UR Power" modules is activated:
- there is no jumper on terminal 4 of the "UR Control" module
- in the Set menu and System characteristics of the user interface, the status of the option is active and the absence of the jumper is confirmed.

If option 1 is not activated:
- there is a jumper on terminal 4 of the "UR Control" module
- in the Set menu and System characteristics of the user interface, the status of the option is inactive and the presence of the jumper is confirmed.



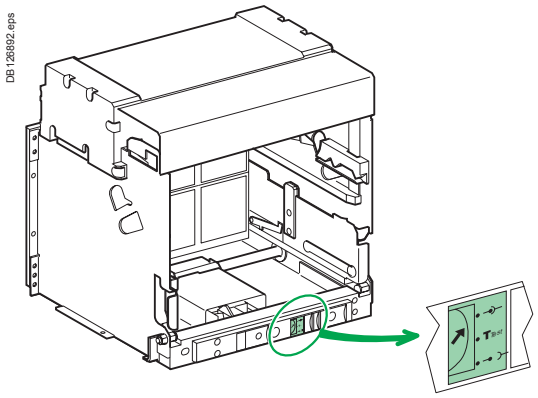
If option 2 for disabling of electrical-fault trips is activated:
- there is no jumper on terminal 3 of the "UR Control" module
- in the Set menu and System characteristics of the user interface, the status of the option is active and the absence of the jumper is confirmed.

If option 2 is not activated:
- there is a jumper on terminal 3 of the "UR Control" module
- in the Set menu and System characteristics of the user interface, the status of the option is inactive and the presence of the jumper is confirmed.

If option 2 for disabling of electrical-fault trips is activated, check its operation.

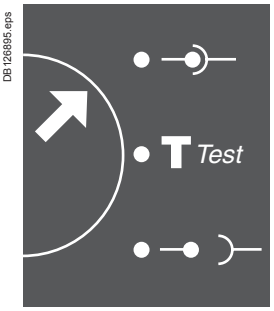
Note: *the trip-disabling function is activated by a contact that must be wired by the customer. When the contact is closed, the circuit breaker must not open if an electrical fault occurs. When the contact is open, the circuit breaker trips normally.*

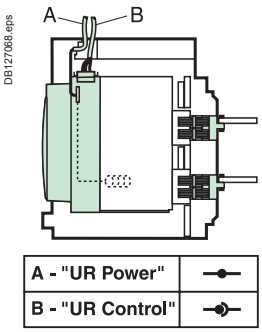
Circuit breaker positions



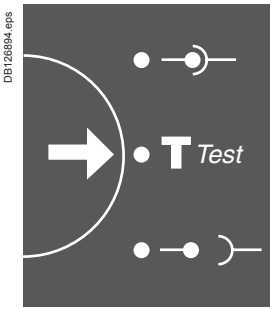
The indicator on the front signals the position of the circuit breaker in the chassis.

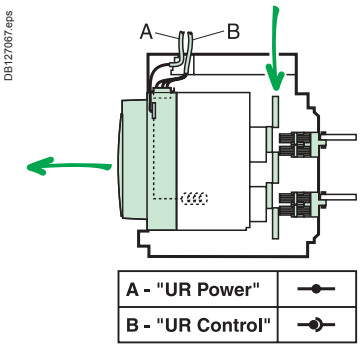
■ "connected" position



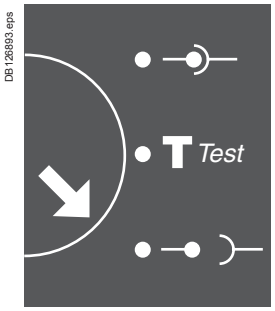


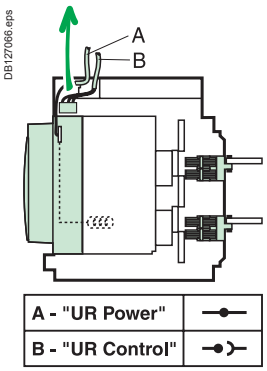
■ "test" position

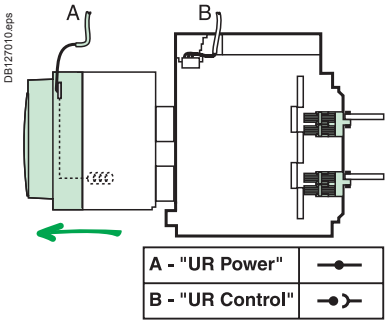




■ "disconnected" position







CAUTION: the capacitor-discharge cables are not disconnected when the device is drawn out.

Racking

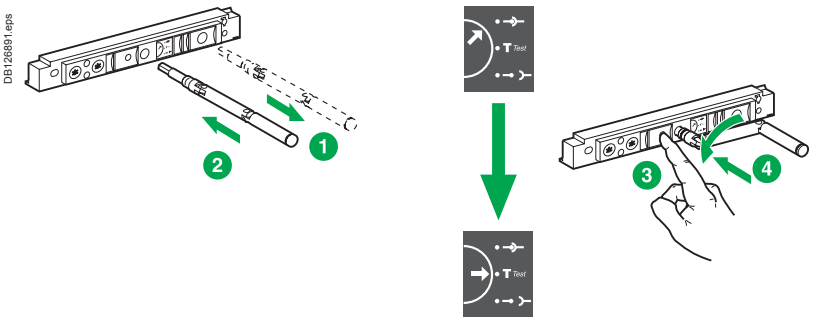
These operations require that all chassis locking functions be disabled (see page 34 on locking the device in position in the chassis).

Prerequisites

To connect and disconnect Masterpact UR, the crank must be used. The locking systems, padlocks and the racking interlock all inhibit use of the crank.

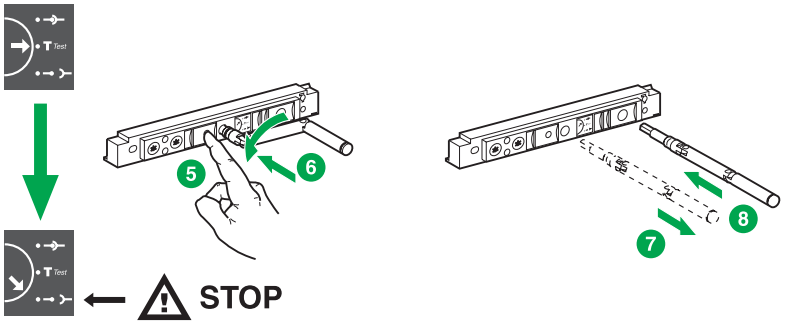
Withdrawing the circuit breaker from the "connected" to "test" position, then to "disconnected" position

The circuit breaker is in "connected" position.



The circuit breaker is in "test" position.

The circuit breaker is in "test" position. Remove the crank or continue to "disconnected" position.



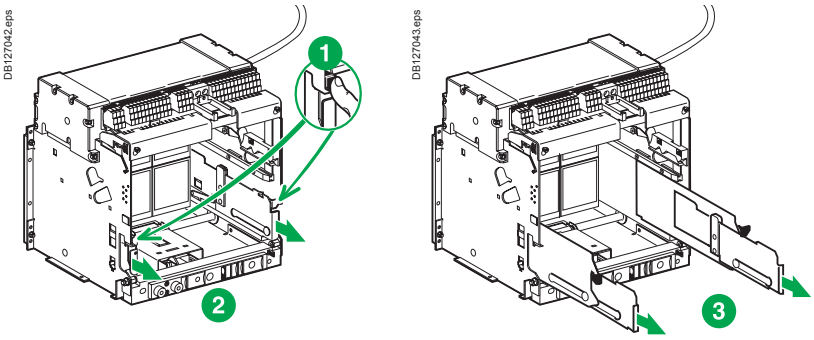
The circuit breaker is in "disconnected" position.

Caution: The right-hand rail cannot be removed if the crank has not been removed or if the circuit breaker is not fully disconnected.

Removing the rails

Press the release tabs and pull the rails out.

If you want to reinstall the rails: press the release tabs push the rails into position.



Racking

For complete information on Masterpact UR handling and mounting, see the installation manual(s).

Before mounting the circuit breaker, make sure it matches the chassis and remove the auxiliary terminal shield.

Inserting Masterpact UR

Position the circuit breaker on the rails. Check that it rests on all four supports.

Open the circuit breaker (in any case, it opens automatically during connection).

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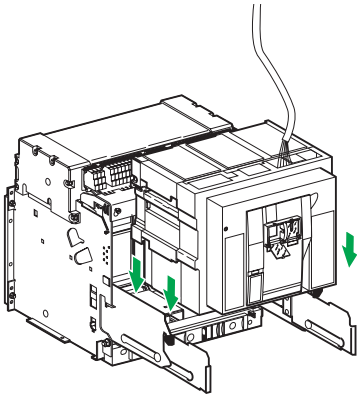
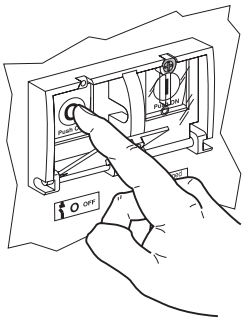


DB127084.eps



Push the circuit breaker into the chassis, taking care not to push on the control unit.

If you cannot insert the circuit breaker in the chassis, check that the mismatch protection on the chassis corresponds to that on the circuit breaker (Masterpact UR 16-30 only).

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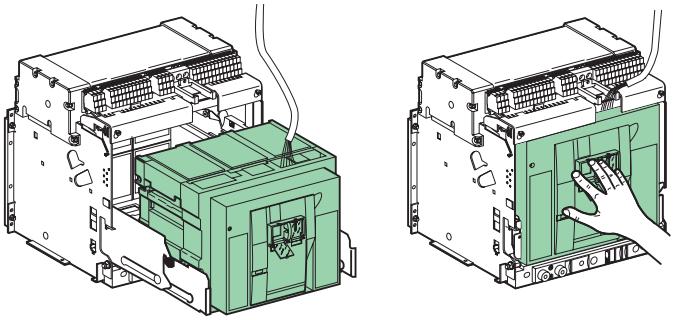
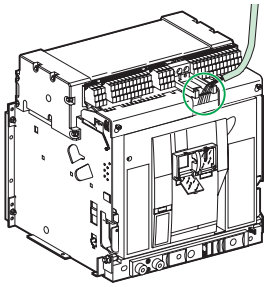
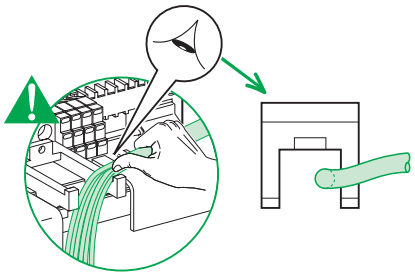


Check that the wires are correctly positioned in the trough.

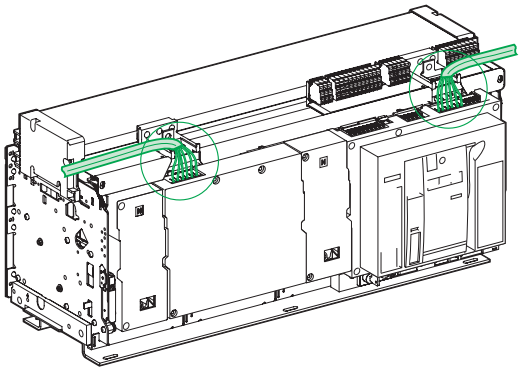
DB127041.eps



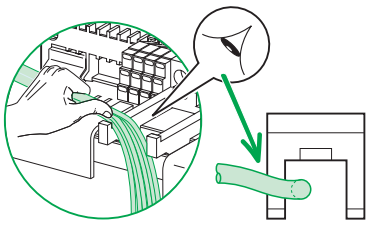
DB127031.eps



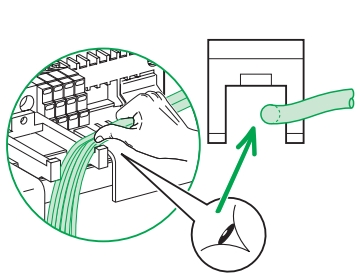
DB127116.eps



DB127033.eps

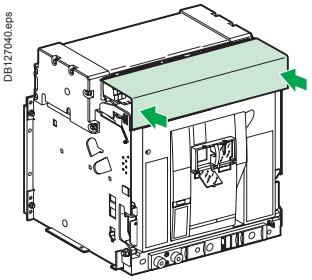


DB127032.eps

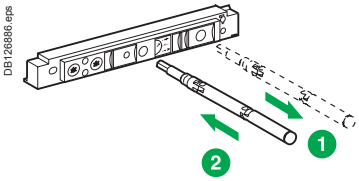


Racking

Reinstall the auxiliary terminal shield.

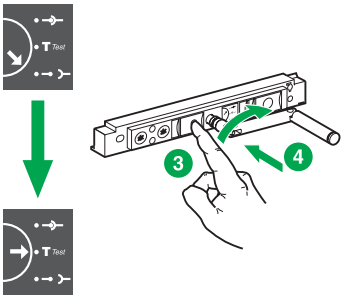


Racking the circuit breaker from the "disconnected" to "test" position, then to "connected" position

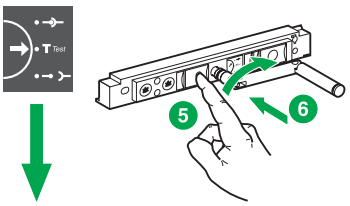


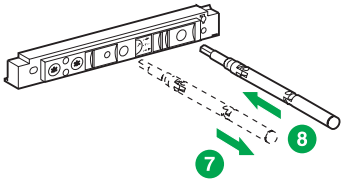
The device is in "test" position.

The device is in "disconnected" position.



The device is in "test" position. Remove the crank or continue to "connected" position.



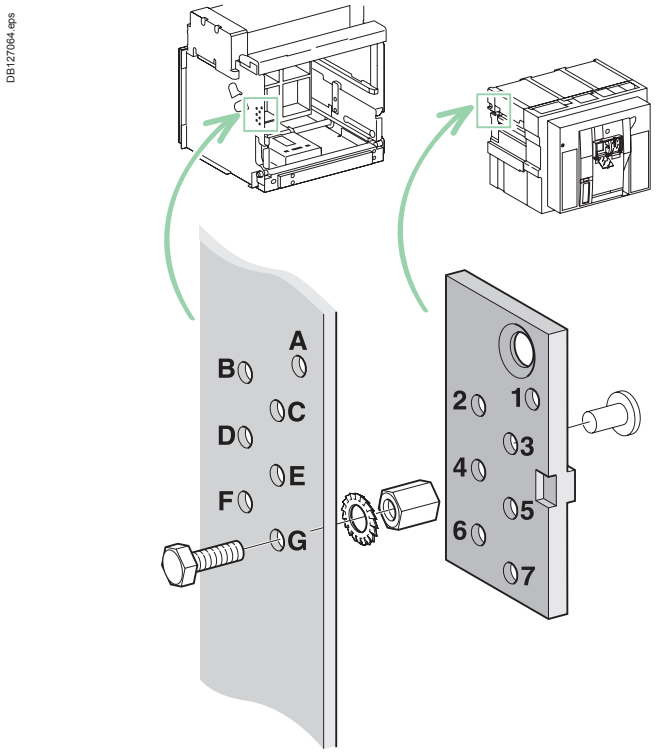


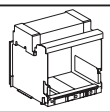
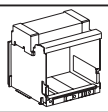
The device is in "connected" position.

Matching a Masterpact UR16-30 circuit breaker with its chassis

To set up a mismatch-prevention combination for the circuit breaker and the chassis, see the mismatch-prevention installation manual.

The mismatch protection ensures that a circuit breaker is installed only in a chassis with compatible characteristics.
This applies only to Masterpact UR16-30.
The possible combinations are listed below.

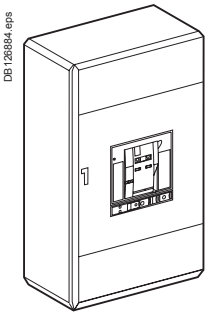


			
A B C D	5 6 7	B C D E	1 6 7
A B C E	4 6 7	B C D F	1 5 7
A B C F	4 5 7	B C D G	1 4 7
A B C G	4 5 6	B C E F	1 4 6
A B D E	3 6 7	B C E G	1 3 7
A B D F	3 5 7	B D E F	1 3 6
A B D G	3 5 6	B D E G	1 3 5
A B E F	3 4 7	B D F G	1 3 4
A B E G	3 4 6	C D E F	1 2 7
A B F G	3 4 5	C D E G	1 2 6
A C D E	2 6 7	C E F G	1 2 4
A C D F	2 5 7	D E F G	1 2 3
A C D G	2 5 6		
A C E F	2 4 7		
A C E G	2 4 6		
A C F G	2 4 5		
A D E F	2 3 7		
A D E G	2 3 6		
A D F G	2 3 5		
A E F G	2 3 4		

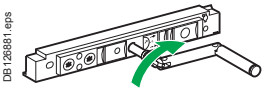
Locking the switchboard door

Disable door opening

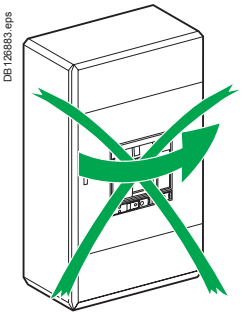
Close the door.



Put the Masterpact in "test" or "connected" position.



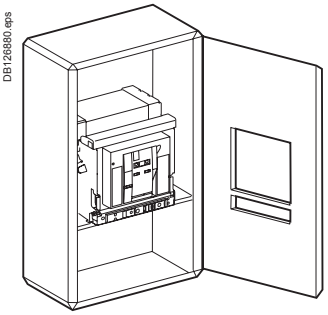
The door is locked.



Enabling door opening

Rack Masterpact UR out.

The door is unlocked.



Locking the device position in the chassis

Padlocks and keylocks may be used together.

Combination of locking systems

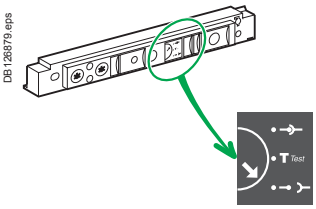
To disable device racking to the connected position, use the following depending on your needs:

- one to three padlocks
- one or two keylocks
- a combination of the two locking systems.

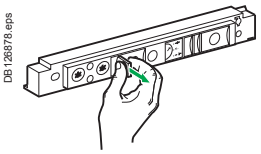
Disabling connection when the circuit breaker is in "disconnected" position, using 1 to 3 padlocks (max. shackle diameter 5 to 8 mm)

Locking

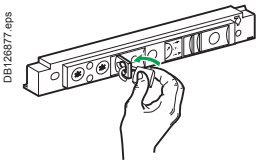
Circuit breaker in "disconnected" position.



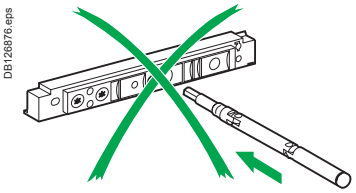
Pull out the tab.



Insert the shackle (max. Ø 5 or Ø 8 mm) of the padlock(s).

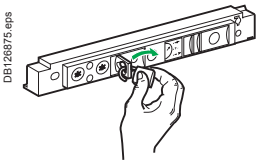


The crank cannot be inserted.

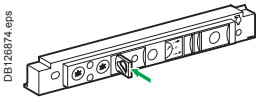


Unlocking

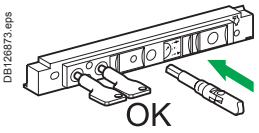
Remove the padlock(s).



Release the tab.



The crank can be inserted.



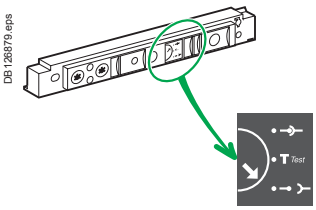
Locking the device position in the chassis

Padlocks and keylocks may be used together.

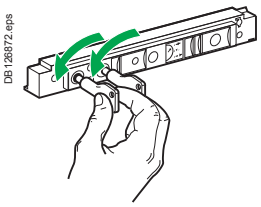
Disabling connection when the circuit breaker is in "disconnected" position, using one or two keylocks.

Locking

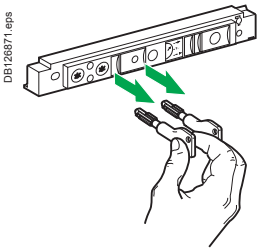
Circuit breaker in "disconnected" position.



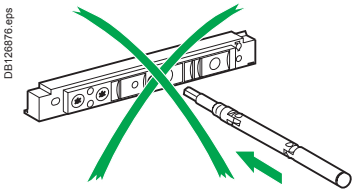
Turn the key(s).



Remove the key(s).

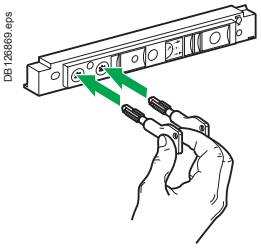


The crank cannot be inserted.

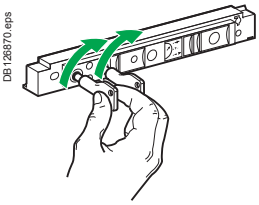


Unlocking

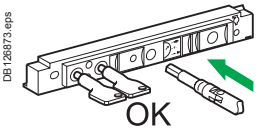
Insert the key(s).



Turn the key(s).

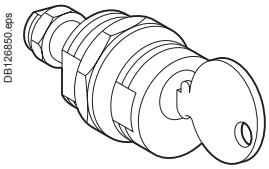


The crank can be inserted.

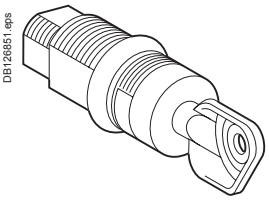


Four types of keylocks are available

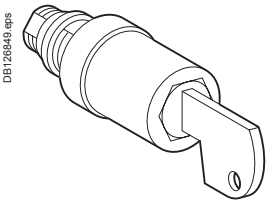
RONIS



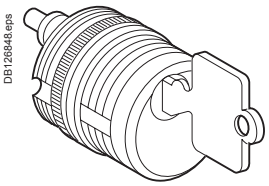
PROFALUX



CASTELL



KIRK



Locking the device position in the chassis

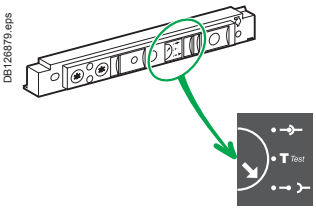
For this operation, the circuit breaker must be removed from the chassis.

Disabling use of the crank in all positions

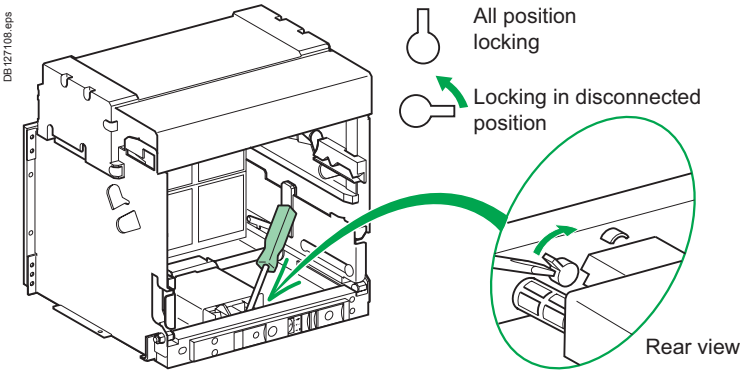
It is possible to modify the padlock and keylock locking function. Instead of locking only in "disconnected" position, it is possible to lock the circuit breaker in all positions.

Set the circuit breaker to "disconnected" position. Remove the circuit breaker from the chassis.

Insert the crank.

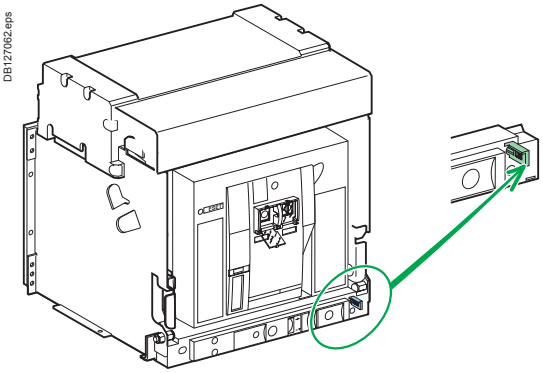


Turn the catch to the left:
the circuit breaker can now be locked in all positions.

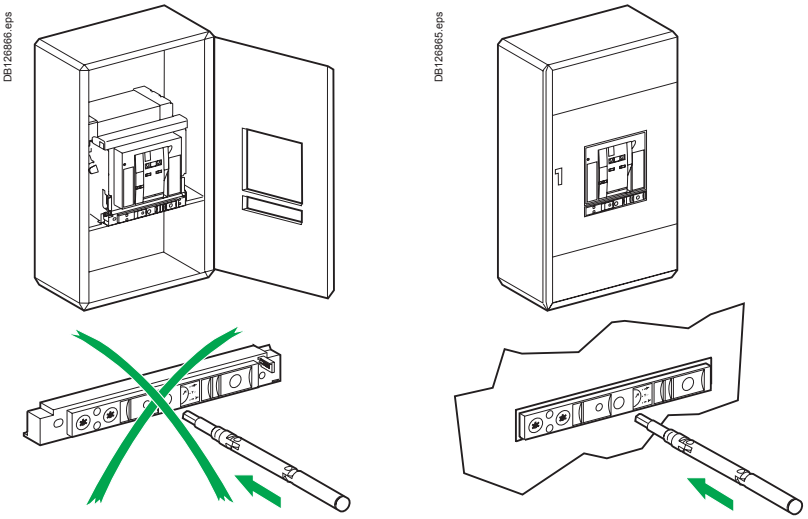


This solution may be used to enable or disable insertion of the crank.

Locking the circuit breaker when the door is open



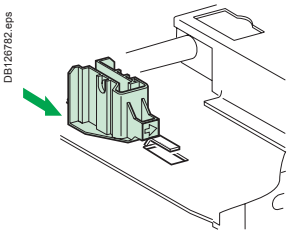
When the door is open, the crank cannot be inserted.



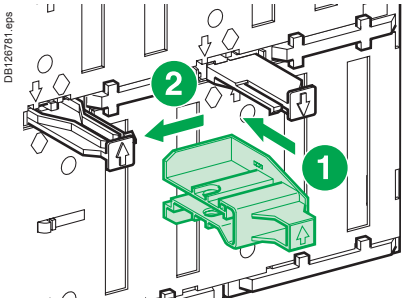
Locking the safety shutters
Padlocking inside the chassis

Using the shutter locking blocks

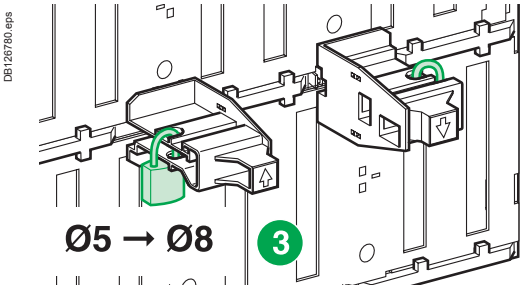
Remove the block(s) from their storage position.



Position the block(s) on the guide(s).

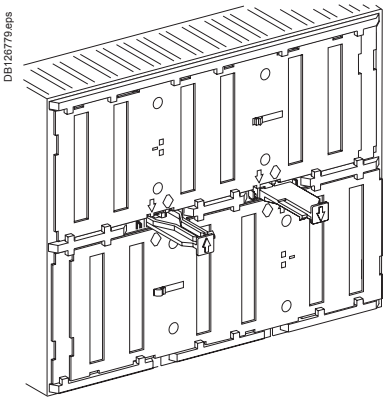


Lock the block(s) using a padlock.

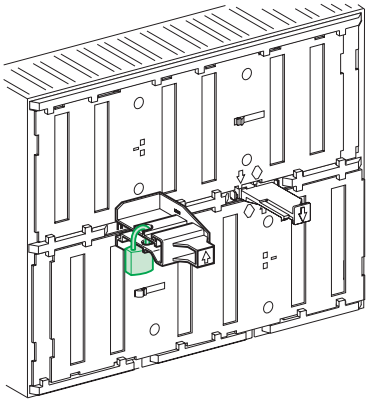


4 locking possibilities

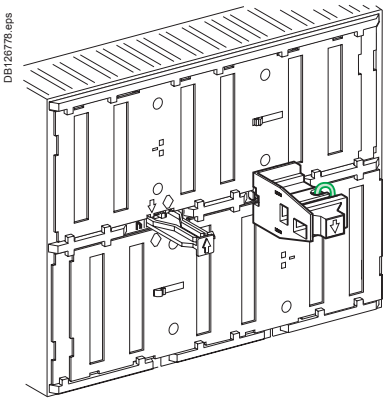
Top and bottom shutters not locked.



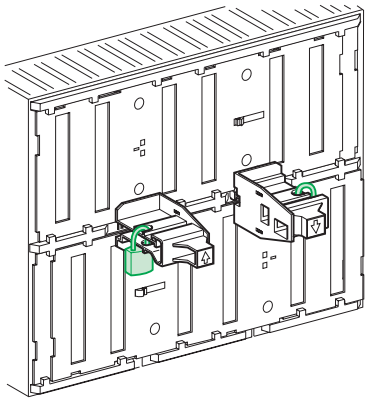
Top shutter locked.
Bottom shutter not locked.



Top shutter not locked.
Bottom shutter locked.

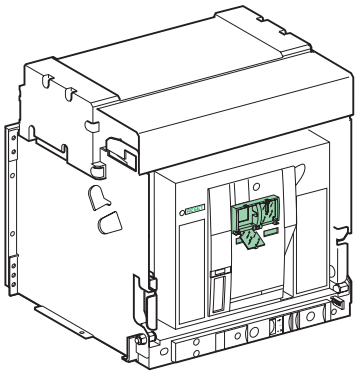


Top and bottom shutters locked.



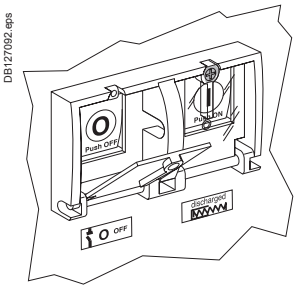
Understanding the controls and indications

DB127093.eps



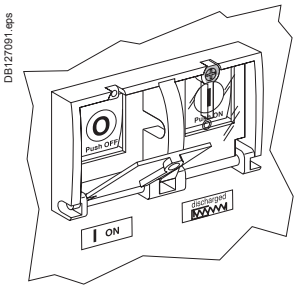
Circuit breaker open and discharged.

DB127092.eps



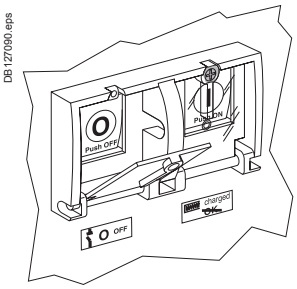
Circuit breaker closed and discharged.

DB127091.eps



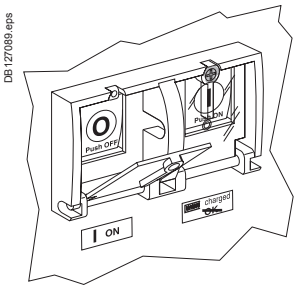
Circuit breaker open, charged, not "ready to close".

DB127090.eps



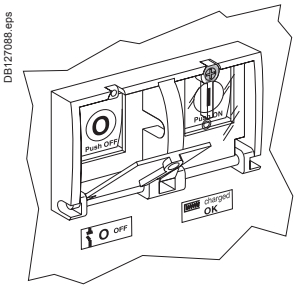
Circuit breaker closed, charged, not "ready to close".

DB127089.eps



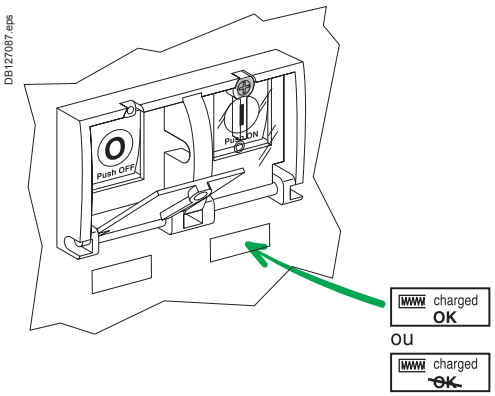
Circuit breaker open, charged, "ready to close".

DB127088.eps



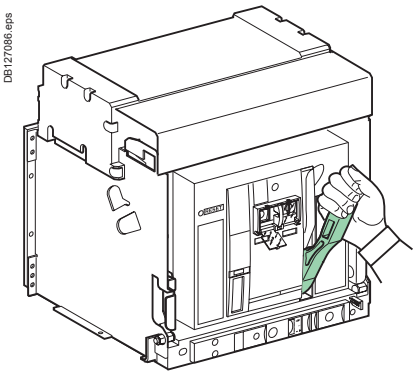
Charging Masterpact UR

The charge status is indicated as follows.

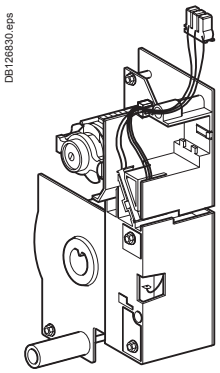


The springs in the circuit breaker operating mechanism must be charged to store the energy required to close the main contacts. The springs may be charged using the charging handle or the optional MCH gear motor.

Manual charging:
pull the handle down seven times until you hear a "clack".
It is possible to charge the circuit breaker while it is closed.



Automatic charging:
if the MCH gear motor is installed and the auxiliary circuit is supplied, the spring is automatically recharged after each closing.



Checking local and remote electrical closing

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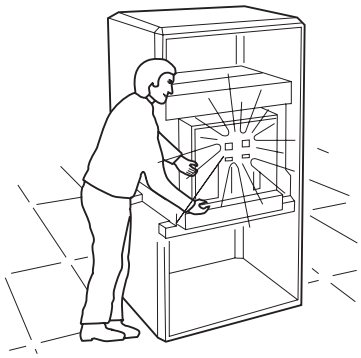


Closing conditions

Device closing is subject to three conditions represented by the in-series connection of three contacts (for more information, see page 20 on the closing conditions).

■ Masterpact UR closing (turning ON) is possible only electrically, either locally or remotely.

Closing the circuit breaker

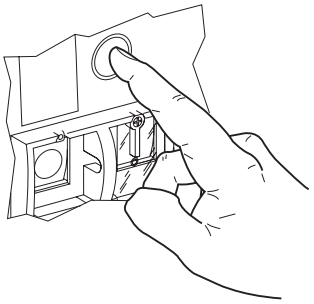
Local, electrical closing

Press the electrical-closing pushbutton (BPFE) on the front of the device.

■ The button is protected by a transparent cover.

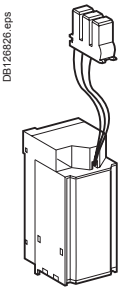
BPFE

DB127085.eps



XF

DB126826.eps



Press the electrical-closing pushbutton. By adding an XF closing release, the circuit breaker can be closed remotely.

Note: *once the supply voltage is present across terminals A1-A3, it is necessary to wait 1.5 sec. before pressing the electrical-closing push button (BPFE).*

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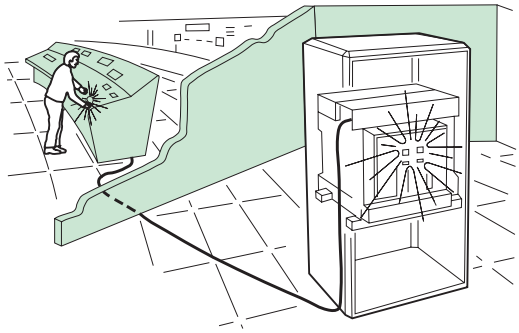


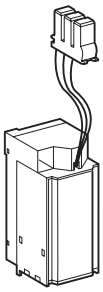
Remote closing

Use the XF closing release (0.85 to 1.1 Un).

■ When connected to a remote-control panel, the XF closing release enables remote closing of the device.

XF

DB126826.eps



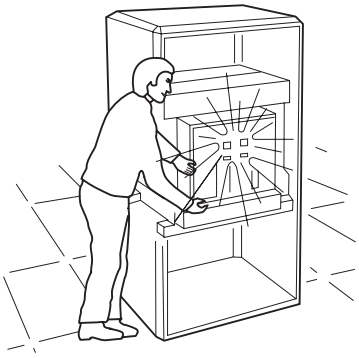
Via a communication bus

This remote-control function requires a "Modbus" communication module (optional) for the device.

Note: *if closing is not possible, check the electrical diagram and the status conditions of PFC + PF + PFUR.*

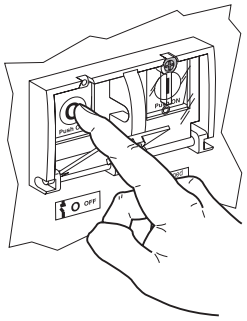
Checking local and remote opening

DB126898.eps

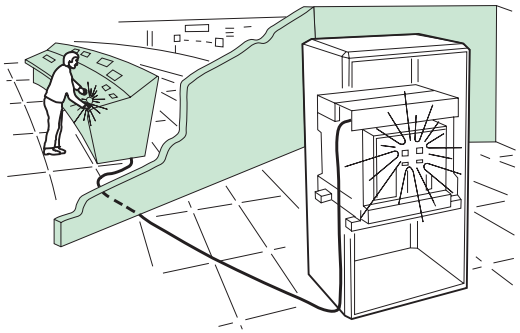


Local opening
Press the opening (OFF) pushbutton.

DB127084.eps



DB126827.eps

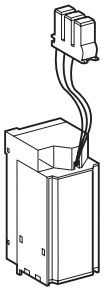


Remote opening
Use:
- an MX opening release (0.7 to 1.1 Un)
- or an MN undervoltage release (tripping between 0.35 and 0.7 Un)
- or a delayed MNR undervoltage release (tripping between 0.35 and 0.7 Un).

When connected to a remote-control panel, these releases enable remote opening of the device.

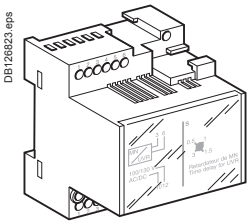
MX or MN

DB126826.eps



MNR

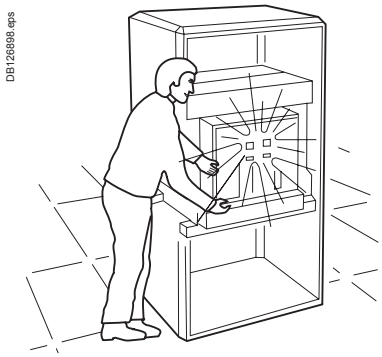
DB126823.eps



Via a communication bus
This remote-control function requires a communicating MX opening release and a "Modbus" communication module (optional) for the device.

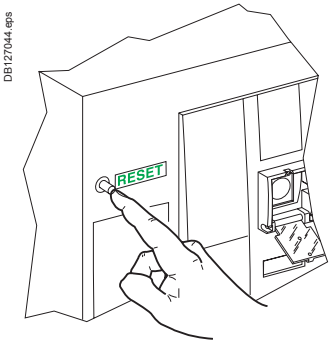
Resetting after a fault trip

The circuit breaker signals a fault by:
- a mechanical indicator on the front
- one or two SDE fault-trip indication contacts (SDE2 is optional)
- an SDUR trip-indication contact (Thomson-effect tripping)
- LEDs on Micrologic and the "UR Control" module.

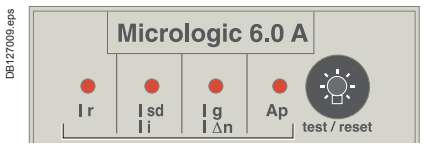


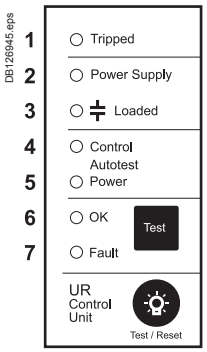
Locally

If the circuit breaker is not equipped with the automatic-reset option, reset it manually.



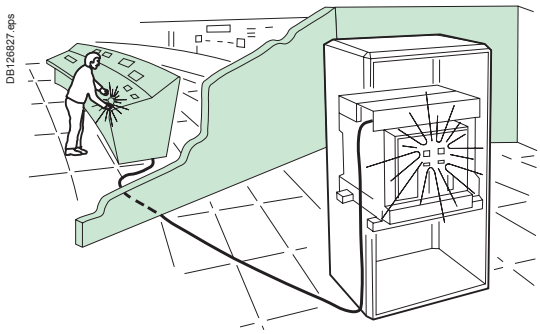
After clearing the fault, press the Test/Reset buttons to reset the LEDs on the Micrologic and the "UR Control" module.

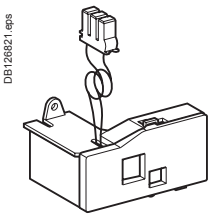




Remotely

Use the Res electrical remote reset option (not compatible with SDE2).

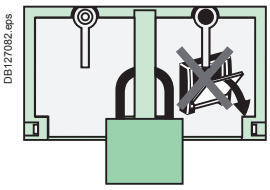




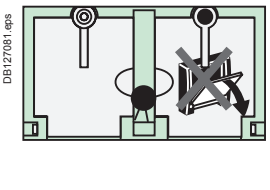
Locking the local opening control

Pushbutton locking using a padlock (shackle Ø 5 to Ø 8 mm), a lead seal or screws. The "Push ON" closing button is always locked by a screw.

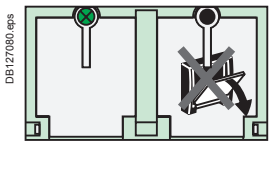
Padlock.



Lead seal.

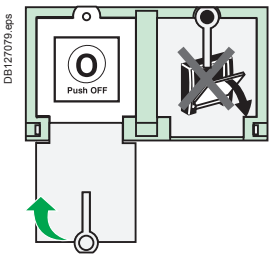


Screws.

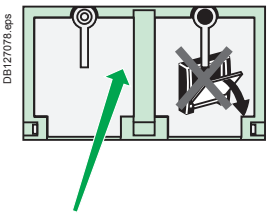


Locking the opening control

Close the cover to protect the "Push OFF" button.

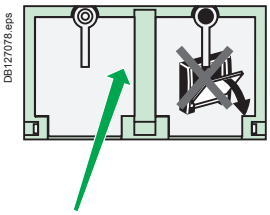


Insert the padlock shackle, lead seal or screw.

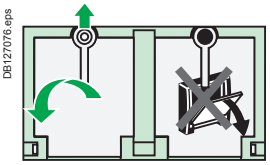


Unlocking the opening control alone

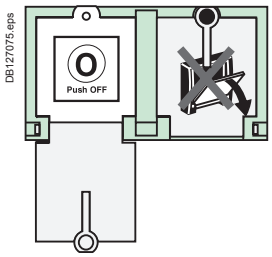
Remove the padlock, lead seal or screw.



Open the cover protecting the "Push OFF" button.



The "Push OFF" button is now unlocked.



Note: *the "Push ON" closing button is factory locked to comply with the three closing conditions PFC, PF and PFUR (see page 20).*

Disable local and remote closing

Combination of locking systems

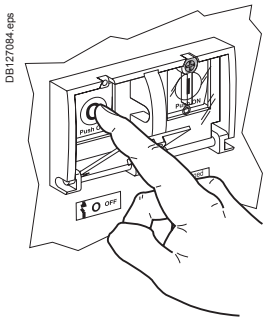
To disable closing by electrical-closing pushbutton (BPFE) and opening by mechanical "Push OFF" button, use as needed:

- 1 to 3 padlocks
- 1 or 2 keylocks
- a combination of the two locking systems.

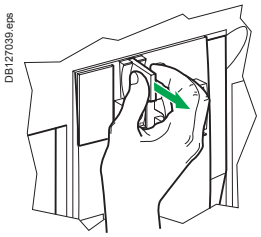
Install 1 to 3 padlocks (max. shackle Ø 5 to Ø 8 mm)

Locking

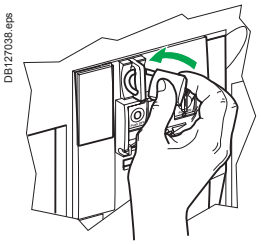
Open the circuit breaker.



Pull out the tab.

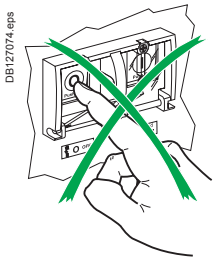


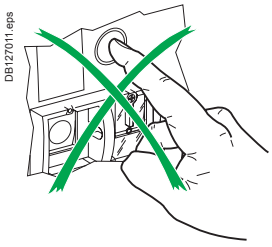
Install the padlock(s).



Check

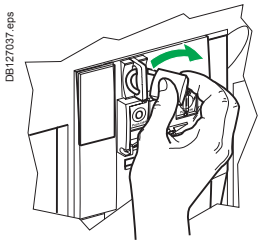
The controls are inoperative.





Unlocking

Remove the padlock(s).

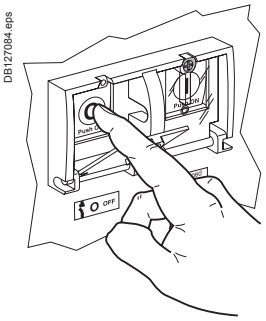


Disable local and remote closing

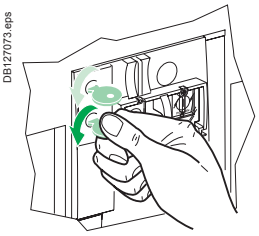
Locking the controls with 1 or 2 keylocks

Locking

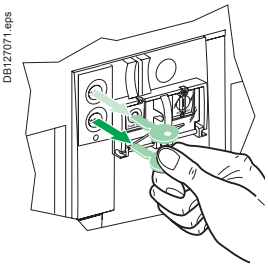
Open the circuit breaker.



Turn the key(s).

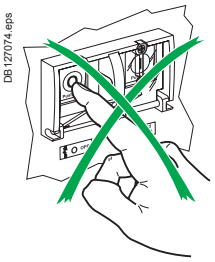


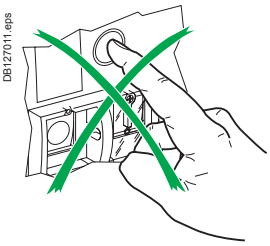
Remove the key(s).



Check

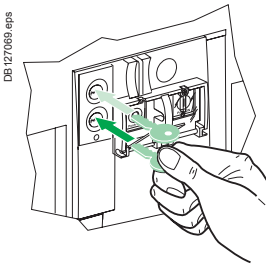
The controls are inoperative.



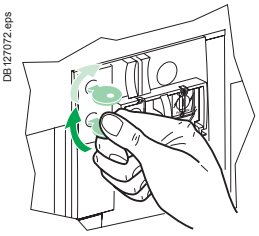


Unlocking

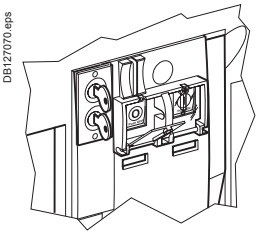
Insert the key(s).



Turn the key(s).

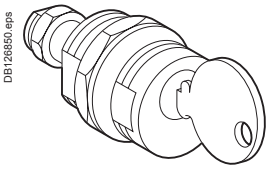


The key(s) cannot be removed.

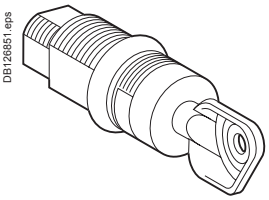


4 types of keylocks are available.

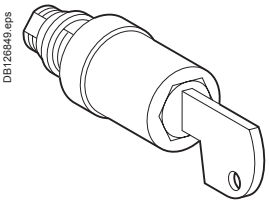
RONIS



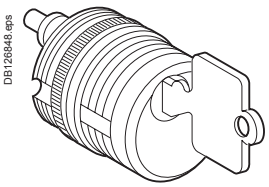
PROFALUX



CASTELL



KIRK



Testing tripping orders

Different types of trip tests can be run on the circuit breaker:
- using a portable test kit (FFTK) or a mini test kit (HHTK)
- by pressing the TEST button on the "UR Control" module
- using the Masterpact UR Utility software
- using a low-frequency generator (to simulate a di/dt signal).

To test tripping during system start-up, it is advised to use only:
- the FFTK or the HHTK tests
- the TEST button on the "UR Control" module.

The other types of tripping are used during maintenance operations.
- For all test operations, put the device in the test position.

Portable test kit (FFTK) or mini test kit (HHTK) connected to the Micrologic test connector

This test can be run:
- during initial start-up of the device
- during maintenance.

Caution: the device must be closed before connecting the cable of the FFTK or the HHTK to the Micrologic test connector. If the test equipment is faulty, it could provoke circuit breaker opening (Thomson effect). Tripping under these conditions could do irreparable damage to the circuit breaker.

The test sends a trip order via the Mitop release, thus provoking complete opening of the circuit breaker.

TEST button on the "UR Control" module

This test can be run:
- during initial start-up of the device
- during maintenance.

This test is the means to simultaneously issue a trip order:
- by Thomson-effect coils
- and by the Mitop release, thus provoking complete opening of the circuit breaker.

This test checks:
- discharge of the capacitors in all the Thomson-effect coils
- the discharge time for the capacitors in the Thomson-effect coils
- device opening by the Thomson-effect coils.

If one of the above points is not OK, the Fault LED goes on.

"Masterpact UR Utility" software

This test should be used exclusively during maintenance and should follow the user-interface procedure indicated in the "Masterpact UR Utility" manual included with the software.

Using the software, it is possible to select:
- contact repulsion through discharge of the capacitors in the Thomson-effect coils, without opening by the Mitop. In this case, the contact fingers remain resting on their cams.

It is then necessary to completely open the circuit breaker by pressing the Push OFF button

- or tripping by the Mitop release, thus provoking complete opening of the circuit breaker.

Low-frequency generator (to simulate a di/dt signal)

This test should be used exclusively during maintenance in observance with maintenance procedures. The generator must be connected to the test connector on the "UR Control" module.

The low-frequency generator is the means to **simultaneously** issue an order to trip:
- by Thomson-effect coils
- and by the Mitop release, thus provoking complete opening of the circuit breaker.

Testing tripping using Micrologic

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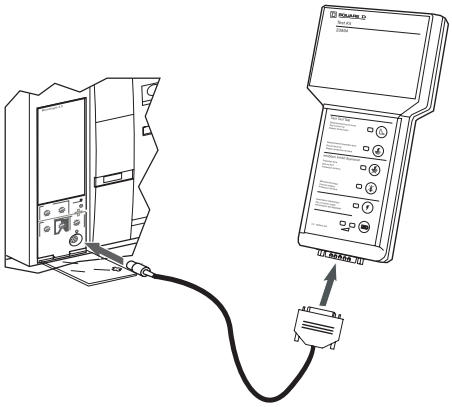

■ Put the device in the test position.
■ Open the Micrologic cover and connect the portable test kit (FFTK) or mini test kit (HHTK) to the Micrologic test connector.
■ Launch a trip order in accordance with the procedure in the instruction manual (supplied with the portable or mini test kit).

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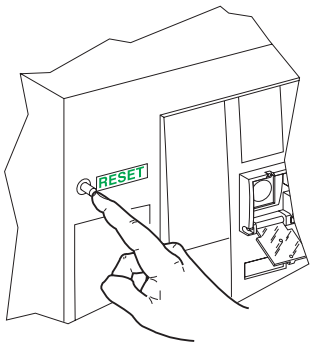
SDE ●
SDUR ○

The SDE LED goes on.

□ the circuit breaker opens
□ the mechanical reset button on the front of the circuit breaker pops out
□ the SDE LED goes on
□ on Micrologic, depending on the type of test, one of the LEDs goes on.

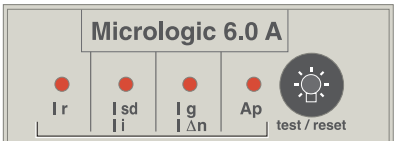
■ Manually reset the red (RESET) button on the circuit breaker.

DB127044.eps



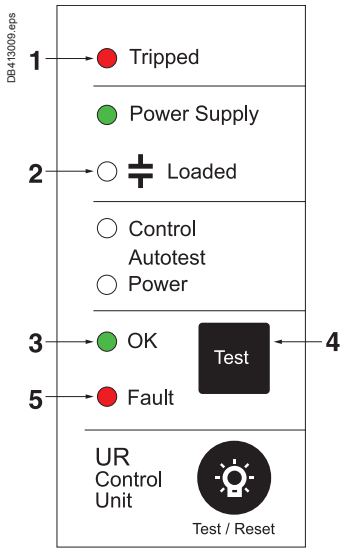
■ Press the RESET button to clear the LED on the Micrologic.

DB127069.eps



The circuit breaker is now ready to close.

Testing tripping using the "UR Control" module



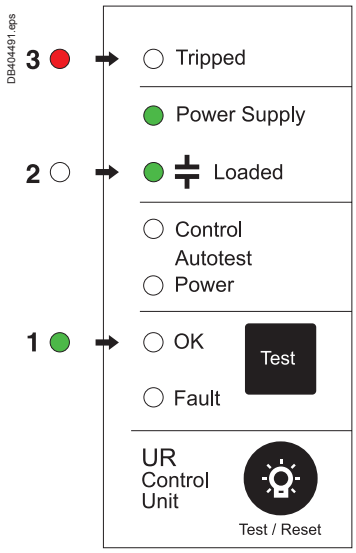
SDE
SDUR
SDE and SDUR LEDs.

PFUR
PFUR LEDs.

- Put the device in the test position.
- Close the circuit breaker.
- Open the cover on the "UR Control" module.
- Press the Test button **(4)**:
  - the "UR Control" module initiates discharge of the capacitors in the Thomson-effect coils, which results in contact repulsion, and confirms opening by the Mitop:
  - the circuit breaker opens
  - the mechanical reset button on the front of the circuit breaker pops out
  - the SDE and SDUR LEDs go on
  - the red Tripped LED goes on **(1)**
  - the green Loaded LED goes off because the capacitors are discharged **(2)**.

- **If the test result is OK**, the green OK LED goes on **(3)**.
- **If the test result is not OK**, the red Fault LED goes on **(5)**.
The possible causes include slow discharge or no discharge of the capacitors, non-opening of the circuit breaker or non-operation of the OF contacts.

- Contact Schneider Electric after-sales support.



SDE
SDUR
SDE and SDUR LEDs.

PFUR
PFUR LEDs.

Automatic reset of the "UR Control" and "UR Power" modules if the test is OK

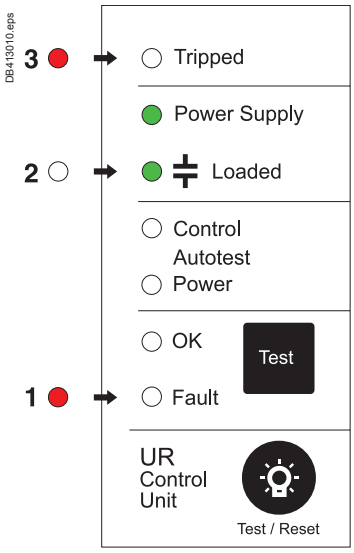
Note: *during operation, the capacitors are charged continuously.*

- After 5 seconds, the SDUR (*) and the green Test OK LEDs go off **(1)**.
- The green Loaded LED **(2)** goes on automatically when the capacitors are fully charged (~30 sec).
- An autotest is automatically launched.
- At the end of the autotest (~50 sec), the red Tripped LED goes off **(3)**.

(*) To maintain SDUR indications, an external relay must be installed.

- Press the mechanical Reset button on the front of the circuit breaker:
  - the red SDE LED goes off
  - the green PFUR LED goes on, indicating that the "UR Power" module is activated
  - the circuit breaker is now ready to close.

Testing tripping using the "UR Control" module



Manual reset of the "UR Control" and "UR Power" modules if the test is not OK (first case)

- Find the fault and clear it (see the section on the probable causes).
- Press the Reset button on the "UR Control" module (~1 sec):
  - all the LEDs should go on
  - the SDUR LED and the red Fault LED go off **(1)**
  - the green Loaded LED **(2)** goes on automatically when the capacitors are fully charged (~30 sec).
- At the end of the autotest (~50 sec), the red Tripped LED goes off **(3)**.

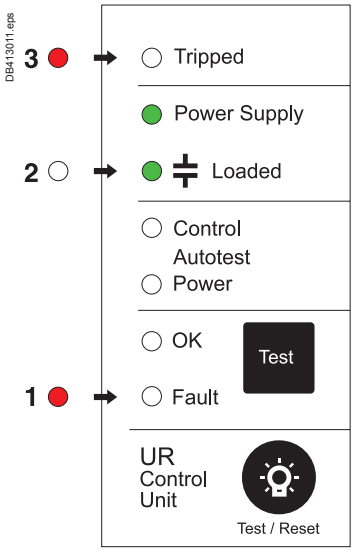
SDE ● → ● → ○
SDUR ● → ○ → ○

SDE and SDUR LEDs.

PFUR ○ → ○ → ○
○ → ○ → ●

PFUR LEDs.

- Press the mechanical Reset button on the front of the circuit breaker:
  - the red SDE LED goes off and the green PFUR LED goes on
  - the circuit breaker is now ready to close.



Second case

- Find the fault and clear it (see the section on the probable causes).
- Press the mechanical Reset button on the front of the circuit breaker:
  - the red SDE LED goes off and the red PFUR LED goes on.

SDE ● → ○ → ○
SDUR ● → ● → ○

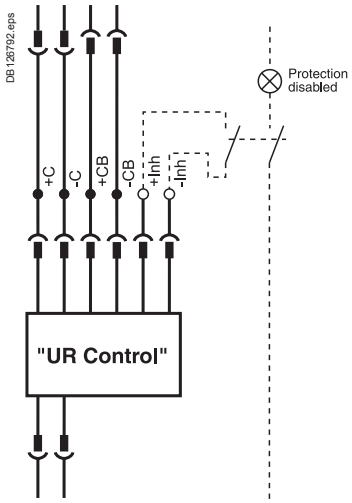
SDE and SDUR LEDs.

PFUR ○ → ● → ○
○ → ○ → ●

PFUR LEDs.

- Press the Reset button on the "UR Control" module (~1 sec):
  - all the LEDs should go on
  - the red SDUR LED and the red Fault LED go off **(1)**
  - the green Loaded LED **(2)** goes on automatically when the capacitors are fully charged (~30 sec).
- At the end of the autotest (~50 sec):
  - the red Tripped LED goes off **(3)**
  - the green PFUR LED goes on
  - the circuit breaker is now ready to close.

Check non-tripping if the "Disabled" option is wired and activated



- Close the contact to disable the protection function.
- Run a trip test using the HHTK mini test kit or the FFTK portable test kit.

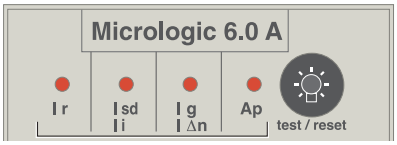
The circuit breaker should remain closed.

- Run other tests using the Test button or the "Masterpact UR Utility" software.
- Open the contact to remove the disable function reinstate the protection function.
- Run a trip test: the circuit breaker should open.

Restarting after tripping by Ir, Isd, Ii, Ig

When Micrologic (Ir, Isd, Ii, Ig) issues a trip order, the Thomson-effect coils are not operative.

DB127009.eps



■ Following a trip order issued by Micrologic, faults are signalled locally or remotely by the indicators and auxiliary contacts installed in the system:
□ the mechanical reset button on the front of the circuit breaker pops out
□ the red SDE LED goes on
□ on Micrologic, one of the LEDs goes on:
- **LED Ir** for an overload
- **LED Isd / Ii** for a short-circuit
- **LED Ig** for an earth fault
- **LED Ap** for other faults (I, U, P, etc.).

Identify the causes and clear them

⚠ A circuit must never be reclosed (locally or remotely) without first identifying and clearing the cause of the fault.

There may be multiple causes:
■ depending on the type of control unit, troubleshooting assistance is proposed. See the control-unit user guide
■ depending on the type of fault and the priority placed on installation restart, certain precautions must be taken, in particular insulation and dielectric tests on the installation (in part or in whole). These checks and tests must be managed and executed by qualified personnel.

If a short-circuit occurred, check the device

■ Check the condition of the arc chutes.
■ Check the condition of the contacts.
■ Check the condition of the disconnecting-contact clusters, in accordance with maintenance procedures.
■ Check the tightness of connections (see the device installation manual).
■ Press the RESET button to clear the LED on Micrologic.

DB413012.eps

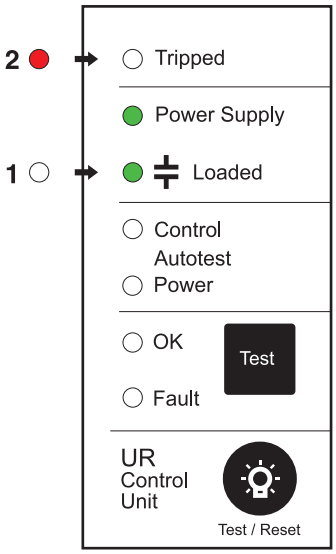
SDE and SDUR LEDs.

PFUR LEDs.

■ Press the mechanical Reset button on the front of the circuit breaker:
□ the red SDE LED goes off
□ the green PFUR LED goes on
□ the circuit breaker is now ready to close.

Restarting after tripping by "UR Control"

DB413013.eps



SDE ● ➡ ●
SDUR ●...5 sec... ➡ ○
SDE and SDUR LEDs.

PFUR ○ ➡ ○
○ ➡ ○
PFUR LEDs.

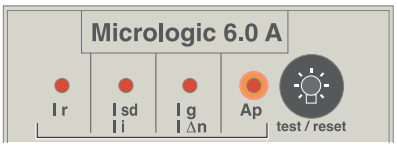
DB413014.eps

SDE ● ➡ ○
SDUR ○
SDE and SDUR LEDs.

PFUR ○
○ ➡ ●
PFUR LEDs.

■ Following a trip order issued by the "UR Control" module and by Micrologic (due to a high short-circuit in the installation):
□ the mechanical Reset button on the front of the circuit breaker pops out and the red SDE LED goes on
□ the Ap LED on Micrologic goes on

DB127002.eps



□ after 5 seconds, the red SDUR LED goes off
□ the green Loaded LED (temporarily off during capacitor discharge) goes on **(1)** automatically when the capacitors are fully charged (~30 sec)
□ at the end of the autotest (~50 sec), the red Tripped LED goes off **(2)**.

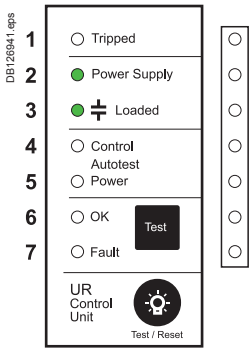
■ Find the fault and clear it.

■ Press the mechanical Reset button on the front of the circuit breaker:
□ the red SDE LED goes off
□ the green PFUR LED goes on, indicating that the "UR Power" module is activated
□ the circuit breaker is now ready to close.

Analysing the fault after an internal-fault alarm

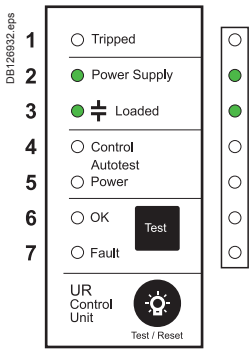
Trigger on internal fault	
No (1)	■ The "UR Control" module does not activate the Thomson-effect coils. ■ The "UR Control" module does not activate the Mitop release. ■ Micrologic does not activate the Mitop release.
Yes (2)	■ The "UR Control" module activates the Mitop release.

(1) If the "internal-fault trip" option is not activated, detection of an internal fault generates an alarm, but does not result in circuit breaker tripping.
(2) If the "internal-fault trip" option is activated, detection of an internal fault results in circuit breaker tripping.

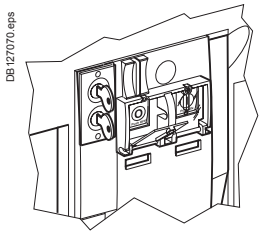


Internal faults detected by Masterpact UR

■ **Fault 1:** No 24 V DC power supplied to the "UR Control" module.
As soon as it is detected, this fault results in LEDs 2 and 3 going off.

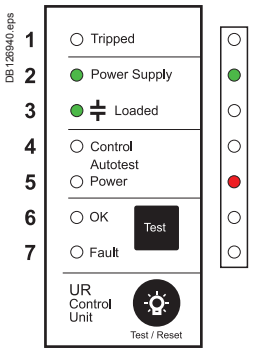


■ **Fault 2:** No 20 V DC power (Mitop supply by the "UR Control" module).
This fault is not signalled or mentioned in the event log because the Mitop control order is issued by Micrologic.
It is possible to detect this fault during maintenance by pressing the TEST button on the "UR Control" module:
□ a trip order is not sent to the Mitop release
□ the red Fault Test LED goes on.

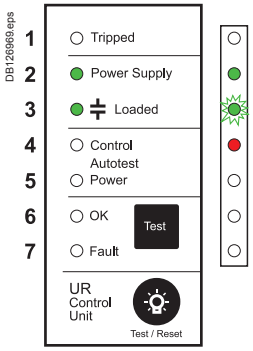


■ **Fault 3:** Temperature too low (< 15 °C).
At the end of the Autotest sequence, which is run every 20 minutes, this fault results in LED 5 Autotest Power going on.
Whatever the options selected, this fault never provokes opening of the circuit breaker.

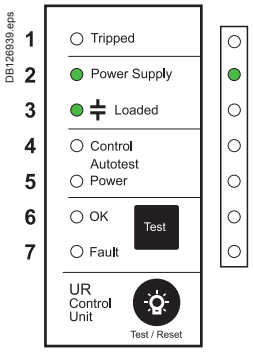
Analysing the fault after an internal-fault alarm



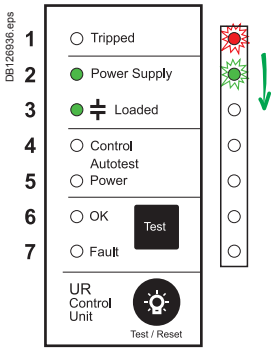
■ **Fault 4:** loss of electrical continuity in the capacitor-discharge circuit.
At the end of the Autotest sequence, which is run every 24 hours, this fault results in LED 5 Autotest Power going on and LED 3 "Loaded" going off.



■ **Fault 5:** capacitor values outside tolerances (±20 %).
At the end of the Autotest sequence, which is run every 24 hours, this fault results in LED 3 Loaded flashing and LED 4 "Autotest Control" going on.

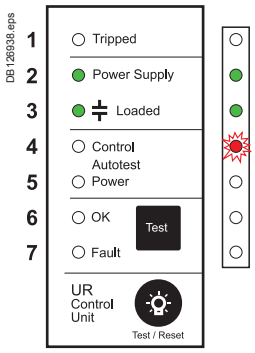


■ **Fault 6:** capacitor-charge voltage outside tolerances (< -15 %).
As soon as it is detected, this fault results in LED 3 "Loaded" going off.

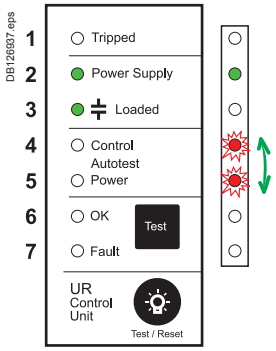


■ **Fault 7:** Tripping curve for the "UR Control" module is incorrect.
As soon as it is detected, this fault results in pairs of adjacent LEDs flashing one after the other (LEDs 1&2, then 2&3, etc.).

Analysing the fault after an internal-fault alarm



■ **Fault 8:** battery not OK.
At the end of the Autotest sequence, which is run every 24 hours, this fault results in LED 4 Autotest Control flashing.
Whatever the options selected, this never provokes opening of the circuit breaker.



■ **Fault 9:** loss of configuration data (serial no., association no., pairing data).
As soon as it is detected, this fault results in alternate flashing of LEDs 4 and 5 and in LED 3 Loaded going off.

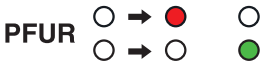
■ Analyse the cause of the internal fault in the event log, using "Masterpact UR Utility" (see the list of events in Appendix 1).
■ For more information, see the section on troubleshooting and solutions.

If the "internal-fault trip" option is activated:

■ the circuit breaker is opened by the Mitop release following an order issued by the "UR Control" module:
□ the mechanical reset button on the front of the circuit breaker pops out
□ the red SDE LED goes on (even though it is not an electrical fault)

■ press the mechanical Reset button on the front of the circuit breaker:
□ the red SDE LED goes off
□ if the fault is cleared, the green PFUR LED goes on and the circuit breaker can close
□ if the fault is not cleared, the green PFUR LED goes on, but the circuit breaker **cannot close.**

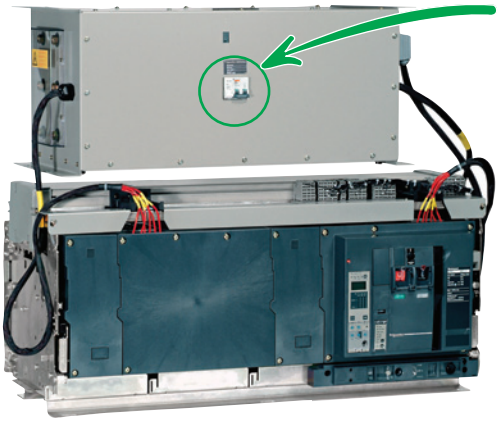
LEDs SDE and SDUR



LEDs PFUR

Manual closing in an emergency

PB101594_SE_68.eps



■ If in an emergency the circuit breaker must be closed, but normal closing by the electrical-closing pushbutton BPFE in not possible, the Push ON button may be used to manually close the device.

Caution: This is an exceptional and very temporary situation.
Make sure that manual closing will not result in a short-circuit due to a fault on the network.
Make sure that all outgoing circuit breakers are open (OFF).

Note: *If a short-circuit results from closing the circuit breaker, high-temperature gases and melted particles will be projected, creating a risk of serious burns. The front plate is no longer there to protect the operator against these projections.Before closing the circuit breaker, the operator must be equipped with suitable protective gear.*

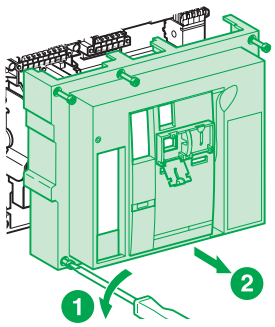
■ Open the miniature circuit breaker on the "UR Power" module.

Caution. Micrologic is no longer supplied, the circuit breaker has become a simple switch.
If a short-circuit occurs, there is a risk of contact repulsion and welding.
The device has a low electrodynamic withstand level.
If it is used for coupling, the power level of the installation must be reduced (temporary shutdown of a generator or transformer).

■ Wait for complete discharge of the capacitors (1 minute).
■ Cut supply to the auxiliaries.

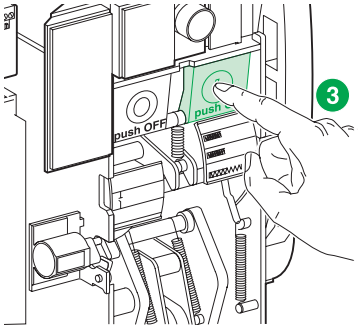
■ Remove the front plate.

DB126997.eps



■ Press the Push ON button on the front of the circuit breaker. The circuit breaker closes.

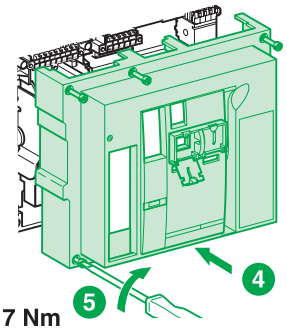
DB126996.eps



If the device is equipped with an MN release, it must be dismantled.

■ Remove the front plate.

DB126995.eps

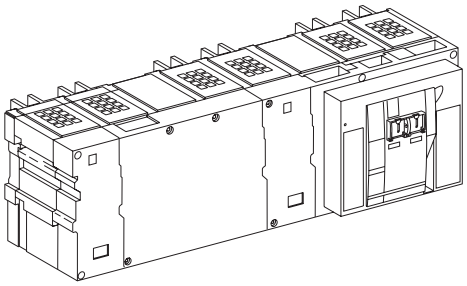


7 Nm

As soon as possible, supply the "UR power" module.

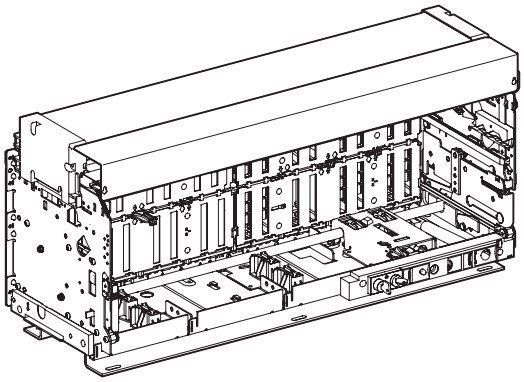
Replacement device, chassis and "UR Power" module

DB126964.eps



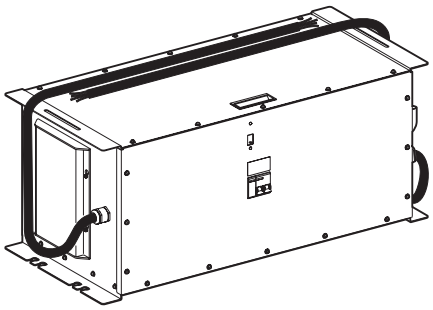
UR50L or UR60L 3P drawout device alone

DB126963.eps



UR 50-60 chassis

DB126962.eps

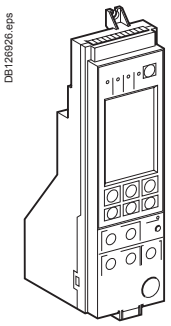


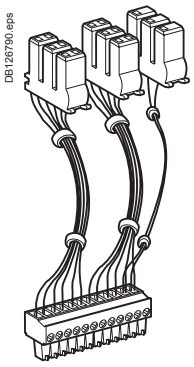
50-60 "UR Power" module

UR16-30 device, chassis and "UR Power" module, performer, rating plug, etc. (not marketed).

Micrologic control units

For more in-depth information, see the control - user manual.



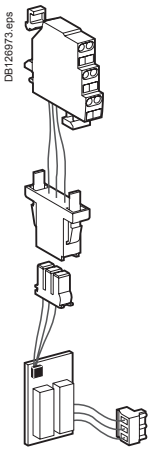


Micrologic control units

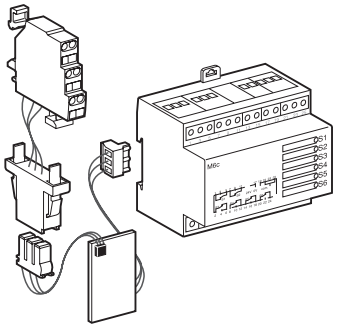
- Standard equipment: one per device.
- Long-time rating plug not included.
- Available versions:
  - Micrologic 2.0A
  - Micrologic 5.0A
  - Micrologic 6.0A
  - Micrologic 2.0E
  - Micrologic 5.0E
  - Micrologic 6.0E
  - Micrologic 5.0P
  - Micrologic 6.0P
  - Micrologic 5.0H
  - Micrologic 6.0H.
- Depending on the model (A, E, P, H), control units offer in addition:
  - fault indications
  - measurement of electrical parameters (current, voltage, power, etc.)
  - harmonic analysis
  - communication.

Long-time rating plugs

- Standard equipment: one per control unit.
  - 0.4 to 1 x Ir settings
  - 0.4 to 0.8 x Ir settings
  - 0.8 to 1 x Ir settings
  - no long-time protection
- The plugs determine the setting range for the Long-time protection.



M2C



M6C

M2C and M6C programmable contacts

- M2C: optional equipement, used with Micrologic E, P and H control units.
- M6C: optional equipement, used with Micrologic P and H control units.
- Connection cables not included, see below:
  - 2 M2C contacts
  - 6 M6C contacts.
- Connection cables:
  - for drawout device.
- Contacts can be programmed using the keypad on the control unit or via the COM option.
- They indicate:
  - the type of fault
  - instantaneous or delayed threshold overruns.

Note: for the characteristics, see the catalogue.

50-60 performer

- Standard equipment.
- Detremines the device electro-dynamic withstand level.

50 rating plug

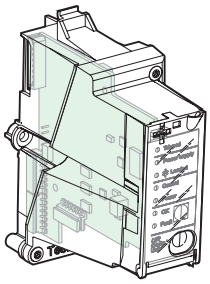
- Standard equipment.
- Determines the rating for the Masterpact 5000 A.

60 rating plug

- Standard equipment.
- Determines the rating for the Masterpact 6000 A.

"UR Control" and "UR Power" modules

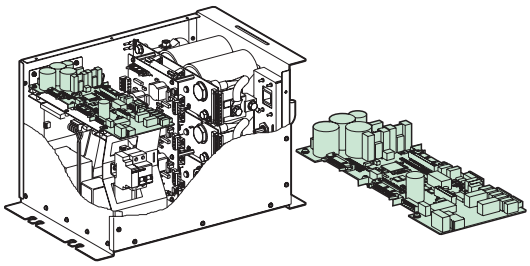
DB127055.eps



"UR Control" module

- Standard equipment: 1 per device.
- In addition to ultra-fast protection (di/dt), it signals system faults and tests the tripping curve.

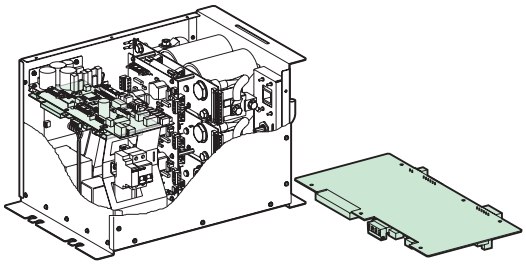
DB127054.eps



Interface board

- Standard equipment: 1 per "UR Power".
- Monitors the "UR Power" module and the communication system between the "UR Power" module, the "UR Control" module and a PC.

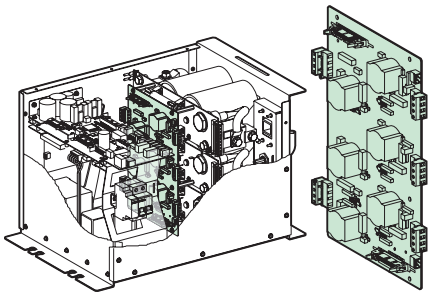
DB127053.eps



Regulation board

- Standard equipment: 1 per "UR Power".
- Regulates capacitor charge.

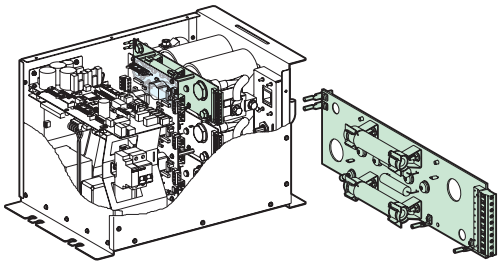
DB127052.eps



TI board (pulse transformer)

- Standard equipment :
  - 1 per "UR Power" 16-30
  - 2 per "UR Power" 50-60.
- Located between the SCR/capacitor board and the interface board.
- Amplifies current signals for SCR control.

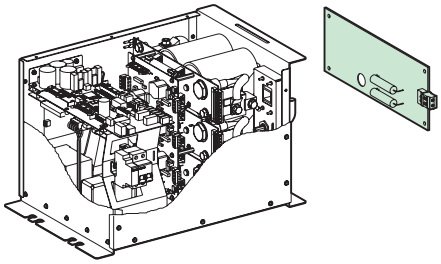
DB127051.eps



SCR/capacitor board

- Standard equipment :
  - 3 per "UR Power" 16-30
  - 6 per "UR Power" 50-60.
- Used to secure the capacitors and for their electrical connections.

DB128977.eps

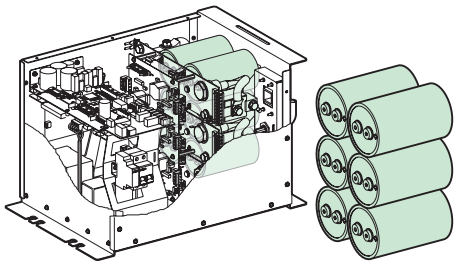


Filter board

- Standard equipment: 1 per "UR Power".
- Protects against surges (lightning arrestor).

"UR Control" and "UR Power" modules

DB127050.eps



Set of 6 capacitors

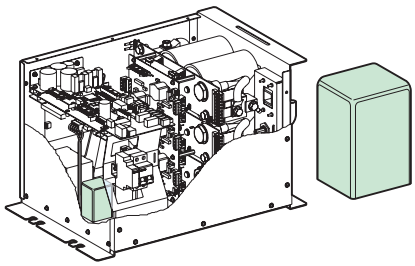
- Standard equipment:
  - 1 per "UR Power" 16-30
  - 2 per "UR Power" 50-60.
- Stores the energy required for current discharge in the Thomson-effect coils.

DB126994.eps

TI-board battery

- Standard equipment.
- Used to save the event and maintenance log.

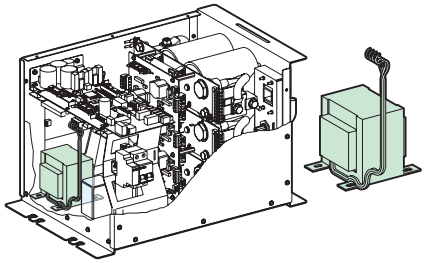
DB126993.eps



Capacitor-charge relay

- Standard equipment: set of 3 per "UR Power".
- Connected between the regulation board and the SCR/capacitor board.
- Used for capacitor charge and discharge.

DB126992.eps



Transformer

- Standard equipment: 1 per "UR Power".
- Used to supply "UR Power" with 240 V AC power.
- It provides 300 V for capacitor charging and 36 V DC to supply the system.

DB127060.eps

Capacitor-discharge cable

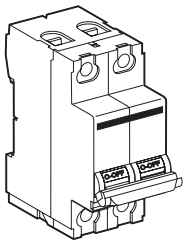
- Standard equipment:
  - 1 per "UR Power" 16-30
  - 2 per "UR Power" 50-60.
- Connects the "UR Power" module to the device Thomson-effect coils.

DB127059.eps

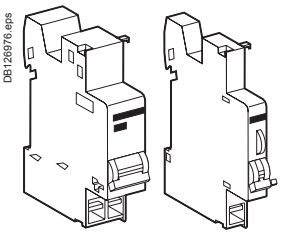
Auxiliary-circuit cable

- Standard equipment: 1 per device.
- Connects the "UR Power" auxiliary circuit to the device chassis.

DB126991.eps



DB126976.eps

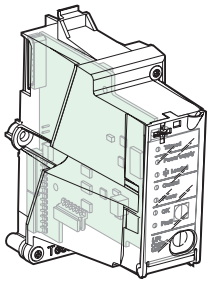


Miniature circuit breaker

- Standard equipment: 1 per "UR Power" equipped with the MX and OF auxiliaries.
- Protects the "UR Power" module.
- The MX release protects against a supply-voltage error.
- The OF contact remotes the status of the miniature circuit breaker.

"UR Control" and "UR Power" modules

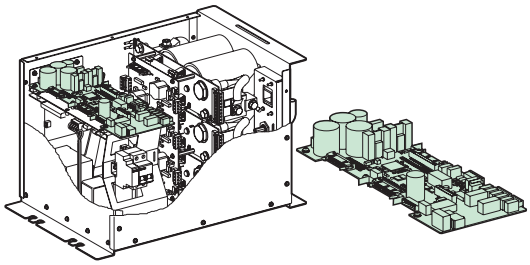
DB127055.eps



Bag of hardware for "UR Power" boards

- Standard equipment: 24 screws per bag.
- Used to secure the electronic boards in the "UR Power" module.

DB127054.eps

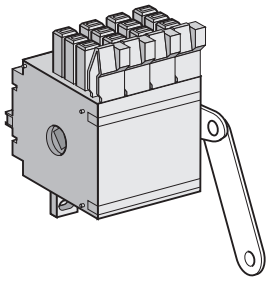


"UR Power" module protection cover

- Standard equipment.
- Blocks access to the live parts of the capacitors.

Indication contacts

DB127049.eps



ON/OFF indication contacts (OF)

■ Standard equipment: 3 OF per device.
■ OF contacts indicate the position of main contacts
■ They trip when the minimum isolation distance between the main contacts is reached.

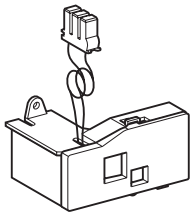
Note: *For the characteristics, see the catalogue.*

"Fault-trip" indication contact (SDE1)

■ Standard equipment on circuit breakers, one SDE1 contact per device.
■ The contact provides a remote indication of device opening due to an electrical fault.

Note: *For the characteristics, see the catalogue.*

DB126821.eps

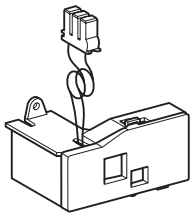


Additional "fault-trip" indication contact (SDE2)

■ Optional equipment for circuit breakers, one additional SDE2 contact per device
■ Not compatible with the Res option.
■ The contact provides a remote indication of device opening due to an electrical fault.

Note: *For the characteristics, see the catalogue.*

DB126821.eps



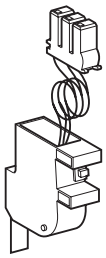
Electrical reset after fault trip (Res)

■ Optional equipment: one Res per device
■ Not compatible with the SDE2 option
■ Available voltages:
□ 110/130 V AC
□ 220/240 V AC.
■ The contact remotely resets the device following tripping due to an electrical fault.

"Springs charged" limit switch contact (CH) (B1-B2)

■ Standard equipment 1 CH contact per device.
■ The contact indicates the "charged" status of the operating mechanism (springs charged).

DB126788.eps



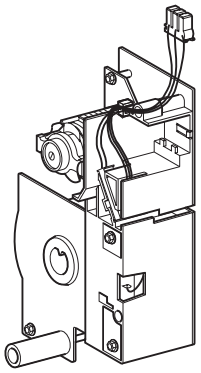
"Ready to close" contact (PF)

■ Optional equipment:1 PF contact per device
■ The contact indicates that the device may be closed because all the following are valid:
□ circuit breaker is open
□ spring mechanism is charged
□ a maintained closing order is not present
□ a maintained opening order is not present.

Note: *For the characteristics, see the catalogue.*

Auxiliaries for remote operation

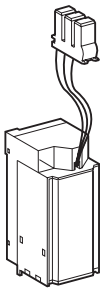
DB126830.eps



Gear motor (MCH)

- Standard equipment: one MCH gear motor per device.
- Available versions:
  - 100/130 V AC
  - 200/240 V AC
  - 277 V AC
  - 380/415 V AC
  - 400/440 V AC
  - 480 V AC
  - 24/30 V DC
  - 48/60 V DC
  - 100/125 V DC
  - 200/250 V DC.
- The gear motor automatically charges and recharges the spring mechanism.
- Charging time: 4 seconds max.
- Consumption:
  - 180 VA AC
  - 180 V DC.
- Inrush current: 2 to 3 In for 0.1 second
- Operating rate: maximum 3 cycles per minute.

DB126826.eps

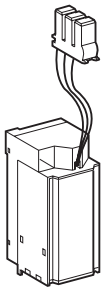


Closing release XF

- Standard equipment: 1 XF per device.
- The function (XF) is determined by where the coil is installed.
- Communicating version (with COM option):
  - 12 V AC - 50/60 Hz / DC
  - 24/30 V AC - 50/60 Hz / DC
  - 48/60 V AC - 50/60 Hz / DC
  - 100/130 V AC - 50/60 Hz / DC
  - 200/250 V AC - 50/60 Hz / DC
  - 240/277 V AC - 50/60 Hz / DC
  - 380/480 V AC - 50/60 Hz / DC.
- The XF release instantaneously closes the circuit breaker when energised, if the device is "ready to close".
- Device response time:
  - XF: 70 ms +10 / -15 > 3200 A : 80 ms ±10.
- Operating threshold:
  - XF: 0.85 to 1.1 x Un.
- The supply can be maintained.
- Consumption:
  - pick-up (80 ms): 200 VA
  - hold: 4.5 VA.

Auxiliaries for remote operation

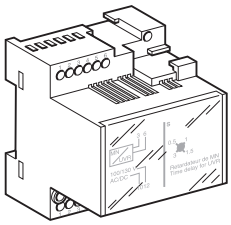
DB126826.eps



Instantaneous undervoltage releases (MN)

■ Optional equipment:1 MN per device
■ Not compatible with the MX opening release.
■ Connection cables not included, see below.
■ Available versions:
□ 24/30 V AC - 50/60 Hz / DC
□ 48/60 V AC - 50/60 Hz / DC
□ 100/130 V AC - 50/60 Hz / DC
□ 200/250 V AC - 50/60 Hz / DC
□ 380/480 V AC - 50/60 Hz / DC.
■ connection cables: for drawout device.
■ The MN release instantaneously opens the circuit breaker when its supply voltage drops.
■ Device response time: 90 ms ±5.
■ Operating threshold:
□ opening: 0.35 to 0.7 x Un
□ closing: 0.85 x Un.
■ Consumption:
□ pick-up (80 ms): 200 VA
□ hold: 4.5 VA.

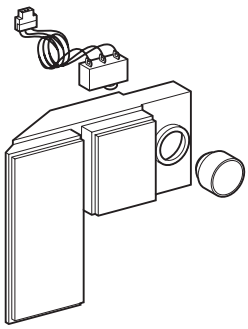
DB126823.eps



Delay unit for MN releases

■ Optional equipment: 1 MN with delay unit per device.
■ Delay-unit part numbers (must be ordered in addition to the MN):
□ 48/60 V AC - 50/60 Hz / DC
□ 100/130 V AC - 50/60 Hz / DC
□ 200/250 V AC - 50/60 Hz / DC
□ 380/480 V AC - 50/60 Hz / DC.
■ The unit delays operation of the MN release to eliminate circuit-breaker nuisance tripping during short voltage dips.
■ The unit is wired in series with the MN and must be installed outside the circuit breaker.
■ Device response time:
□ 0.5 s, 1 s, 1.5 s, 3 s.
■ Operating threshold:
□ opening: 0.35 to 0.7 x Un
□ closing: 0.85 x Un.
■ Consumption:
□ pick-up (80 ms): 200 VA
□ hold: 4.5 VA.

DB126787.eps

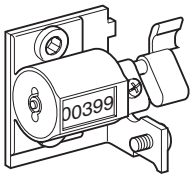


Electrical closing pushbutton (BPFE) (specific)

■ Standard equipment: 1 BPFE per device.
■ Located on the front of the device, this pushbutton carries out electrical closing of the circuit breaker via the XF release, taking into account the three closing conditions, PFC, PF and PFUR.

Device mechanical accessories

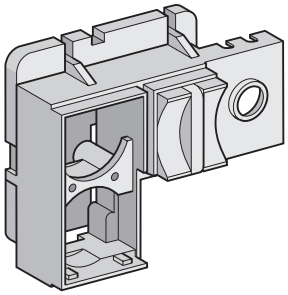
DB126928.eps



Operation counter (CDM)

- Optional equipment: 1 CDM per device.
- The operation counter sums the number of operating cycles.

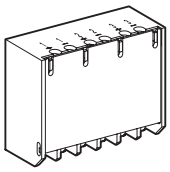
DB127048.eps



Device locking in the OFF position using a padlock

- Optional equipment: 1 locking system per device.
- The unit inhibits local or remote closing of the device.
- Up to three padlocks may be used for locking.

DB126987.eps



Right-hand terminal block

- Standard equipment:
  - UR 16-30
  - UR 50-60.
- Used for connection of the capacitor-discharge cable to the device.

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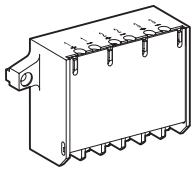
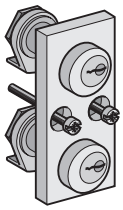


Left-hand terminal block

- Standard equipment: UR 50-60.
- Used for connection of the capacitor-discharge cable to the device.

DB127047.eps

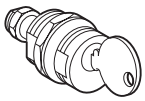


Device OFF position locking kit for keylocks

- Optional equipment: 1 locking kit per device.
- Locks not included:
  - for Profalux or Ronis keylocks
  - for Castell keylocks
  - for Kirk keylocks.
- The kit inhibits local or remote closing of the device.

Ronis

DB126834.eps



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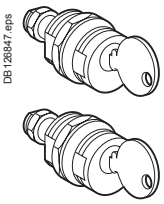
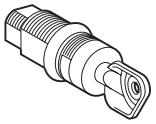


Keylocks required for the device locking kit

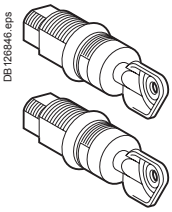
- Optional equipment: 1 or 2 keylocks per locking kit.
  - Ronis :
    - 1 keylock
    - 2 keylocks
  - Profalux :
    - 1 keylock
    - 2 keylocks.

Profalux

DB126833.eps

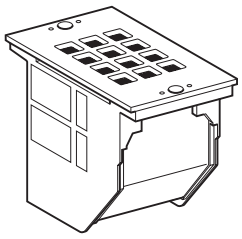


DB126846.eps

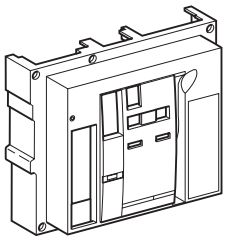


Device mechanical accessories

DB126785.eps



DB126925.eps



DB126920.eps

Arc chute

■ Standard equipement: quantity per device.

	UR16	UR30	UR50	UR60
3P	3	3	6	6
4P	4	4	8	-

Front plate

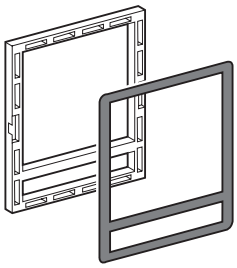
■ Standard equipment: 1 front plate per device.
■ Equipped with locking system for the ON and OFF pushbuttons.
The cover for the "Push ON" closing button is always locked by a screw.
The cover for the "Push OFF" button can be locked:
■ 1 padlock
■ 1 lead seal
■ 1 screw.

Charging handle

■ Standard equipement : 1 handle per device.

Chassis mechanical accessories

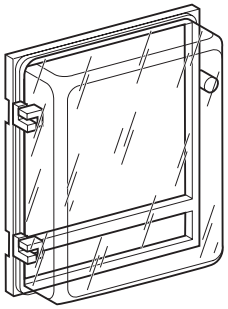
DB128922.eps



Escutcheon (CDP)

- Optional equipment: 1 CDP per device.
- Degree of protection IP40, IK07.

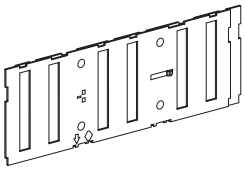
DB126923.eps



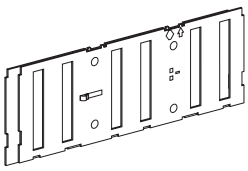
Transparent cover (CCP)

- Optional equipment: 1 CCP per device equipped with a CDP.
- Mounted with a CDP, it increases the degree of protection to IP54 and IK10.

DB126786.eps



Top closed position.

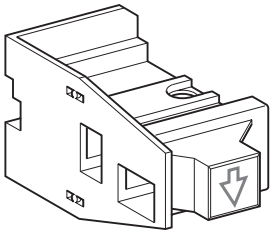


Bottom closed position.

Safety shutters

- Standard equipment (set of shutters for top and bottom):
  - UR 16-30:
  - 3 poles
  - 4 poles
  - UR 50-60: identical for 3 and 4 poles.
- Mounted on the chassis, the safety shutters automatically block access to the disconnecting-contact cluster when the device is in the "disconnected" or "test" positions.
- IP20.

DB126917.eps

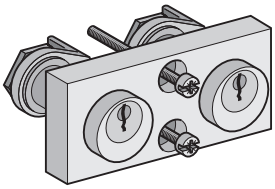


Shutter locking blocks des volets isolants

- Optional equipment:
  - 2 blocks UR 16-30
  - 4 blocks UR 50-60.
- The block may be padlocked and used to:
  - prevent connection of the device
  - lock the shutters in the "closed" position
  - maintain the shutters in the "open" position.

Chassis mechanical accessories

DB126916.eps

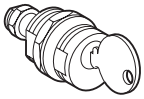


Chassis locking in the "disconnected" position

■ Optional equipment: 1 locking system per device.
■ Keylocks not included:
□ for Profalux or Ronis keylocks
□ for Castell keylocks
□ for Kirk keylocks.
■ Mounted on the chassis and accessible with the door closed, this system locks the circuit breaker in the "disconnected" position using one or two keylocks.
■ This locking system may be modified to lock the circuit breaker in all three positions.

Ronis

DB126834.eps



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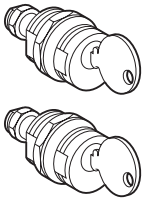
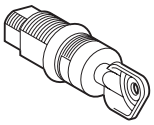
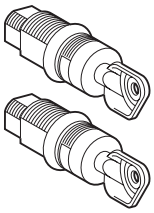


Profalux

DB126833.eps



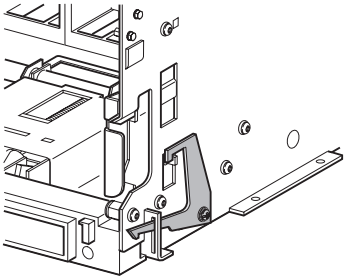
DB126846.eps



Keylocks required for chassis locking in the "disconnected" position

■ Optional equipment: 1 or 2 keylocks per locking system:
□ Ronis :
- 1 keylock
- 2 keylocks
□ Profalux :
- 1 keylock
- 2 keylocks.

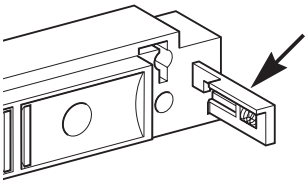
DB126914.eps



Door interlock for UR 16-30 only

■ Optional equipment: 1 racking interlock per chassis.
■ This device prevents insertion of the racking handle when the cubicle door is open.
■ It is mounted on the right-hand side of the chassis.

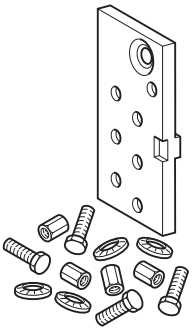
DB126921.eps



Racking interlock

■ Optional equipment: 1 racking interlock per chassis.
■ This device prevents insertion of the racking handle when the cubicle door is open.
■ It is mounted on the right-hand side of the chassis.

DB126924.eps

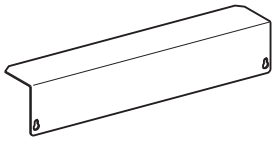


Mismatch protection for UR 16-30 only

■ Optional equipment: 1 mismatch-protection device per chassis.
■ Mismatch protection offers 20 different combinations that the user may select to ensure that only a compatible circuit breaker is mounted on a given chassis.

Chassis mechanical accessories

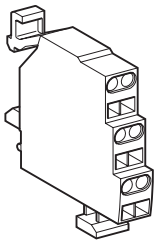
DB126805.eps



Auxiliary terminal shield (CB)

■ Standard equipment: 1 CB shield per chassis:
□ UR 16-30:
- 3 poles
- 4 poles
□ UR 50-60: identical for 3 and 4 poles
■ The shield prevents access to the terminal block of the electrical auxiliaries.

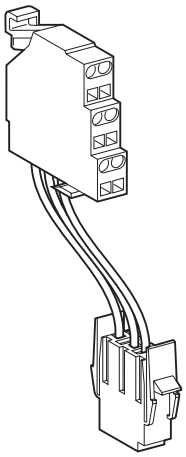
DB126929.eps



Connected, disconnected and test position carriage switches (CE, CD, CT)

■ Standard equipment: 1 CE.
■ Optional equipment: 1 to 6 carriage switches.
■ Standard configuration: 0 to 2 CE, 0 to 2 CD, 0 to 2 CT.
■ Other configurations (by ordering more actuators with the additional carriage switches):
□ 0 to 6 CE, 0 CD, 0 CT
□ 0 to 4 CE, 0 to 2 CD, 0 CT
□ 0 to 4 CE, 0 CD
□ 0 to 2 CT.
■ The carriage switches indicate the three positions:
□ CE: connected
□ CD: disconnected (when the minimum isolation distance between the main contacts and the auxiliary contacts is reached)
□ CT: test.

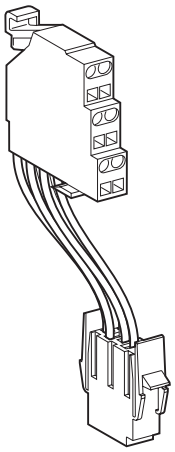
DB127129.eps



Chassis 3-point connection terminals

■ Standard equipment: 10 per device.
■ Optional equipment: 3 per device.
■ For auxiliary circuit / "UR Power" / customer connections.

DB127128.eps

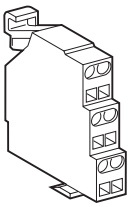


Chassis 6-point connection terminals

■ Standard equipment: 2 per device.
■ Optional equipment: 1 per device.
■ For auxiliary circuit / "UR Power" / customer connections.

Chassis mechanical accessories

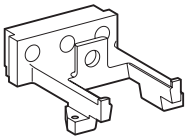
DB127127.eps



Chassis-relay connection terminals

- Standard equipment: 3 per device.
- For auxiliary circuit / "UR Power" / customer connections.

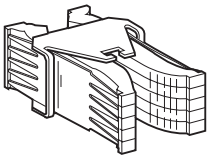
DB126985.eps



Auxiliary terminal shield support

- Standard equipment:
  - UR 16-30: 1 per device
  - UR 50-60: 2 per device.
- Mounted on the arc-chute cover, it supports the auxiliary terminal shield.

DB126919.eps

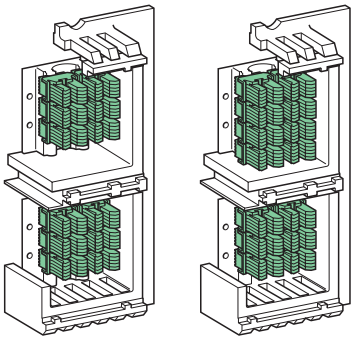


Disconnecting-contact clusters

- Standard equipment: quantity per device.

	UR16	UR30	UR50	UR60
3P	42	42	84	84
4P	56	56	96	-
3P	3(a)	3(a)	6(a)	6(a)
4P	4(a)	4(a)	8(b)	-

DB126959.eps

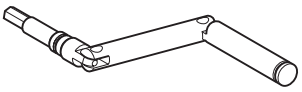


(b) (a)

Grease for disconnecting-contact clusters

- 1 can.

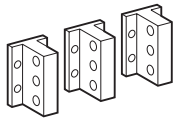
DB126784.eps



Crank

- Standard equipment: 1 crank per device.

DB126975.eps



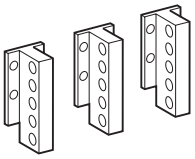
(a)

Terminal extensions

- Standard equipment : quantity per device.

	UR16	UR30	UR50	UR60
3P	6(a)	6(a)	12(a)	12(b)
4P	8(a)	8(a)	16(a)	-

DB126960.eps



(b)

Maintenance tools and accessories

Contact finger travel measurement tool

■ During pairing of the "UR Power" module and the circuit breaker, this tool measures travel of the contact fingers during discharge by the Thomson-effect coils (optic-fibre system). It is installed in the position generally occupied by the arc chutes.
□ For use by the maintenance department only.

Cable for maintenance in the removed position

■ During pairing, this cable is used to connect the "UR Power" module to the circuit breaker when it has been pulled out on its rails. It connects to the auxiliary connectors of the circuit breaker.
□ For use by the maintenance department only.

Selection tool for the Thomson-effect coils

■ This tool comprises a ribbon cable used to pair the poles one by one by selecting only the group of capacitors connected to the coils for each pole. It is installed between the interface board and the capacitor board.
□ For use by the maintenance department only.

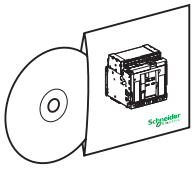
Measurement tool for clearance and travel of the thruster disk

■ This tool checks the clearance between the disk and the contact fingers, and measures the travel of the disk. It connects to the rear of the circuit breaker, between the upstream and downstream disconnecting contacts of each pole.
□ For use by the maintenance department only.

Contact position measurement tool

■ This tool checks that the contact position is OK and whether the contact tips are still in good condition. It is installed on the housing of the moving contact.
□ For use by the maintenance department only.

DB127057.eps



Maintenance CD ROM

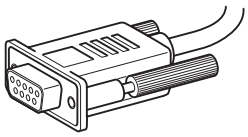
■ Optional equipment.
■ For communication with "UR Control" and "UR Power".

USB/CAN converter (not supplied)

■ Optional equipment: recommended brand: IXXAT.+ USB cable.
■ The converter is used to connect the PC (RS232) to the CAN port (RJ45) on the "UR Control" module.

Maintenance tools and accessories

DB126990.eps



SubD9 / RJ45 CAN communication cable

■ Optional equipment:
□ the cable is used to connect the RJ45 output on the "UR Power" module to the converter.

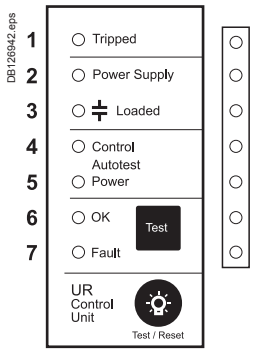
DB126989.eps

Test-connector cable

■ Optional equipment:
□ the cable is used to connect the test connector on the "UR Control" module to a low-frequency generator.

Troubleshooting and solutions

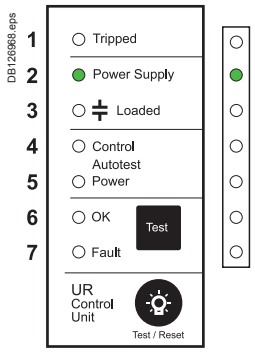
Problem	Probable causes	Solutions
1 - The miniature circuit breaker on the "UR Power" module trips on closing	■ Network voltage is too high	□ Check the supply voltage. It must not exceed 240 V +10 %
2 - LCD screen on Micrologic and Power"UR Control" LED on "UR Control" module do not go on when the miniature circuit breaker on the "UR Power" module is closed	■ No supply voltage for the"UR Power" module, loss of 24 V power	□ Check the supply voltage. It should be 240 V (+10 %, -15 %) □ Check the "UR Power" module connector
	■ Miniature circuit breaker on the "UR Power" module is faulty	□ Replace the miniature circuit breaker on the"UR Power"
	■ Device in the disconnected position	□ Connect the circuit breaker
	■ Auxiliaries incorrectly connected on the "UR Power" module	□ Reconnect the auxiliary-circuit connector on the "UR Power" module
	■ Auxiliary link cut between "UR Power" module and chassis terminal block	□ Replace the auxiliary-circuit cable
	■ Auxiliary link cut between chassis terminal block and device terminal block	□ Replace the chassis connection terminals □ Replace the connection wires (2)
	■ Auxiliary link cut between device terminal block and Micrologic and/or"UR Control" module	□ Check the connections (1)
	■ Poor connection of the filter, regulation, interface boards	□ Replace the regulation board on the "UR Power" module as per procedure n° **UR Power N IV_3_4** (1)
	■ Regulation board on the "UR Power"module is faulty	□ Replace the interface board on the "UR Power" module: - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)
	■ Interface board on the "UR Power" module is faulty	□ Replace the filter board on the "UR Power" module as per procedure N° **UR Power N IV_3_5** (1)
	■ Filter board on the "UR Power" module is faulty	□ Replace the transformer module on the "UR Power" as per procedure N° **UR Power N IV_3_5** (1)
	■ Transformer module on the "UR Power" module is faulty	□ Replace the filter as per procedure **N° UR Power N IV_3_5** (2)
	■ SCHAFFNER filter is faulty	
	■ Auxiliaries incorrectly connected on the chassis terminal block: - for "UR Control", terminal block UC1, terminals +AD -AD - for Micrologic, terminal block UC3, terminals F2+ F1-	□ Reconnect as per the diagram in the installation manual.



(1) Servicing by Schneider Electric after-sales support.
(2) Servicing by Schneider Electric after-sales support (a special replacement part must be ordered via the Help Desk).

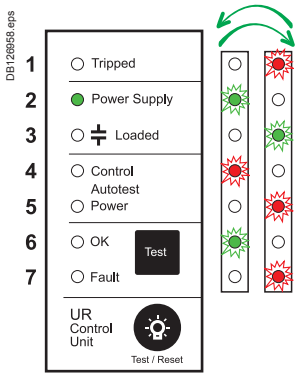
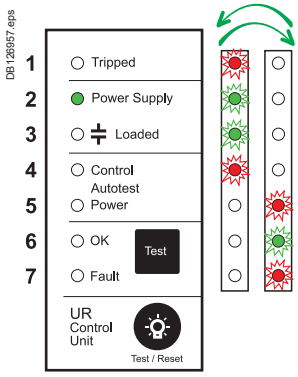
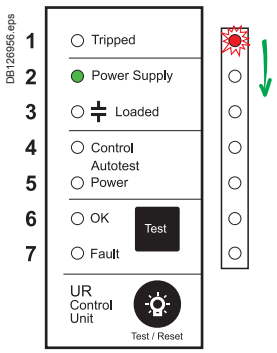
***Note:** the procedures are available on the ABT services support site.*

Troubleshooting and solutions

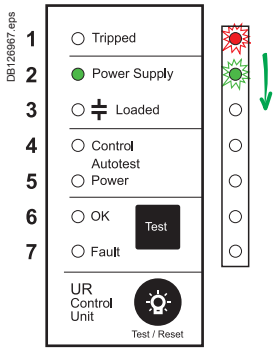
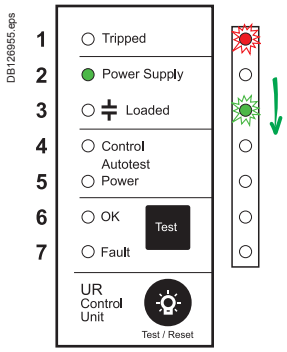
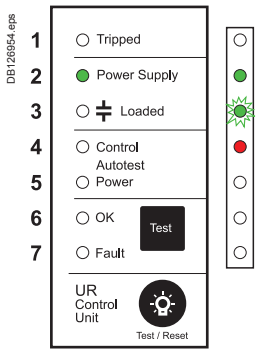
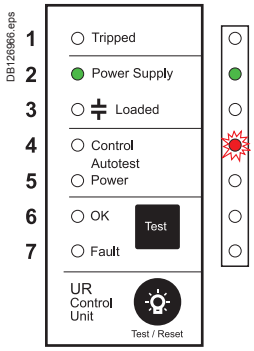
Problem	Probable causes	Solutions
3 - The Power Supply LED (2) goes on, but the Loaded LED (3) remains off. The system does not start 		□ If LED operation is doubtful, check them by pressing the **Test/Reset** button
	■ System calibration was not carried outor an error was made on the user interface. The CALIBRATION_DONE variable is set to FALSE	■ Recalibrate the "UR Power" module as per procedure N° **UR Power N IV_3_4** (1)
	■ The supply voltage for the "UR Power" module is outside tolerances (< -15 %)	□ Check the supply voltage and restart the system
	■ Mitop 20 V DC supply outside tolerances	□ Check the 20 V DC voltage via the user interface □ If the voltage is outside tolerances (±10 %), the problem may be caused by: - the 36 V output of the supply transformer - the interface board - the wiring. Replace the faulty board as per procedure N° **UR Power N IV_3_4 or N IV_3_5** (1) - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)
	■ Ambient temperature is less than 15°C	□ increase the ambient temperature to above 15 °C
	■ Faulty thermistor	□ replace the interface board: - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)

(1) Servicing by Schneider Electric after-sales support.

Troubleshooting and solutions

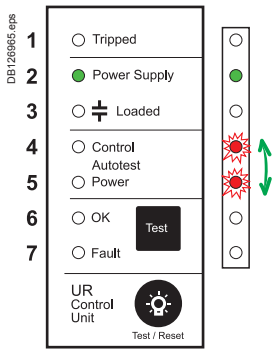
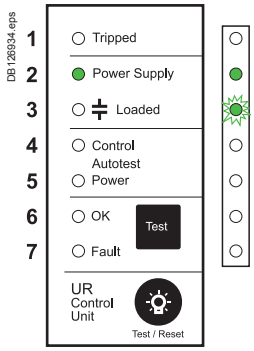
Problem	Probable causes	Solutions
4 - flashing LEDs on the "UR Control" module:		
Even and odd LEDs flash alternately 	■ There is an inconsistency in the configuration of the option (internal-fault trip) between the programming for the "UR Control" module and the presence or absence of the jumper on terminal 4 of the "UR Control" module.	□ Use procedure N° **UR Control N IV_3_3** (1) to modify the options.
First four LEDs and last three LEDs flash alternately 	■ There is an inconsistency in the flash alternately configuration of the option (tripping disabled) between the programming for the "UR Control" module and the presence or absence of the jumper on terminal 3 of the "UR Control" module.	□ Use procedure N° **UR Control N IV_3_3** (1) to modify the options.
LEDs flash one after the other (first LED 1, then LED 2, etc.) 	■ There is an inconsistency in the configuration between the rating of the "UR Power" module ("Basic model TI1 board, TI2 board" variable) and the number of connection ribbon cables (between the interface boards and the Ti boards) Ti1 ➡ 1 ribbon cable for 3000 A Ti2 ➡ 2 ribbon cables for 6000 A	□ A - reconnect the corresponding ribbon cables: - 2 for "UR Power" "6000 A" - 1 for "UR Power" "3000 A" □ B - use procedure: N° **UR Power N IV_3_4** (1)

Troubleshooting and solutions

Problem	Probable causes	Solutions
4 - flashing LEDs on the "UR Control" module (cont.)		
Pairs of adjacent LEDs flash one after the other (LEDs 1&2, then 2&3, etc.) 	■ The tripping curve for the "UR Control" module is incorrect	□ replace the "UR Control" module as per procedure N° **UR Control N IV_3_3** (1)
Pairs of non-adjacent LEDs flash one after the other (LEDs 1&3, then 2&4, etc.). 	■ Incorrect pairing between the "UR Power" and "UR Control" modules	□ Use procedure N° **UR Power N IV_3_4** (1) to correct the pairing between the "UR Power" and "UR Control" modules
LED 3 flashes, LED 4 remains on 	■ The capacitors are outside tolerances (+20 %, -20 %)	□ Replace all the capacitors in the faulty module, as per procedure N° **UR Power N IV_3_1** (1)
Led 4 flashes 	■ The battery is not OK	□ Replace the battery on the "UR Power" module (interface board). ***Note:*** *if the system does not restart, see case 2 on page 76.*

(1) Servicing by Schneider Electric after-sales support.

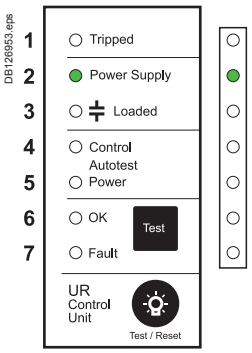
Troubleshooting and solutions

Problem	Probable causes	Solutions
4 - Flashing LEDs on the "UR Control" module (cont.)		
LEDs 4 and 5 flash alternately 	■ Configuration parameters lost (serial no., association no., pairing data, tripping curve).	□ "UR Control" module board is faulty interface board on "UR Power" module is faulty □ First replace the "UR Control" module: - if the system restarts (flashing LEDs), initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1) - if the system does not start: - reinstall the old "UR Control" module - replace the interface board - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)
5 - At end of capacitor charge LED 3 goes on, then off, a new charge cycle is started. 	■ Charge circuit in the "UR Power" module is faulty (max. charge time overrun)	□ Check calibration via the user interface □ Recalibrate the "UR Power" module as per procedure N° **UR Power N IV_3_4** (1) □ Check the capacitor-charge voltage via the user interface. If there is no charge voltage (or it is too low), the problem may be caused by: - the 300 V output of the supply transformer - the regulation board - the Ti board - the connection of the charge wiring - the charge relays. **Identify the faulty subassembly**
6 - Device cannot be closed locally or remotely.	■ Faulty BPFE/XF wiring. ■ Faulty BPFE contact. ■ Electrical closing order by XF produces no effect	□ Check the wiring between BPFE and XF □ Check the BPFE contact - if faulty, replace it as per procedure N° **Auxiliaries N IV_3_3** (1) □ Check the voltage and the supply circuit (0.85 to 1.1 Un) - if the problem persists, replace the XF release
	One of the three closing conditions (customer, mechanical, electronic) is not met **Condition 1: The PFC (Customer ready to close) contact is not OK**	□ Check the PFC closing conditions (generator synchronisation, etc.) □ Check the PFC wiring and contact

(1) Servicing by Schneider Electric after-sales support.

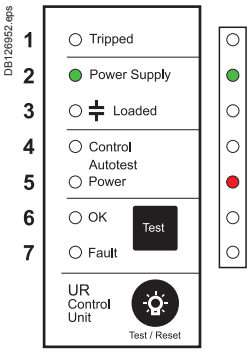
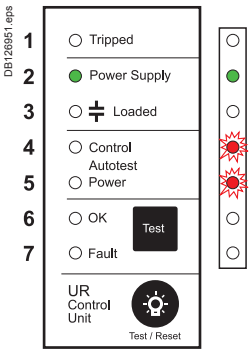
Troubleshooting and solutions

Problem	Probable causes	Solutions
6 - Device cannot be closed locally or remotely (cont.)	**Condition 2. The PF (Ready to close) contact is not OK**	
	■ Device padlocked or keylocked in the open position	□ Disable the locking function
	■ Device not completely connected	□ Terminate racking in (connection)
	■ The Reset button signalling a fault trip has not been reset	□ Clear the fault □ Push the Reset button on the front of the device
	■ Stored energy mechanism not charged	□ Charge the mechanism manually: - if the device is equipped with an MCH gear motor, check the voltage and the supply circuit. - if the problem persists, replace the MCH gear motor.
	■ MX opening shunt release permanently supplied with power	□ There is an opening order: - determine the origin of the order - the order must be cancelled before the device can be closed
	■ MN undervoltage release not supplied with power	□ There is an opening order: - determine the origin of the order - check the voltage and the supply circuit (U > 0.85 Un) - if the problem persists, replace the MN release)
	■ Permanent trip order in the presence of a Micrologic P or H control unit with minimum voltage and minimum frequency protection in Trip mode and the control unit powered.	□ Disable these protection function on the Micrologic P or H control unit
	■ Faulty PF wiring	□ Check the wiring on the chassis terminal block
	■ Faulty PF contact	□ Check the PF contact and if the problem persists, replace the contact
	Condition 3. The PFUR (UR ready to close) contact is not OK	
	■ Faulty PFUR wiring	□ Check the wiring on the chassis terminal block (1)
	■ Faulty PFUR relay contact	□ Replace the interface board: - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)
	If the red "Autotest Control" LED is on	
	■ "UR Control" module 24 V DC supply outside tolerances	□ Check the 24 V DC voltage: - via the user interface - or across the AD+ and AD- terminals on the chassis □ If the voltage is outside tolerances (+/-10 %), the problem may be caused by: - the 36 V output of the supply transformer - the interface board - the wiring. Replace the faulty board as per procedure No. N° **UR Power N IV_3_4 or N IV_3_5** (1) - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)



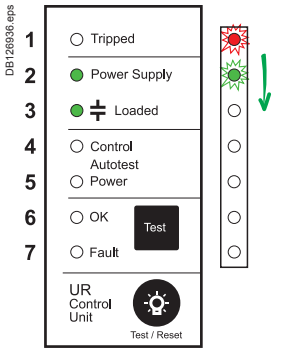
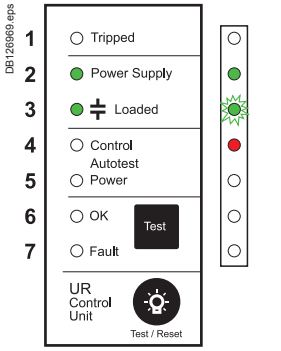
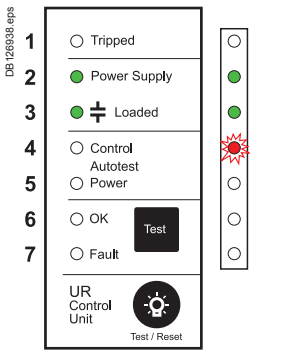
(1) Servicing by Schneider Electric after-sales support.

Troubleshooting and solutions

Problem	Probable causes	Solutions
6 - device cannot be closed locally or remotely (cont.)	■ Mitop 20 V DC supply outside tolerances	□ Check the 20 V DC voltage via the user interface □ If the voltage is outside tolerances (±10 %), the problem may be caused - the 36 V output of the supply transformer - the interface board - the wiring. Replace the faulty board as per procedure N° **UR Power N IV_3_4 or N IV_3_5** (1) - restart (LEDs flash) - initialise variables via user interface per procedure N° **UR Power N IV_3_4** (1)
	■ Ambient temperature is less than 15 °C	□ Increase the ambient temperature to above 15 °C
	■ Faulty thermistor	□ Replace the interface board - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)
	**If the red Autotest Power LED is on**	
	■ Fault in power-circuit continuity	□ Using an ohmmeter, check power-circuit continuity across the terminals of the free-wheel diode on each capacitor board. - if measurement = ~20 milliohms, the wiring is OK - if measurement > 30 milliohms, check tightness of connections at cable ends and if measurement has not changed, replace the wiring as per procedure N° **UR Power N IV_3_3** (1)
	**If the two red Autotest Control and Autotest Power LEDs flash**	
	■ Configuration parameters lost (serial no., pairing data, tripping curve)	□ "UR Control" module board is faulty or interface board on "UR Power" is faulty □ First replace the "UR Control" module - if the system restarts (flashing LEDs), initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1) - if the system does not start: - reinstall the old "UR Control" module - replace the interface board - restart (LEDs flash) - initialise variables via user interface

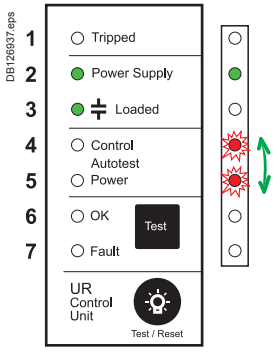
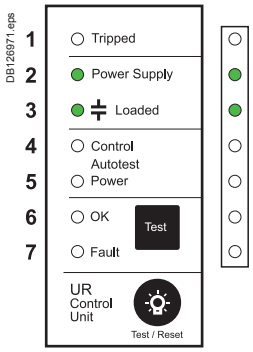
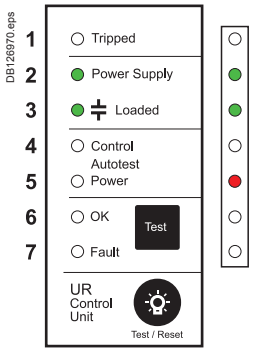
(1) Servicing by Schneider Electric after-sales support.

Troubleshooting and solutions

Problem	Probable causes	Solutions
7 - Unexpected opening following an internal fault, in spite of option 1 (internal-fault trip) trip) being NOT ACTIVATED	■ The jumper for option 1 (internal-fault trip) became disconnected during device operation ■ If the system detects a fault in the "UR Control" module, an opening order is issued ***Note:*** *if another internal fault is detected,* ➡ *an opening order is not issued*	□ Replace the "UR Control" module as per procedure N° **UR Control N IV_3_3** (1) □ Initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)
8 - Faults detected during an autotest" (device in operation) pairs of adjacent LEDs flash one after the other (LEDs 1&2, then 2&3, etc.) 	■ The tripping curve for the "UR Control" module is incorrect	□ Replace the "UR Control" module as per procedure N° **UR Control N IV_3_3** (1)
LED 3 flashes, LED 4 remains on 	■ The capacitors are outside tolerances (+20 %, -20 %)	□ Replace all the capacitors in the faulty module, as per procedure N° **UR Power N IV_3_1** (1)
Led 4 flashes 	■ The battery is not OK	□ Replace the battery on the "UR Power" module (interface board) ***Note:*** *If the system does not start, see case 2* (1).

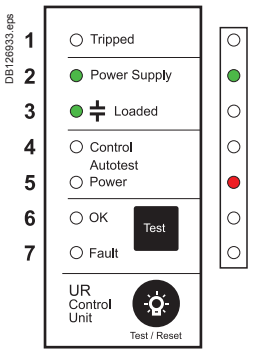
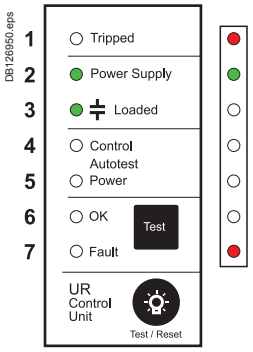
(1) Servicing by Schneider Electric after-sales support.

Troubleshooting and solutions

Problem	Probable causes	Solutions
8 - Faults detected during an autotest (device in operation) *(cont.)*		
LEDs 4 and 5 flash alternately 	■ Configuration parameters lost (serial no., association no., pairing data)	□ After replacing the boards, reconfigure the parameters as per procedure N° **UR Power N IV_3_4** (1)
Red "Autotest Control" LED is on 	■ "UR Control" module 24 V DC supply outside tolerances	□ Check the 24 V DC voltage: - via the user interface - or across the AD+ and AD- terminals on the chassis □ If the voltage is outside tolerances (+/-10 %), the problem may be caused by: - the 36 V output of the supply transformer - the interface board - the wiring. Replace the faulty board as per procedure N° **UR Power N IV_3_4 or N IV_3_5** (1) - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)
	■ Mitop 20 V DC supply outside	□ Check the 20 V DC voltage via tolerances the user interface □ If the voltage is outside tolerances (+/-10 %), the problem may be caused by: - the 36 V output of the supply transformer - the interface board - the wiring, etc. Replace the faulty board as per procedure N° **UR Power N IV_3_4 or N IV_3_5** (1) - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)
Red Autotest Power LED is on 	■ Ambient temperature is less than 15 °C	□ Increase the ambient temperature to above 15 °C
	■ Faulty thermistor	□ Replace the interface board: - restart (LEDs flash) - initialise variables via user interface as per procedure N° **UR Power N IV_3_4** (1)

(1) Servicing by Schneider Electric after-sales support.

Troubleshooting and solutions

Problem	Probable causes	Solutions
8 - Faults detected during an autotest (device in operation) (cont.) Red "Autotest Power" LED is on 	■ Fault in power-circuit continuity	□ Using an ohmmeter, check power-circuit continuity across the terminals of the free-wheel diode on each capacitor board □ If measurement = ~20 milliohms, the wiring is OK □ If measurement > 30 milliohms, check tightness of connections at cable ends and if measurement has not changed, replace the wiring as per procedure N° **UR Power N IV_3_3** (1)
9 - Problem detected during test on the "UR Control" module red Fault and Tripped LEDs go on 	■ Device not opened by the Thomson-effect coils and by Mitop release (no status change in OF contacts)	□ Check mechanical and electrical operation of the OF contact □ If faulty, replace it as per procedure N° **Auxiliaries N IV_3_2** (1)
	■ Capacitor discharge is too slow	□ Check capacitor values (+20 % -20 %) □ Replace all the capacitors in the faulty module, as per procedure N° **UR Power N IV_ 3_1** (1)
	■ Fault in power-circuit continuity	□ Using an ohmmeter, check power-circuit continuity across the terminals of the free-wheel diode on each capacitor board □ If measurement = ~20 milliohms, the wiring is OK □ If measurement > 30 milliohms, check tightness of connections at cable ends and if measurement has not changed, replace the wiring as per procedure N° **UR Power N IV_3_3** (1)
10 - Unexpected tripping without activation of the Reset button signalling a fault trip voltage too low circuit (U > 0.85 Un)	■ MN undervoltage release supply voltage too low	□ Check the voltage and the supply circuit (U > 0.85 Un)
	■ Load-shedding order sent to the MX opening release by another device	□ Check the overall load on the distribution system □ If necessary, modify the settings of devices in the installation
	■ Unnecessary opening order from the MX opening release	□ Determine the origin of the order
11 - Unexpected tripping with activation of the Reset button signalling a fault trip	A fault is present: ■ overload ■ insulation fault ■ short-circuit detected by the control	□ Determine and clear the causes of the fault □ Check the condition of the device before putting it back into service
12 - Instantaneous opening after each attempt to close the device with activation of the reset button signalling a fault trip	■ Thermal memory	□ See the user manual of the control unit □ Press the Reset button
	■ Transient overcurrents	□ Modify the distribution system or the closing settings (too high) of the control unit □ Check the condition of the device before putting it back into service □ Press the Reset button
	■ Closing on a short circuit	□ Determine and clear the causes of the fault □ Check the condition of the device before putting it back into service □ Press the Reset button
	■ Link cut between CT and Micrologic	□ Check the wiring and connections between the CT and Micrologic

(1) Servicing by Schneider Electric after-sales support.

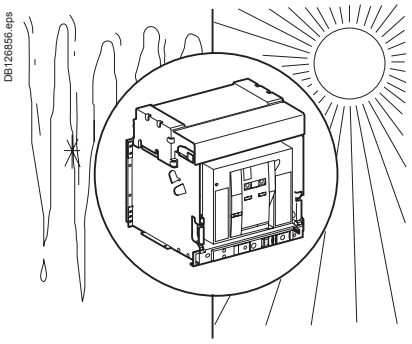
Troubleshooting and solutions

Problem	Probable causes	Solutions
13 - Device can be opened locally, but not remotely	■ Opening order not executed by the MX opening release	□ Check the voltage and the supply circuit (0.7 - 1.1 Un) If the problem persists, replace the MX release
	■ Opening order not executed by the MN undervoltage release	□ Drop in voltage insufficient or residual voltage (> 0.35 Un) across the terminals of the undervoltage release. If the problem persists, replace the MN release
14 - Device cannot be opened locally	■ Operating-mechanism malfunction or welded contacts.	□ Contact a Schneider Electric service centre
15 - Device can be reset locally, but not remotely	■ Supply voltage for MCH gear motor is too low or absent	□ Check the voltage and the supply circuit (U > 0.85 Un). If the problem persists, replace the MCH
16 - Nuisance tripping with activation of the Reset button signalling a fault trip	■ The Reset button is not pushed in completely	□ Push the Reset button in completely
17- Impossible to insert the crank in "connected", "test" or "disconnected" position	■ A padlock or keylock is installed on the chassis or a door interlock is installed	□ Disable the locking function
18 - Impossible to turn the crank	■ The Reset button has not been pushed	□ Press the Reset button
19 - Device cannot be removed from chassis	■ Device not in disconnected position	□ Turn the crank until the device is in disconnected position and the Reset button is out
	■ The rails are not completely out	□ Pull the rails all the way out
20 - Device cannot be connected (racked in)	■ Chassis/circuit breaker mismatch protection	□ Check that the chassis corresponds with the circuit breaker.
	■ The safety shutters are locked	□ Remove the lock(s)
	■ The disconnecting-contact clusters are incorrectly positioned	□ Reposition the clusters
	■ Chassis locked in "disconnected" position	□ Disable the locking function
	■ The Reset button has not been pressed, preventing rotation of the crank	□ Press the Reset button
	■ The device has not been sufficiently inserted in the chassis	□ Insert the device completely so inserted in the chassis that it is engaged in the racking mechanism
21 - Device cannot be locked in "disconnected" position	■ The device is not in the correct position	□ Check the device position by making position sure the Reset button is out
	■ The crank is still in the chassis	□ Remove the crank and put it back in its storage position
22 - Device cannot be locked in "connected", "test" or "disconnected" position	■ Check that locking in any position is "enabled"	□ Set the locking catch to the "test" or correct position
	■ The device is not in the correct position	□ Check the device position by making sure the Reset button is out
	■ The crank is still in the chassis	□ Remove the crank and put it back in its storage position
23 - Crank cannot be inserted to connect or disconnect the device	■ Chassis rails are not completely pushed in	□ Push the rails all the way in
24 - Right-hand rail (chassis alone) or device cannot be drawn out	■ The crank is still in the chassis	□ Remove the crank and put it back in its storage position

Troubleshooting and solutions

Operating conditions

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

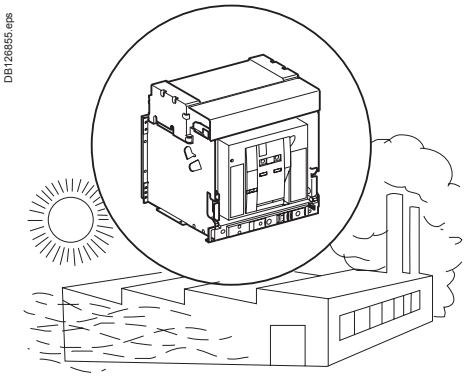


Ambient temperature (1)

Masterpact UR can operate under the following temperature conditions:
- the electrical and mechanical characteristics are guaranteed for an ambient temperature of +15 °C to +50 °C (2).

Storage conditions are as follows:
- Masterpact UR without control unit (Micrologic, “UR control”) and “UR Power” module: -40 °C to +85 °C
- control units (Micrologic, “UR control”) and “UR power” module: -25 °C to +85 °C.

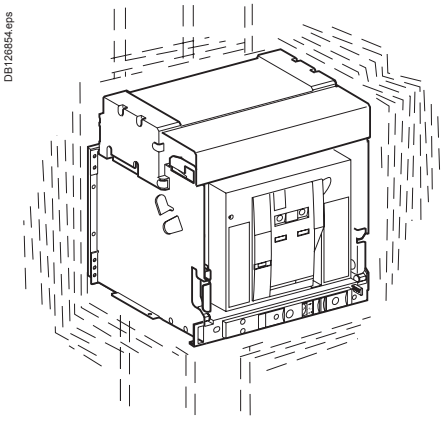
(1) Temperature measured inside the switchboard, 10 cm above the arc chute.
(2) For higher temperature, please consult us.



Extreme atmospheric conditions

Masterpact UR have successfully passed the tests defined by the following standards for extreme atmospheric conditions:
- IEC 60068-2-1: dry cold at -55 °C
- IEC 60068-2-2: dry heat at +85 °C
- IEC 60068-2-30: damp heat (temperature +55 °C, relative humidity 95 %)
- IEC 60068-2-52 level 2: salt mist.

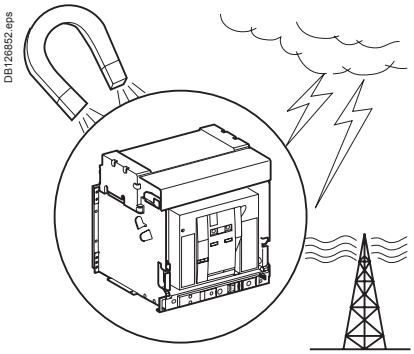
Masterpact UR can operate in the industrial environments defined by standard IEC 60947 (pollution degree up to 3).
It is nonetheless advised to check that the devices are installed in suitably cooled switchboards without excessive dust.



Vibrations

Masterpact UR are guaranteed against electromagnetic or mechanical vibrations. Tests are carried out in compliance with standard IEC 60068-2-6 for the levels required by merchant-marine inspection organisations (Veritas, Lloyd’s, etc.):
- 2 to 13.2 Hz: amplitude ±1 mm
- 13.2 to 100 Hz: constant acceleration 0.7 g.

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



Electromagnetic disturbances

Masterpact UR are protected against:
- overvoltages caused by devices that generate electromagnetic disturbances
- overvoltages caused by atmospheric disturbances or by a distribution-system outage (e.g. failure of a lighting system)
- devices emitting radio waves (radios, walkie-talkies, radar, etc.)
- electrostatic discharges produced by users.

Masterpact UR have successfully passed the electromagnetic-compatibility tests (EMC) defined by the following international standards:
- IEC 60947-2, appendix F.

The above tests guarantee that:
- no nuisance tripping occurs
- tripping times are respected.

Appendix 1

Analysis of various events :

Events are presented with data listed in the order shown below:

- Date:
- Name of event:
- Description of event:
- Description of context:

List of events names:

CODE_EVT_PILE_PB :

Description of event: Battery voltage < 2.6 V.
Description of context: Faulty battery, no battery.

CODE_EVT_APPAIRAGE :

Description of event: Incorrect pairing between the "UR Power" and "UR Control" modules.
Description of context: Replacing the "UR Control" or "UR Power" module.
Remark. For pairing, use the procedure:
Replace the interface board: UR Power NIV_3_4
Replace the UR Control board:UR Control NIV_3_3.

CODE_EVT_DISJ_BET_SURC :

Description of event: Ultra-rapid tripping for a short-circuit.
Description of context: circuit breaker opening by Thomson effect following a short-circuit on the busbars or a short-circuit simulated via the test connector.

CODE_EVT_DISJ_BET_TEST :

Description of event: Ultra-rapid tripping after the user presses the Test button on the UR Control module.
Description of context: Test on ultra-rapid opening (Thomson-effect) after maintenance work.

CODE_EVT_DISJ_BET_ARC :

Description of event: Ultra-rapid tripping after closing of the Arc input.
Description of context: Circuit breaker tripping provoked by closing of the Arc input following an arc fault in the switchboard.

CODE_EVT_DISJ_MITOP :

Description of event: Mitop tripping following an opening order via the user interface, in Mitop Forcing Test mode.
Description of context: Test on Mitop opening after maintenance work.

CODE_EVT_INCOH_OPT1 :

Description of event: Inconsistency between the jumper on terminal 4 of the "UR Control" module and the programming (via the user interface) for the option 1 register. In the Set menu and System characteristics of the user interface, if the status of the option is active, the absence of the jumper is confirmed.
Description of context: Changing the status of the option or of the "UR Control" module during maintenance work.

CODE_EVT_INCOH_OPT2 :

Description of event: Inconsistency between the jumper on terminal 3 of the "UR Control" module and the programming (via the user interface) for the option 2 register. In the Set menu and System characteristics of the user interface, if the status of the option is active, the absence of the jumper is confirmed.
Description of context: Changing the status of the option or of the "UR Control" module during maintenance work.
Use the procedure for changing options.

CODE_EVT_INCOH_CALIB :

Description of event: Inconsistency between the connections of the interface and Ti boards and the configuration of the "Basic model" register on the Set / Characteristics screen of the user interface.
This fault is also displayed if no Ti boards are connected.
Description of context: No connection between the interface and Ti boards following replacement of a board and non connection during remounting.

Appendix 1

CODE_EVT_CORRUP_GAB :

Description of event: Incorrect tripping curve for the "UR Control" module.
Description of context: During energising of the "UR Power" module or operation of the Masterpact UR, the di/dt tripping curve for the Imax function was lost.

CODE_EVT_DEFAUT_COM_CAN :

Description of event: Loss of communication between the "UR Control" and "UR Power" modules.
Description of context: No link between the Masterpact UR and the "UR Control" module.

CODE_EVT_DEFAUT_24V :

Description of event: Loss of the 24 V power supply for the "UR Control" and "UR Power" modules.
Description of context: Interruption in the main power supply to the "UR Power" module (240 V power).

CODE_EVT_DEFAUT_P20V :

Description of event: Loss of the 20 V power supply from the Micrologic interface.
Description of context: Following replacement of the Micrologic, there is no link between the Micrologic and the "UR Control" module.

CODE_EVT_DEFAUT_TENSION_CAPA :

Description of event: The charge for one of the capacitors in the "UR Power" module is not OK.
Description of context: One of the capacitors in the "UR Power" module cannot be charged due to failure of the component or of the charge circuit.

CODE_EVT_DEFAUT_AUTOTEST_CAPA :

Description of event: One of the capacitors in the "UR Power" module is outside tolerances (±20 %).
Description of context: During energising or operation, an autotest detected a faulty capacitor or a faulty measurement circuit.

CODE_EVT_DEFAUT_AUTOTEST_THY :

Description of event: Fault detected on the SCR control circuit or on the power cables connecting the "UR Power" module to the Masterpact UR.
Description of context: During energising or operation of the "UR Power" module, an autotest detected loss of the connection between the "UR Power" module and the Masterpact UR.

CODE_EVT_DEFAUT_TEMPERATURE :

Description of event: The temperature of the UR Power module is lower than the permissible level for Masterpact UR closing (< 10 °C).
Description of context: Fault detected during energising or operation of the "UR power" module.

CODE_EVT_CHANGEMENT_INHIB :

Description of event: Closing of the disabling input detected.
Description of context: Closing of the disabling input by a user has been detected.

Appendix 2

Commissioning check list

Check list of startup operations

Customer Identification :	
Name	
Address	
Tel	
Plant	
Station	
Panelboard	
Function	

This report is issued by Schneider Electric	
Serviced by	
Date	

Product identification	
Device type	
Serial number	
Trip unit	
Nominal current	

Appendix 2

N° Operation / *Opération*		Result : OK *Non OK NA*	Comments *Commentaires*
1	Energise "UR Power" module *Mise sous tension "UR power"*		
2	Close circuit breaker electrically *Fermeture électrique appareil*		
3	Configure Modbus COM - Address / *adresse* : - Parity / *Parité* : - Baud rate / *vitesse* :		
4	Start RCU *Démarrage RCU*		
5	Set Time and day for Micrologic *Mise à jour date et heure*		
6	Start Masterpact UR utility *Démarrage de l'utilitaire "Masterpact UR"*		
7	Start Autotest *Démarrage Autotest*		
8	Erase event Log *Effacement du journal des événements*		
9	Start Capacitors value Autotest *Lancement autotest valeur condensateurs*		
10	Start circuit continuity Autotest *Lancement test filerie*		
11	Start 24 V Autotest *Lancement test 24 V*		
12	Start 20 V Autotest *Lancement test 20 V*		
13	Write in Maintenance log *Ecriture journal maintenance*		
14	Test tripping by Mitop using "Masterpact UR" utility *Test déclenchement Mitop en utilisant*		***Note:*** *circuit breaker must be in the test position the test position* *Il faut mettre l'appareil en position test l'utilitaire "Masterpact UR "*
15	Reset and reclose circuit breaker *Réinitialisation et re-fermeture disjoncteur*		
16	Test tripping by HHTK or FFTK (Micrologic) *Test déclenchement par la mallette HHTK*		
17	Reset and reclose circuit breaker *Réinitialisation et re-fermeture disjoncteur*		
18	Test tripping by "UR Control" test buttom (TEC activation) *Test de déclenchement BET par bouton test du module "UR Control"*		The circuit breaker must be tripped by the Thomson Effect Coil (TEC) and the Mitop release and the "UR Control" tripped LED must go on *Déclenchement par Mitop et BET Led Tripped allumée*
19	Reset and reclose circuit breaker *Réinitialisation et re-fermeture disjoncteur*		

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