Automatic Transfer Switch OTM_C_20D

Installation and Operation Instructions

Contents

1 Symbols & Terms

1.1 Use of symbols

Hazardous voltage: warns about a situation where a hazardous voltage may cause physical injury to a person or damage to equipment.

General warning: warns about a situation where something other than electrical equipment may cause physical injury to a person or damage to equipment.

Caution: provides important information or warns about a situation that may have a detrimental effect on equipment.

Information: provides important information about the equipment.

1.2 Explanations of abbreviations and terms

OTM_C_20D	Automatic transfer switch, the type name
LN1-Switch I	Power supply line, e.g. the primary line
LN2-Switch II	Power supply line, e.g. the secondary line used in emergency cases
EMERG OFF (fire control system)	Used to drive the automatic transfer switch transfers to the “O” position when receiving EMRG OFF signal.
AUTO	Automatic mode
TEST	The switch performs “switching cycle test” as the pre-set program

Table 1 Explanations of abbreviations and terms

2 Product overview

2.1 Product overview and packing

The OTM_C20D automatic transfer switches can be used as a source transfer switch in a three-phase or single-phase networks. Monitored conditions are, no-voltage and phase-loss. You can operate the switch, either manually with the handle or automatically by the "AUTO" mode. The automatic operation modes include Line 1 priority, no line priority and manual back switching mode.

Figure 1 OTM_C_20D automatic transfer switch

1. Handle for manual operation
2. Place for auxiliary contact blocks
3. Push button
4. Mimic panel
5. Voltage sensing connections
6. Locking clip for padlock
7. Locking latch for releasing the handle and locking electrical control
8. Locking clip for locking manual operation
9. Dip switches
10. Connecting terminal

The standard package includes: 1.automatic transfer switch, 2.handle, 3.handle storage clip 4.terminal plug, 5.mounting kit

2.2 OTM_C_20D switching sequence

2.2.1 Line 1 Priority (default mode)

The switching sequence can be summarized in following steps:

- An fault occurs on Line 1 (LN1), while Line 2 (LN2) functions normally
- Change-over switch (Switch I) to the position 0
- Change-over switch (Switch II) to the position II

And the back switching sequence can be summarized in the following steps:

- The Line 1 will start the normal functioning
- Change-over switch (Switch II) to the position 0
- Change-over switch (Switch I) to the position I

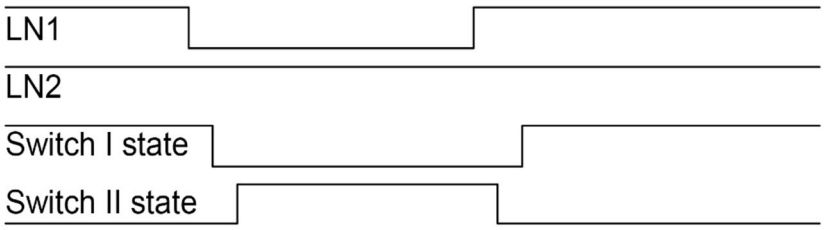


Figure 2 Automatic Switching Sequences in OTM_C_20D, Line 1 priority

2.2.2 No line priority

The switching sequence can be summarized in following steps:

- An fault occurs on Line 1 (LN1), while Line 2 (LN2) functions normally
- Change-over switch (Switch I) to the position 0
- Change-over switch (Switch II) to the position II

And the back switching sequence can be summarized in the following steps:

- The Line 1 will start the normal functioning
- Change-over switch stays in position II
- An anomaly occurs on the Line 2 (LN2)
- Change-over switch (Switch II) to the position 0
- Change-over switch (Switch I) to the position I

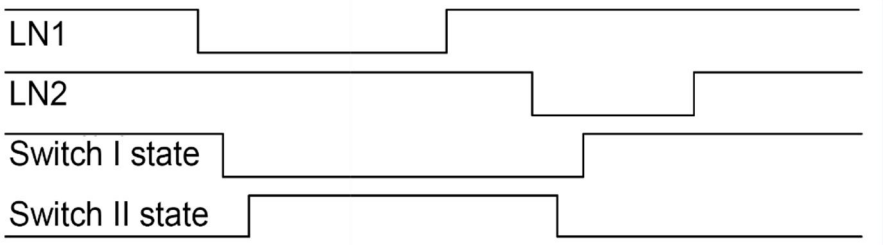


Figure 3 Automatic Switching Sequences in OTM_C_20D, No line priority

3 Quick start

3.1 Operating the switch manually (local operation)

To operate the switch manually:

1. Attach the handle to the switch panel. You can attach the handle in any position.
2. When the handle is attached, the automatic transfer switch will automatically be in Manual mode and won't operate automatically in case of line failure. The AUTO LED on the mimic panel is OFF.

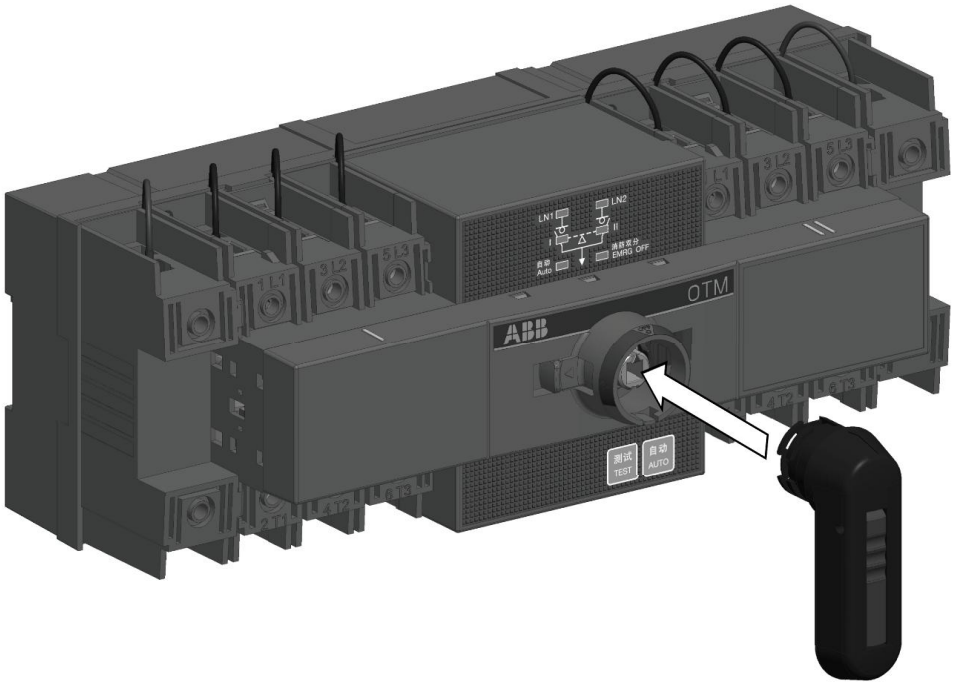


Figure 4 Operating the switch manually

	When the handle is inserted into the switch, the switch will enter "manual mode" with the automatic operation disabled.
	Do not adjust wires when the transfer switch is being energized.
	Before the power-on operation of the transfer switch, please operate the switch manually to confirm it is in normal function.
	With the power supply function in "normal" and without the handle inserted and EMRG OFF signals, the initially energized switch will enter automatic mode and transfer to the main line. Keep the handle inserted if you do not want the switch to be in automatic mode upon initial energization.

3.2 Automatic operation

OTM_C_20D must be in automatic mode and the "AUTO" LED is on in order that the switch can perform automatic transfer cycles according to the pre-set operating mode.

To operate the switch electrically:

- If the handle inserted,
  1. Press handle locking clip and remove the handle from the switch.
  2. Press “AUTO” button and the "AUTO" LED will be ON, indicating automatic mode.

- If handle is not inserted
  1. If "AUTO" LED blinks or OFF, press “AUTO” button and the "AUTO" LED will be ON, indicating automatic mode.
  2. Automatic operation includes two operating modes: Line 1 priority (factory default setting) and No line priority.

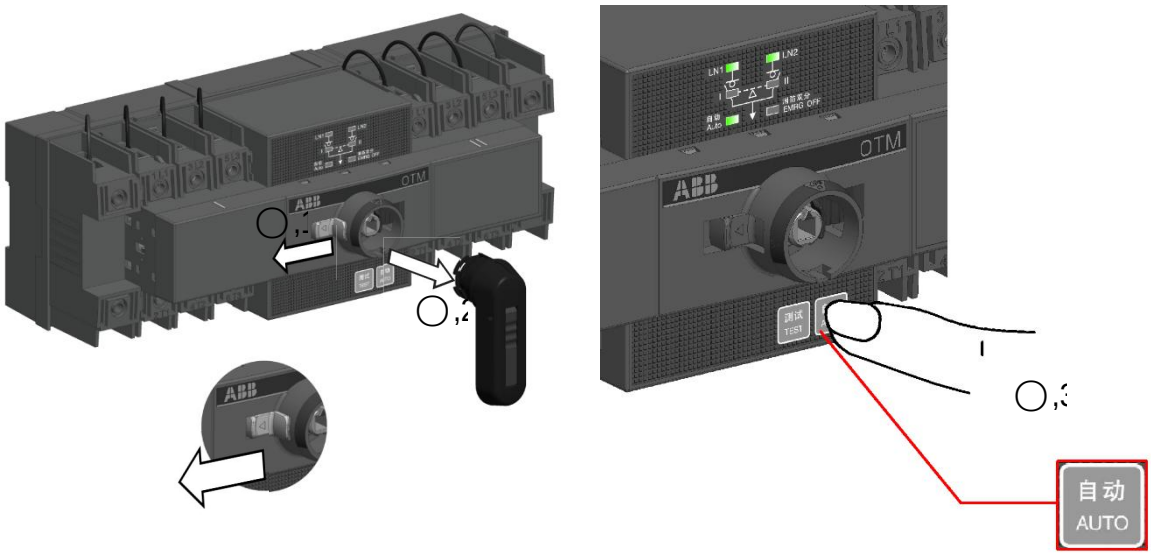


Figure 5 Selecting the automatic transfer OTM_C_20D switch to Auto mode

3.3 Local test operation

In automatic mode, "AUTO" LED is ON and you can press the “TEST” button on the panel to lead it to "TEST" mode:

Operation sequences:

1. Ensure switch in "AUTO" mode
2. Press the “TEST” button and the Auto LED will blink, indicating the activation of "TEST" mode.
   Under "TEST" mode, the automatic transfer switch will transfer by one cycle and finally return to its original position.
   e.g., when the switch is in Position I:
   Press the "TEST" button; the switch transfers to Position “O” à to Position “II” à to Position “O” à to Position “I”. During process, pressing the "TEST" button again will be invalid until it returns to its original position.
   During "TEST" process, press the "AUTO" button will cancel "TEST" mode and return to "AUTO" mode.

3. After test, press "AUTO" button to return the automatic operation.

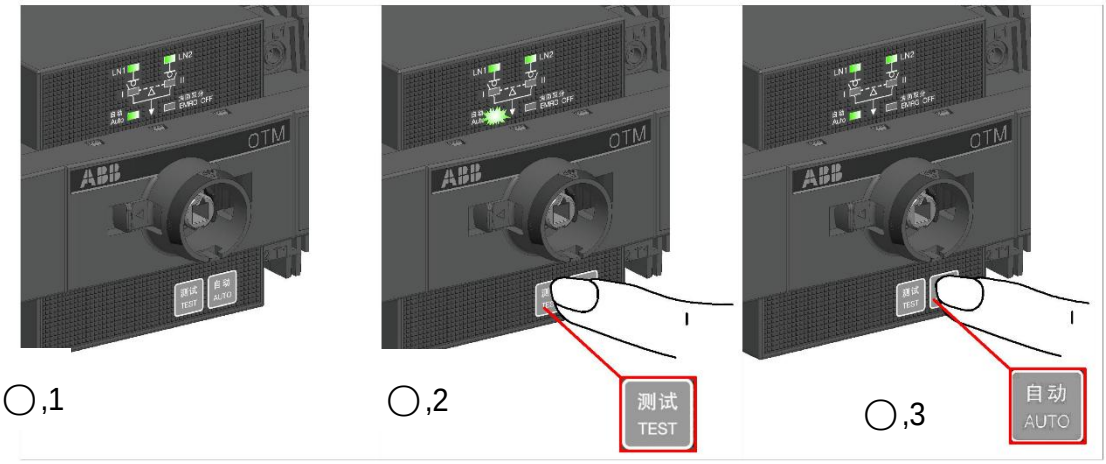


Figure 6 Local test of OTM_C_20D

	In the test sequence, the main power supply circuit will be closed.
	If the test sequence is interrupted due to power failure, the automatic transfer switch will enter "automatic mode" after power recovery.

3.4 Locking

3.4.1 Locking the electrical operation

The switch can be padlocked in any position, causing that all operating modes and test operations are disabled and handle cannot be inserted. See below for operation:

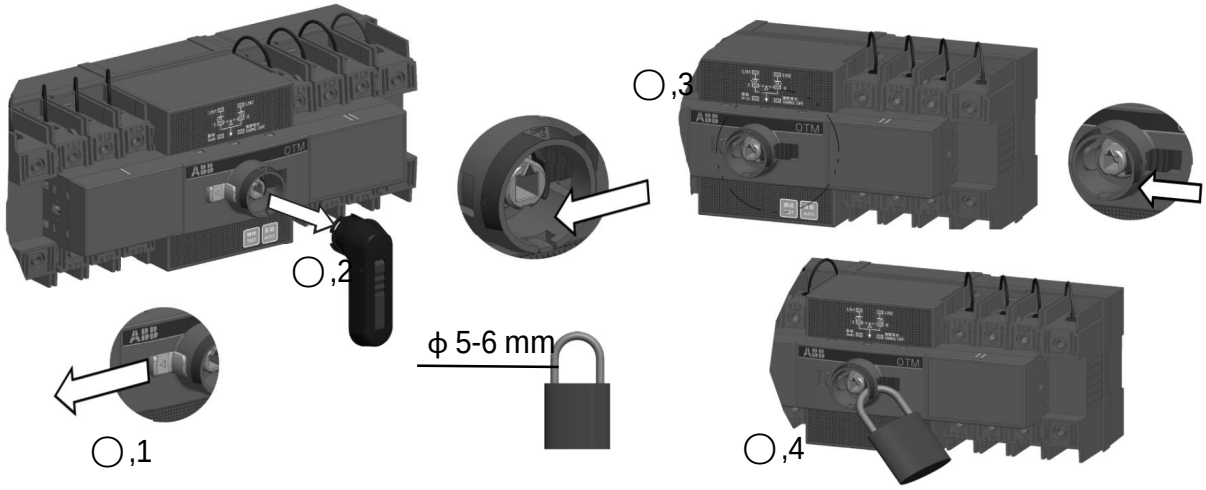


Figure 7 Locking the electrical operation

3.4.2 Locking the manual operation

By default, the manual operation can only be locked in position 0. The handle can be padlocked by pulling out the clip from the handle and place the padlock on the handle.

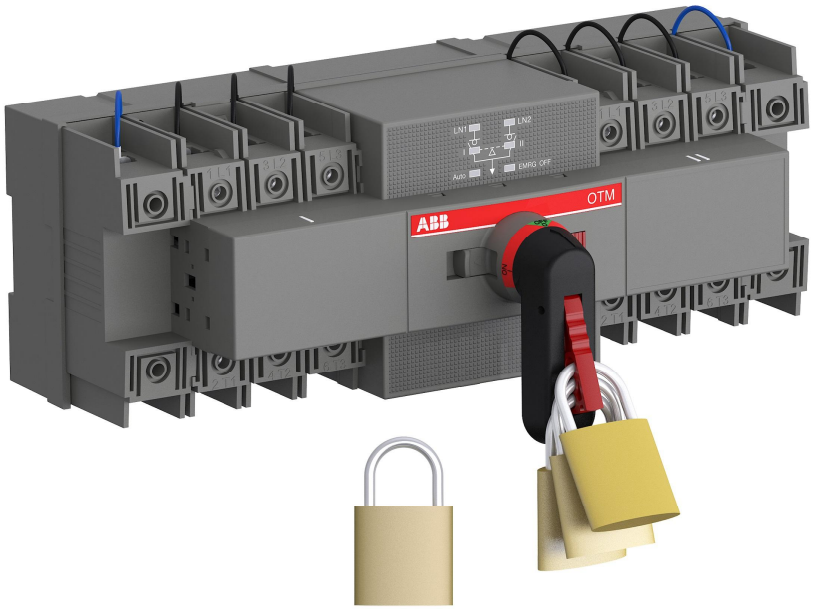


Figure 8 Locking the manual operation

4 Interface and Settings

4.1 Buttons

Figure 9 Buttons of OTM_C_20D

AUTO button

It can lead you to "AUTO" mode. When the switch is in “Test” or fault status, you can press the "AUTO" button until the "Auto" LED on.

TEST button

It can lead you to "TEST" mode. First you must on "AUTO" mode, then you can press the "TEST" button while the "Auto" LED blinking. You must press the "AUTO" button after the test is complete.

4.2 LEDs

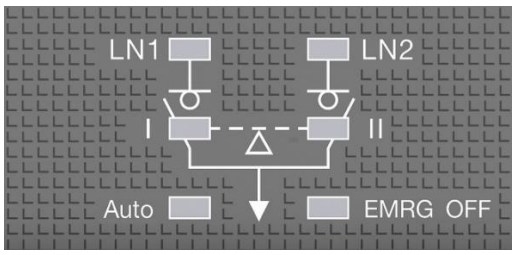


Figure 10 LEDs of OTM_C_20D

LED	Display	Status description
LN1/LN2	ON	Source available
	Blinking	Overvoltage, undervoltage or phase loss
	OFF	Source not available
I/II	ON	Switch I or II closed
	OFF	Switch I or II open
	Blinking	Switching failure.
Auto	ON	Transfer switch in automatic mode
	Blinking	Transfer switch in test mode or invalid setting
	OFF	Transfer switch in manual mode
EMRG OFF	ON	Receiving emergency signals
	OFF	No emergency signals input

Table 2 LEDs

4.3 Dip switch setting

The DIP switch is used to set the working modes and poles of transfer switch.

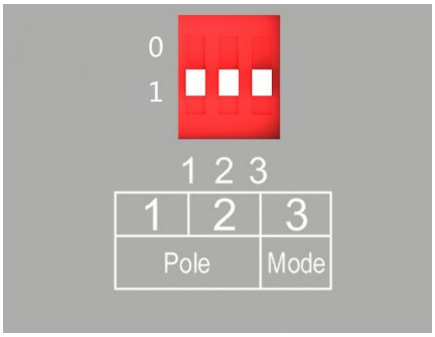


Figure 11 DIP switch

No.	Function	Setting			
1, 2	Pole setting	01	10	11	00
		2 poles	3 poles	4 poles	Invalid setting
3	Mode setting	0		1	
		No line priority		Line priority LN1	

Table 3 DIP switch

The 9-bit dip is used to control the switch for circuit testing, and the mismatch with the load power supply will result in testing and transfer failure. Therefore, carefully read this guide and set correct parameters based on the actual situation before using this product.

4.4 Terminal

EMRG OFF: Input the 24VDC EMRG OFF signals for at least 1s until the switch transfers to the EMRG OFF position and the EMRG OFF LED is on. At this time, the switch cannot enter the automatic or test mode and only handle operation is allowed. After the signal is canceled, press "AUTO" to quit EMRG OFF.

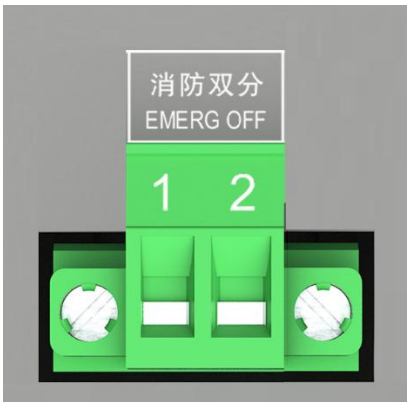


Figure 12 EMRG OFF terminal

5 Technical data

Automatic transfer switch	Parameters
Rated operational voltage U_e[V]	220~240 V AC 50~60 Hz
Operating voltage range	0.8~1.2 U_e
Error range of monitoring	±5%
Operating angle	90° (O-I, I-O, O-II, II-O) 180° (I-O-II, II-O-I)
Transfer time for contact	610 ms ± 10%
Transfer time for switch	2.5 s ± 10%
Output relay utilization category	3A,AC1,250V
Electromagnetic compatibility	Class B
Ingress Protection Rating	IP20, front panel
Rated impulse withstand voltage U_{imp}	8 kV (6 kV for control circuit, disconnect the power line of the control circuit before the dielectric voltage withstand test)
Operating temperature	-25~55℃
Transportation and storage temperature	-40~70℃
Altitude	Max. 2000 m

Table 4 Technical data

6 Installation

6.1 Installation method

The switch can be installed using screws or a DIN rail.
The fixed installation mode on the base board is as follows:

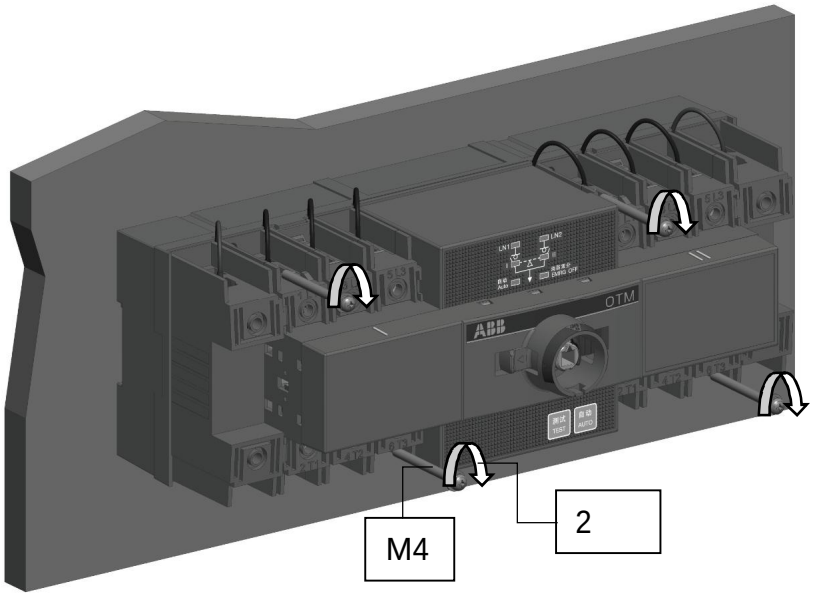


Figure 13 Installation of OTM_C_20D, screw

The DIN rail installation mode is as follows:
First pry out the latch with an appropriate tool, as shown in Fig. 13

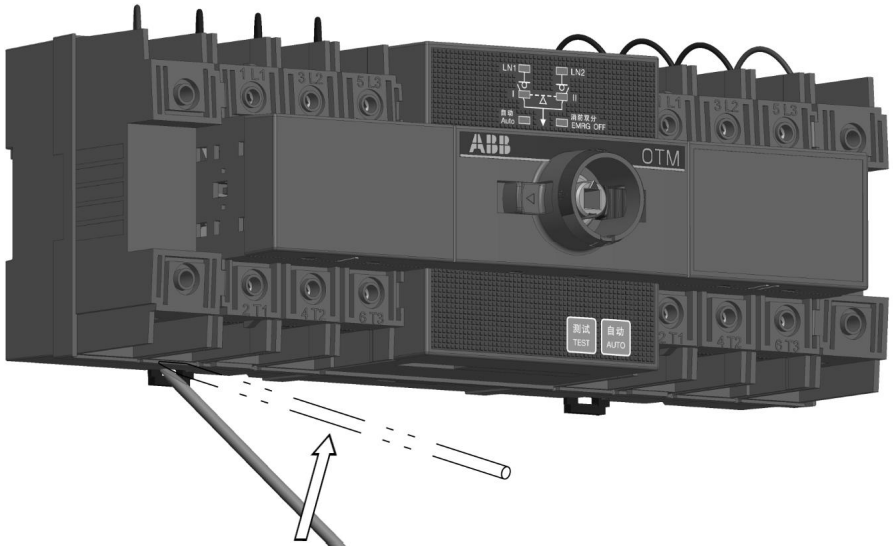


Figure 14 Installation of OTM_C_20D, DIN rail

After attaching the switch to the DIN-rail, push the latch back to lock it

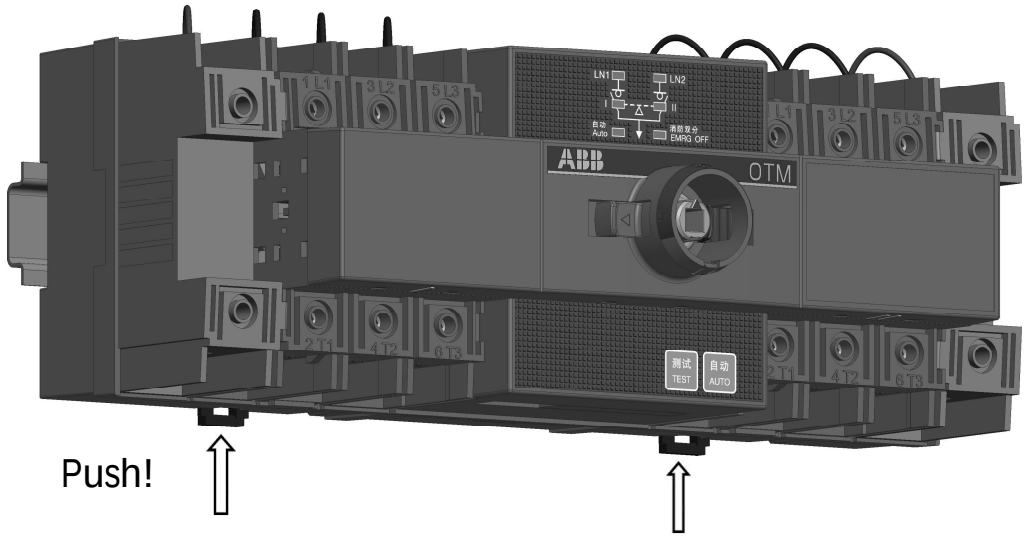


Figure 15 Installation of OTM_C_20D, DIN rail

After attaching the switch to the DIN-rail, make sure you push the latch back to the lock position, otherwise the switch may fall off.

6.2. Installation dimensions

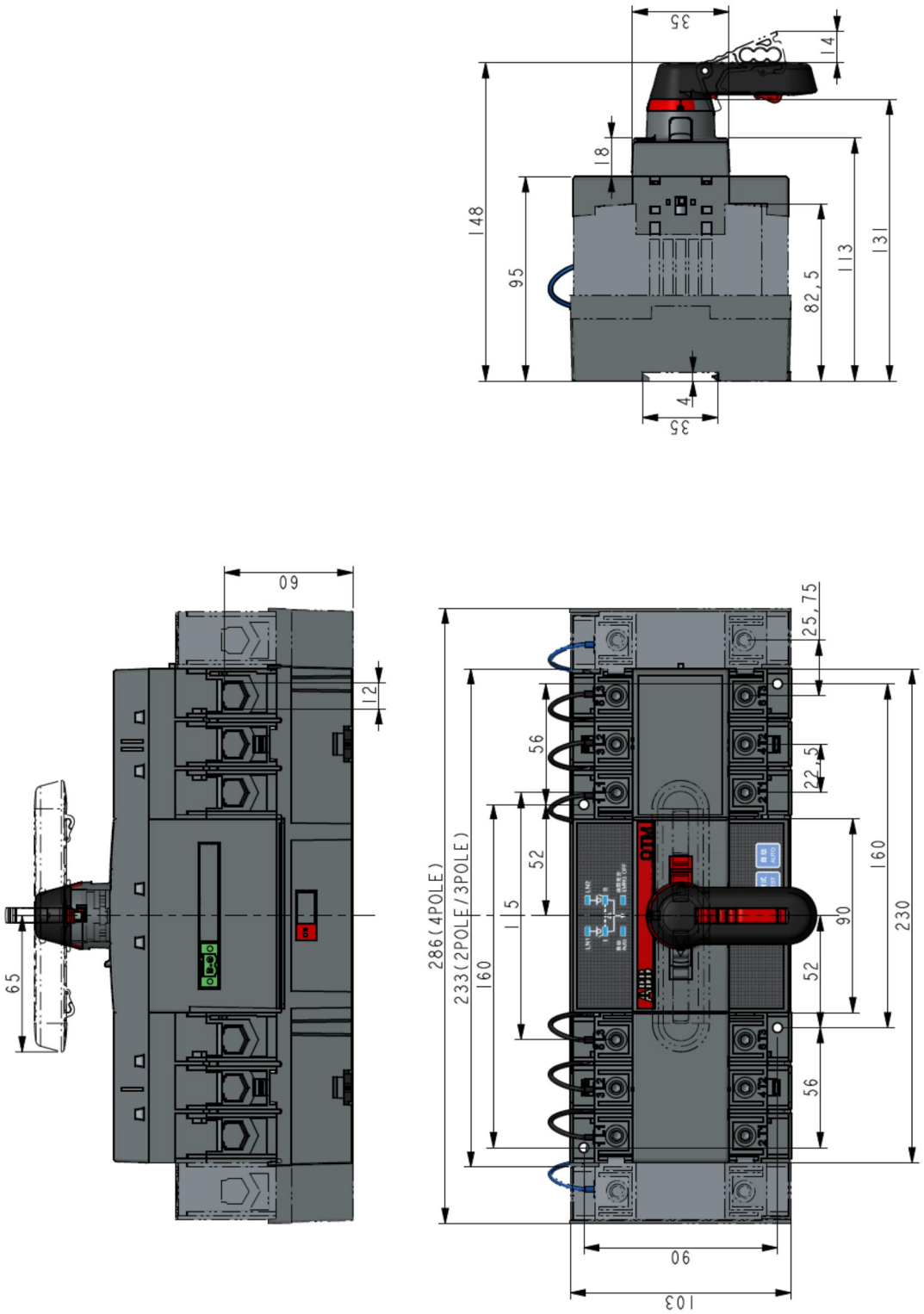
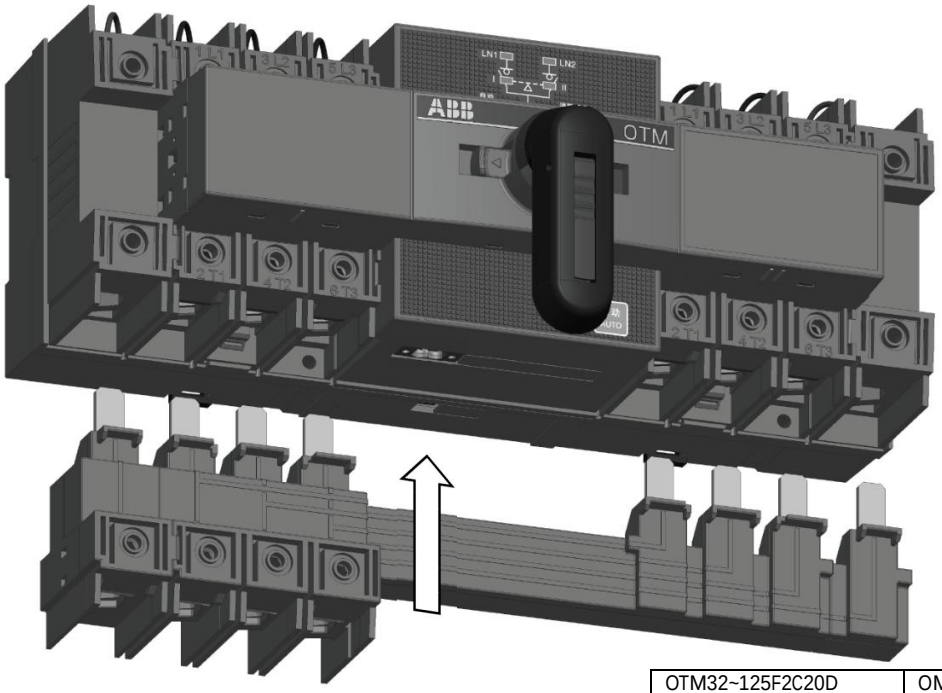


Figure 16 Dimensions

7. Optional accessories

7.1 Bridging bars



OTM32~125F2C20D	OMZC03
OTM32~125F3C20D	
OTM32~125F4C20D	OMZC04

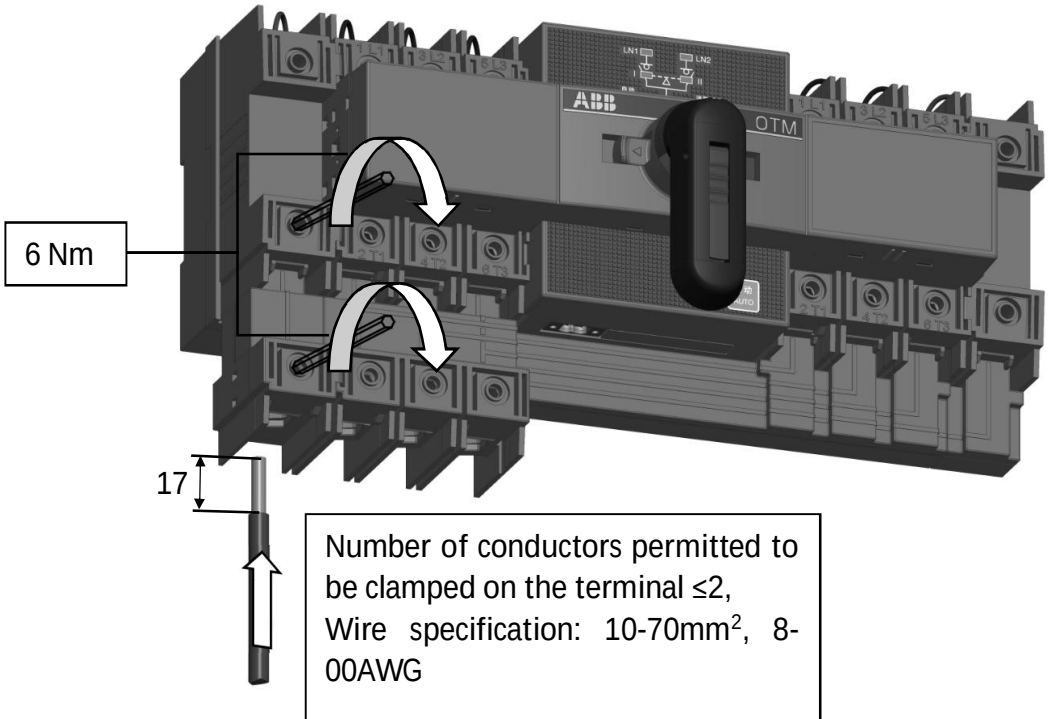


Figure 17 Bridging bars

7.2 Terminal shrouds

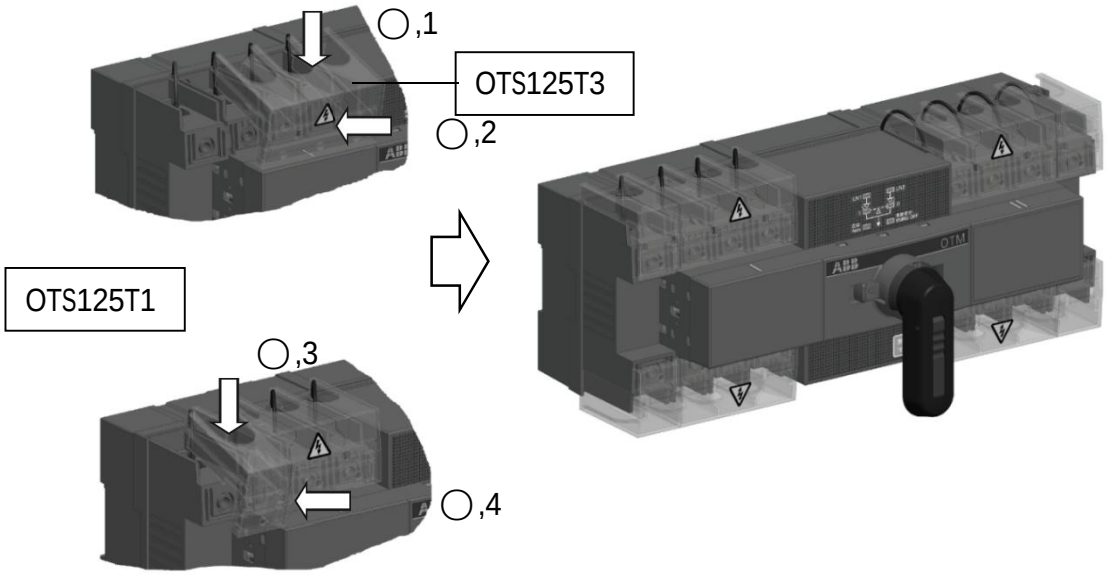


Figure 18 Terminal shrounds

7.3 Auxiliary contact blocks

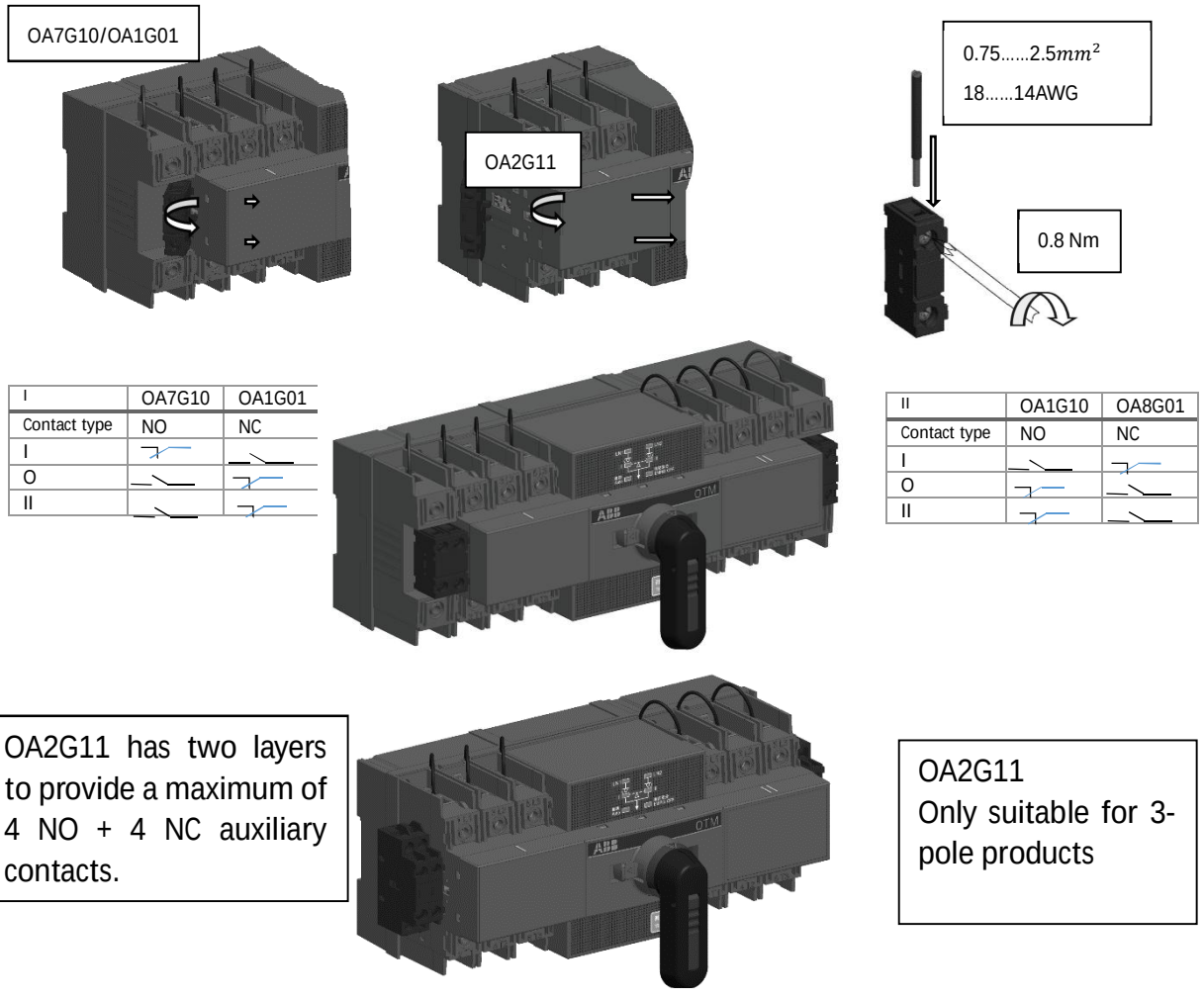


Figure 19 Auxiliary contact blocks

8. Maintenance and common troubleshooting

8.1 Maintenance

To ensure the operation reliability of switches, regular switching tests should be performed (once every 3 months) to confirm normal function.

8.2 Common troubleshooting

No.	Fault Description	Fault Analysis	Troubleshooting Method
1	Power supply functioning normally, but LED not ON	Control unit power supply terminal not connected with switch wiring terminal	Check and connect the switch wiring terminal
2	Power supply LED functioning normally but "AUTO" LED OFF, or no response with “AUTO” button pressed	Handle not pulled out or electrical padlock not removed	Pull out the handle or remove the padlock, and then press the "AUTO" button
3	Transition failure in case of faulty power supply	1. Switch not operating in "AUTO" mode 2. Both power supplies malfunctioning	Make sure the switch is working in "AUTO" mode; check and make sure both power supplies are not malfunctioning simultaneously;
4	EMRG OFF function failure	1. Check if the EMRG OFF signal is 24V DC 2. Too short duration of EMRG OFF signal	Correctly switch on the EMRG OFF signal, which should only be 24V DC with the duration ≥ 1 s
5	AUTO LED blinking with all other LEDs OFF No response from buttons	DIP switch for poles number of power supply set to “00”	Check if the DIP switch setup matches the phase number of switch power supply.
6	“I” or “II” LED blinking	Execution rejected during switching operation, thus expected result not achieved	Manually set the switch to Position “O”, and press the “AUTO” button to reset

Table 5 Troubleshooting

9. Appendix

9.1 Wiring diagram

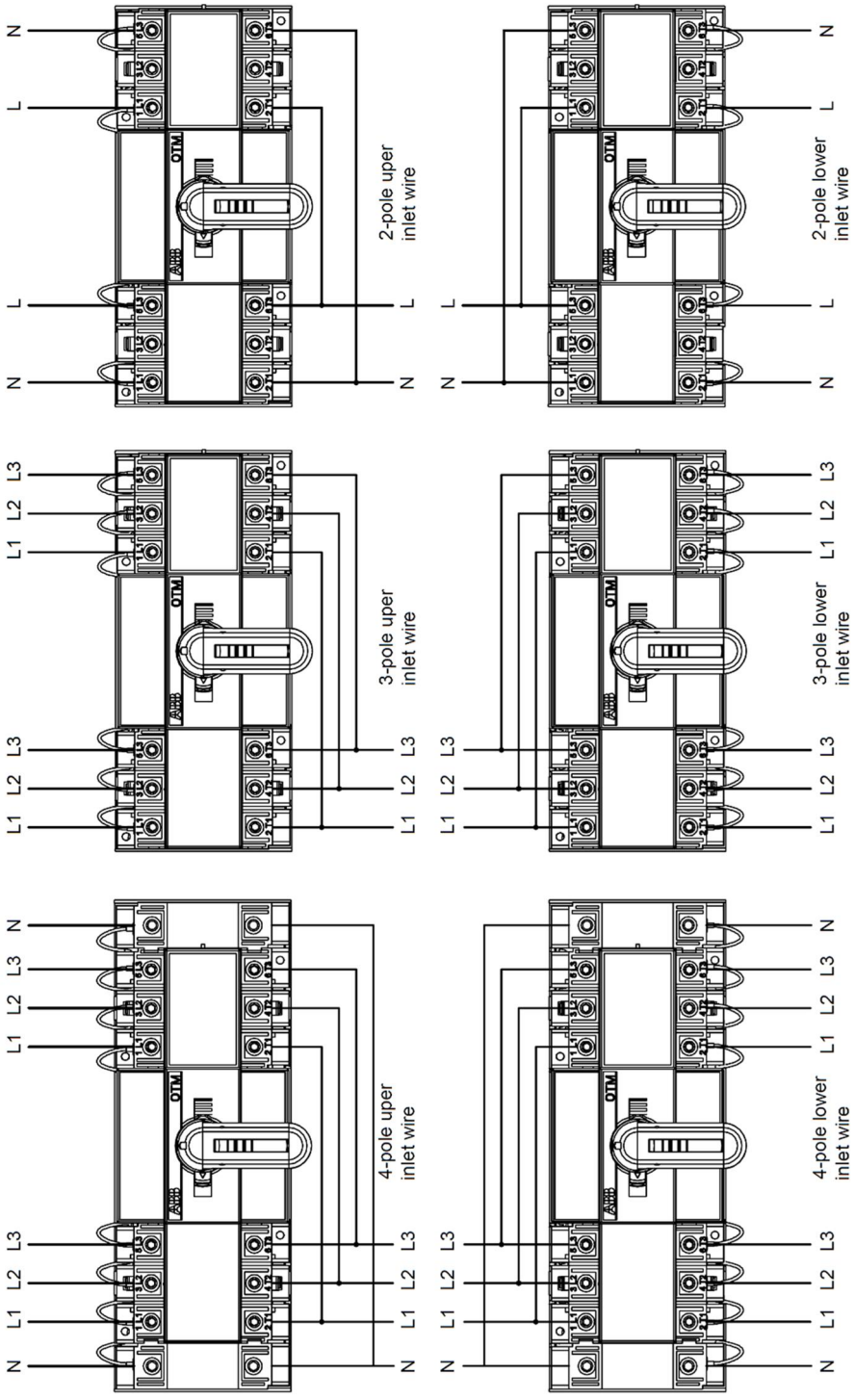


Figure 20 Wiring Diagram

- Read through this instruction book carefully before working on the switch, and keep this instruction book to hand for later reference
- The images provided in this instruction book are for illustration purposes only and may not match the actual product exactly
- This instruction book is subject to change for product updates without prior notice

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