

POW100 Power module Installation instructions Edition 04/2018 EN

1 Introduction

These installation instructions contain important information that should be followed when installing the POW100 Power module.

- Read all the instructions carefully before installing and commissioning the POW100 Power module to avoid possible risks and mistakes.
- Keep the installation instructions in a safe place for future reference.

2 Safety instructions

These instructions contain notes that you must follow for your own personal safety and to avoid injury and damage to property. They are highlighted by warning triangles and are shown as follows according to the level of danger.

2.1 Hazard classification

The signal word designates a hazard with a **high** degree of risk which, if it is not avoided, will result in death or severe injury.

⚠ WARNING

The signal word designates a hazard with a **medium** degree of risk which, if it is not avoided, will result in death or severe injury.

The signal word designates a hazard with a **low** degree of risk which, if it is not avoided, could result in minor or moderate injury.

NOTE

A note as used in these instructions contains important information about the product or about a part of the manual to which particular attention should be paid.

2.2 Notes on installation

- Follow ALL danger and warning instructions and notes on precautionary measures.
- Read section 2 "Safety instructions" carefully.

2.3 Notes on using the module safely

DANGER

Danger of death by electric shock.

Mains voltage components carry potentially fatal voltages.

Install the TQ-Automation modules only in approved housings or distribution boards so that the connections for the outer and neutral conductors are located behind a cover or guard to prevent accidental contact.

The housing or distribution board must be accessible only with a key or suitable tool in order to limit access to authorised personnel.

- Before starting any installation or maintenance work, switch off the input voltage and secure it to prevent it being switched on again accidentally.
- Remember that the terminals on the backplane can still carry voltage when the module is removed.
- Install the POW100 module only in a dry environment.
- Protect the POW100 module against moisture and wet conditions.



Install an additional electrical isolating device upstream of every line of connected TQ-Automation modules so that every TQ-Automation module in the line can be electrically disconnected.

NOTE

- Always run data and mains cables separately or in separate conduits. Refer to EN 50174-2.
- Protect the POW100 module against damage by transient overvoltages by installing additional overvoltage protection elements conforming to SPD type 1 (coarse protection) and SPD type 2 (medium protection).
- Make sure that the device can be isolated from the supply, e.g. with a type C2 or B6 line circuit breaker. This must be identified as the isolating unit for the device and must be easily accessible.
- Make sure that the POW100 module is adequately ventilated. Make sure that the ventilation slots are not covered to prevent the POW100 module from overheating.
- The POW100 module requires no maintenance.

3 Target group

The activities described in this manual must only be carried out by technicians with the following qualifications:

- Training in the installation and commissioning of electrical devices
- Training in electrical hazards and the local safety requirements
- Knowledge of the relevant standards and directives
- Knowledge and observance of this document and all the safety instructions

4 Description

The POW100 module supplies the TQ-Automation modules connected in a line with 24 V DC via the CAB bus. The POW100 module is made up of two parts - the backplane and the mains adapter, which is electrically connected to the backplane via contacts.

The backplane latches into place on a DIN rail with two snap locks. The CAB bus cables are integrated into the backplane. These are connected to backplanes of other TQ-Automation modules, such as MIO100 or CUB100, with backplane connectors. The backplane has a mechanical housing encoding to prevent any confusion between different modules of the same width.

The mains adapter is plugged into the backplane and locked to the backplane with a snap lock. In the event of a fault, the mains adapter can be easily replaced without having to detach any wiring.

5 Intended usage

- The POW100 module may only be used to supply power as part of a TQ-Automation system.
- The POW100 module may only be operated when it is installed on the DIN rail in the distributor box and the protective covers are attached.
- The POW100 module is approved only for use in dry interior areas.
- Only use the POW100 module as specified in the documentation provided. Any other usage may result in injury or damage to property.
- For safety reasons, no changes may be made to the POW100 module, including the software, unless they are expressly approved for the product by TQ-Automation.
- The intended usage also includes compliance with all the notes in these instructions.

NOTE

Any types of usage other than those specified in section 5 "Intended usage" are regarded as contrary to the intended usage and will invalidate the warranty.

6 Scope of delivery



Item	Designation	Quantity
1	POW100 Power module	1x
2	Backplane	1x
3	Backplane connector*	1x
-	Installation instructions	1x

* The backplane connector is used to connect adjacent backplanes of other modules.

7 Technical data

Input data	
Rated input voltage	120 V AC to 240 V AC
Rated frequency	50 Hz to 60 Hz
Power consumption	Max. 115 VA
Efficiency at 230 V AC (full load)	> 82 %
Potential isolation	SELV output voltage to EN 61010-1
Output data	
Output voltage	24 V DC ± 5 % (SELV)
Output current	Max. 1.7 A
Overload protection for output current	105 % to 120 %
Output power	Max. 40 W
Parallel switching	No
Redundant operation	No
Power failure, holding time (full load at 230 V AC)	> 20 ms
Starting time (full load at 115 V AC)	
— Input side	< 100 ms
Output side	< 1.5 s
Short-circuit resistance	Yes (hiccup mode, 25 s)
Line connections	
Connection cross section	0.5 mm ² to 1.5 mm ²
Housing protection	
IP code	IP20
Protection class	II
Overvoltage category	II (EN 61010)
Ambient conditions	
Ambient temperature	
— Operation	0 °C to 50 °C
— Storage	-25 °C to 60 °C
Relative humidity (non condens.)	50 % to 95 %
Air pressure during operation	790 hPa to 1070 hPa

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Dimensions/weight			
Dimensions (W x H x D)	90 mm x 95 mm x 67 mm, width equals 5 DIN units		
Weight	0.33 kg		
Handling			
Max. altitude during operation	2000 m above sea level		
DIN rail system	TS 35 (35 mm x 7.5 mm, 1 mm thick)		

8 Controls

There are three pushbuttons and a USB port beneath the service flap (item 5 in Fig. 2) on the POW100 module.



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ltem	Control	Function
1	RESET button	Restarts the POW100 module
2	USB port (Micro-B)	For software and firmware updates or manually controlling the module
3	BTN1 button	Assigned to a software function
4	BTN2 button	Assigned to a software function

9 Wiring diagram for mains connection

120 V AC to 240 V AC IN (Mains connection)



Fig. 3: Wiring diagram for mains connection

10 Installation

\land DANGER

Danger of death by electric shock.

Mains voltage components carry potentially fatal voltages.

- ▶ Disconnect the connection points from the power supply.
- ► Secure the fuses to prevent switching on again.
- Make sure that the conductors to be connected are voltage-free.

10.1 Tools and equipment

Screwdriver, insulated, size 1, max. blade width 3 mm
 Voltmeter

10.2 Install the backplane



Fig. 4: Place the backplane on the DIN rail

- Arrange the backplane (item 1 in Fig. 4) so that the tab (item 2 in Fig. 4) is underneath.
- ► Holding the backplane at an angle, engage it from above (item A in Fig. 4) in the top edge of the DIN rail (item 4 in Fig. 4).
- Carefully press the backplane (item 1 in Fig. 4) against the DIN rail (item 4 in Fig. 4) until it snaps into place (item B in Fig. 4).

NOTE

- There must be no backplane connector (item 3 in Fig. 4) inserted on the last module of a row of DIN rails or on the last module of the entire installation.
- To detach the backplane from the DIN rail, press the tab (item 2 in Fig. 4) down lightly and swivel the backplane up.

10.3 Wire the backplane



Fig. 5: Wire the backplane

- Wire the backplane as described in the installation specifications. The openings for the push-in terminals (item 1 in Fig. 5) are at the top and bottom of the backplane. The label on the backplane shows the terminal assignments.
- Strip the insulation from the end of the hook-up wire:
- Rigid wire 0.5 to 1.5 mm², stripped length 10 mm
 Other d 0.5 to 1.5 mm² formula length 10 mm
- Strand 0.5 to 1.5 $mm^2,$ ferrule, length 10 mm

NOTE

- ▶ Note the length of the ferrule (10 mm).
- Insert the rigid wire or ferrule into the round opening of the pushin terminal (item 1 in Fig. 5) as far as it will go.

NOTE

For small hook-up wire cross-sections:

- Insert the screwdriver from the front into the square opening (item 2 in Fig. 5) at a 45° angle.
- Press the screwdriver lightly against the terminal and insert the hook-up wire into the round opening as far as it will go.
- Pull on the hook-up wire to make sure that it is seated firmly in the push-in terminal.

NOTE

To release the hook-up wire from the terminal:

- Insert the screwdriver from the front into the square opening (item 2 in Fig. 5) at a 45° angle.
- Press the screwdriver lightly against the terminal and pull the hook-up wire out.

10.4 Install the mains adapter



- Fig. 6: Install the mains adapter
- Insert the pivot axes (item 4 in Fig. 6) of the mains adapter (item 1 in Fig. 6) into the hooks (item 3 in Fig. 6) of the backplane (item 2 in Fig. 6).
- Tilt the mains adapter down and press it carefully against the backplane until it latches into place.

10.5 Start up the POW100 module

NOTE

- Carry out an insulation measurement before starting up.
- Switch on the mains supply to the POW100 module. The L LED and RUN LED light up green.
- Check the LED statuses according to Table 1.

10.6 Uninstalling the electronic module

To uninstall the electronic module from the backplane:

Insert the screwdriver into the two gaps (item 1 in Fig. 7) on the underside of the electronic module one after the other in order to detach the module from its fixing.



Fig. 7: Uninstalling the electronic module

 Tilt the electronic module upwards and lift it away from the backplane.



Once you have removed the module from the backplane, reattach the protective film to the backplane. This will protect the contacts against soiling by dust on site, for example.

Function	Labelling	LED position	LED colour	Status if LED is off	Status if LED is on	Status if LED is flashing
Module status	RUN	Item A in Fig. 8	red/ green	The module is switched off or the status is not OK if the module is switched on	 red: the module is switched on, but the processor is not responding or the module is in the boot- loader state 	 red (< 150/150 ms interval): software exception red alternating with the CAB bus status LED: CAB bootloader active green (1750/250 m interval): module status OK
CAB bus status	BUS	Item B in Fig. 8	red/ yellow/ green	CAB bus inactive	 red: baud rate synchronisa- tion is active yellow: CAB bus in Init mode green: CAB bus is ready-to-operate 	 red (500 ms interval): bus in scan mode red (1 s interval): bus in position detection mode red alternating with the mod- ule status LED: module in the bootloader state yellow (250 ms interval): bus in PREOP mode yellow (1 s interval): bus in SAFEOP mode
Bus termi- nation	TERM	Item C in Fig. 8	yellow	Termination is inactive	Termination is active	-
I/O error	ERR	Item D in Fig. 8	red	Module is switched off or is working normally	Bus voltage < 18 V or > 30 V or unstable	-
230 V~ IN	L	6 (item E in Fig. 8)	green	no mains voltage available or AC/DC mains adapter is faulty	mains voltage is available and AC/DC mains adapter is OK	-

Table 1: LED status displays

11 LED status displays

All the status LEDs are arranged on the front panel of the POW100 module. There is a description of the LED status displays in Table 1.



Fig. 8: Position of the LED status displays

Item	Function	Labelling
A	Module status	RUN
В	CAB bus status	BUS
С	Bus termination	TERM
D	I/O error	ERR
E	230 V~ IN	L

12 Environmentally-friendly disposal

- The POW100 module must not be disposed of in the residual waste bin.
- Dispose of the POW100 module in accordance with the electronic waste disposal regulations that apply on site.

13 Fault finding

- The L LED does not light up.
- Check the mains supply.
- The RUN LED does not light up.
- Fault in the electronic module. Contact Customer Service.
- The RUN LED flashes red.
 A fault has occurred. Contact Customer Service.
- The RUN LED lights up red.
 The module is in the bootloader state or a software update is in progress.

14 Software licence

This product also contains open source software that was developed by third parties. You will find the licence texts and associated notes on our home page www.tq-automation.com.

15 Contact

If you have technical problems with the product, contact TQ-Automation Customer Service. We will need the following information to be able to give you specific help:

- Serial number of the POW100 module
- Description of the fault

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