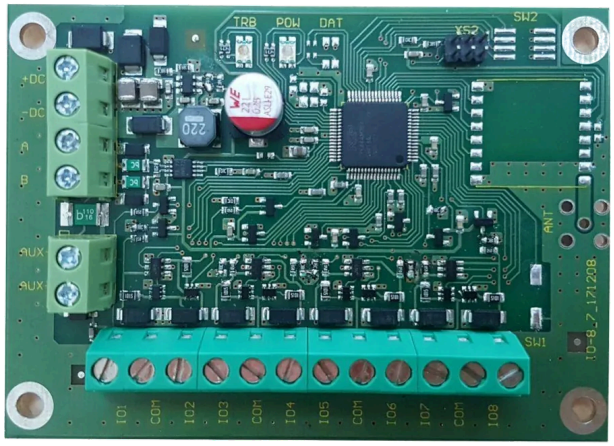
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TRIKDIS Official Distributor

iO8 input and output expander – installation manual

Installation manual for the Trikdis iO8 input and output expander: connection to the RS485 bus, setting up the inputs and outputs in the control panel or communicator, use from the Protegus 2 app.



Edition: 2026-11-17
Always up-to-date web version: https://mobilamb.eu/io8-manual

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1. Overview

The **iO8** (**iO-8** in the Trikdis documentation) is the Trikdis wired input and output expander: a small board with eight universal terminals, each of which can be set up as an input (zone) or an output (PGM). It is not a standalone device – it is always connected to a Trikdis alarm control panel, communicator or gate controller (hereinafter: the main device) over its RS485 bus, and it gets its settings in the main device's configuration program, TrikdisConfig.

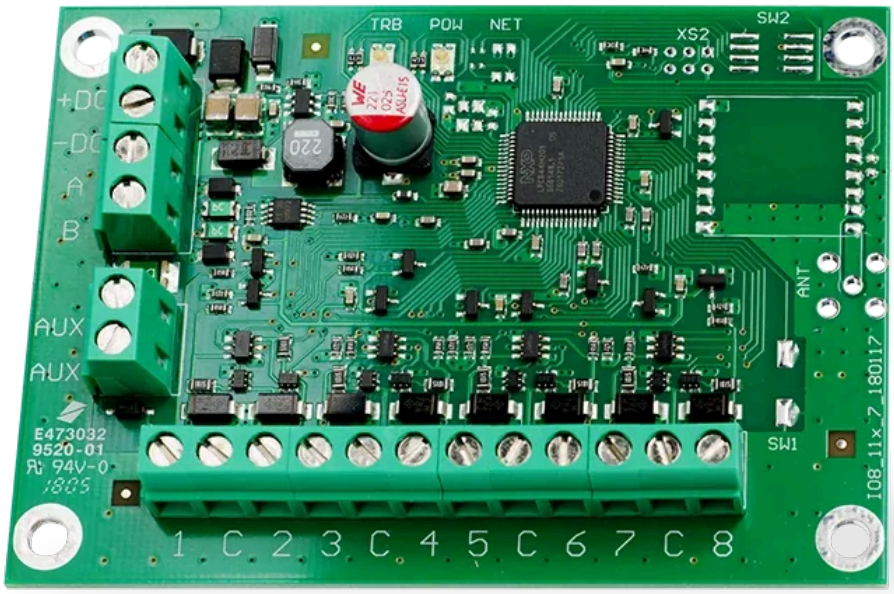


Figure 1. The iO8 expander board. On the left, the power terminals (**+DC**, **–DC**), the RS485 bus (**A**, **B**) and the two **AUX** terminals; at the bottom, the eight universal terminals (**1**–**8**), each pair with a shared **C** terminal; on the board, the **POW**, **NET** and **TRB** indicator LEDs.

1.1 What it is for and how it works

If a Trikdis device has run out of inputs or outputs, the iO8 gives it eight more. Typical cases:

- **more zones** for a communicator or alarm control panel: additional opening detectors, motion detectors, smoke detectors, tamper circuits;
- **more controllable outputs**: gate, garage door, heating, lighting, pump, ventilation – anything that can be switched with a contact or a relay and that you want to switch from the Protegus 2 app;
- **remote connection point**: the iO8 can be placed away from the main device, close to the detectors and the loads, so the zone wires can be shorter.

The iO8 does not work on its own: it passes the state of the inputs to the main device and switches the outputs on the main device's command. Therefore the zone types, the alarm logic, the forwarding of events to the monitoring station and to Protegus 2, and the role of the outputs are all settings of the main device, made according to its manual. On the RS485 bus, events reach the main device without delay, and the state of every terminal is also shown in real time in the Protegus 2 app. The main device continuously supervises the bus connection: if the connection between the iO8 and the main device is lost, the main device signals a bus fault and immediately notifies both the monitoring station and the user.

Trikdis iO8 wired expander module

Its wireless version is the **iO8-LORA**, which connects by radio, through the RF-LORA transceiver, to the FLEXi SP3 control panel or the GATOR gate controller – for when no cable can be run to the place of the expansion.

Trikdis IO8-LORA wireless expander module

1.2 Compatible main devices

The iO8 can be connected to these devices; the always up-to-date list of compatible devices and the technical data are on the trikdis.com iO-8 product page. The table also shows how many iO8 modules one device can handle and where to find the expander in TrikdisConfig – the details are in the main device's manual. The product page generally mentions at most four iO8 modules in one system, depending on the main device's firmware; the exact number for each main device is given in the table.

Main device	Maximum number of iO8	In TrikdisConfig	Manual
FLEXi SP3 alarm control panel	8 expander modules in total in the system	**Modules → RS485 modules**	FLEXi SP3 manual
CG17 compact alarm control panel	according to the CG17 manual	**Modules → RS485 modules**	CG17 product page
E16, E16T Ethernet communicator	4	**RS485 modules**	E16T manual
G16, G16T 4G communicator	4 (only the 4G version has RS485)	**RS485 modules**	G16T manual
GT, GT+ 4G communicator	4	**RS485 modules**	GT product page
G17F fire communicator	according to the G17F manual	**RS485 modules**	G17F product page
GV17 GATOR gate controller (GATOR Cellular in the Trikdis list)	1	**Modules**	GV17 product page
WP17 GATOR WiFi gate controller	1	**Modules**	WP17 product page

The older 2G versions of the E16 and the G16 have no RS485 bus, so the iO8 cannot be connected to them. The older SP231 control panel is no longer among the compatible devices.

1.3 Technical data

Property	Value
Supply voltage	10–26 V DC
Current consumption	max. 20 mA (without the loads connected to the outputs)
AUX terminal load capacity	no separate limit – the AUX terminals are a continuation of +DC and −DC; their load capacity is set by the power supply connected to the +DC and −DC terminals
Universal terminals	8, each can be set as an input or an output

Property	Value
Input type	NC, NO, EOL – depending on the main device, further terminations (ATZ) as well; besides NC, NO and EOL, the circuit type can also be EOL_T, BEOL, ATZ and ATZ_T
End-of-line resistor	2.2 kΩ or 10 kΩ – determined by the main device
Input voltage	max. the supply voltage
Output type	open collector (OC)
Output load capacity	max. 100 mA
Operating environment	−10 … +55 °C, max. 80% relative humidity (at +20 °C)
Dimensions	65 × 90 × 15 mm

Further properties:

- the board is protected against electromagnetic interference and overvoltage;
- the module's firmware can be updated remotely, so it always supports the latest functions of the system;
- a built-in tamper input protects against unauthorized opening of the enclosure – the installation instructions and the wiring diagrams do not go into detail about it.

Zone doubling

On the FLEXi SP3, the iO8 terminals can also be used with **ATZ** (zone doubling) wiring: two detectors go on one terminal, each with its own resistor, so the eight terminals give up to 16 zones. Which circuit types your main device supports is in its manual.

1.4 Terminals and indicator LEDs

Terminal	Function
+DC, **−DC**	power supply, 10–26 V DC – typically from the 12 V AUX output of the main device or the alarm control panel
A, **B**	RS485 bus to the main device's A and B terminals (A to A, B to B)
AUX, **AUX**	passes the supply voltage on to the loads connected to the outputs (**AUX+** on the output diagrams)
1–**8**	the eight universal terminals; as an input, the detector circuit goes between the terminal and the **C** next to it; as an output, the load goes between **AUX+** and the terminal
C	common terminal – one shared terminal for every two universal terminals

The board has three indicator LEDs: **POW** (power), **NET** (data connection with the main device) and **TRB** (trouble) – so the state of the power and of the data connection can be checked on site at a glance. The blink patterns are not documented in detail; whether the main device sees the module is checked in TrikdisConfig (section 3.3).

2. Installation

Figyelem!

Tilos a vezetékezést feszültség alatt álló eszközön elvégezni. A munka előtt a megfelelő áramtalanításról és érintésvédelemről (beleértve a szünetmentes működést biztosító akkumulátorokat) gondoskodni kell.

The wiring is four wires to the main device, then the detectors and the loads on the eight terminals. Do the work with the power off: disconnect the main device's power supply and its battery as well.

2.1 Placement and mounting

The iO8 is a thin board without an enclosure, designed for easy installation in standard alarm control panel enclosures: mount it in the enclosure of the main device or the power supply, on standoffs, using the four holes in its corners, or put it in its own lockable box. Place it so that the terminal blocks stay accessible and the underside of the board does not touch a metal surface. Since the iO8 can also be away from the main device, close to the detectors, let the RS485 bus cover the long distance, not the zone wires.

2.2 Connecting to the main device

Four wires are needed: two for power and two for the RS485 bus.

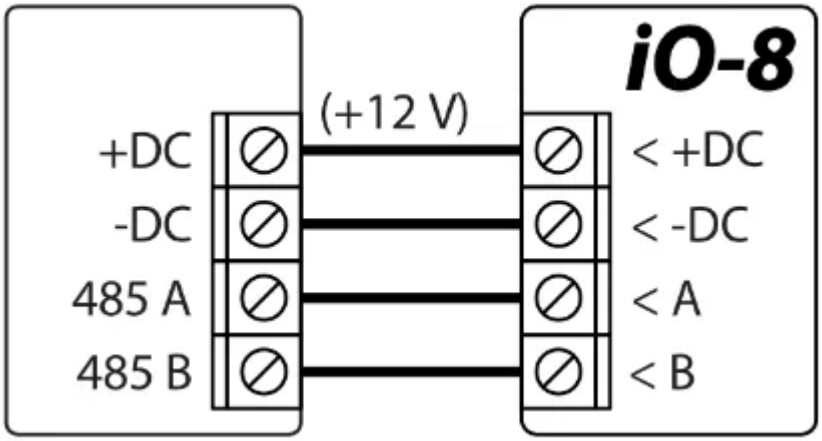


Figure 2. Connecting the iO8 to a Trikdis main device. Labels on the diagram: **+DC**, **–DC** – the main device's power terminals (+12 V) to the iO8 +DC and –DC terminals; **485 A**, **485 B** – the main device's RS485 A and B terminals to the iO8 A and B terminals.

1. **Power**: connect the **+DC** and **–DC** terminals to the 12 V AUX output of the main device (or of the alarm control panel). The iO8 runs on 10–26 V DC and draws 20 mA, plus the current of the loads connected to the outputs; this low consumption hardly burdens the power supply even in a battery-backed system. If the main device runs on a higher voltage than that (the GATOR gate controllers, for example, also run on 9–32 V), the iO8 needs a separate 12 V power supply; in that case, connect the negative poles of the two power supplies together.
2. **RS485 bus**: the main device's **A** terminal to the iO8 **A** terminal, its **B** terminal to the **B** terminal. If they are swapped, the module does not log on. Use a twisted pair over a long distance; the permitted length of the RS485 bus is given in the main device's manual (for the communicators and the GATOR, max. 100 m).
3. Connect several iO8 modules to the same bus, in parallel (A–A, B–B); each goes on the TrikdisConfig list with its own serial number.

The "up to … m" distances are theoretical maximums achievable under ideal conditions. In practice, the quality and routing of the cable, sources of interference and, for radio links, walls and terrain give a considerably shorter range. Plan with a margin, and on long runs check the connection during commissioning.

The main device's terminals in the most common cases:

Main device	Power to the iO8 +DC / −DC terminals	RS485 to the iO8 A / B terminals
FLEXi SP3	**AUX+** / **AUX−**	**485 A** / **485 B**
E16	the alarm control panel's **+12 V AUX** output	**A RS485** / **B RS485**
E16T, G16, G16T (4G)	the alarm control panel's **+12 V AUX** output	**A 485** / **B 485**
GV17 GATOR	**AC/+DC** / **AC/−DC** – only if the GATOR's supply is max. 26 V; otherwise a separate 12 V	**A RS485** / **B RS485**

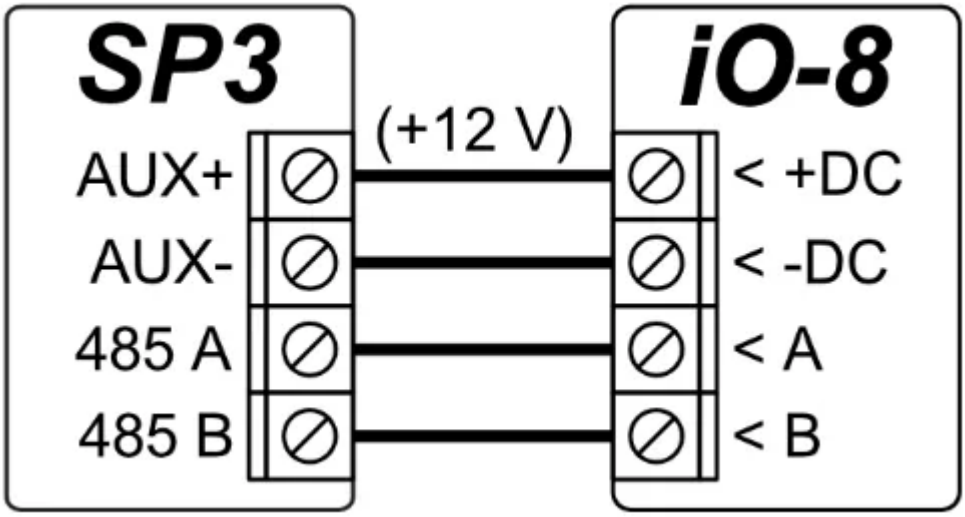


Figure 3. iO8 to the FLEXi SP3: AUX+ (+12 V) → +DC, AUX− → −DC, 485 A → A, 485 B → B.

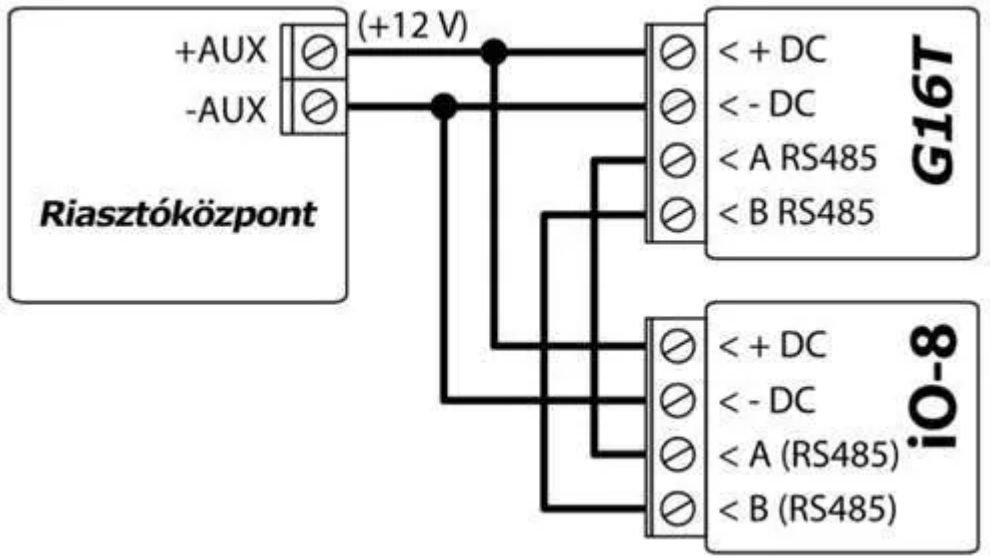


Figure 4. iO8 to the G16T communicator: power from the alarm control panel's AUX output, the communicator's A 485 and B 485 terminals (labelled A RS485 / B RS485 on the Trikdis diagram) to the iO8 A and B terminals. The E16, E16T and G16 are wired the same way.

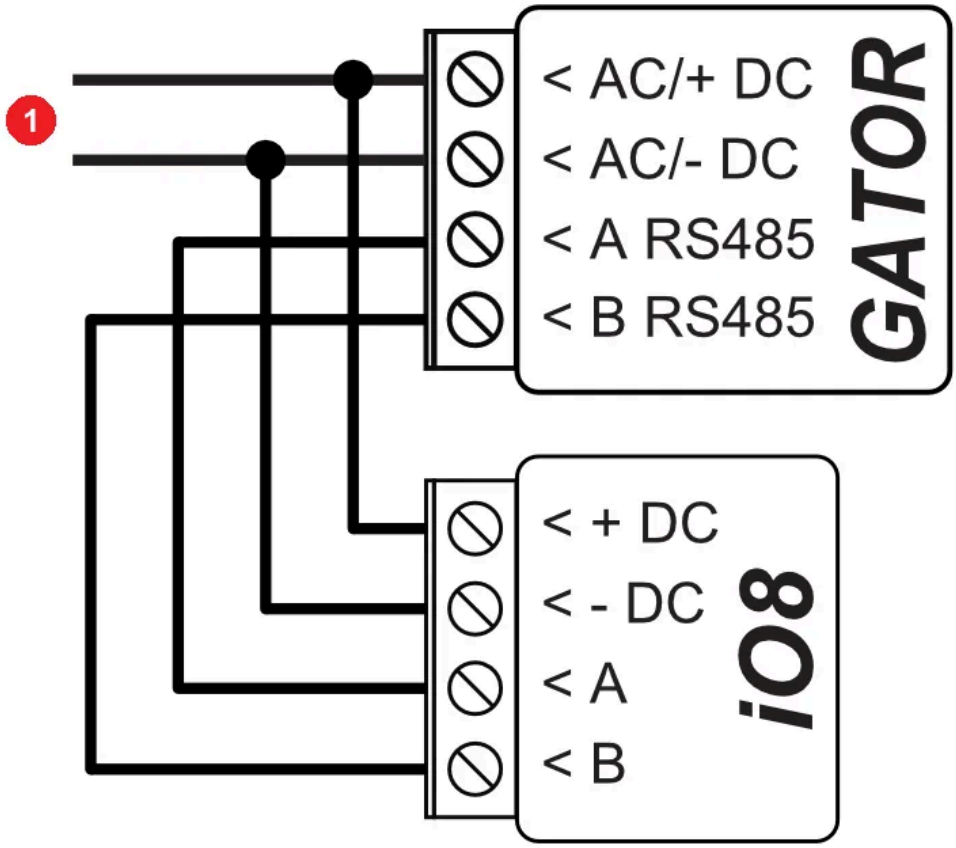


Figure 5. iO8 to the GV17 GATOR: the 10–28 V DC, 0.5 A power supply to the GATOR AC/+DC and AC/−DC terminals, and from there to the iO8 +DC and −DC terminals (the iO8 tolerates max. 26 V – with a higher supply voltage it gets a separate 12 V power supply); RS485 connection: A RS485 → A, B RS485 → B, max. 100 m ("up to 100m").

- 1 power supply ("Power supply"), 10–28 V DC, 0.5 A

2.3 Wiring the inputs

On a terminal used as an input, the detector circuit goes between the numbered terminal (**xIN** on the diagram) and the common **C** terminal next to it. There are three basic cases:

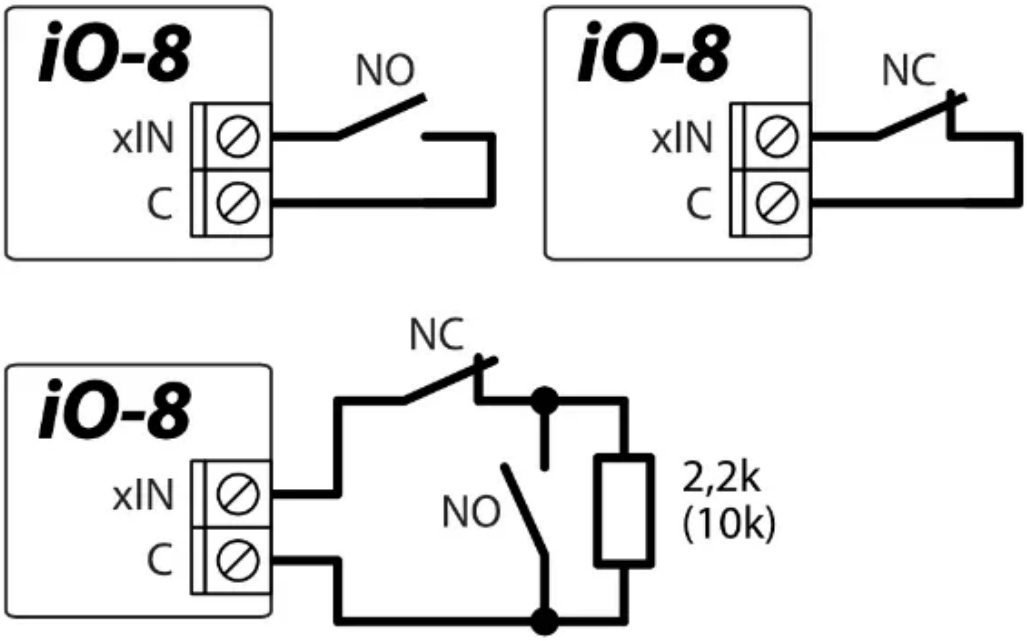


Figure 6. Wiring the inputs between the xIN and C terminals. Top left: **NO** ("Normally open") – contact open at rest; top right: **NC** ("Normally closed") – contact closed at rest; bottom: **EOL** ("End of line resistor") – NO or NC contact with an end-of-line resistor, **2,2k (10k)** – 2.2 kΩ or 10 kΩ depending on the main device.

- **NO** – contact open at rest, closing = violation.
- **NC** – contact closed at rest, opening = violation.
- **EOL** – circuit supervised by an end-of-line resistor: the main device also detects a broken wire and a short circuit.

The input wiring diagram, the end-of-line resistor value and the supported circuit types are always determined by the **main device** the iO8 is connected to, not by the iO8:

Main device	End-of-line resistor	Further types
FLEXi SP3	2.2 kΩ (factory default; five selectable resistor profiles)	DEOL, 3EOL, ATZ zone doubling, tamper circuit – section 3.2 of the SP3 manual
E16, E16T, G16, G16T	2.2 kΩ	NC/EOL, NO/EOL, NC/DEOL, NO/DEOL – the input type section of the E16T manual
GT, GT+	2.2 kΩ	according to the GT manual
GV17 GATOR	10 kΩ	NC, NO, EOL

The input voltage must not be higher than the iO8 supply voltage. Whether a terminal is an input, and of what type, is set in TrikdisConfig (section 3.2).

2.4 Wiring the outputs

A terminal set up as an output is an open-collector (**OC**) output: when switched on, it pulls the terminal to the negative pole, with a load of max. **100 mA**. The load goes between **AUX+** and the numbered terminal (**xOUT** on the diagram).

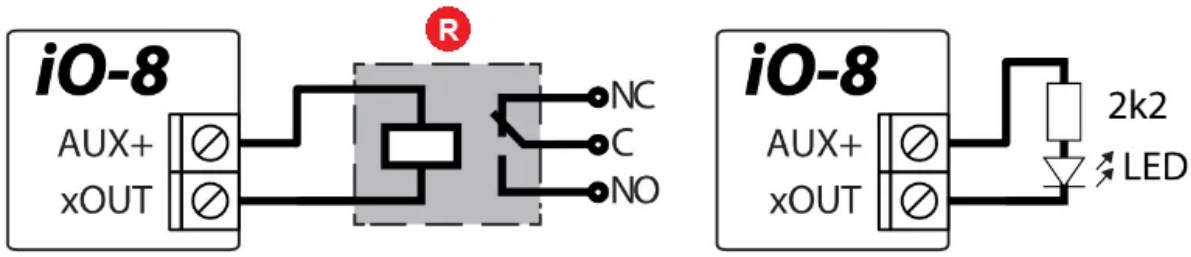


Figure 7. Wiring the outputs: the relay coil between the AUX+ and xOUT terminals, the relay's NC, C, NO contacts switch the load; **LED** – indicator LED with a **2k2** (2.2 kΩ) series resistor between AUX+ and xOUT.

- R relay ("Relay")

- **Relay**: always switch a load with a current higher than 100 mA or one on mains voltage (gate motor, pump, lighting) through a relay; the relay coil should match the +DC supply voltage (typically 12 V), and a protective diode is recommended across a DC coil.
- **LED**: can be connected directly, with a 2.2 kΩ series resistor.
- The AUX terminals have no separate load limit: they are a continuation of +DC and −DC, so the loads of all outputs are supplied by the power supply connected to the +DC and −DC terminals – keep an eye on the load capacity of the main device's AUX output.

2.5 Powering on

After checking the wiring, power up the main device: the iO8 **POW** LED lights up. The module does nothing until you have added it with its serial number in the main device's TrikdisConfig settings – this is the next chapter.

3. Setup in TrikdisConfig

The iO8 has no USB connector and no configuration page of its own: you set everything up in the **main device's** TrikdisConfig program, and the main device passes the settings to the module automatically. The steps are the same for every main device; only the name of the page and the place where the terminals are assigned differ.

Az összes Trikdis eszköz egy közös szoftverrel programozható. A program neve TrikdisConfig és a gyártó honlapjáról letölthető.

TrikdisConfig Letöltés a trikdis.com oldalról.

Letöltést követően telepítsd a programot. Ha bármikor a TrikdisConfig indításakor a program azt jelzi, hogy új verzió jelent meg, töltsd le az ajánlott frissítést és telepítsd!

1. Connect the main device to the computer with a USB cable, start TrikdisConfig and read the settings with the **Read [F4]** button.
2. Add the iO8 to the list of modules with its serial number (section 3.1).
3. Assign the terminals: which should be an input and which an output, and set their properties (section 3.2).
4. Write the settings with the **Write [F5]** button, unplug the USB cable and check the operation (section 3.3).

Warning

While the device is connected to a computer via USB cable, it is in programming mode: its normal operation stops, it does not monitor, does not report, cannot be controlled, is powered from USB, and restarts once the cable is unplugged. Therefore the device must not be freely accessible: keep it in a closed metal enclosure with tamper protection or with a motion detector covering the enclosure. More in the FAQ

3.1 Adding the module to the list

Open the modules page – **Modules** on a control panel and on a gate controller, **RS485 modules** on a communicator –, click a free row and in the **Module** drop-down list (**Module Type** on a communicator) select the **iO-8 expander** item (**Expander iO-8** on a communicator, **IO-8** on the GATOR). In the **Serial No.** cell (to the right of the selected module type), enter the serial number of the iO8 – digits only; the number is on the sticker on the module and on its box.

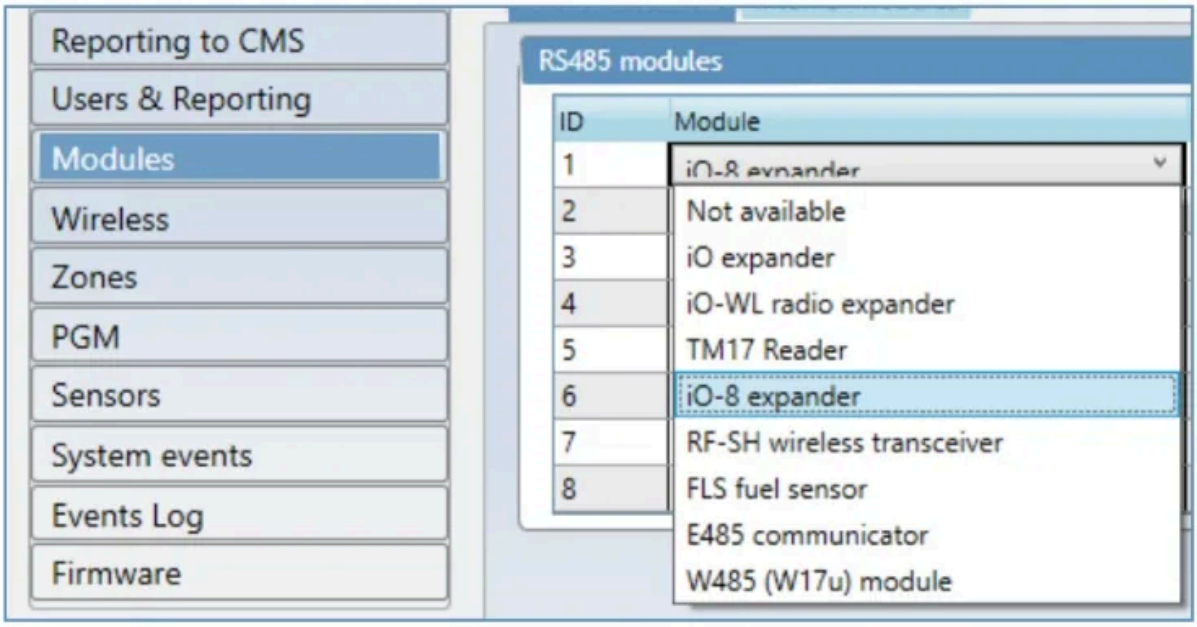


Figure 8. TrikdisConfig – **Modules**, the **RS485 modules** table on a control panel: **iO-8 expander** in the **Module** list of row 1.

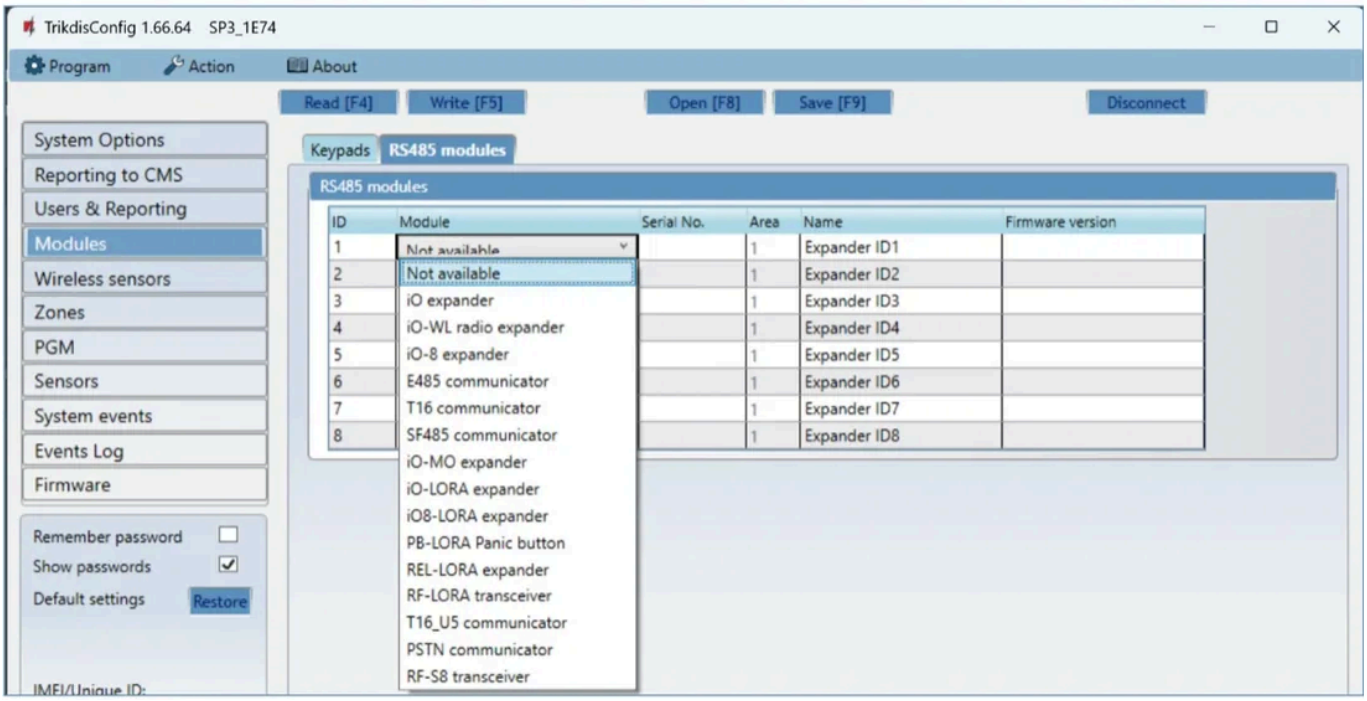


Figure 9. TrikdisConfig – FLEXi SP3, **Modules** → **RS485 modules**: **iO-8 expander** in the **Module** drop-down; in the row, the **Serial No.**, **Area**, **Name** and **Firmware version** columns.

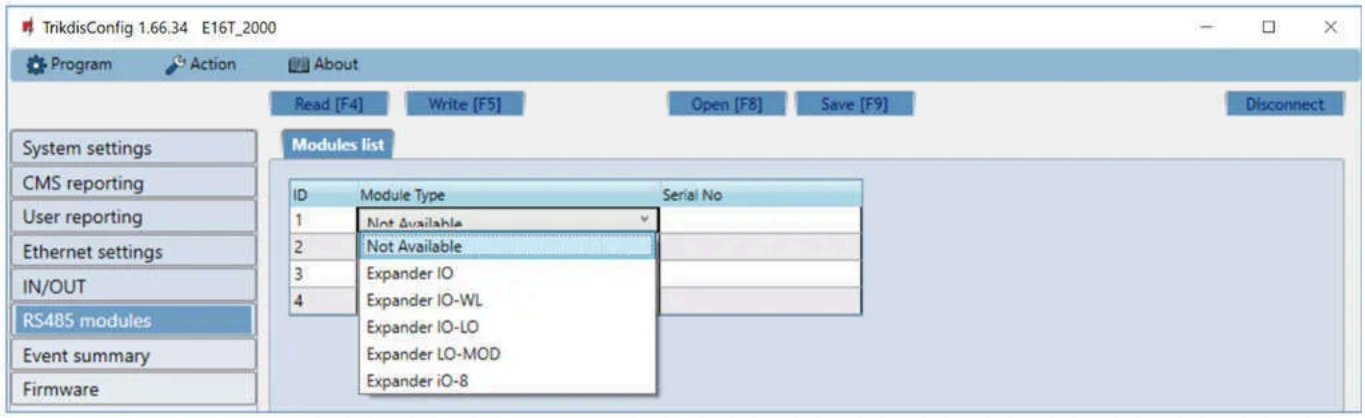


Figure 10. TrikdisConfig – E16T communicator, **RS485 modules** → **Modules list**: **Expander iO-8** in the **Module Type** list, next to it the **Serial No** column.

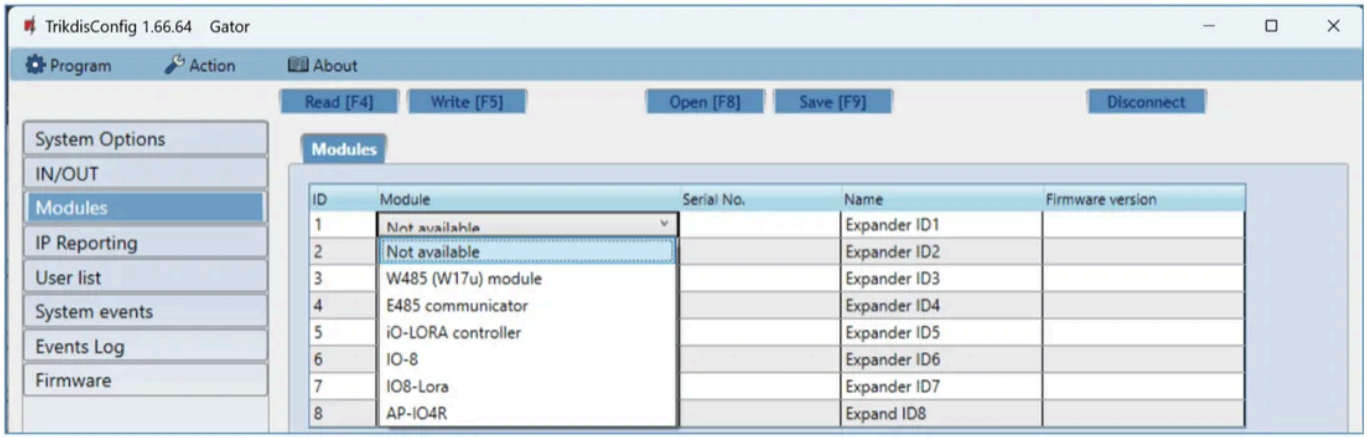


Figure 11. TrikdisConfig – GATOR gate controller, **Modules**: **IO-8** (and **IO8-Lora**) in the **Module** list, next to it the **Serial No.**, **Name** and **Firmware version** columns.

On a communicator, after adding the module, write it to the device (**Write [F5]**), unplug the USB cable, wait one minute for the communicator to find the module, then plug it back in and read it again (**Read [F4]**): now the module's own numbered tab (**Module 1**) appears. On a control panel and on the GATOR, the module's terminals can be selected in the input and output lists right after the serial number is entered.

3.2 Assigning the terminals: input or output

Which of the eight terminals will be an input and which an output is decided in one of two places, depending on the type of main device.

On a control panel (FLEXi SP3, CG17) you assign the terminals in the lists of zones and PGM outputs: on the **Zones** page, select the **RS485 Expander ID1, IO1 … IO8** item in a zone's **Input** drop-down, and the same way in an output's **Output** list on the **PGM** page. A terminal assigned to a zone is an input; one assigned to a PGM is an output. The zone type, the circuit type and the end-of-line resistor are set in the zone settings, the output's function in the PGM settings.

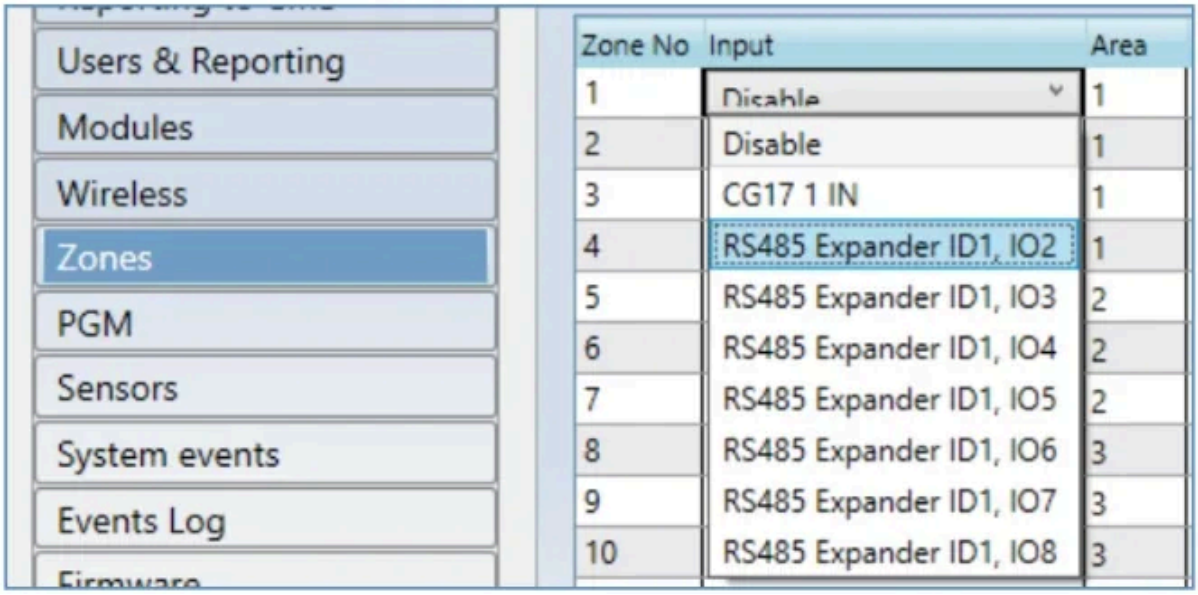


Figure 12. TrikdisConfig – **Zones** page: in the **Input** list of zone 1, besides the main device's own input, the **RS485 Expander ID1, IO2 … IO8** items – the iO8 terminals.

On a communicator (E16, E16T, G16, G16T, GT, GT+, G17F), on the module's own tab (**Module 1**), enter in the **Input Count** field how many terminals should be inputs – counting from terminal 1; the rest will be outputs. In the table, set the type of the inputs (**Input type**: NO or NC), as well as the reporting of the bus fault (**BUS_FAULT**, Contact ID 333) and of the inputs' violation / restore events (**INPUT1 …**, Contact ID 130) (**Enable**, **E/R**, **CID**, **Part.**, **Zone**). The role of the outputs (arming/disarming or switching a device) is set in the Protegus 2 app.

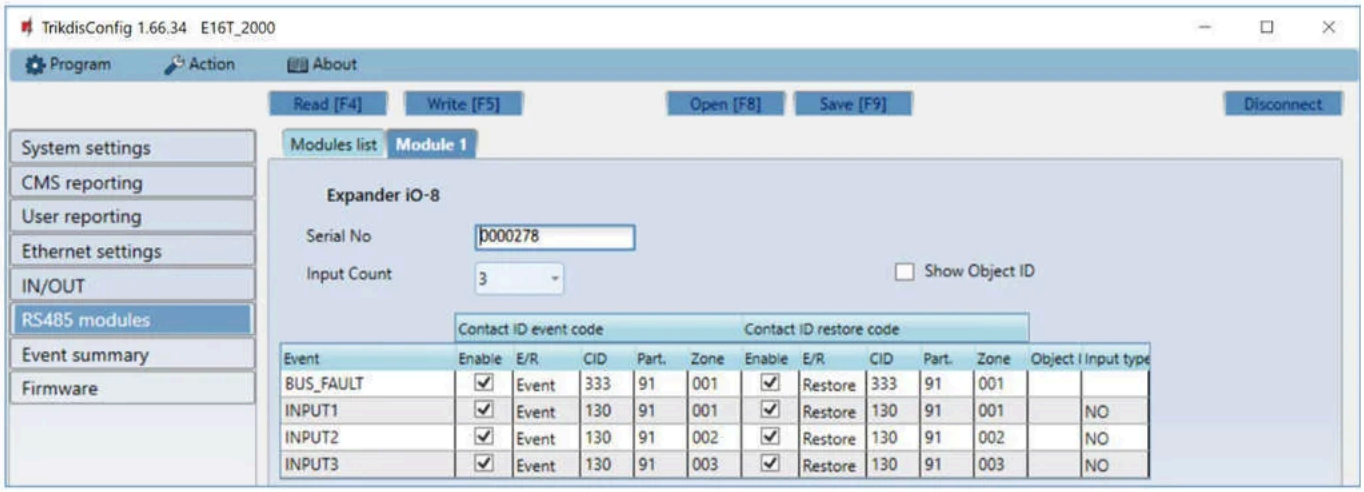


Figure 13. TrikdisConfig – E16T, **RS485 modules** → **Module 1** tab: **Expander iO-8**, **Serial No**, **Input Count** = 3 (terminals 1–3 are inputs, 4–8 outputs), below it the **BUS_FAULT** and **INPUT1–3** rows with Contact ID codes and the **Input type** column.

On a GATOR gate controller (GV17, WP17), the terminals of the added module appear in the list on the **IN/OUT** page after the gate controller's own terminals, and they can be set up as inputs or outputs in the same way, with type and function – according to the gate controller's manual.

So the setup procedure may differ from one main device to another; always set up the zones and PGM outputs according to the main device's manual.

Names in the app

You can name the inputs and outputs the usual way for the main device (zone name, output name), so that Protegus 2 and the event list show, for example, "Garden gate" instead of a number. The custom operating logic of the outputs (when and for what they switch) is also set the usual way for the main device.

3.3 Writing and checking

1. Press the **Write [F5]** button and unplug the USB cable: the main device restarts with the new settings.
2. Read the device again: data appearing in the **Firmware version** column of the module list (on the **Module 1** tab on a communicator) shows that the main device sees the iO8. If the cell is empty, check the serial number, the A–B wires and the power (chapter 4).
3. Violate the inputs one by one (open the contact, remove the resistor) and check that the main device, the monitoring station and Protegus 2 show the right zone.
4. Switch the outputs from Protegus 2 (or in the main device's own way) and check the relay or the indicator LED.

4. Troubleshooting and frequently asked questions

If the module does not do what you expect, first check the wiring and the serial number, then the points below.

The main device does not see the module (empty Firmware version, bus fault)

- Check the serial number: digits only, exactly as on the sticker.
- Check that the **A** and **B** wires are not swapped and that both go to the correct terminal on the main device (SP3: 485 A / 485 B; E16T, G16, G16T: A 485 / B 485; E16 and GATOR: A RS485 / B RS485).
- Check that the iO8 has power (**POW** is lit) and that the negative poles of the two devices are common.

- On a communicator: after adding the module, did you write to the device and wait one minute before reading it again?
- With the G16 and G16T, only the 4G version has an RS485 bus.

How many iO8 modules can be connected to one device?

To a communicator (E16, E16T, G16, G16T, GT, GT+) max. four; to the FLEXi SP3 max. eight expander modules in total (besides the iO8, the iO, iO-WL and the LORA expanders also count towards this); to the GATOR gate controller one. (The Trikdis product page generally mentions at most four iO8 modules in one system, depending on the main device's firmware.) Each goes on the list with its own serial number, and each gives 8 terminals.

What resistor should I put on the input?

Whatever the main device expects: 2.2 kΩ by default on the FLEXi SP3, also 2.2 kΩ on the E16, E16T, G16, G16T, GT and GT+ communicators, 10 kΩ on the GATOR. Supervised (EOL) wiring is recommended: this way the main device also signals a broken wire and a short circuit, not only the state of the contact.

Can two detectors be connected to one terminal (zone doubling)?

On the FLEXi SP3, yes: with **ATZ** type wiring, one terminal gives two zones, with two different resistors – so the eight terminals of the iO8 give up to 16 zones. Whether your main device supports the ATZ type is shown in the input type table of its manual.

How large a load can an output switch?

The output is open collector: it switches max. 100 mA (1.3). Every larger load or one on mains voltage needs a relay (section 2.4). The AUX terminals have no separate load limit: they are a continuation of +DC and −DC, and their load capacity is set by the power supply connected to the +DC and −DC terminals.

How far can the iO8 be from the main device?

As far as the main device's RS485 bus allows – for the communicators and the GATOR, max. 100 m, with a twisted pair. This value applies to ideal conditions; over a long distance, check the connection during commissioning. If no cable can be run, the **iO8-LORA** radio version is an option.

5. Safety instructions

Figyelem!

Az elektromosság veszélyes! Személyi sérülést vagy HALÁLT, valamint anyagi kárt okozhat!

A telepítés során elektromos berendezéssel történik munkavégzés, amit az érvényes erős- és gyengeáramú rendelkezések betartásával kell kivitelezni!

A garancia (jótállás) érvényesítésének is feltétele, hogy az eszközt szakképzett személy telepítse az elektromos berendezések telepítésére vonatkozó előírások betartásával és az elektromos berendezések biztonságos üzemeltetésére vonatkozó hatályos előírásokat követve.

- The iO8 may only be installed and maintained by qualified persons.
- Before wiring, read this manual and the main device's manual.

- **Disconnect the power before making any connection** – of the main device, the power supply and the battery as well.
- Only the permitted load may be connected directly to the outputs (max. 100 mA); a load on mains voltage only through a relay.
- Changes, modifications or repairs not authorized by the manufacturer void the warranty.
- Follow local waste disposal regulations: do not throw the device in household waste – hand in the discarded device as electronic waste.

See also

- FLEXi SP3 alarm control panel – installation and programming manual – input types, resistor profiles, the Modules page.
- E16T communicator manual and G16T communicator manual – wiring the iO8 and the RS485 modules page on the communicators.
- Trikdis GV17 GATOR and Trikdis WP17 GATOR WiFi – the gate controllers the iO8 can be connected to.
- Trikdis iO8-LORA – the wireless version with the RF-LORA transceiver.
- Trikdis documentation: docs.trikdis.com – iO-8 Input/Output Expander and the trikdis.com iO-8 product page (technical data and the always up-to-date list of compatible devices).

Related products

Trikdis iO8 wired expander module | **Trikdis IO8-LORA wireless expander module**

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