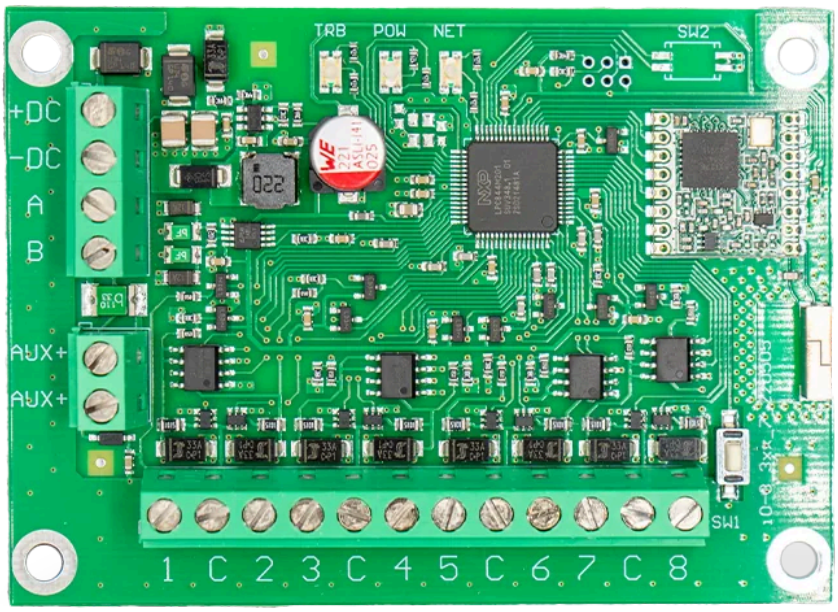
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TRIKDIS Official Distributor

iO8-LORA wireless expander – installation and setup manual

Installation and setup manual for the Trikdis iO8-LORA wireless expander: 8 inputs or outputs, input types and end-of-line resistors, wiring a relay, adding it to the FLEXi SP3 in TrikdisConfig, use with the GATOR gate controller, indicator lights, frequently asked questions.



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Always up-to-date web version: https://mobilamb.eu/io8-lora-manual

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1. Overview

With the Trikdis family of LoRa wireless expanders, wired connection points for the FLEXi SP3 alarm control panel can be set up at a remote location. One member of this family is the **iO8-LORA** expander module (also known as iO-8-LORA). The module has 8 contacts, each of which can be either an input (e.g. an alarm zone) or a controllable output (opening a gate, starting a pump). In total, up to 8 controllable devices, or with zone doubling 16 alarm zones, can be connected to it by wire.

This manual describes the **4F** (433 MHz) version; it does not cover the 8F (868 MHz) versions.

Together with the **RF-LORA** transceiver, the iO8-LORA increases the number of inputs and outputs of the **FLEXi SP3** over a two-way radio link. Each of its 8 terminals (I/O) can be set up as an input (IN) or an output (OUT); with a clear line of sight, the range is up to **5000 metres**.

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.

1.1 What does it work with?

The iO8-LORA is compatible with the **FLEXi SP3** alarm control panel and the **GATOR** (GV17, cellular) gate and door controller; it always connects through the **RF-LORA** transceiver. The GATOR WiFi (WP17) is not among the compatible devices.

- **FLEXi SP3:** up to **8 iO8-LORA** modules. The 8 is the combined number of LoRa modules (iO-LORA, iO8-LORA, PB-LORA).
- **GV17 GATOR: one** iO8-LORA, or a wired iO8 instead (chapter 4).

Wiring and setting up the RF-LORA is described in the RF-LORA manual. The transceiver in the shop:

Trikdis RF-LORA wireless expander module

1.2 Technical data

Parameter	Value
Frequency	433.3–434.7 MHz (4F version)
Modulation	LoRa
Supply voltage	10–26 V DC
Current consumption	max. 50 mA in standby · max. 120 mA briefly, when transmitting
Message encryption	yes
Range in open space	up to 5000 m
Two-way terminals (I/O)	8 (input or output, see below)
Operating environment	−20 °C … +50 °C, relative humidity max. 80% (at +20 °C)
Dimensions	65 × 90 × 12 mm
Weight	80 g

You choose the function of the terminals (IN or OUT) during programming:

- **As an input (IN)** the type is: NC, NO, EOL, EOL_T, 3EOL, ATZ, ATZ_T; resistors of different values can be used in the EOL- and ATZ-type circuits (2.2).
- **As an output (OUT)** the terminal is an open-collector (OC) output with a current of max. 100 mA.

The product comes with a standard antenna that is suitable for most uses. If you need a good-quality connection over the greatest possible distance, use a higher-gain antenna (**AX-ANT-KIT**). It is also available in the shop:

RF-LORA large Antenna Meteor 433MHz

1.3 Parts

The indicator lights, controls and connectors of the iO8-LORA on the printed circuit board:

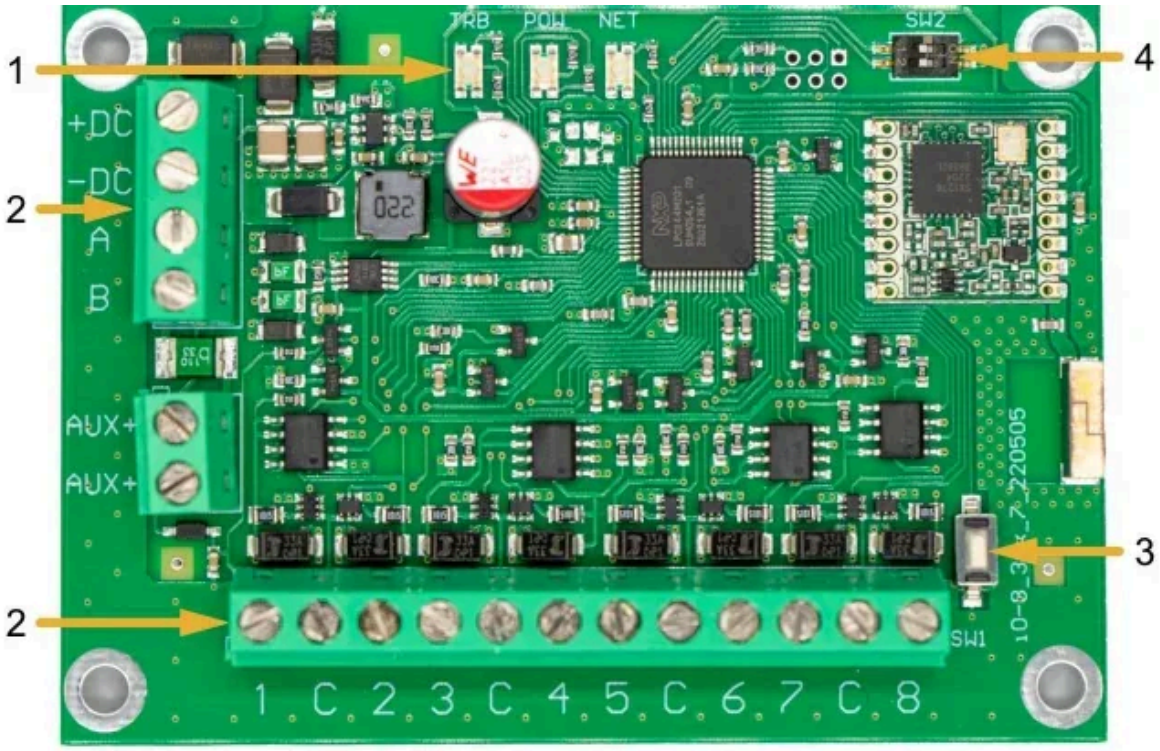


Figure 1. The printed circuit board of the iO8-LORA.

- 1 indicator lights (**TRB**, **POW**, **NET** on the board)
- 2 terminal blocks for the external connections
- 3 **SW1** button – pairing the expander and checking the connection
- 4 **SW2** DIP switch

The two switches of the **SW2** DIP switch:

- **Switch 1 – radio channel:** OFF = RF1, ON = RF2. Switch over if the current channel is heavily loaded.
- **Switch 2 – modulation:** OFF = fast, ON = slow. In the ON position the range roughly doubles, depending on the environment, but the system responds more slowly; if the connection is good in the OFF position as well, use that.

The switch positions must match

The **SW2** DIP switch of the iO8-LORA and the **SW** DIP switch of the RF-LORA must be in the same position, otherwise there is no radio link.

1.4 Terminals

Terminal	Function
+DC	supply voltage, positive (10–26 V DC)
–DC	supply voltage, negative
A	RS485 data bus, A
B	RS485 data bus, B
1–8	input/output terminals
C	common negative terminal

There are also two **AUX+** terminals on the board: both are a continuation of **+DC**, so they have no separate load limit – their load capacity is set by the power supply connected to the **+DC** and **–DC** terminals. The relay wiring diagram (2.3) connects the relay coil between **AUX+** and the output.

1.5 Indicator lights

Indicator light	State	Meaning
NETWORK (NET on the board)	off	no radio signal
NETWORK	flashes green	the radio signal level (0–10); level 3 is already sufficient
POWER (POW on the board)	off	no supply voltage
POWER	flashes green	normal supply voltage
POWER	flashes yellow	low supply voltage (max. 11.5 V)

The **TRB** indicator light on the board signals only one thing: the expander is not connected to the system.

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.

2.1 Power supply

The iO8-LORA is powered at its own location, from a separate power supply (10–26 V DC): connect the **+** pole of the power supply to the **+DC** terminal and its **0 V** pole to the **–DC** terminal. The Trikdis diagram shows a 12 V power supply.

2.2 Wiring the inputs

The 8 terminals of the expander (**1–8**, **IOx** on the diagrams) are for connecting detector circuits; **C** is the common negative terminal. Any terminal can be set up as an input, and the zone properties can be specified: the circuit type (**NO, NC, EOL, EOL_T, 3EOL, ATZ, ATZ_T**), the sensitivity to short circuit events, and the

zone function (delay, instant, instant stay, follower, follower stay, fire, keyswitch, 24-hour, silent, silent 24-hour). On the diagrams, NC is a normally closed and NO a normally open contact.

Labels on the diagrams. R1, R2, RT – resistor; RT is the resistor of the tamper circuit. The red **T** marks the tamper contact, the blue number the detector's number; the meaning of each label is also given under the diagram concerned.

NO and NC – without an end-of-line resistor. When activated, an NO detector closes, an NC detector breaks the circuit between IOx and C.

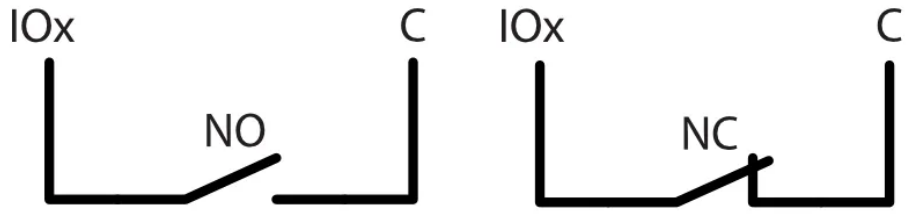


Figure 2. Left: NO ("Normally open"), right: NC ("Normally closed") zone: the contact between the **IOx** and **C** terminals.

EOL – with an end-of-line resistor. With an NO detector, R1 is in parallel with the contact, with an NC detector in series with it, between IOx and C.

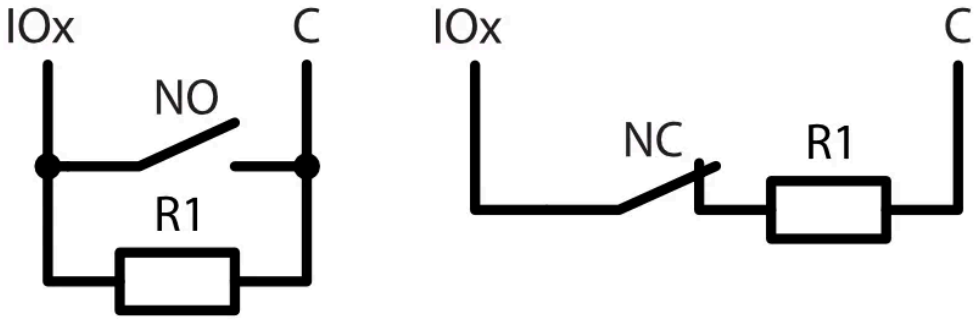


Figure 3. Zone with an end-of-line resistor (EOL, "End of line resistor"): left, NO contact with R1 in parallel; right, NC contact with R1 in series.

EOL_T – with an end-of-line resistor, tamper and wiring fault detection.

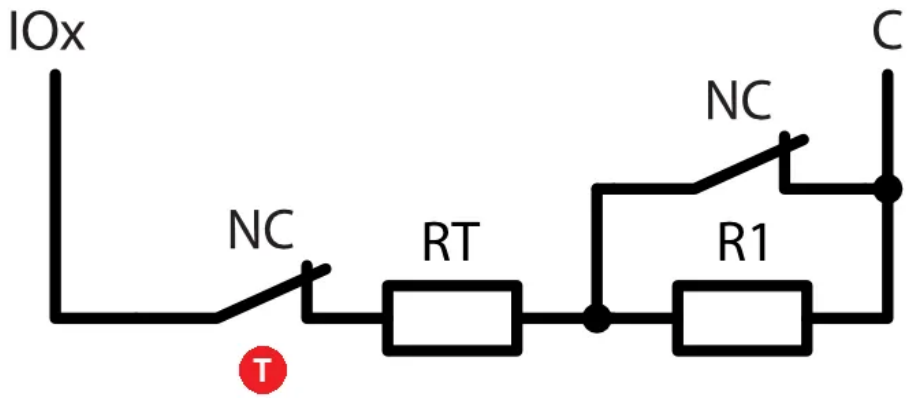


Figure 4. EOL_T zone: IOx → NC tamper contact → RT → (NC alarm contact in parallel with R1) → C.

- T tamper contact ("Tamper"), signals the opening of the detector's housing

ATZ – zone doubling. Two detectors on one terminal: two circuits in series between IOx and C, in the first an NC contact in parallel with R1, in the second an NC contact in parallel with R2.

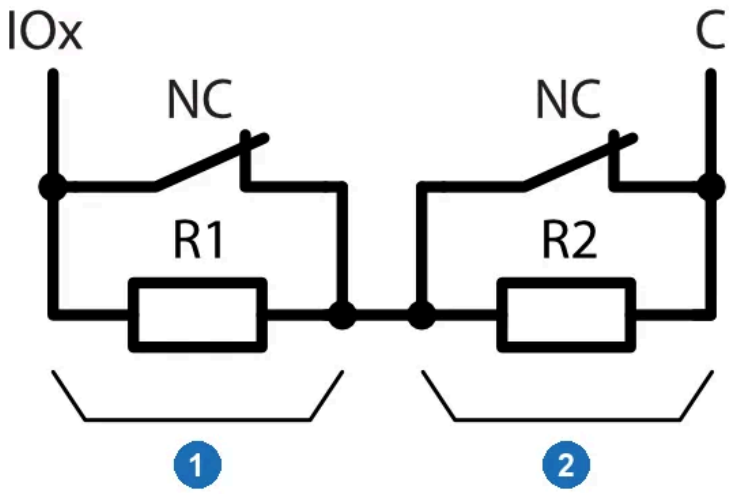


Figure 5. ATZ zone: the NC contact of detector 1 in parallel with R1, in series with it the NC contact of detector 2 in parallel with R2, between IOx and C.

- 1 circuit of detector 1 ("Detector terminal 1")
- 2 circuit of detector 2 ("Detector terminal 2")

ATZ_T – zone doubling with tamper and wiring fault detection. Like ATZ, but the NC tamper contact is also in series in the circuit of both detectors, in the first circuit together with the RT resistor.

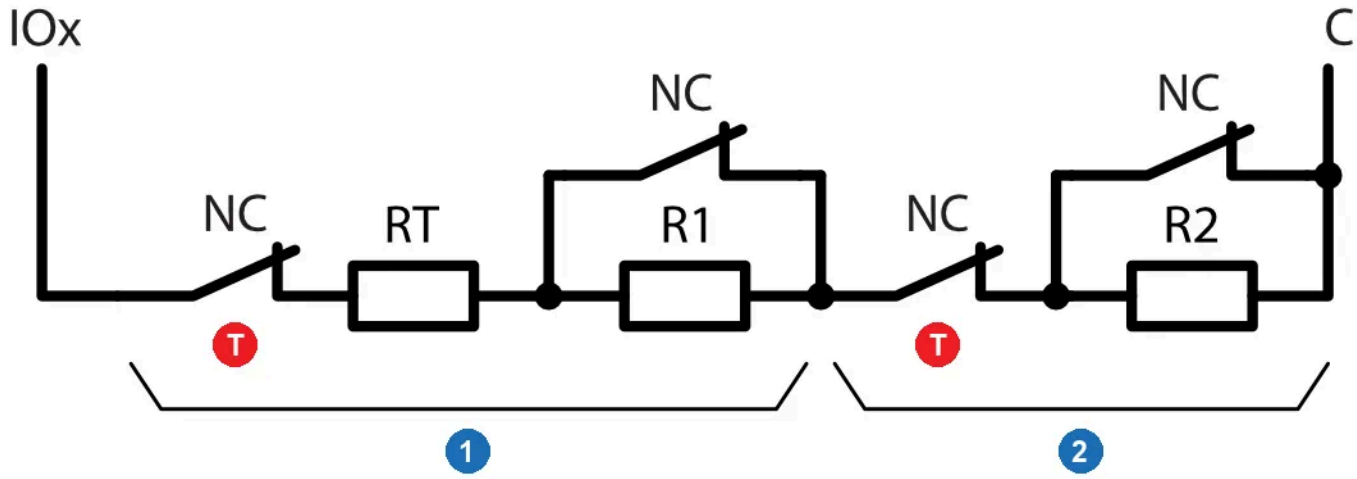


Figure 6. ATZ_T zone: detector 1 – NC tamper contact and RT in series, then NC contact in parallel with R1; detector 2 – NC tamper contact in series, then NC contact in parallel with R2; the two circuits in series between IOx and C.

- T tamper contact ("Tamper"), signals the opening of the detector's housing
- 1 circuit of detector 1 ("Detector terminal 1")
- 2 circuit of detector 2 ("Detector terminal 2")

3EOL – three end-of-line resistors: alarm, tamper and masking.

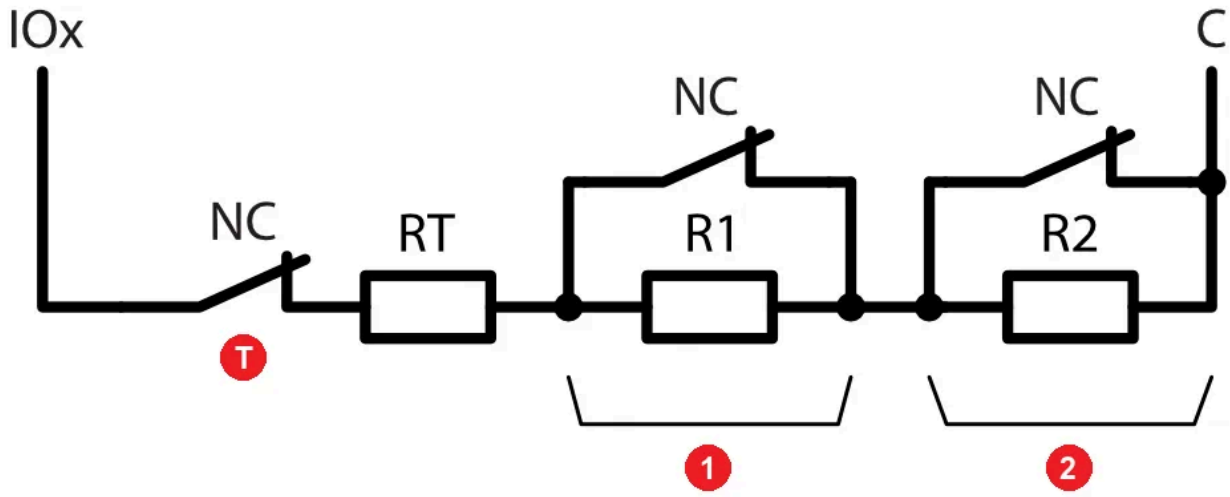


Figure 7. 3EOL zone: IOx → NC tamper contact and RT in series → alarm circuit (NC contact in parallel with R1) → anti-masking circuit (NC contact in parallel with R2) → C.

- T tamper contact ("Tamper"), signals the opening of the detector's housing
- 1 alarm circuit ("Alarm")
- 2 anti-masking circuit ("Anti-masking"), signals that the detector is covered

In the EOL- and ATZ-type circuits, the resistor values in the table below can be used (RT is the resistor of the tamper circuit, R1 of the first, R2 of the second detector):

RT	R1	R2
2.2 kΩ	2.2 kΩ	4.7 kΩ
1 kΩ	1 kΩ	2.2 kΩ
5.6 kΩ	5.6 kΩ	3.3 kΩ
5.6 kΩ	3.3 kΩ	5.6 kΩ
3.3 kΩ	6.8 kΩ	3.3 kΩ
2.2 kΩ	4.7 kΩ	8.2 kΩ

With the FLEXi SP3, you select the resistor set in the TrikdisConfig **System Options** → **System general** → **EOL Type** field; the Trikdis default setting is 2.2 kΩ / 2.2 kΩ / 4.7 kΩ – see sections 3.2 and 6.2.1 of the "FLEXi" SP3 alarm control panel – installation and programming manual.

2.3 Wiring a relay

With a relay, various electrical devices can be switched remotely (on and off). To do this, the iO8-LORA terminal must be set up as an output (**OUT**) and assigned the **Remote control** function (chapter 3, **PGM**). The output is open-collector, max. 100 mA (1.2), so switch the load through a relay.

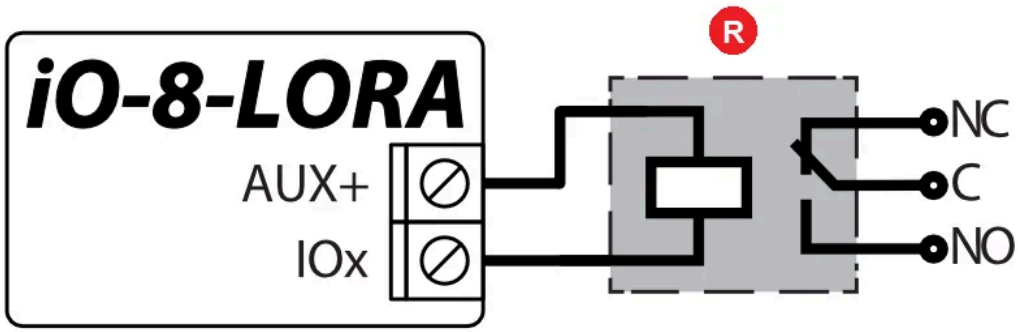


Figure 8. Wiring a relay: the relay coil between **AUX+** and the terminal set up as an output (**IOx**); the relay's **NC**, **C** and **NO** contacts switch the load.

- R relay ("Relay")

2.4 The iO8-LORA expanders in the system

The iO8-LORA expanders connect to the panel by radio, through the RF-LORA transceiver wired to the FLEXi SP3:

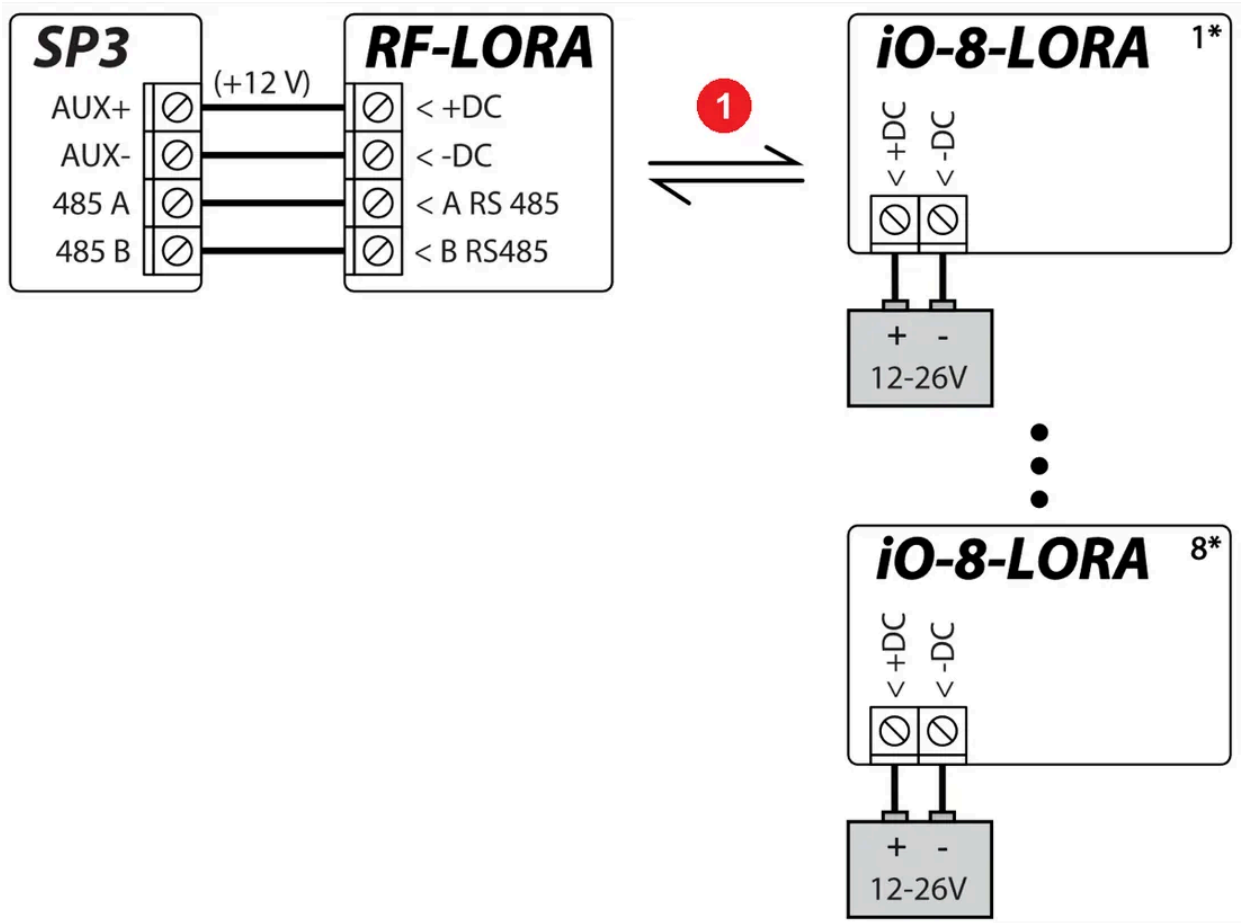


Figure 9. FLEXi SP3 – RF-LORA – iO8-LORA expanders. SP3 **AUX+** (+12 V) → RF-LORA **+DC**, **AUX−** → **−DC**, **485 A** → **A RS 485**, **485 B** → **B RS485**. The RF-LORA reaches the iO8-LORA expanders (1* … 8*) by radio (1); each gets its own 12–26 V supply on its **+DC** and **−DC** terminals.

- 1 wireless connection ("Wireless connection"), up to 5000 m

Note

An RF-LORA transceiver must first be connected to the FLEXi SP3; after that, up to 8 iO8-LORA expanders can be connected to it.

Can also be wired

The iO8-LORA is the same expander as the wired iO8, just with a radio add-on. By default it connects wirelessly to the FLEXi SP3 alarm control panel, through the RF-LORA transceiver, but if the situation on site calls for it, it can also be wired over RS485 (**A**, **B** terminals), like the iO8 – see the iO8 manual. In that case, select the iO8 in the TrikdisConfig **Modules** list (**iO-8 expander** on the FLEXi SP3, **IO-8** on the GATOR), not the iO8-LORA. This manual describes the wireless connection.

3. Setup with the FLEXi SP3

You add and set up the iO8-LORA expander in the TrikdisConfig settings of the FLEXi SP3.

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. The RF-LORA transceiver must be connected to the FLEXi SP3 (2.4).
2. Switch on the power supply of the FLEXi SP3.
3. Switch on the power of the iO8-LORA expander.
4. Start TrikdisConfig.
5. Connect the FLEXi SP3 to the computer with a USB Mini-B cable, or connect to it remotely.
6. Press the **Read [F4]** button: the program reads the panel's settings. If the program asks for it, enter the six-character administrator code.
7. In the **Modules** list, select the **iO8-LORA expander** item.
8. Enter the serial number of the iO8-LORA in the **Serial No.** field.

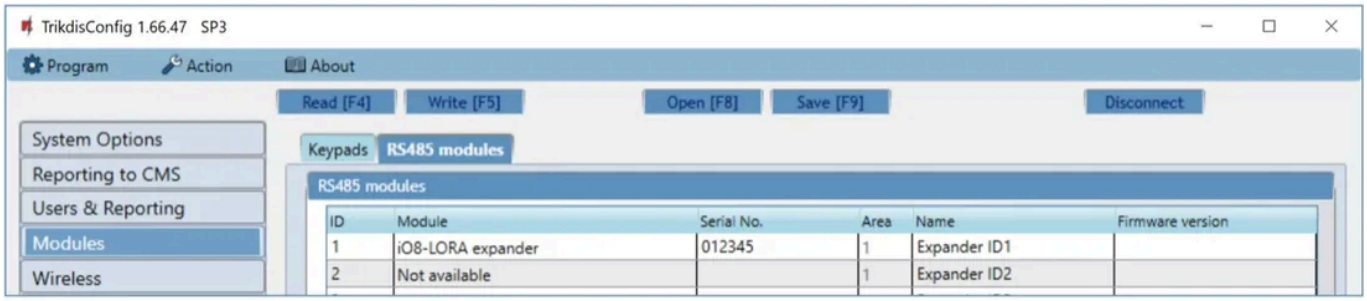


Figure 10. TrikdisConfig – FLEXi SP3, **Modules** → **RS485 modules**: in row 1 the **iO8-LORA expander** with its serial number (**Serial No.**), area (**Area**) and name (**Name**: Expander ID1); row 2 is empty (**Not available**).

9. On the **Zones** page, set up the expander's inputs: in the zone's **Input** list, the expander's terminals appear as **RS485 Expander ID1, IO1**, **IO2** …

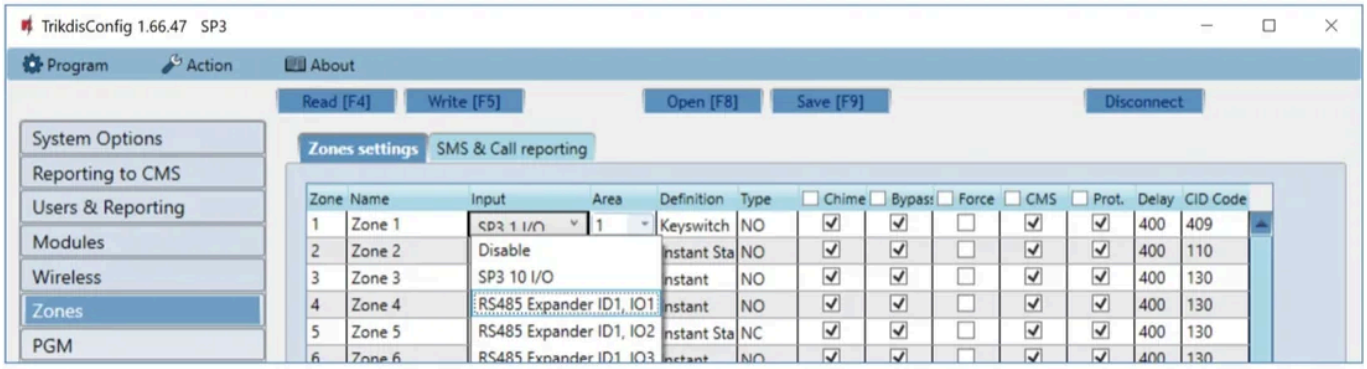


Figure 11. Zones → Zones settings: in the zone's **Input** list, next to the panel's own inputs (**SP3 10 I/O**), **RS485 Expander ID1, IO1 … IO3** – the terminals of the iO8-LORA; **RS485 Expander ID1, IO1** is selected.

10. On the **PGM** page, set up the expander's outputs: in the **PGM output** list, likewise named **RS485 Expander ID1, IO…**.

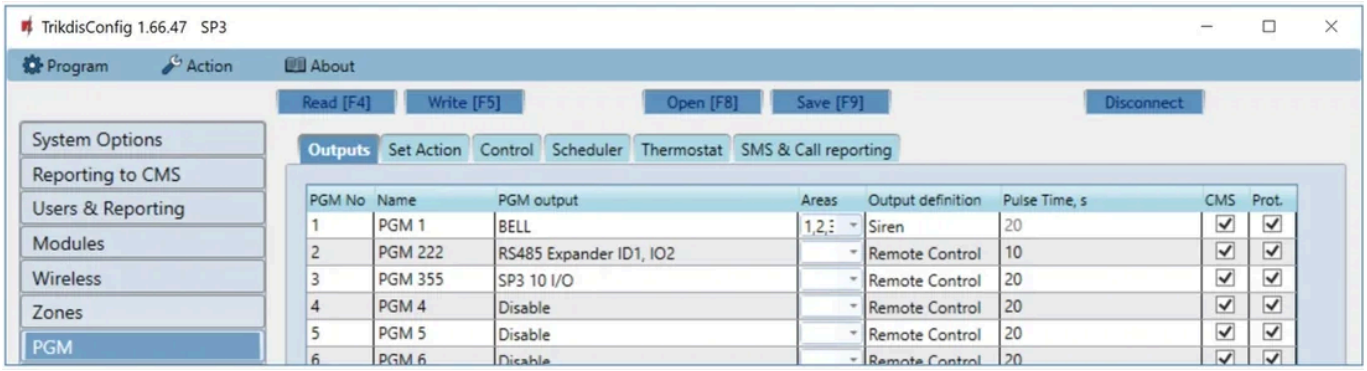


Figure 12. PGM → Outputs: PGM 1 is **BELL**, in the other row **RS485 Expander ID1, IO2** – terminal 2 of the iO8-LORA as an output, with the **Remote Control** output function (**Output definition**) and a pulse time of 10 s (**Pulse Time, s**).

11. At the end of the setup, press the **Write [F5]** button.
12. Wait until writing has finished.
13. Press the **Disconnect** button and unplug the USB cable.

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

4. Use with the GATOR gate controller

If you need more inputs or outputs at one location with the **GV17 GATOR** gate controller, **one** iO8-LORA (wirelessly, through the RF-LORA transceiver) or a wired iO8 instead can be connected to it. The expander's inputs and outputs appear in the list on the gate controller's **IN/OUT** page and can be handled in the same way as the GATOR's own; the module must be added with its serial number on the **Modules** page.

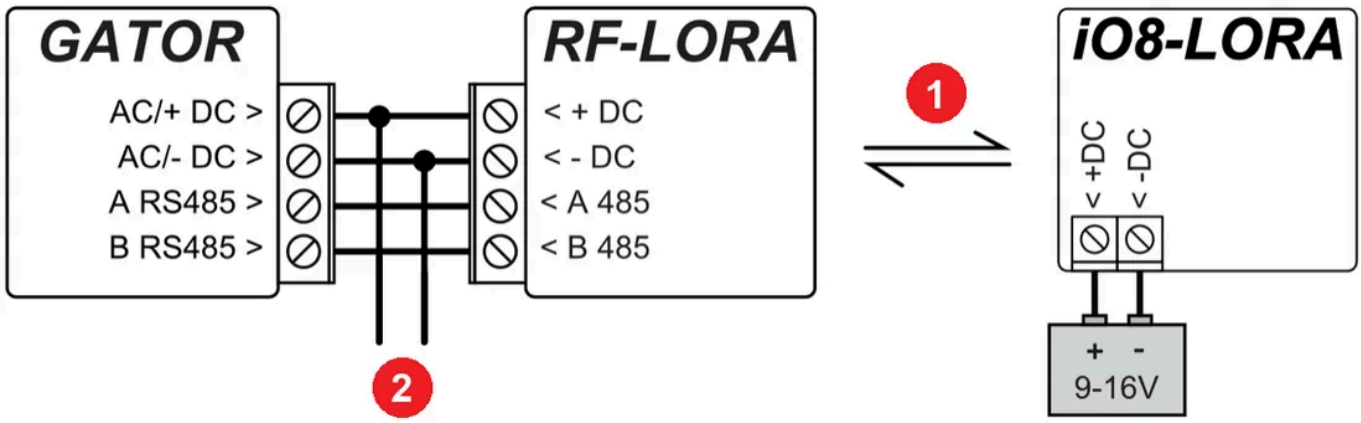


Figure 13. The iO8-LORA expander through the RF-LORA transceiver (GV17 diagram). The GATOR and the RF-LORA share a power supply (AC/+DC – +DC, AC/−DC – −DC); RS485: A RS485 – A 485, B RS485 – B 485; the iO8-LORA gets its own 9–16 V supply.

- 1 wireless connection ("Wireless connection") between the RF-LORA and the iO8-LORA, up to 5000 m
- 2 power supply ("DC power supply"), 9–16 V DC, 0.5 A

The setup steps are described in sections 3.10 and 5.4 of the GV17 GATOR gate controller – installation and programming manual.

5. Frequently asked questions

There is no radio link with the RF-LORA – what should I check?

1. Whether both switches of the iO8-LORA **SW2** and the RF-LORA **SW** DIP switch are in the same position (1.3) – with different positions there is no radio link.
2. Whether the expander has power (the **POWER** light flashes green), and whether its serial number is correct in the **Modules** list (chapters 3 and 4).
3. The radio signal level is shown by the green flashing of the **NETWORK** light (0–10); level 3 is already sufficient.
4. With a weak signal, set switch 2 to ON (slow modulation) on the RF-LORA and on all LoRa modules, or use a higher-gain antenna (1.2).

The POWER light flashes yellow

The supply voltage is low (max. 11.5 V): check the power supply – the iO8-LORA runs on 10–26 V DC.

How many zones does one iO8-LORA handle?

It has 8 terminals; with ATZ or ATZ_T type zone doubling wiring, two detectors can be handled on one terminal, so up to 16 zones (2.2). The terminals set up as outputs are deducted from this.

How large a load can one output switch?

The output is open-collector, max. 100 mA. Switch a larger load through a relay (2.3).

Which switch position should I choose?

By default, fast modulation (switch 2 OFF). If there is no reliable connection because of the distance, slow modulation (ON) roughly doubles the range, depending on the environment, but the system responds more slowly. Change the channel (switch 1) if the current channel is heavily loaded. Whichever you change, set it the

same way on the RF-LORA and on every LoRa module.

6. 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-LORA expander may only be installed and maintained by qualified persons.
- Before installation, read this manual carefully to avoid mistakes that could lead to malfunction or even damage to the equipment.
- Disconnect the power before making any connection.
- Changes, modifications or repairs not authorized by the manufacturer void the warranty.
- Do not throw the device and its parts in household waste: follow the local waste sorting regulations.

See also

- RF-LORA wireless transceiver – installation and setup manual – wiring the transceiver, its DIP switch and indicator lights.
- iO8 input/output expander – installation manual – the wired sister module.
- "FLEXi" SP3 alarm control panel – installation and programming manual – wiring and setting up the panel, including the zone types and the end-of-line resistors (3.2, 6.2.1).
- GV17 GATOR gate controller – installation and programming manual (3.10) – the iO8-LORA on the GATOR.
- Trikdis documentation: docs.trikdis.com – iO8-LoRa Wireless Expander.

Related products

Trikdis IO8-LORA wireless expander module **Trikdis RF-LORA wireless expander module**

RF-LORA large Antenna Meteor 433MHz

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