

ION8-1324

Installation and Commissioning Guide · October 2026 · Rev. 1.0

Wireless remote I/O unit: 8 DI + 8 DO + 4 AI + 4 AO



Slot layout (schematic view)

Contents

1 Safety	1
2 Product and model	2
3 Enclosure and mounting	2
4 Power connection	3
5 Terminal layout and field wiring	4
6 Web interface access and first setup	5
7 Connection modes and pairing	9
8 Software update and maintenance	11
9 Troubleshooting	12
10 Commissioning checklist	12
11 Contact	13

1 Safety

About this guide

This guide is for field and commissioning personnel. It describes mounting, power, terminal wiring, web interface access, pairing and first verification in step order.

Electrical values and limits are not repeated in this guide; see the model datasheet.

- Installation, wiring and maintenance must be done only by authorised, trained personnel.
- Fit and remove terminals with the supply off; verify with a measurement that the circuit is de-energised before removing.
- Check the supply polarity before energising.
- This device alone is not sufficient for emergency stop or other safety functions; provide machine safety independently of the wireless link.
- For commands carried over the wireless link, also provide the safe state and timeout supervision on loss of communication in the PLC program.
- Outputs go to a safe state when the link is lost; write the process's definition of “safe” in the commissioning record.

2 Product and model

ION8 is a family of wireless remote I/O that collects sensor, encoder and control signals on wire and cable processing machines without running cables, and passes them on to the PLC. The same enclosure is used in every model; models differ only in their slot modules.

The model code has the form **ION8-ABCD**; the four digits show the module in slots A, B, C, D (1 = 8 DI, 2 = 8 DO, 3 = 4 AI, 4 = 4 AO, 5 = 2 isolated loadcell, 0 = empty).

Model code	ION8-1324
Total channels	24
Signal terminals	32

Slot	Module	Channels	Terminal
A	 DI8 — 8-channel digital input module	8	A1 – A8
B	 AI4 — 4-channel analog input module	4	B1 – B8
C	 DO8 — 8-channel digital output module	8	C1 – C8
D	 AO4 — 4-channel analog output module (0–10 V)	4	D1 – D8

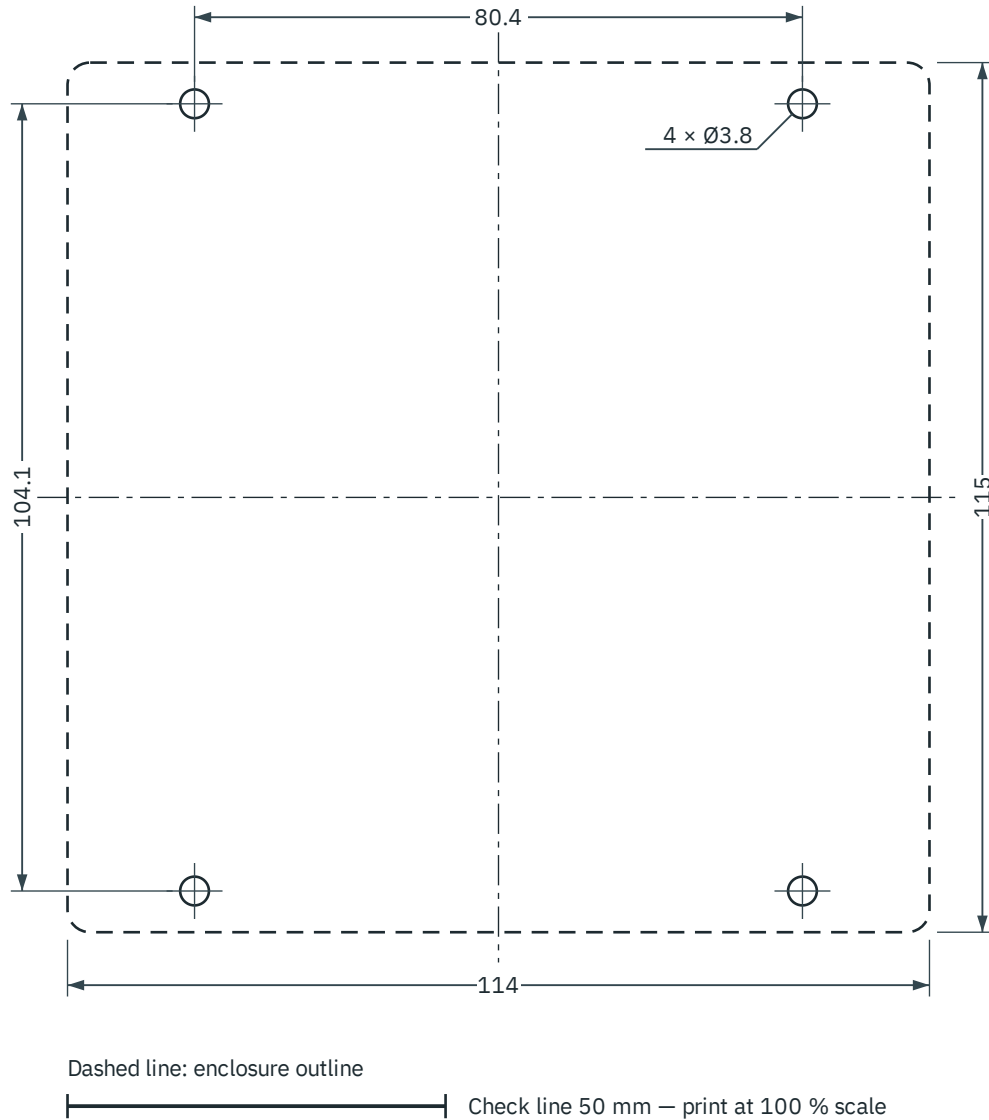
See the model datasheet for electrical values and limits.

3 Enclosure and mounting

- Fix the device inside the panel with screw mounting.
- Keep a reasonable distance from noise sources such as VFDs and welding equipment.
- Leave service access to the terminals and cables; secure cables so that they are not subject to strain and vibration.
- For wireless link quality, place the device away from metal enclosures and, if possible, with a clear line of sight.
- Enclosure dimensions: 115 × 114 × 45 mm (W × L × H; excluding mounting tabs and antenna connectors). In the panel, allow extra room for cables and antennas.
- Mounting holes: 4 × Ø3.8 mm, centre to centre 80.4 × 104.1 mm (dimensioned 1:1 template below).
- Weight: 250 g.

Mounting hole template (1:1)

Mounting hole template — scale 1:1, dimensions in mm



Print the page without scaling (100 %) and verify the 50 mm check line with a ruler; then fix the template to the mounting surface and mark the hole centres. Dimensions in mm.

4 Power connection

1. Keep the supply switched off.
2. Connect the supply wires to the + / 0 V / GND (panel earth) terminals marked on the device.
3. Connect the field signals to blocks A / B / C / D according to the tables in the “Terminal layout” section.
4. Check polarity and look for loose terminals.
5. Switch the supply on.

Caution: a weak or fluctuating supply makes the device restart. The power-up counter and reset reason in the web interface help diagnosis.

Supply: 24 V DC nominal (15–30 V DC). The supply must be at least 15 V DC for the 0–10 V analog outputs to operate over their full range; digital inputs also require at least 15 V DC for logic 1; current consumption min. 50 mA, typ. 80 mA, max. 120 mA (24 V DC).

5 Terminal layout and field wiring

Numbering rule

- The terminal blocks are arranged on the device from left to right as **A → B → C → D**; the block letter is the slot letter.
- In every block, terminal 1 is at the top left; terminals are numbered from 1 (A1, A2, ...).
- The terminal blocks are pluggable.
- If the printed label on the device and a table in this document disagree, **the printed label governs**.
- Signal names start at 0 within a module (e.g. DI0 – DI7); if there are two modules of the same type, each module is numbered separately.

The signal assignment of each terminal is on the printed label on the device; wire the field connections according to the printed label.

Module connections

DI8 – 8-channel digital input module – Slot A

Connection notes

- If you use an encoder, connect the A/B lines to the related DI terminals; prefer shielded cable and ground the shield at a single point in the panel.
- When an encoder or counter is enabled, the related inputs cannot be used as general DI; fix the plan before commissioning.
- See the value table (datasheet) for the input type and voltage levels.

Settings in the web interface

- Live state of the inputs
- Enabling encoder 0/1 and pulse counter 0/1 functions
- Software counter and frequency channels: value, rate and status
- Rising-edge lockout (filter) setting
- Timeout (stale) time setting for the frequency value

Commissioning test

- Trigger an input; check that the state appears in the web interface and (if used) on the PLC side.

DO8 – 8-channel digital output module – Slot C

Connection notes

- Loads in the relay, valve or lamp class are targeted; see the value table (datasheet) for load type and limits.
- Safe state: when the link is lost, outputs go to a safe state (typically off). Write the process's definition of “safe” in the commissioning record.
- When connecting an external step drive, verify the drive's input requirements and timing separately in the application.

Settings in the web interface

- Driving outputs manually (commissioning test)
- PWM channel enable, frequency and duty cycle setting
- Selecting the pulse/direction sources
- Live monitoring of the output state

Commissioning test

- Drive an output from the web interface; check that the field load operates.

AI4 – 4-channel analog input module – Slot B

Connection notes

- See the value table (datasheet) for the input range and wiring; the process measurement is verified by field calibration.

Settings in the web interface

- Live monitoring of channel values
- Filter, gain and scaling setting
- Calibration

Commissioning test

- Apply a known signal to the input; check that the value in the web interface matches the expected value.

A04 – 4-channel analog output module (0–10 V) – Slot D

Connection notes

- **Caution:** do not connect an AO output to an external voltage source or with reversed polarity.
- Align the 0 V / ground reference with the process device's manual; check for short circuits and ground loops.

Settings in the web interface

- Entering the output value (set point) and live monitoring
- Signal chain setting and calibration

Commissioning test

- Set an AO channel to a low value; verify the measured value with a multimeter or the process input (0–10 V range).

6 Web interface access and first setup

Local access point (first setup)

1. Switch on the supply and wait for start-up to finish.
2. In the wireless network list of your computer or phone, find the device's access point and connect with the password in the table.
3. Open the address from the table in a browser.
4. Check the software build signature and the live connection indicator in the page header; if the device stops responding, the indicator must change to “no connection”.

Parameter	Value
Access point network name	ION8_1324_XXXXXX
Default password	Supplied with the device
Address (access point)	http://192.168.4.1
Local name (same network)	http://ion8-1324.local

XXXXXX in the network name is the 6 characters printed on the product label. The password in the table is the same factory value on all devices; **change it at the first login**.

If the device is on a network, it can also be reached by the local name in the table. If you use several devices, give each its own name in the web interface to avoid confusion.

To join a plant network, select the network mode “AP + STA” on the **Device Info** page, enter the network name and password, save and restart the device. The access point password has 8 – 63 characters. The local name is changed on the same page: a–z, 0–9 and “-” are allowed, the name cannot start or end with “-”, 1 – 32 characters; a name that breaks the rule is not saved, and if left empty the factory name is used.

Web interface cards

Card / section	What it is for
General / live terminals	Channel verification; visual confirmation of wiring
DI / events / encoder	Inputs, encoder and counters
DO / PWM	Outputs and PWM
AI	Analog reading, filter, scaling
AO 0–10 V	Analog output set point
Wireless / pairing	Partner selection, link state, signal class
System	Version, uptime, power-up counter, reset reason, operating mode
Software update	Loading an authorised package

First setup

1. Change the default password at the first login.
2. If there are several devices, give each a distinguishing name.
3. Decide the device's operating mode and the partner it will be paired with (see Connection modes and pairing).
4. Check that live data arrives in the web interface cards of the modules.

6.4 Example screens from the web interface

The images below show the main pages you will see in the browser after installation. Values are examples.

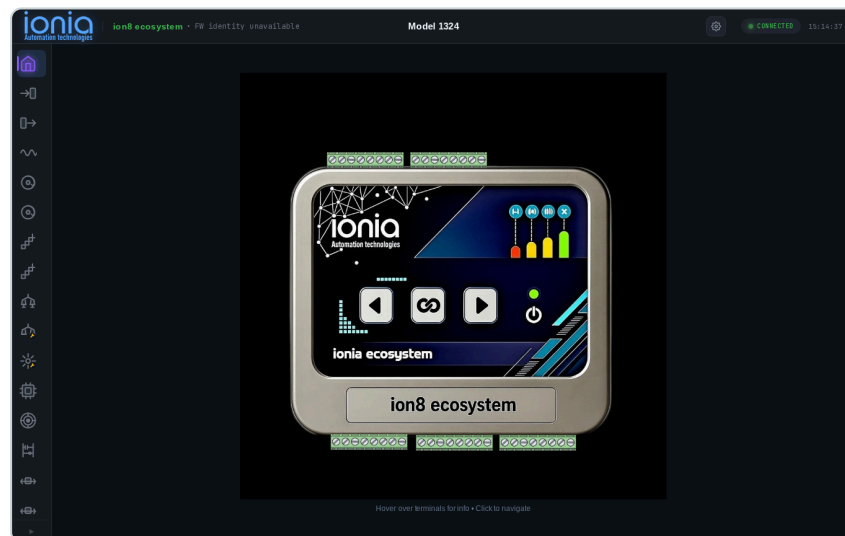


Figure 6.1 Home page: the device view; hover over a terminal group for information, click to open its page.

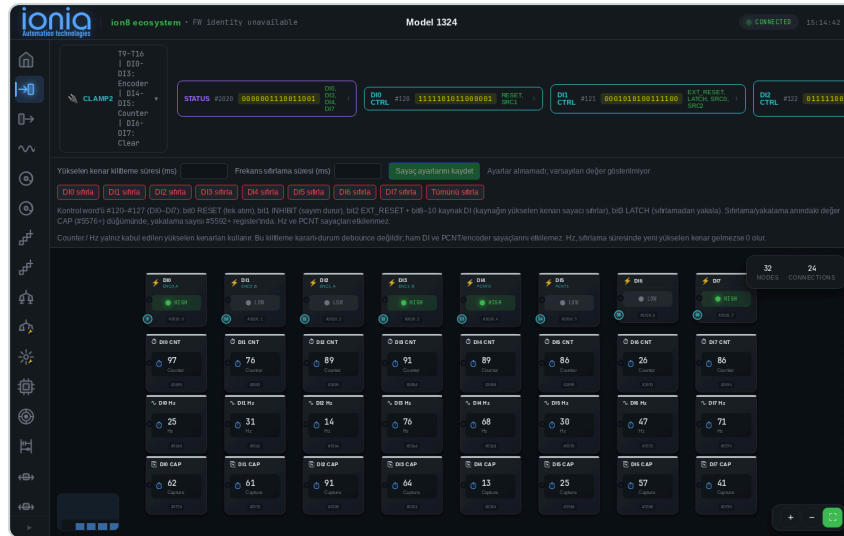


Figure 6.2 Digital inputs: live state of each input with counter and frequency values; filter and counter settings are at the top of the page.

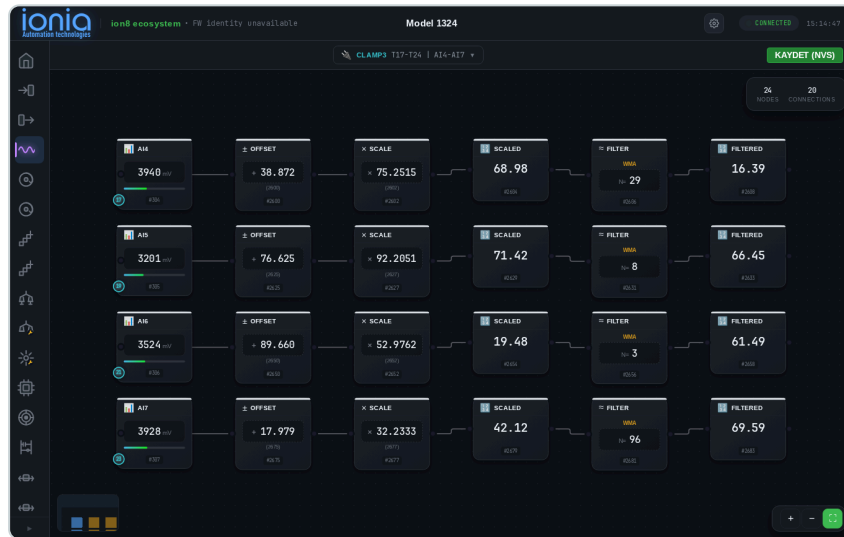


Figure 6.3 Analog inputs: each channel's processed value through raw, offset, scale and filter steps; settings are made permanent with SAVE.

[illegible]

Figure 6.4 Device identity: machine information and wireless settings (network mode, local name, access point).

ionia

Autonomous Technology

ionli ecosystem · FW Identity unavailable

Model 1324

CONNECTED 15:07:45

PLC

ION808: ION8 1324

Başı

Program kullanıcısı

Durum Çalıyor

Sistem #2

Çalışan saat: 94567699

Düşüm 6

Hata yok

Salt okunur

Ayır

Canlı

Program

Sürümler

Etkiler

Uzman

Görsel zincir

Geçmiş grafiği

Değer: D10

Azalt

son 5 dk

Çiz

Tekhis

Tekhis al

Figure 6.5 PLC page, Live tab: instantaneous state of inputs, outputs and internal values.

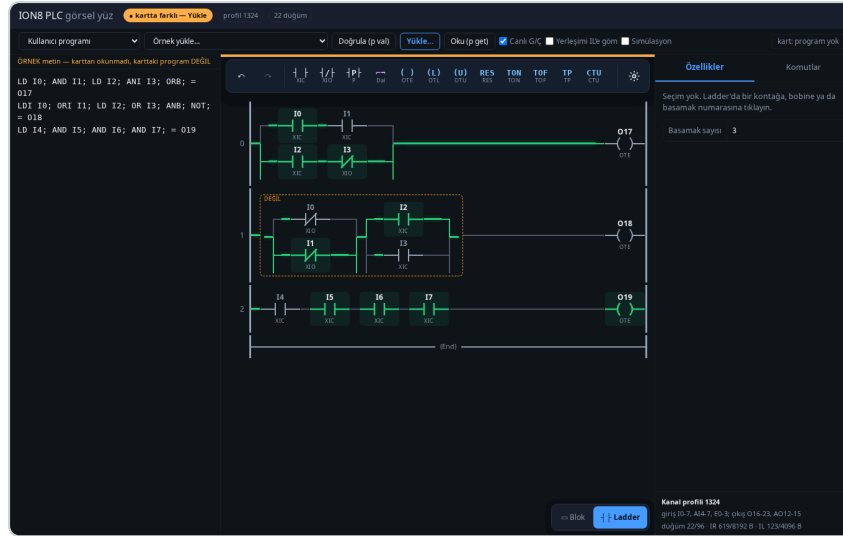


Figure 6.6 PLC page, ladder view: the same program drawn as rungs and contacts; see the Programming Guide for details.

7 Connection modes and pairing

ION8-1324 is used in two ways; the choice depends on where the signal has to go.

- The operating mode is selected in the web interface on the System / Mode card; after the selection the wireless and I/O side restarts briefly while the web interface stays open. Mode names: **P2P Master** (initiates the connection), **P2P Slave** (accepts the connection); mirroring works in both directions, **BRIDGE** (default; PLC through ION8 EB).

Wireless link mode

In mirroring (P2P) the wireless link mode is selected in the web interface and stored persistently. The default mode is Range; the advantage and disadvantage of each option are written on the mode screen.

- The wireless link mode is selected in P2P operating mode from the **Wireless Link Mode** section of the **Device Info** page.
- The Master unit determines the mode; a selection made on the Slave applies only when that unit is the Master.
- The update interval is selected from 7.5 / 10 / 15 / 20 / 30 ms; the interval recommended for the selected mode is shown on the screen. A larger interval increases latency.
- Save and apply** stores the setting persistently and applies it immediately if the Master is connected. In the short-range modes (Fast, Very fast) link quality drops with obstacles and noise.

Pairing with the middle button (family standard)

- While the device is running, press the middle button, hold it for at least **3 seconds** and release it; the pairing window opens.
- While the window is open, a running light is shown on the signal indicator. The window closes by itself after **3 minutes**.
- When pairing is established, the indicator blinks for 5 seconds and then shows the signal level.
- Pairing can also be started and removed from the pairing section of the **Device Info** page in the web interface; the same section shows the partner device, the operating mode and the signal level.
- During operation, holding the middle button never triggers a factory reset, however long it is held.

Signal indicator

Indication	Meaning
Running light	Pairing window open
Blinking for 5 seconds	Pairing established
Whole indicator blinking	“Find me”: this unit was identified from the interface
All four LEDs slowly fade in and out together (“breathing”)	No pairing, or the link is lost
1 – 4 steps lit	Link up; wireless signal level

Mirroring (two ION8 units)



1. On one of the two units, select **P2P Master** on the System / Mode card.
2. On the other unit, select **P2P Slave**.
3. Open the pairing screen on both units; on the Master, select the target Slave from the list and connect. Approve only the correct partner.
4. Once connected, mirroring works in both directions: the digital and analog inputs of each unit are reflected on the digital and analog outputs of the partner unit. The default mapping is one-to-one: DI0...DI7 → DO16...DO23 on the partner unit; AI4...AI7 → AO12...AO15 on the partner unit. Master / Slave only determines which unit initiates the connection.
5. Functional test: trigger an input on one unit and watch the related output on the partner unit; change an analog value and verify the partner's analog output with a multimeter. Repeat the test in the opposite direction.
6. Cut the link deliberately; verify that the outputs mirrored from the partner unit go to the safe state (0). Record the results in the commissioning record.

Caution: the two units must not both be Master or both be Slave; mirroring does not work in that case. In installations that use encoders and counters, verify before commissioning that the input assignments are consistent on both units.

PLC through ION8 EB



1. Run the unit in bridge (BRIDGE) mode (the default mode on the 1324); prepare ION8 EB according to its own guide.
2. Power the ION8 units. Press **Pairing Mode** in the ION8 EB web interface; the mode closes by itself after 5 minutes for safety.
3. See the ION8 units in the scanned devices list with model, software version and signal strength; select only your own unit.
4. Use **Assign to Slot** to choose a free slot from 0–7; the slot number determines the PLC addresses.
5. Press **Find** to see which physical unit is in which slot; the unit's LEDs blink. Use **Delete** to remove a pairing.
6. Follow the ION8 EB Installation Guide for tag selection, address map and PLC-side settings.

ION8 EB supply voltage **10–30 V DC**

8 Software update and maintenance

Software update

1. Use only the authorised package for this model; a package for a wrong model is not accepted.
2. Load the package from the software update card in the web interface; provide uninterrupted power during the update.
3. The update replaces the whole software of the device in a single step; no separate second step is needed. The update typically takes about 80 seconds. When the update starts, mirroring stops; digital outputs go to 0, analog outputs to 0 V, and PID/PLC outputs go to their safe values. Factory reset and program changes are rejected during the update. Wait until the device has restarted.
4. When finished, check that the build signature shows the new date.
5. On critical lines, prepare a fallback procedure and a rollback plan.

Maintenance

- Periodically check visually that terminal connections are tight and cable insulation is intact.
- Switch off the supply and verify that the circuit is de-energised before fitting or removing terminals and tightening cables.

Factory reset (family standard)

1. Switch off the supply.
2. Press the middle button, switch the supply on while holding it and keep it pressed for **10 seconds** without interruption.
3. During the first 7 seconds the indicator fills step by step; between 7 and 10 seconds it blinks fast. Releasing the button before 10 seconds cancels the operation.
4. The device settings return to factory values; set up network, pairing and operating mode again.
5. **Returns to default:** wireless settings (including the access point), pairing and operating mode, timeouts, input filter, company and note fields. **Kept:** calibration, analog input/output offset and scale values, power-up counter, installed software version. The same operation is available in the web interface under Device Info → Factory Reset; it is rejected while an update, motion or PID is running.

Timeout settings

- The access point broadcast time is set in seconds on the **Device Info** page; **0** = the access point never switches off.
- The time for the outputs to go to the safe state on loss of link is set from the web interface; the factory value is **1.5 s**. A longer time also extends how long the outputs hold their last state after the link is lost; choose the value according to the safe stopping time of the process. When the time expires, the digital and analog outputs mirrored from the partner unit go to 0; when the partner unit runs again, the link returns by itself and the mirrored values are applied again (typically 5 – 10 s).

Persistent settings

- The program keeps its last run/stop state: a running program starts again by itself when power returns, a stopped program starts stopped. Counter values inside the program are reset by a power interruption.
- PID settings (Kp, Ti, Td, setpoint, output limits, enabled state) are stored persistently; after a power cycle they return unchanged and the PID continues to run.

9 Troubleshooting

Symptom	Check
Access point not visible	Supply, wireless placement, start-up wait time; reset
Access point password forgotten	Factory reset with the middle button: password back to factory value, calibration kept; then set up again
Local name (.local) does not open	Are device and computer on the same network; name resolution and firewall; try the access point address
Web interface shows “no connection”	The indicator works correctly: the device is not responding. Check supply and network connection
Pairing cannot be established	Operating mode of both units, pairing screen open, distance, correct partner; delete the pairing and pair again
Both units Master, or both Slave	Mirroring does not work; change the mode of one unit
Input state is not reflected	Wiring, input level (value table), whether an encoder/counter function has taken the input
Output does not operate	Safe state (is the partner link up), load, polarity
Analog input value wrong	Wiring, filter/gain/scaling setting, calibration
Analog output value wrong	Terminal order confirmation, 0 V reference, calibration
Restarts frequently	Supply quality; power-up counter and reset reason record in the web interface

10 Commissioning checklist

- ☐ Panel mounting and earthing done
- ☐ Supply polarity correct
- ☐ Wiring checked against the printed label on the device
- ☐ Web interface opened via the access point or local name
- ☐ Build signature and live connection indicator checked
- ☐ Default password changed
- ☐ Operating mode selected correctly; pairing or EB connection done
- ☐ DI smoke test
- ☐ DO smoke test
- ☐ AI smoke test
- ☐ AO smoke test (with a multimeter)
- ☐ Link-cut and safe-state test done
- ☐ Software update procedure recorded (if needed)

11 Contact

Ionía is the manufacturer of the ION8 family. Contact us for model selection, the ABCD code and a configuration that fits your application.

İonia Otomasyon Teknolojileri San. Tic. Ltd. Şti.

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