

ION8 FAMILY · INDUSTRIAL WIRELESS BRIDGE

ION8 EB

From your PLC's Ethernet port to wireless field I/O — one device, two operating modes: **ETH Bridge** and **ETH2BLE**.

Cable & wire machinery automation since 2001 · electronics & automation since 1994



8 remote stations

BLE RIO per EB

S7 · Modbus · EIP ·

OPC UA

PLC-side protocols

RS485

Modbus RTU master / slave /
tunnel

Bluetooth LE 5

adaptive channel and RF
power

No cabling, no changes to your PLC program

On cable and wire processing machines, I/O points that rotate, move or sit far away make cabling, slip rings and maintenance a heavy burden. **ION8 EB** plugs into the PLC's existing Ethernet port and carries field data over a Bluetooth LE 5 link. The PLC side uses familiar tools: a DB in TIA Portal, a Modbus address in SCADA, a node in OPC UA.

MODE 1 · ETH BRIDGE

Connect field I/O to your PLC protocol

- Up to 8 ION8 remote I/O stations (RIO) connect to a single EB
- Siemens S7 PUT/GET, Modbus TCP, EtherNet/IP and OPC UA
- RS485 Modbus RTU master (8 devices) or slave
- Tag selection in the web interface, TIA Portal DB structure copy and a **Speed / Range** connection profile

MODE 2 · ETH2BLE

Extend an Ethernet and RS485 line wirelessly

- Transparent point-to-point bridge between two EBs
- TIA Portal discovery, online, upload / download all work
- RS485 serial tunnel: 300–230400 baud, each end with its own settings
- Button pairing — no IP, channel or role setup needed

8

BLE RIO stations / EB

1088

word shared data table

2 profiles

Speed or Range (ETH Bridge)

500 m

line of sight with external antenna (ETH2BLE)

Why ION8 EB?



Robust wireless

Adaptive frequency hopping skips noisy channels; adaptive RF power transmits only as much as needed.



Speaks your PLC's language

An S7 DB, a Modbus register, an EtherNet/IP tag or an OPC UA node — no extra driver in your existing PLC program.



Ready for TIA Portal

The DB size is calculated automatically from the tags you select; the DB structure is copied as SCL source or as a table.



One hardware, two jobs

Switch between ETH Bridge and ETH2BLE from the web interface; you stock a single product.



RS485 included

Modbus RTU devices such as drives, encoders and weighing indicators reach the PLC through the same box.



Field diagnostics

Signal strength, lost packets, disconnect count, boot count and last reset reason can be monitored from the PLC and from the Diagnostics / Expert section of the web interface.

1 ETH Bridge mode — field network gateway

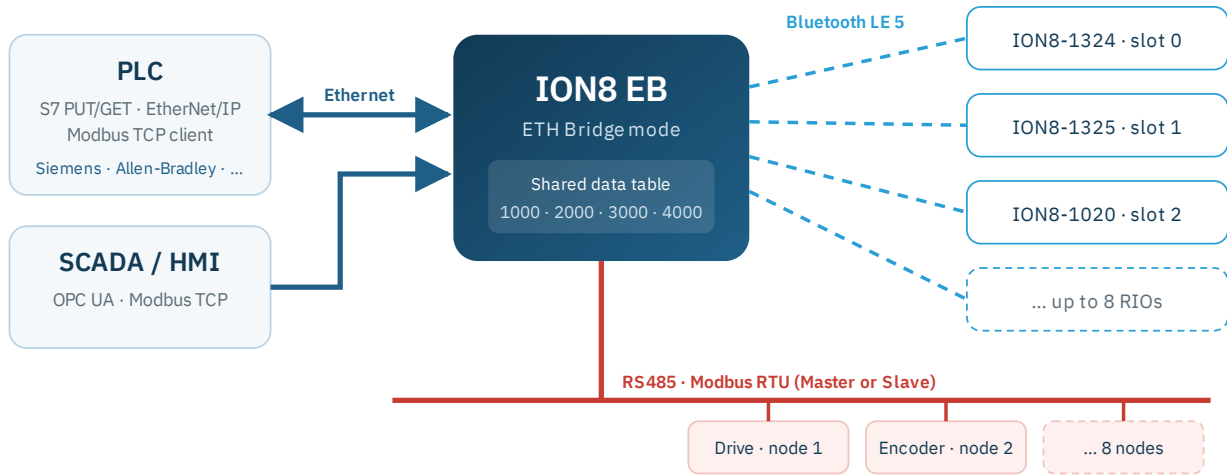
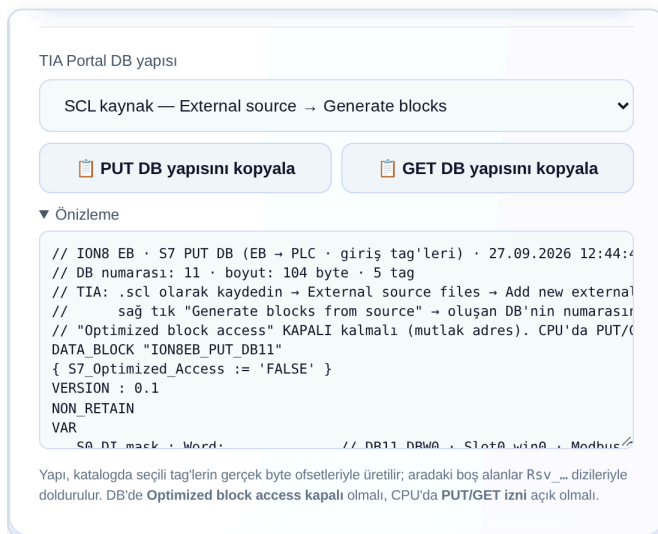


Figure 1. The PLC and SCADA connect over Ethernet, remote I/O stations over Bluetooth LE and serial devices over RS485 — all meeting in the same data table.

Protocol	EB role	What you do on the PLC side
Siemens S7 PUT/GET	Client	Create one GET DB (output commands) and one PUT DB (input data); the EB reads/writes them by itself. On S7-1200 / S7-1500, PUT/GET access is enabled and optimized access is disabled.
Modbus TCP	Server (port 502)	Read with FC03, write with FC06/FC16. Inputs start at 2000, outputs at 3000.
EtherNet/IP	Client	Define an INT array read tag and write tag in the Logix PLC (Class 3 explicit).
OPC UA	Server (port 4840)	SCADA/MES connects directly; read and write nodes are ready.
Modbus RTU	Master or slave	Periodic read/write of up to 8 serial devices, or exposing EB data to a serial master.

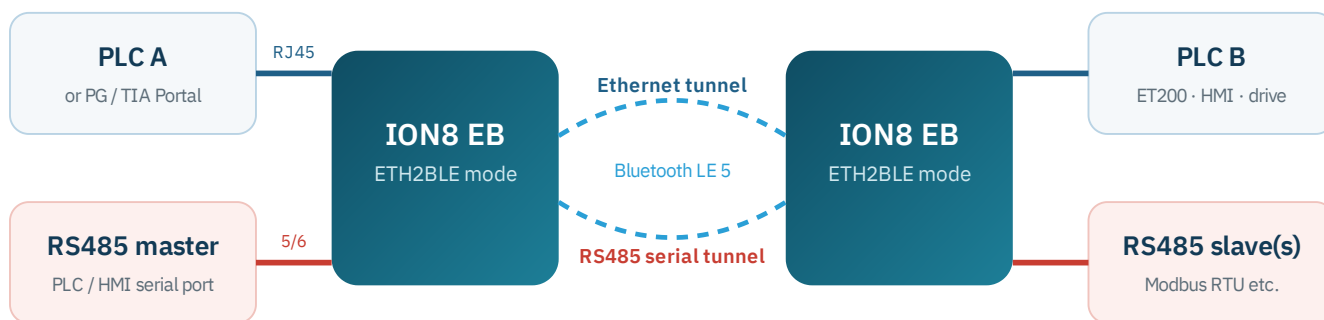


TIA Portal DB structure — copy with one click, paste into TIA

In this release

- **Speed / Range profile:** choose *Speed* when devices are close, *Range* when they are far away or in a harsh environment; the choice is persistent.
- **Changes sent instantly:** input and output changes are sent without waiting for the next cycle; when nothing changes there is only a sparse heartbeat.
- **Safe outputs on PLC loss:** when the S7 connection drops or no data arrives from the PLC, RIO outputs are set to a safe (zero) state.
- **Permanent BLE, timed Wi-Fi:** field data always travels over BLE; the Wi-Fi management access point opens only during an adjustable service window.
- **Diagnostics / Expert section** and pairing of up to 16 RIO models; automatic DB size for S7 and one-click DB structure for TIA.

2 ETH2BLE mode — transparent wireless line



IP, subnet and VLAN are unchanged — both ends communicate as if joined by one cable

Figure 2. Two EBs extend an Ethernet and an RS485 line wirelessly at the same time. The network configuration does not change.

What is carried?

- TIA Portal accessible-device scan (PROFINET DCP), online connection, upload and download
- S7 communication, Modbus TCP, ARP, IPv4 and VLAN-tagged frames
- RS485 byte stream — protocol independent, CRC untouched

Easy in the field

- **Button pairing:** press and release for 3 seconds on both devices.
- **Multiple lines side by side:** give each pair its own pairing group number so neighbouring lines do not mix.
- **Device lock:** after the first pairing, no foreign device can interfere.
- **Optional MAC filter:** only the required PLC traffic is passed to the wireless link.

Wireless line features

- Range of **up to 500 m** in line of sight with an external antenna (depending on environment)
- Adaptive channel selection in noisy environments
- Transparent pass-through for S7, Modbus TCP and TIA Portal traffic
- The Wi-Fi management access point is open only during setup; the bridge keeps working after it closes

Range and latency depend on the environment, antenna placement, distance and traffic load.



Unsuitable use

Lines requiring a deterministic 1–4 ms cycle such as PROFINET RT/IRT, video, and continuous high-bandwidth transfer.



At a glance

10–30 VDC · 1 × RJ45 10/100 · 1 × RS485 · Bluetooth LE 5 · internal or external antenna · 120 × 75 × 40 mm (incl. antenna outlet) · 105 g · up to 70 °C. Details: **ION8 EB Datasheet**.

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Automation technologies

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www.ionia-automation.com · For details see the ION8 EB Installation Guide and Datasheet

Images are for illustration. Technical values may change without notice.