



EUL32 — EnOcean interface for USB and Wi-Fi

These instructions describe connection, commissioning and safe operation of the EUL32. Read them before commissioning, keep them, and pass them on together with the device.

1 Safety information

CAUTION

- bare circuit board, no enclosure: the components are sensitive to electrostatic discharge. Hold the device by its edges only, do not place it on conductive surfaces, and protect it from moisture, dust and mechanical stress.
- Operate only in: dry indoor locations, 0 ... +40 °C, 5 ... 85 % RH, non-condensing.
- Do not put a damaged device into operation.
- Connect only to USB ports of equipment, or to USB power supplies, that comply with the applicable safety standards themselves.
- As delivered, the EUL32 does not transmit: it is supplied without firmware, and without firmware the TCM515 stays in reset. Only firmware installed by the customer can transmit; with “USB-serial emulation” the TCM515 transmits only on command of the software on the computer, and Wi-Fi stays off. With radio firmware the device transmits in the 868 MHz band and in the 2.4 GHz band; then do not operate it where radio transmission is prohibited. During radio operation keep a distance of at least 20 cm between the device and persons.
- For EnOcean radio connect only an antenna with these properties: passive, approx. 50 Ω, for 868 MHz, gain at most 0 dBd; recommended: VSWR ≤ 3:1.
- With network firmware the device is reachable on the local network. Operate it only in trusted networks and do not expose it directly to the internet.
- Install firmware only from a trusted source, e.g. the installer named in section 5.

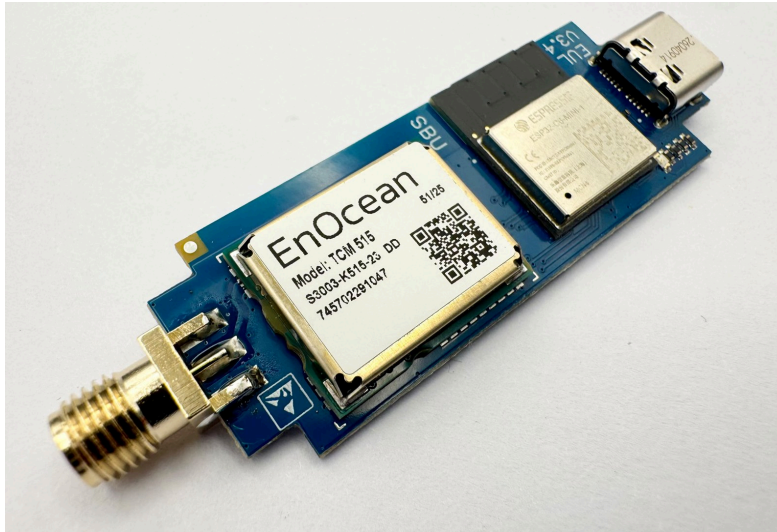
2 Intended use

The EUL32 is a hardware component for DIY use: an interface between EnOcean radio in the 868 MHz band and a computer (USB) or an IP network (Wi-Fi; Ethernet with an expansion board). It is powered via USB or the expansion connector J2 and is intended for use in dry indoor locations. It is not intended to perform safety functions as the sole means (e.g. personal protection, fire or intrusion alarm). Any other use is considered improper.

3 Scope of delivery

EUL32 (circuit board EUL V3.4), without antenna. The device is shipped without firmware; the customer installs it. Optional: enclosure for self-assembly, available as an option.

4 Device overview



EUL32 (top side): RP-SMA socket in front, USB-C receptacle at the back

Element	Location	Function
USB-C receptacle	front end	power, data connection, firmware installation
ESP radio module with antenna	top side	Wi-Fi, Bluetooth LE, IEEE 802.15.4
EnOcean radio module TCM515	top side	EnOcean radio 868 MHz
RP-SMA socket	end opposite USB	connection of the 868 MHz antenna
Blue LED	top side, next to the USB receptacle	depends on firmware
Push button "BOOTLOAD"	bottom side	download mode, further function depends on firmware
Expansion connector J2	bottom side	expansion boards, e.g. Ethernet

5 Commissioning

5.1 Installing the firmware

The device is shipped without firmware; the customer installs it. Installation runs in the web browser (Chrome, Edge or Opera (Web Serial)).

1. Connect the EUL32 to the computer with a USB-C cable. The cable must carry data lines (charge-only cables do not work).
2. Open <https://install.busware.de/EUL/>, select product and firmware variant, click **INSTALL** and select the serial port of the EUL32.
3. If no port appears: unplug the EUL32, hold down the push button "BOOTLOAD" on the bottom side, plug the EUL32 back in, release the button, then repeat step 2.

Firmware available for the EUL32:

Firmware	Function
USB-serial emulation	Transparent bridge USB ↔ TCM515 (ESP3), e.g. for FHEM

Firmware	Function
EnOcean ↔ TCP Bridge (cdc2net)	TCM515 reachable over TCP on the network (Wi-Fi or Ethernet)

Set-up and operation of the firmware (e.g. Wi-Fi credentials) are described in the documentation of each firmware.

5.2 Connecting the antenna

1. Obtain a suitable 868 MHz antenna: passive, approx. 50 Ω, for 868 MHz, gain at most 0 dBd; recommended: VSWR ≤ 3:1.
2. Screw the antenna onto the RP-SMA socket hand-tight, without tools.
3. Place the EUL32 so that the antenna stands free and is not covered by metal.

Without an antenna no EnOcean reception is possible.

6 Indicators and controls

Element	State	Meaning
Blue LED	—	depends on firmware
Push button	held while plugging in	download mode for firmware installation
Push button	during operation	depends on firmware

7 Troubleshooting

Problem	Possible cause	Remedy
Computer shows no serial port	no firmware; USB cable without data lines	use download mode (section 5.1, step 3); use a different cable
No EnOcean telegrams	no antenna; unsuitable antenna; no firmware	connect an antenna per section 5.2; install firmware
Installation in the browser not possible	browser without Web Serial	use Chrome, Edge or Opera (Web Serial)

8 Maintenance and cleaning

The device is maintenance-free. Do not clean it with liquids or solvents. It contains no user-serviceable parts.

9 Technical data

The complete technical data are given in datasheet BW-EUL32-DB-EN.

Item	Value
Supply	5 V DC via USB-C (sink, 5.1 kΩ on CC1/CC2)
Current consumption USB	approx. 67 mA without Wi-Fi (TCM515 receiving), approx. 110 mA receiving Wi-Fi, up to approx. 410 mA peak when transmitting Wi-Fi (calculated)

Item	Value
Operating temperature	0 ... +40 °C

Radio information (Directive 2014/53/EU, Article 10(8)):

Radio technology	Frequency band	Maximum transmit power
EnOcean (868.300 MHz, ASK, 125 kbit/s)	868.000 – 868.600 MHz	+10.8 dBm
Wi-Fi (IEEE 802.11b/g/n/ax (Wi-Fi 6), 2.4 GHz)	2400 – 2483.5 MHz	19.81 dBm EIRP
Bluetooth (Bluetooth LE 5.3)	2400 – 2483.5 MHz	18.46 dBm EIRP
IEEE 802.15.4 (Thread, Zigbee)	2405 – 2480 MHz	10.40 dBm EIRP

10 Disposal

Disposal. The crossed-out wheeled bin symbol means that electrical and electronic equipment must not be disposed of with household waste. Take the device to a collection point for waste electrical equipment. Delete stored data before disposal (e.g. Wi-Fi credentials): reinstall the firmware or erase the flash memory. The device contains no batteries.



WEEE reg. no. (Germany): DE 54401172

11 Manufacturer and product identification

Type: EUL32 · Hardware revision: V3.4 (printed on the circuit board) · serial number = busware MAC address (A4:50:55:02:xx:xx)

Manufacturer

Ingenieurbüro Tostmann (busware)

Lindenstrasse 18, 23684 Scharbeutz, Germany

Email: info@busware.de · Phone: +49 4524 7439 779 · <https://busware.de>

Revision history

Rev.	Date	Change
1.0	2026-09-25	First edition
1.1	2026-09-25	Antenna socket corrected: RP-SMA instead of SMA
1.2	2026-09-26	Product photos instead of a rendering from the fabrication data