EMBER

Outdoor LoRaWAN gateway with LTE and Gigabit Ethernet backhaul

DOCUMENTATION

docs.hardwario.com/ember/first-steps

Configuration, firmware updates and integration, step by step.

Intended use

EMBER is a LoRaWAN gateway for building and operating private LoRaWAN networks. It receives data from LoRaWAN sensors through an 8-channel concentrator and forwards them to a network server over LTE (with 3G/2G fallback) or Gigabit Ethernet. Its IP67 enclosure suits indoor and outdoor installation.

ACCESSORIES AND SOFTWARE

The gateway comes with a 24 V DC power adapter and its LoRaWAN and LTE antennas fitted inside; an external LoRa antenna is optional. It is configured with MikroTik WinBox 4 and forwards data to a LoRaWAN network server: the HARDWARIO managed service, ChirpStack, The Things Stack or another.

Safety

- Read this manual before installing the device and keep it for later reference.
- Use the device only for its intended use and within the operating conditions given in this manual.
- Do not modify the device beyond what the documentation describes. Do not use a visibly damaged device.
- The device is not designed for potentially explosive atmospheres.
- Outdoors, mount the gateway with its connectors facing down, and close the cable glands and the enclosure carefully: the IP67 rating depends on it.
- Never power the gateway with the antenna connector of its LoRa card left open: transmitting into an open connector can damage the card.

- ⚠ When you fit an external antenna, set its gain in the gateway configuration. Otherwise the gateway can radiate above the legal limit.
- ⚠ Set a new password at the first login. Do not disconnect power during a firmware update.
- ⚠ Keep a distance of at least 20 cm between the device and people while it operates.

First start

1. The LoRaWAN and LTE antennas are fitted inside and connected at the factory: there is nothing to attach.
2. Mount the gateway; outdoors with the connectors facing down.
3. Connect the supplied 24 V DC adapter to the DC IN connector, or feed 24 V passive PoE into the WAN port.
4. Connect a computer to the Ethernet port and log in with WinBox 4 as the documentation describes. Set a new password straight away.
5. Select the LoRaWAN network server and set the antenna gain.

Technical data

Power supply	11–28 V DC (24 V DC adapter supplied) or 24 V passive PoE on the WAN port
Operating temperature	−20 to +60 °C
Storage temperature	−30 to +70 °C
Ingress protection	IP67
Ethernet	2 × RJ45, 10/100/1000 Mbit/s
Antennas	LoRaWAN and LTE inside; external LoRa antenna via the N connector

Radio equipment

The device operates in the following frequency bands:

INTERFACE	FREQUENCY BAND	MAXIMUM POWER
LoRaWAN	863–870 MHz	14 dBm
LTE	bands 1, 3, 7, 8, 20, 28, 38, 40	23 dBm
UMTS (3G)	bands 1, 8	24 dBm
GSM (2G)	900 MHz	33 dBm
DCS (2G)	1800 MHz	30 dBm

The cellular radio is fitted on the variants EMBER-H1-C8 and C9.

Batteries

The device contains no battery.

Disposal and take-back

The crossed-out wheeled bin on the product or on its packaging means that at the end of its life it must not be disposed of with unsorted municipal waste: it must be collected separately.

THE DEVICE

Hand the device in free of charge at a take-back point for electrical equipment, or return it to HARDWARIO.

WHY IT MATTERS

By handing it in you enable re-use, recycling and other recovery of its materials. Electrical equipment contains substances (metals, flame retardants) that harm the environment and human health when littered or put into unsorted waste.

LESS WASTE

You help prevent waste by using the device for its full service life and keeping its firmware up to date.

TAKE-BACK POINTS

Take-back of electrical equipment and batteries
hardwario.com/legal/take-back

Declaration of conformity

EUROPEAN UNION

CE

Hereby, HARDWARIO a.s. declares that the radio equipment type **EMBER** is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:

Declarations of conformity
hardwario.com/resources/declarations/#ember

The device also complies with Directive 2011/65/EU on the restriction of hazardous substances (RoHS).

GREAT BRITAIN

UK CA

Hereby, HARDWARIO a.s. declares that the radio equipment type **EMBER** is in compliance with the relevant statutory requirements. The full text of the declaration of conformity is available at the following internet address:

hardwario.com/resources/declarations/#ember

UK IMPORTER

HARDWARIO LTD
10 John Street, London WC1N 2EB, United Kingdom

Installation record

SERIAL NUMBER

VARIANT / ORDERING CODE

INSTALLED ON

LOCATION

INSTALLED BY

NETWORK / SERVER

NOTES

MANUFACTURER

HARDWARIO a.s.

U Jezu 525/4
460 01 Liberec
Czech Republic

www.hardwario.com
ask@hardwario.com

The type designation and the serial number are given on the product label.

For products placed on the market from December 11, 2027, HARDWARIO provides free security updates for at least five years from placing on the market (Regulation (EU) 2024/2847).