

Jooby Outdoor Gateway LoRaWAN

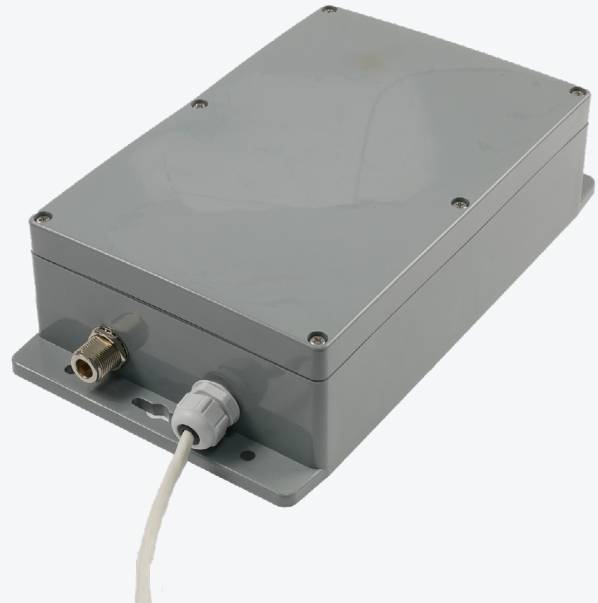


jooby

Technical Specifications

Gateway for Data Collection in LoRaWAN networks

Part number: Jooby Outdoor Gateway LoRaWAN 300 EU



Jooby Outdoor Gateway LoRaWAN are the devices designed to receive data from radio modules and transmit it to a server. The data is transmitted over the wireless LoRaWAN and, after being transcoded, is stored in the server's software as convenient reports.

Industrial level gateway components ensure the highest data protection level. Devices are easy to use thanks to a set of accessories and mounting. Gateway capacity can be increased with the help of dedicated technical solutions – these can be included in the basic configuration at the customer's request.

Characteristics

Equipment

Plastic enclosure **IP67** with all required cable entry ports

LoRaWAN Concentrator: One module as default for up to 8 channels

Data transmission: LTE and Ethernet

Power supply: Power over Ethernet (802.3af) with surge and lightning protection

GNSS

Software

Web UI
LoRaWAN

Technical Characteristics

Overview

This overview outlines is about a dual Jooby Outdoor Gateway LoRaWAN circuit board, which consists of the main board (JOGL_CPU) and indication board (JOGL_LED). This overview also contains a list of components and accessories for the Jooby Outdoor Gateway LoRaWAN.

Components and Accessories

The Jooby Outdoor Gateway LoRaWAN consists of included components and optional accessories:

- Doubled circuit board: Main board and indication board
- Plastic enclosure
- Accessories

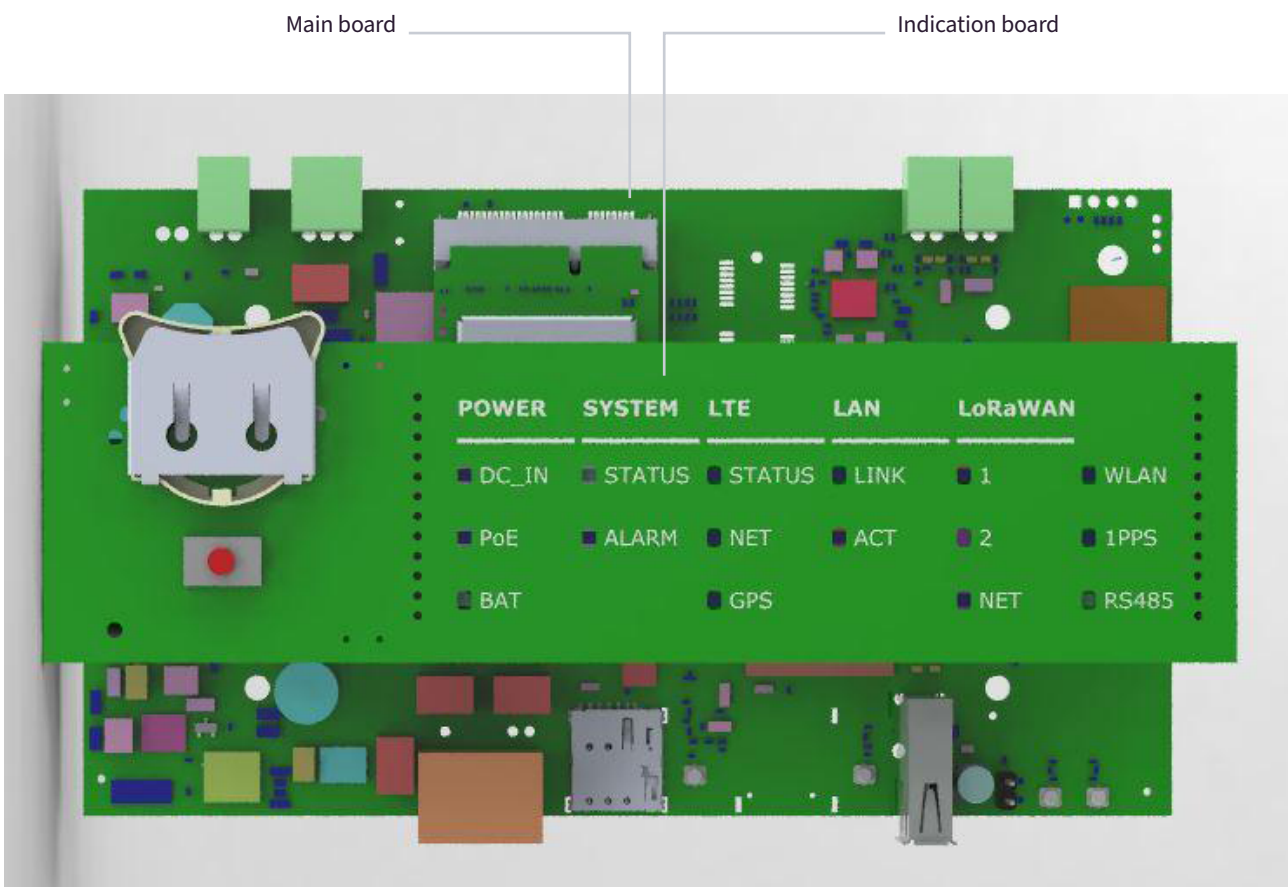


Figure 1: Doubled circuit board

Main board (JOGL_CPU)

CPU:	Main board JOGL with Arm Cortex-A7 STM32MP131FAF7 (up to 1 GHz)
RAM:	DDR3-1066 512MB
Flash storage:	8MB eMMc (16GB eMMc – optional)
Power Tx:	Up to 22 dBm
Rx Sensitivity:	Up to -111 dBm
LoRa Hub:	One default module for up to 8 channels
LTE:	LTE (1 SIM, Quectel EG915N - LTE-FDD (B1/B3/B7/B8/B20), GSM (EGSM900/DCS1800)
GNSS:	Integrated module in LTE EG915N (if any) or a stand-alone module GNSS (GPS/GLONASS/Galileo/BDS/QZSS/SBAS) – optional
Tampers:	Up to 2 pcs. – optional
RS-485:	Optional
Real-Time Clock:	Powered by the main power source and a CR2032 lithium-ion battery
Power over Ethernet (PoE):	Basic Ethernet network IEEE 802.3u 100Base-TX (fast Ethernet network)

Indication Board (JOGL_LED)

Indication:	16 LED indicators reflecting the operation of various nodes of the double-sided circuit board
Functional button	
Back-up real-time clock battery:	CR2032 – backup power supply in case of main power failure

Enclosure

Frame:	plastic HB UL-94 IP67, waterproof, gray
Interface:	1 x N-type connector for antenna, 1 PoE port, built-in GNSS and LTE antennas
Weight (with cable):	Approx. 0.75kg
Dimensions:	262mm x 146mm x 66mm
Wall thickness:	3.5mm
Support:	Flanges facilitate default mounting on flat surfaces, pole mounting kit (optional)

Accessories (by request)

LoRa Antenna
Pole mounting kit

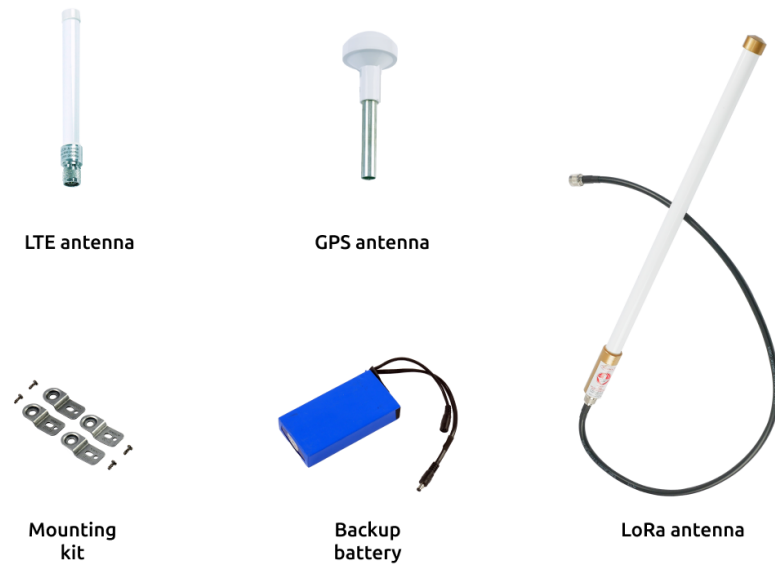


Figure 2: Accessories (by request)

Hardware

Hardware specifications detail the Jooby Outdoor Gateway LoRaWAN interface (both the hardware outer interface and the doubled circuit board interface).

Hardware outer interfaces

The image below features the hardware interfaces of the Jooby Outdoor Gateway LoRaWAN enclosure.

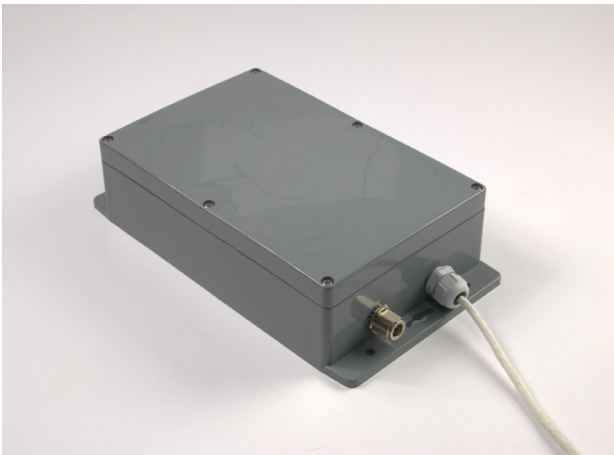


Figure 3: Hardware interface – bottom side

Interfaces of the double circuit board

Main board interfaces

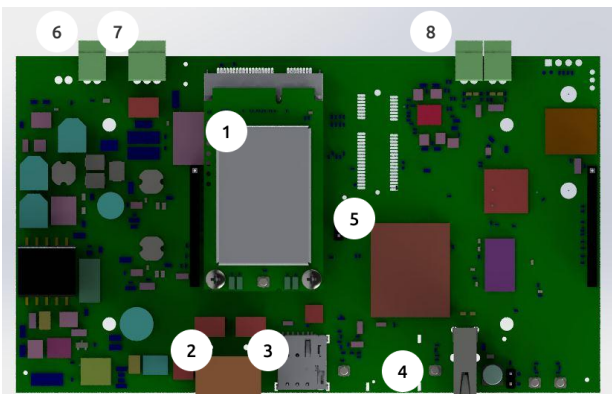


Figure 4: Main board interfaces

Description of Figure 4:

1. PCIe LoRa mini card hub
2. PoE
3. Nano SIM slot
4. USB 2.0
5. CPU
6. Connecting an external battery (accumulator) 12V
7. RS485 (optional)
8. Tamperers (optional)

Indication board interfaces

The indication board has a Fn key and 16 x LEDs for status indication.

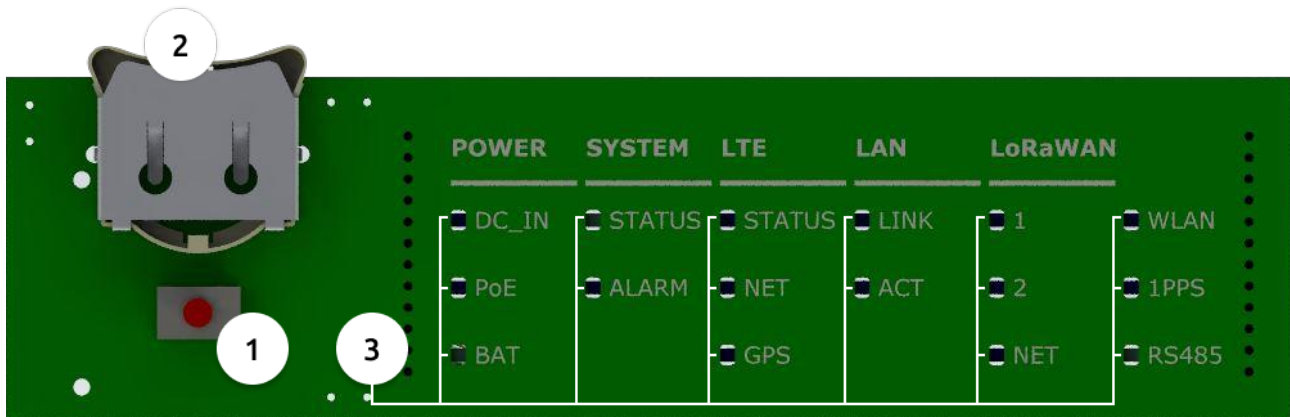


Figure 5: Indication board interfaces

Description of Figure 5:

1. Functional button (Fn)

To reset:

- **Press and hold (30 s)** – System|Status indicator will blink red;
- When the System|Status indicator lights up red, release Fn button – **wait for 30 s**;
- System|Status indicator will start blinking yellow – **long-press (30 s)**;
- System|Status and System|Alarm indicators will light up red – **release Fn button**;
- The gateway has been successfully reset.

Loading from the flash storage:

- **Press and hold (30 s)** – System|Status indicator will blink red;
- When the System|Status indicator lights up red, release the Fn button – **wait for 30 s**;
- System|Status indicator will start blinking yellow – **hold (15 s)**;
- System|Status indicator will light up red – **release Fn button**;
- The gateway is loaded from the flash storage.

2. Slot for CR/BR 2032 lithium-ion battery

3. LED indicators

The status of the LED indicators is described as shown below. See the text printed next to each LED on the display board.

POWER

LED name	Function	Color
DC_IN	Accessibility of the constant power source 15 V	green
PoE	Accessibility of the PoE power source	green
BAT	Backup battery charging	Charging in progress – red Fully charged – green

SYSTEM

LED name	Function	Color
STATUS	Gateway status indication	Normal operating mode / Successful loading – green Error / Standby mode – red
ALARM	Tamper is disconnected – the gateway enclosure has been opened	red

LTE

LED name	Function	Color
STATUS	LTE enabled	green
NET	LTE connected	Yellow LED blinks slowly while searching for a network Yellow LED flashes during active data transfer Yellow LED lights up during a voice call
GNSS	GNSS active	green

LAN

LED name	Function	Color
Link	Connection	green
ACT	ACTIVITY	yellow

LoRaWAN

LED name	Function	Color
1	The first LoRaWAN module is on the board	blue
2	The second LoRaWAN module on the board	blue
NET	Server connection available	green
WLAN	Wi-Fi network available	green
1PPS	1PPS signal available	Green LED blinks once per second (if available)
RS485	RS485 receipt/transmission	Green – receipt in progress Red – transfer in progress 0 – not activated

Modules / Nodes

The table below shows the main configurations of the Jooby Outdoor Gateway LoRaWAN.

Jooby Outdoor Gateway LoRaWAN (followed by a model name)

Model name	Modification of the control module	8 LoRaWAN channels	Surge protection	Lightning protection	LTE	GNSS	EU868, US915
300 EU	C002E4W0L1G12A00110	✓	✓	✓	✓	✓	✓

Certification



Main Specifications (standard models)

Function	Specifications
Computing	Arm Cortex-A7, DDR3 RAM 512MB, 8GB eMMC (optionally 16GB eMMC)
LoRaWAN	<ul style="list-style-type: none"> • Card: SX1302 / SX1303 Mini PCIe (up to 2) • Channels: 8 channels (optionally: 16 channels) • RX Sensitivity: Usual sensitivity level (EU868/US915): - 141 dBm at SF12 125 kHz bandwidth - 127 dBm at SF7 125 kHz BW - 111 dBm at FSK 50 kbps • TX Power: 22 dBm (max.) • Frequency: EU868, US915, upon request – AS923, AU915, KR920, IN865
LTE	Supports Quectel EG915N - LTE-FDD(B1/B3/B7/B8/B20), GSM (EGSM900/DCS1800)
Power Supply	PoE (compatible with IEEE 802.3af/at) - 42~57V DC
Power Consumption	10 W (max.)
Ethernet	RJ45 (10/100 Mbps) with surge and lightning protection
Antenna	1 x N-type connector Built-in antennas GNSS and LTE
Tampering protection	IP67
Enclosure material	ABS, HB UL-94
Weight	Approx. 0.75kg
Dimensions	262mm x 146mm x 66mm
Operating Temperature	-40 °C to +60 °C
Storage Temperature	-40 °C to +85 °C
Operating Humidity	0% to 95% (no condensation)
Permissible humidity during storage	0% to 95% (no condensation)
Mounting method	Mounting on a support or wall

Radio Frequency Specifications LoRaWAN

Function	Specifications
Operating Frequency	<ul style="list-style-type: none">• EU868, US915• by request – AS923, AU915, KR920, IN865
Transmit Power	22 dBm (max.)
Receiver Sensitivity	Usual sensitivity level (EU868/US915): <ul style="list-style-type: none">• 141 dBm at SF12 125 kHz BW• 127 dBm at SF7 125 kHz BW• 111 dBm at FSK 50 kHz BW

Supported software

LoRaWAN

- You can choose to use Packet_Forwarder or Basic_Station
- Select regional parameters
- Customize channel plan
- Enable and configure LBT
- Supports up to 2 LoRa hubs
- Receive statistics

Network

- Configure LTE connection
- Configure LAN using both DHCP and STATIC
- Set interface priority
- Enable and configure the firewall

System

- Manage via Web UI and connect via SSH
- Select time zone and NTP source – GNSS, DHCP, list
- Support door sensor use
- Monitor power consumption and manage battery discharge
- Update firmware