

Jooby Outdoor Gateway LoRaWAN



jooby

Specifications

Gateway for data acquisition in LoRaWAN networks

Part number: Jooby Outdoor Gateway LoRaWAN 400 EU

Jooby Outdoor Gateway LoRaWAN 401 EU

Jooby Outdoor Gateway LoRaWAN 402 EU

Jooby Outdoor Gateway LoRaWAN 403 EU



The Jooby Outdoor Gateway LoRaWAN series gateways are designed to receive data from radio modules and transmit it to a server. The data is sent to the device via LoRaWAN wireless network and the gateway then transmits it to the server. The data is re-coded and stored as part of the software in the form of user-friendly reports.

Industrial-grade gateway components provide robust data protection, while a set of accessories and mounts guarantees its convenient operation. Special technical solutions regarding configuration can be included in the bundle at the customer's request.

Features

Hardware

IP67 industrial Die-Cast Aluminium enclosure with all necessary cable glands

LoRaWAN Concentrator: one module as default for up to 8 channels or dual modules for up to 16 channels — depends on device modification

Power: PoE (802.3af), with Surge Protection, with Lightning Protection

Backup Power: 12V 10.8 Ah Polymer Lithium Backup Battery (depends on device modification). Provides 20 hours of battery life on a full charge under normal conditions.

Backhaul: LTE and Ethernet

GNSS

Software

Web UI

Specifications

Overview

The overview presents dual circuit board of Jooby Outdoor Gateway LoRaWAN which consists from Mainboard (JOGL_CPU) and Indication board (JOGL_LED). It also refers to the list of components and accessories of the Jooby Outdoor Gateway LoRaWAN.

- Dual circuit board: Mainboard and Indication board
- Enclosure
- Backup Battery (depends on device modification)
- Accessories

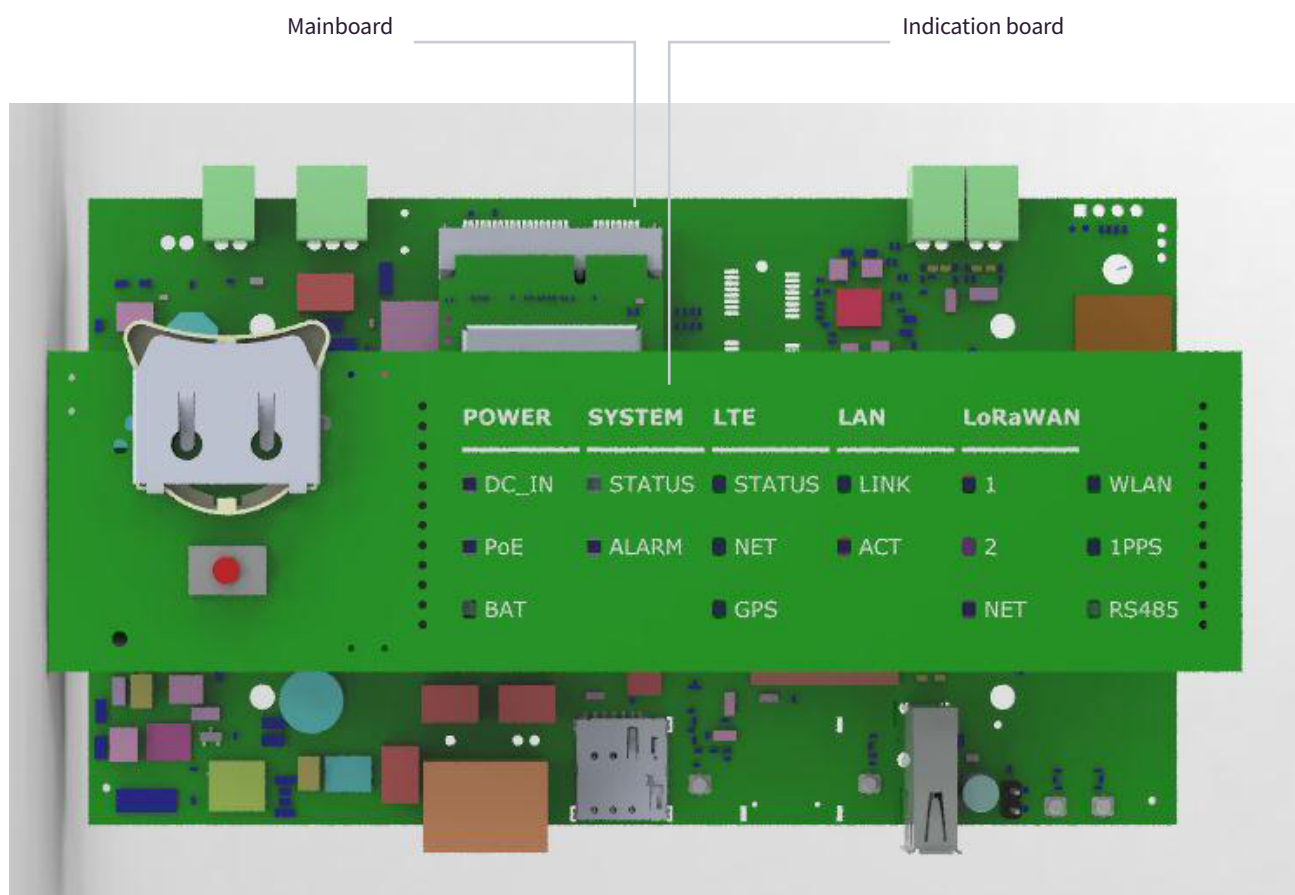


Figure 1: Dual circuit board

Mainboard (JOGL_CPU)

CPU:	JOGL Mainboard with Arm Cortex-A7 STM32MP131FAF7 inside (up to 1GHz)
RAM:	DDR3-1066 512MB
Flash:	8GB eMMc (16GB eMMc – optional)
Tx Power:	up to 22dBm
Rx sensitivity:	down to -111dBm
LoRa Concentrator:	one module as default for up to 8 channels or dual modules for up to 16 channels – optional
LTE:	LTE (1 sim-card, Quectel EG915N - LTE-FDD (B1/B3/B7/B8/B20), GSM (EGSM900/DCS1800)
GNSS:	Module integrated into the LTE-module EG915N (if present) or separate module GNSS (GPS/GLONASS/Galileo/BDS/QZSS/SBAS) – optional
Tampers:	up to 2 pcs – optional
RS-485:	optional
Charge pump:	depends on device modification (12V polymer lithium battery 10.8 Ah)
Real-time clock (RTC):	powered by main power supply of device and by Li-ion battery CR2032
Power-over-Ethernet (PoE):	basic Ethernet at standard IEEE 802.3u 100Base-TX (Fast Ethernet)

Indication board (JOGL_LED)

Indication:	16 LEDs that indicate the work of different nodes of the dual circuit board
Functional button	
Backup battery RTC:	Li-ion battery CR 2032 — backup power in the absence of main power for RTC

Enclosure

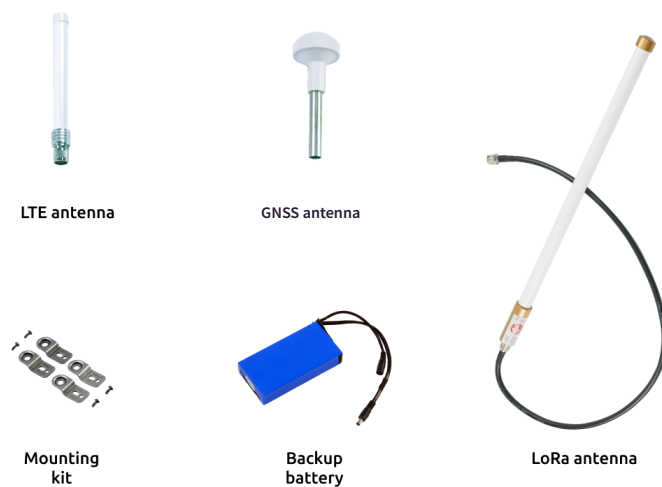
Case:	IP67 aluminium ribbed case in white colour
Interface:	400 EU / 401 EU — 3 x N-Type connectors for external antennas, 1 PoE port and 2 reserve ports; 402 EU / 403 EU — 4 x N-Type connectors for external antennas, 1 PoE port and 1 reserve port
Weight (including cable):	400 EU / 402 EU — 2,30 kg 401 EU / 403 EU — 2,74 kg
Dimensions:	295mm x 220mm x 105mm
Wall thickness:	2mm
Support:	up to 70~100 mm diameter pole mount

Backup Battery*

Backup battery Polymer Lithium 12V / 10.8 Ah
140 mm x 70 mm x 30 mm
DC 5.5 x 2.1 circular joint with two interfaces (male and female)

Accessories

GNSS Antenna (mounting kit is included)
LoRaWAN Antenna (mounting kit is included)
LTE Antenna
Backup Battery*
Mounting Kit for enclosure mounting



*available for 401 EU, 403 EU models only

Figure 2: Accessories (on request)

Hardware

The hardware specification presents the interfacing of Jooby Outdoor Gateway LoRaWAN both in hardware and dual circuit board interfaces.

Hardware Interfaces

The images below show the hardware interfaces at the top and bottom of the case.



Figure 3: Hardware Interfaces – Top side



Figure 4: Hardware Interfaces – Bottom side

Dual circuit board Interfaces

MainBoard

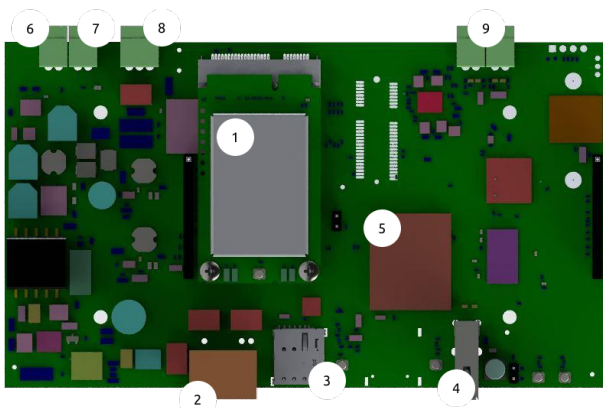


Figure 5: MainBoard

Figure 5: MainBoard

1. Mini PCIe Module LoRaWAN Concentrator
2. PoE
3. Nano SIM-card slot
4. USB 2.0
5. CPU
6. Backup Battery connector (optional)
7. Power supply connector (DC 12-16.5V) (optional) (15V+/-10% is needed for charge pump system if available)
8. RS485 (optional)
9. Tamperers (optional)

Indication board

The Indication board provides a Functional button (Fn) and 16 x LEDs for status indication

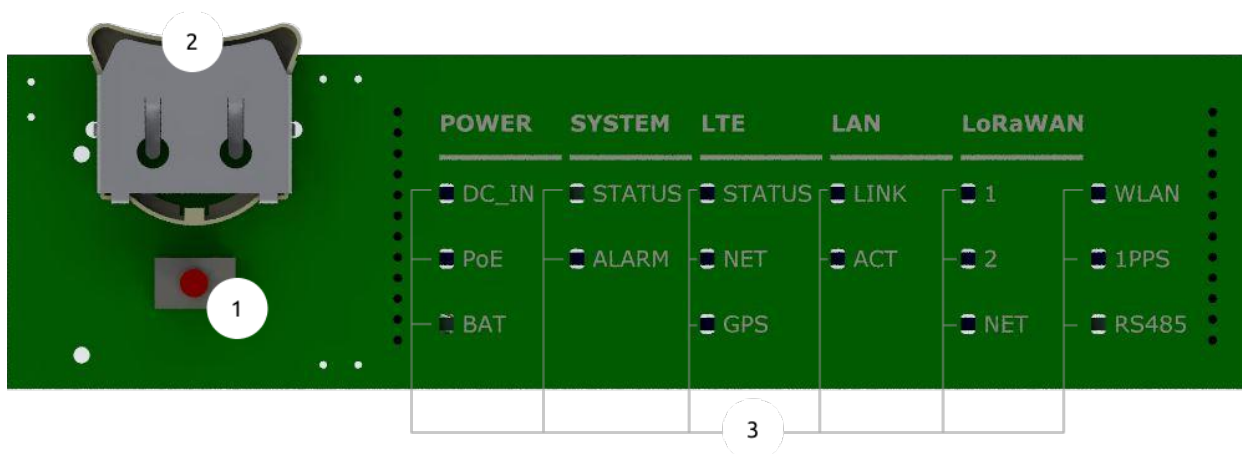


Figure 6: Indication Board

Description to the Figure 6:

1. Functional button (Fn)

Factory Reset:

- **Long press (30 sec)** - System|Status led blinks red;
- When System|Status led lights red, then release Fn - **wait for 30 sec**;
- System|Status starts to blink yellow – **long press (30 sec)**;
- System|Status led and System|Alarm led light red – **release Fn**;
- Gateway was reseted successfully.

Switching memory bank

- **Long press (30 sec)** - System|Status led blinks red;
- When System|Status led lights red, then release Fn - **wait for 30 sec**;
- System|Status starts to blink yellow – **long press (15 sec)**;
- System|Status led lights red – **release Fn**;
- Gateway loads from an alternate memory bank

2. Slot for Li-ion battery CR 2032

3. LED Indicators

The status of the LEDs is described as shown below. Please refer to the print near each LED on the Indication board.

POWER

LEDs name	Function	Colour
DC_IN	Availability of DC power supply	Green
PoE	Availability of PoE power supply	Green
BAT	Charging status of Backup Battery	Charging in progress – red, Fully charged – green

SYSTEM

LEDs name	Function	Colour
STATUS	Status Indication of Gateway	Normal work mode / Successful loading – green Error - red
ALARM	Disconnecting the tamper – Gateway case has been opened	Red

LTE

LEDs name	Function	Colour
STATUS	LTE is activated	Green
NET	LTE is connected	Yellow led blinks slowly while searching network Yellow led blinks fast during active data transfer
GNSS	GNSS is working	Green

LAN

LEDs name	Function	Colour
Link	Link	Green
ACT	Activity	Yellow

LoRaWAN

LEDs name	Function	Colour
1	First LoRaWAN Module is on board	Blue
2	Second LoRaWAN Module is on board	Blue
NET	Connection to server is available	Green
WLAN	WiFi is available	Green
1PPS	1PPS signal is available	Green led blinks once per second if available
RS485	RS485 receive/transmit	green – receive red – transmit 0 – not active

Models / Bundles

The table below shows the Jooby Outdoor Gateway LoRaWAN Models and Control module configurations.

Jooby Outdoor Gateway LoRaWAN (model name) EU

Model Name	Control module configuration	8 Channel LoRaWAN	16 Channel LoRaWAN	Ethernet Lightning Protection	LTE	GNSS	Backup Battery	EU868, US915
400	C002E2W0L1G12A00010	✓		✓	✓	✓		✓
401	C002E2W0L1G12A00110	✓		✓	✓	✓	✓	✓
402	C002E2W0L2G12A00010		✓	✓	✓	✓		✓
403	C002E2W0L2G12A00110		✓	✓	✓	✓	✓	✓

Certification



Main Specifications (default models)

Feature	Specifications
Computing	Arm Cortex-A7, DDR3 RAM 512MB, 8GB eMMC (optional 16GB eMMC)
LoRaWAN	<ul style="list-style-type: none"> • Module: SX1302 / SX1303 Mini PCIe Card (maximum of two) • Channels: 8 Channels (Optional: 16 channels) • RX Sensitivity: Typical sensitivity level (EU868/US915): -141 dBm at SF12 BW 125 kHz -127 dBm at SF7 BW 125 kHz -111 dBm at FSK 50 kbps • TX Power: 22dBm (Max) • Frequency: EU868, US915, on request – AS923, AU915, KR920, IN865
LTE	Supports Quectel EG915N - LTE-FDD(B1/B3/B7/B8/B20), GSM (EGSM900/DCS1800)
Power Supply	PoE (IEEE 802.3af/at-Compliant) - 42~57VDC Depends on the Gateway model: Backup Battery Super Lithium Polymer DC-12-10.8AH DC-12.6V
Power Consumption	10W (max)
Ethernet	RJ45 (10/100Mbps) with surge protection, with lightning protection
Antenna	3 or 4 N-Type Connectors (depends on the Gateway model)
Ingress Protection	IP67
Enclosure Material	Aluminium
Weight	400 EU, 402 EU - Approximately 2.3 kg 401 EU, 403 EU - Approximately 2.74kg
Dimensions	220mm x 220mm x 104mm
Operating Temperature	-40 °C to +60 °C
Storage Temperature	-40 °C to +85 °C

Feature	Specifications
Operating Humidity	0% to 95% (non-condensing)
Storage Humidity	0% to 95% (non-condensing)
Installation method	Pole or Wall mounting

RF Specifications LoRaWAN

Feature	Specifications
Operating Frequency	<ul style="list-style-type: none">• EU868, US915• on request — AS923, AU915, KR920, IN865
Transmit Power	22dBm (Max)
Receiver Sensitivity	Typical sensitivity level (EU868/US915): <ul style="list-style-type: none">• 141 dBm at SF12 BW 125 kHz• 127 dBm at SF7 BW 125 kHz• 111 dBm at FSK 50 kbps

Software

LoRaWAN:

- Select whether to use Packet forwarder or Basic station
- Select the regional parameters
- Configure channel plan
- Enable and configuring LBT
- Support of 2 LoRa concentrators
- Get the statistics

Network:

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

System

- Management via Web UI and connection via SSH
- Select the timezone and NTP source – GNSS, DHCP, list
- Support using door sensors
- Power monitoring and battery discharge management
- Firmware update