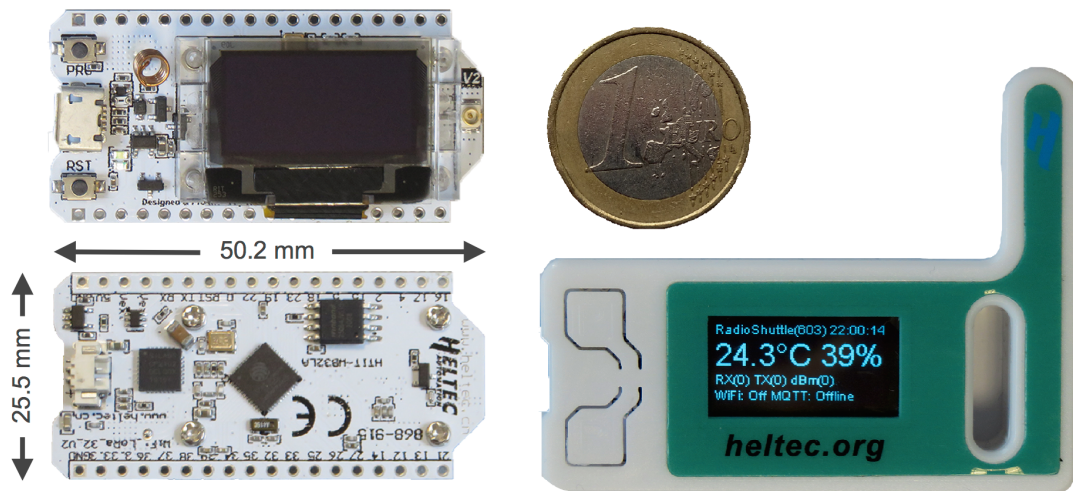


Eagle – LoRa MQTT Gateway

Arduino compatible, for Industrial use, ready for Makers



MQTT gateway for LoRa nodes

The Eagle board is a turnkey hardware and software solution to bring peer-to-peer LoRa nodes into the Internet and vice versa. Eagle – an extremely small ESP32 board with WiFi, LoRa and display, powered by the RadioShuttle software – enables IoT connectivity for LoRa sensors.

MQTT – the IoT protocol

An easy-to-use TCP/IP messaging protocol dispatches messages between the Eagle LoRa MQTT gateway and the MQTT server.

Gateway security

Offers secure and reliable message transfers using the latest encryption standards for WiFi, MQTT, and LoRa. Automatic re-connects ensure a stable operation for years.

MQTT gateway and LoRa node

The Eagle board can be used as a LoRa online node and/or as a MQTT gateway. An optional LiPo battery offers UPS.

Software & tools

Extensive open source example software (TCP/IP, HTTP, MQTT gateway, alarm system, doorbell, etc.) is included and can be installed using Arduino on Windows, Mac, or Linux.

LoRa wireless technology

LoRa allows sensors to communicate in the free 868 MHz ISM band across great distances from 200 m to 20 km, and is suited for small data rates.

Peer-to-peer LoRa wireless protocol software

The included “RadioShuttle” LoRa wireless protocol software can efficiently send messages in a fast and secure way between LoRa devices. It handles thousands of nodes. A license is included with every LoRa board from www.radioshuttle.de.

The hardware is manufactured by Heltec Automation, the software by RadioShuttle.de

Features & Benefits

MQTT gateway

- LoRa to MQTT gateway
- WiFi (MQTT communication)
- NTP and Watchdog support
- Supports 1000 LoRa nodes
- Push messages (iOS/Android)

Security

- SSL support for MQTT
- WPA2 support for WiFi
- AES128/SHA256 for LoRa

Hardware

- ESP32 MCU (2x 240 MHz)
- Extension headers (36 pins)
- LoRa 868 MHz with antenna
- OLED display
- LiPo battery (optional, UPS)

Wireless protocol

- RadioShuttle protocol
 - LoRa peer-to-peer
 - Operation as server or node
 - Reliable & secure messages
 - No concentrator required
- LoRa: 200 m ... 20 km

Arduino IDE

- Windows, Mac, and Linux

Eagle – LoRa MQTT Gateway

Arduino compatible, for Industrial use, ready for Makers



MQTT gateway

- LoRa messages to MQTT
- MQTT messages to LoRa
- WiFi for MQTT communication
- Supports SSL (MQTTS)
- Statistics on OLED display
- Reconnect for WiFi, MQTT
- MQTT push notifications on phone (app for iOS, Android)
- Open source gateway code

Hardware

- Arduino compatible board
- ESP32 MCU (2x 240 MHz)
- 8 MB flash, 512 kB RAM
- 2 buttons (1 Program, 1 Reset)
- 2 LEDs (white, orange)
- ESP32 extension headers
 - 2x 18 pin headers
 - SPI, I²C bus available
 - 12 GPIOs freely available
 - Software controlled power pin
- Micro-USB
 - Power supply via USB
 - Arduino serial monitor
 - Programming
- Battery UPS support
 - LiPo/Li-ion battery option, e.g. 1000 mAh
 - Battery voltage measurement
 - Battery charging control (orange LED)
 - SH1.25 battery connector
 - UPS 7 hours (MQTT gateway)
 - Deepsleep 30 days (800 µA) in *node offline* operation

Plastic housing

- Indoor use
- USB & pin header holes

A product from:

HelTec Automation 成都惠利特自动化科技有限公司
四川省成都市成华区龙潭工业园区钢铁领域B13B10
☎ (+86) 028-62374838
heltec@heltec.cn
www.heltec.cn

OLED display

- 128x64 pixel for text & graphics
- Bright and sharp
- Display driver included, co-developed by RadioShuttle

Development environment

- Standard Arduino IDE for Mac, Windows, and Linux
- Many examples included
 - MQTT gateway
 - HTTP client with GET/POST
 - Alarm system (messages on mobile, controlled by mobile)
 - Door bell via AVM TR64

LoRa radio

- LoRa chip 168 dB link budget (Semtech SX1276 based)
EU: 868 MHz
- Antenna:
 - External antenna included
 - U.FL antenna connector
- License-free operation

Wireless protocol software

“RadioShuttle”

- Reliable message transmission, receipt is confirmed, lost data is automatically repeated
- Simple message transmission, e.g. temperature data
- Parallel message processing
- Unique 32-bit device ID (device number) per LoRa participant
- Unique 16-bit app ID (program number for communication)

RadioShuttle data security

- AES 128-bit encryption
- SHA-256 encrypted passwords with random number per login
- Secure against replay attack

RadioShuttle operating mode

- As a server (station-basic)
- As a node (node-online)
- As a node (node-offline)

Temperature sensor option

- Silicon Labs Si7021
- Temperature (-40 °C ... +85 °C)
- Humidity (0 ... 80%)

Dimensions

- 50.2 mm x 25.5 mm x 10 mm

More information:

www.radioshuttle.de

Technical guide:

www.radioshuttle.de/en/esp32-eagle-board-en/

RadioShuttle protocol:

www.radioshuttle.de/en/radioshuttle-2/protocol/

Push Notification on mobile:

www.radioshuttle.de/en/mqtt-en/push-notification

