

Nebra Smart LoRa Gateway - Prototype Information

Pi Supply

The Maker Emporium

<https://learn.pi-supply.com>

LoRa (Long Range) is the smart, long-range, wireless transmission technology that is enabling the future of IoT (Internet of Things).

It's very low power but is only suitable for very small amounts of data.

Making it ideal for sensors such as weather monitoring, air quality etc

Our IoT Smart LoRa Gateway allows you to set up an industrial LoRa Gateway with ease at a cost effective price compared to other solutions.

Pre-loaded with our software you can have your gateway running in under 1 hour* .

The IoT Smart LoRa Gateway utilises the Raspberry Pi Compute Module 3, RAKWireless mPCIe LoRa gateway concentrator and optionally a 4G Module to provide a customisable solution for your requirements.

It's available in the following frequency variations:

- 868 MHz
- 915 MHz

Other frequencies may be available at special request. Currently utilising the semtech SX1301 chipset however designed to be able to upgraded in the future the modularity of the design.

Fully soldered and assembled, plug in and power up and you're ready to go! No compiling of software required Nebra LoRa Gateway Controller Software - Provides an easy to use user interface to setup and configure your gateway within minutes. The Nebra Smart LoRa Gateway also has been designed to have updates over the internet.

Features

- Utilizes the Raspberry Pi Compute Module 3 bringing stable software support and updates at a higher industrial level of reliability over a normal Raspberry Pi.
- Power Over Ethernet - Power your gateway using most POE switches or injector compliant with 802.11af
- DC Power - Or power the gateway with a 12V 1.25A Power Supply
- Dual LoRa Card Support - Supports up to two LoRa cards for either redundancy, dual region or 16 channel support.
- Optional 4G Module - Add 4G Backup for when uptime is crucial, our software can switch between both 4G and LAN within 1 Minute of connectivity loss.
- Fits in our IP67 Outdoors Case - Ideal for running a gateway outdoors.

Technical Specifications

- Powered By Raspberry Pi Compute Module 3/3+**

- Quad Core ARM Cortex-A53 1.2GHZ
- 1GB DDR2 RAM
- 8GB Industrial SD Card or 8GB EMMC ***
- Dual LoRa Module Support
 - Supports both single and dual configurations
 - Redundancy & Multi Frequency modes
 - RF Interface over a standard U.FL connector (Hirose U.FL-R-SMT) with an impedance of 50. The RF port supports both Tx and Rx
- WAN Connectivity
 - Supports IE 48V POE Injectors & Switches
 - Supports 2 LoRa Modules
 - Provides 100Mbps Ethernet to the CM3
 - USB Socket for USB Wi-Fi Adapter
 - M-PCIE 4G Module Support (USB Mode)
- Efficient Power Consumption
 - Peak draw of 15W
 - Power via 12V 1.25A or POE
 - Average power draw to be confirmed.

Security

The software that runs on the Nebra Smart LoRa gateway has been designed with both Security & Setup Speed in mind.

While it uses a Raspberry Pi it has had multiple tweaks made to the software to improve the security from the standard Raspbian images available including:

- Local Webserver uses SSL certificate generated on first boot.
- User is required to setup a username and password for each gateway
- Random Linux Password generated for each gateway.
- SSH is disabled as default.
- If SSH is enabled, the default port has been changed to help prevent it being found on search engines such as Shodan
- Packet Forwarders & Website UI are run in their own containers allowing separation.
- Linux is setup for automatic security & kernel updates.
- Packet Forwarder & Web UI are distributed using docker containers allowing updates.
- Containers are updated each system boot.

Want to keep up to date?

Follow updates on our twitter account [@NebraLTD](#) & [The Pi Supply Discord Channel](#)

Note: All features and specifications mentioned are to be confirmed before release and are subject to change

* Figure given based on figures with user testing & feedback.

** This component is yet to be finalised and may vary unit to unit. Performance is the same between the two units.

*** This is yet to be finalised and will be subject to supply of components and further testing. So far the Industrial SD card we're using is testing better than the EMMC.