



IronLinkLoRa

Processor ARM Cortex-M0 48Mhz, 128KB Flash, 16KB RAM

Power

Input	5V / 1.5A USB 3.7V 2-Pin Terminal LiPO Charger
Output	Regulated 3.3V / 500mA 3.7 LiPo Output 2A (Through Fuel Gauge)

The LiPo output can provide high current for external devices but is still tracked by the fuel gauge to ensure accurate tracking of the battery's current capacity.

Power Consumption Sleep: < 7uA CPU Running < 5mA LoRa Transmit < 50mA

Power consumption varies with use of the modem, GPS module and peripheral devices. External devices and peripherals should be put into a deep sleep or de-initialised to save power when operating from a battery.

Modem **LoRa 868/433 Mhz (EU Version)**
LoRa 915Mhz (US & AU Version)

Frequency Info <http://bit.ly/Ironlink-Frequency>

Get Started **For setup and test scripts to get you off the ground with your project**
Please visit <https://start.ironlink.io>

Connectors

Micro USB Battery Charging, Data (Optional Serial Port), Primary Power

SWD Debug Header Programming Microcontroller and Debugging

GPIO Header GPIOs, I2C, SPI, ADC, UART

Battery Connector 2 Pin Screw Terminal

GPS SMA male connector

LoRa/NB-IoT Antenna SMA male connector

Core Features

- GPS with Easy Mode*
Or on-board GPS with 1second lock time (*When in easy mode)
- 28 Pin header for add ons board
- Fuel Gauge for accurate battery tracking
- 6 channel 12bit ADC for sensor add-ons
- Optional external GPS antenna for greater range
- Lora Antenna 868Mhz
- Integrated EEPROM
- HAL software for easy programming
- USB serial interface for debugging
- Battery Support for 4.2V LiPo's

IronLink LoRa

Product Name IronLink LoRa 434 & 868MHz

Product Description IronLink LoRa is an industrial Low-Power Long Range LoRa® Technology Transceiver with GPS capabilities. A Rugged LoRaWAN Development Board for challenging applications. Integrated battery management, GPS and Fault Detection. IronLink is suitable for simple long range sensor applications with external host MCU.

LoRa Specs

Frequency Band 863.000 MHz to 870.000 MHz; 433.050 MHz to 434.790 MHz

Modulation Method FSK, GFSK, and LoRa® Technology modulation

Max Over the Air Data Rate 300 kbps with FSK modulation; 10937 bps with LoRa Technology modulation

Operation Range Up to 15 km coverage at suburban; up to 5 km coverage at urban area

Sensitivity at 1% PER -146 dBm Dependent on modulation settings, Receiver Bandwidth (RBW), and Spreading Factor (SF).

RF TX Power Adjustable up to max. 10 dBm on 433 MHz band (limited to meet regulations); max. 14 dBm on the 868 MHz band. TX power is adjustable.

For more information, refer to the "RN2483 LoRa® Technology Module Command Reference User's Guide" (DS40001784).

GPS Specs

L1 Band Receiver (1575.42MHz)

Channel: **22 (Tracking) / 66 (Acquisition)**
C/A Code:
SBAS: **WAAS, EGNOS MSAS, GAGA**

Horizontal Position Accuracy Acceleration Accuracy

Autonomous: **<2.5m CEP** Without aid: **0.1m/s²**

Velocity Accuracy Timing Accuracy

Without aid: **<0.1m/s** 1PPS out: **10ns**

Reacquisition Time

TTF@-130dBm with EASY™:

Cold start: **<15s**
Warm start: **<5s**
Hot start: **<1s**

Sensitivity:

Acquisition : **-148dBm**
Tracking: **-165dBm**
Reacquisition: **-160dBm**

TTF@-130dBm without EASY™:

Cold start: **<35s**
Warm start: **<30s**
Hot start: **<1s**

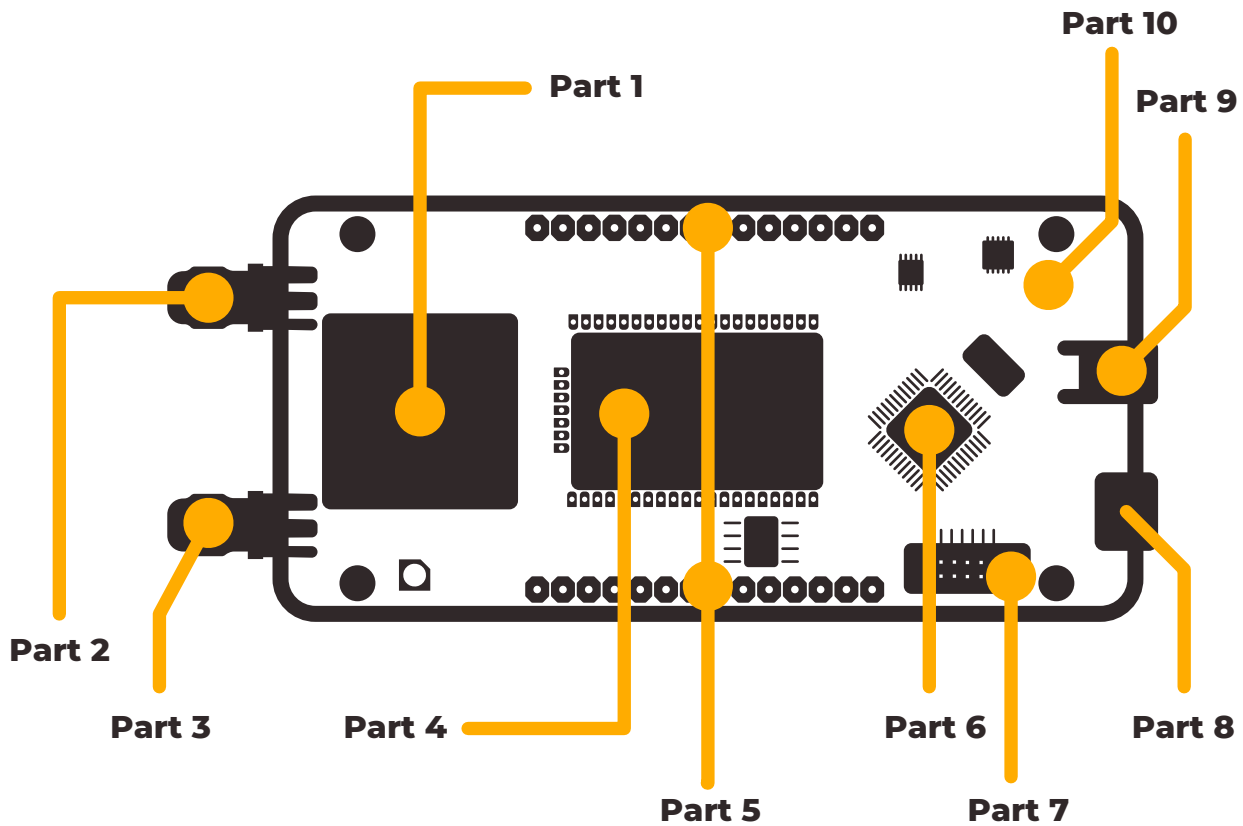
Dynamic Performance:

Maximum Altitude: **Max.18,000m**
Maximum Velocity: **Max.515m/s**
Maximum Acceleration: **4G**

Max Update Rate: Up to 10Hz, 1Hz by default

IronLinkLoRa

Board Layout



Part 1 - GPS

Part 2 - Main LoRa Antenna

Part 3 - GPS Expansion Antenna

Part 4 - Communication Model

Part 5 - GPIO Header

Part 6 - Processor

Part 7 - Programing Header

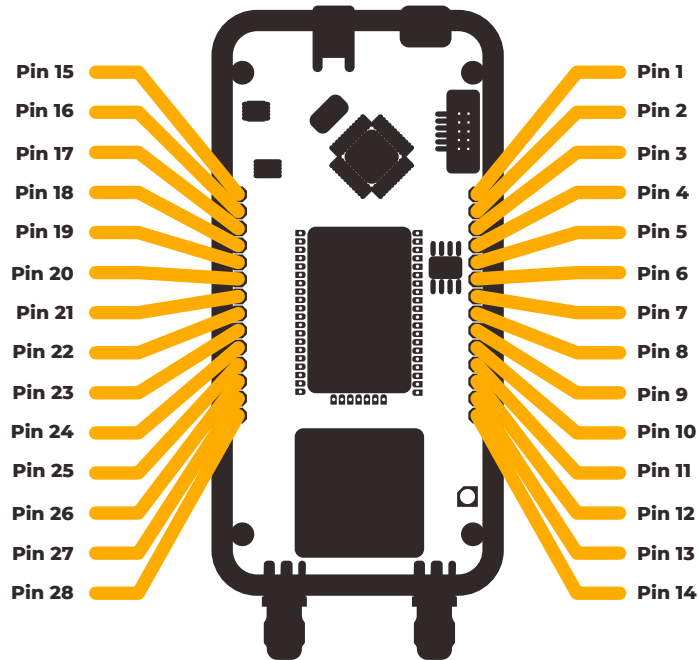
Part 8 - Micro usb

Part 9 - Battery Port

Part 10 - Battery Management

IronLink LoRa

Board Pinout



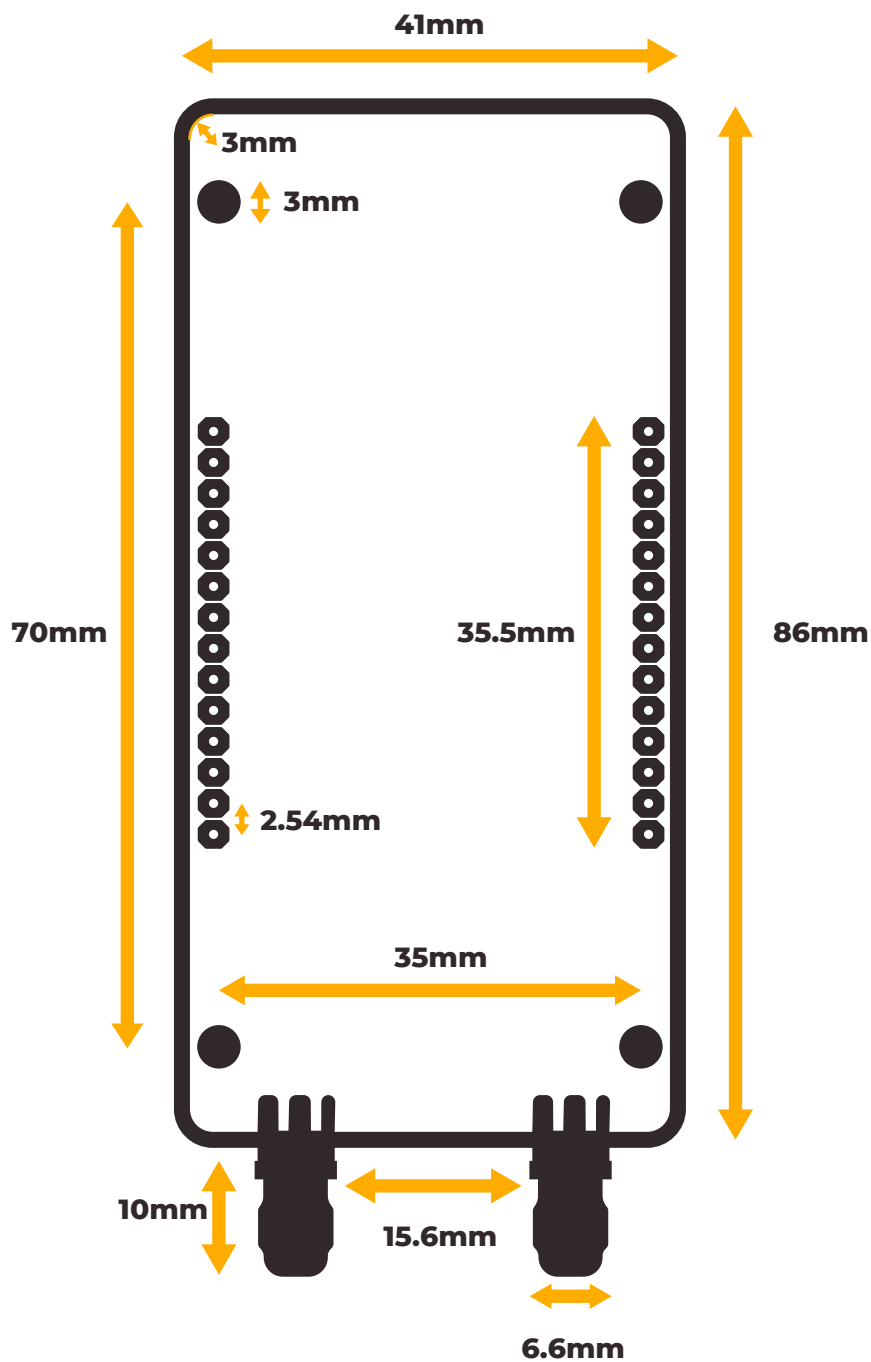
GPIO Layout

Pin#	Function
15	GND
16	GPIO1
17	UART4_CTS
18	I2C1_SCL
19	I2C1_SDA
20	SPI_MISO
21	I2C1_SMBA
22	UART4_Rx
23	UART4_TX
24	SPI_SCK
25	SPI_MOSI
26	GPIO4
27	GND
28	3v3

Pin#	Function
1	GND
2	VBATT
3	GPIO3
4	GND
5	UART1_RX
6	UART1_TX
7	GPIO2
8	GPIO7
9	I2C2_SDA
10	I2C2_SCL
11	UART4_RTS
12	GPIO5
13	GND
14	3V3

IronLinkLoRa

Board Measurements



A Rugged Development Board for Challenging Applications.
Integrated Battery Management, GPS and Fault Detection.
High temperature operations and ESD resistance.
Large range of fully supported sensors.

Smart
Agriculture 

Smart
Homes & Buildings 

Smart
Cities 

Smart
Industrial Control 

Smart
Environment 

Smart
Metering 

Smart
Healthcare 

Smart
Supply Chain & Logistics 

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IRONLINK

LoRa + NB-IoT Add-on Boards

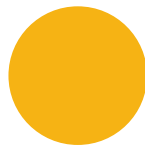
We will support you in any way we can.
Large range of fully supported sensors.



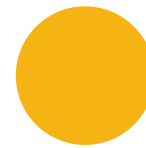
Add-ons



Bridge Board (ADC)



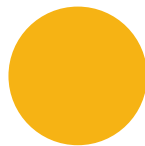
Noise Pollution



Grove Breakout



Current sense



**Accelerometers &
Gyroscope Sensor**

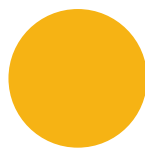


Lightning strike sensor

Air Pollution Add-ons



**Temperature, humidity,
Barometric pressure**



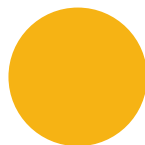
VOC Gas



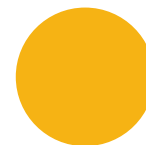
Tilt Sensor



**Spec sense
H₂S, NO₂, SO₂,
O₃, ETOH, IAQ, CO
& RESPIRR**



**SGX
NH₃, CO, Cl, ClO₂
Ethylene Oxide, Hydrogen
H₂S, NO, NO₂, Oxygen
Phosphine, SO₂**



Alpha sense

LoRa + NB-IoT Add-on Boards

Useful Add On & Expansions

SWD Debug Header

The SWD header is a 2x5 (10-pin) connector with a 1.27mm pitch. This header connects to the SWD interface on the board which allows for debugging and flashing of firmware directly to the board. To use this header you will need a debugger (e.g. ST-LINK V2) and an adapter to connect to the 10-pin header on the PCB.

SWD Adapter for Ironlink Board



Description: Sockets & Adapters JTAG 20 PIN 0.1" TO 10 PIN 0.05" ADAPTER
ShortLink to buy: <https://t.ly/Gg3wB>

ST-LINK V2



Description: Programmers - Processor Based STM8S STM32 Programr 5V USB 2.0 JTAG DFU
ShortLink to buy: <https://t.ly/b2W0Z>

Add Better Antenna Capabilities

GPS Antenna

To get a better connection over longer distances consider upgrading antennas. You need a SMA male antenna for both GPS and LoRa. Here is a few recomandations



Description: Antennas Water resistant GPS 28 dBi antenna for communication products
ShortLink to buy: <https://t.ly/ZEOZB>

LoRa Antenna



Description: Antennas 868MHz Terminal 2dBi Hinged
ShortLink to buy: <https://t.ly/Gg3V9>



Description: Antennas Shockwave 2M 868/915MHz
ShortLink to buy: <https://t.ly/BXV1L>

LoRa + NB-IoT Add-on Boards

Supported Battery Type

LiPo 3.7V typical voltage
Single cell with the max battery size of 8000mAh

Electronic Housing

Screw locking vented enclosure of the ECS Family.
IP66/67/69 rated when mated with associated faceplate.
Color: Black (9005), Width: 164 mm, Height: 116 mm, Depth: 64 mm

Your Advantages



- Part of the EnviroCase System
- Suitable for outdoor/indoor applications
- IP66/IP67 rated with faceplate secured to the base
- Wall, panel, or pole mounting options
- Toolless assembly
- Breather vent

ShortLink to buy: <https://t.ly/DGbeY>