IRON*LINK*

IronLink LoRa

Specifications

Modem	LoRa: **Microchip RN2903**
Proccessor	Cortex-M0
Dimensions	
Power	Input Voltage: **2.4-5.5V** Battery Input Voltage: **3.6-4.2V**
Power Consumption	Idle: **< 7uA** Averge: **20mA** Max: **200mA(Lora) 250mA(NB-IoT)**
Input Voltage Range	**2.4V - 5.5V** 77.043mA Max current draw - **200mA(Lora Tranmission) 250mA(NB-IoT Tranmission)**

Connectors

Micro USB	Com port & power
Jtag Header	Programming header
GPIO Connector	Communications header
Battery Connector	Terminal blocks
GPS	SMA connector
LoRa/NB-IoT Antenna	SMA 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 addons

- Optional external GPS antenna for greater range

- Lora Antennta 915Mhz

- Integrated EEProm

- HAL software for easy programming

- USB serial interface for debugging

- Battery Support for 4.2V LiPo's

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IronLink**LoRa**

Product Name	**IronLink LoRa 915MHz**

Product Description	IronLink LoRa is an industrail 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	902.000 MHz to 928.000 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 CommandReference 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

TTFF@-130dBm with EASY™:		**Sensitivity:**	
Cold start:	**<15s**	Acquisition :	**-148dBm**
Warm start:	**<5s**	Tracking:	**-165dBm**
Hot start:	**<1s**	Reacquisition:	**-160dBm**

TTFF@-130dBm without EASY™:		**Dynamic Performance:**	
Cold start:	**<35s**	Maximum Altitude:	**Max.18,000m**
Warm start:	**<30s**	Maximum Velocity:	**Max.515m/s**
Hot start:	**<1s**	Maximum Acceleration:	**4G**

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

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IronLink LoRa

GPIO Layout

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

Pin#	Function
1	GND
2	GPIO1
3	UART4_CTS
4	I2C1_SCL
5	I2C1_SDA
6	SPI_MISO
7	I2C1_SMBA
8	UART4_Rx
9	UART4_TX
10	SPI_SCK
11	SPI_MOSI
12	GPIO4
13	GND
14	3v3

IronLink LoRa

Board Layout
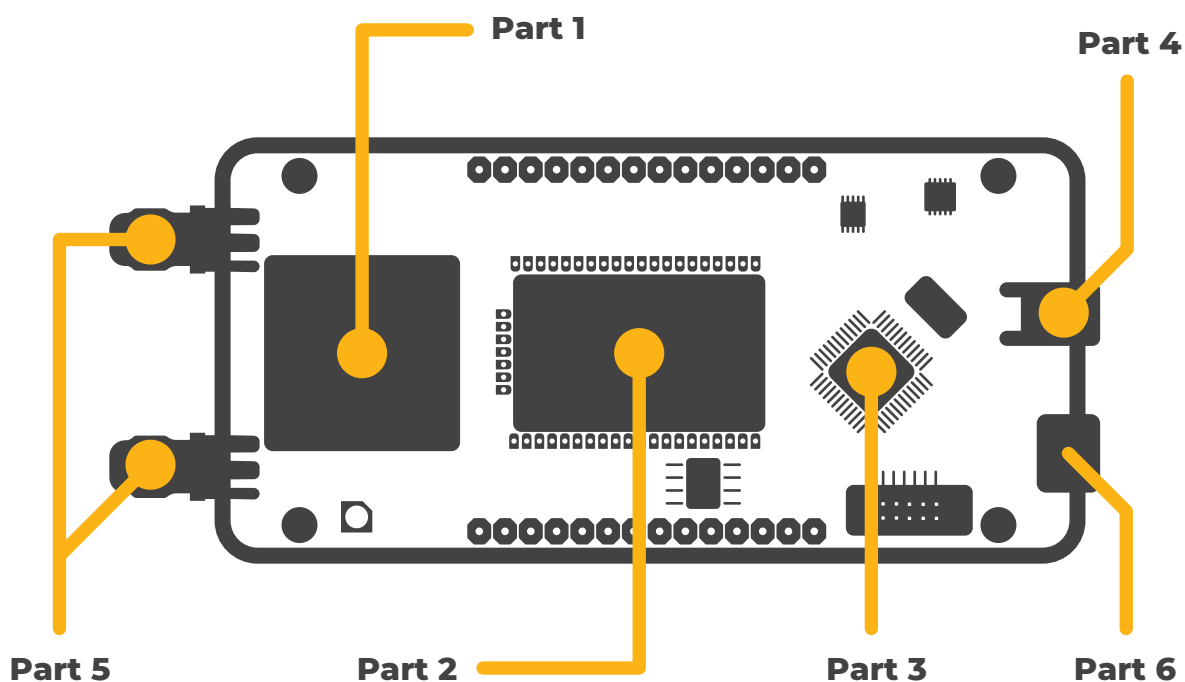
Part 1 - GPS

Part 2 - Communication Model

Part 3 - Processor

Part 4 - Battery Port

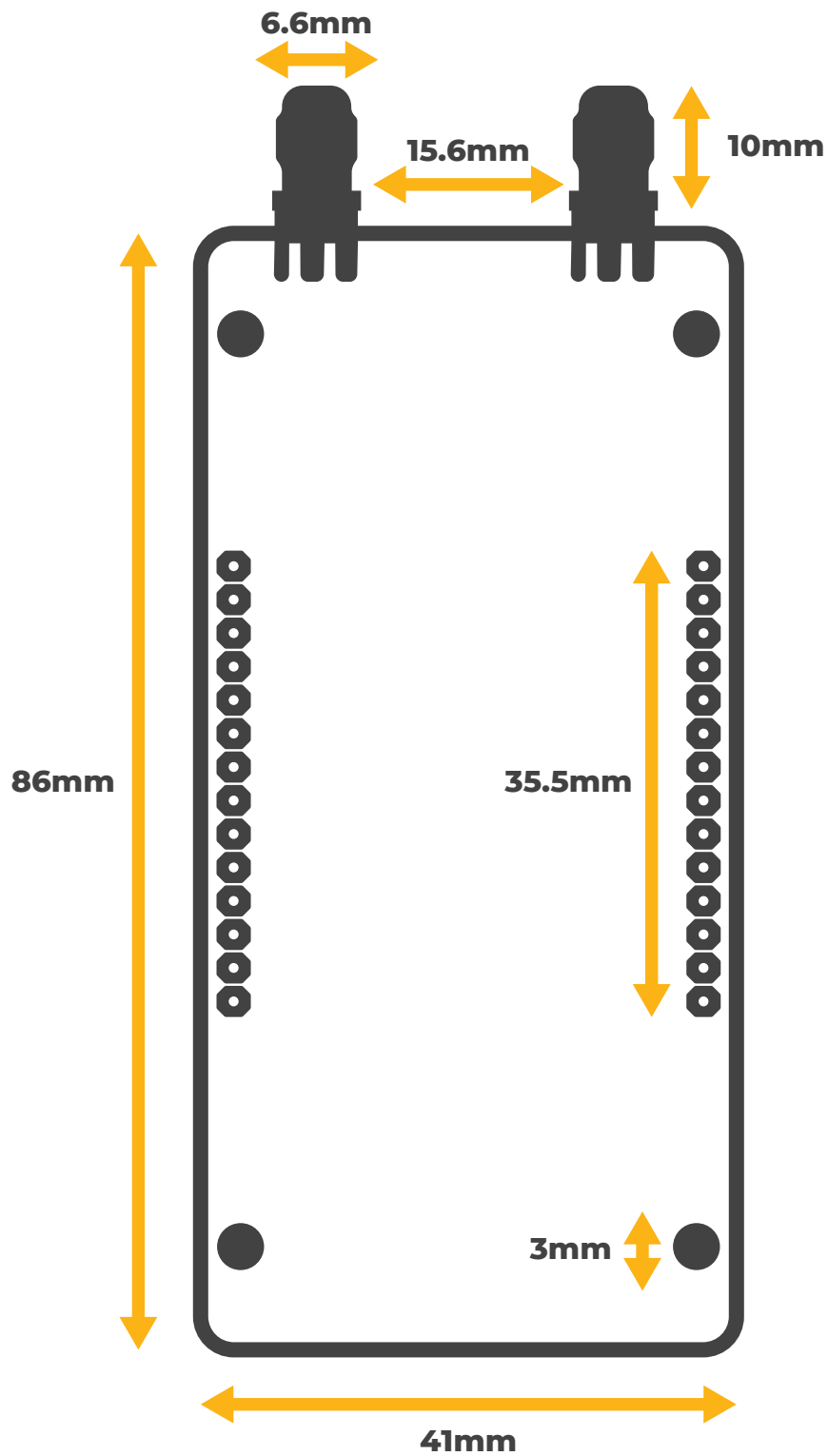**Part 5 - SMA Antenna**

Part 6 - Micro usb

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IronLink LoRa

Board Layout

GPIO 28
GPIO 27
GPIO 26
GPIO 25
GPIO 24
GPIO 23
GPIO 22
GPIO 21
GPIO 20
GPIO 19
GPIO 18
GPIO 17
GPIO 16
GPIO 15

GPIO 1
GPIO 2
GPIO 3
GPIO 4
GPIO 5
GPIO 6
GPIO 7
GPIO 8
GPIO 9
GPIO 10
GPIO 11
GPIO 12
GPIO 13
GPIO 14
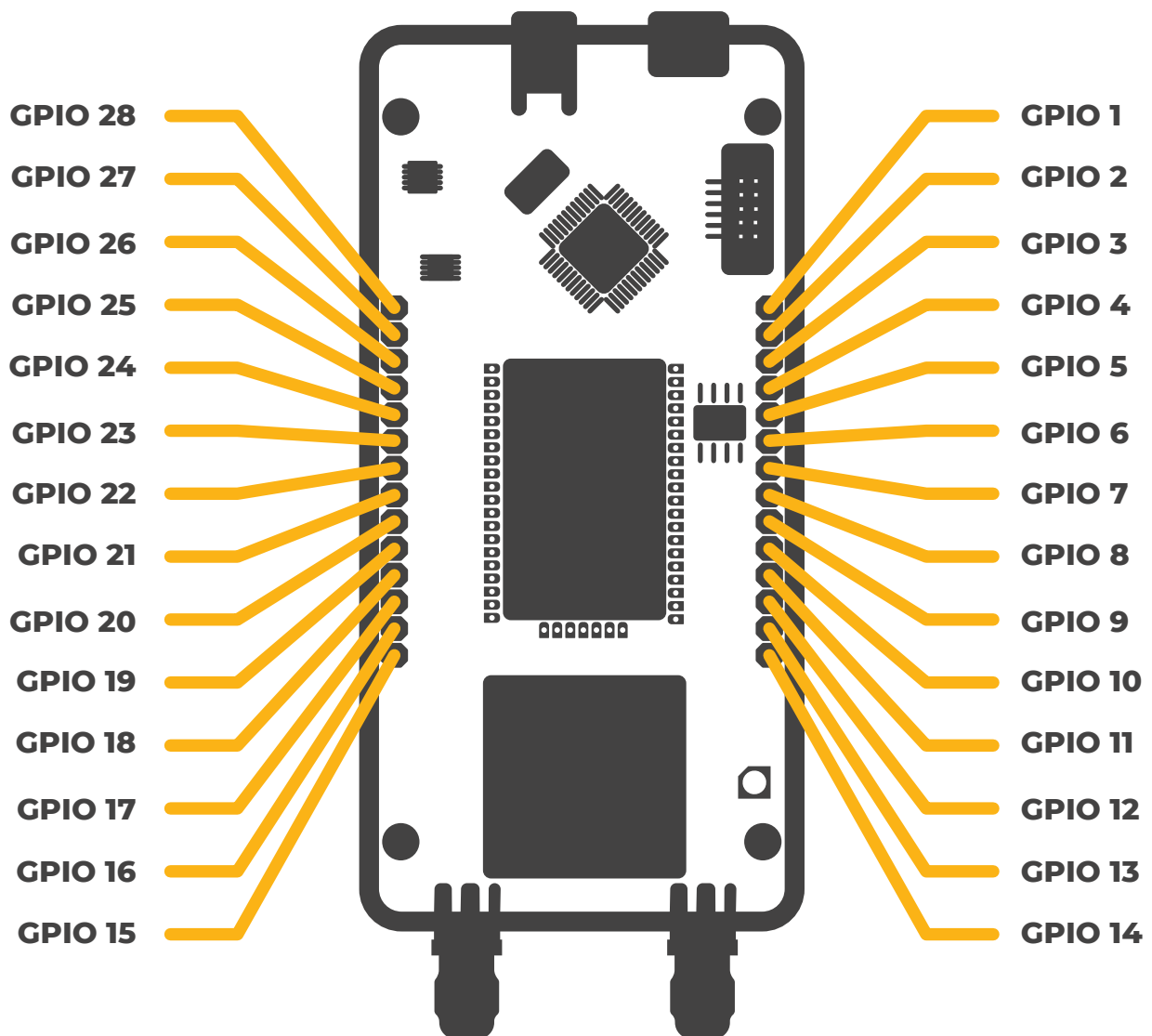
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IronLink LoRa

Board Measurements

6.6mm

15.6mm

10mm

86mm

35.5mm

3mm

41mm

IRONLINK
LoRa

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
Industrial Control

Smart
Cities

Smart
Environment

Smart
Metering

Smart
Healthcare

Smart
Supply Chain & Logistics

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IRON*LINK*
LoRa + NB-IoT Add-on Boards

Out of the Box Support
Large range of fully supported sensors.
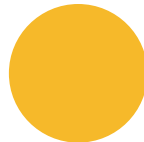
Infrared Sensor (IR)

Temperature, Pressure, Humidity, and Indoor Air Quality

Proximity Sensor

Ultrasonic Sensor

Accelerometers & Gyroscope Sensor

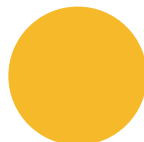**Hall Effect Sensor**

Load Cell

PIR Motion Detector & Vibration Sensor

Humidity, Soil Moisture & Rain

Touch Sensor

Light Sensor

Colour Sensor

Tilt Sensor

Flow and Level Sensor

Metal detector, Water Flow & Heartbeat Sensor

Smoke, Fog, Gas, Ethanol & Alcohol Sensor

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