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IronLink NB-IoT

Specifications

Modem	NB-IOT: **BG96**
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
- NB-IoT Antennta with 2G fallback
- Integrated EEProm
- HAL software for easy programming
- USB serial interface for debugging
- Battery Support for 4.2V LiPo's

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Product Name	**IronLink NB-IoT**
Product Description	IronLink NB-IoT development board is an industrail Low-Power worldwide NB-IoT & LTE-M communaton board with GPS capabilities. This cellular modem giving coverage across much of the globe for high value asset tracking to sensing on a mass scale the IronLink provides the perfect hardware to get your systems connected to the cloud.

Rugged, Out of the Box
Our platform comes with high temperature range operation and ESD protection as default, and with the option of IP rated enclosures or resin filled cases you can rest assured the IronLink is ready to collect data from the most challenging environments.

Embedded Applications:

Smart Agriculture
Environmental Monitoring
Smart Cities
Reliable Asset Tracking
Bridge Sensor Measurements
Long Life Sensors 5+ years

GPS Specs

L1 Band Receiver (1575.42MHz)

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

Horizontal Position Accuracy

Autonomous: **<2.5m CEP**

Acceleration Accuracy

Without aid: **0.1m/s²**

Velocity Accuracy

Without aid: **<0.1m/s**

Timing Accuracy

1PPS out: **10ns**

Reacquisition Time

TTFF@-130dBm with EASY™:

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

Sensitivity:

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

TTFF@-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**

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NB-IoT Specs

LTE Features	Support LTE Cat.M1 and LTE Cat.NB1 Support 1.4MHz RF bandwidth for LTE Cat.M1 Support 200KHz RF bandwidth for LTE Cat.NB1 Support SISO in DL direction Cat.M1: Max. 375kbps (DL)/375kbps (UL) Cat.NB1: Max. 32kbps (DL)/70kbps (UL)
GSM Features	**GPRS:** Support GPRS multi-slot class 33(33by default) Coding Scheme: CS-1, CS-2, CS-3 and CS-4 Max. 107Kbps (DL), Max. 85.6Kbps (UL) **EDGE:** Support EDGE multi-slot class 33(33by default) Support GMSK and 8-PSK for different MCS (Modulation and Coding Scheme) Downlink coding schemes: CS 1-4 and MCS 1-9 Uplink coding schemes: CS 1-4 and MCS 1-9 Max. 296Kbps (DL), Max. 236.8Kbps (UL)
Internet Protocol Features	Support PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)protocols Support PAP (Password Authentication Protocol) and CHAP (Challenge Handshake Authentication Protocol) protocols which are usually used for PPP connections
SMS	Text and PDU mode Point to point MO and MT SMS cell broadcast SMS storage: ME by default

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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

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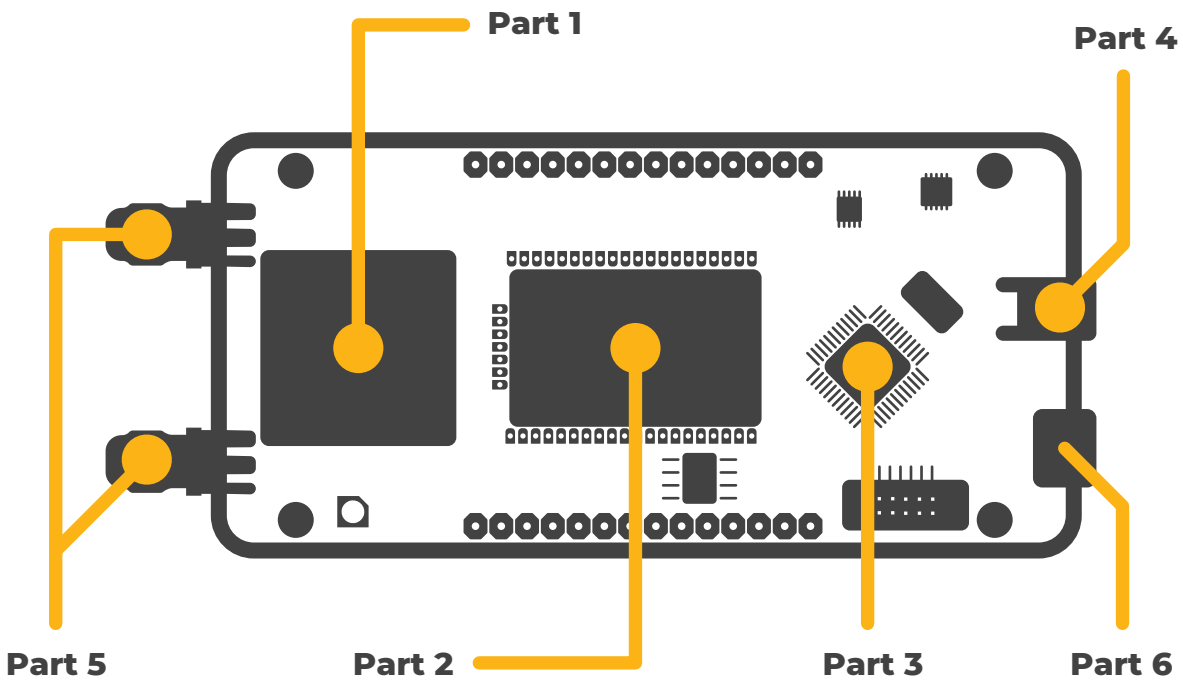
Board Layout



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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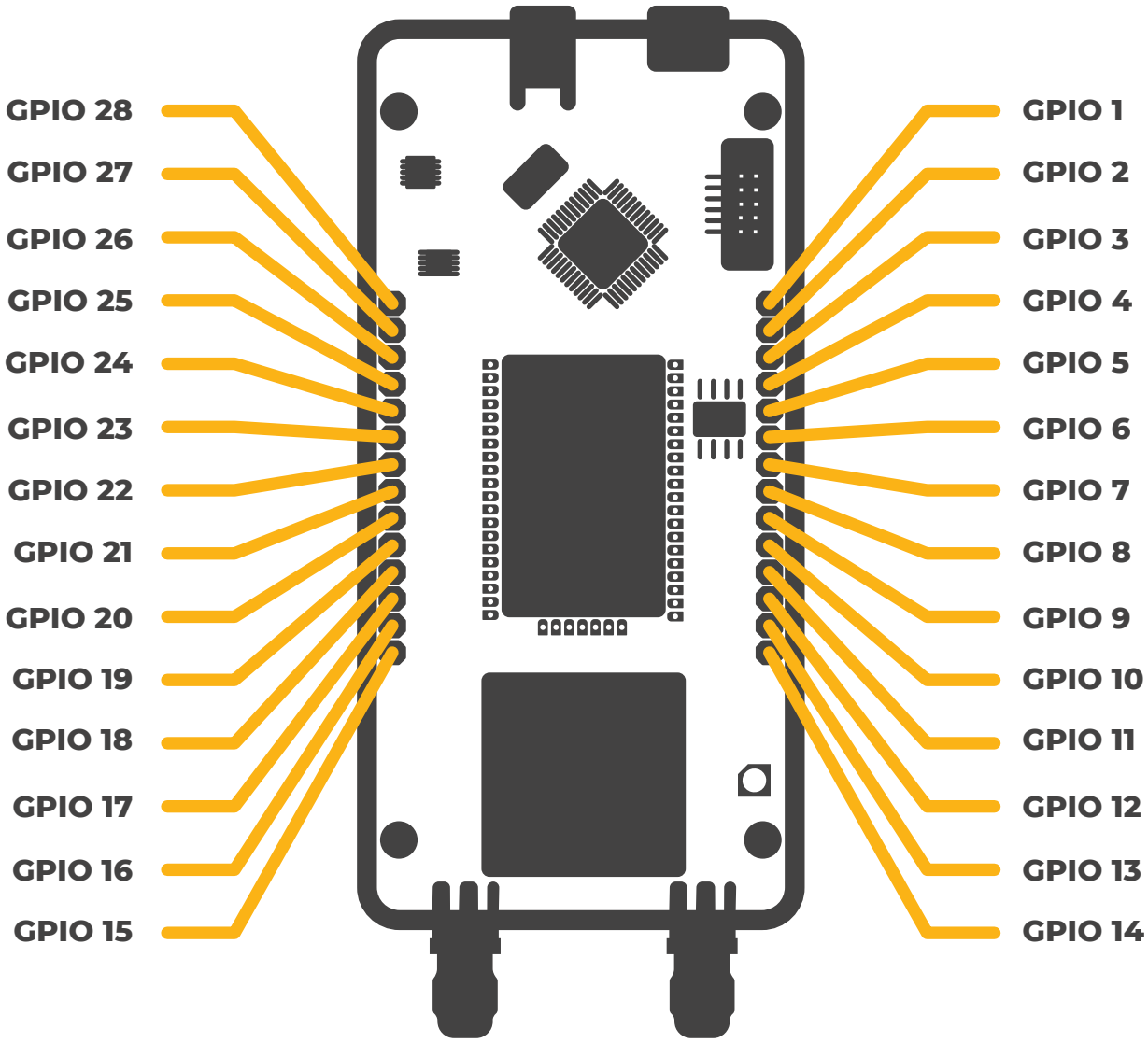
Board Layout



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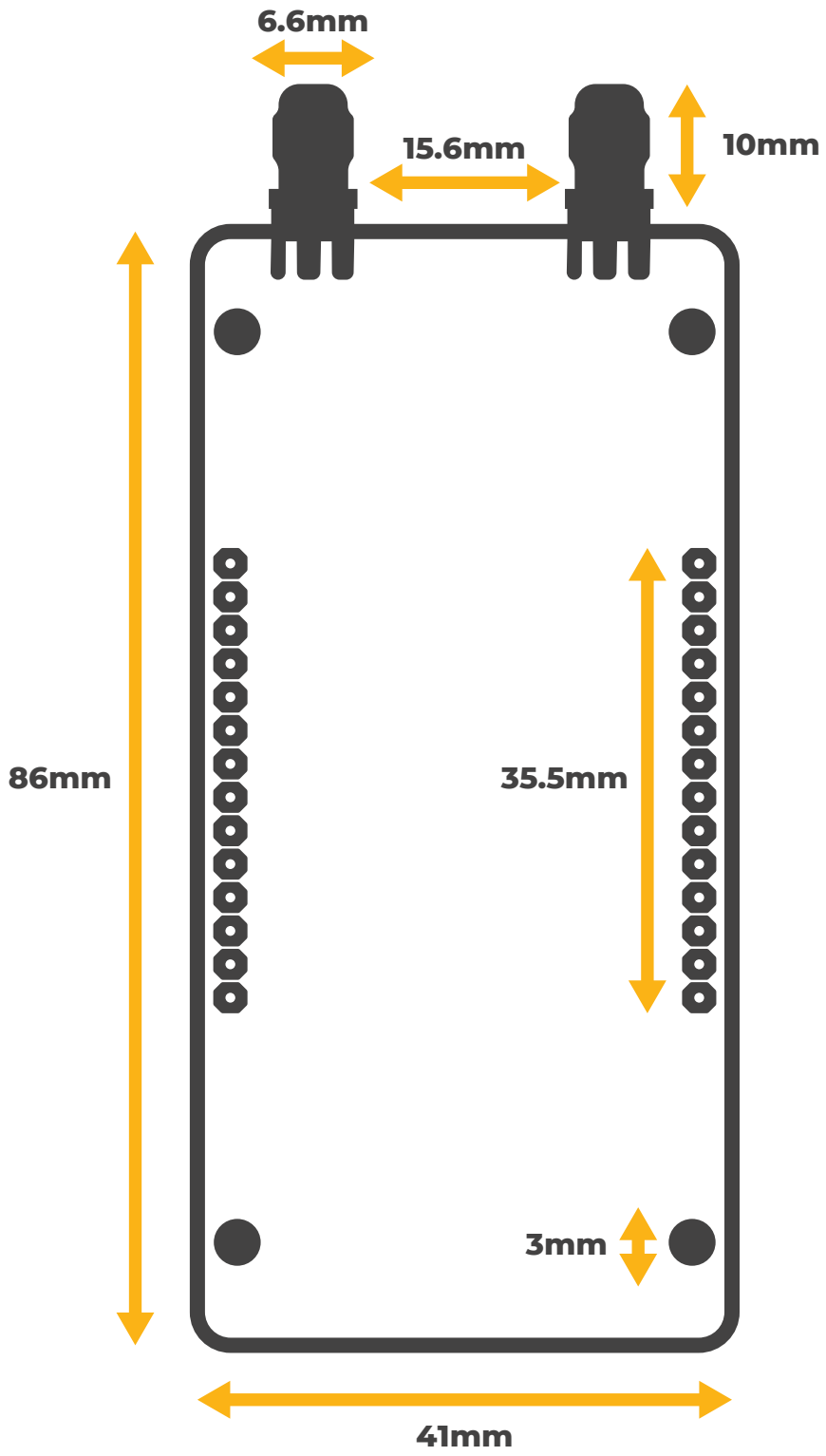
Board Measurements



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.

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