



IronLink NB-IoT

Specifications

Modem	NB-IOT: BC96
Processor	Cortex-M0
Dimensions	
Power	Input Voltage: 2.4-5.5V Battery Input Voltage: 3.6-4.2V
Power Consumption	Idle: < 7uA Average: 20mA Max: 200mA(Lora) 250mA(NB-IoT)
Input Voltage Range	2.4V - 5.5V 77.043mA Max current draw - 200mA(Lora Transmission) 250mA(NB-IoT Transmission)

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 Antenna with 2G fallback
- Integrated EEPROM
- HAL software for easy programming
- USB serial interface for debugging
- Battery Support for 4.2V LiPo's

IronLink NB-IoT

Product Name IronLink NB-IoT

Product Description IronLink NB-IoT development board is an industrial Low-Power worldwide NB-IoT & LTE-M communication 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 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

IronLink NB-IoT

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

IronLink NB-IoT

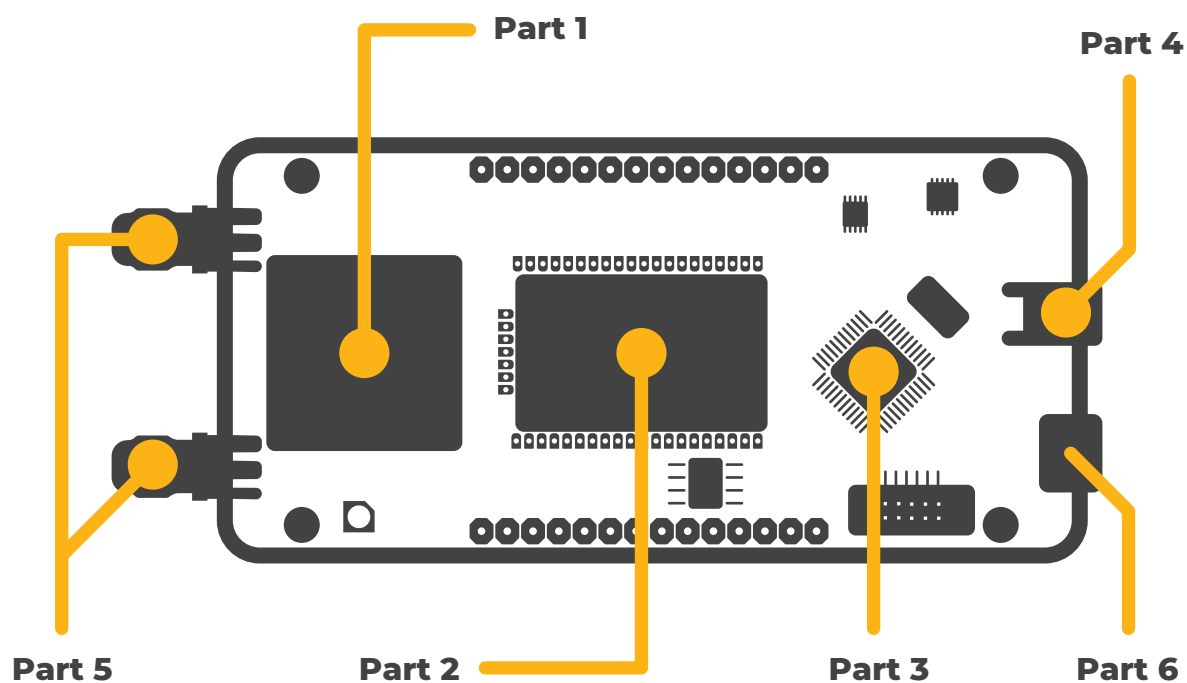
GPIO Layout

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

IronLinkNB-IoT

Board Layout



Part 1 - GPS

Part 2 - Communication Model

Part 3 - Processor

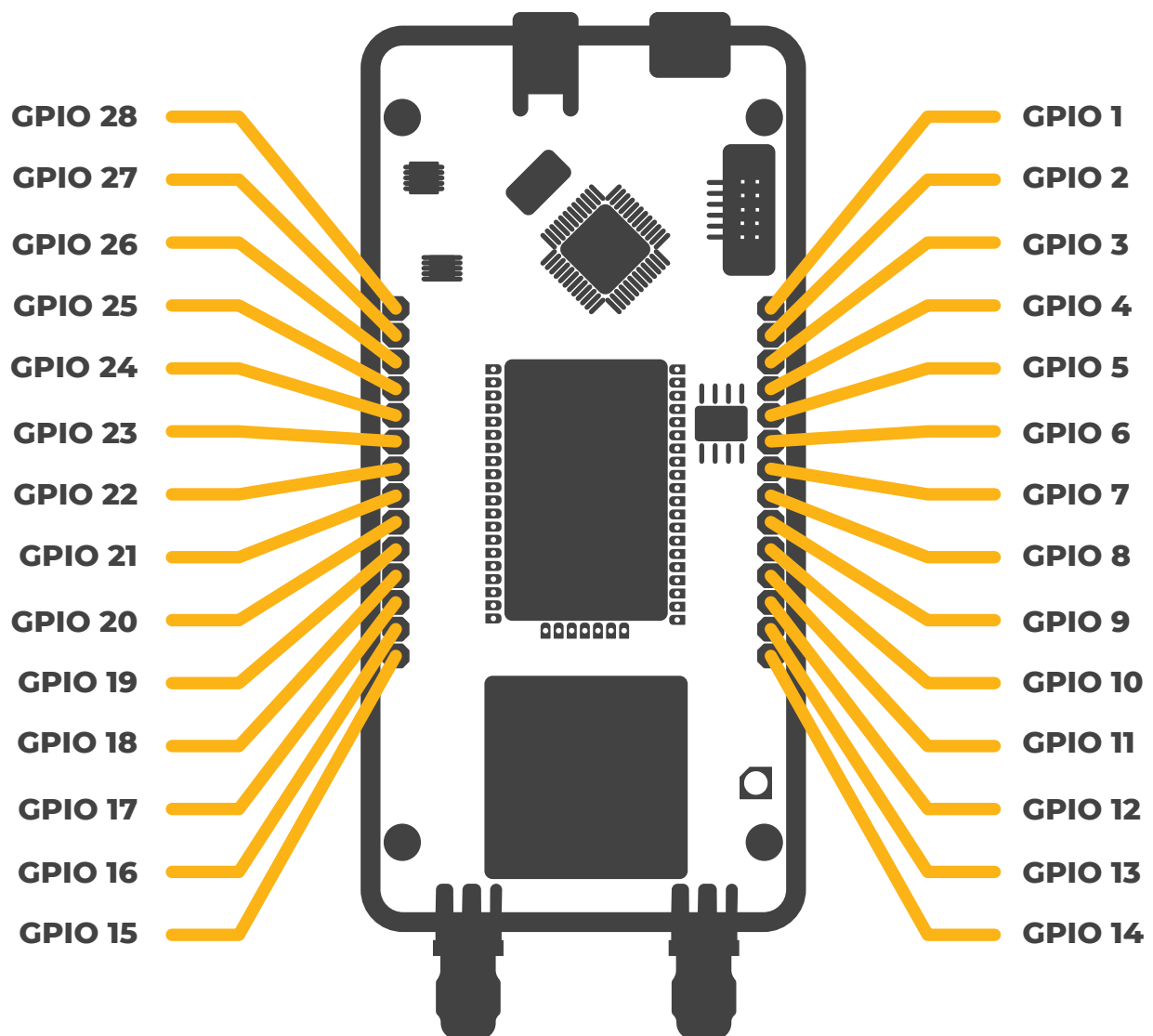
Part 4 - Battery Port

Part 5 - SMA Antenna

Part 6 - Micro usb

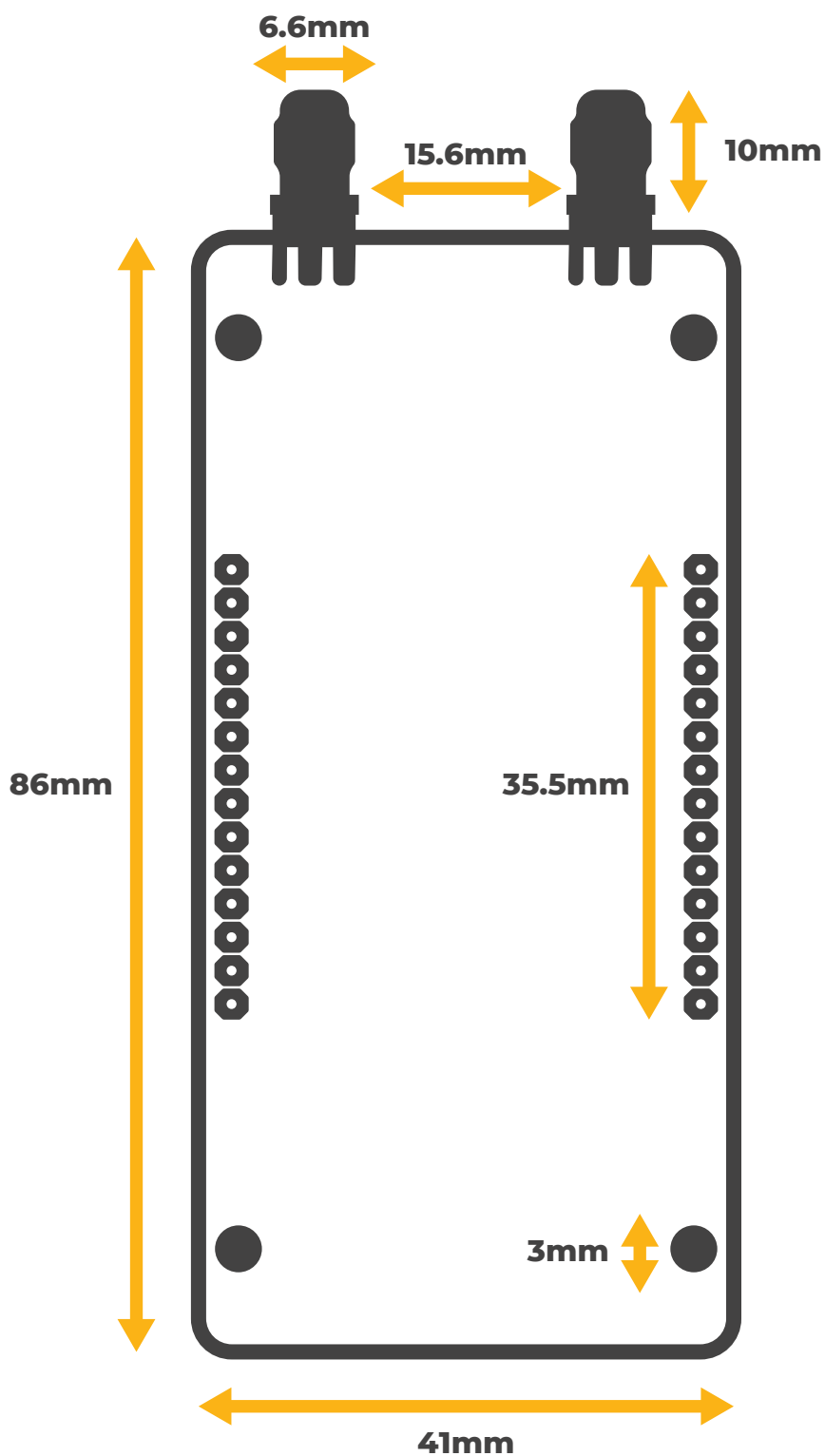
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Board Layout



IronLink NB-IoT

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.

Smart
Agriculture 

Smart
Homes & Buildings 

Smart
Industrial Control 

Smart
Cities 

Smart
Environment 

Smart
Metering 

Smart
Healthcare 

Smart
Supply Chain & Logistics 

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IRONLINK

LoRa + NB-IoT Add-on Boards

Out of the Box Support
Large range of fully supported sensors.



**Infrared Sensor
(IR)**



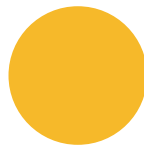
**Temperature, Pressure,
Humidity, and Indoor Air Quality**



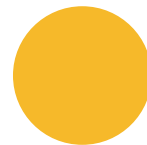
**Proximity
Sensor**



**Ultrasonic
Sensor**



**Accelerometers &
Gyroscope Sensor**



**Hall Effect
Sensor**



Load Cell



**PIR Motion Detector &
Vibration Sensor**



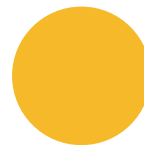
**Humidity, Soil
Moisture & Rain**



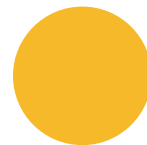
Touch Sensor



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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