Blue Node

User Manual

CONTACT US

LX
Suite 101, 4 Cornwallis St, Eveleigh, 2015
National Innovation Centre
Australian Technology Park
Sydney, Australia

+612 9209 4133

IoTCores.com.au

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1. Functional description

Congratulations on your new Blue Node!

The Blue Node is a battery powered communications device that allows you to deploy a large range of third party sensors, and have their data transmitted back to the cloud. With cutting edge low power design, rugged body and connectors, and utilising the latest in long range communications, the Blue Node reports your sensor data back to the Cloud via a Base Station without needing any complex setup – simply plug in your sensor and tighten the bracket bolt.

The Blue Node comes in two wireless variants for communicating over different LoRa and LoRaWAN frequencies:

1. 433 MHz (Europe Version)
2. 868 MHz (Europe Version) / 915 MHz (North America Version)

2. Wired interfaces

The Blue Node has a 14 pin connector that provides power to third party sensors, as well as various standard communications protocols.

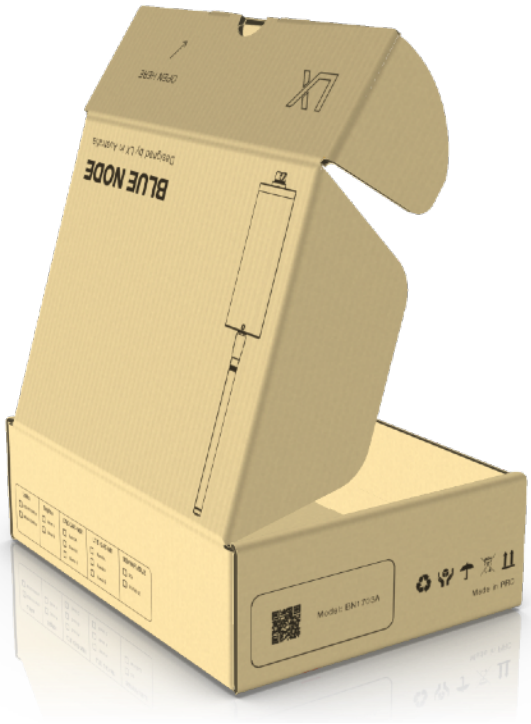
2.1 Power

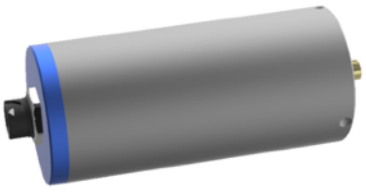
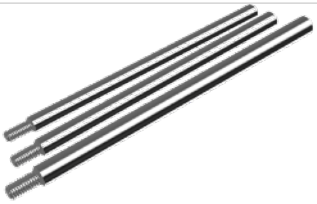
The Blue Node can provide either 5V DC (up to 90 mA) or 12V DC (up to 35 mA).

2.2 Communications

- 4-20 mA
- SDI 12
- UART
- I2C
- DIO with configurable pull ups
- Analog input 0-12V

3. What's in the box



Blue Node x1	
Radial pins x3 (only on the 433MHz variant)	
LoRa antenna x1	
Mounting bracket x1	

4. Blue Node Assembly and Installation

Unpack and check that you have all your parts, and then complete the following instructions to assemble your Blue Node:

1. Install the mounting bracket on a post, pole or other suitable base at least 60cm above the ground, and make sure that antenna will be clear of any nearby obstacles.

2. Assemble Blue Node - gently install the antenna on the SMA connector.

3. Screw the 3 radial pins into their positions around the top of the node. *Note that this is only required for installation where long range is required. We recommend putting a drop of low strength Locktite thread-locker on the threaded section of the pins during installation.*

4. Secure Blue Node in the bracket. *We recommend putting a drop of low strength Locktite thread-locker on the threaded section to make sure that the Blue Node stays well secured.*

5. Connect your sensor fitted with the correct mating connector. This will start the Blue Node automatically and trigger your first data transmission!

4.1 Good practice

- Install the Node out of direct sunlight exposure to limit extreme temperature variations. It will help extend the life of the device, its accessories and its internal battery.
- Ideally with direct line of sight of the Base Station.
- Keep in mind that the higher you install the Node, the better the chances that you will have a good quality radio link with the Base Station.

4.2 Typical Use Scenario with Third Party Sensor

5. Testing and troubleshooting

- The best way to check if your Blue Node is working is to check the data it has sent to the internet via the Base Station. This data typically includes the unique ID of the device, the LoRa signal strength, the internal temperature, the low battery flag. It is a great way to test the system end-to-end.
- If you cannot see any data reaching the internet, you can check disconnect and reconnect the external probe or sensor. It will force the Blue Node to restart and send a LoRa message within a few seconds. If you can't see any message reaching the web and you have checked your Base Station, it probably means that its battery is flat or that the unit is damaged.
- Remember that the illuminated push button of the Embedded Base Station will show a double blink every time a LoRa packet from a Blue Node is received.

6. Qualification and approvals

- Model number: BN3L9A
- RoHS
- CE
- FCC ID: 2ALVGBN3L9A
- IC: 22444-BN3L9A

7. FCC IC CE Warnings

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter. This End equipment should be installed and operated with a minimum distance of 20 centimetres between the radiator and your body.

IMPORTANT NOTE

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorisation is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorisation.

Battery Caution

Risk of explosion if the battery is replaced by an incorrect type. Please dispose of used batteries according to the instructions.

Canada Statement

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage;
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même sile brouillage est susceptible d'en compromettre le fonctionnement.

Caution Exposure:

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS102 and users can obtain Canadian information on RF exposure and compliance.

Le dispositif répond à l'exemption des limites d'évaluation de routine dans la section 2.5 de RSS102 et les utilisateurs peuvent obtenir des renseignements canadiens sur l'exposition aux RF et le respect.