Hid Global MOD001 BEEKS BLE Module Installation Guide

Contents

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- This BEEKs™ BLE Module Install Guide covers the basics of the setup and provisioning of equipment with Bluzone cloud account and project. This install guide is intended for technicians. The HID BEEKs Bluetooth Low Energy (BLE)
- Module supports transmission of data from wired sensors utilizing a variety of protocols, including UART, SPI, and I2C.
- Additionally, the built-in 12-bit analog-to-digital converter provides support for analog output sensors. The BEEKs BLE
- Module therefore enables custom solution development for a wide range of applications.
- When combined with HID Global's end-to-end IoT ecosystem, which includes BluFi™ BLE-to-WiFi gateways and the Bluzone™ cloud services, the BLE Module can be centrally managed remotely through the cloud to transfer new messages and firmware updates. The unique design allows BEEKs BLE Module to broadcast reliably, even in densely populated WiFi environments.
- The BLE radio enables the module to transmit the data from wired analog and digital sensors for a variety of applications. Bluzone allows you to control the transmitting capabilities of the module.

System components

- BluFi™ model BluFi-AC00 – Bluetooth to WiFi Gateway
- Bluzone – Cloud Fleet Management and Condition Monitoring dashboard.
- BLE Module model MOD001 Bluetooth Low Energy Module

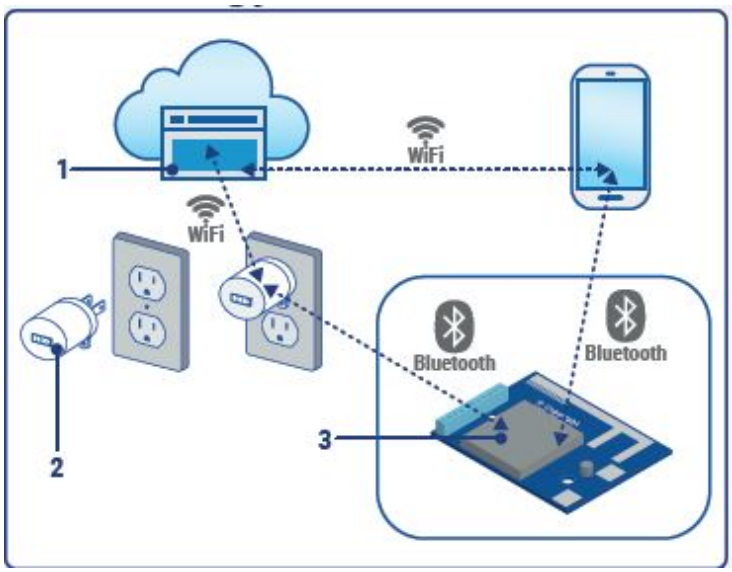
Best practices

- Maximum of 15 – 20 beacons per BluFi for best results
- Maximum 20 – 30 meters from beacon to BluFi for best results (distance will decrease for increased interference/blockages). For RTLS applications, the BEEKS Duress Badge signal must be received by at least three BluFis in the vicinity.

Network troubleshooting

- 2.4 GHz WiFi only
- HTTPS port 443 must be open
- DHCP required
- 1 Mbps upload speed required
- Captive WiFi portals not compatible
- Compatible certificate formats: .pem, .der
- Some networks may require adding the BluFi MAC address to an allowlist

Terminology



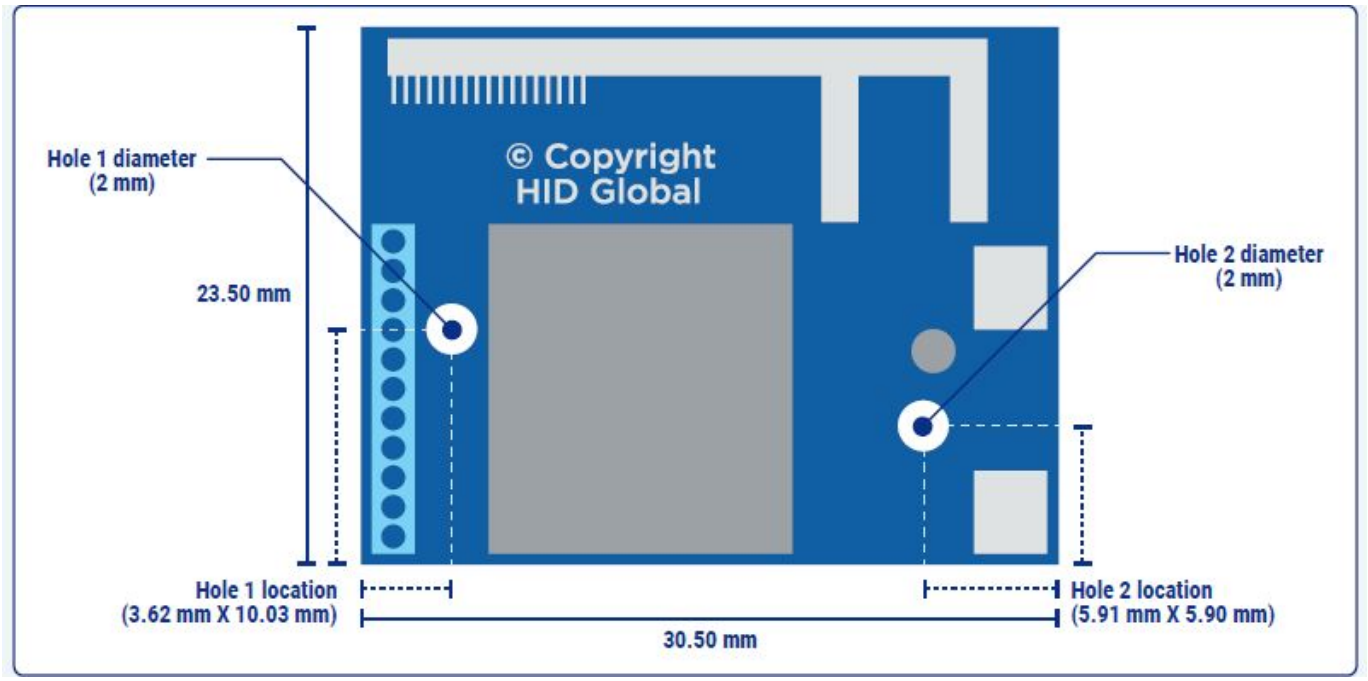
1. Bluzone – Secure cloud-based SaaS to centrally manage BEEKs via BluFi gateways. Additionally, monitor, store and analyze performance data collected from deployed fleet.
2. BluFi Gateway – Receives data from BEEKs over Bluetooth and sends to Bluzone Cloud.`
3. BLE Module – Sends data from wired sensors to BluFi.

Prerequisites

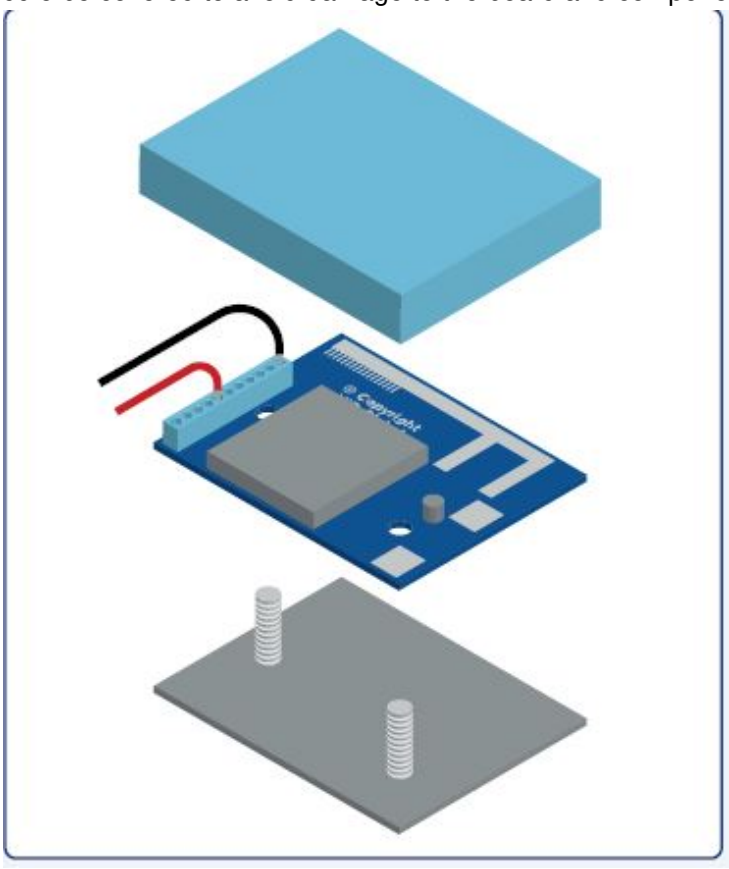
- Set up Bluzone account
- Download Bluzone mobile app
- Additional installation guides are available and can be found at: https: **//hid.gl/HID-BluFi-installation**

Module mounting

BLE Modules should be mounted with screws to rigid standoffs using the two through-holes on the printed circuit board assembly (PCBA).



The modules may be mounted in a custom enclosure or to a surface that is isolated from contact. It is recommended that the module be covered to avoid damage to the board and components.



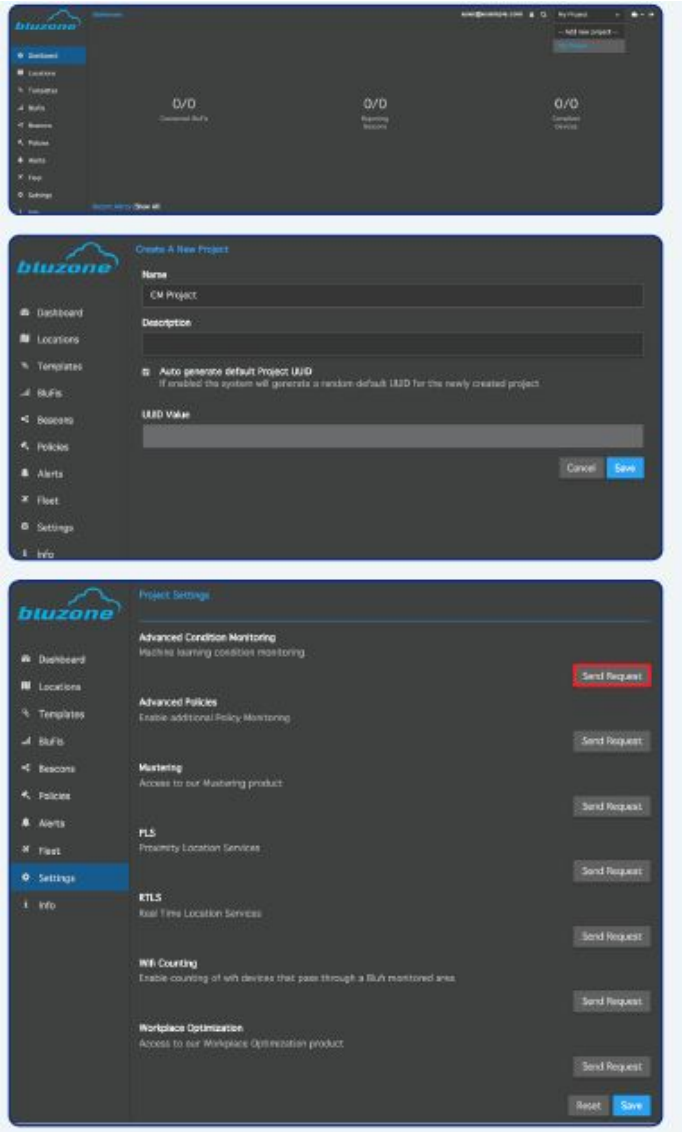
Initial set up

Account set up

1. 1. Visit bluzone.io and register a new account. Verify your email by clicking on the link emailed to you.

Project set up

1. . Use the drop-down menu in the top right portion of the screen to create a new project.
2. Go to Settings and send a Product Activation request for your use case e.g. RTLS, Status Monitoring or Advanced Condition Monitoring, depending on the SaaS model you have purchased. Your product features will be activated within 24 hours.

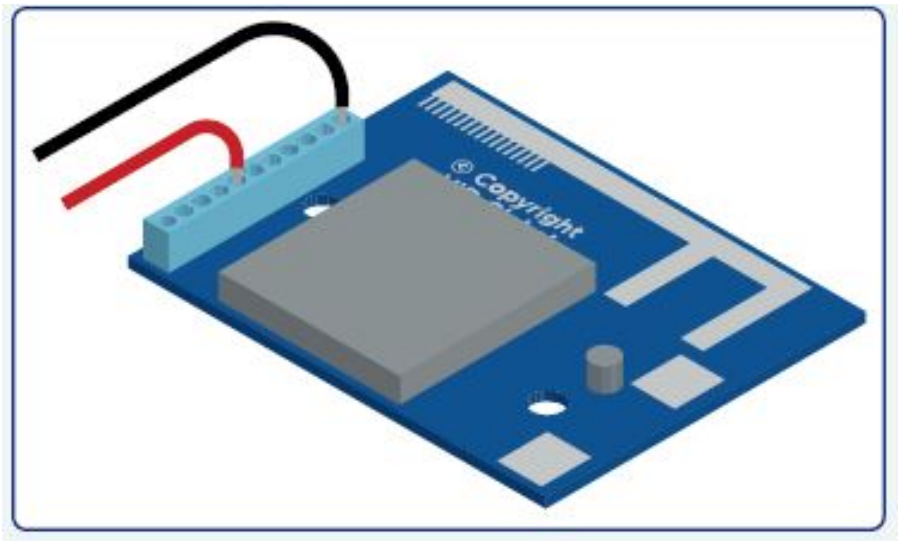


Bluzone mobile app setup

1. . Download the Bluzone mobile app from Google Play or the iOS App Store.
2. Login to your account with Bluzone credentials.

BEEKs BLE Module provisioning

1. Power on the module with a 3.6 – 30 VDC supply voltage and place the module close to a BluFi (don't install on assets yet).



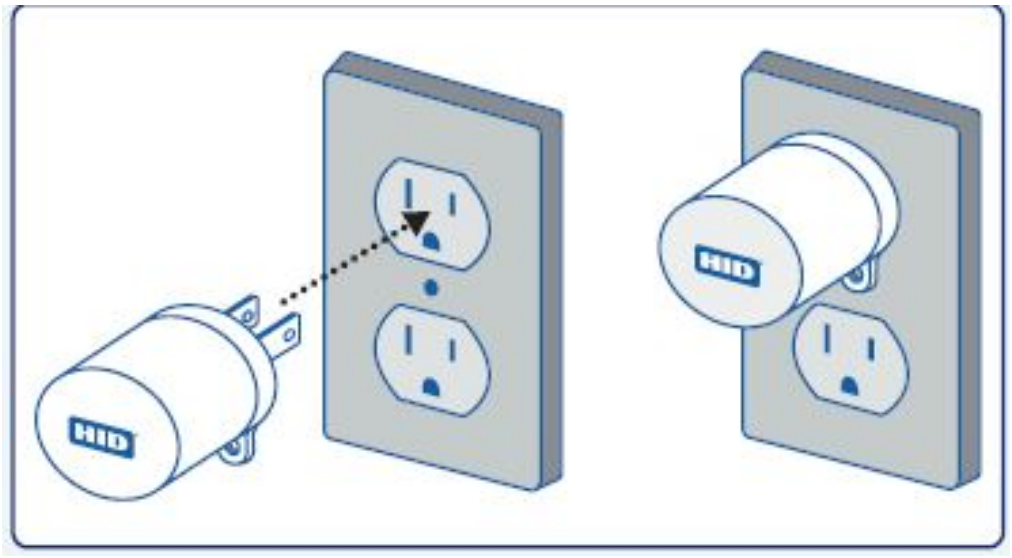
2. . For each module, hold the mobile device close to the module and select the device with highest signal strength (swipe down to refresh list). Continue the steps for each BEEKs module.
3. When prompted for a Template, select the template that corresponds to your custom use-case.
4. Assign the module a name that coincides with the asset on which it is installed.

BEEKs and BluFi installation

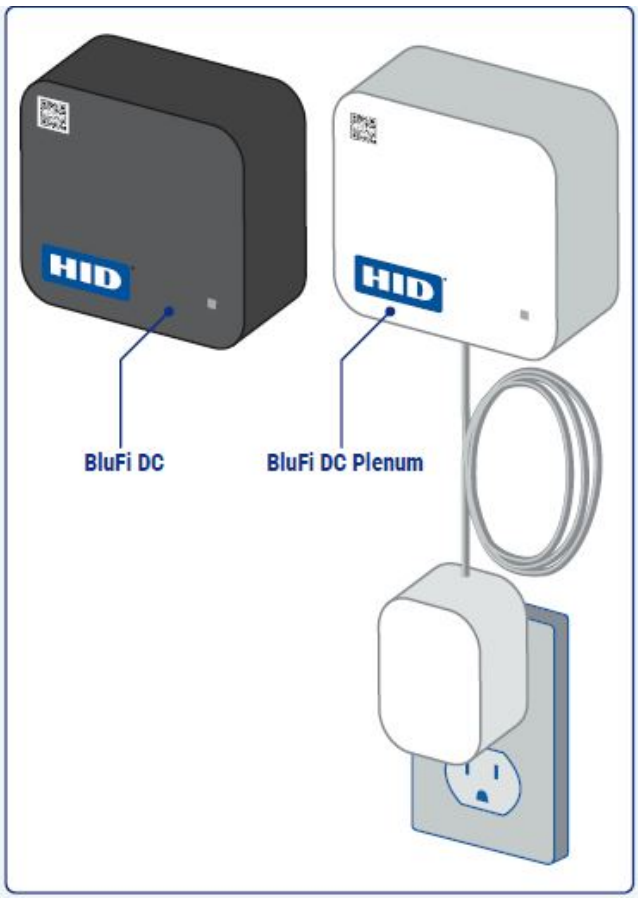
BluFi installation

BluFi should be installed within 100ft (30m) of monitored assets (shorter distances are required for environments with obstructions).

- **BluFi AC:**



BluFi DC:

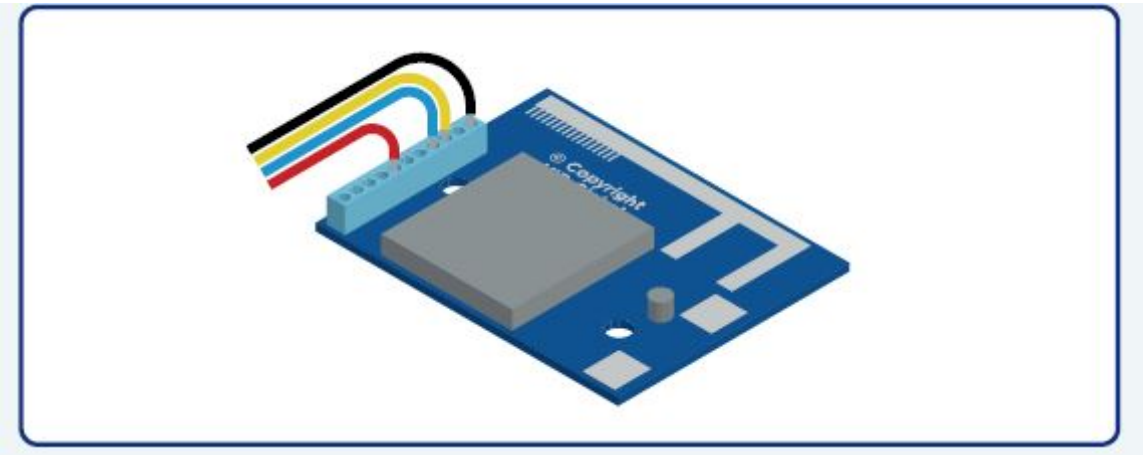


- **BLE Module**

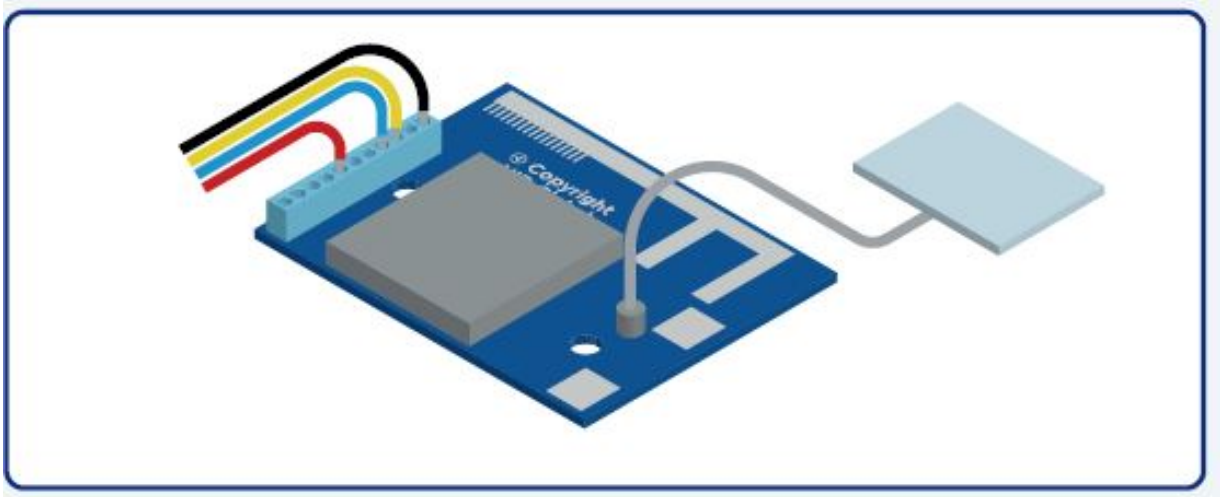
1. . Place beacons near the desired assets (don't install yet).
2. In Bluzone console, go to BluFi > {BluFi Name} > Statistics and scroll down to the Scan Map.
3. Verify that each beacon sees at least one BluFi. (-75 dBm or higher is desired). Move any BluFi, if necessary.

BLE Module installation

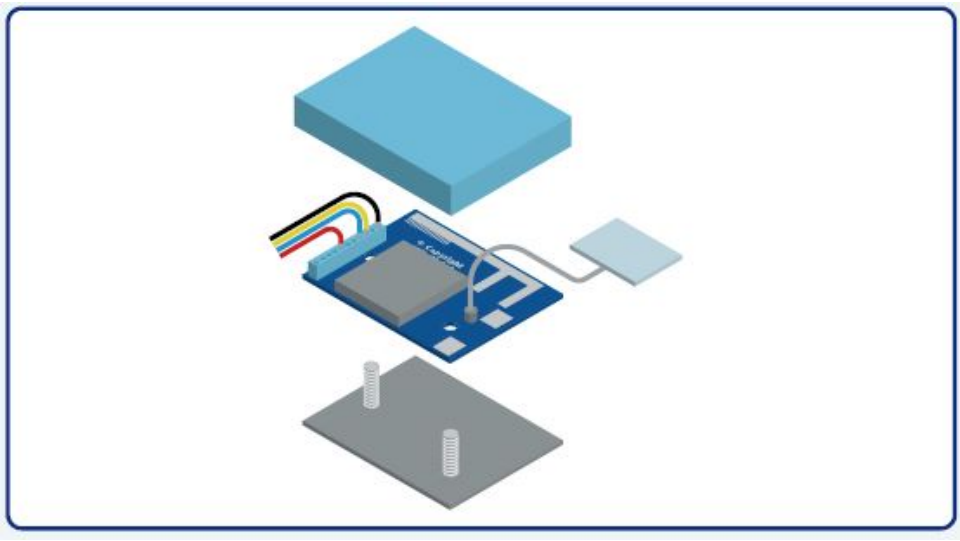
1. Connect the wired sensor (for your use-case) to the BLE Module.
2. Power on the BLE Module using 3.6 – 30 VDC power supply.



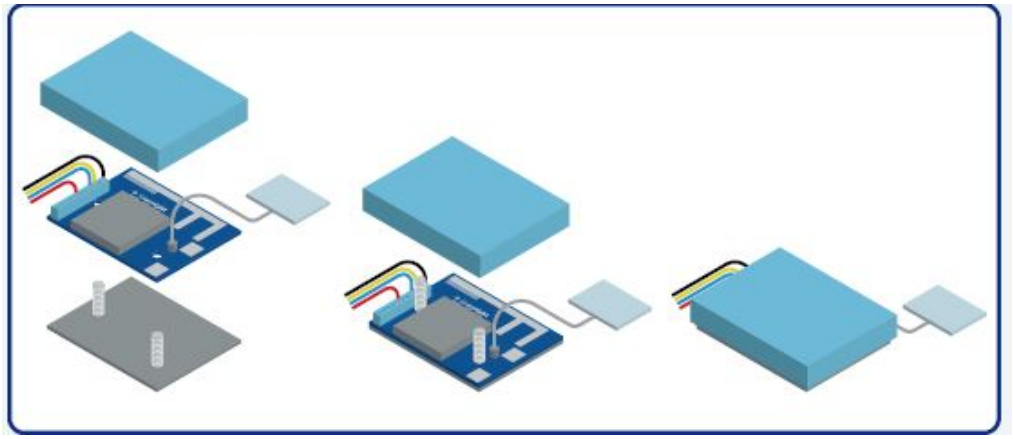
3. (Optional) Connect external antenna to the U.FL coaxial connector.



4. BLE Modules should be mounted with screws to rigid standoffs using the two through-holes on the printed circuit board assembly (PCBA).



5. The modules may be mounted in a custom enclosure or to a surface that is isolated from contact. It is recommended that the module be covered to avoid damage to the board and components.



Specifications

	BEEKs BLE Module Model: MOD001		
Available configurations	**MOD001** **(Most comprehensive)**	**MOD001-UART**	**MOD001-Badge**
Description	Base model board with components to support g eneric data input through I2C, SPI, and analog sensors.	Board with components t o support serial data input via UART connection; raw data advertised in sBeaco n packets.	Board with components t o support use of module i n a badge application for l ocation service use-cases
Dimensions	30.5mm x 23.5mm	30.5mm x 23.5mm	30.5mm x 23.5mm
Frequency Range	2400-2483.5 MHz		
Number of Channels	40		
Modulation	GFSK		
Mode of operation	Half-duplex		
RF output power (max)	+5 dBm		
Data Rate	1 Mbit/s		
Antenna	PCB antenna, antenna gain 0.30 dBi		
External Antenna (optio nal)	TAOGLAS WCM.01.0111 2.4GHz Button Antenna. Antenna Gain 0.89 dBi		
Power Supply	Input Voltage 3.6—30 VDC		
Operating temperature	-22° to +140° F (-30° to +60° C)		
Power consumption -RX	7.5 mA RX Active Mode		
Power consumption-TX	6.5 mA TX Active Mode		
Power consumption-sle ep	1.6 µA (SRAM retention and RTC running)		
CPU	Dual Code: ARM Cortex M3 (32 bit, 48 MHz) main CPU, ARM Cortex M0 (16 bit) s ensor controller		
Flash Memory	128 KB flash (MCU) 512 KB additional flash		

Type	Feature
BLE Stack	• Bluetooth Low Energy 4.2 compliant single mode protocol stack • GAP, SM, GATT, ATT, L2CAP and Link layer protocols • Peripheral and broadcaster roles • Central role • Observer and limited master role • Fully embedded software architecture. No bifurcation between Host and Controller
Link-Layer	• Packets per connection interval – Configurable up to 12 • Connection parameters update • Connection channel map update • Connection graceful terminate • AES128 Encryption request and response
Memory	• ~54 kB stack and application size (Flash non-volatile memory) • ~8 kB RAM requirement • No memory Isolation between application and protocol stack

Regulatory information

SRD Model: MOD001
RF Specifications

Standard protocol	BLE 4.2
Frequency band	2400-2483.5 MHz
No of RF channels	40
RF output power	+5 dBm
Modulation	GFSK
Antenna	PCB, 0.30 dBi

Communication Regulation

The following is a list that applies:
US FCC – United States Compliance
FCC ID: SL6-MOD001
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.
   IMPORTANT: Changes or modifications to this product not authorized by HID, could void the FCC Certification and negate your authority to operate this product.
   Note: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules.
3. Federal Communication Commission Interference Statement
4. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
5. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
6. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This module is certified pursuant to two Part 15 rules sections(15.247).

Integrator / End Product

The user manual of the end product should include:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Label of the end product:

The host product must be labeled in a visible area with the following

"Contains FCC ID: SL6-MOD001". The end product shall bear the following 15.19 statement: 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.

Canada Compliance

24824-MOD001

This device complies with Industry Canada license-exempt RSS standard(s). 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, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC Radiation Exposure Statement:
This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps
OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).
IMPORTANT NOTE: In the event that these conditions cannot be met
(for example certain laptop configurations or co-location with another transmitter), then the IC authorization is no longer considered valid and the IC number 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 IC authorization.
OEM Integrator Notice
End Product Labeling
This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains **transmitter module IC:** IC: 24824-MOD001".
Contient le module d'émission IC: IC: 24824-MOD001
The Host Model Number (HMN) must be indicated at any location on the exterior of the end product or product packaging or product literature which shall be available with the end product or online.
This device is intended only for OEM integrators under the following conditions:

1. . The antenna must be installed such that 20cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna.

Australia/ New Zealand Compliance
This product conforms to Australia and New Zealand Radio Requirements.

PLT-06387, Rev. A.0
Part of ASSA ABLOY
For technical support, please visit: **https://support.hidglobal.com**

Documents / Resources

	Hid Global MOD001 BEEKS BLE Module [pdf] Installation Guide MOD001, SL6-MOD001, SL6MOD001, MOD001 BEEKS BLE Module, BEEKS BLE Module