

HID® MOD001

Install Guide



Overview

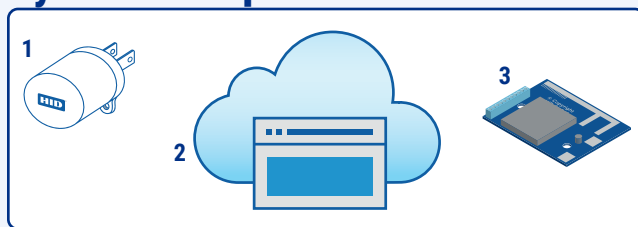
This BEEKs™ BLE Module Install Guide covers the basics of the setup and provisioning of equipment with Bluzone cloud account and project. This install guide is intended for technicians. The HID BEEKs Bluetooth Low Energy (BLE) Module supports transmission of data from wired sensors utilizing a variety 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



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

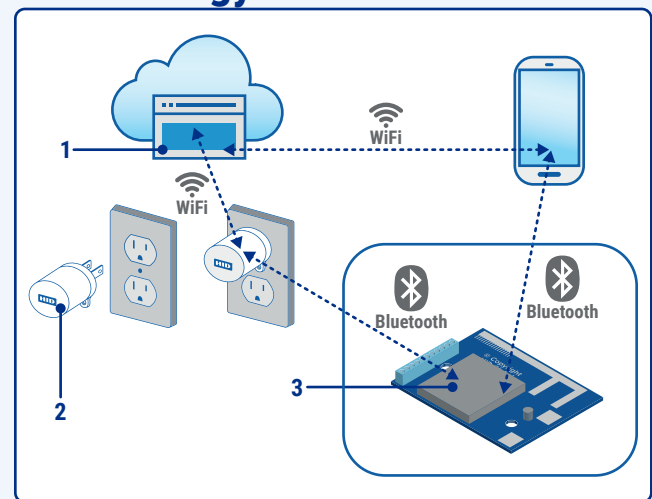
Best practices

- 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



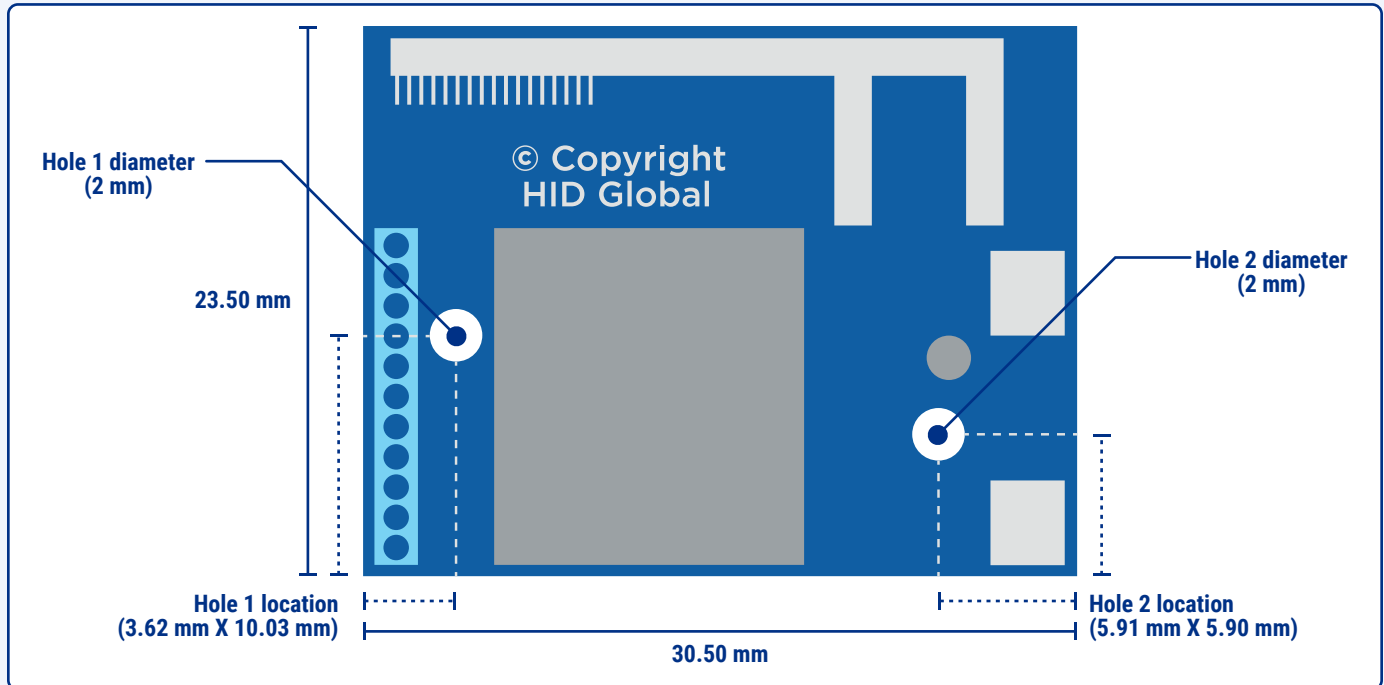
1	Bluzone – Secure cloud-based SaaS to centrally manage BEEKs via BluFi gateways. Additionally, monitor, store and analyze performance data collected from deployed fleet.
2	BluFi Gateway – Receives data from BEEKs over Bluetooth and sends to Bluzone Cloud.
3	BLE Module – Sends data from wired sensors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

Prerequisites

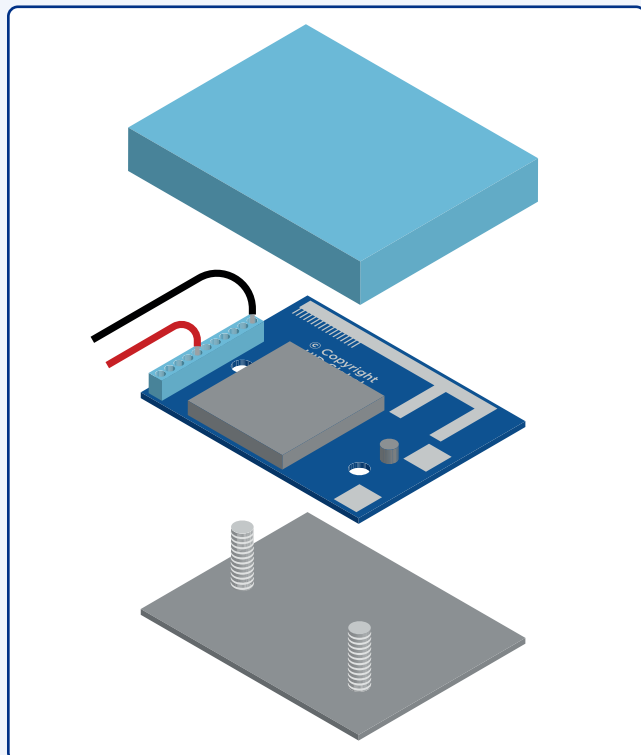
- Set up Bluzone account
- Download Bluzone mobile app
- Additional installation guides are available and can be found at: <https://hid.gl/HID-BluFi-installation>

1. Module mounting

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



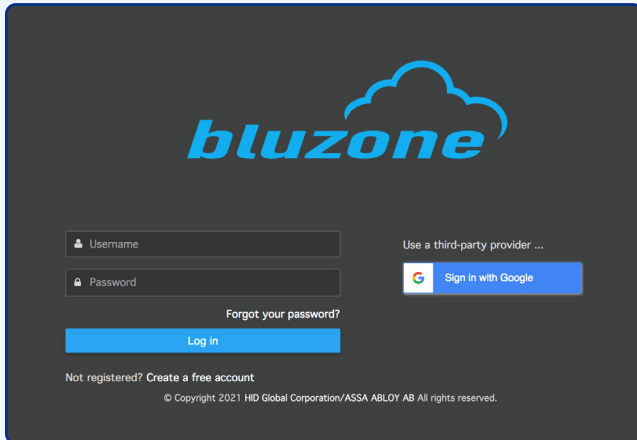
The modules may be mounted in a custom enclosure or to a surface that is isolated from contact. It is recommended that the module be covered to avoid damage to the board and components.



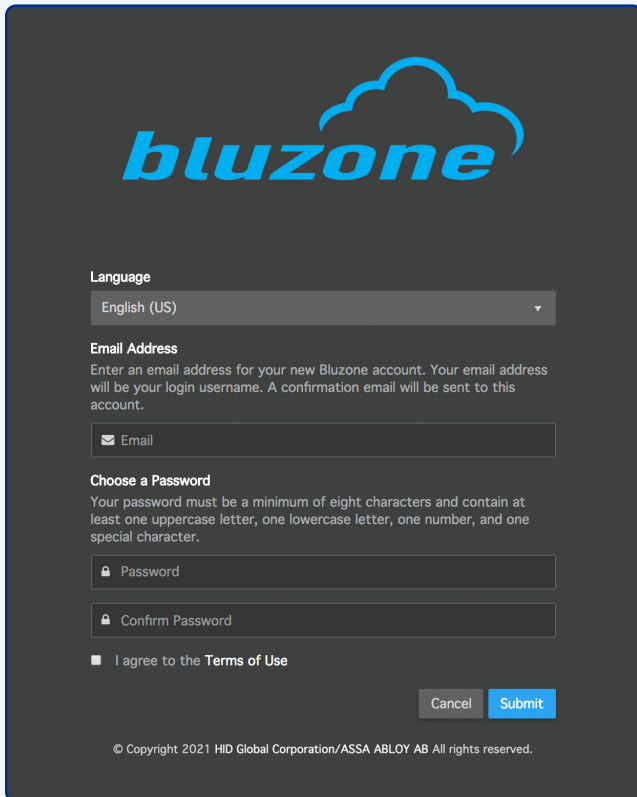
2. Initial set up

2.1 Account set up

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



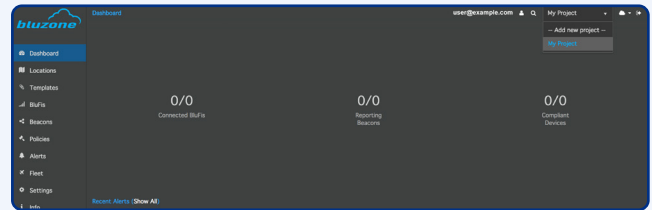
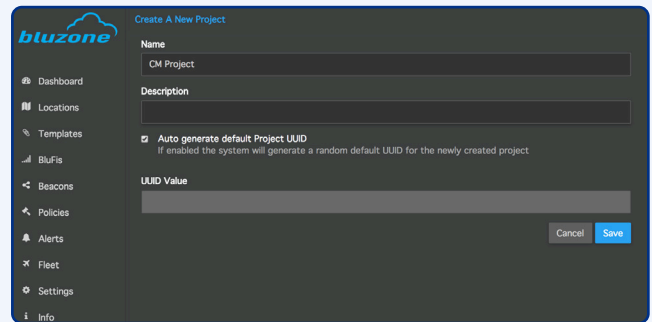
The login screen features the Bluzone logo at the top. Below it are input fields for 'Username' and 'Password'. A 'Log in' button is positioned below the password field. To the right, there is a link for 'Forgot your password?' and a 'Sign in with Google' button. At the bottom, there is a link for 'Not registered? Create a free account' and a copyright notice: '© Copyright 2021 HID Global Corporation/ASSA ABLOY AB All rights reserved.'



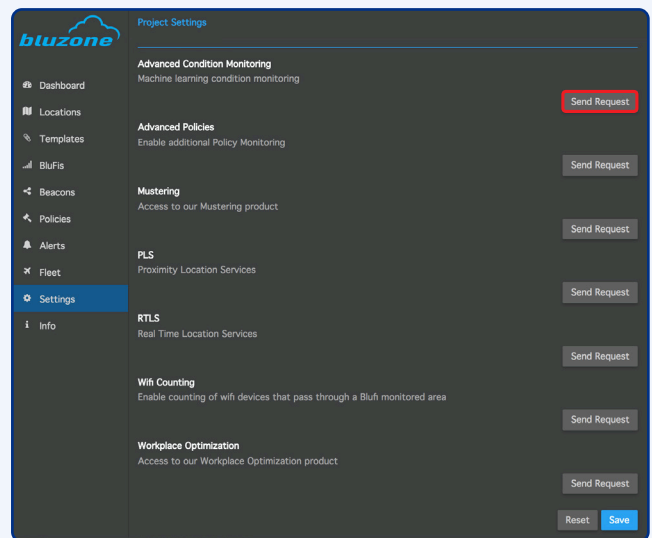
The registration screen features the Bluzone logo at the top. Below it is a 'Language' dropdown menu set to 'English (US)'. The 'Email Address' section includes a text box and a note: 'Enter an email address for your new Bluzone account. Your email address will be your login username. A confirmation email will be sent to this account.' The 'Choose a Password' section includes two password input fields and a note: 'Your password must be a minimum of eight characters and contain at least one uppercase letter, one lowercase letter, one number, and one special character.' At the bottom, there is a checkbox for 'I agree to the Terms of Use', 'Cancel' and 'Submit' buttons, and a copyright notice: '© Copyright 2021 HID Global Corporation/ASSA ABLOY AB All rights reserved.'

2.2 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.

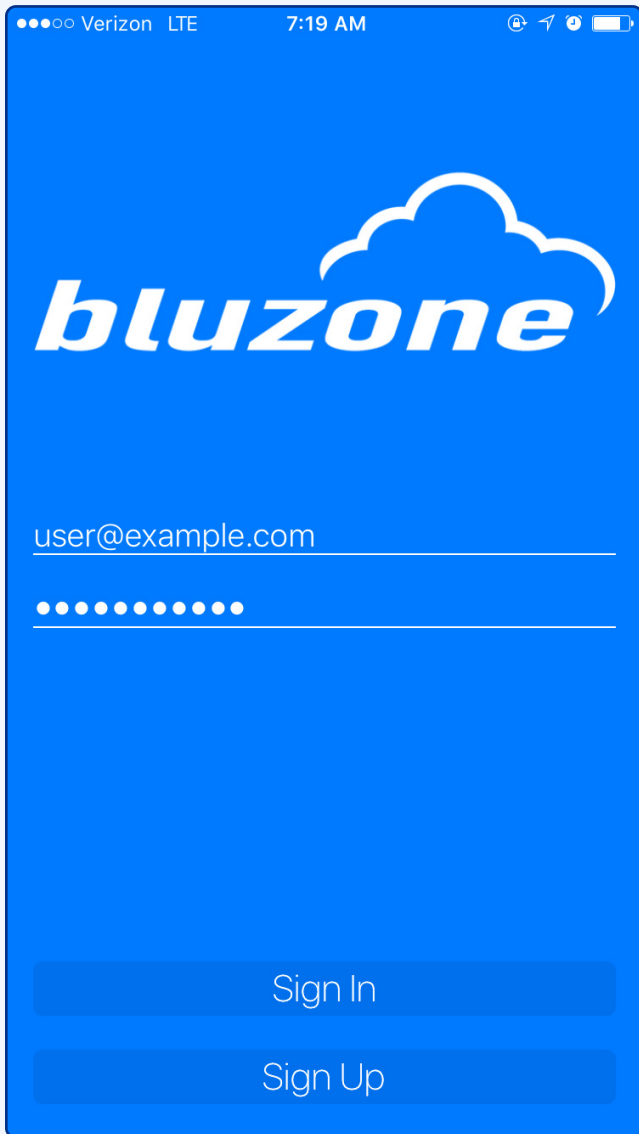
The 'Create A New Project' form includes a 'Name' field with 'CM Project' entered, a 'Description' field, and a checked checkbox for 'Auto generate default Project UUID'. Below this is a 'UUID Value' field. 'Cancel' and 'Save' buttons are at the bottom right.



The 'Project Settings' page lists various features with 'Send Request' buttons: 'Advanced Condition Monitoring', 'Advanced Policies', 'Mustering', 'PLS', 'RTLS', 'Wifi Counting', and 'Workplace Optimization'. The 'Settings' menu item in the sidebar is highlighted.

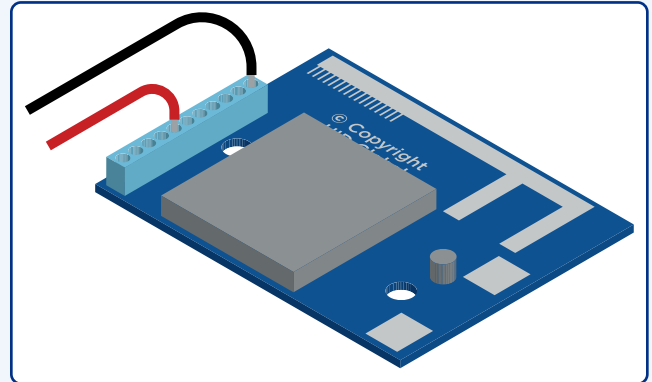
2.3 Bluzone mobile app setup

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



2.4 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).



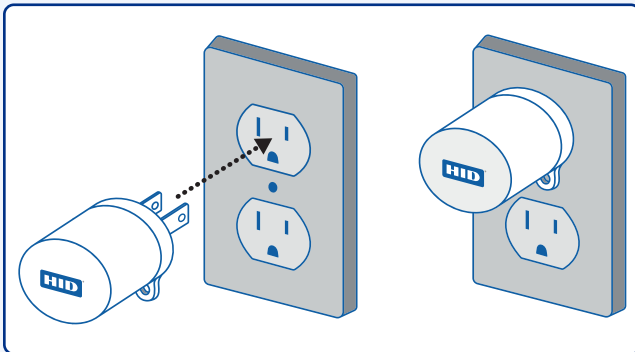
2. For each module, hold the mobile device close to the module and select the device with highest signal strength (swipe down to refresh list). Continue the steps for each BEEKs module.
3. When prompted for a Template, select the template that corresponds to your custom use-case.
4. Assign the module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

3. BEEKs and BluFi installation

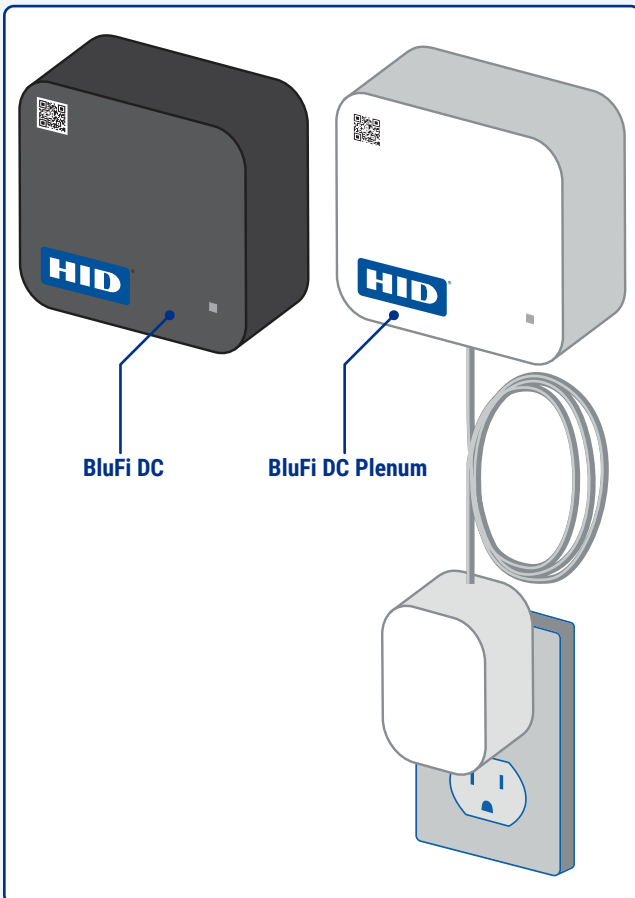
3.1 BluFi installation

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

• **BluFi AC:**

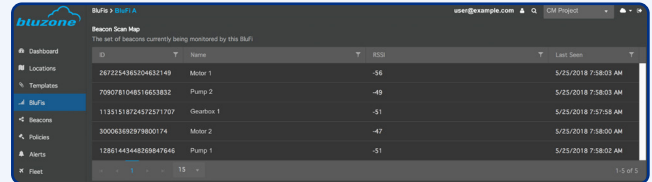


• **BluFi DC:**



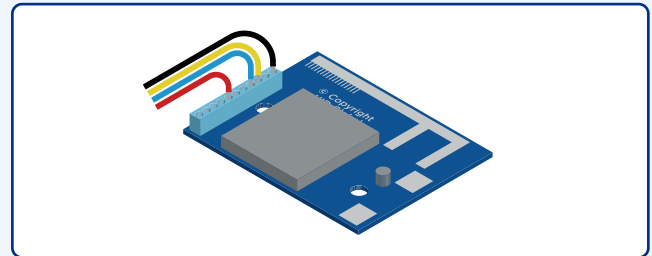
3.2 BLE Module

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.

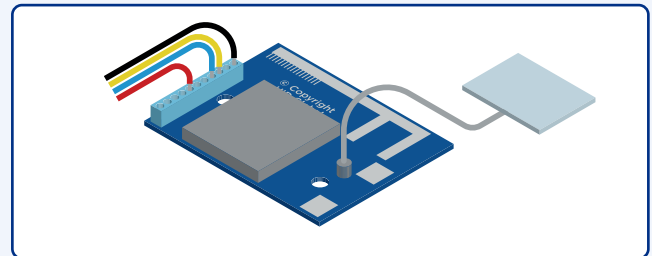


3.3 BLE Module installation

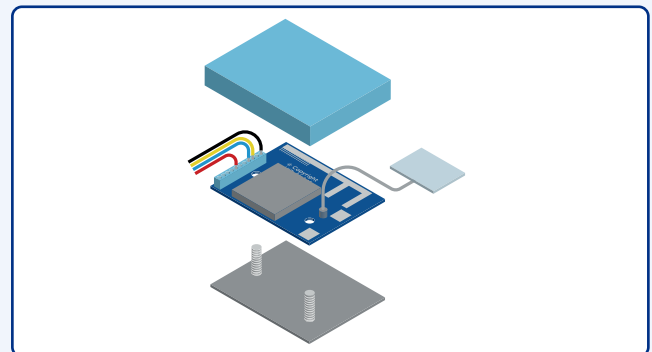
1. Connect the wired sensor (for your use-case) to the BLE Module.
2. Power on the BLE Module using 3.6 - 30 VDC power supply.



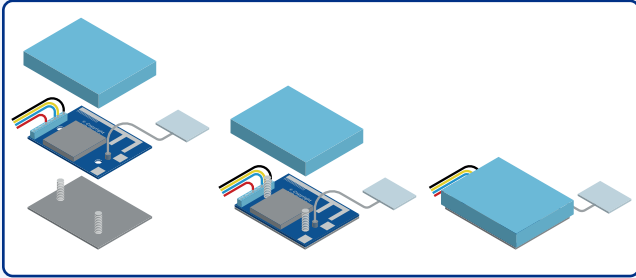
3. (Optional) Connect external antenna to the U.FL coaxial connector.



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 generic data input through I2C, SPI, and analog sensors.	Board with components to support serial data input via UART connection; raw data advertised in sBeacon packets.	Board with components to support use of module in a badge application for location 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 (optional)	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-sleep	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) sensor controller		
Flash Memory	128 KB flash (MCU) 512 KB additional flash		
Type	Feature		
BLE Stack	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Packets per connection interval - Configurable up to 12 • Connection parameters update • Connection channel map update • Connection graceful terminate • AES128 Encryption request and response 		
Memory	<ul style="list-style-type: none"> • ~54 kB stack and application size (Flash non-volatile memory) • ~8 kB RAM requirement • No memory isolation between application and protocol stack 		



Type	Feature
Advertising	<ul style="list-style-type: none">• Reverse RSSI• Configurable interval• Configurable adaptive advertisement mode for lower power consumption
Operating System	Bare metal implementation by HID
Application supported	<ul style="list-style-type: none">• iBeacon support• sBeacon support• Eddystone support• Fully open and easily configurable for 3rd party Beacon protocol
Security	<ul style="list-style-type: none">• Bluzone Cloud-Key-vault managed security• Unique internal key per individual Beacon• Internal Device ID per individual Beacon (sBV2ID)• Internal UNIX time clock / Timer since "on" (Manufacture)• RSA Private/Public with(Bluzone Cloud - key/vault)-Communication from/to Beacon encrypted use RSA

4. 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.

Federal Communication Commission Interference Statement

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. 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. 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.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)

1. L'antenne doit être installée de telle sorte qu'une distance de 20cm est respectée entre l'antenne et les utilisateurs, et
2. Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Australia/ New Zealand Compliance

This product conforms to Australia and New Zealand Radio Requirements.



Japan



UK Compliance



European Union Compliance

Conformite Européenne (European Community)



Hereby, HID Global declares that this Radio Equipment SRD Model number MOD001 is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following Internet address: www.hidglobal/certifications

This product operates at the following frequencies:

- 2.4 GHz band with an RF output power of less than +5 dBm e.i.r.p.

Czech

Společnost HID Global tímto prohlašuje, že toto rádiové zařízení, číslo modelu MOD001, odpovídá požadavkům směrnice 2014/53/EU. Úplný text EU Prohlášení o shodě je k dispozici na následující internetové adrese: www.hidglobal/certifications

Tento výrobek používá následující frekvence:

- frekvenční pásmo 2,4 GHz, přičemž výstupní RF výkon je nižší než +5dBm EIRP

Greek

Δια του παρόντος, η HID Global δηλώνει ότι ο παρών ραδιοεξοπλισμός με αριθμό Μοντέλου MOD001 βρίσκεται σε συμμόρφωση με την Οδηγία 2014/53/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης για την Ευρωπαϊκή Ένωση είναι διαθέσιμο στην ακόλουθη διαδικτυακή διεύθυνση: www.hidglobal/certifications

Το παρόν προϊόν λειτουργεί στις ακόλουθες συχνότητες:

- Ζώνη των 2,4 GHz με ισχύ εξόδου ραδιοσυχνότητας (RF) μικρότερη από +5dBm e.i.r.p. (ισοδύναμη ιστροπικά ακτινοβολούμενη ισχύς)

Dutch

Hierbij verklaart HID Global dat deze radioapparatuur modelnummer MOD001 in overeenstemming is met Richtlijn 2014/53/EU. De volledige tekst van de Europese conformiteitsverklaring is te vinden op de website: www.hidglobal/certifications

Dit product werkt op de volgende frequenties:

- 2,4 GHz-band met een RF-uitgangsvermogen van minder dan +5 dBm e.i.r.p.

Danish

HID Global erklærer hermed, at dette radioudstyr modelnummer MOD001 er i overensstemmelse med direktiv 2014/53/EU. Den fulde tekst i EU-overensstemmelseserklæringen kan læses her: www.hidglobal/certifications

Denne produkt fungerer ved følgende frekvenser:

- 2,4 GHz-bånd med en RF-udgangseffekt på mindre end +5dBm e.i.r.p.

Estonian

Käesolevaga kinnitab HID Global, et see raadioseadmestik mudelinumbriga MOD001 on vastavuses direktiiviga 2014/53/EL. Kogu EL-i vastavusdeklaratsiooni tekst on saadaval järgmisel internetiaadressil: www.hidglobal/certifications

See toode töötab järgmistel sagedustel.

- 2,4 GHz ribalaiusel raadiosagedusliku väljundvõimsusega vähem kui +5 dBm e.i.r.p.

Maltese

Hawnhekk, HID Global tididikjara li dan it-Taghmir tar-Radju bin- numru tal-mudell MOD001 huwa konformi mad-Direttiva 2014/53/UE. It-test shih tad- dikjarazzjoni ta' konformità ta- UE hu disponibbli f'dan l- indirizz fuq l-Internet: www.hidglobal/certifications

Dan il-prodott jopera fil- frekwenzi li eġġjin:

- 2.4 GHz band b'RF output power ta' inqas minn +5 dBm e.i.r.p.

German

Hiermit erklärt HID Global, dass dieses Funkgerätmodell Nr.

MOD001 der Richtlinie 2014/53/EU entspricht. Der vollständige Text der EU-Konformitätserklärung steht unter der folgenden Internetadresse zur Verfügung: www.hidglobal/certifications

Dieses Produkt arbeitet mit den folgenden Frequenzen:

- 2,4-GHz-Band mit einer HF-Ausgangsleistung von weniger als +5dBm EIRP

Finnish

HID Global vakuuttaa täten, että tämä radiolaitte, mallinumero MOD001, vastaa direktiiviä 2014/53/EU. EU-

vaatimustenmukaisuus- vakuutuksen koko teksti on saatavissa seuraavasta Internet-osoitteesta: www.hidglobal/certifications

Tämä tuote toimii seuraavilla taajuuksilla:

- 2,4 GHz:n kaista, RF- lähtöteho alle +5 dBm EIRP

Swedish

Härmed intygar HID Global att denna radioutrustning modell nummer MOD001 överensstämmer med direktiv 2014/53/EU. Den fullständiga texten med intyg om överensstämmelse för EU finns på följande internetadress: www.hidglobal/certifications

Den här produkten fungerar på följande frekvenser:

- 2,4 GHz-band med en RF-ut effekt på mindre än +5dBm e.i.r.p.

French

Par la présente, HID Global déclare que cet équipement radio Modèle MOD001 est conforme à la directive 2014/53/UE. Le texte intégral de la déclaration de conformité de l'UE est disponible sur le site Internet: www.hidglobal/certifications

Ce produit fonctionne aux fréquences suivantes:

- dans la bande de 2,4 GHz avec une puissance de sortie RF inférieure à +5dBm PIRE

Italian

Con il presente documento, HID Global dichiara che la presente apparecchiatura radio modello MOD001 è conforme alla direttiva 2014/53/UE. Il testo completo della dichiarazione UE di conformità è disponibile su Internet al seguente indirizzo: www.hidglobal/certifications

Questo prodotto funziona alle seguenti frequenze:

- Banda a 2,4 GHz con potenza di uscita RF inferiore a +5 dBm EIRP

Polish

Firma HID Global deklaruje niniejszym, że to urządzenie radiowe, model numer MOD001, spełnia wymogi określone w Dyrektywie 2014/53/UE. Pełny tekst deklaracji zgodności UE jest dostępny pod następującym adresem internetowym: www.hidglobal/certifications

Ten produkt działa na następujących częstotliwościach:

- w paśmie 2,4 GHz z równoważną mocą wyjściową RF wypromieniowaną izotropowo (EIRP) mniejszą niż +5dBm.

Croatian

Ovime tvrtka HID Global izjavljuje da je ova radijska oprema model MOD001 u skladu s Direktivom 2014/53/EU. Cjelokupan tekst europske izjave o sukladnosti dostupan je na sljedećoj internetskoj stranici: www.hidglobal/certifications

Ovaj proizvod radi pri sljedećim frekvencijama:

- pri frekvenciji od 2,4 GHz s izlaznom RF snagom manjom od +5dBm e.i.r.p.

Lithuanian

Šiuo „“ deklaruoja, kad šis radijo įrangos modelis HID Global iš, kurio numeris MOD001, atitinka Direktyvą 2014/53/EB. Visą ES atitikties deklaracijos tekstą galite rasti šiuo interneto adresu: www.hidglobal/certifications

Šis gaminy s veikia tokiais dažniais:

- 2,4 GHz dažnio diapazonas, RD išvesties galia yra mažesnė nei +5 dBm EIRP.

Slovenian

Družba HID Global izjavlja, da je ta radijska oprema, številka modela MOD001, v skladu z Direktivo 2014/53/EU. Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu: www.hidglobal/certifications

Ta izdelek deluje pri naslednjih frekvencah:

- 2,4 GHz z izhodno močjo RF manj kot +5dBm e.i.m.o. (EIRP)

Hungarian

A HID Global ezúton nyilatkozza, hogy ez az MOD001 típuszámú rádióberendezés megfelel a 2014/53/EU irányelvnek. Az EU megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: www.hidglobal/certifications

A termék a következő frekvenciákon üzemel:

- 2,4 GHz-es sáv, mely esetében RF kimeneti teljesítménye kevesebb, mint +5 dBm EIRP

Latvian

Ar šo uzņēmums HID Global apliecina, ka šī radioiekārta, modeļa numurs MOD001, atbilst Direktīvas 2014/53/ES prasībām. Pilnu ES atbilstības deklarācijas tekstu var skatīt vietnē www.hidglobal/certifications

Šis izstrādājums darbojas ar šādām frekvencēm:

- 2,4 GHz josla; radiofrekvences izvades jauda ir mazāka par +5 dBm (ekvivalentā izotropiski izstarotā jauda).

Slovak

Spoločnosť HID Global týmto vyhlasuje, že toto rádiové zariadenie, model MOD001, je v súlade so smernicou 2014/53/EÚ. Úplné znenie vyhlásenia o zhode so smernicami EÚ je k dispozícii na stránke: www.hidglobal/certifications

Toto zariadenie pracuje pri nasledujúcich frekvenciách:

- 2,4 GHz pásmo s RF výstupným výkonom nižším ako +5dBm EIRP

Romanian

Prin prezenta, HID Global declară că acest echipament radio număr model MOD001 ste în conformitate cu Directiva 2014/53/UE. Textul complet al declarației de conformitate UE poate fi găsit la următoarea adresă de internet: www.hidglobal/certifications

Acest produs funcționează la următoarele frecvențe:

- în banda 2,4 GHz cu o putere de ieșire RF de mai puțin de +5dBm E.I.R.P.

Portuguese

Por este meio, a HID Global declara que este modelo de equipamento de rádio, número MOD001, está em conformidade com a Diretiva 2014/53/UE. O texto completo da declaração de conformidade da UE está disponível no seguinte endereço da Internet: www.hidglobal/certifications

Este produto opera nas frequências seguintes:

- 2,4 GHz com uma potência de saída de RF inferior a +5dBm e.i.r.p.

Spanish

Por la presente, HID Global declara que este equipo de radio, modelo número MOD001 cumple la Directiva 2014/53/EU. El texto completo de la Declaración de Conformidad CE está disponible en la siguiente dirección de internet: www.hidglobal/certifications

Este producto opera en las siguientes frecuencias:

- Banda de frecuencia de 2,4 GHz con una potencia de salida de RF (PIRE) de menos de +5dBm.