

iBS05 Specification

Waterproof Sensor Beacon

iBS05 is a small IP67 beacon/ tag for multi-purpose. One major usage is for location tracking and with different sensor options, it can also be used for sensor monitoring purposes. iBS05 supports **Bluetooth® Low Energy (BLE)** in Bluetooth 5. It works with INGICS beacon gateway to locate the beacon location and to monitor the sensor status. The typical battery usage time is over 3 years in default settings.



Features

General

- ARM Cortex™-M4 32-bit processor
- Powered with one CR2032 battery
- Long battery life: 3.4 year in typical beacon setting
- Android APP for configuration
- Panic/alarm button
- Power on/off button
- Size: 38mmX38mmX9mm

Environment

- IP67 waterproof
- Rugged, 2M of drop protection
- Operating temperature: -20°C to 60°C

BLE

- 2.4GHz frequency band
- Support Bluetooth Low Energy in **Bluetooth 5** standard
- Maximum transmit power +4dBm
- Receiver sensitivity: -97 dBm @1Mbps, 0.1% BER
- On board PCB antenna
- >100M range in open space

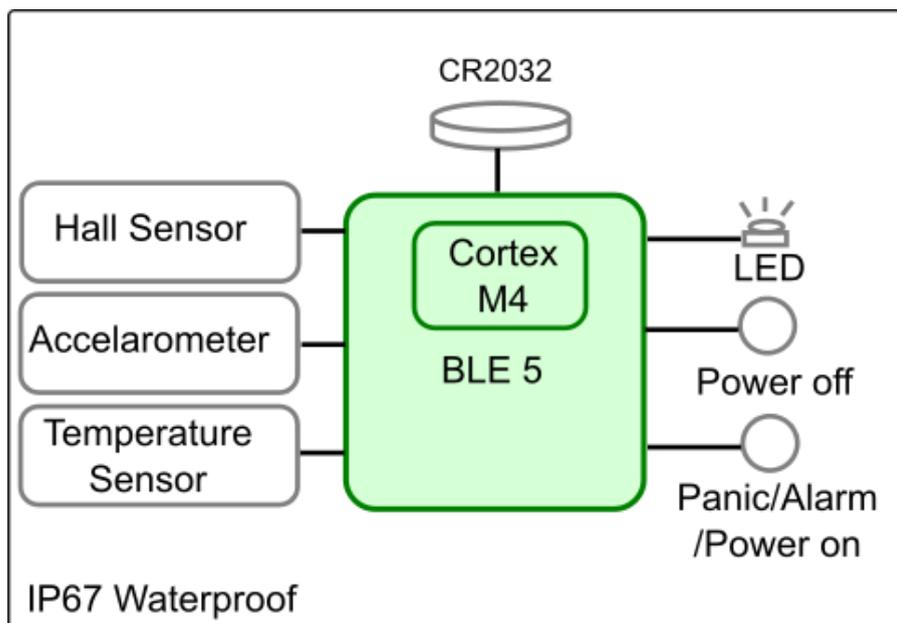
Certification

- Bluetooth
- CE/FCC/TELEC(scheduled in Sep, 2021)

Applications

- Location tracking
- Activity monitoring
- Sensor network
- Building automation
- Security
- Access control
- Industrial automation
- Health and wellness monitoring

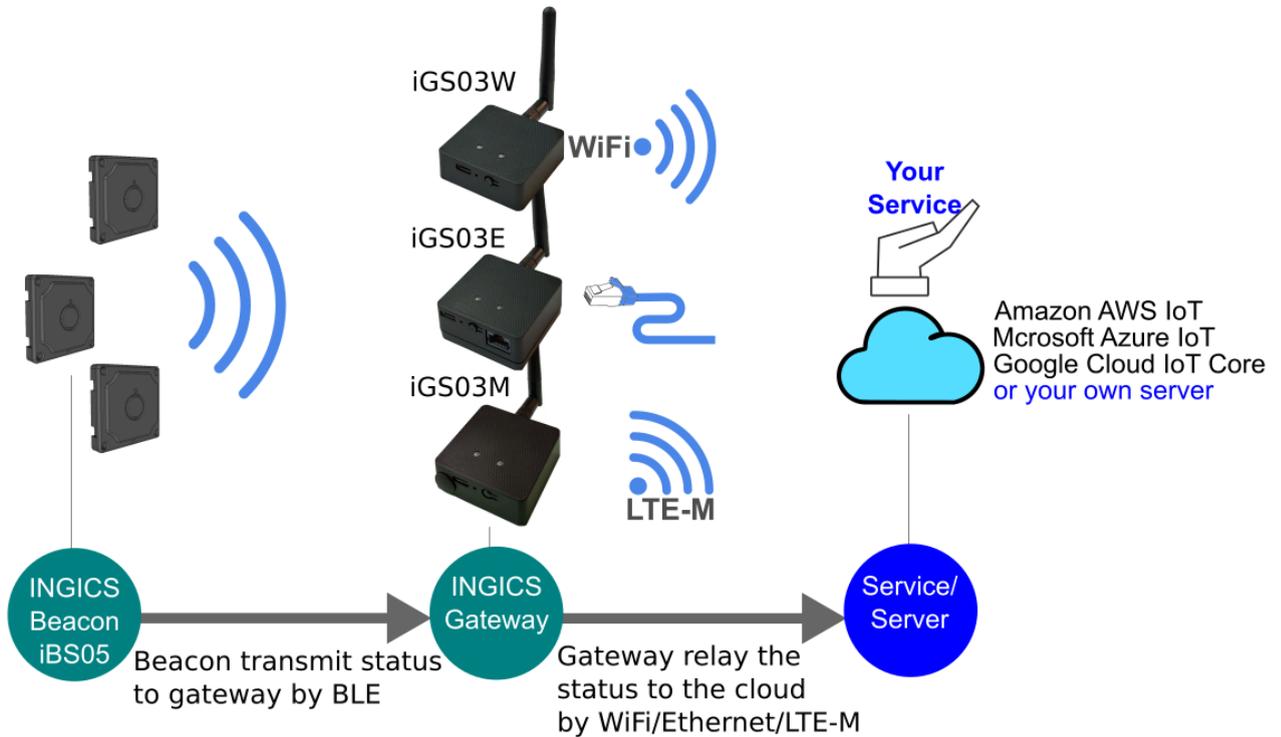
Block Diagram



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Typical Usage

Works with the latest iGS03W, iGS03E, or iGS03M beacon gateway(or iGS01S/iGS02E) to receive the beacon message and send it to the cloud server. Users can access and manage the data anytime, anywhere.

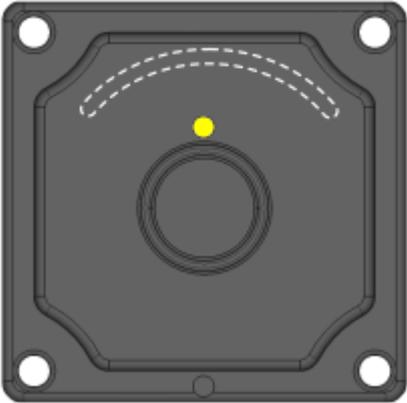
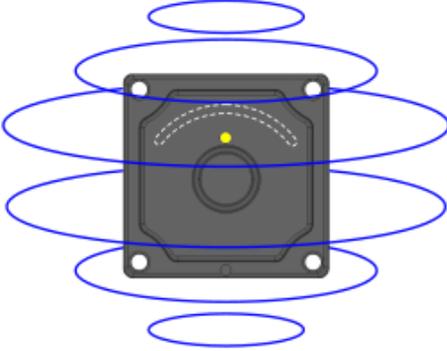
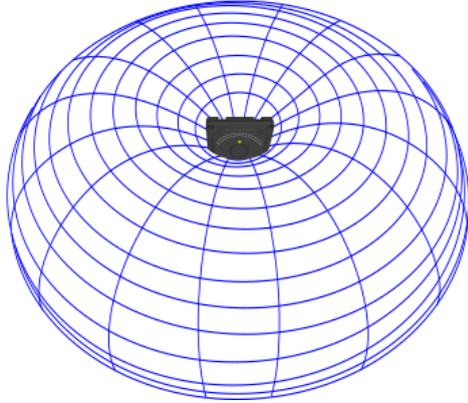


Note: iGS03W/E/M are the 3rd generation of beacon gateway in WiFi/Ethernet/LTE-M interface.

Models

Model Name	Description	Advertising interval	Note
iBS05	Basic beacon for tracking the position of people or assets.	User configurable from 100ms~60 min. Default: 5 s	
iBS05G	Beacon with accelerometer for motion event detection	User configurable from 100ms~60 min. Default: 5 s	Sensor status change(still->motion, motion ->still) will trigger a series of transmission to inform the status change.
iBS05H	Beacon with hall sensor for open/close detection.	User configurable from 100ms~60 min. Default: 30 s	Sensor status change(magnet moving closer or moving away) will trigger a series of transmission to inform the status change
iBS05T	Beacon with temperature sensor for environment monitoring	User configurable from 100ms~60 min. Default: 30 s Sensor updated at 0.5X (advertising interval), min.10s	

Antenna

Antenna Position	Radiation Direction	Radiation Pattern
		

Specification

Absolute Maximum Rating

Supply Power	CR2032 battery X1
Storage Temperature	-40° to 85° Celsius

Recommendable Operation Condition

Operating Temperature	-20° to 60° Celsius
Humidity	Max 95%, Non condensing, relative humidity
VDD	+3V by CR2032 battery
IP67	30min.@1 Meter water

Average Current Consumption

iBS05	6uA*, in default 5s transmit period@1Mbps..
iBS03G	10.9uA*, in default 5s transmit period@1Mbps.. (assume 120 times of active event in one day)
iBS05H	2.6uA*, in default 30s transmit period@1Mbps.. (assume 120 times of active event in one day)
iBS03T	3.1uA*, in default 30s transmit period@1Mbps..

* Measured with Panasonic CR2032 battery.

Battery Life Simulation

iBS05	3.4 yr*, in default 5s transmit period@1Mbps.
iBS05G	1.8 yr*, in default 5s transmit period@1Mbps.. (assume 120 times of active event in one day)
iBS03H	7.7 yr*, in default 30s transmit period@1Mbps.

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(assume 120 times of active event in one day)

iBS05T 6.6 yr*, in default 30s transmit period@1Mbps.

* Calculated with one piece of CR2032 battery with 220mAH capacity. Considering the battery discharge characteristic, only 80% of capacity is used for calculation. This value is just for reference and may be varied with component tolerance and different environments.

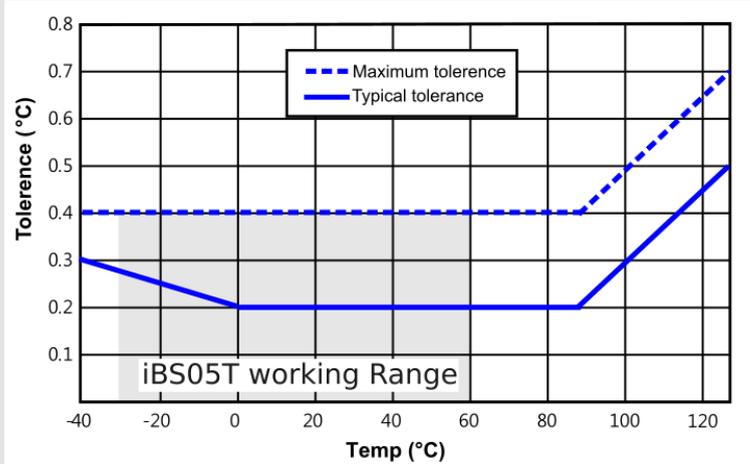
Accelerometer Characteristic

Acceleration range	+2G, +4G(default), +8G, +16G
Sensitivity	+2G: 4mg/digit +4G: 8mg/digit +8G: 16mg/digit +16G: 32mg/digit
Offset Accuracy	+40mg

Hall Sensor Characteristic

Operation point	Typ : 0.9mT(N or S)
Release point	Typ : 0.5mT(N or S)
Hysteresis width	Typ: 0.4mT(N or S)

Temperature Sensor Characteristic

Temperature accuracy	
	The accuracy of the sensor chip used in iBS05T.
Response time	Typ. : TBC
Long term Drift	max.<0.03 °C/yr

BLE RF Specification

Transmit Power	Default: 0 dBm; Max.: +4 dBm.
Frequency band	2.400 – 2.483 GHz
Antenna	on board PCB antenna
Range	>100M in open space

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Marking

Model	MAC
Serial Number	QR
MAC(6 digits)	Code

Model: **[5]**iBS05; **[H]**iBS05H; **[G]**iBS05G; **[T]**iBS05T

Serial Number: <Y><M><SN>

<Y> Year code; 1:2021, 2:2022, ...

<M> Month code; 1:Jan, 2:Feb, ..., A:Oct, B:Nov, C:Dec

<SN> Sequence Number

MAC(6 digit): The last 6 digits of MAC address

MAC QR Code: Full MAC address(12 digits) in QR code



Example

iBS05

SN:00001, manufactured in Apr, 2021.

The last 6 digit of MAC is 7F97EA

The full MAC is E715577F97EA



Dimension

Dimensions L x W x H	38 mm x 38 mm x 9 mm
Weight	12g (w/ 1xCR2032 battery)

Packaging

One package box(size: 100mmX43mmx47mm) contains 15 units of iBS05.

10X



Waste Electrical and Electronic Equipment Recycling

Our product is compliant with the WEEE directive for re-use/recovery/recycling. This cross-out wheeled-bin symbol is a reminder that this product should not be treated as household waste. Instead hand it over to the appropriate collection point for the recycling of electrical and electronic equipment in accordance with local environmental regulations for waste disposal.

Since our product is not sold directly to the end user and generally it is a part of our customer's solution, our customer is recognized as a professional seller. Our customer has the responsibility to comply with the requirement of the directive too. To help our customers, when necessary, we will provide a WEEE compliant assessment report for registering and communicating with the local authorities and recycling agency.



Certification

Bluetooth SIG Qualification

Model number: iBS05/iBS05H/iBS05T/iBS05G

Declaration ID: D048813

Description: Beacon

Japan MIC Regulatory

201-210714

FCC Regulatory

2AH2IIBS05

NCC Regulatory

iBS05 CCAH21LP6550T2
iBS05H CCAH21LP6552T6

iBS05T CCAH21LP6553T8
iBS05G CCAH21LP6551T4

CE Regulatory

iBS05 series have been tested and complies with the essential requirements of the DIRECTIVE 2014/53/EU, DIRECTIVE 2014/35/EU and DIRECTIVE 2014/30/EU. Below is the copy of the CE Conformity of Declaration.

Statement

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 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 Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

Industry Canada Statement

This device complies with Industry Canada licence-exempt RSS standard. 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'utilisateur de 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 limit set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Cet équipement est conforme aux CNR-102 d'Industrie Canada. Cet équipement doit être installé et utilisé avec une distance minimale de 20 centimètres entre le radiateur et votre corps. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec autre antenne ou émetteur. Les antennes utilisées pour cet émetteur doivent être installés et fournir une distance de séparation d'au moins 20 centimètre de toute personne et doit pas être co-située ni fonctionner en conjonction avec une autre antenne ou émetteur.

NCC 警語

「取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。」

DECLARATION OF CONFORMITY

EU RED - DIRECTIVE 2014/53/EU -
EU-LOW VOLTAGE DIRECTIVE 2014/35/EU -

This declare that the following designated product

Sensor Beacon
Model No.: iBS05, iBS05H, iBS05T, iBS05G
Brand Name: INGICS

.....
(Product identification)

complies with the essential requirements of the **EU RED - DIRECTIVE 2014/53/EU, EU-LOW VOLTAGE DIRECTIVE 2014/35/EU** and meet the limitation of the relevant test standard(s) listed below:

EMC EN 301 489-1: V 2.2.3 (2019-11) EN 301 489-17: V 3.2.4 (2020-09)	Radio Spectrum EN 300 328 (V 2.2.2, 2019-07)	Safety IEC 62368-1:2014/COR1:2015 and EN 62368-1:2014/A11:2017 Health EN 62479(2010)
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(Identification of regulations / standards)

This declaration is issued for
INGICS TECHNOLOGY.
2F., No.15-2, Changshou St.,
Shulin Dist., New Taipei City 238,, Taiwan, R.O.C.

.....
(Name / Address)

Furthermore we declare that our product will be produced in correspondence with all requirements according to the Directive 2014/53/EU and LOW VOLTAGE DIRECTIVE 2014/35/EU

Name: J.K.Fan

Title: President

Signature 

Date: 2021. 10. 28

Revision History

DATE	REVISION	CHANGES
Feb 15, 2021	0a	Initial release
May 30, 2021	0b	<ol style="list-style-type: none">1. Add iBS05T model2. Adjust the default setting of the advertising interval and the battery life accordingly..3. Remove the free fall detection on iBS05G.4. Add Marking section5. Update block diagram6. Add iBS05T temperature accuracy figure
July 1, 2021	0c	Update packaging information
Aug 22, 2021	0d	<ol style="list-style-type: none">1. Update the certification schedule2. Update the working temperature range3. Update the dimension4. Add Antenna section
Oct 28, 2021	01	<ol style="list-style-type: none">1. Update packaging section2. Update certification section3. Add WEEE information section