INGICS TECHNOLOGY

Specification
Ver.1b

iGS01 Specification

BLE(Bluetooth Smart) to WiFi Gateway

iGS01 is a BLE to WiFi gateway and bridge. The gateway reads iBeacon and Eddystone like beacon or customized Tag(w/ sensor) format and sends to local TCP server or internet HTTP/MQTT server. User can configure the transmit period and server information through a simple web UI.

Features

- Size: 54mmx41mmx18mm(not including antenna)
- Input: 5V, 500mA, micro-USB
- Operating temperature: -20'C to 60'C
- Low power consumption, 80mA typical working current
- Over-The-Air software upgrade
- Reads multiple BLE devices in the same time
- Support TCP/HTTP/MQTT server

BLE

- Bluetooth Smart(BLE) is based on INGICS nBLE822
- Bluetooth with on board PCB antenna
- Bi-direction: Reads message advertised from BLE devices and/or advertise command to BLE devices(not standard, by request)
- 30M range in open space

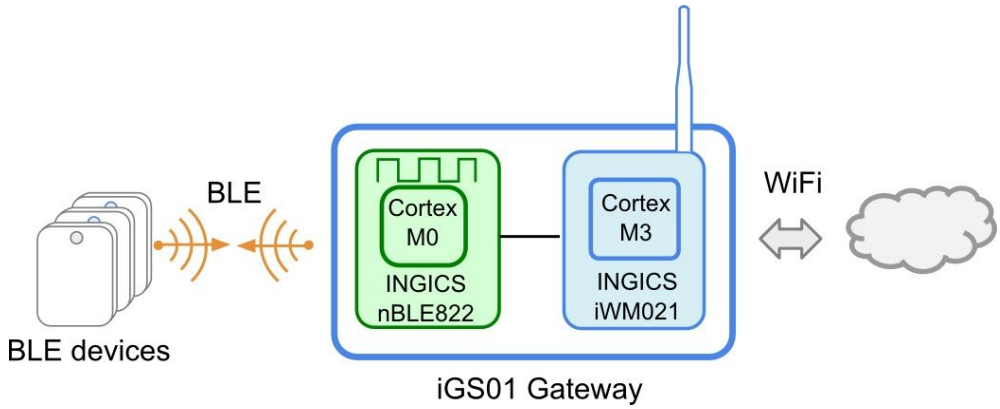
WiFi

- WiFi is based on INGICS iWM021
- Support 802.11b/g/n(single stream)
- 2.4GHz frequency band
- Transmit power:
  - +17dBm @802.11b
  - +13dBm @802.11g
  - +11dBm @802.11n
- WiFi data rate up to 72.2Mbps
- WiFi with 2dBi dipole Antenna
- Web based UI for configuration
- Connect to Cloud server or local server
- 100M range in open space

Applications

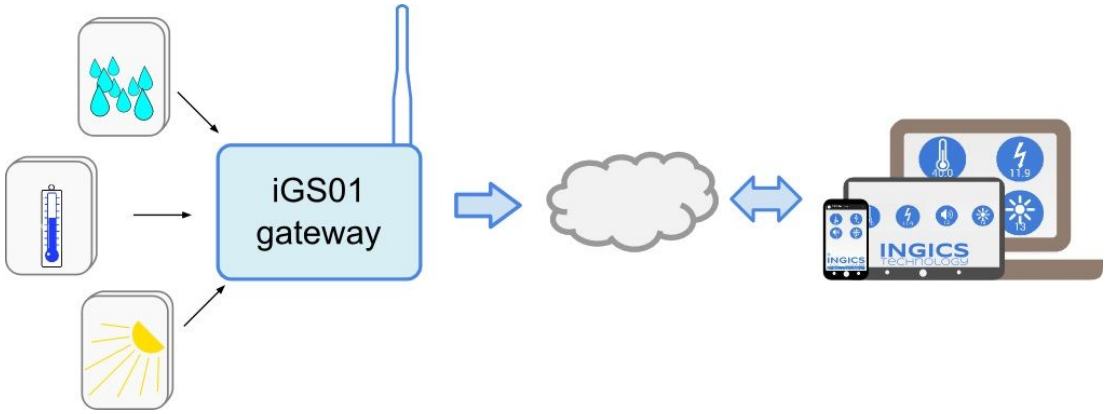
- iBeacon/Eddystone/tag receiver for location tracking
- BLE sensor reader for sensor network
- Building automation
- Health and wellness monitoring
- Cycling, biking
- Security
- Location tracking
- Access management
- Advertisement
- Industrial automation

Block Diagram

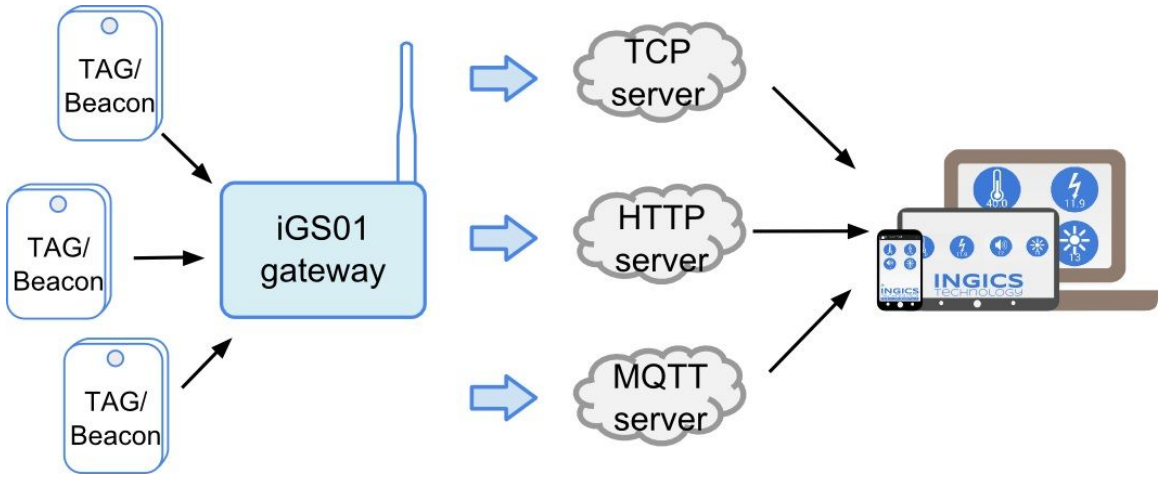


Typical Applications

1. Collecting BLE sensor data and sending to cloud server



2. Location Tracking with different kinds of server in the internet or cloud



Specification

Absolute Maximum Rating

Supply Power	Max. +5.5 Volt
Storage Temperature	-40° to 85° Celsius
Voltage Ripple	+-2%

Recommendable Operation Condition

Operating Temperature	-20° to 60° Celsius
Humidity	Max 95%, Non condensing, relative humidity
VDD	+5 Volt +- 5%

Current Consumption

Working mode (reading BLE and send to server)	Max.: 436 mA Average: 83 mA

WiFi RF Specification

Wireless	IEEE 802.11b/g/n(single stream)
Network modes	infrastructure, Ad-Hoc
Data rate	IEEE 802.11b, 1-11Mbps IEEE 802.11g, 6-54Mbps IEEE 802.11n(2.4GHz), 7.2-72.2 Mbps
Frequency band	2.400 – 2.484 GHz
Number of selectable Sub channels	14 channels
Channel Bandwidth	20MHz
Modulation	OFDM, DSSS (Direct Sequence Spread Spectrum), DBPSK, DQPSK, CCK , 16QAM, 64QAM
Maximum receive input level	- 10dBm (with PER < 8%@11 Mbps) - 20dBm (with PER < 10%@54 Mbps) - 20dBm (with PER < 10%@MCS7)
Minimum receive input level	- 87dBm (typ. with PER < 8%@11 Mbps) - 70dBm (typ. with PER < 10%@54 Mbps) - 70dBm (typ. with PER < 10%@MCS7)
Transmit Power	17dBm (typical)@ 802.11b 13dBm (typical)@ 802.11g 11dBm (typical)@ 802.11n
Carrier Frequency Accuracy	+/- 20ppm (crystal: 26MHz +/-10ppm in 25°C)
Antenna	2dBi dipole antenna
Range	up to 100M meters(in open area)
Security	WPA/WPA2

BLE RF Specification

Transmit Power	Max.: 4dBm
RF Power Accuracy	+- 4 dB
Receiver Sensibility	-96 dBm @250kbps, 0.1% BER -90 dBm @1Mbps, 0.1 %BER
Maximum Received Signal Strength at <0.1% PER	0dBm
Frequency Deviation	+-250 kHz @BLE
Antenna	on board PCB antenna
Range	30M in open space

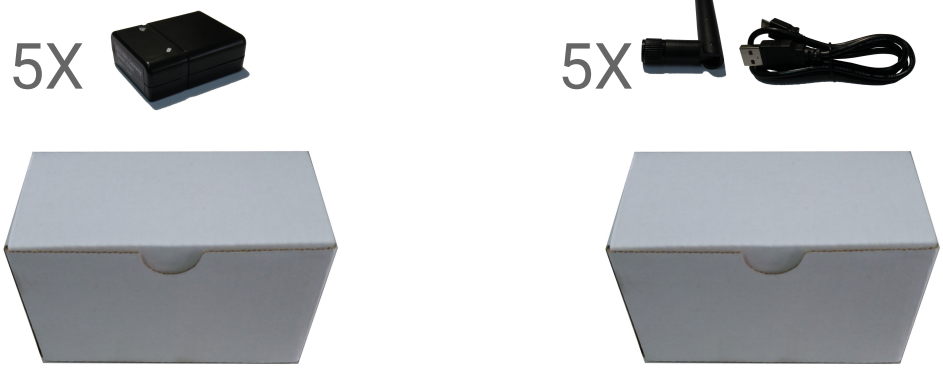
Dimension

Dimensions L x W x H (mm)	54 x 41 x 18 (not including dipole antenna)

Packing

Each iGS01 has it's accessory including a dipole antenna and micro-USB cable.

Two packing boxes(size: 11cmX5.5cmx6.5cm) contains 5 units of iGS01 and accessories.



Revision History

DATE	REVISION	CHANGES
Feb 3, 2016	1	Initial release
May 1, 2016	1a	Operation temperature upgrades from 45°C to 60°C in Recommandable Operation Condition
May 20, 2016	1b	Add statement of FCC, IC, and NCC in page 5

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 êtreinstallé et utilisé avec une distance minimale de 20 centimètres entre le radiateur et votrecorps. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec autreantenne ou émetteur. Les antennes utilisées pour cet émetteur doivent être installés etfournir 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

第十二條
經型式認證合格之低功率射頻電機，非經許可，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。
第十四條
低功率射頻電機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。
前項合法通信，指依電信法規定作業之無線電通信。
低功率射頻電機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
電磁波曝露量MPE標準值1mW/cm2，送測產品實測值 0.0103mW/cm2。