

# GTI-Beacon/ PV Beacon User Guide

Rev 2.0- Mar 24, 2025

## Revision history

Date	Revision	Board Rev	Section/ page	Description
Aug 22, 2024	Rev 1.0			Preliminary
Mar 24, 2025	Rev 2.0	V1-3-0		

## Index

1. Overview .....	4
2. Block diagram.....	5
3. Two SKUs .....	6
3-1. GTI-Beacon .....	7
3-2. GTI-PV Beacon .....	8
4. Specifications .....	9
5. Start using .....	10
6. Open the enclosure .....	11
6-1. PCBA .....	11
6-1-1. The top side of PCBA .....	11
6-1-2. I/O descriptions .....	12
6-1-3. The bottomk side of PCBA.....	13
7. Set up and Testing .....	14
8. Appendix-Programmer Board .....	16
9. Contact information .....	17

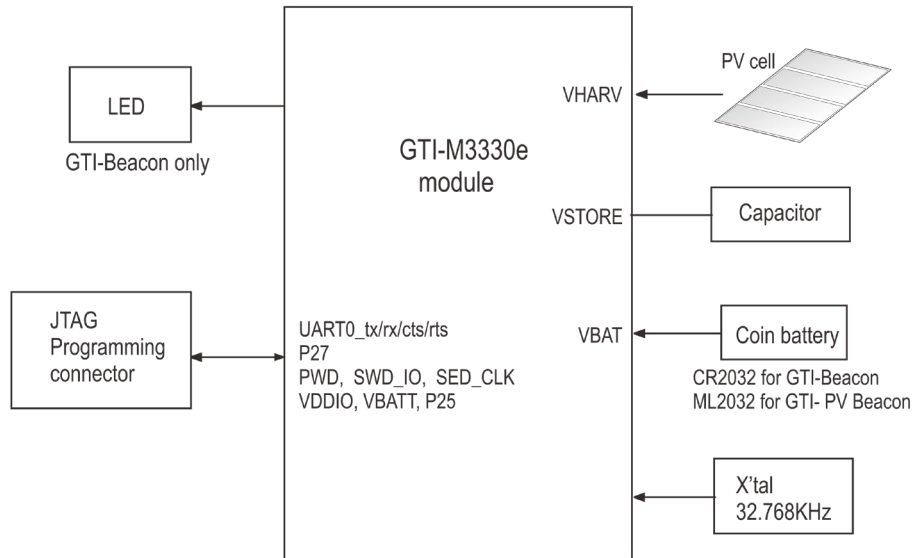
## 1. Overview

The GTI-Beacon/ PV Beacon is designed based on the GTI-M3330e Bluetooth module. It inherits the high efficiency and ultra-low power consumption characteristics of the GTI-M3330e, allowing it to last longer in various applications. With a CR2032 button battery, it can support more than one year of use time and even more than 3 years with the combination of an ML2032 rechargeable battery and a PV cell like the GTI-PV Beacon.

This beacon integrates the GTI-M3330e Bluetooth module, a 32.768KHz crystal oscillator, an LED indicator, an energy storage capacitor, and a 16-pin I/O interface, including the UART serial port and some GPIOs, this interface can also be used as the Flash programmer.

Please refer to another document named "[GTI-ATM3330e module datasheet.pdf](#)" for a more detailed description of this Bluetooth module.

## 2. Block diagram

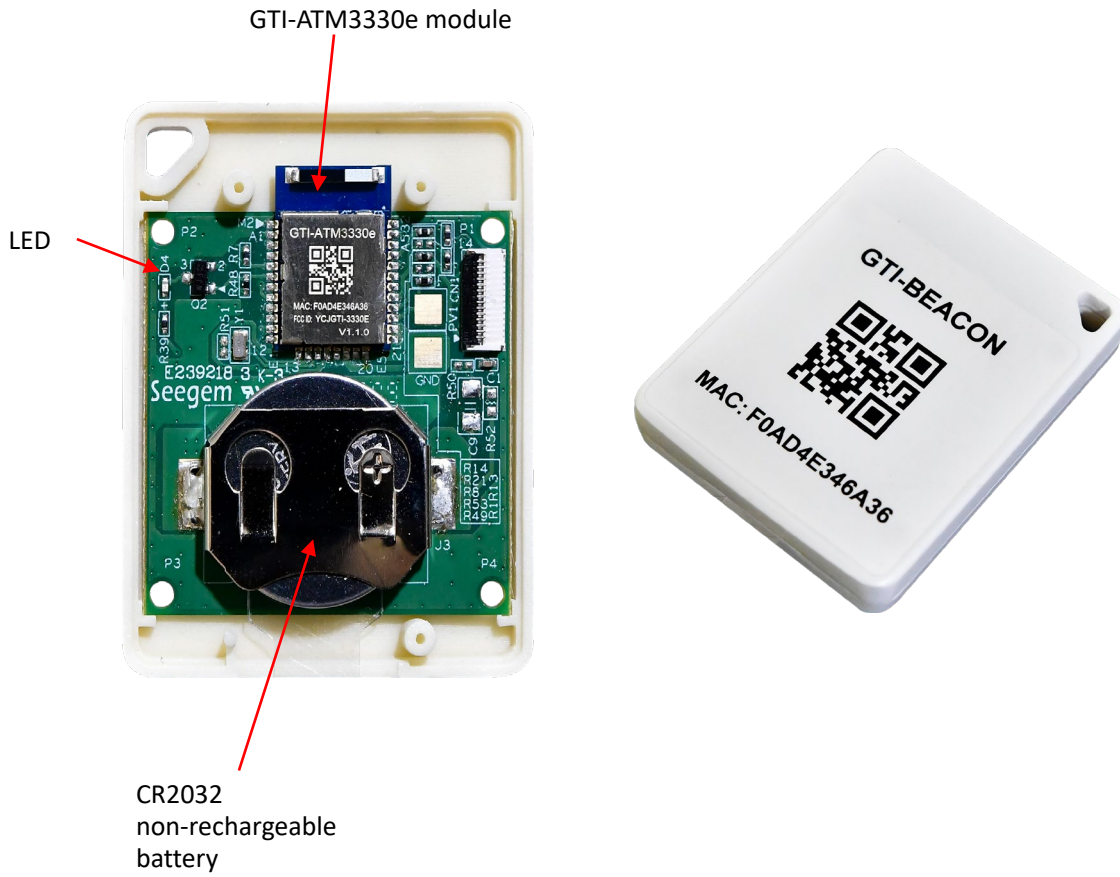


### 3. Two SKUs

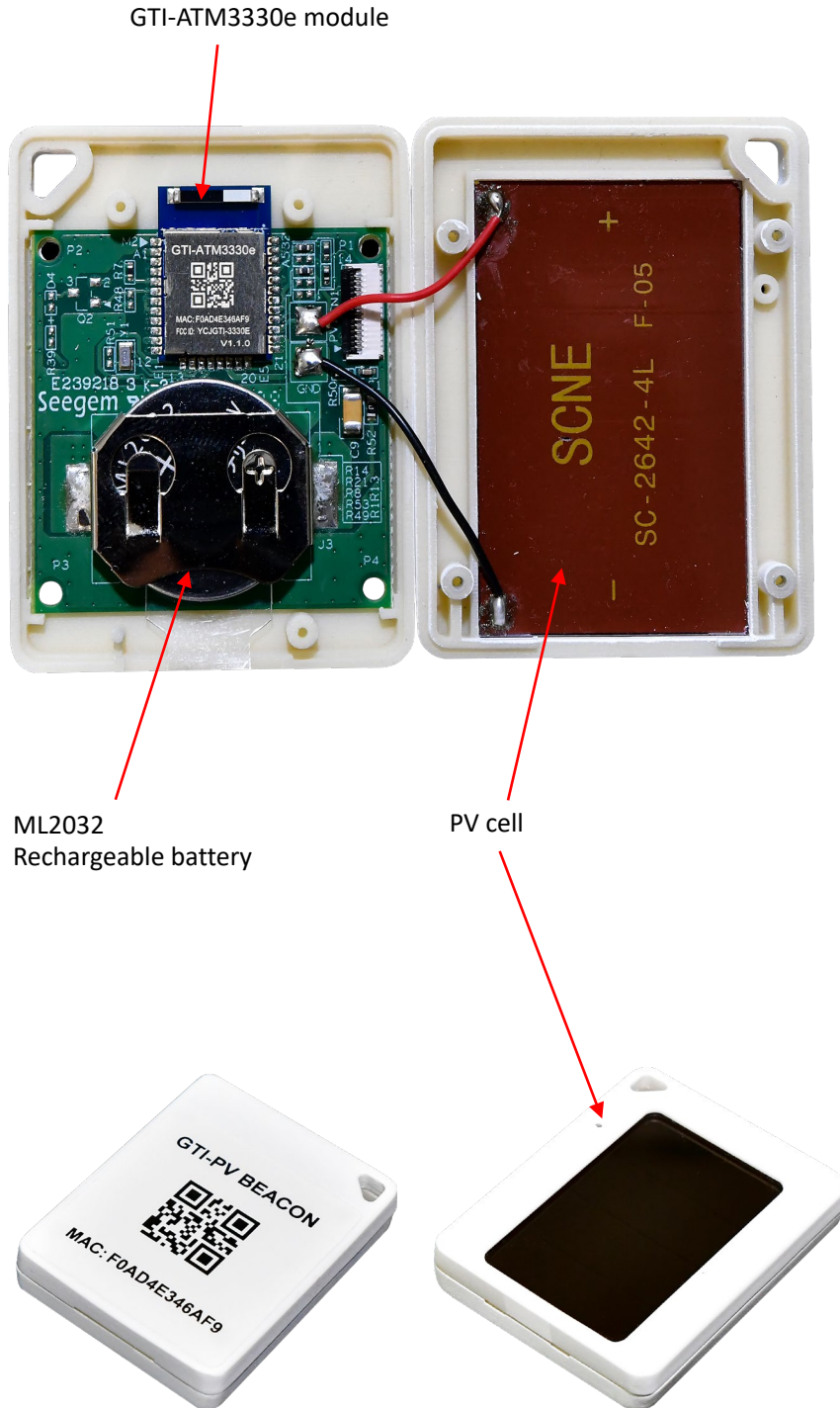
There are two SKUs of this Beacon product, The GTI-Beacon and the GTI-PV beacon. The two SKUs share the same PCBA and have the same enclosure size. See the pictures below for both two SKUs.



### 3-1. GTI-Beacon



### 3-2. GTI-PV Beacon



## 4. Specifications

#	Item	GTI-Beacon	GTI-PV beacon
1	Coin battery	CR2032 coin battery @210mAh	ML2032 rechargeable battery @65mAh
2	Wake-up, sleep and Advertisement	<p>As default, there is a timer to wake up the system in every 3 seconds then send the advertisement message and go sleep again until the next wake-up 3 seconds later</p> <p>Note: the 3 sec wakeup time cannot be changed without the programming tool</p>	<p>As default, there is a timer to wake up the system in every 3 seconds then send the advertisement message and go sleep again until the next wake-up 3 seconds later</p> <p>Note: the 3 sec wakeup time cannot be changed without the programming tool</p>
3	Average working current	7.2uA	7.2uA
4	PV cell charging current	N/A	31uA@1.8V under 200 lux illuminance
5	Battery life under condition above	3 years estimated	3 years at least
6	Transmitting power/ distance	0 dbm/ 10 meters	0 dbm/ 10 meters
7	Water resistant	For indoor use only, not water proof	For indoor use only, not water proof
8	Size	L:45.9 mm x W:38.7mm x H:7.8mm	L:45.9 mm x W:38.7mm x H:7.8mm

## 5. Start using

Pull out then remove the battery insulating piece, and the power will be on automatically.



## 6. Open the enclosure

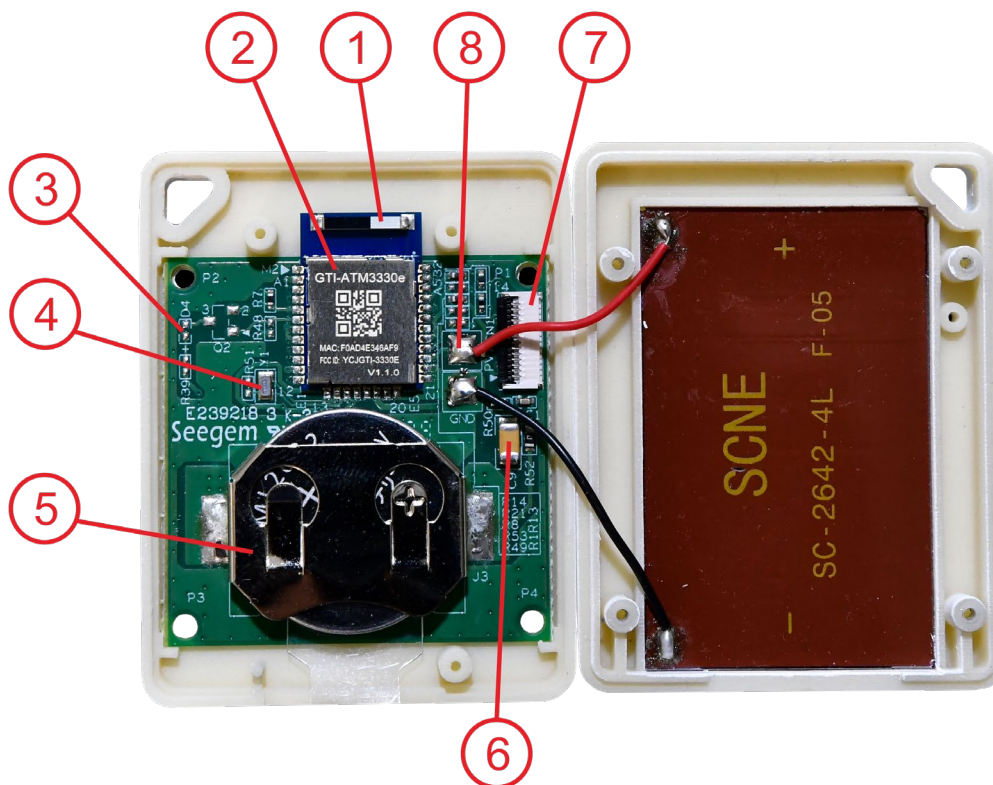
In case you need to change the battery, you have to open the enclosure first.

There are four screws on the back side of the enclosure hidden under the sticker, lift one corner of the sticker with a pin or art knife then use the tiny screwdriver to remove the screws.

### 6-1. PCBA

Here are pictures for the PCBA

#### 6-1-1. The top side of PCBA



## 6-1-2. I/O descriptions

Number	Part #	Description
1	ANT	GTI-ATM3330e module antenna
2	M2	GTI-ATM3330e module
3	D4	LED (D4), controlled by P29, active high <i>note: only for GTI-Beacon SKU</i>
4	Y1	32.768KHz crystal
5	J3	Coin battery holder <i>Note:</i> CR2032 battery for GTI-Beacon ML2032 rechargeable battery for GTI-PV Beacon
6	C9	Capacitor
7	CN1	Pin1-VBATT Pin2-VDDIO Pin3-PWD Pin4-P25 (GPIO) Pin5-NC (No Connection) Pin6-P0_SWCLK Pin7-GND Pin8-P1_SWIO Pin9-NC (No Connection) Pin10- P22_U0_RX Pin11-P21_U0_TX Pin12-P20_U0_CTS Pin13-P17_U0_RTS Pin14-P27_RDI Pin15-GND Pin16-GND
8	PV1	Pin1-PV cell positive Pin2-PV cell negative  <i>Note: only for GTI-PV Beacon</i>

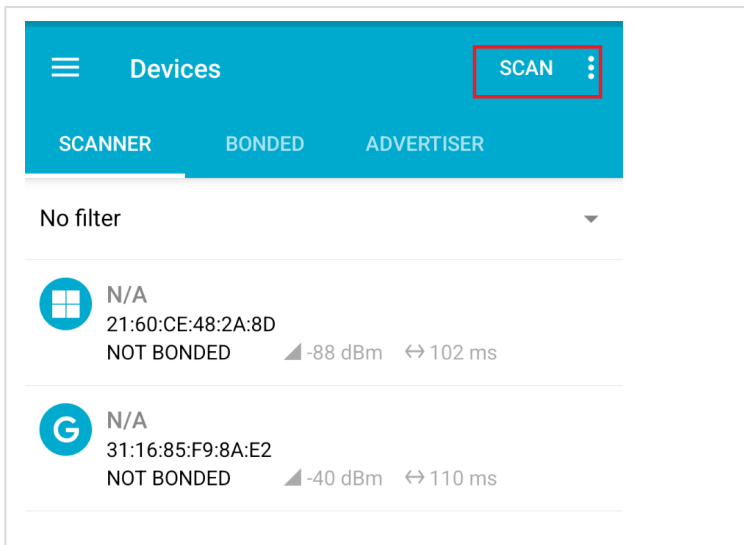
### 6-1-3. The bottomk side of PCBA



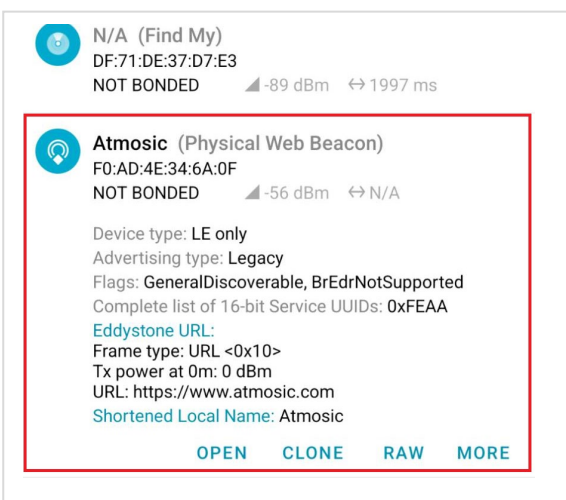
Pin #	Pin name	Description
TP1	VBATT	V battery
TP2	VDDIO	Power supply for digital and analog I/O
TP3	PWD	Connected to GND through R7 (1M) resistor
TP4	P25	GPIO 25
TP5	P0_SWDCCLK	SWDCCLK
TP6	P1_SWDDIO	SWDDIO
TP7	P27_RDI	RDI
TP8	GND	GND

## 7. Set up and Testing

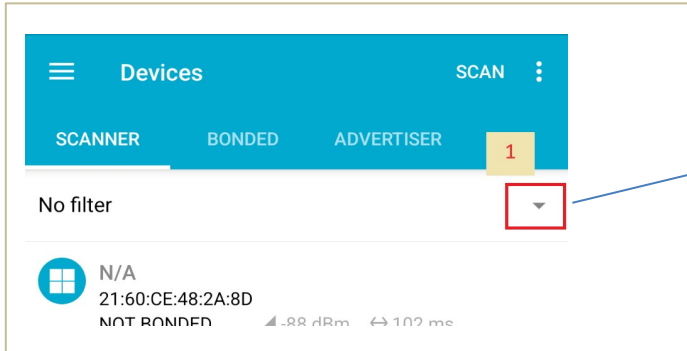
1. inserting the CR-2032 coin battery or just pulling out the insulating piece if the battery already exists, the system will turn on automatically and the green LED indicator will flash once.
2. Install the Nordic nRF Connect app on your Android or Apple mobile phone.
3. Run the app then tap “SCAN” to scan the BLE beacon.
4. As default, the device sends a beacon advertisement every 3 seconds



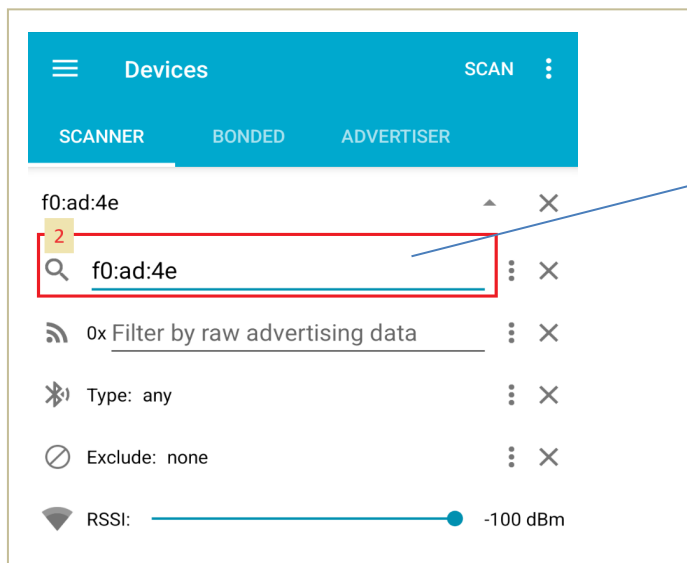
5. If the device is working, you should be able to find the MAC address displayed which matches the one on the sticker of your beacon



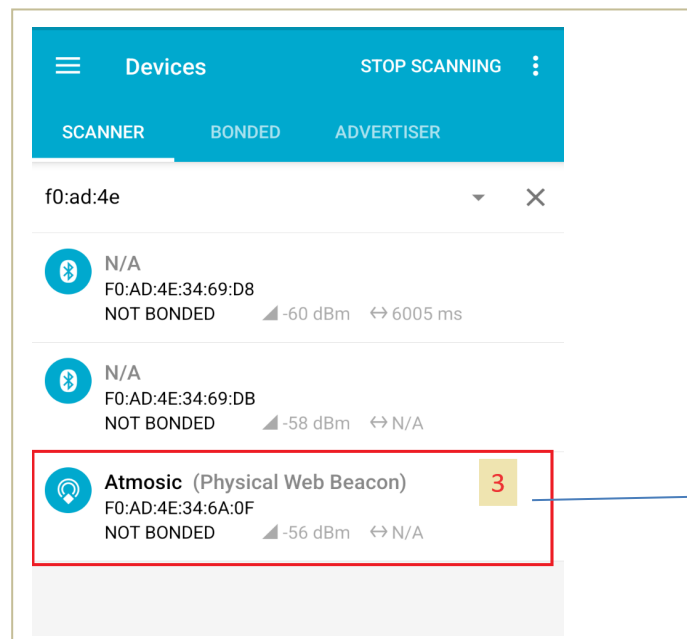
6. You can also set a MAC address filter to help you find the device quickly.



1. Tap here



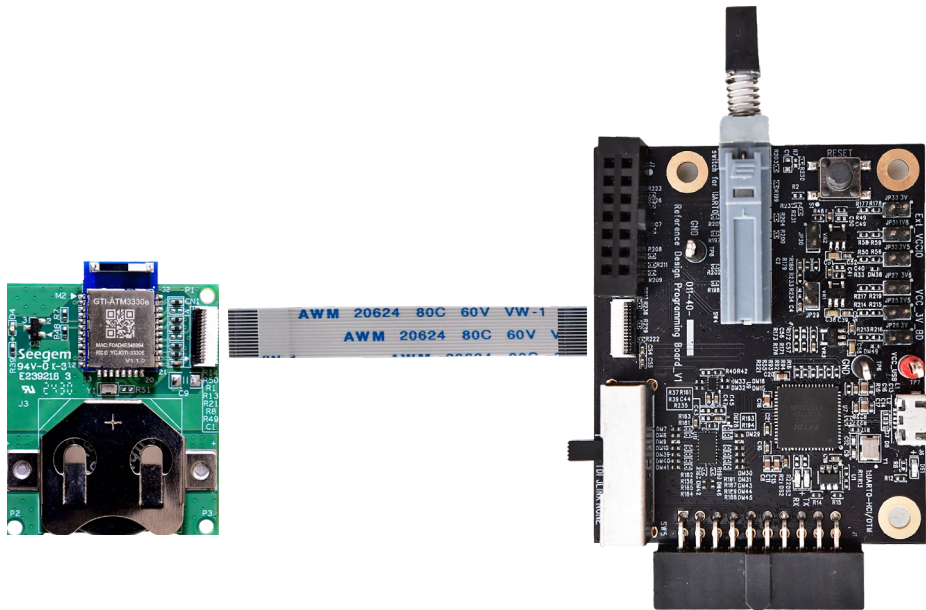
2. Enter keyword and search



3. Match found

## 8. Appendix-Programmer Board

The firmware has already been programmed into the flash memory of the beacon before shipping out. Either programming or fixing tasks should be done in the factory. Please contact GTI or your dealer in case the system doesn't work.



## 9. Contact information

[Sales@globalscaletechnologies.com](mailto:Sales@globalscaletechnologies.com)

Globalscale Technologies, Inc.  
1200 N. Van Buren Street  
Anaheim, CA 92807  
U.S.A.

Office: (714) 632 9239 Fax: (714) 632 7550