

6162C-IC

Bluetooth 5.0 Module Datasheet



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Customer Approval :	_____	Company
	_____	Title
	_____	Signature
	_____	Date
	_____	Fn-Link

Revision History

Version	Date	Revision Content	Draft	Approved
1.0	2019/08/13	First version	Lyj	
2.0	2020/01/06	Add RF Pin 17 (Alternative) ; Change Package Information	Lyj	

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1 Overview

1.1 Introduction

Mesh self-organizing network type communication equipment, can efficiently and quickly form a non-central wireless broadband network; Supporting multi-hop relay can effectively expand the coverage radius of wireless network.

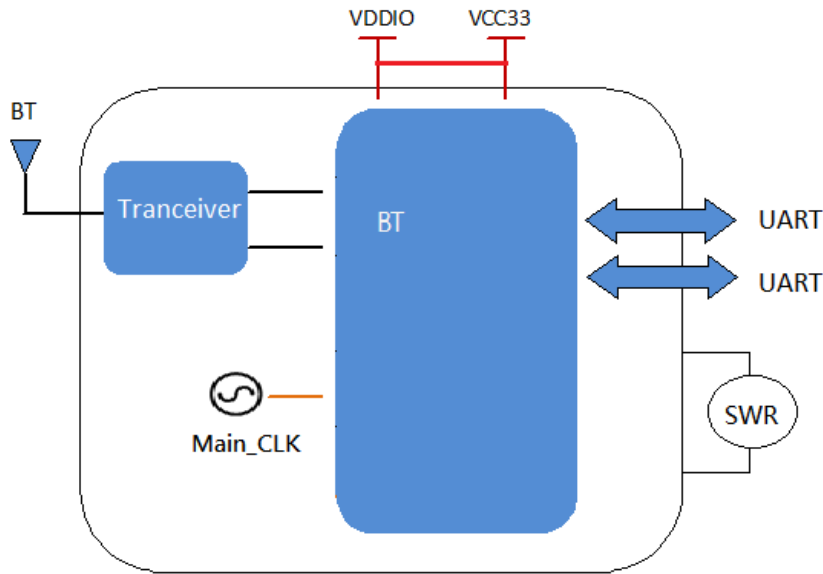
FN-link releases a low-cost, low-power Bluetooth 5.0 module with Mesh functionality. It is a highly integrated ARM Cortex-M4F 32-bit CPU, 160kByte RAM and 512kByte flash MCU, and Bluetooth 5.0 LE transceiver Mesh network solution.

The wireless module meets the Bluetooth 5.0 LE standard and provides UART interfaces for Bluetooth. Modules of moderate size, suitable for intelligent LED and other applications, can efficiently solve the complex environment such as high-rise, underground, tunnel, large complex emergency communication problems.

1.2 Features

- Supports Bluetooth 5 core specification
- Supports 2M LE , LE Long Range, LE Data Length Extensions (257 byte)
- Supports OTA (Over-the-Air)programming mechanism for firmware upgrade
- UART x 2, one for data transceiver, the other for firmware upgrade
- Embedded 4Mbits Flash
- Supports 5 GPIOs
- Embedded Switching Regulator(SWR) for low current consumption
- Package: 18.6X13X2.5mm

Block Diagram:



1.3 General Specification

Model Name	6162C-IC
Product Description	Bluetooth 5.0 Mesh only
Dimension	L x W x T: 18.6X13X2.5 (typical) mm
BT Interface	UART
Operating temperature	0°C to 70°C
Storage temperature	-40°C to 125°C

1.4 Recommended Operating Rating

	Min.	Typ.	Max.	Unit
Operating Temperature	0	25	70	deg.C
VBAT&VDDIO	2.7	3.0	3.6	V
Power Consumption	VCC33 = 3.0V(Unit:mA)			
	BT on	11.3		

2 Bluetooth Specification

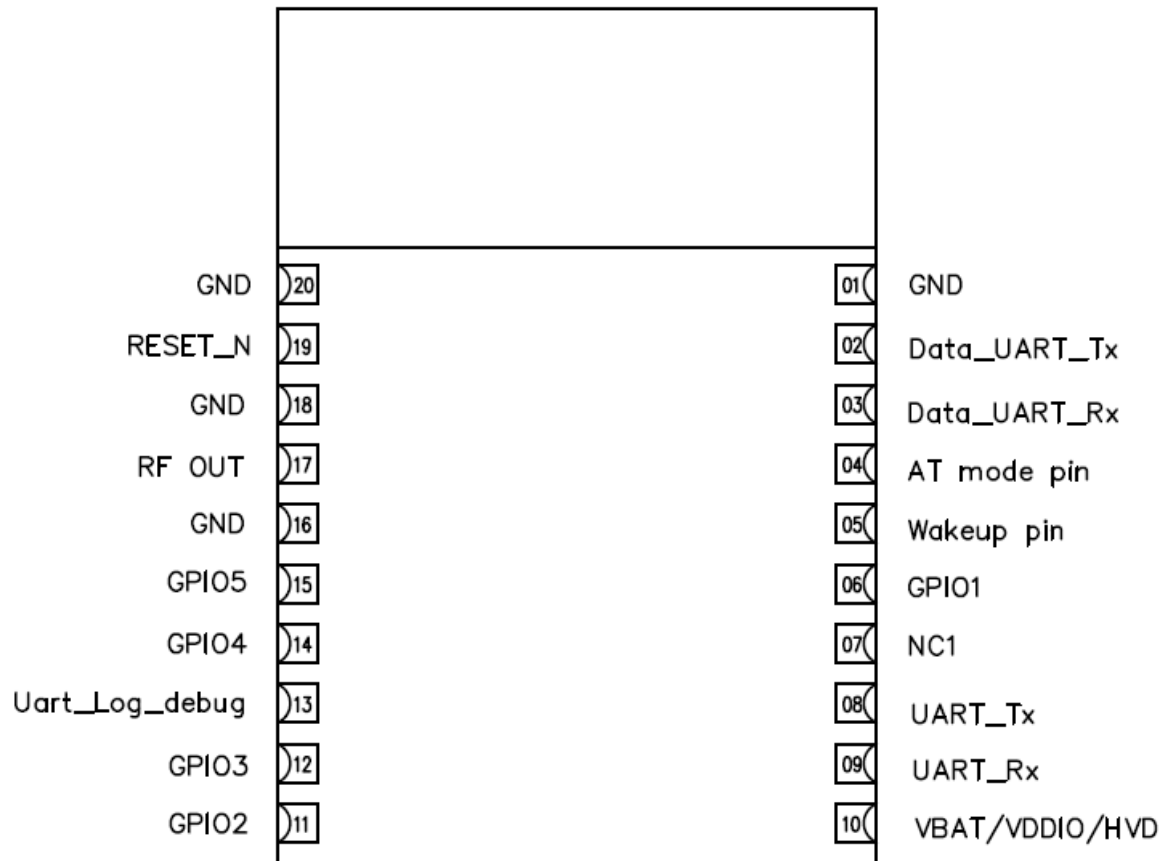
2.1 Bluetooth Specification

Feature	Description		
General Specification			
Bluetooth Standard	Bluetooth V5.0 LE		
Host Interface	UART		
Antenna Reference	On board PCB antennas		
Frequency Band	2402 MHz ~ 2480 MHz		
Number of Channels	40 (3 Advertising + 37 Data)		
Modulation	GFSK		
RF Specification			
	Min.	Typical.	Max.
Output Power	0 dBm		8 dBm
Sensitivity @ BER=0.01% for LE 1Mbps	-97 dBm		-90 dBm
Sensitivity @ BER=0.01% for LE 2Mbps	-97 dBm		-90 dBm
Maximum Input Level	LE 1Mbps:-20dBm		
	LE 2Mbps :-20dBm		

3 Pin Assignments

3.1 Pin Outline

< TOP VIEW >



3.2 Pin Definition

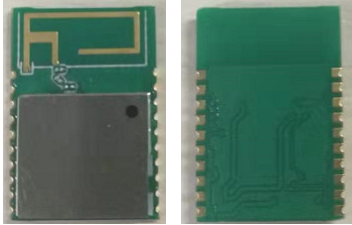
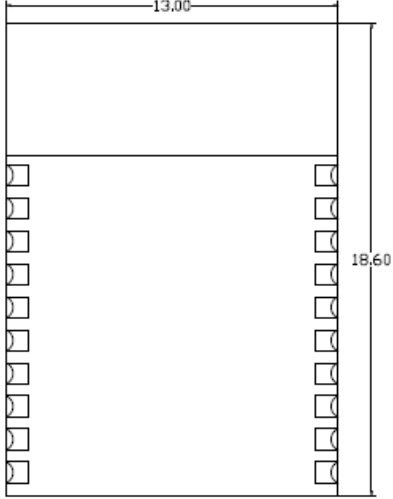

NO	Name	Type	Description	Voltage
1	GND	P	Ground connections	
2	Data_UART_Tx	O	Bluetooth UART interface _ Data Output	
3	Data_UART_Rx	I	Bluetooth UART interface _ Data Input	
4	AT mode pin	I/O	Bluetooth Transceiver or Local Recognition 1: Bluetooth Transceiver 0: Local Recognition	
5	Wakeup pin	I	Bluetooth UART event wakeup	
6	GPIO1	I/O	GPIO (P2_2)	
7	NC1	—	No connect	
8	Uart_Tx	O	Software Upgrade UART interface _Data Output	
9	Uart_Rx	I	Software Upgrade UART interface _Data Input	
10	VBAT/VDDIO/HVD	P	I/O Voltage supply input 3.3V	
11	GPIO2	I/O	GPIO (P0_1)	
12	GPIO3	I/O	GPIO (P0_2)	
13	Uart_Log_debug	I/O	Log_Uart Interface_ Data Output; Connect to GND for upgrade software (P0_3)	
14	GPIO4	O	GPIO (P0_5)	
15	GPIO5	I/O	GPIO (P0_6)	
16	GND	—	No connect	
17	RF OUT	—	RF OUT PIN (Alternative)	
18	GND	—	No connect	
19	Reset	I	Reset (Low active)	
20	GND	P	Ground connections	

P:POWER I:INPUT O:OUTPUT

4 Dimensions

4.1 Module Picture

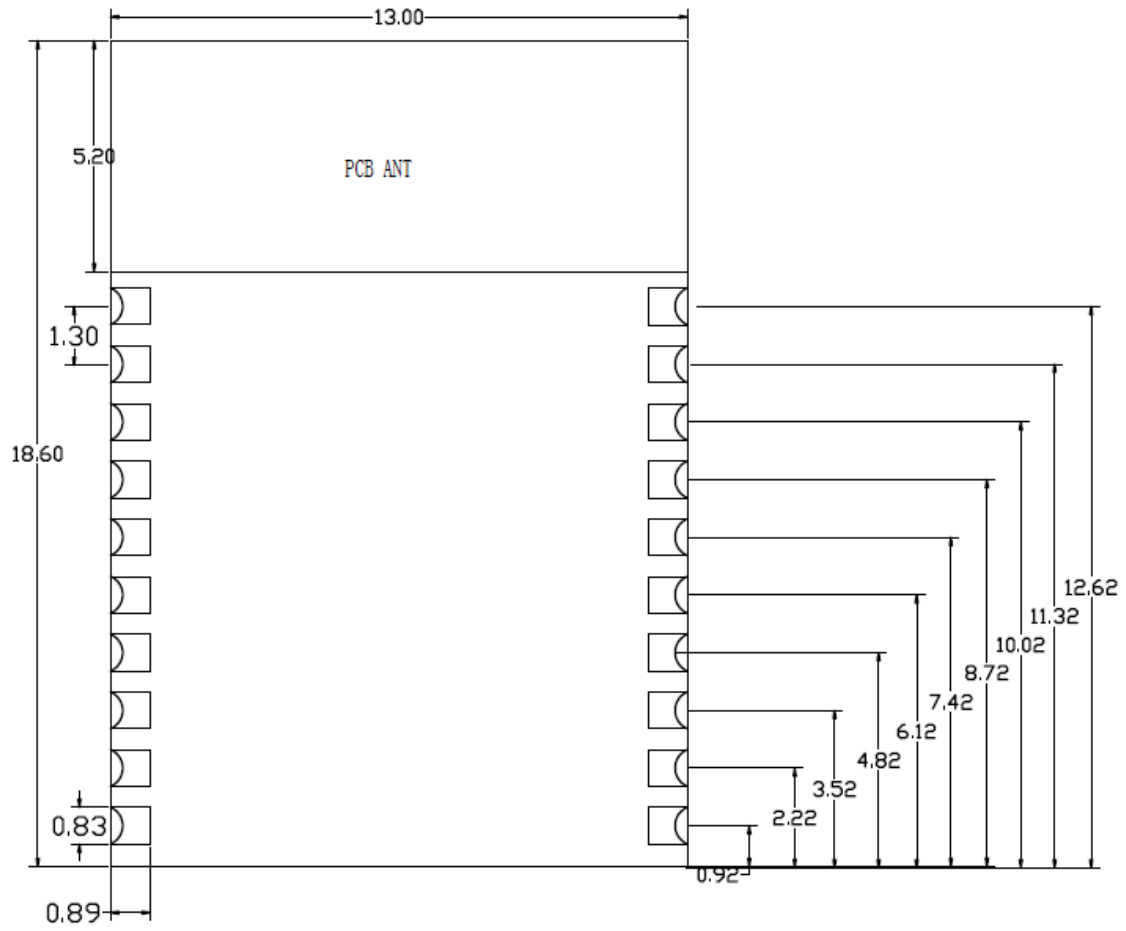
(Unit: mm)

<p>L x W : 13 x 18.6 (+0.3-0.1) mm</p> 	
<p>H: 2.5 (±0.1) mm</p>	
<p>Weight</p>	<p>0.8g</p>

4.2 Module Physical Dimensions

(Unit: mm)

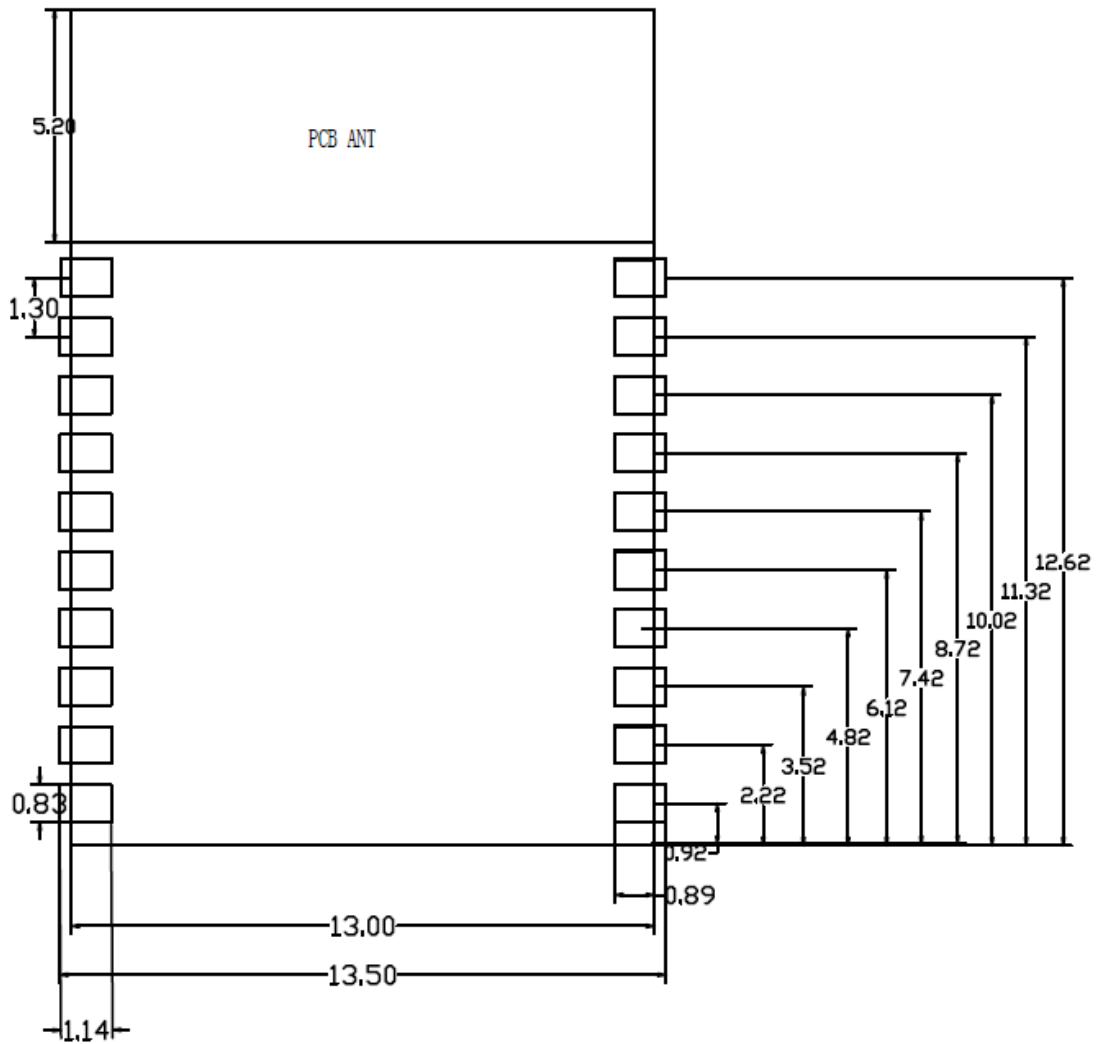
< TOP VIEW >



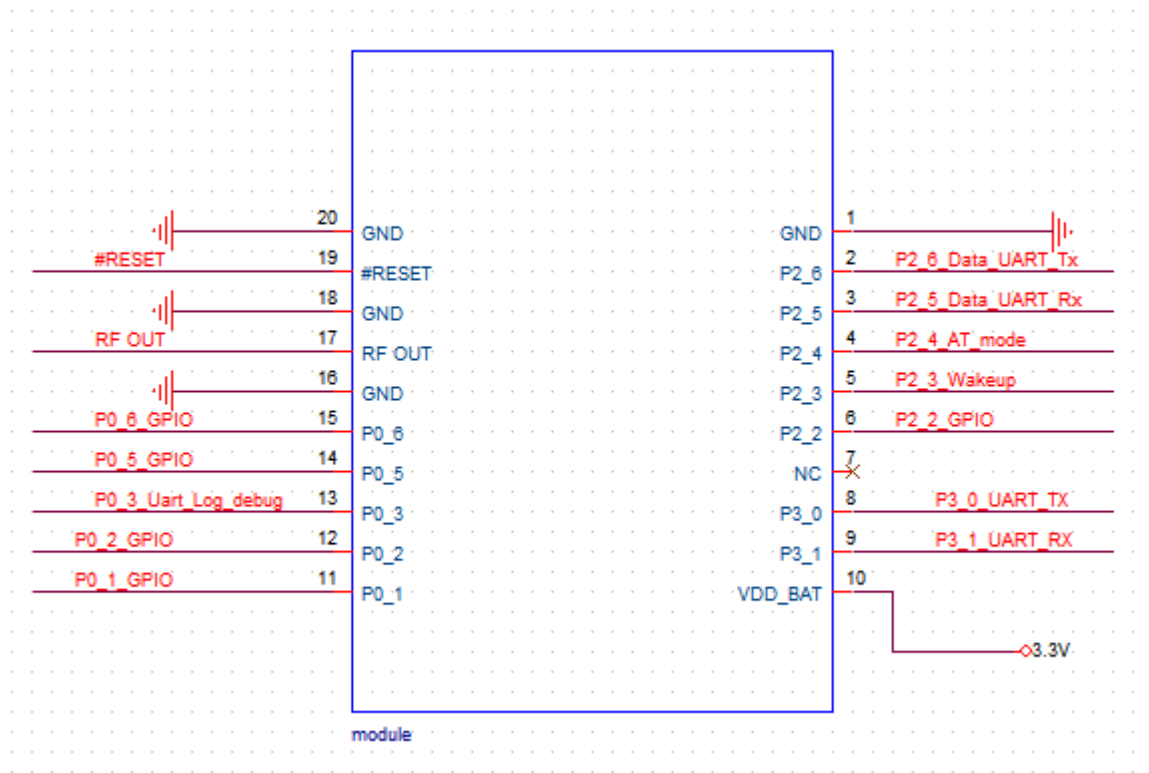
4.3 Layout Recommendation

(Unit: mm)

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5 Reference Design



6 Ordering Information

Part No.	Description
FG6162CICX-01	6162C-IC RTL8762CMF QFN40_5x5 PCB 天线 BT5.0+UART 带 RF 输出 PCB 版本 V2.0

7 The Key Material List

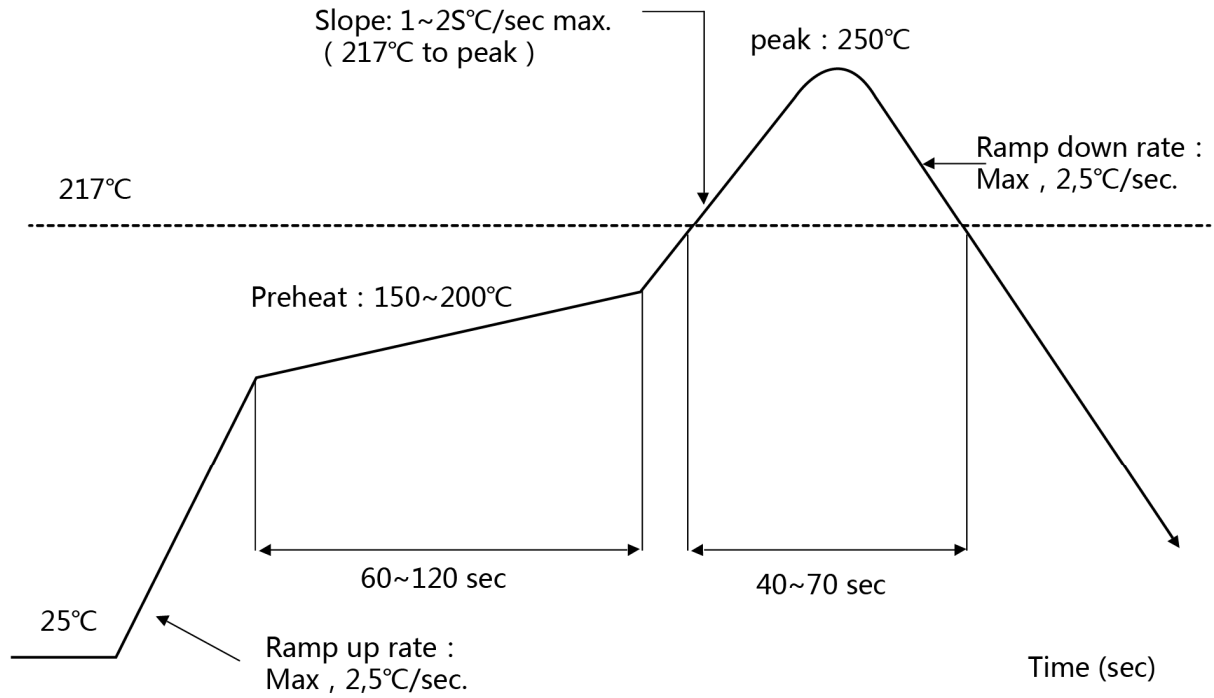
Main	Shielding cover	6162C-IC, 1.5*11.33*10.36mm, copper, no positioning foot
Main	Crystal	XTAL-SMD3.2X2.5,40MHz, CL=15pF, 10ppm TZ0475B (TST)
Alternative	Crystal	XTAL-SMD3.2X2.5,40MHz, CL=15pF, 10ppm, -20~+85°C,SIWARD: XTL571100-W103-033 (SIWARD)
Main	Chipset	RTL8762CMF-CG QFN40_5x5 Realtek 1T1R BT5.0+UART Mesh only

8 Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : <250 °C

Number of Times : ≤2 times



9 Package Information

9.1 Tray

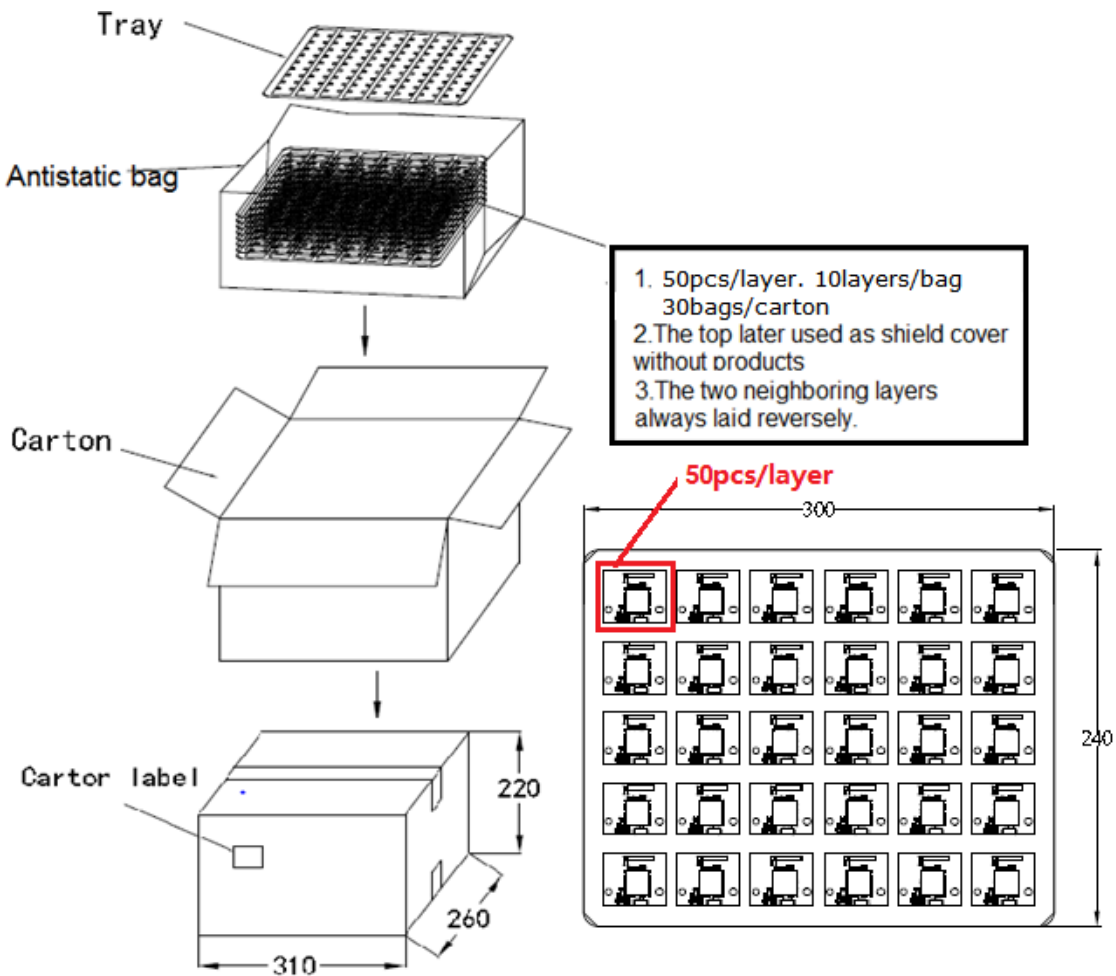
Note: The package information will be updated in next revision of this document.

Layer size: 206X150X5mm

Layer material: PVC

Carton size: L310.0*W260.0*H220.0 mm

Carton material: A=A



Reference Package

9.2 Moisture sensitivity

The Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDEC J-STD-020, take care

all the relatives requirements for using this kind of components.

Moreover, the customer has to take care of the following conditions:

- a) Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH).
- b) Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5.
- c) The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition
- b) "IPC/JEDEC J-STD-033A paragraph 5.2" is respected
- d) Baking is required if conditions b) or c) are not respected
- e) Baking is required if the humidity indicator inside the bag indicates 10% RH or more

EU DECLARATION OF CONFORMITY

in accordance with
Annex VI of Directive [2014/53/EU](#) of the European Parliament and of the Council

1. For the following Radio equipment:

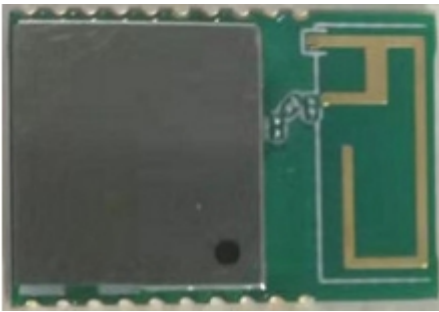
Product name / Number (s): bluetooth Module
Tradename or Brand: FN-LINK
Software / Hardware number: v1.0/v1.0

2. Name and address of the manufacturer:

Manufacturer: HUNAN FN-LINK TECHNOLOGY LIMITED
Address: No.8, Litong Road, Liuyang Economic & Technical Development Zone, Changsha, Hunan, CHINA

3. This declaration of conformity is issued under the sole responsibility of the Manufacturer.

4. Object of the declaration (identification of the radio equipment allowing traceability; it may include a colour image of sufficient clarity where necessary for the identification of the radio equipment):



5. The object of the declaration described above is in conformity with the relevant Union harmonization legislation:
Directive 2014/53/EU (RED)

6. References to the relevant harmonized standards used or references to the other technical specifications in relation to which conformity is declared:

Article 3.2: ETSI EN 300328 V2.2.2 (2019-07)

Article 3.1b: ETSI EN 301 489-1 V2.2.3(2019-11); ; ETSI EN 301 489-17 V3.2.4(2020-09)

Article 3.1a Health: EN 62479:2010

Article 3.1a Electrical Safety: ENIEC62368-1:2020

7. Notified Body Name: MET Laboratories, Inc.

Notified Body Number: 0980

Notified Body Assessment Performed: Module B/C on Article 3.1a, 3.1b, 3.2 and 3.3

Technical File Identification Number: N/A

8. Where applicable, description of accessories and components, including software, which allow the radio equipment to operate as intended and covered by the EU declaration of conformity: User instructions are provided in the User Manual. The Software and Hardware versions are specified above.

9. Additional information:

Referring to Article 10.2 of the Directive, this equipment is so constructed that it can be operated in all Member States, without infringing applicable requirements on the use of radio spectrum.

Referring to Article 10.10 of the Directive, there are no restrictions on putting this equipment into service or of requirements for authorisation of use. Please refer to the User Manual for details.


On behalf of:

Manufacturer: HUNAN FN-LINK TECHNOLOGY LIMITED

Add: No.8, Litong Road, Liuyang Economic & Technical Development Zone, Changsha, Hunan, CHINA

(place and date of issue): 2021.08.03

(name, function): Wei Fengbao, FAE

(signature): 

FCC Statement

FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Integral antenna with antenna gain 2dBi

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.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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. 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 modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2AATL-6162C-IC Or Contains FCC ID: 2AATL-6162C-IC"

When the module is installed inside another device, the user manual of the host must contain below warning statements; 1. 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.
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with modular approval should perform the test of radiated & conducted emission and spurious emission, etc. according to FCC part 15C : 15.247 and 15.209 & 15.207 , 15B Class B requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 & 15.207 , 15B Class B requirement , then the host can be sold legally.