

**SL-BTWFM-P001 WIFI/Bluetooth communication board**  
**Product manual**

[illegible]

## Catalogue

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## 1. Summary

SL-BTWFM-P001 is used to realize the transparent transmission of serial port and WIFI/ Bluetooth wireless data. SL-BTWFM-P001 is a WIFI+ Bluetooth dual channel wireless transparent transmission mode, with WIFI band IEEE802.11b/g/n2.4G, Bluetooth protocol BLE 5.0, unobstructed maximum transmission power of 140m, hardware power on defaults to Bluetooth connection, Bluetooth antenna gain of -0.89dbi (RSBRS02ABR) and WIFI antenna gain of 1.97dBI (ESP-12F).

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.

### FCC Caution:

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

FCC RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.

### FCC Statement:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### IC statement:

This device complies with Industry Canada licence-exempt RSS standard(s).

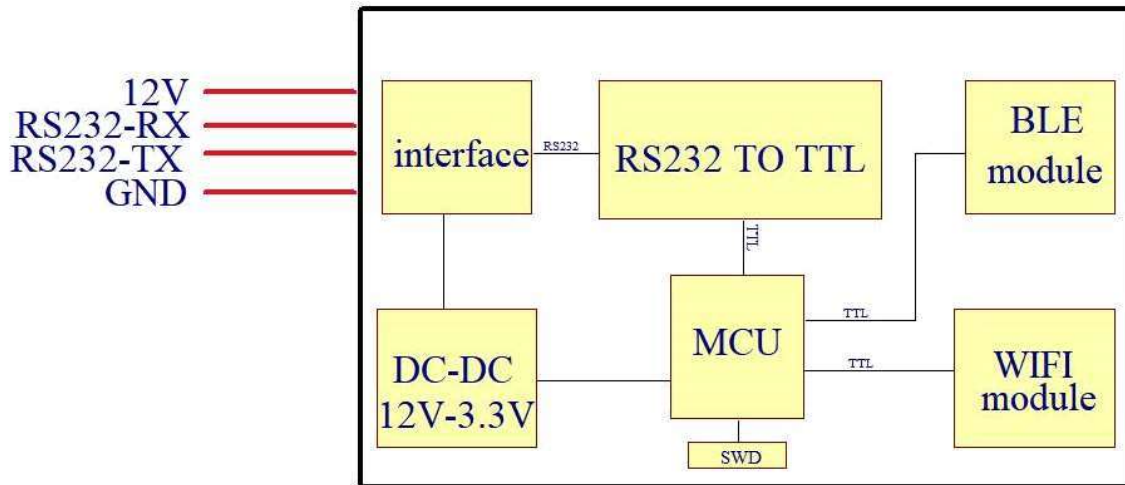
Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

:

Cet émetteur doit être installé pour fournir une distance de séparation d'au moins 20 cm de toute personne.

### 1.1. Product principle block diagram



## 2. Product picture and pin description

### 2.1. Picture of real products

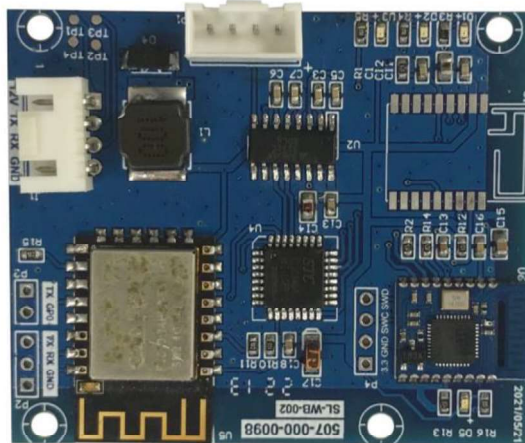


Fig. 1 Product picture

### 2.2. Outline dimension drawing

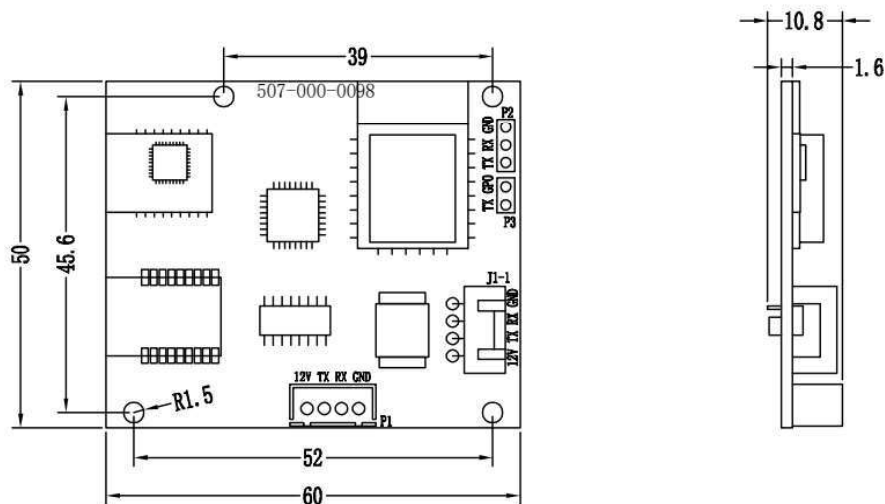


Fig. 2 Dimension drawing

### 2.3. Pin description

Pin definition:

Number	Pin name	Pin definition	Pin description
1	VCC	Power Supply	Input voltage 4.75 - 12V
2	TX	Serial port sending pin	Serial port sending pin of the module, RS232 level
3	RX	Serial port receiving pin	Serial port receiving pin of the module, RS232 level
4	GND	Ground	Powered GND

Table 1 Pin definitions

## 3. Hardware reference design

### 3.1. Power interface

The module is powered by pins 1 (VCC) and 4 (GND), DC 4.75 - 12V.

### 3.2. Serial port interface

The level of the module has been converted internally, and the interface is RS232 level.

### 3.3. WIFI/ Bluetooth module status indicator

working condition	MCU status (D3)	WIFI status (D2)	Bluetooth status (D1)
Power on	On	On	On
Normal operation / Online	On	On	On
Offline / restart	off	off	off
Data transfer	flashes	flashes	flashes

Table 2 Indicator Status

### **3.3.1. Operating instructions of indicator light**

#### **1. D1 status description**

Stage 1: the module is powered on for 1 second and then off.

Stage 2: Bluetooth is always on after entering the broadcast transparent transmission.

Stage 3: when Bluetooth data is sent on the mobile phone connection, it flashes.

**Abnormal restart or no broadcast is normally off.**

#### **2. D2 status description**

Stage 1: the module is powered on for 1 second and then off.

Stage 2: WiFi is always on after logging in the route and connecting to the terminal.

Stage 3: the terminal flashes when sending data.

**The network is abnormal / rebooted or the line drops and is always off.**

#### **3. D3 power status description**

Stage 1: the module is powered on for 1 second and then off.

Stage 2: flash when transmitting transparent data.

**Abnormal restart is normally off.**

## **4. After service**

### **4.1. Warranty conditions**

When the product leaves the factory, the user completely abides by the storage, installation and use rules specified in this instruction.

After the product leaves the factory, due to transportation reasons, the user found that the product or supporting parts were damaged during the unpacking inspection.

### **4.2. Guarantee time**

The product quality is guaranteed for 12 months from the date of delivery.

### **4.3. Warranty method**

During the warranty period, the manufacturer is responsible for free replacement or repair.

Beyond the warranty period, the user shall negotiate with the manufacturer to replace or repair in a paid way.

This manual is subject to change without notice.

If the contents of this manual do not conform to the real object, please refer to the real object.

#### FCC COMPLIANCE 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.

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.

**Warning:** Changes or modifications to this unit not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

#### 2.8 LABELING AND USER INFORMATION REQUIREMENTS OF THE END PRODUCT:

The final end product must be labelled in a visible area with the following "Contains TX FCC ID: 2A7AM-BTWFM001 or "Contains Transmitter Module FCC ID: 2A7AM-BTWFM001 if the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users' manual: 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.

A user's manual for the finished product should include one of the following statements:- For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:



A user's manual for the finished product should include one of the following statements:-  
For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

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.

The User's Manual for The finished product should include the following statements:

Any changes or modifications to this equipment not expressly approved by the OEM/Integrator may cause harmful interference and void the user's authority to operate this equipment.

### **RF Exposure**

This device has been evaluated and shown compliant with the FCC RF Exposure limits under fixed exposure conditions (antennas are greater than 20cm from a person's body) when installed in certain specific OEM configurations.

## **General Statements**

The module is limited to OEM installation only.

The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

This module should be installed and operated with a minimum distance 20cm between the radiator and your body. OEM integrator shall equipped the antenna to compliance with antenna requirement part 15.203& 15.204 and must not be co-located or operating in conjunction with any other antenna or transmitters. And OEM host shall implement a Class II Permissive Change (C2PC) or a new FCC ID to demonstrate complied with FCC standard.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the module.

The OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

This module support Bluetooth 2402-2480MHz & 2.4G WLAN 2412-2462MHz which compliance with part 15.247.

## **Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01**

### **2.2 LIST OF APPLICABLE FCC RULES:**

Compliance with § 15.247 regulation

### **2.3 SPECIFIC OPERATIONAL USE CONDITIONS:**

The module is typically use in industrial, household and general office / ITE and audio & video, EV charging system end-products. The product must not be co-located or operating in conjunction with any other antenna or transmitters.

### **2.4 LIMIT MODULE PROCEDURES:**

The module compliance with FCC requirements based on Limit module procedure as no shielding cover included. Any installation or operation that does not follow this manual will require further evaluation.

OEM integrator shall not modify and change the fixed designed PCB print antenna, and must not be co-located or operating in conjunction with any other antenna or transmitters, otherwise, a Class II Permissive Change (C2PC) must be filed with the FCC and/or a new FCC authorization must be applied.

### **2.5 TRACE ANTENNA DESIGNS:**

The module was designed with the fixed PCB print antenna and the wifi antenna maximum gain is about 1.97dBi, BT antenna maximum gain is -0.89dBi between 2400-2500MHz, any changes or modifications by the OEM integrator will require additional testing and evaluation.

### **2.6 RF EXPOSURE CONSIDERATIONS:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This product must be installed and operated with a minimum distance of 20 cm between the radiator and user body. OEM integrator shall equipped the antenna to compliance with antenna requirement part 15.203& 15.204 and must not be co-located or operating in conjunction with any other antenna or transmitters, otherwise, a Class II Permissive Change (C2PC) must be filed with the FCC and/or a new FCC authorization must be applied.

### **2.7 ANTENNAS:**

The antenna of the module was deisgned as PCB printed on the PCBA board and the best gain of wifi antenna maximum gain is about 1.97dBi, between 2400-2500MHz . Modification the antenna design may need additional testing and evaluation.

## **2.9 INFORMATION ON TEST MODES AND ADDITIONAL TESTING REQUIREMENTS:**

Data transfer module demo board can control the EUT work in RF test mode at specified conditions. This radio module must not be installed to co-locate and operating simultaneously with other radios in the host system except in accordance with FCC multi-transmitter product procedures. Additional testing and equipment authorization may be required operate simultaneously with other radio.

## **2.10 ADDITIONAL TESTING, PART 15 SUBPART B DISCLAIMER:**

The host product manufacturer is responsible for compliance with any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

### **General Statements**

The module is intended only for OEM integrators.

The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

OEM integrator shall not modify and change the fixed designed PCB print antenna, and must not be co-located or operating in conjunction with any other antenna or transmitters, otherwise, a Class II Permissive Change (C2PC) must be filed with the FCC and/or a new FCC authorization must be applied.

The product is typically use in industrial, household and general office / ITE and audio & video, EV charging system end-products (Manufacturer:SHENQI, Model:BS20-BC-7KW-APP). The antenna is over 20cm from human body.

The module install in the EV charging station and the distance between transmitter and cover is over 20 cm. The EV charging station will work at the place where the car need to charg.

## Installation instructions

1. Open the enclosure of the Charging station.



2. Fix the module to the housing using 4PCS m3x6 screws.



3. Connect the motherboard and modules using customized connecting cables.



4. Close the enclosure of the Charging station.

