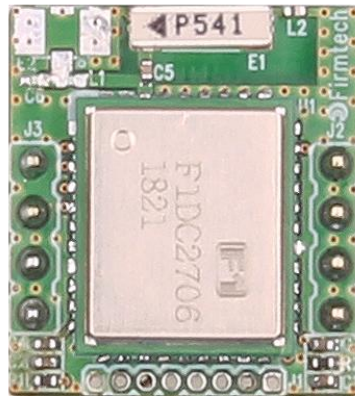


# Bluetooth Classic Embedded Module FB300BC-01 (SPP) User Guide



Version 1.0



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**Revision History**

<b>Revision</b>	<b>Date</b>	<b>Change Descriptions</b>
Ver 1.0	2018-10-31	- Write a draft

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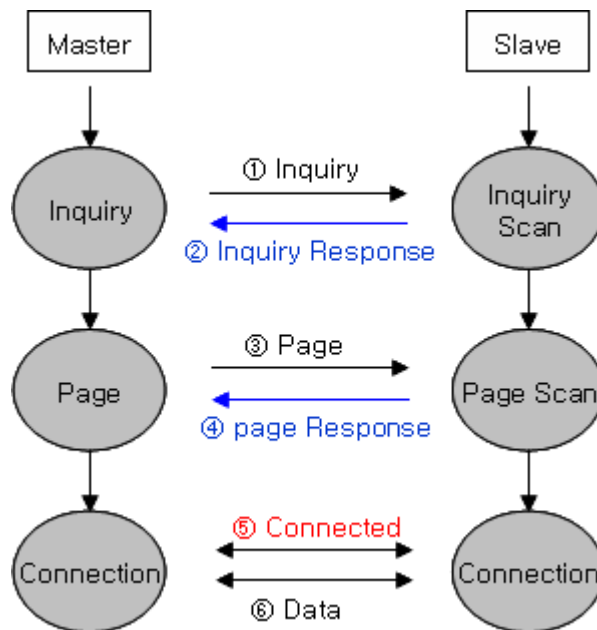
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# 1 What is Bluetooth?

## 1.1 Features of Bluetooth

- Objectives of Bluetooth : To Realize Wireless Communication for Short Distance with Low Power Consumption, High Reliability, and Low Cost.
- Frequency in Use: To Use ISM(Industrial, Scientific, Medical) Band which does not require any permission to use.
- Transmission Rate : 1Mbps ~ 3Mbps
- Transmission Output : 1mW (10m, Class2), 100mW (100m Class1)
- Network Configuration : Configured with Master and Slave relation. A Bluetooth unit shall allow simultaneous connections up to 7 devices (in case of ACL).
- Reliability : To Guarantee stable wireless communication even under severe noisy environment through adopting the technique of FHSS (Frequency Hopping Spread Spectrum).

## 1.2 Operation of Bluetooth



<Feature 1-1 Bluetooth Operation>

- Bluetooth operates based on the connection between “Master” and “Slave”.
- Masters are simply supposed to do “Inquiry” and “Page”. Slaves are supposed to do “Inquiry Scan” and “Page Scan”.
- If a Master finds a Slave and so “inquiry” is successful, a Slave responds to the Master with its information.

Interconnection between the Master and the Slave is achieved only if the information from the Slave is corresponded with the Master, and the Slave sends data to the Master.

## 2 Product Overview


Major Features of FB300BC-01

1. Bluetooth Specification 4.2 BR Support
2. Easily Applicable to the Product with 8 Pins Header Type
3. Start Scanning Automatically when Power is Supplied -> Operates as Mode2, Slave
4. Support AT Command, and capable to control FB300BC-01 by using AT Command
5. Easy to connect to use with Bluetooth PDA, Bluetooth USB Dongle
6. Provides the most compact size among Class 2
7. Stable Data Transmission / Receipt

※ We request the new users of FB300BC-01 to read the information on this description carefully before they start to use the products.

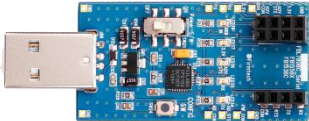
## 3 Product Components

### 3.1 FB300BC-01

MODEL	PICTURE	Q'TY (EA)
FB300BC-01 (On-board Chip Antenna)		1

< Table 3-1 Basic Components of FB300BC-01 >

### 3.2 PC Interface Kit (Option)

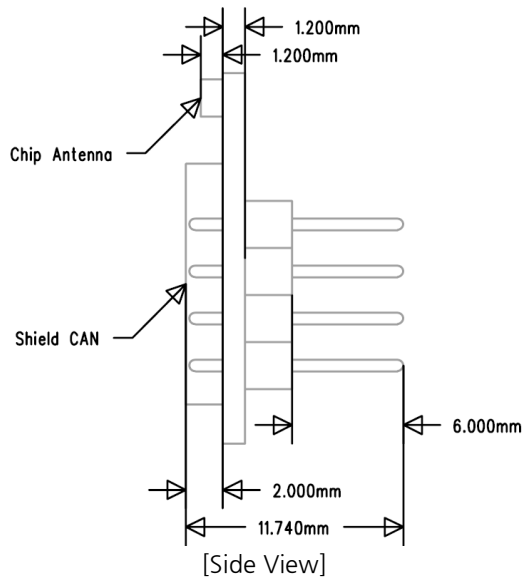
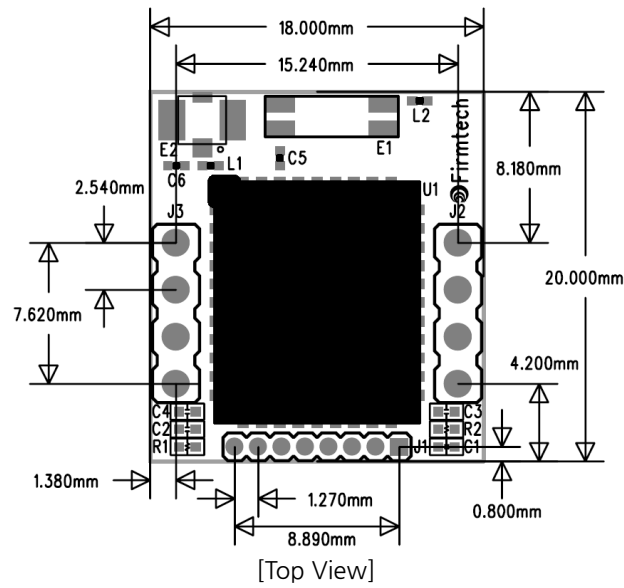
MODEL	PICTURE	Q'TY (EA)
Interface Board		1

< Table 3-2 Components of PC Interface Kit >

※ If you find any of above components is defective, or not included in the package, please contact the seller you purchased.

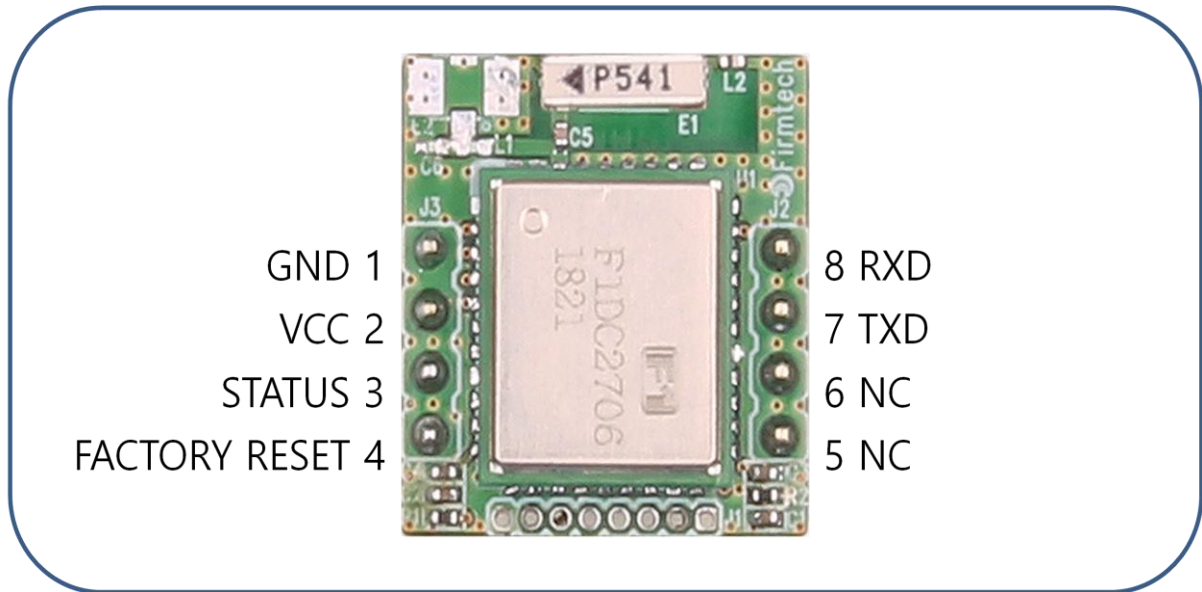
## 4 FB300BC-01 Appearance

### 4.1 FB300BC-01 Dimension



< Figure 4-1 FB300BC-01 Dimension >

### 4.2 FB300BC-01 PIN Assign



< Figure 4-2 FB300BC-01 PIN Assign >

NO	Name of Signal	Features	I / O	Level
1	GND	Ground		
2	VCC	DC 3.3V		
3	STATUS	Operation Status	Output	TTL
4	FA_SET CONFIG_SELECT	Factory Reset Configuration Select	Input	TTL
5	NC	Not Connect		
6	NC	Not Connect		
7	TXD	Transfer Data (Data out)	Output	TTL
8	RXD	Received Data (Data in)	Input	TTL

< Table 4-1 Pin Description >

- STATUS port

To be used to monitor the status of FB300BC-01.

It keeps LOW (0V) when the Bluetooth wireless section is connected smoothly and both devices can communicate

In standby mode for connection with Bluetooth, or connection trial, or searching for around Bluetooth device will repeat LOW and HIGH.

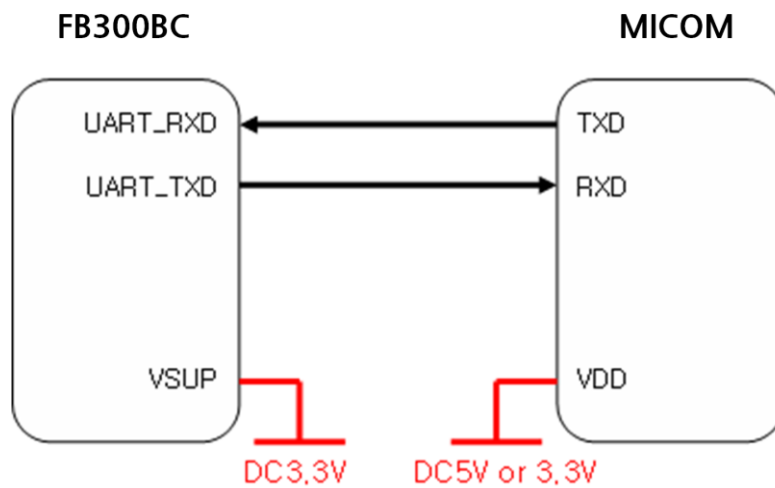


-FA\_SET / CONFIG\_SELECT

If you want to enter the configuration mode, turn on the power to the module while inputting LOW Signal (0V) to Configuration Select (No. 4 pin).

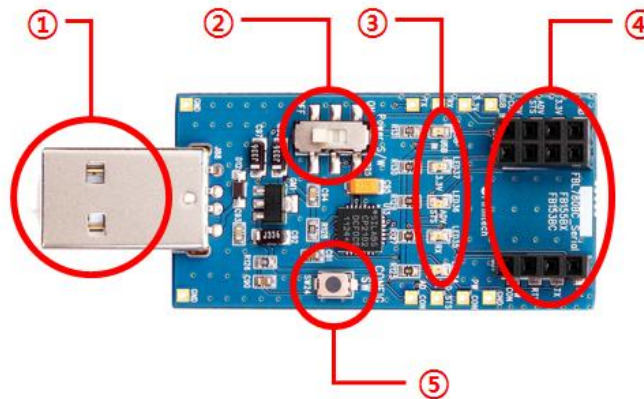
If you want to change to the factory default value, enter the LOW Signal (0V) for more than 4 seconds into the Factory Reset (Pin No. 4) after entering the configuration mode and all setting values will be changed to the original purchase status.

## 5 Interface (Pin Connection)



<Figure 5-1 Pin Connection Control>

## 6 PC Interface Board (Jig Board)



No.	Title	Description
1	UART communication & power port	UART communication interface terminal for PC connection 5V power input terminal
2	Power ON/OFF Switch	Interface Board Power On / Off Switch
3	STATUS LED	USB LED: USB port status LED POWER LED : 3.3V power supply LED STATUS LED: Status confirmation LED RX LED : UART input confirmation LED TX LED : UART Output confirmation LED
4	Connection connector	FB300BC-01 Connection connector
5	Configuration Select Switch	Switch for enter the configuration mode The configuration entry mode method is as follows. 1. Hold CONFIG switch and power on.. 2. Enter the configuration mode completed
	Factory Reset Switch	Factory initialization switch The Factory initialization is as follows. 1. Enter the configuration mode 2. After entering configuration mode, press the FASET switch Hold for 4 seconds. 3. Factory initialization completed

< Table 6-1 PC Interface Board >

## 7 Specification of FB300BC-01

No.	Part		Specification
1	Bluetooth Spec.		Bluetooth Specification 4.2 BDR Support
2	Communication distance		10 M
3	Frequency Range		2402 ~ 2480 MHz ISM Band
4	Sensitivity		-79dBm (Typical)
5	Transmit Power		4dBm(Typical)
6	Size		18 x 20 mm
7	Support Bluetooth Profile		SPP (Serial Port Profile)
8	Input Power		3.3V
9	Current Consumption		20mA (Max)
10	Temperature	Operating	-10℃ ~ 50℃
		Limit Operating	-30℃ ~ 80℃
11	Communication Speed		9,600bps - 115,200bps
12	Antenna		Chip Antenna
13	Interface		UART (TTL Level)

< Table 7-1 FB300BC-01 Specification >

## 8 Current Consumption

Status		Current Consumption (mA)		
		MIN	MAX	AVG
Inquiry scan & Page scan (Slave)		5.99	7.54	6.20
Standby(Master)		5.91	7.19	6.10
Inquiry scan & Page scan(Master)		19.10	20.28	19.69
Connected	Slave	10.39	11.86	10.50
	Master	10.39	11.86	10.50
Data Transmission	Slave	10.17	12.45	10.81
	Master	10.67	12.81	11.08
Data Reception	Slave	10.13	12.21	10.77
	Master	9.09	11.52	9.73
Data Transmission/Reception	Slave	11.67	15.65	13.27
	Master	10.40	13.99	12.09

< Table 8-1 Current Consumption of FB300BC-01 >

TEST CONDITIONS

Baud Rate : 9600 bps, Input Voltage : DC 5V

The power consumption will change depending on transmission speed and volume of data.

## 9 Preliminary Product Components

The preliminary value of product is set as on the <Table 9-1>.

Please be sure of basic set value and so on before using the product.

Type	Set Value
Device Name	FB300-01vx.x.x
Pin Code (Pass key)	0000
Uart (baud rate-data bit-parity bit-stop bit)	9600-8-N-1
ROLE	SLAVE
Connection Mode	MODE2

<Table 9-1 Preliminary Configuration Setting Value for FB300BC-01>

※ FB300BC-01 can change the setting value by using AT command of Bluetooth setting.

## **FCC MODULAR APPROVAL INFORMATION EXAMPLES for 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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

**CAUTION:** 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 equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

### **OEM INTEGRATION INSTRUCTIONS:**

This device is intended only for OEM integrators under the following conditions:

The module must be installed in the host equipment such that 20 cm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the internal on-board antenna that has been originally tested and certified with this module. External antennas are not supported. As long as these 3 conditions above are met, further transmitter test will not be required.

However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.). The end-product may need Verification testing, Declaration of Conformity testing, a Permissive Class II Change or new Certification. Please involve a FCC certification specialist in order to determine what will be exactly applicable for the end-product.

**Validity of using the module certification:**

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization. In such cases, please involve a FCC certification specialist in order to determine if a Permissive Class II Change or new Certification is required.

**Upgrade Firmware:**

The software provided for firmware upgrade will not be capable to affect any RF parameters as certified for the FCC for this module, in order to prevent compliance issues.

**End product labeling:**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: U8D-FB300BC-01".

**Information that must be placed in the end user manual:**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.