

ZBS-200 Manual V0.9

1. Introduction

This product is the Zigbee wireless module used when controlled by the 1 : n way. With a module, you can use both transmission module and reception one. And one group can constitute 255 modules and control them owing to the possibility to alter the RF Channel into 16 channels and to be changed up to 255 IDs. The module is designed for the useful controlling of 255 Device sensors in the RX mode by setting SUB-ID. Communication speed is 9600bps , Noparity, 8data bit, 2stop bit



2. How to set

A user can set up ID, RF Channel, SUB-ID, and RX/TX mode of this product as he or she likes. Let's check each term

**** RF Channel** : RF Channel indicates it is possible to be used as 16 groups in a space. The Channel that you can choose ranges from 0B to 1A (0B, 0C, 0D, 0E, 0F, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 1A)

**** RX/TX mode** : This module has the TX(transmission mode),and RX(reception mode) you can choose. "01" signifies the transmission mode, and "02" does the reception mode.

**** ID** : ID signifies the figures which can be set in a RF Channel. 254 IDs can be set in total, that is to say, ID can be set from 0x00 to 0xFE, and if there are a few modules that share the same ID, they operate simultaneously.

**** SUB-ID** : SUB-ID indicates the number that can expand the sensors(controllers) with

MCU expanded in the RX module. You can operate the sensors you want according to the SUB-ID. From 0x00 to 0xFE can it be utilized.

Setting

1. By USB cable between the Zigbee base board and a computer
2. Installing the driver of the Zigbee base board to PC (The driver is available by the download)
3. Inserting ZBS-200 module to the Zigbee base board (Please be careful about the direction)
4. Executing the communication program (Hyper-terminal) in a PC
5. There are three commanding values in the ZBS-200 module

Instruction words (Capital letters are required)

S: The value for setting module

G: The value for conforming the present state of module

X: The value for resetting

H: The value for the menu of help

First of all, in the terminal window,

>> G → Press the Enter key

1234 FFFF FF 0B 01 00 02

Please utilize the part of 1234 as the Fan ID Default.

Utilize the part of FFFF as the Short Address Default,

Utilize the part of the FF as the REV Default.

“ 0B ” mentioned above indicates the RF Channel and it can be set from 0B to 1A.

“ 01 ” is the setting part of TX or RX (If you want TX mode, set "01" or if RX, set "02"). Although you set other values that can be seen as different forms of value on the monitor, only "01" or "02" is fixed as value beforehand.

“ 00 ” is the part in which the SUB-ID is set from 00 to FE

“ 02 ” is for ID setting ranging from 00 to FE

>> S → It is used when you set the key for the sake of your convenience according to a certain form

After setting in the following order of ASCII (American standard code for information interchange) style below, Please click the Enter

>> S1234FFFFFF0B0015510000010002 → Enter

<< Part description >>

S 1234 FFFF FF 0B 0015510000 01 00 02

(Fan_ID) (Short Addr) (REV) (RF Channel) (Setting Value) (RX/TX) (Sub_ID) (ID)

- * The part of RF Channel can be set in the range of 0B to 1A
- * In RX/TX mode, "01" means TX, and "02" is RX mode
- * The part of SUB_ID Part can be used from 00 to FE
- * ID Part can be utilized from 00 ~ FE

3. Instruction Packet

Instruction Packet is the packet which the main controller sends through the TX module. The structure of Instruction Packet runs as follows.

Instruction Packet → Start, LENGTH, Fan_ID, ID, Sub_ID, INSTRUCTION, Value, Check_SUM, End

→ The signification of each byte constituting Packet runs as follows. (Fan_ID is 16bit)

ex) Start, Length, Fan_ID, ID, sub_id, command, value, check_sum, End

0xAA 0x06 0x12 0x34 0x01 0x00 command, value, check_sum, 0x55

ex) 0xAA 0x06 0x12 0x34 0x02 0x00 0x45 value(0xDD) 0x6E 0x55

(The TX module → Transmission through the RX module : RXD1, TXD1)

0xAA 0x06 0x12 0x34 0x02 0x00 0x45 value(0xDD) 0x6E 0x55

(The RX module → Transmission through the TX module : RXD0, TXD0)

Command

0x40(speed) : The RC servo motor-speed-controlling value(Please refer to P3.2)

0x41(degree) : RC servomotor-angle-controlling value(Please refer to P3.2)

0x42(read) : signifies the analogue value coming from the ADC0 Pin

0x43(ADC read) : When reading the analogue value coming from ADC0 Pin

0x44(on-off) : When outputting "High", and "Low" shown at P3.2 — Reserved

0x45(transmission & reception): When transmitting the serial data from the TX module to the RX module

When transmitting the serial data from the RX module to the TX module

0x46(read) : When reading the analogue value from the ADC1 Pin — Reserved

Command + Value

0x40(speed) + Value --> 10ms + Value

0x41(degree) + 0x00 ~ 0xfe --> Setting the angle from 0 ~ 180 degree(For Servomotor)

0xff(Broadcast) + 0x00 ~ 0xfe --> Setting the RC-servo-angle connected with every module

0x42(read) : Signifying the value coming into ADC0(0x00 ~ 0xff : 0V ~ 5V)

0x43(ADC read) : The instruction word when reading at ADC0

0x44(on-off) + 0x00/0xFF : In 0x00, "Low" is output at P3.2, in 0xFF "High" is output as signal respectively

0x45(transmission & reception) : Outputting the value(packet)in the TXD0 Pin of the RX module when transmitting the serial data from the TX module to the RX module

0x46(read) : When Reading the analogue value coming from the ADC1 Pin(0x00 ~ 0xFF : 0V~1.5V)

Reference: In the setting of TX module, it is recommended to only use TXD1,orRXD1

In the setting of RX module, it is highly recommended to make use of TXD0,or RXD0

Packet Instruction >>

0xAA 0x55 --> The foremost 0xAA is the starting sign of Packet, 0x55 is End Packet

ID --> The ID of module. The ID of motor can be made to 254 from 0x00 through 0xFD

Broadcasting ID --> ID 0xFF is Broadcast ID that sets the whole connected motors

The Packet whose ID is set as 0xFE is very beneficial to every connected motor. At this time, the Status Packet do not return.

LENGTH --> The length of Packet.

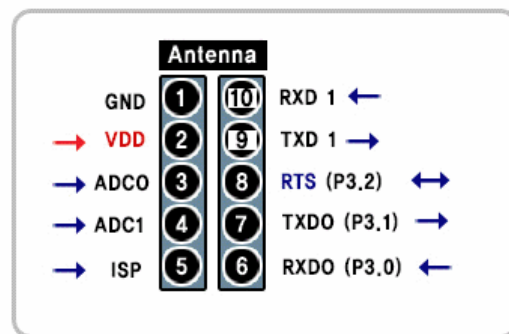
4. PIN Description

When the module is powered, the thing you need to take notice of is to input voltage.

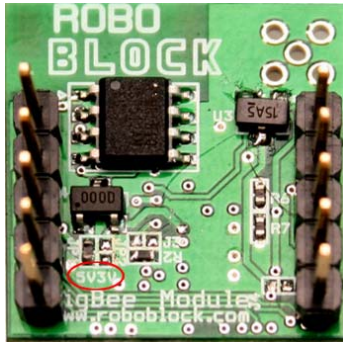
This module is designed to be used with the choice of 5V and 3.3V. Please notice If it is unveiled in the market, its voltage is set to 5V. The module with 3.3V ought to be transformed in line with the Manual



- RS232C 케이블링 대처
- 무선 POS 시스템
- 산업용 무선 기기 제어 및 모니터링
- 공장 자동화 무선 통신 응용
- 교통감시 시스템
- 자동차 진단 시스템
- PLC 프로그래밍
- 무선 물류 시스템
- 센서 네트워크 시스템



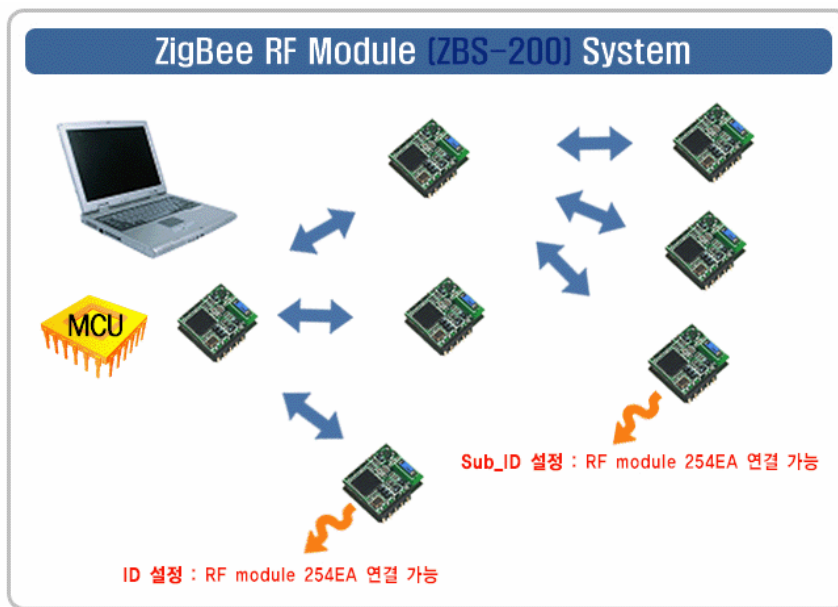
Pin No.	Pin Name	Direction	Description	Signal Level
1	GND		Power Ground	Ground
2	VDD	Input	DC input(3V or 5V)	Power
3	ADC0	Input	Reserved	0V ~ 5V
4	ADC1	nput	Reserved	0V ~ 1.5V
5	ISP	N.C	Not Connected	N.C
6	RXD0	N.C	UART0 data Input	TTL
7	TXD0	Output	UART0 data output	TTL
8	P3.2(I/O Pin)	Input/Output	Input(Reserved)/Output	TTL
9	TXD1(P3.1)	Output	UART1 data output	TTL
10	RXD1(P3.0)	Input	UART1 data output	TTL



Notice: There is the sign,"0" ohm resistance that is attached in the circular part. When attached to the side of 5V, it is being operated by 5V(3.2V – 6V), and when to the side of 3V, it is working through 3V(2.8V – 3.3V). When this product is unveiled, its voltage is 5V, so that if a user use the one with 3V, you must remove "0" ohm resistance of 5V side, and then transform it to the side of 3V.

5. Zigbee module system

Through the serial communication, you set a module of PC into the TX mode(01) and the other modules into RX(02). Sub-ID is used when you receive data from the module of RX mode and control other pieces of Device. In the TX mode, you can use RXD1 & TXD1. In the RX mode, however, the other things can not be used except for TXD0 & RXD0.



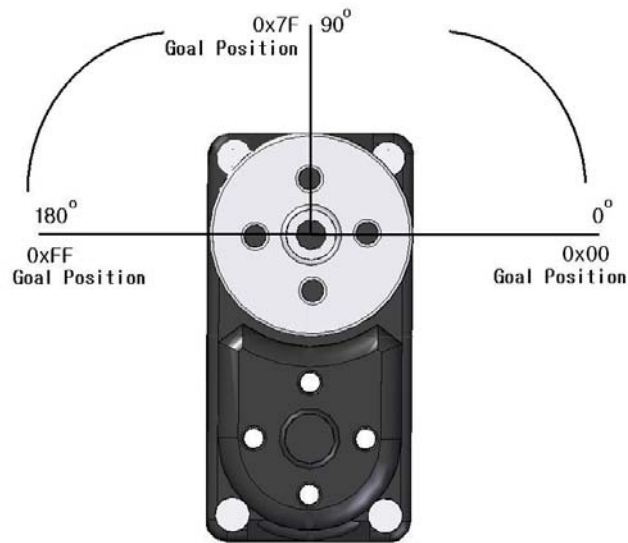
6. RC Servo Motor Control

This mode is used when you would like to control the generally used servomotor in a wireless way. If the command of 0x41 is sent, the use is possible. As shown below, when the command of 0x41 and the angle value of the motor are sent, the servomotor will be set according to the command & the value.

0x40(speed) + Value → 10ms + m

0x41(degree) + 0x00 ~ 0xfe → Setting the angle(0 ~ 180 degree)

0xff(Broadcast) + 0x00 ~ 0xfe → Setting the angle of the RC servomotor connected to every module

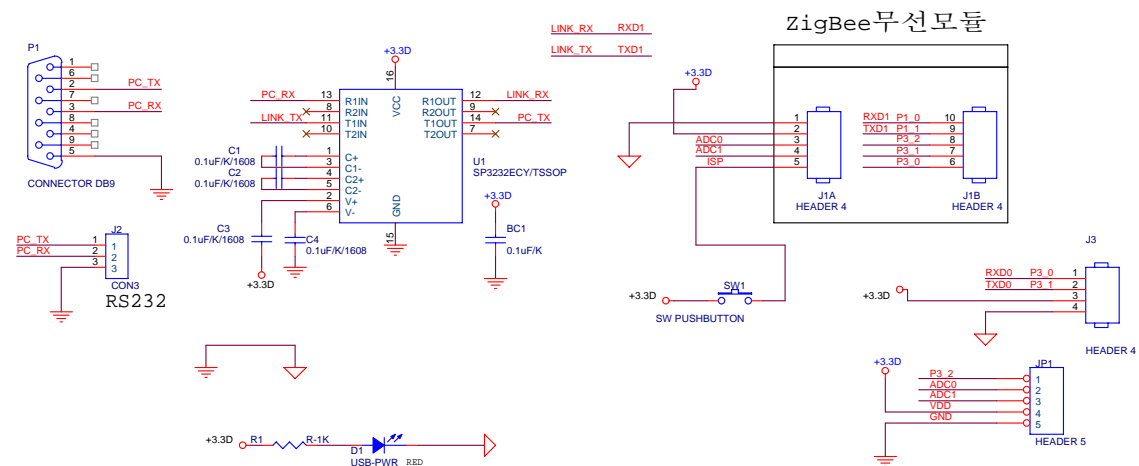


ex) 0xAA 0x06 0x12 0x34 0x02 0x00 0x41 data(degree) Check_Sum 0x55 (TX Module → RX Module(Servo motor) sending)

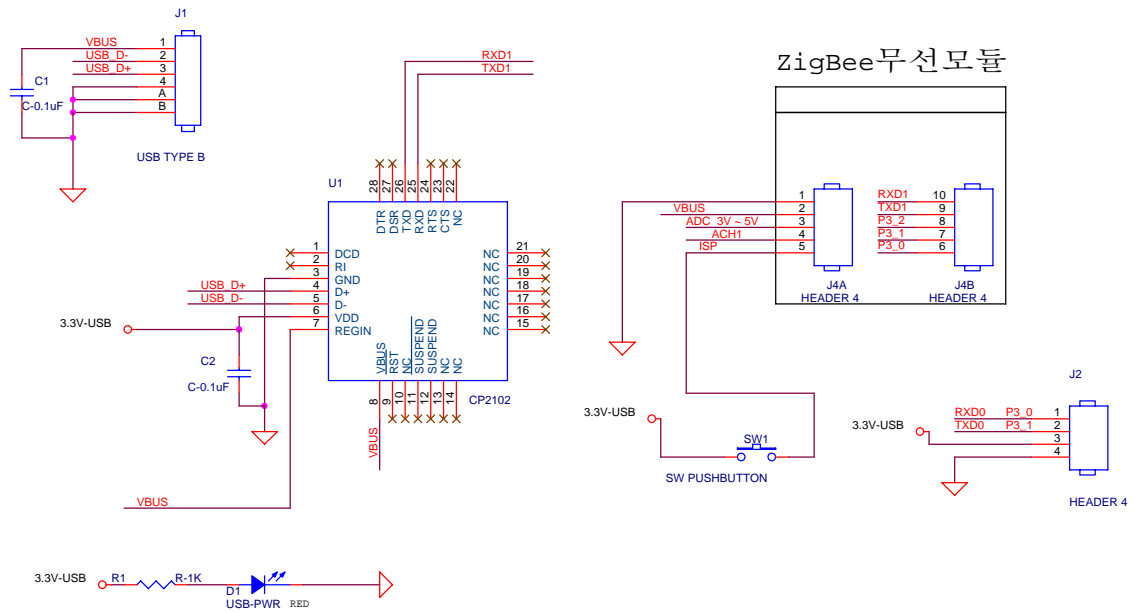
Check_Sum = Length + Fan ID_H + Fan ID_L + ID + sub_id + command + value

7. Application Circuit

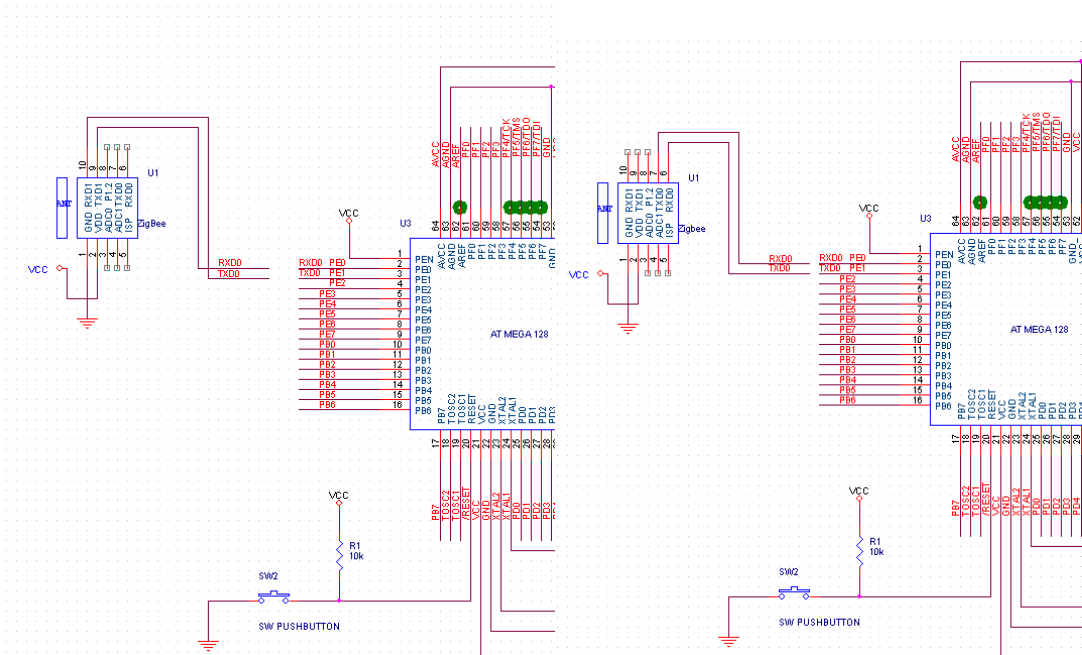
– For SP3232 (Serial Port Type)



- For CP2102 USB (USB Port Type)



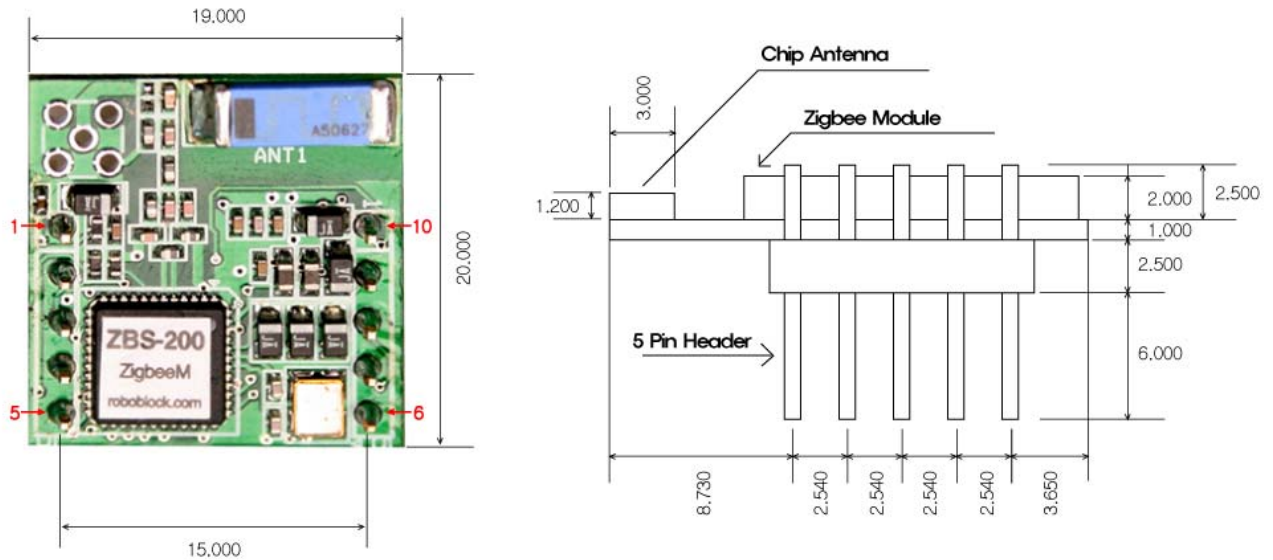
- For Microcontroller



(TX Mode Example circuit)

(RX Mode Example Circuit)

8. Pin Dimension



9. Information Roboblock

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* Reference: In the size and pin, ZBS-100 and ZBS-200 are the same, but there are differences in functions.