Bluetooth Module (master/slave)

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Overview

Serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR(Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. It uses CSR Bluecore 04-External single chip Bluetooth system with CMOS technology and with AFH(Adaptive Frequency Hopping Feature).It even has the smallest footprint as small as 12.7mmx27mm. Hope it will simplify your overall design/development cycle.

# License

Specifications

Hardware features

- Typical -80dBm sensitivity
- Up to +4dBm RF transmit power with power level control
- Fully Qualified Bluetooth V2.0+EDR 3Mbps Modulation
- Integrated 15-bit Linear 8KHz Sample Frequency   *(not in default profile)*
- External 8Mbit Flash
- Low Power 1.8V Operation ,1.8 to 3.6V I/O
- PIO control
- UART interface with programmable baud rate
- Integrated PCB antenna
- SMD package
- With PCM Out & PCM in *(not in default profile)*
- With edge connector

Software features

- Default Baud rate: 38400, Data bits:8, Stop bit:1,Parity:No parity, Data control: has. Supported baud rate: 9600,19200,38400,57600,115200,230400,460800.
- Use CTS and RTS to control the data stream, deep sleep and wake up.
- When a rising pulse is detected in PIO0, device will be disconnected.
- Status instruction port PIO1: low-disconnected, high-connected;
- PIO10 connected red led, PIO11 connected blue led. When master and slave are paired, red and blue led blinks 1time/2s in interval, while disconnected only blue led blinks 2times/s.
- Auto-connect the last device on power as default.
- Permit matched device connect by default.
- Default PINCODE:"0000".
- Auto-reconnect in 30 min when disconnected as a result of beyond the range of connection.
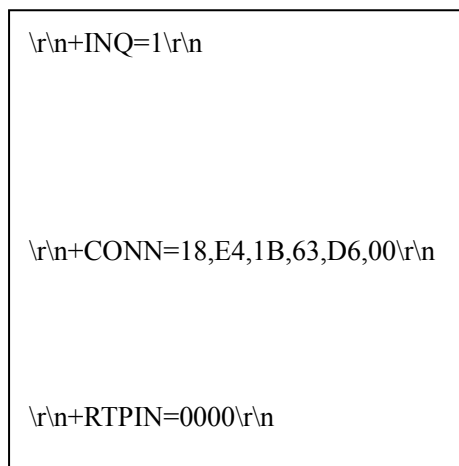
Software Instruction

Working Sketch Map
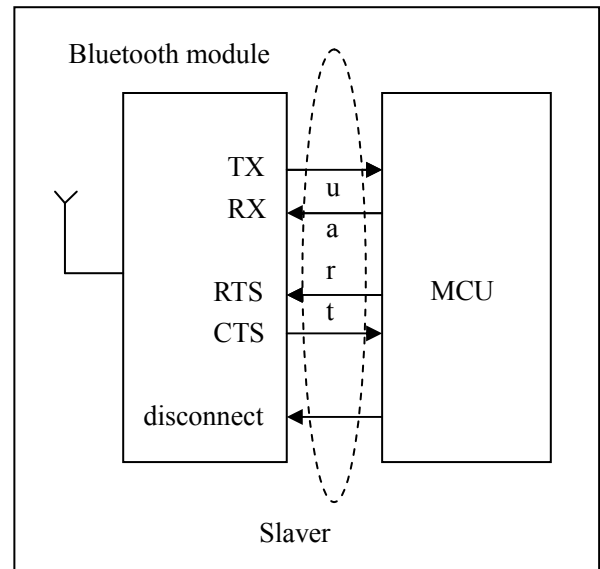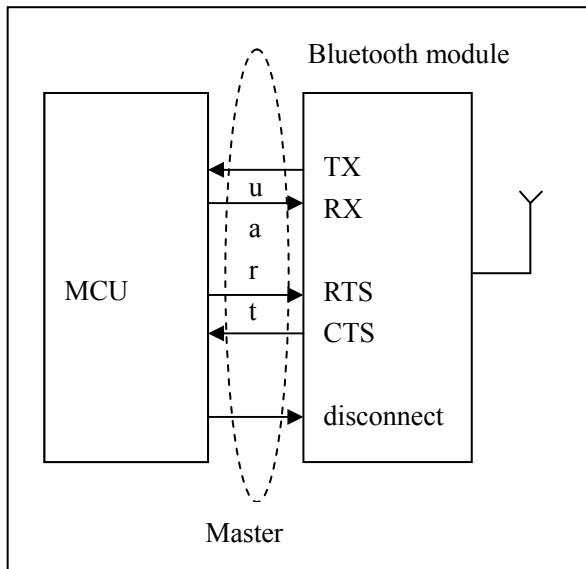
Flowchart

Master MCU Instructions

Message and feedback of Bluetooth Module

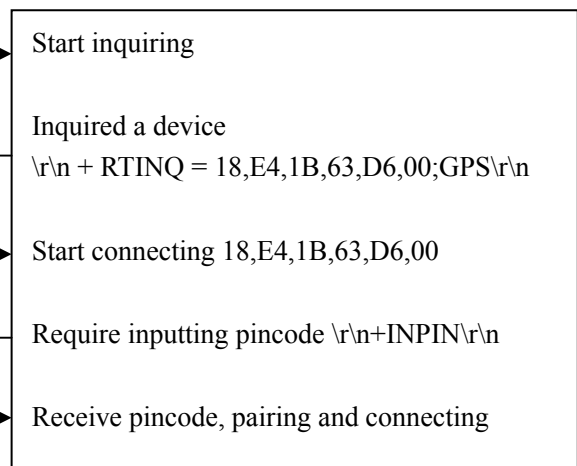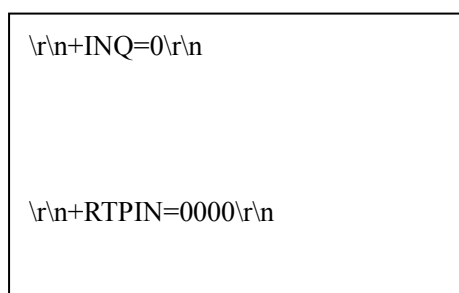| Master MCU Instructions	Message and feedback of Bluetooth Module
\r\n+INQ=1\r\n	Start inquiring
	Inquired a device \r\n + RTINQ = 18,E4,1B,63,D6,00;GPS\r\n
\r\n+CONN=18,E4,1B,63,D6,00\r\n	Start connecting 18,E4,1B,63,D6,00
	Require inputting pincode \r\n+INPIN\r\n
\r\n+RTPIN=0000\r\n	Receive pincode, pairing and connecting

Slave MCU Instructions

Message and feedback of Bluetooth Module

Slave MCU Instructions	Message and feedback of Bluetooth Module
\r\n+INQ=0\r\n	Enter paring mode
	Require inputting pincode \r\n+INPIN\r\n
\r\n+RTPIN=0000\r\n	Receive pincode, pairing and connecting
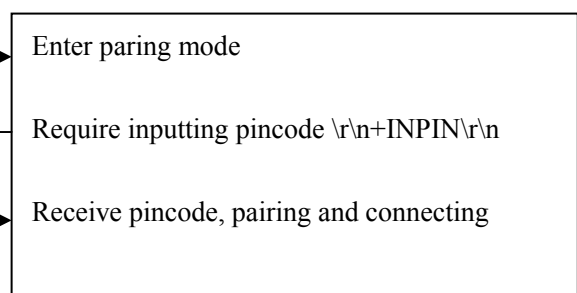
Commands to change default settings

1. Set working MODE

\r\n+STWMOD=0\r\n   Set device working as client (slave), Save and Rest
\r\n+STWMOD=1\r\n   Set device working as server (master), Save and Rest

2. Set BAUDRATE

\r\n+STBD=115200\r\n   Set baudrate 115200, Save and Rest
Supported baudrate: 9600, 19200,38400,57600,115200,230400,460800.

3. Set MASTER NAME

\r\n+STNA=abcdefg   Set device name "abcdefg", Save and Rest

4. Auto-connect the last paired device on power

\r\n+STAUTO=0\r\n   Forbidden, Save and Rest
\r\n+STAUTO=1\r\n   Permit, Save and Rest

5. Permit Paired device to connect me

\r\n+STOAUT=0\r\n   Forbidden, Save and Rest
\r\n+STOAUT=1\r\n   Permit, Save and Rest

6. Set PINCODE

\r\n +STPIN=222\r\n   Set pincode "2222", Save and Rest

7. Delete PINCODE(input PINCODE by MCU)

\r\n+DLPIN\r\n   Delete pincode, Save and Rest

8. Open ECHO

\r\n+STECHO\r\n   Open controlling command echo

9. Read local ADDRESS CODE

\r\n+RTADDR\r\n   Return address of the device

10. Auto-reconnecting when master device is beyond the valid range (slave device will auto-reconnect in 30 min when it is beyond the valid range)

\r\n+LOSSRECONN=0\r\n Open
\r\n+LOSSRECONN=1\r\n Close

Commands for Normal Operation:

1. Inquire SLAVER

  a)   Master
\r\n+INQ=0\r\n   Stop Inquiring
\r\n+INQ=1\r\n   Begin/Restart Inquiring
  b)   Slave
\r\n+INQ=0\r\n   Enable been inquired
\r\n+INQ=1\r\n   Disable been inquired

2. Bluetooth module returns inquiring result

\r\n+RTINQ=aa,bb,cc,dd,ee,ff;name\r\n   A serial Bluetooth device with the address "aa,bb,cc,dd,ee,ff" and the name "name" is inquired

3. Connect device

\r\n+CONN=aa,bb,cc,dd,ee,ff\r\n   Connect to a device with address of "aa,bb,cc,dd,ee,ff"

4. Bluetooth module requests inputting PINCODE

\r\n+INPIN\r\n

5. Input PINCODE

\r\n+RTPIN=code\r\n
Example: RTPIN=0000   Input PINCODE which is four zero

6. Disconnect device

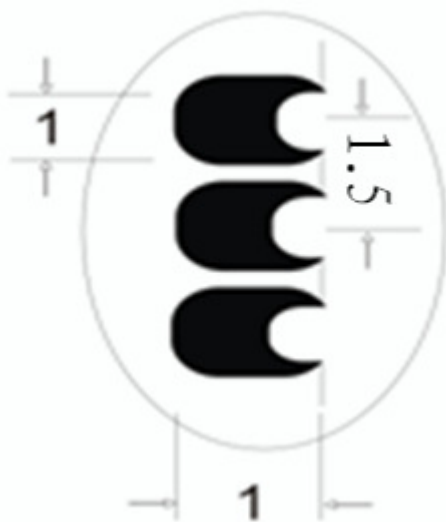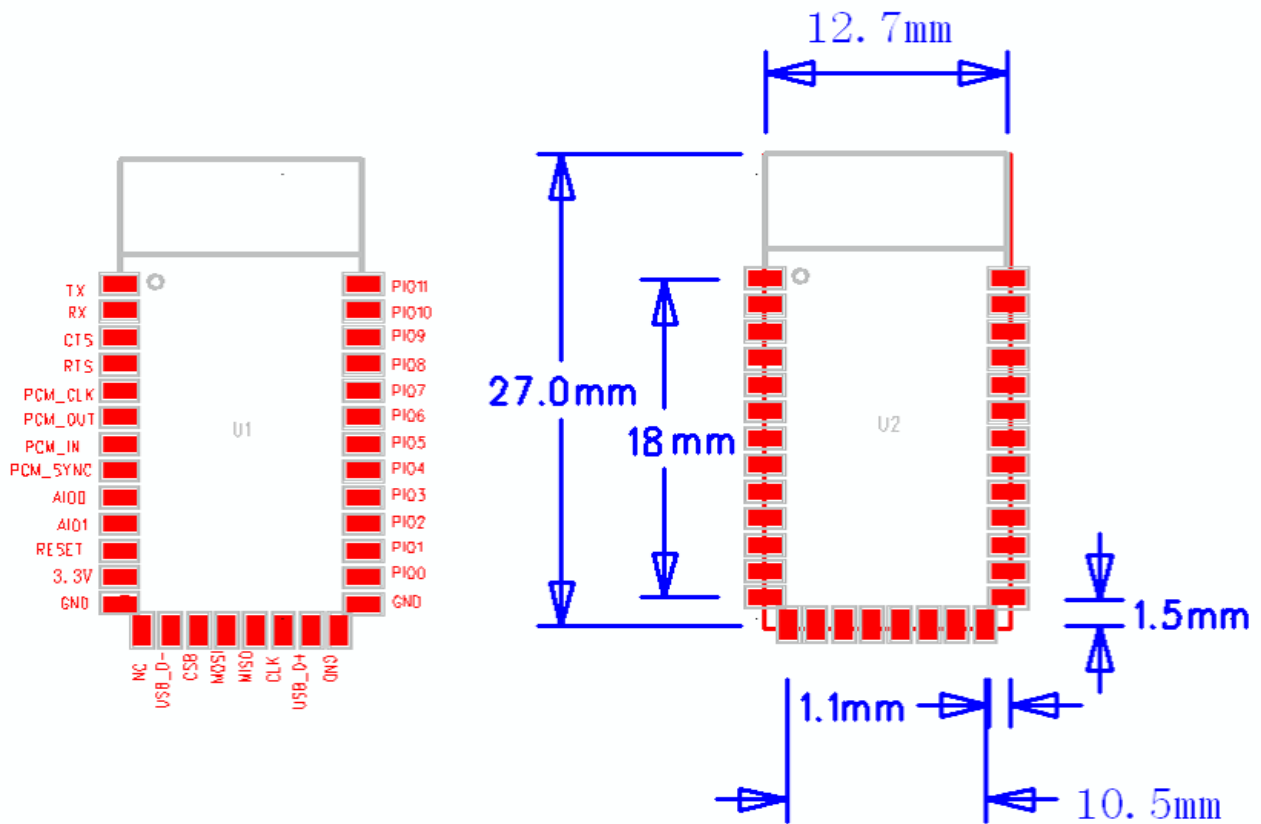Pulling PIO0 high will disconnect current working Bluetooth device.

7. Return status

\r\n+RTSTA:xx\r\n
xx status:
0,   Initializing
1,   Ready
2,   Inquiring
3,   Connecting
4,   Connected

Pinout

Pin Function

PIN Name	PIN #	Pad type	Description	Note
GND	13 21 22	VSS	Ground pot	
3.3 VCC	12	3.3V	Integrated 3.3V (+) supply with On-chip linear regulator output within 3.15-3.3V	
AIO0	9	Bi-Directional	Programmable input/output line	
AIO1	10	Bi-Directional	Programmable input/output line	
PIO0	23	Bi-Directional RX EN	Programmable input/output line, control output for LNA(if fitted)	
PIO1	24	Bi-Directional TX EN	Programmable input/output line, control output for PA(if fitted)	

PIN Name	PIN #	Pad type	Description	Note
PIO2	25	Bi-Directional	Programmable input/output line	
PIO3	26	Bi-Directional	Programmable input/output line	
PIO4	27	Bi-Directional	Programmable input/output line	
PIO5	28	Bi-Directional	Programmable input/output line	
PIO6	29	Bi-Directional	Programmable input/output line	
PIO7	30	Bi-Directional	Programmable input/output line	
PIO8	31	Bi-Directional	Programmable input/output line	
PIO9	32	Bi-Directional	Programmable input/output line	
PIO10	33	Bi-Directional	Programmable input/output line	
PIO11	34	Bi-Directional	Programmable input/output line	

RESETB	11	CMOS input with weak internal pull-up	Reset if low.input debouncde so must be low for >5MS to cause a reset	
UART_RTS	4	**CMOS output, tri-stable with weak internal pull-up**	**UART request to send, active low**	
UART_CTS	3	**CMOS input with weak internal pull-down**	**UART clear to send, active low**	
UART_RX	2	**CMOS input with weak internal pull-down**	**UART Data input**	
UART_TX	1	**CMOS output, Tri-stable with weak internal pull-up**	**UART Data output**	
SPI_MOSI	17	**CMOS input with weak internal pull-down**	**Serial peripheral interface data input**	

SPI_CSB	16	**CMOS input with weak internal pull-up**	**Chip select for serial peripheral interface, active low**	
SPI_CLK	19	**CMOS input with weak internal pull-down**	**Serial peripheral interface clock**	
SPI_MISO	18	**CMOS input with weak internal pull-down**	**Serial peripheral interface data Output**	
USB_-	15	**Bi-Directional**		

USB_+	20	Bi-Directional		
NC	14			
PCM_CLK	5	Bi-Directional	Synchronous PCM data clock	
PCM_OUT	6	CMOS output	Synchronous PCM data output	
PCM_IN	7	CMOS Input	Synchronous PCM data input	
PCM_SYNC	8	Bi-Directional	Synchronous PCM data strobe	

Revision History

Rev.	Descriptions	Release date
1.0	Initial release	2010.1.8