

MuYu

MY-BT104/BT401/BC204/BT501 Commands Guide

Version 1.9

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1. Introduction

1.1 Overview

The serial port communication command is the communication protocol between the module and the MCU. This design guide is suitable for engineers developing MY-BC204 series Bluetooth BLE modules, and also suitable for BT104, BC501, BT401 series modules. The default baud rate of all modules is 115200.

1.2 Default Configuration

Name	MY-BC204
Pin Code	123456
Service UUID	FFF0
Write UUID	FFF2
Notify UUID	FFF1
UART Baudrate	115200/8/N/1

1.3 Command Format

AT+ Command {=Param1{, Param2{, Param3...}}} <CR><LF>

- All command start with "AT", end with <CR><LF>
- <CR> stand for "carriage return", corresponding hex is 0x0D
- <LF> stands for "line feed", corresponding hex is 0x0A
- If command has parameter, parameter keep behind "="
- If command has multiple parameter, parameter must be separated by ","
- If command has response, response start with <CR><LF>, end with <CR><LF>
- Module will always report command's execution result using "OK" for success or "ERROR" for failure
- Module UART default baud rate 115200
- All module instructions are in uppercase letters
- Data: 8
- Parity: none
- Stop bit 1
- C->S Host send COMMAND to the module

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5	NC	NC	NC
6	NC	NC	NC
7	NC	NC	NC
8	NC	NC	NC
9	PA01_Tran	I/O	Host MCU change UART Throughput/ Command transmission mode, programmable I/O line (To open this IO function requires the Command of the module, it is not open by default) ADC_CH_5
10	PA02_Disc	I/O	Host MCU control Bluetooth connection/ disconnect by IO (To open this IO function requires the Command of the module, it is not open by default) ADC_CH_6
11	RESET	I	Reset: Active Low
12	VDD_3V3	VDD	Power supply voltage: 3~3.6V
13	GND	VSS	Power Ground
14	PB14	I/O	Programmable input/ output line (Note: Pull high to enter program burning mode when powered on)
15	NC	NC	NC
16	PB01_TX	I/O	Firmware burning port, connected to the RX of the serial tool
17	PB01_RX	I/O	Firmware burning port, connected to the TX of the serial tool
18	NC	NC	NC
19	NC	NC	NC
20	NC	NC	NC
21	GND	VSS	Power Ground
22	GND	VSS	Power Ground
23	PA07	I/O	Programmable input/ output line
24	PA08	I/O	Programmable input/ output line
25	PA09	I/O	Programmable input/ output line
26	PA13	I/O	Programmable input/ output line
27	PA14	I/O	Power mode, low level in running mode, high level in sleep mode
28	PA15	I/O	Programmable input/ output line
29	PB05	I/O	Programmable input/ output line
30	PB06	I/O	Programmable input/ output line
31	PB08	I/O	Programmable input/ output line
32	PB09	I/O	Programmable input/ output line
33	PB10	I/O	BLE connected status pin, disconnected as low, connected as high
34	PB11	I/O	Programmable input/ output line
35	GND	VSS	Antenna power ground
36	EXT_ANT		By default, this PIN is an empty feet. this PIN can connect to an external antenna to improve the Bluetooth signal coverage

2.3 Hardware Design Description

- The module only needs to be connected to VDD/GND/UART_RX/UART_TX to use
- If the MCU needs to obtain the connection status of the Bluetooth module, it needs to be connected to the STATUS pin
- After drawing the schematic diagram, please send it to MuYu for review, so as to prevent the Bluetooth distance from not reaching the best effect

3. Command Table

3.1 General Command

3.1.1 UART Communication Test

Command Explain
Format: AT Response: OK Description: UART communication testing between HOST and Module
Example
C->S AT C<-S OK

3.1.2 Read Firmware Version: AT+VER

Command Explain
Format: AT+VER Response: +VER=Param Description: Param: firmware version
Example
C->S AT+VER C<-S +VER=3.2.0,MY-BT401 C<-S OK

3.1.3 Restart the device: AT+REBOOT

Command Explain
Format: AT+REBOOT Response: OK Description: Restart the device
Example

```
C->S AT+REBOOT
C<-S OK
```

3.1.4 Restore: AT+RESTORE(NEED REBOOT)

Command Explain
Format: AT+RESTORE Format: OK Description: Restore the settings to the initial state
Example
C->S AT+RESTOER C<-S OK

3.1.5 Read/Setting Baud Rate AT+BAUD=PARAM

Command Explain
Format: AT+BAUD=Param Response: +BAUD=Param Description: Baud Rate(4800/9600/19200/38400/57600/115200/230400/460800/921600,256000,512000,1000000) (Default baud rate: 115200)
Example
Read Baud Rate: C->S AT+BUAD C<-S +BAUD=115200 C<-S OK Setting Baud Rate: C->S AT+BAUD=115200 C<-S +BAUD=115200 C<-S OK

3.1.6 Read MAC Address: AT+ADDR

Command Explain
Format: AT+ADDR Response: +ADDR= Param Description: BLE MAC address(12 Bytes ASCII)
Example
C->S AT+ADDR C<-S +ADDR=DD0D305AF262 C<-S OK

3.1.7 Read/Setting Bluetooth Name: AT+NAME=PARAM1,PARAM2

Command Explain
Format: AT+NAME=Param1,Param2 Response: OK Description: Param1: BLE Name (1~25/29 Bytes ASCII)

Param2: Add the last four digits of the Bluetooth MAC address, 0: not adding, 1 means adding
Example
Read BLE Name: C->S AT+NAME C<-S +NAME=MY-BT501 C<-S OK Setting BLE Name: C->S AT+NAME=MY-BT501,1 C<-S OK

3.1.8 Read/Setting PIN Code: AT+PIN=PARAM

Command Explain
Format: AT+PIN=Param Response: +PIN=Param Description: PIN Code, (4~15 Bytes ASCII), Default PIN Code: 0000
Example
Read PIN Code C->S AT+PIN C<-S +PIN=123456 C<-S OK Setting PIN Code: C->S AT+PIN=123456 C<-S OK

3.1.9 Read/Setting SSP (Secure Simple Pairing) AT+SSP=PARAM

Command Explain
Format: AT+SSP Response: +SSP=Param(0~1) Description: Param=0(turn off SSP), 1(turn on SSP) (Default Turn on)
Example
Read SSP Status: C->S AT+SSP C<-S +SSP=0 C<-S OK Setting SSP Status C->S AT+SSP=1 C<-S OK

3.1.10 Read/Setting Throughput Mode: AT+TPMODE=PARAM

Command Explain
Format: AT+TPMODE=Param(0~1) Response: +TPMODE=Param OK Description: 0:turn off Throughput mode 1: turn on Throughput mode
Example
Read Throughput Mode: C->S AT+TPMODE

```
C<-S +TPMODE=1
C<-S OK
Setting Throughput Mode:
C->S AT+TPMODE=1
C<-S +TPMODE=1
C<-S OK
```

3.1.11 Read/Setting BLE Peripheral/Central Mode: AT+ROLE=PARAM

Command Explain
Format: AT+ROLE= Param(0~1) Response: +OK Description: 0: Peripheral Mode (Default) 1:Central Mode
Example
Read BLE Peripheral/Central Mode: C->S AT+ROLE C<-S +ROLE=0 C<-S OK Setting BLE Peripheral/Central Mode C->S AT+ROLE=1 C<-S OK

3.1.12 Read Paired Record: AT+PLIST

Command Explain
Format: AT+PLIST Response: +PLIST={ +PLIST=Param1,Param2 +PLIST=} Description: Param1= Number of paired records and sorting (1~4) Param2=Bluetooth MAC address
Example
C->S AT+PLIST C<-S +PLIST={ +PLIST=1,D89B3B9EAE9F +PLIST=} C<-S OK

3.1.13 Clear Paired Record: AT+PLIST=Param

Command Explain
Format: AT+PLIST=Param Response: OK Description: Param=0 Clear all paired record Param=1~4, Clear the corresponding pairing record according to the index of 1~4 Param=MAC address address, clear specific paired record with MAC address
Example
C->S AT+PLIST=0 C<-S OK

--

3.1.14 Read/Setting Low Power Mode: AT+LPM=PARAM

Command Explain
Format: AT+LPM=Param(0~1) Response: +LPM=Param Description: 0: Turn off Low Power Mode(default) 1: Turn on Low Power Mode
Example
Read Low Power Mode: C->S AT+LPM C<-S +LPM=0 C<-S OK Setting Low Power Mode C->S AT+LPM=1 C<-S +LPM=1 C<-S OK

3.1.15 Disconnect the connected device: AT+DISC (On Command Mode)

Command Explain
Format: AT+DISC Response: OK Description: Disconnect the connected devices
Example
C->S AT+DISC C<-S OK

3.1.16 Disconnect all connected devices: AT+DISCA (On Command Mode)

Command Explain
Format: AT+DISCA Response: OK Description: Disconnect all connected devices
Example
C->S AT+DISCA C<-S OK

3.2 Central Mode Commands

3.2.1 Scan all Bluetooth devices: AT+SCAN

Command Explain

Format: AT+SCAN
 Response: +SCAN=Param1,Param2,Param3,Param4,Param5,Param6
 OK

Description:

Param1	Index(1~8)
Param2	Address type(0~2) 0:LE shared address 1 LE random address
Param3	MAC address (12 Bytes ASCII)
Param4	RSSI(-255~0)
Param5	Length of Param6
Param6	broadcast data for LE devices

Example

```
C->S AT+SCAN
C<-S +SCAN=1,0,3C610529F63E,-80,9,MY-BT
C<-S +SCAN=2,1,3C610529FFFE,-10,8,MY-BT
C<-S OK
```

3.2.2 Stop Scanning Bluetooth Device: AT+SCAN=0

Command Explain

Format: AT+SCAN=0
 Response: OK

Example

```
C->S AT+SCAN=0
C<-S OK
```

3.2.3 Scan Time: AT+SCANTIME=PARAM

Command Explain

Format: AT+SCANTIME=2
 Response: +SCANTIME=Param
 Description: Unit: second

Example

```
C->S AT+SCANTIME=2
C<-S OK
```

3.2.4 Read Currently Connected Device: AT+ LINK

Command Explain

Format: AT+LINK
 Response: +LINK=Param1,Param2,Param3
 Description:

Param1	Index
Param2	Mater or Slave
Param3	MAC address (12 Bytes ASCII)

Example

```
C->S AT+LINK
C<-S +LINK=1,S,3C610529F63E
C<-S +LINK=2,S,3C610529FFFE
```

```
C<-S OK
```

3.2.5 Connect Devices According to Scan Index: AT+ LINK=PARAM

Command Explain	
Format:	AT+LINK=PARAM
Response:	+ LINK= PARAM
Description:	PARAM the index of the AT+SCAN scan result 1
Example	
C->S	AT+LINK=0
C<-S	+LINK=0
C<-S	OK

3.2.6 Automatic connection based on scan results: AT+ SCANAC=PARAM(MASTER ONLY)

Command Explain	
Format:	AT+SCANAC=Param
Response:	+ SCANAC =Param
Description:	Whether to automatically connect to the device after scanning for surrounding devices. It only works when the filter configuration condition AT+FILTER=param is configured.
Example	
C->S	AT+SCANAC =1
C<-S	+ SCANAC =1
C<-S	OK

3.2.7 Set Scanning Filter Conditions: AT+ FILTER= PARAM

Command Explain											
Format:	AT+FILTER=Param										
Response:	+ FILTER =Param										
Description:	Configure the filtering conditions for scan results. After configuration, the scan results will only display devices that meet the filter criteria.										
	<table border="1"> <tr> <td>0</td> <td>No Filter</td> </tr> <tr> <td>1</td> <td>Filter according name of scan result</td> </tr> <tr> <td>2</td> <td>Filter according mac address of scan result</td> </tr> <tr> <td>3</td> <td>Filter according rssi of scan result</td> </tr> <tr> <td>4</td> <td>Filter according ADV of scan result</td> </tr> </table>	0	No Filter	1	Filter according name of scan result	2	Filter according mac address of scan result	3	Filter according rssi of scan result	4	Filter according ADV of scan result
0	No Filter										
1	Filter according name of scan result										
2	Filter according mac address of scan result										
3	Filter according rssi of scan result										
4	Filter according ADV of scan result										
Example											
C->S	AT+FILTER =1										
C<-S	+ FILTER =1										
C<-S	OK										

3.2.8 Read Scanning Filter Conditions: AT+ FILTER

Command Explain

Format: AT+FILTER	
Response: + FILTER =Param	
Description:	
0	No Filter
1	Filter according name of scan result
2	Filter according mac address of scan result
3	Filter according rssi of scan result
4	Filter according ADV of scan result
Example	
C->S	AT+FILTER
C<-S	+ FILTER =1
C<-S	OK

3.2.9 Filter Scanned Bluetooth Names: AT+ FILTERNAME= PARAM

Command Explain	
Format: AT+FILTERNAME=Param	
Response: + FILTERNAME =Param	
Description: The maximum value of the Param length is the same as the maximum value of the Bluetooth name, and the set BLE Bluetooth name filter length range (1~29 characters)	
Example	
C->S	AT+FILTERNAME=MY-BT
C<-S	+ FILTERNAME =MY-BT
C<-S	OK

3.2.10 Filter Scanned Bluetooth Addresses: AT+ FILTERADDR= PARAM

Command Explain	
Format: AT+FILTERADDR=Param	
Response: + FILTERADDR =Param	
Description: The maximum value of the Param length is the same as the maximum value of the Bluetooth address, and the set filter range (1~12) characters	
Example	
C->S	AT+FILTERADDR =112233
C<-S	+ FILTERADDR =112233
C<-S	OK

3.2.11 Filter Scanned Bluetooth RSSI Value: AT+FILTERRSSI= PARAM

Command Explain	
Format: AT+FILTERRSSI=Param	
Response: + FILTERRSSI =Param	
Description: Param: RSSI value. Only the values within this range can be scanned, and those exceeding this value cannot be scanned.	
Example	
C->S	AT+FILTERRSSI =70
C<-S	+ FILTERRSSI =70
C<-S	OK

3.2.12 Filter Scanned Broadcast Content: AT+FILTERADV= PARAM

Command Explain	
Format:	AT+FILTERADV=Param
Response:	+ FILTERADV =Param
Description:	The maximum value of Param is the maximum value of Bluetooth broadcast, and the setting filter range is (1~31).
Example	
C->S	AT+FILTERADV =0201020C09
C<-S	+ FILTERADV =0201020C09
C<-S	OK

3.3 BLE Data Command

3.3.1 Establish BLE Connection AT+LECONN (Central Mode Only)

Command Explain	
Format:	AT+LECONN=Param1,Param2,Param3,Param4
Response:	+SCAN=Param1,Param2,Param3,Param4
Description:	Param1: MAC Address, Param2: Service-UUID, Param3: Wire-UUID, Param4: Notify-UUID
Example	
C->S	AT+LECONN=3C610529F63E,FFF0,FFF2,FFFF1
C<-S	OK

3.3.2 BLE Send Data: AT+LESEND BLE

Command Explain	
Format:	AT+LESEND=Param1,Param2
Response:	OK
Description:	Description: Param1: Payload Data Length Param2: Payload Data
Example	
C->S	AT+LESEND=10,1234567890
C<-S	OK

3.3.3 Multiple Connections to Send Data:

AT+LESEND=PARAM1,PARAM2,PARAM3

Command Explain	
Format:	AT+LESEND=Param1,Param2,Param3
Response:	+OK
Description:	Param1: Link index, through AT+LINK to read; Param2: Lenth(1~100); Param3:Data(1~100 Bytes UTF8)

Example
C->S AT+LESEND=1,5,12345 C<-S +OK

3.3.4 Set BLE UUID: AT+SETUUID

Command Explain
Format: AT+SETUUID=Param1, Param2, Param3 Description: Param1: Service-UUID, Param2: Write-UUID, Param3: Notify-UUID Support 16bit/128bit
Example
C->S AT+SETUUID=FFF0,FFF2,FFFF1 C<-S +UUID=FFF0,FFF2,FFFF1 C<-S OK

4. I/O Explanation

4.1 Operation Pin Description

4.1.1 MY-BT401: Port A and Port B Can Operate

Port A	Port B
PA07 (PIN23)	PB08 (PIN31)
PA08 (PIN24)	PB11 (PIN34)
PA09 (PIN25)	PB12 (PIN3)
PA013 (PIN26)	PB13 (PIN4)
PA015 (PIN28)	

4.1.2 MY-BC204: Port B Can Operate

Port B
PB06 (PIN12)
PB10 (PIN15)

4.2 Operation Pin Commands

4.2.1 Setting Input and Output Command:

AT+DIRA= Param1,Param2

AT+DIRA= Param1,Param2

Command Explain
Format: AT+DIRA= Param1,Param2 Response: OK Description: Param1: the module port number; Param2: 0(Output), 1(Input)
Example
Eg: MY-BT401 PIN23 is output C->S AT+ DIRA =7,0 C<-S OK

4.2.2 Setting the High/Low Level

AT+PORTA= Param1,Param2

AT+PORTA= Param1,Param2

Command Explain
Format: AT+ PORTA = Param1,Param2 Description: Param1: the module port number; Param2: 0(Low level), 1(High Low)
Example
Eg: MY-BT401 PIN23 is low level C->S AT+ DIRA =7,0 C<-S OK