



FEASYCOM

FSC-BT630

BT5.0 Mesh Programming User Guide (Gateway)

Version 1.1

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Revision History

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Contents

1. Introduction.....	4
1.1 Terms	4
1.2 Hardware Interface	4
1.3 Supported Bluetooth Profile	4
1.4 Command Format	4
1.5 Indication Format	5
1.6 Module Default Settings	5
2. Command Table.....	6
2.1 General Commands	6
2.1.1 UART Communication Test.....	6
2.1.2 Read Firmware Version.....	6
2.1.3 Read Mesh Network Address	6
2.1.4 Read/Write Mesh Network Pin Code	7
2.1.5 Read/Write UART Baudrate.....	7
2.1.6 Read All Nodes Address in Mesh Network.....	7
2.1.7 Add New Node To Mesh Network.....	8
2.1.8 Delete Node From Mesh Network	8
2.1.9 Add /Del Subscription Address	9
2.1.11 Node Light Control	9
2.1.17 Soft Reboot	10
2.1.18 Restore Factory Settings	10
3. Indication Table	11
3.1 General Indications	11
3.1.1 Send command to Node need ACK Indications.....	11
3.1.2 Send command to Node need ACK Timeout Indications	11
3.1.3 Add Device Success Indications.....	11

1. Introduction

This specification presents design guidelines for software engineers that use FSC-BT630 Mesh series modules for Bluetooth requirements.

1.1 Terms

Throughout this specification:

- {} : Content between {...} is optional
- << : Content behind << represents a *COMMAND* sent from Host to Module
- >> : Content behind >> represents a *RESPONSE* sent from Module to Host

1.2 Hardware Interface

- GPIO
- PWM
- UART
- SPI Master
- I2C Master/Slave
- Analog Input/Output

1.3 Supported Bluetooth Profile

- GATT Server (Generic Attribute Profile)
- Mesh (Mesh Profile)

1.4 Command Format

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

- All commands start with "AT", end with <CR><LF>
- <CR> stands 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 parameters, 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

e.g.

1. Read module's BR/EDR local name

```
<< AT+NAME
>> +NAME=Feasycom
>> OK
```
2. Write a baudrate which is not supported

```
<< AT+BAUD=0
>> ERROR
```

1.5 Indication Format

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

- All indications start with <CR><LF>, end with <CR><LF>
- If indication has parameter, parameter keep behind "="
- If indication has multiple parameters, parameter must be separated by ","

e.g.

1. Received "1234567890" from mobile phone via SPP profile

```
>> +SPPDATA=10,1234567890
```

1.6 Module Default Settings

Network Pin Code	0000
Physical UART Baudrate	115200bps/8/N/1

2. Command Table

2.1 General Commands

2.1.1 UART Communication Test

Format: AT
Response: OK
Description: Test the UART communication between HOST and Module after power on, baudrate changed, etc.
Example: UART communication test << AT >> OK

2.1.2 Read Firmware Version

Format: AT+VER
Response: +VER=Param1 Param1: Firmware version
Example: Read module's firmware version << AT+VER >> +VER=Mesh-Gateway,1.0.0 >> OK

2.1.3 Read Mesh Network Address

Format: AT+NDID
Response: +NDID=Param1

Example: Read Module's Mesh Network address

```
<< AT+NDID
>> +NDID=1
>> OK
```

2.1.4 Read/Write Mesh Network Pin Code

Format: AT+NETKEY{=Param1}

Param1: Mesh Network Pin code (4~15 Bytes ASCII, default:0000)

Response: +NETKEY=Param1

Example: Read module's Mesh Network pin code

```
<< AT+NETKEY
>> +NETKEY=0000
>> OK
```

Example: Change module's Mesh Network pin code to "1234"

```
<< AT+NETKEY=1234
>> OK
```

2.1.5 Read/Write UART Baudrate

Format: AT+BAUD{=Param1}

Param1: Baudrate (2400/4800/9600/19200/38400/57600/115200/230400/256000/460800/512000/921600, default:115200)

Response: +BAUD=Param1

Description: Need Reset Module.

2.1.6 Read All Nodes Address in Mesh Network

Format: AT+NDLIST

Response1: +NDLIST= {

Response2: +NDLIST=Param1, Param2

Param1: Node device's index Param2: Node device's Mesh Network address Response3: +NDLIST=}
Example: Read All Node in mesh network <pre><< AT+NDLIST >> +NDLIST= { +NDLIST=0,51952 +NDLIST=1,51953 +NDLIST=} >> OK</pre>

2.1.7 Add New Node To Mesh Network

Format: AT+NDADD
Response: OK
Description: wait new node, and invite it to join the Mesh network
Example: Add new Device Success <pre><< AT+NDADD >> OK >> +NDADD=1</pre> Example: Add new Devices Failed <pre><< AT+NDADD >> OK >> +NDADD=0</pre>

2.1.8 Delete Node From Mesh Network

Format: AT+NDDEL=Param1 Param1: Node Mesh Network Address
Response: OK
Description: Delete node form Mesh network. And remove flash recording.

Example: Delete node 263

```
<< AT+NDDEL=263
>> OK
```

2.1.9 Add /Del Subscription Address

Format: AT+NDSUBS=Param1,Param2,Param3

Param1: [0-1] 0: Delete; 1: Add

Param2: Node Address

Param3: Group Address

Response: OK

Description: Add subscription address to node device or Delete subscription address from node device.

Example: Node 263 add subscription address 51953.

```
<< AT+NDSUBS=1,263,51953
>> OK
```

Example: Node 263 Delete subscription address 51953.

```
<< AT+NDSUBS=0,263,51953
>> OK
```

2.1.11 Node Light Control

Format: AT+NDLED=param1,param2,param3,param4

Param1: Mesh Network Address of controlled device.

Param2: [0-255] sub command

0: control white yellow light power. Param1 [0-1], 0: turn off, 1: turn on.

1: control white yellow light level. Param1 [0-255].

2: control white yellow light color temperature. Param1 [3000-5000].

3: control RGB light power. Param1 [0-1], 0: turn off, 1: turn on.

4: control RGB light level. Param1 [0-255].

5: control RGB light color. Param1 [0-255], red level; Param2 [0-255], green level;

Param3 [0-255] blue level.

6-255: Reserved for future.

Param3: sub command parameters. Reference subcommand.

Param4:[0-1] 0, no need ACK, 1 need ACK

Response: OK
Description: Control node according to subcommands.
<p>Example: Control Node 263 White Yellow Light turn on.</p> <pre><< AT+NDLED=263,0,1,1 >> OK >> +DATA=263,o:1l:100t:30000:0L:255R:255G:255B:255</pre> <p>Example: Control Node 263 White Yellow Light change level to 200.</p> <pre><< AT+NDLED=263,1,200,1 >> OK >> +DATA=263,o:1l:200t:30000:0L:255R:255G:255B:255</pre> <p>Example: Control Node 263 White Yellow Light change Color Temperature to 4000.</p> <pre><< AT+NDLED=263,2,4000,1 >> OK >> +DATA=263,o:1l:200t:40000:0L:255R:255G:255B:255</pre> <p>Example: Control Node 263 RGB Light change color red 100, green 30, blue 45.</p> <pre><< AT+NDLED=263,5,100,30,45,1 >> OK >> +DATA=263,o:1l:200t:30000:0L:255R:100G:30B:45</pre>

2.1.17 Soft Reboot

Format: AT+REBOOT
Description: Module software reboot.

2.1.18 Restore Factory Settings

Format: AT+RESTORE
Description: Module restore all factory settings then reboot

3. Indication Table

3.1 General Indications

3.1.1 Send command to Node need ACK Indications

<p>Format: +DATA=Param1, Param2 Param1: Remote Address Param2: Remote ACK data</p>
<p>Description: The ACK data will be different depending on the command sent.</p>
<p>Example: White Yellow Light Turn On << AT+NDLED=263,0,1,1 >> OK +DATA=263, o:1l:100t:40000:1L:200R:100G:40B:30 Note o <white yellow light on/off> l <white yellow light level> t <white yellow light color temperature> O <RGB light on/off> L <RGB light level> R <RGB light red level> G <RGB light green level> B <RGB light blue level></p>

3.1.2 Send command to Node need ACK Timeout Indications

<p>Format: +TIMEOUT Description: when send command to need ACK, but no ACK return within 30s.</p>
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3.1.3 Add Device Success Indications

<p>Format: +NDADD=Param1 Param1:(0~1) (0) Add Device Failed (1) Add Device Success</p>
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