BT06 APP Communication Protocol v1.4

Unless otherwise specified, all are in big-endian mode, that is, the low Byte is sent first (LSB).
All times refer to UTC+0 time zone time.

1 Broadcast and scan response data format

1) Broadcast data PDU

I) The location is specifically defined as follows (the order of the PDU part)

Location	Definition	Meaning
1	02	Fixed value
2	01	Fixed value
3	06	Fixed value
9	length	0xff type data data length 27
10	Type description	0xff
11- n	detailed data	See Broadcast Data Format

II) Sequence of broadcast data fields: (analyzed strictly as follows)

<table>
<tr><td>Length</td><td>Type</td><td>Vendor Number Low Position 1Byte</td><td colspan="2">Vendor Number High Position 1Byte</td><td>Hardware Type</td><td>USB Firmware Version</td><td>Reserved</td><td>ID</td></tr>
<tr><td>Length</td><td>0xff</td><td>Vendor number low position, provided by Party A 1Byte 0x23</td><td colspan="2">Vendor number high position,provided by Party A，1Byte 0xFF</td><td>1 Byte</td><td>2 Bytes</td><td>1 Byte</td><td>4 Bytes</td></tr>
<tr><td rowspan="2">Reserved</td><td rowspan="2">Voltage</td><td rowspan="2">Device Status</td><td rowspan="2">Alarm Status</td><td colspan="4">Sensor Data</td><td>Reserved</td></tr>
<tr><td>Activation Status</td><td>Temperature</td><td>Humidity</td><td>Reserved</td><td></td></tr>
<tr><td>3 Byte</td><td>1 Byte</td><td>1 Byte</td><td>1 Byte</td><td>1 Byte</td><td>2 Byte</td><td>2 Byte</td><td colspan="2">5Byte</td></tr>
</table>

a. The high and low bits of the manufacturer number: **0x FF 23**
b. Hardware type: 1Byte,
   Version type:
   0x09: BT06
c. Firmware version: 2Bytes, by version type (1Byte) + firmware version (1Byte)
   Version type:0x01: Standard Edition
   Firmware Version: [1,255]
d. Reserved: 1Byte, 0x00
e. ID: 4 Bytes, (4 Bytes hex) means, for example, 0x01 23 45 67, then the ID is displayed as 01234567
f. Reserved: 3Byte, 0x00 00 00
g. Battery voltage: 1Byte, the unit is 10mv, which is the value obtained from the actual voltage -200, for example, 0xA0=160, then the actual voltage value is 160+200)*10=3600mv
h. Device status: 1Byte

Bit7- Bit6	Bit5- Bit4	Bit3	Bit2	Bit1- Bit0
Reserved	00: Unlocked 01: Low level lock 10: High level lock 11: Reserve	Reserved	0: Data is not full 1: Data is full	00: Initialize 01: Delay 10: Record 11: End

i. Alarm status: 1Byte

B it7- Bit4	Bit3- Bit2	Bit1- Bit0
Reserved	00: No alarm for humidity 01: Humidity upper limit alarm 10: Humidity lower limit alarm 11: Humidity upper and lower limit alarm	00: No temperature alarm 01: Temperature upper limit alarm 10: Temperature lower limit alarm 11: Temperature upper and lower limit alarm

j. Sensor enable status: 1Byte

Bit7- Bit3	Bit2	Bit1- Bit0
Reserved	1: Enable humidity sensor 0 : Humidity sensor not enabled	00: Enable temperature sensor, the unit is C 01: Enable the temperature sensor, the unit is F 11: Temperature sensor not enabled

Note: Sensor not activated, sensor data does not exist.

k. Temperature sensor data: 2Bytes, unit: 0.1C/F

Bit15	Bit14-Bit0
0: positive temperature 1: negative temperature	temperature value

For example, 0x0164 means the temperature is 35.6℃,

0x8164 means the temperature is -35.6℃,

0xFE00 indicates that the temperature sensor is not working properly;

l. Humidity sensor data: 2Bytes, unit: 0.1%

Bit15-Bit0
Humidity value

For example, 0x0164 means the temperature is 35.6%,

0xFE00 indicates that the humidity sensor is not working properly;

m. Sensor data reservation and reservation: 5Bytes, all data is filled with 0xFF

2) Scan response data PDU

The device name location is specifically defined as follows (in the order of the PDU part):

Location	Definition	Meaning
1	Length	Length of data of type **0x09**
2	Type description	0x09
3	Detailed data	See Scan Response Data Format

	Type	Device Name
Length	0x09	0-15 Bytes

Device Name: 0-15Bytes

2 The connection communication protocol

Service UUID1: 6C40-0001 -B5A3-F393-E0A9-E50E24DCCA9E

Characteristic UUID correspondence table:

Characteristic UUID	Length	Attributes	Characterist
6c40-0002	Not fixed , the maximum is set according to MTU	Write Write No Response	RX
6c40-0003	Not fixed , the maximum is set according to MTU	Notify	TX

A-1: Control Instruction Format

'start character'+'length'+'command'+'parameter'+'terminator'

Start character: 1Byte, * (0x2A)

Length: 1Byte, the length from the command to the terminator

Command: 2Bytes, see the command table for details

Parameter: nByte, where n[0,15] see the instruction list for details

Terminator: 1Byte, #(0x23)

A-2: Response command format

The response data format is as follows: (response in the TX characteristic)

'start character'+'command'+'status'+'parameter'+'terminator'

Start character: 1Byte, & (0x26)

Command: 2Bytes, see the command table for details

Status: 1Byte, see the instruction status table for details

Parameter: nByte, where n[0,15] see the instruction list for details

Terminator: 1Byte, #(0x23)

A-3: Response command status

Control Instruction	Status Value	Description
Control Command Sent	0x00	Reserved
	0x01	Successful operation
	0x02	Operation failed
	0x03	Operation not allowed
	0x04	Data length exceeds limit
	0x05	Unknown mistake
	0x06	Parameter error
	0x07	Need to restart historical data transfer
	0x08-0xff	Reserved

A-4: Instruction List

Notice:

a. All multi-Bytes writes use the low Byte first mode;

b. The green fonts in the configuration content are the data that defaults to 00 directly;

c. In the recording state, the following commands are not allowed to be configured: 43 20/43 23, if configured, the device will clear all data records;

Set content	Instruction	Parameter	Parametric	Notes

	(hex)	Length	Form	
Start recording	52 a0	0		
Stop recording	52 a1	0		
Clear historical data	52 a 3	0		
Set storage information	43 02	15	Hex	**Format:** Storage interval (2Bytes) +**reserved (4Bytes)** + temperature unit (1Byte) + **reserved (8Bytes)** composition **Storage interval format**: the unit is seconds, [10,64800] **Example:** 10 seconds: 0x0A 00 **Temperature unit format** : **Example:** 0x00: Use Celsius (°C) as the unit 0x01: Use Fahrenheit (F) as the unit **Reserved format: 0x00**
Read storage information	72 02			
Set PDF description information/description information	43 04	15	ASCII	**Format:** Add \0' to the last character configuration software. 2. If the description is not filled in, the input data is: 0x00 **PDF example :** Temp and humidity is entered in the itinerary description , the input data is : 0x 54 65 6d 70 20 61 6e 64 20 68 75 6d 69 64 69 74 79 00 When the description information exceeds 20Bytes, please write in sub-packages. After all written, the device will return the status information
	43 05			
	43 06			
	43 07			
	43 08			
	43 09			
	43 0a			
	43 0b			
Read PDF description information/description information	72 04			
Set L1 H1 alarm information	43 20	12	Hex	**Format:** Alarm L1 button (1Byte) + **reserved (3 Bytes)** + alarm threshold (2 Bytes) + Alarm H1 button (1Byte) **+ Reserved (3 Bytes)** + Alarm threshold (2 Bytes) **Alarm button format:** 0x00, close the alarm 0x1a, enable alarm **Alarm threshold format:** 10 times larger than the actual temperature , BT06 : [- 4 0 0, 7 0 0]°C **Example :**
Read L1 H1 alarm information	72 20			

				20 ℃ : write 0xC8 00 -2 ℃ : Convert to hexadecimal as 65536 -20=0xEC FF
Set L1 H1 humidity alarm information	43 23	12	Hex	**Format:** Alarm L1 button (1Byte) **+ reserved (3 Bytes)** + alarm threshold (2 Bytes) + Alarm H1 button (1Byte) **+ Reserved (3 Bytes)** + Alarm threshold (2 Bytes) **Alarm button format:** 0x00, close the alarm 0x1a, enable alarm **Alarm threshold format:** 10 times larger than the actual humidity , [0,1000]% RH **Example :** 20 %RH : write 0xC8 00
Read L1 H1 humidity alarm information	72 23	12	Hex	
Set Bluetooth password	43 32	7	Hex	**Format :** Encryption Mode (1Byte) + Password (6Bytes) **Encryption Mode Format :** 0x00: no encryption 0x0a: normal encryption 0x1a: high encryption **Password format :** 6Bytes digital password,using ASCII code
Read Bluetooth encryption	72 32	1	Hex	**Format :** 0x00, not encrypted 0x0a: normal encryption 0x1a, high encryption
Set Bluetooth name	43 33	15	ASCII	**Format :** than 15Bytes, all filled with FF
Read Bluetooth name	72 33			
Unlock Bluetooth encryption	43 34	6	Hex	Password (6Bytes)
Set broadcast power and interval	43 35	2	Hex	**Format :** Broadcast power (1Byte) + broadcast interval (2Bytes) **Broadcast Power Format:** 0x00: -40dbm 0x01: -20dbm 0x02: -16dbm 0x03: -12dbm 0x04: -8dbm 0x05: -4dbm
Read broadcast power	72 35	2	Hex	

				0x06: 0dbm 0x07: 4dbm 0x08 : 6dbm _ 0x09 : 8dbm _ **Broadcast interval format:** Unit 100ms, 1Byte [1,400], i.e. support 100 — 40000ms
Set broadcast rate	43 37	1	Hex	**Broadcast rate format:** 1Byte 0x00: 1 Mbit (default) 0x02: 125 K bit (long distance mode)
Read broadcast rate	72 37	1	Hex	
Read device ID	72 41	7	Hex	**Format :** 7Bytes,composed of numbers (4 Bytes hex) + reserved (3 Bytes) , for example, 0x01 23 45 67, the ID is displayed as 01234567
Read version information	72 42	10	Hex	**Format:** Hardware Type (2Bytes) + Firmware Version Type (1Byte) + Firmware Version (1Byte) + Reserved (6Bytes) **Hardware Type :** 0x3 D 09 **Firmware version type :** 1Byte 0x01: Standard Edition **Firmware Version :** 1Byte [1,255]
Set time information	43 51	8	Hex	**Format:** Time (6Bytes) + **Reserved (2Bytes)** **Time format:** YY (minus 1980):MM:DD HH:MM:SS Example: The time is 2018-1-11 16:27:35, then write data 0x26 01 0B 10 1B 23 Require: The configuration software displays the system time as the current computer time
Read time information	72 51	8	Hex	**Format:** Time (6Bytes) + **Reserved (2Bytse)** **Time format:** YY (minus 1980):MM:DD HH:MM:SS Example: data 0x26 01 0B 10 1B 23, then the time is 2018-1-11 16:27:35 Require: The configuration software displays the

				time when the system time is UTC + 0:00
Update configuration information	43 FF	0		
Request to log information data	4c 01	without	Hex	**The returned data consists of:** 0x00 00 00 00 00 00 00 00 **returned data under the stored data :** Record information data + reserved (6 Bytes) , the data format see the following four data
Return record info type data	corresponding data		Hex	**Format:** Record information length (2Bytes) + start mode (1Byte) + stop mode (1Byte) + reserved (14Bytes) **Record information length format:** Length from startup mode to reserved data; **Boot Mode Format:** 0x00 : button start 0x01 : timed start 0x02 : Bluetooth enabled **Stop Mode Format:** 0x00 : initialization state 0x01 : button stop 0x02: USB stopped 0x04 : Stop when storage is full 0x05 : Bluetooth stopped 0x10 : Recording 0x11: Delayed state
Parameters for extracting temperature history data	6c 00	11	H ex	**Format:** Extraction mode (1Byte) + ACK acknowledgement packet (2Bytes) + start timestamp (4Bytes) + end timestamp (4Bytes) **Extract schema format:** 0x00: All data extraction 0x02: Time extraction **ACK acknowledgement packet format :** 0x00: The device sends the device directly without waiting for the APP confirmation packet 0x00000001-0xFFFFFFFF:

				The device sends n pieces of data and waits for the ACK packet of the APP, receives the ACK and continues to send , and stops sending if it is not received **Start timestamp and end timestamp format:** the specified time read mode, the start timestamp is 0x00000000, which means the first data of the device is used, and the end timestamp is 0x00000000, which means the last data of the device is used. a piece of data. If you set another time, please write the timestamp
Return to set advanced temperature /temperature and humidity historical data parameters	data	10	Hex	**Data Format:** Number of data bars (2Bytes) + start timestamp (4Bytes) + end timestamp (4Bytes) **Timestamp format:** seconds from January 01, 1970 00:00:00 to the current device time
APP sends and receives the temperature historical data confirmation packet format	6c a1	1	Hex	**Format:** Confirm status : 0x01 means that the correct acknowledgment packet is received, and the device continues to send data 0xa1 , if no data is received , please send a retransmission command
Start the transmission of historical temperature and humidity data	6c 01	without		
Return temperature and humidity historical data		N	Hex	**Format:** **See historical data format below** N is the maximum length of a packet after connection, which is [0, MTU], where MTU is the maximum length of each packet of data obtained by the interaction between the device and the mobile phone **Among them** , when the MTU is only N Bytes after the connection , but when the alarm data exceeds N Bytes , it will be sent in packets
Request to retransmit historical temperature	6c 02	without		requesting historical temperature and humidity data , retransmit all data ;

and humidity data				
Stop uploading historical temperature and humidity data	6c 03	without		
Protocol version for requesting sensor historical data	6c 04	without		
Returns the sensor history data protocol version		1	Hex	Format: Sensor History Data Protocol 0x01: Temperature sensor (2 Bytes , unit 0.1) 0x02: Temperature and humidity sensor, temperature (2 Bytes, unit 0.1) + humidity (2 Bytes , unit 0.1%)

A-5: Historical data format:

package length + Type+ data

a. Packet length: 2 Bytes , length from type to sensor history data
b. Type: 1 Byte
c. Data: 0-n Bytes
   The following X is the length of the sensor historical data, which is the format and length obtained according to the sensor historical data protocol version

Packet Length (2 Bytes)	Type (1 Byte)	data
	0x00	**Start package format** : Number of stored historical data (4 Bytes)
	0xFF	**End packet format:** The number of uploaded historical data (4 Bytes) + the number of uploaded historical data packets (4 Bytes)
	0x01	**Timestamp + sensor history packet format:** N groups * (timestamp (4 Bytes) + Sensor History Data (X))
	0x02	**Sensor History Packet Format:** N * Sensor History Data (X)
	0x03	**Timestamp + time interval + sensor history packet format:** Timestamp (4 Bytes) + time interval (4 Bytes , unit: seconds) + N groups * sensor historical data (X)
	other	reserved

3 Examples of steps to configure equipment and read historical data

1) Steps to configure the device

a. APP connection equipment;
b. APP send command: 0x2A 03 72 32 23, query whether the equipment is encrypted, and encryption enters step C, otherwise enters step D ;
c. APP send command: 0x2A 09 43 34 XX XX XX XX XX XX (6Bytes password) 23 to the device decryption;
d. APP sends corresponding instructions according to the content that needs to be configured;
e. APP sends update configuration command 0x2A 03 43 FF 23, update all configurations;

2） Steps to read historical data:

I) Read all historical data, no ACK :

a. APP connection device;
b. APP send command: 0x2A 03 72 32 23, query whether the equipment is encrypted, and encryption enters step C, otherwise enters step D ;
c. APP send command: 0x2A 09 43 34 XX XX XX XX XX XX (6Bytes password) 23 to the device decryption;
d. APP sends a command to extract all data:
0x2A 0 D 6c 00 00 00 00 00 00 00 00 00 00 00 00 23;
e. Device response:
0x26 6c 00 01 (status successful) 01 00 (1 data bar) 80 96 78 61 (start timestamp:2021-10-27 08:00:00) 80 96 78 61 (end timestamp: 2021-10-27 08:00:00) 23;
f. APP sends historical data protocol version command: 0x2A 03 6c 04 23
g. Device response:
0x26 6c 04 01 02 23
h. APP sends a command to extract historical data: 0x2A 03 6c 01 23
i. Device response:
Starting package:
0x06 00 00 01 00 00 00
data pack:
0x09 00 01 80 96 78 61 (2021-10-27 08:00:00) FA 00 (Temperature: 25.0) EE 02 (Humidity: 75.%)
End package:
0x0A 00 FF 01 00 00 00 01 00 00 00

II) Read all historical data, with ACK :

a. APP connection device;
b. APP send command: 0x2A 03 72 32 23, query whether the equipment is encrypted, and encryption enters step C, otherwise enters step D ;
c. APP send command: 0x2A 09 43 34 XX XX XX XX XX XX (6Bytes password) 23 to the device decryption;
d. APP sends a command to extract all data: 0x2A 0 D 6c 00 00 01 00 (send 1 data and wait for ACK) 00 00 00 00 00 00 00 00 23;
e. Device response:
0x26 6c 00 01 (status successful) 02 00 (2 pieces of data) 80 96 78 61 (start timestamp: 2021-10-27 08:00:00) 8 B 96 78 61 (end timestamp: 2021-10-27 08:00:11) 23;
f. APP sends historical data protocol version command: 0x2A 03 6c 04 23
g. Device response:
0x26 6c 04 01 02 23
h. APP sends a command to extract historical data: 0x2A 03 6c 01 23
Starting package:
0x06 00 00 02 00 00 00
The device responds to the first packet:
0x09 00 01 80 96 78 61 (2021-10-27 08:00:00) FA 00 (Temperature: 25.0) EE 02 (Humidity:75.%)
i. APP sends and receives data confirmation packet: 0x26 03 6c A1 23;
j. The device responds with the second piece of data:
0x09 00 01 8 B 96 78 61 (2021-10-27 08:00:10) FA 00 (Temperature: 25.0) EE 02 (Humidity:75.%)
k. The device sends the end packet:
0x0A 00 FF 02 00 00 00 02 00 00 00

III) According to the extraction time, read historical data without ACK :

a. APP connection device;
b. APP send command: 0x2A 03 72 32 23, query whether the equipment is encrypted, and encryption enters step C, otherwise enters step D ;
c. APP send command: 0x2A 09 43 34 XX XX XX XX XX XX (6Bytes password) 23 to the device decryption;
d. APP sends historical data protocol version command: 0x2A 03 6c 04 23
e. Device response:
0x26 6c 04 01 02 23
f. APP send and extract 2021-10-27 08:00:00---2021-10-27 20:00:00 Time Period Data Data Command:
0x2A 0D 6c 00 02 00 00 80 96 78 61 (2021-10-27 08:00:00) 40 3 F 79 61 (2021-10-27 20:00:00) 2 3;
g. Device response:
0x26 6c 00 01 (status successful) 01 00 (1 data bar) 80 96 78 61 (Start Timestamp: 2021-

10-27 08:00:00) 80 96 78 61 (end timestamp: 2021-10-27 08:00:00) 23;

h. APP sends a command to extract historical data: 0x2A 03 6c 01 23

i. Device response:

Starting package:

0x06 00 00 01 00 00 00

data pack:

0x09 00 01 80 96 78 61 (2021-10-27 08:00:00) FA 00 (Temperature: 25.0) EE 02 (Humidity:75.%)

End package:

0x0A 00 FF 01 00 00 00 01 00 00 00