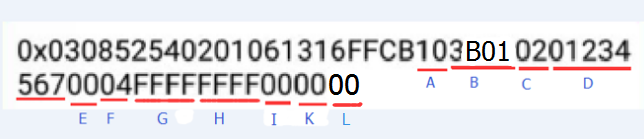
**BT HK\_CHERISH Communication Protocol v1.01**

1. **Broadcast data packets format:**



It is the broadcast data packets format of temperature and humidity sensor as it shows above. Directions of each part of the broadcast data：

A：data packets length of sensor，Hexadecimal data of one byte length, length of all data(from A to I)

B：hardware type of Sensor ,hex data of two byte length, Bluetooth temperature data logo:**0x3B01**

C：firmware version of Sensor , hex data of one byte length

D：Sensor ID, hex data of four byte length, for example, for0x01 0x23 0x45 0x67，the ID is 01234567

E：the electricity percentage of Sensor , hex data of one byte length, for 0x60，it means the electricity remains 96%.

F：temperature and humidity length of Sensor ,hex data of one byte length, it is zero without temperature and humidity data behind, and four with the data behind.

G： value of Sensor , hex data of two byte length;

The first one shows if the temperature sensor works normally, 1means it is not normal, 0 means normal.The second one shows temperature symbol, 0-is positive temperature and 1-is negative temperature.The rest shows temperature value, the unit is0.01℃, for 0B D1 means +30.25℃, 4B D1 means -30.25℃.

H：humidity value of Sensor ,hex data of two byte length.

The first one shows if the temperature sensor works normally, 1means it is not normal, 0 means normal. The rest shows humidity value, which is One hundred times more than the actual expansion, like 1A F0，means the humidity is 68.96%（this version is without humidity, the default value is 0）

I：the acceleration length of the Sensor ,hex data of 1 byte length, the data is 0 if there is no acceleration data behind.

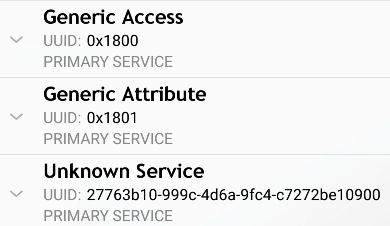
K：Geomagnetic data length of the Sensor, hex data of one byte length, the data is 0 if there is no geomagnetic data behind.

L：the alarm type of the Sensor . 0x80：low pressure alarm，0x40：temperature alarm,**0x01 is the Light perception data.**

**二、Service, Characteristic and UUID correspondence:**

After the APP is connected to the sensor, the corresponding parameters need to be configured according to the UUID，the corresponding relationship between UUID and each parameter is as follows：

* **Service UUID：**



The UUID of Beacon Service is:2776**3B10**-999C-4D6A-9FC4-C7272BE10900

* **Characteristic UUID corresponding relationship form:**

|  |  |  |
| --- | --- | --- |
| **Characteristic UUID** | **Characteristic** |  |
| 0x2776**3B11**-999C-4D6A-9FC4-C7272BE10900 | Sensor ID |  |
| 0x2776**3B12**-999C-4D6A-9FC4-C7272BE10900 | Broadcast interval | Not being set |
| 0x2776**3B13**-999C-4D6A-9FC4-C7272BE10900 | Password |  |
| 0x2776**3B14**-999C-4D6A-9FC4-C7272BE10900 | Transmit power |  |
| 0x2776**3B15**-999C-4D6A-9FC4-C7272BE10900 | Temperature sensor acquisition interval |  |
| 0x2776**3B16**-999C-4D6A-9FC4-C7272BE10900 | Storage interval | SaveInterval |
| 0x2776**3B17**-999C-4D6A-9FC4-C7272BE10900 | Storage coverage |  |
| 0x2776**3B18**-999C-4D6A-9FC4-C7272BE10900 | Number of stored data | Only Readable, special character value |
| 0x2776**3B19**-999C-4D6A-9FC4-C7272BE10900 | Alarm parameter setting |  |
| 0x2776**3B20**-999C-4D6A-9FC4-C7272BE10900 | UTC time setting |  |
| 0x2776**3B21**-999C-4D6A-9FC4-C7272BE10900 | Synchronous data switch |  |
| 0x2776**3B22**-999C-4D6A-9FC4-C7272BE10900 | The trip starts or ends | Flash memory clearing. |
| 0x2776**3B23**-999C-4D6A-9FC4-C7272BE10900 | Model and version |  |
| 0x2776**3B24**-999C-4D6A-9FC4-C7272BE10900 | LDO voltage |  |
| 0x2776**3B25**-999C-4D6A-9FC4-C7272BE10900 | Calibrate LDO temperature |  |
| 0x2776**3B26**-999C-4D6A-9FC4-C7272BE10900 | Start the calibration switch |  |
| 0x2776**3B27**-999C-4D6A-9FC4-C7272BE10900 | Reserve storage 1 |  |
| 0x2776**3B28**-999C-4D6A-9FC4-C7272BE10900 | Reserve storage2 |  |
| 0x2776**3B29**-999C-4D6A-9FC4-C7272BE10900 | Reserve storag3 |  |
| 0x2776**3B2A**-999C-4D6A-9FC4-C7272BE10900 | Reserve storage 4 |  |
| 0x2776**3B2B**-999C-4D6A-9FC4-C7272BE10900 | Reserve storage 5 |  |

**Characteristic Configuration instructions：**（Unless otherwise specified, are large-end mode, that is, the low byte sent in the first）

**Sensor ID**：Readable and writable property，hex data of 4Byte（default, cannot be configured）

**Broadcast interval** ：Readable and writable property, hex data of 2Byte（the unit is ms，Must be greater than or equal to 100ms and less than and equal to 10000ms）

For example:

Set the broadcast interval to 1000ms，Bluetooth sent in the following order：0xE8 0x03

**Password：**Readable and writable property，hex data of 6Byte，only number can be written into.

For example:

The password is 000000，then can enter it as 0x0 0x0 0x0 0x0 0x0 0x0

**Transmit power**：Readable and writable property, hex data of 1Byte, The value of the corresponding power as the table below：

|  |  |
| --- | --- |
| APP actual transmit value | Corresponding transmit power |
| 0 | 4dBm |
| 1 | 0dBm |
| 2 | -4dBm |
| 3 | -8dBm |
| 4 | -12dBm |
| 5 | -16dBm |
| 7 | -30dBm |

**Temperature acquisition interval: readable and writable properties, hex data of 4Byte, in units of**

**storage interval：**Readable and writable property, hex data of 4Byte,range [10,3600]

0-1Byte is the storage interval in normal

2-3Byte is the storage interval in alarm condition

**storage date coverage：**Readable and writable property, hex data of 1Byte（default, can not be configured）

0：Enable coverage

1：Disable coverage

**Number of storage data：**Readable property, hex data of 2 Byte

**Alarm parameter setting：**Readable and writable property, hex data of 2 Byte, range[-20,60],Expressed in the form of two's complement

0Byte:low temperature

1Byte:high temperature

For example, low temperature is -10, high temperature is 20, enter:

0xF6 0x14

**UTC time setting：**writable property, hex data of 6Byte, year month day hour minute second

For example:2016 year 10 month 10 date 18 hour 20 minute 30 second，enter：

0x10 0x0a 0x0a 0x12 0x14 0x1E

**Synchronous data switch:** Notice attribute,hex data of 2Byte.

Note :

After the switch is turned on, if the synchronization is disabled, the data in the FLASH will be cleared；

**The trip starts or ends:** Readable and writable property, hex data of 1Byte

0x00：ends

0x01：running

Note ：

From the start to the end,it will clear all the data of FLASH；

All the data of FLASH will be cleared when second time configuration during running；

**Model and version:**Readable property, hex data of 3Byte

0-1Byte：device type

2Byte：firmware type

**LDO voltage：**Readable property, hex data of 2Byte, the unit is 1mv

Calibrate LDO temperature**：**Readable property, hex data of 2Byte, the unit is 1 degree

Start the calibration switch: writable property, hex data of 1Byte, 1 is to start the calibration, 0 is prohibited.

**Reserve storage（1-4）：**Readable property, hex data of 20Byte

**Reserve storage（5）：**Readable property, hex data of 16Byte

**The notification returns the data protocol as follows:**

Temperature data（6Bytes\*n）+Checksum（1Byte ）

Return data length：1+6\*n Bytes，n=[1,3]

Package serial number:

Checksum：from the temperature data to the checksum of package serial number

Temperature data protocol as follow:

|  |  |  |  |
| --- | --- | --- | --- |
| 11bit | 7bit | 1bit | **29bit** |
| temperature | humidity | Light sense of state | Time stamp |
| Valid values  [-400,1250]，unit：0.1degree，With the complement said，like 1848，means 1848-2048=-200，that is -20.0 degree，if less than 1250，like 103，then means 10.3 degree | Valid values  0-100 | Valid values 0：dark 1：light | Valid values [0,536870912]s |

**Synchronously end data format:**

**Return data length**：Start character（1Bytes）device time（4 Bytes）+the number of data（2 Bytes）+End symbol（1Bytes）checksum（1Bytes）

Start character：0x2A

Device time：Device time sent by the sync device（The number of seconds after which the device stores data to the end)（High byte first）

The number of data：The number of data sent by the sync device（High byte first）

End symbol：0x23

checksum：from the temperature data to the checksum of the package serial number

**A、Synchronous data loss data logic processing：**

**Turn off the notification, restart the notification, the data will be synchronized again；**

**B、Sync data bar data confirmation:**

**Synchronization data is completed, and finally a packet of data, on behalf of the number of synchronized data；**

**C、way to delete device data：**

**APP delete directly；`**