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# **Heart Rate Monitor (J1810) BLE Communication Protocol**

Version: R01  
Date: 2019.05.06

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## Protocol Description

The protocols in this document only apply to J-Style BLE Fitness Tracker.

### 1. BLE Profile Description

Service UUID: 0xFFFF0

Feature UUID:

TX UUID: 0xFFFF6 data is sent from smart phone to tracker, the length is 16 bytes.

RX UUID: 0xFFFF7 data is sent from smart phone to tracker, the length is 16 bytes.

communication is the interaction only between two feature UUID. Please refer to Section 2, for the specific protocol format.

### 2. BLE Protocol

A) The Upper Computer send 16-byte packets to the Lower Computer, then the Lower Computer sends back the 16-byte packets. Except for some commands specially specified, otherwise, all use this communication Protocols.

B) The Upper Computer sends the 16-byte packets, the packet format as below:

B1	B2 ----- B15	B16
Command	Payload bytes, 14 bytes	CRC checksum byte

Command: value range 0x00→0x7F; Bit7 for 0 all the time.

The last byte is CRC, CRC calculation is just simply adding the first 15 bytes, and then gets the lowest 8 bytes, for example:

If the packets as below:

A1 A2 A3 A4..... A13 A14 A15 CRC, then

$CRC = (A1 + A2 + A3 + A4 + \dots + A13 + A14 + A15) \& 0xFF;$

C) After the pedometer get command, then return 16-byte response packets, the format as below:

B1	B2 ----- B15	B16
Command	Payload bytes, 14 bytes	CRC checksum byte

Command: Response to a received command

For example: If get command 0x01, and also CRC check OK, then return 0x01.

If CRC error, please set Bit7 to 1, return 0x81.

The last byte is CRC, CRC calculation is simple to add up the first 15 bytes, and then get the lowest 8 bytes, for example:

if the packets as below:

A1 A2 A3 A4..... A13 A14 A15 CRC, then

$CRC = (A1 + A2 + A3 + A4 + \dots + A13 + A14 + A15) \& 0xFF$

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### 3. BLE Data Format

#### 1) Set Time

Command Format: 0x01 AA BB CC DD EE FF GG 00 00 00 00 00 00 00 00 CRC

Function: Write the APP current time into the device, totally 16bytes

Description: AA = year, BB = month, CC = day, DD = hour, EE = minute, FF = second, the format is BCD, for example, 12 year, AA = 0x12

Command response:

Check right and execute OK, then return: 0x01 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA: Maximum length of Bluetooth packet

Check error and execute Fail, then return: 0x81 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

#### 2) Get Time

Command Format: 0x41 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: APP gets current time from the device, totally 16bytes

Command response:

Check right and execute OK, then return: 0x41 AA BB CC DD EE FF WW GG HH II JJ KK LL 00 00 CRC

Check error and execute Fail, then return: 0xC1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Response description: AA = year, BB = month, CC = day, DD = hour, EE = minute, FF = second. The format is BCD, e.g. 12 year, AA = 0x12.

WW = day of the week, used to set the alarm for 0x23.

GG: Maximum length of Bluetooth packet

#### 3) Set User Personal Information

Command Format: 0x02 AA BB CC DD EE 00 00 00 00 00 00 00 00 00 00 CRC

Function: Write personal information into the device

Description: AA = gender (0 stands for female, 1 stands for male), BB = age, CC = height, DD = weight, EE = stride length

Command response:

Check right and execute OK, then return: 0x02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0x82 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

#### 4) Get User Personal Information

Command Format: 0x42 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: PC reads user's personal information from the device.

Command response:

Check right and execute OK, then return: 0x42 AA BB CC DD EE FF GG HH II JJ KK 00 00 00 00 CRC

Check error and execute Fail, then return: 0xC2 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Description: AA = gender (0 stands for female, 1 stands for male), BB = age, CC = height, DD = weight, EE = stride length, FF→KK is the device ID code in 6 bytes, high bytes in front.

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## 5) Set Device Basic Parameters

Command Format: 0x03 AA BB CC DD EE FF GG HH II JJ KK 00 00 00 CRC

Function: Write the basic parameters to the device

Description:

AA: distance unit, 0x81: MILE, 0x80: KM

BB: 12hour & 24hour display, 0x81: 12hour display, 0x80: 24hour display

CC: wrist sense, 0x81: enable, 0x80: disable

DD: reserved field

EE: reserved field

FF: ANCS, 0x81: enable, 0x80: disable

0x83: enable ANCS and open ANCS debugging function.

After opening ANCS debugging function, it will return debugging instructions when receiving message

0X70; Format is as below:

70 AA BB CC S1 S2 ....

AA: means if ANCS is open; BB CC: Sub-switch condition. S1 S2 ... means character string, return the received manufacturer information.

GG HH: ANCS information switch, totally 15 bytes. The highest byte is used to control if needed to set separate information switch. The detailed sub-switches are arranged as follows. The top one is the lowest byte:

Call (the lowest byte), Wechat, Message, Facebook, WhatsApp, Telegram, QQ

II: basic heart rate setting, the highest byte is 1 and must exceed 40.

Command response:

Check right and execute OK, then return: 0x03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0x83 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

## 6) Get Device Basic Parameters

Command Format: 0x04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: Get the basic parameters from device

Command response:

Check right and execute OK, then return: 0x04 AA BB CC DD EE FF GG HH II JJ KK 00 00 00 CRC

Description:

AA: distance unit, 0x81: MILE, 0x80: KM

BB: 12hour & 24hour display, 0x81: 12hour display, 0x80: 24hour display

CC: wrist sense, 0x81: enable, 0x80: disable

DD: reserved field

EE: reserved field

FF: ANCS, 0x81: enable, 0x80: disable

0x83: enable ANCS and open ANCS debugging function.

After opening ANCS debugging function, it will return debugging instructions when receiving message

0X70; Format is as below:

70 AA BB CC S1 S2 ....

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AA: means if ANCS is open; BB CC: Sub-switch condition. S1 S2 ... means character string, return the received manufacturer information.

GG HH: ANCS information switch, totally 15 bytes. The highest byte is used to control if needed to set separate information switch. The detailed sub-switches are arranged as follows. The top one is the lowest byte:

Call (the lowest byte), Wechat, Message, Facebook, WhatsApp, Telegram, QQ

II: basic heart rate setting, the highest byte is 1 and must exceed 40.

Check error and execute Fail, then return: 0x84 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

## 7) Set Device ID Code

Command format: 0x05 ID5 ID4 ID3 ID2 ID1 ID0 00 00 00 00 00 00 00 00 CRC

Function: PC writes ID code to the device

Description: 6-byte ID code arrangement is high byte first.

Command response:

Check right and execute OK, then return: 0x05 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0x85 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

## 8) Real-time Step Mode

Command format: 0x09 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: start or close real-time step mode

AA: 1 refers to start real-time step mode, 0 refers to close real-time step mode

Command response:

Check right and execute OK, then return: 0x09 AA BB CC DD EE FF GG HH II JJ KK LL MM NN OO PP QQ RR SS TT UU

Check error and execute Fail, then return: 0x89 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Response description:

After starting up succeed, if the device data has some change, it will automatically send the command response again.

AA BB CC DD stands for 4-byte total steps, highest byte in the back.

EE FF GG HH stands for 4-byte total calories, highest byte in the back (Divide the calorie number by 100 and keep two decimal places. The unit is KCAL).

II JJ KK LL stands for 4-byte walking distance, highest byte in the back (Divide the distance number by 100 and keep two decimal places. The unit is KM).

MM NN OO PP stands for 4-byte activity time, highest byte in the back, the unit in minutes and seconds.

QQ RR SS TT stands for 4-byte fast activity time, highest byte in the back, the unit in minutes.

UU: 1 byte, heart rate value.

## 9) Set Target Steps

Command format: 0x0B AA BB CC DD 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: Write target steps to device

Description: AA BB CC DD is the target steps value, 4 bytes, low byte in front.

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Command response:

Check right and execute OK, then return: 0x0B 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0x8B 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### 10) Get the Target Steps

Command format: 0x4B 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: Smart phones read target steps from device

Command response:

Check right and execute OK, then return: 0x4B AA BB CC DD 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0xCB 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Response description:

AA BB CC DD is the target steps value, 4 bytes, low byte in front.

### 11) Read Device Battery

Command format: 0x13 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA: 0X99, now perform a power check

Function: Read device battery

Description:

Command response:

Check right and execute OK, then return: 0x13 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0x93 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Response description:

AA means battery level, range is from 0 to 100, stands for the battery %.

### 12) Read MAC Address

Command format: 0x22 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: Read the device MAC address.

Description:

Command response:

Check right and execute OK, then return: 0x22 MAC0 MAC1 MAC2 MAC3 MAC4 MAC5 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0xA2 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### 13) Read Software Version Number

Command format: 0x27 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: Read software version number

Command response:

Check right and execute OK, then return: 0x27 AA BB CC DD EE FF GG 00 00 00 00 00 00 ID CRC

Check error and execute Fail, then return: 0xA7 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Description:

AA BB CC DD are software version number (BCD code)

EE FF GG are time.

### 14) Factory Reset

Command format: 0x12 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: Back to factory reset with minimum electric current

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Description:

Command response:

Check right and execute OK, then return: 0x12 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0x92 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### 15) MCU Reset Command

Command format: 0x2E 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: APP resets and controls MCU

Description:

Command response:

Check right and execute OK, then return: 0x2E 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0xAE 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### 16) Send Motor Vibration Signal

Command format: 0x36 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: set the display mode

Description:

AA: vibration times, unit is vibrate 0.5s and stop 0.5s every time, the max range is 5.

Command response:

Check right and execute OK, then return: 0x36 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute Fail, then return: 0xB6 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### 17) Set Bluetooth Name

Command format: **0x3D AA BB CC DD EE FF GG HH II JJ KK LL MM NN CRC**

Function: Set the Bluetooth name, after this command execute, please execute the MCU restart command.

Description: AA → NN is the device name (it must be ASCII byte code, 32 to 127, if send other data will be regarded as Blank).

Command response:

Check right and execute OK, then return: **0x3D 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC**

Check error and execute Fail, then return: **0xBD 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC**

### 18) Read Bluetooth Name of Device

Command format: **0x3E 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC**

Function: Read device name

Command response:

Check right and execute OK, then return: **0x3E AA BB CC DD EE FF GG HH II JJ KK LL MM NN CRC**

Check error and execute Fail, then return: **0xBE 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC**

Response description: AA → NN is the device name (ASCII code).

### 19) Set Auto Heart Rate Monitoring Period

Command format: 0x2A AA BB CC DD EE GG HH 00 00 00 00 00 00 00 00 CRC

Function: Set the exercise period.

Description:

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AA: Work mode, 0: Turn off, 1: Work mode in time period, 2: Interval Work mode within time period.  
BB: stands for the hour of the time start monitoring, (24-hour clock), BCD code format (such as 23:00 AA = 0x23).  
CC stands for the minute of the time start monitoring, (24-hour clock), BCD code format (such as 00:59 BB = 0x59).  
DD stands for the hour of the time end monitoring (24-hour clock), BCD code format (such as 23:00 AA = 0x23).  
EE stands for the minute of the time end monitoring, BCD code format (such as 00:59 BB = 0x59).  
FF stands for week enable bit.

Bit0 = 0 Sunday disable, Bit0 = 1 Sunday enable  
Bit1 = 0 Monday Disable, Bit1 = 1 Monday enable  
Bit2 = 0 Tuesday Disable, Bit2 = 1 Tuesday enable  
Bit3 = 0 Wednesday Disable, Bit3 = 1 Wednesday enable  
Bit4 = 0 Thursday Disable, Bit4 = 1 Thursday enable  
Bit5 = 0 Friday Disable, Bit5 = 1 Friday enable  
Bit6 = 0 Saturday Disable, Bit6 = 1 Saturday enable

GG HH: When work mode is 2, how long to test once, the unit is minute, and the test time is one minute every time.

Command response:

Check right and execute OK, then return: 0x2A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check wrong then execute Fail then return: 0xAA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

## **20) Read Auto Heart Rate Monitoring Period**

Command format: 0x2B 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: APP read the exercise period value from device.

Description:

Command response:

Check right and execute OK, then return: 0x2B AA BB CC DD EE FF GG HH 00 00 00 00 00 00 CRC

Check wrong then execute Fail then return: 0xAB 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Response description:

AA: Work mode, 0: Turn off, 1: Work mode in time period, 2: Interval Work mode within time period.

BB: stands for the hour of the time start exercise, (24-hour clock), BCD code format (such as 23:00 AA = 0x23).

CC stands for the minute of the time start exercise, (24-hour clock), BCD code format (such as 00:59 BB = 0x59).

DD stands for the hour of the time end exercise (24-hour clock), BCD code format (such as 23:00 AA = 0x23).

EE stands for the minute of the time end exercise, BCD code format (such as 00:59 BB = 0x59).

FF stands for week enable bit.

Bit0 = 0 Sunday disable, Bit0 = 1 Sunday enable  
Bit1 = 0 Monday Disable, Bit1 = 1 Monday enable  
Bit2 = 0 Tuesday Disable, Bit2 = 1 Tuesday enable  
Bit3 = 0 Wednesday Disable, Bit3 = 1 Wednesday enable  
Bit4 = 0 Thursday Disable, Bit4 = 1 Thursday enable  
Bit5 = 0 Friday Disable, Bit5 = 1 Friday enable  
Bit6 = 0 Saturday Disable, Bit6 = 1 Saturday enable

GG HH: When work mode is 2, how long to test once, the unit is minute, and the test time is one minute every time.



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## 21) Set Alarm (Can Lengthen the Command)

Command format: 0x23 XX AA BB CC DD EE FF GG T1 T2 ... T30

Lengthen the command means can choose the max length command based on the phone. If the command length is 37 bytes, if the phone max length is 200 bytes, then one command can send  $200/37=5.4$ , the integer is 5, means one command can set 5 alarms.

The command structure is as below:

0x23 05 00 BB CC DD EE FF GG T1 T2 ... T30 0x23 05 01 BB CC DD EE FF GG T1 T2 ... T30  
0x23 05 02 BB CC DD EE FF GG T1 T2 ... T30 0x23 05 03 BB CC DD EE FF GG T1 T2 ... T30  
0x23 05 04 BB CC DD EE FF GG T1 T2 ... T30 0x23 FF (means over, this time will save the data)

Function: set alarm.

Description:

XX is the total number of alarms (representing the total number of alarms to be set this time).

AA stands for the number of alarm (value from 0 to 9), can set 10 alarms at most.

BB: 0 stands for disabling alarm, 1 stands for enabling alarm.

CC: alarm type, 1 = alarm clock, 2 = pill reminder, 3 = drinking reminder, 4 = eating reminder.

DD Stands for the hour of alarm time (24-hour clock), BCD code format (such as 23:00 CC = 0x23).

EE stands for the minute of alarm time (24-hour clock), BCD code format (such as 00:59 CC = 0x59).

FF stands for week enable bit.

Bit0 = 0 Sunday disable, Bit0 = 1 Sunday enable

Bit1 = 0 Monday Disable, Bit1 = 1 Monday enable

Bit2 = 0 Tuesday Disable, Bit2 = 1 Tuesday enable

Bit3 = 0 Wednesday Disable, Bit3 = 1 Wednesday enable

Bit4 = 0 Thursday Disable, Bit4 = 1 Thursday enable

Bit5 = 0 Friday Disable, Bit5 = 1 Friday enable

Bit6 = 0 Saturday Disable, Bit6 = 1 Saturday enable

GG: length, 0 to 30, indicating the length of the text displayed later.

T1 T2 ... T30, The content of the text, regardless of the length of the front, the useless position is represented by 0, and the content is ASCII code.

Command response: 0x23 R1 23 R2 ... 23 RX

IDX: stands for the number of the alarm, RX: 0xEE:stands to save the alarm.

## 22) Notification

Command format: 0x4D AA BB T1 T2 T3 .... T60

Function: Notification Command; Data Length :at most 60 bytes

Description:

AA = Command Notification type

0: Incoming call

1: Wechat

2: Message

3: Facebook

4: WhatsApp

5: Telegram

6: QQ

0xFF: stop the incoming phone notification

BB length: less than 60 bytes

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T1 T2 T3 ... T60: text content

Command response:

Check right and execute OK, then return: 0x4D 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check error and execute fail, then return: 0xCD 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### 23) Set Activity Period

Command format: 0x25 AA BB CC DD EE FF GG HH 00 00 00 00 00 00 CRC

Function: Set activity time period

Description:

AA stands for the hour of the time start activity (24-hour clock), BCD code format (such as 23:00 AA = 0x23)

BB stands for the minute of the time start activity, BCD code format (such as 00:59 BB = 0x59)

CC stands for the hour of the time end activity (24-hour clock), BCD code format (such as 23:00 AA = 0x23)

DD stands for the minute of the time end activity, BCD code format (such as 00:59 BB = 0x59)

EE stands for week enable bit

Bit0 = 0 Sunday disable, Bit0 = 1 Sunday enable

Bit1 = 0 Monday Disable, Bit1 = 1 Monday enable

Bit2 = 0 Tuesday Disable, Bit2 = 1 Tuesday enable

Bit3 = 0 Wednesday Disable, Bit3 = 1 Wednesday enable

Bit4 = 0 Thursday Disable, Bit4 = 1 Thursday enable

Bit5 = 0 Friday Disable, Bit5 = 1 Friday enable

Bit6 = 0 Saturday Disable, Bit6 = 1 Saturday enable

FF stands for exercise reminder period, unit is minute, values range is 1 to 255. Such as, 255 stands for reminder once in 255 minutes.

GG: minimum number of steps

HH: reminder switch setting, HH = 1 open exercise reminder, HH = 0 close exercise reminder.

Command response:

Check right then execute OK then return: 0x25 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check wrong then execute Fail then return: 0xA5 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### 24) Read Activity Period

Command format: 0x26 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Function: App read the activity period value settled from the device

Description:

Command response

Check right then execute OK then return: 0x26 AA BB CC DD EE FF GG HH 00 00 00 00 00 00 CRC

Check wrong then execute Fail then return: 0xA6 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Response description:

AA stands for the hour of the time start activity (24-hour clock), BCD code format (such as 23:00 AA = 0x23)

BB stands for the minute of the time start activity, BCD code format (such as 00:59 BB = 0x59)

CC stands for the hour of the time end activity (24-hour clock), BCD code format (such as 23:00 AA = 0x23)

DD stands for the minute of the time end activity, BCD code format (such as 00:59 BB = 0x59)

EE stands for week enable bit

Bit0 = 0 Sunday disable, Bit0 = 1 Sunday enable

Bit1 = 0 Monday Disable, Bit1 = 1 Monday enable

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Bit2 = 0 Tuesday Disable, Bit2 = 1 Tuesday enable  
Bit3 = 0 Wednesday Disable, Bit3 = 1 Wednesday enable  
Bit4 = 0 Thursday Disable, Bit4 = 1 Thursday enable  
Bit5 = 0 Friday Disable, Bit5 = 1 Friday enable  
Bit6 = 0 Saturday Disable, Bit6 = 1 Saturday enable

FF stands for exercise reminder period, unit is minute, values range is 1 to 255. Such as, 255 stands for reminder once in 255 minutes.

GG: minimum number of steps.

HH: reminder switch setting, HH = 1 open exercise reminder, HH = 0 close exercise reminder.

## 25) Get Total Steps Data

Command format: 0x51 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA: 99: delete all history data, 0:read all data.

Function: Get all data

Command response: (can lengthen the command)

0x51 ID YY MM DD S1 S2 S3 S4 T1 T2 T3 T4 D1 D2 D3 D4 K1 K2 K3 K4 DA DB F1 F2 F3 F4

The minimum unit is 27 bytes, can control how many data included in one BLE data packet based on the actual maximum packet length dynamics.

ID: Number, count backwards X day all data, 0 stands for the day, is the real time data, range is 0-29, in total 30 days data.

YY MM DD: stands for the data date, year, month, day.

S1 S2 S3 S4: steps, high byte in the back.

T1 T2 T3 T4: activity time, high byte in the back, unit is second.

D1 D2 D3 D4: distance, high byte in the back, unit is 0.01KM.

K1 K2 K3 K4: calorie, high byte in the back, unit is 0.01KCAL.

DA DB: target, range is from 0 to 65535, high byte in the back.

F1 F2 F3 F4: intensive minutes, high byte in the back, unit is minute.

## 26) Get Detailed Steps Data

Command format: 0x52 AA BB CC 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA =

99: delete all history data

0: read the latest steps detailed data

1: read specified steps detailed data (BB CC means specified, low byte in front).

2: continue the next steps data of the last read position

Function: Get detailed steps data

Command response: (can lengthen the command) 0x52 ID1 ID2 YY MM DD HH mm SS S1 S2 K1 K2 D1 D2 SD1 SD2 SD3 ... SD10

The minimum unit is 25 bytes, the total number of pieces of total data contained in a BLE packet can be dynamically controlled according to the actual maximum length of the transmitted packet.

ID1 ID2: read the data number, high byte in the back

YY MM DD HH mm SS: stands for the data date, year month day hour minute second

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S1 S2: steps, high byte in the back  
K1 K2: calories, high byte in the back, unit is 0.01KCAL  
D1 D2: distance, high byte in the back, unit is 0.01KM  
SD1 SD2 SD3 ... SD10: stands for every minute's steps within this 10 min.

## **27) Get Detailed Sleep Data**

Command format: 0x53 AA BB CC 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA =

99: delete the detailed sleep data

0: read the latest detailed sleep data

1: read sleep details at a specified location (BB CC means specified, low byte in front).

2: continue the next steps data of the last read position

Command response: (can lengthen the command) 0x53 ID1 ID2 YY MM DD HH mm SS LEN SD1 SD2 SD3 ... SD24

The minimum unit is 34 bytes, the total number of pieces of total data contained in a BLE packet can be dynamically controlled according to the actual maximum length of the transmitted packet.

ID1 ID2: read the data number, high byte in the back

YY MM DD HH mm SS: stands for the data date, year month day hour minute second

LEN: means the length of the sleep data

SD1 SD2 SD3 ... SD24: means the sleep quality in every 5min, maximum 2 hour sleep data for every data piece.

## **28) Get Heart Rate Data**

Command format: 0x54 AA BB CC 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA =

99: delete all HR data

0: read the latest heart rate data

1: read specified heart rate data (BB CC means specified, low byte in front).

2: continue the next steps data of the last read position.

Command response: (can lengthen the command) 0x54 ID1 ID2 YY MM DD HH mm SS SD1 SD2 SD3 ... SD12

The minimum unit is 21 bytes, the total number of pieces of total data contained in a BLE packet can be dynamically controlled according to the actual maximum length of the transmitted packet.

ID1 ID2: read the data number, high byte in the back.

YY MM DD HH mm SS: stands for the data date, year month day hour minute second

SD1 SD2 SD3 ... SD12: save a heart rate value every 10 seconds for a total of 12 heart rate values, representing 2 minutes of heart rate data.

## **29) Get Single HR Data (Interval Heart Rate Testing)**

Command format: 0x55 AA BB CC 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA =

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99: delete all single HR data  
0: read the latest single heart rate data  
1: read specified single heart rate data (BB CC means specified, low byte in front).  
2: continue the next steps data of the last read position.

Command response: (can lengthen the command) 0x55 ID1 ID2 YY MM DD HH mm SS HH

The minimum unit is 10 bytes, the total number of pieces of total data contained in a BLE packet can be dynamically controlled according to the actual maximum length of the transmitted packet.

ID1 ID2: read the data number, high byte in the back  
YY MM DD HH mm SS: stands for the data date, year month day hour minute second  
HH: heart rate value

### 30) Get Alarm Data

Command response: 0x57 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA: 99: delete all alarm data  
00: read all alarm data

Command response: (can lengthen the command) 0x57 ID1 ID2 AA BB CC DD EE FF T1 T2 ... T30

ID1 ID2: read the data number, high byte in the back  
AA stands for the number of alarms (value from 0 to 9), can set 10 alarms at most.  
BB: 0 stands for disabling alarm, 1 stands for enabling alarm, 2 stands for pill alarm, 3 stands for drinking alarm.  
CC stands for the hour of alarm time (24-hour clock), BCD code format (such as 23:00 CC = 0x23).  
DD stands for the minute of alarm time (24-hour clock), BCD code format (such as 00:59 CC = 0x59).  
EE stands for week enable bit.

Bit0 = 0 Sunday disable, Bit0 = 1 Sunday enable  
Bit1 = 0 Monday Disable, Bit1 = 1 Monday enable  
Bit2 = 0 Tuesday Disable, Bit2 = 1 Tuesday enable  
Bit3 = 0 Wednesday Disable, Bit3 = 1 Wednesday enable  
Bit4 = 0 Thursday Disable, Bit4 = 1 Thursday enable  
Bit5 = 0 Friday Disable, Bit5 = 1 Friday enable  
Bit6 = 0 Saturday Disable, Bit6 = 1 Saturday enable

FF: length, 0 to 30, indicating the length of the text displayed later.  
T1 T2 ... T30, the content of the text, regardless of the length of the front, the useless position is represented by 0, and the content is ASCII code.

### 31) Get Sleep Debugging Data

Command format: 0x58 AA BB CC 00 00 00 00 00 00 00 00 00 00 00 CRC

AA = 99: sleep debugging data  
= 1: read Specified sleep debugging data  
= 2: Continue the next paragraph data of the last read position

Command response: (can lengthen the command)  
0x58 ID1 ID2 AA BB CC DD EE FF T1 T2 ... T

Description: PC APP reads data, no need to use this explanation.

---

### 32) Get system debugging data

Command format: 0x59 AA BB CC 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA = 99: system debugging data

= 1: read specified system debugging data

= 2: Continue the next paragraph data of the last read position

Command response: (can lengthen the command) 0x59 ID1 ID2 AA BB CC DD EE FF D1 D2 D3 D4 P1 P2 P3 P4

Description:

AA BB CC DD EE FF: time, year month day hour minute second

D1 D2 D3 D4: type, high byte in the back

P1 P2 P3 P4: parameter, high byte in the back

Type	Parameter	Description
0	See the table below for detailed reset reasons.	Save this data every time when booting. It's the reason for the boot.
1	Detailed error code	Software error reset
3	1: FLASH error reset 2: Under manual charge, by long press, short press, long press to reset.	
5		OTA reset
0x88	1: Access to low battery 2: Exit low battery 3: Sleep mode	State record

Bit number					31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
Id					H G F E														D C B A																			
Reset 0x00000000					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Id	RW	Field	Value Id	Value	Description																																	
A	RW	RESETPIN	NotDetected	0	Reset from pin-reset detected																																	
			Detected	1	Not detected																																	
B	RW	DOG	Detected	1	Detected																																	
			NotDetected	0	Reset from watchdog detected																																	
C	RW	SREQ	Detected	1	Not detected																																	
			NotDetected	0	Detected																																	
D	RW	LOCKUP	Detected	1	Reset from soft reset detected																																	
			NotDetected	0	Not detected																																	
E	RW	OFF	Detected	1	Reset from CPU lock-up detected																																	
			NotDetected	0	Not detected																																	
F	RW	LPCOMP	Detected	1	Reset due to wake up from System OFF mode when wakeup is triggered from DETECT signal from GPIO																																	
			NotDetected	0	Not detected																																	
G	RW	DIF	Detected	1	Reset due to wake up from System OFF mode when wakeup is triggered from ANADETECT signal from LPCOMP																																	
			NotDetected	0	Not detected																																	
H	RW	NFC	Detected	1	Reset due to wake up from System OFF mode when wakeup is triggered from entering into debug interface mode																																	
			NotDetected	0	Not detected																																	
			Detected	1	Reset due to wake up from System OFF mode by NFC field detect																																	
			NotDetected	0	Not detected																																	
			Detected	1	Detected																																	
			NotDetected	0																																		

### 33) Combined Packet Receive and Dispatch

Command format: 0x99 LEN A1 A2 ... A16 B1 B2 ... B16 C1 C2 ... C16 .... X1 X2 ...X16.

Function: Combined packet receive and dispatch

Description:

LEN: length, state how long the later data is, must be the integer of 16.

A1 A2 ... A16: The first command

B1 B2 ... B16: The second command

C1 C2 ... C16: The third command

...

X1 X2 ... X16: The X number command

### 34) APP Control HR Monitoring Function

Command format: 0x19 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

AA = 1: turn on HR monitoring, = 0: turn off HR monitoring

Command response:

Check right and execute OK, then return: 0x19 AA 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

---

AA = 1: Normal operation, 0: Control failed because the heart rate cannot be turned on at low power.  
Check wrong then execute Fail then return: 0xA9 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### **35) Control the Bracelet Into the Camera Mode**

Command format: 0x20 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check right and execute OK, then return: 0x20 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check wrong then execute Fail then return: 0xA0 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

### **36) Turn Off the Camera on Device**

Command format: 0x10 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check right and execute OK, then return: 0x10 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC

Check wrong then execute Fail then return: 0xA0 00 00 00 00 00 00 00 00 00 00 00 00 00 CRC