Viatom	O2 Product Bluetooth Communication Protocol	
深圳源动创新科技有限公司 Shenzhen Viatom Technology Co., Ltd.	文档编码 Document Number 20-DN-10594	版本 Revision 1.3

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1 Summary

This document is used to introduce the Bluetooth communication protocol between the master equipment and Checkme O2.

2 Bluetooth Information

2.1 Bluetooth hardware

Bluetooth Compliance: 2.0&4.0BLE

Bluetooth Name: Checkme O2 xxxx (xxxx is the last four numbers of Checkme O2serial number)

Operating Frequency: 2.4 to 2.4835 GHz

Output Power: <20dBm

Operating Range: 100-meter radius indoors

Network Topology: Point-to-Point

Operation:Slave: Model 9560

Antenna Type: L-shaped PWB whip-type antenna

Modulation Type: Frequency Shift Keying, Frequency Hopping Spread Spectrum

Band Width: 1 MHz

Bluetooth Profiles Supported: SPPLE

Antenna Type: Inverted F type antenna

Antenna Gain: +2 dB (typ.), +3 dB (max.)

2.2 Communications Interface

Checkme O2 is a slave device which use Bluetooth SPPLE protocol. It must be a master device to connect Checkme O2, Checkme O2 does not take the initiative in connect the master device. All communication request initiated by the master device and Checkme O2 equipment to respond. The master device shall have the retransmission mechanism, when receiving response CRC error or timeout should resend the command packet.

Checkme O2 is a Dual Mode Bluetooth device, but it supports BLE only now.

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2.3 Service & Characteristic

Only 1 service is used, UUID: 14839ac4-7d7e-415c-9a42-167340cf2339

And 2 characteristics, 1 for read and 1 for write.

Read Characteristic UUID: 0734594A-A8E7-4B1A-A6B1-CD5243059A57

Write Characteristic UUID: 8B00ACE7-EB0B-49B0-BBE9-9AEE0A26E1A3

3 Packet format

Command packet is a packet sent by the master device to Checkme O2, response packet is a packet Checkme O2 device sends to the master device, which command packet structure and respond to data packet structure as shown in Table 1 and Table 3.

Note: when working in SPPLE mode the MAX_BUF_BUFSIZE is 512

3.1 Command packet format

Content	Size(bytes)	Description
Magic	1	Header, it must be 0xAA
CMD	1	command，refer to table 2 Command value
NCMD	1	Negated the value of CMD:nCMD = ~CMD e.g.CMD = 0x04，nCMD = 0xFB
PKT_NR	2	Package number
PKT_BUF_SIZE	2	the size of DATA
DATA	PKT_BUF_SIZE [0~MAX_BUF_BUFSIZE]	Package Data
CRC8	1	CRC checksum

Table 1 Command package format

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Macro variables(unsigned char)	Value of CMD	Description
CMD_GET_FILE_START	0x03	Begin to read
CMD_GET_FILE_DATA	0x04	Read data
CMD_GET_FILE_END	0x05	End to read
CMD_GET_DEVICE_INFO	0x14	Get device informations
CMD_PING	0x15	For test
CMD_PARA_SYNC	0x16	Set the parameters
CMD_GET_RT_DATA	0x17	get real-time data
CMD_FACTORY_RESET	0x18	Factory reset

Table 2 Command value

3.2 Response packet format

Content	Size(bytes)	Description
ACK_MAGIC	1	Header, it must be 0x55
ACK_CMD	1	ACK command， refer to table 2 Command value
ACK_nCMD	1	Negated the value of ACK_CMD, ACK_nCMD = ~ ACK_CMD e.g. ACK_CMD = 0x04， ACK_nCMD = 0xFB
ACK_PKT_NR	2	Package number
ACK_BUF_SIZE	2	the size of ACK_DAT
ACK_DAT	ACK_BUF_SIZE [0~MAX_BUF_BUFSIZE]	Package Data ***Note: the package data is ERROR code(int type) when the Response packet has no file data, and refer to Table 5***
ACK_CRC8	1	CRC checksum

Table 3 Response packet format

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Macro variables(unsigned char)	Value of ACK_CMD	Description
ACKCMD_OK	0x00	success
ACKCMD_BAD	0x01	fail

Table 4 ACK command value

Macro variables(int)	Value	Description
ERR_OK	0	NO ERROR
ERR_CRC	1	CRC ERROR
ERR_IO	2	IO initialize ERROR
ERR_FMT	3	File format ERROR
ERR_FSIZE	4	File size ERROR
ERR_TIMEOUT	5	Time out
ERR_ERASE	6	Erase ERROR
ERR_WRITE	7	Write file ERROR
ERR_CMD	8	Command ERROR
ERR_nFILE	9	File does not exist
ERR_READ	10	Read file ERROR

Table 5 ERROR code

4 Communication protocol

when the Bluetooth connection is break, the Bluetooth state of Checkme O2 will return to the initial state， Packet CRC process uses a CRC-8 (X8 + X2 + X + 1)， All data packets (except CRC) CRC calculation are to participate in， CRC8 Function as follows：

*const unsigned char Table_CRC8[256]={ /*CRC8 */*

0x00, 0x07, 0x0E, 0x09, 0x1C, 0x1B, 0x12, 0x15,0x38, 0x3F, 0x36, 0x31, 0x24, 0x23, 0x2A, 0x2D,

0x70, 0x77, 0x7E, 0x79, 0x6C, 0x6B, 0x62, 0x65,0x48, 0x4F, 0x46, 0x41, 0x54, 0x53, 0x5A, 0x5D,

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```
0xE0, 0xE7, 0xEE, 0xE9, 0xFC, 0xFB, 0xF2, 0xF5, 0xD8, 0xDF, 0xD6, 0xD1, 0xC4, 0xC3, 0xCA, 0xCD,
0x90, 0x97, 0x9E, 0x99, 0x8C, 0x8B, 0x82, 0x85,0xA8, 0xAF, 0xA6, 0xA1, 0xB4, 0xB3, 0xBA, 0xBD,
0xC7, 0xC0, 0xC9, 0xCE, 0xDB, 0xDC, 0xD5, 0xD2, 0xFF, 0xF8, 0xF1, 0xF6, 0xE3, 0xE4, 0xED, 0xEA,
0xB7, 0xB0, 0xB9, 0xBE, 0xAB, 0xAC, 0xA5, 0xA2,0x8F, 0x88, 0x81, 0x86, 0x93, 0x94, 0x9D, 0x9A,
0x27, 0x20, 0x29, 0x2E, 0x3B, 0x3C, 0x35, 0x32,0x1F, 0x18, 0x11, 0x16, 0x03, 0x04, 0x0D, 0x0A,
0x57, 0x50, 0x59, 0x5E, 0x4B, 0x4C, 0x45, 0x42,0x6F, 0x68, 0x61, 0x66, 0x73, 0x74, 0x7D, 0x7A,
0x89, 0x8E, 0x87, 0x80, 0x95, 0x92, 0x9B, 0x9C,0xB1, 0xB6, 0xBF, 0xB8, 0xAD, 0xAA, 0xA3, 0xA4,
0xF9, 0xFE, 0xF7, 0xF0, 0xE5, 0xE2, 0xEB, 0xEC, 0xC1, 0xC6, 0xCF, 0xC8, 0xDD, 0xDA, 0xD3, 0xD4,
0x69, 0x6E, 0x67, 0x60, 0x75, 0x72, 0x7B, 0x7C,0x51, 0x56, 0x5F, 0x58, 0x4D, 0x4A, 0x43, 0x44,
0x19, 0x1E, 0x17, 0x10, 0x05, 0x02, 0x0B, 0x0C,0x21, 0x26, 0x2F, 0x28, 0x3D, 0x3A, 0x33, 0x34,
0x4E, 0x49, 0x40, 0x47, 0x52, 0x55, 0x5C, 0x5B,0x76, 0x71, 0x78, 0x7F, 0x6A, 0x6D, 0x64, 0x63,
0x3E, 0x39, 0x30, 0x37, 0x22, 0x25, 0x2C, 0x2B,0x06, 0x01, 0x08, 0x0F, 0x1A, 0x1D, 0x14, 0x13,
0xAE, 0xA9, 0xA0, 0xA7, 0xB2, 0xB5, 0xBC, 0xBB,0x96, 0x91, 0x98, 0x9F, 0x8A, 0x8D, 0x84, 0x83,
0xDE, 0xD9, 0xD0, 0xD7, 0xC2, 0xC5, 0xCC, 0xCB, 0xE6, 0xE1, 0xE8, 0xEF, 0xFA, 0xFD, 0xF4, 0xF3
};
static unsigned char CRC8(unsigned char *RP_ByteData,unsigned int Buffer_Size)
{
 unsigned char x,R_CRC_Data;
 unsigned int i;
 R_CRC_Data=0;
   for(i=0;i<Buffer_Size;i++)
   {
      x = R_CRC_Data ^ (*RP_ByteData);
      R_CRC_Data = Table_CRC8[x];
      RP_ByteData++;
   }
   return R_CRC_Data;
```

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}

Note：CMD_Header is 0xAA，ACK_Header is 0x55，0xZZZZ represents any value In the text, all data are used little-endian mode.

4.1 Read file

Read file communication process is as follows：

The master device：send begin to read command

Checkme O2：send the Reply package of begin to read

The master device：send read data command (Package number is 0)

Checkme O2：send the Reply package of read data

The master device：send read data command (Package number is 1)

Checkme O2：send the Reply package of read data

……

……

The master device：send end to read command

Checkme O2：send the Reply package of end to read

Note: When Checkme O2 responds read error, the master device should stop sending any command, and Checkme O2 will return to initialization state.

4.1.1 Begin to read

Begin to read command：

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_GET_FILE_START	0x03	1	command
~CMD_GET_FILE_START	~0x03	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	Size of file name	2	Size of File name

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CMD_ BUF	file name	CMD_BUF_SIZE [0 ~ MAX_BUF_BUFSIZE]	File name
CMD_CRC8	CRC checksum	1	CRC checksum

Note:The file name must end with the '\ 0',e.g.the file name id "123",the the CMD_ BUF is "0x31 0x32 0x33 0x00"

Reply package of begin to read：

Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command
ACK_PKT_NR	0xZZZZ	2	Package number
ACK_BUF_SIZE	4	2	Size of ACK_BUF
ACK_ BUF	ERROR code	ACK_BUF_SIZE [0 ~ MAX_BUF_BUFSIZE]	ERROR code(4 bytes)
ACK_CRC 8	CRC checksum	1	CRC checksum

4.1.2 Read data

Read data command：

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_GET_FILE_DATA	0x04	1	command
~CMD_GET_FILE_DATA	~0x04	1	Negated the value of command
CMD_PKT_NR	Package number	2	Package number
CMD_BUF_SIZE	0	2	Size of CMD_BUF
CMD_ BUF	N/A	N/A	N/A
CMD_CRC8	CRC checksum	1	CRC checksum

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Reply package of read data：

Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command
ACK_PKT_NR	Package number	2	Package number
ACK_BUF_SIZE	Size of ACK_BUF	2	Size of ACK_BUF
ACK_ BUF	File data	ACK_BUF_SIZE [0 ~ MAX_BUF_BUFSIZE]	File data
ACK_CRC 8	CRC checksum	1	CRC checksum

4.1.3 End to read

End to read command：

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_GET_FILE_END	0x05	1	command
~CMD_GET_FILE_END	~0x05	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	0	2	Size of CMD_BUF
CMD_ BUF	N/A	N/A	N/A
CMD_CRC8	CRC checksum	1	CRC checksum

Reply package of end to read：

Variable	Content	Size(bytes)	Description

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ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command
ACK_PKT_NR	0xZZZZ	2	Package number
ACK_BUF_SIZE	4	2	Size of ACK_BUF
ACK_ BUF	ERROR code	ACK_BUF_SIZE [0 ~ MAX_BUF_BUFSIZE]	ERROR code(4 bytes)
ACK_CRC 8	CRC checksum	1	CRC checksum

4.2 Get device information

Get device information command：

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_GET_DEVICE_INFO	0x14	1	command
~ CMD_GET_DEVICE_INFO	~0x14	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	0	2	Size of CMD_BUF
CMD_ BUF	N/A	N/A	N/A
CMD_CRC8	CRC checksum	1	CRC checksum

Reply package of Get device information:

Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command

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ACK_PKT_NR	0xZZZZ	2	Package number
ACK_BUF_SIZE	4/ MAX_BUF_BUFSIZE	2	Size of ACK_BUF
ACK_ BUF	ERROR code or Data	ACK_BUF_SIZE	Data content, in line with JSON data format*, it returns ERROR code(4 bytes) if failured
ACK_CRC8	CRC checksum	1	CRC checksum

*In line with JSON data format

{"Region":"CE","Model":"6632","HardwareVer":"A","SoftwareVer":"5.2.0",”BootloaderVer”:”0.0.1.0”,~~"LanguageVer":"1","CurLanguage":"English",~~"FileVer":"1.0",~~"SPCPVer":"1.0",~~"SN":"14010101022","CurTIME":"2015-04-06,16:18:12","CurBAT":"25%","CurBatState":"0","CurOxiThr":"90","CurMotor":"80","CurPedtar":"800","CurMode":"0","CurState":"0","LightingMode":"0","HRSwitch":"0","HRLowThr":"50","HRHighThr":"120","LightStr":"1","OxiSwitch":"1",“BranchCode“:”2303000”,"FileList":"20160530142523,20160530142523, 20160530142523, 20160530142523,"}

Descriptions for JSON data format:

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key name	example	note
Region	CE	region
Model	6632	model name
HardwareVer	A	
BootloaderVer	50201	bootloader version, "50201" means btl version is "05.02.01"
LanguageVer	1	language version
CurLanguage	Chinese	current language
SPCPVer	1	bluetooth protocol version
FileVer	1	file protocol version
SN	202008132222	serial number
CurTIME	2015-04-06,16:18:12	current time
CurBAT	25	current battery
CurBatState	0	current battery state. 0 is in use, 1 is in charging, 2 is fully charged.
CurOxiThr	90	current threshold for spo2 vibration/alarm
OxiSwitch		switch for spo2 vibration/alarm
CurMotor	80	vibration intensity
CurPedtar	800	current step target
CurMode	0	mode. 0 is sleep, 1 is monitor.
CurState		current state.
LightingMode		screen mode. 0 is standard, 1 is always off, 2 is always on.
HRSwitch		switch for HR vibration/alarm
HRLowThr		lower threshold for HR vibration/alarm
HRHighThr		upper threshold for HR vibration/alarm
LightStr		screen brightness
BranchCode		branch code
FileList		files on the device

4.3 PING function

PING communication process is as follows：

The master device：send PING command

Checkme O2：send the Reply package of PING

PING command:

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_LST_FILE_START	0x15	1	command
~CMD_LST_FILE_START	~0x15	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	0	2	0
CMD_ BUF	N/A	N/A	N/A
CMD_CRC8	CRC checksum	1	CRC checksum

Reply package of PING:

Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK	0x00	1	command
~ACKCMD_OK	~0x00	1	Negated the value of command
ACK_PKT_NR	0	2	Package number
ACK_BUF_SIZE	4	2	Size of ACK_BUF
ACK_ BUF	ERR_OK	ACK_BUF_SIZE [0 ~ MAX_BUF_BUFSIZE]	ERROR code(4 bytes)
ACK_CRC 8	CRC checksum	1	CRC checksum

4.4 Set the parameters

Set the parameters command：

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header

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CMD_PARA_SYNC	0x16	1	command
~ CMD_PARA_SYNC	~0x16	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	0xXXXX	2	Size of CMD_BUF
CMD_ BUF	Data content	ACK_BUF_SIZE	Data content, in line with JSON data format, it returns ERROR code(4 bytes) if failed
CMD_CRC8	CRC checksum	1	CRC checksum

The content and size of command package:

{"SetTIME":"2016-04-06,16:20:00",~~"SetLanguage":"English"~~, "SetOxiThr":"90", "SetMotor":"80"," SetPedtar":"1000"}

Parameter	Type	Data	Description
SetTIME	String	2015-04-06,16:18:12	Set time
SetOxiThr	String	90	Set blood oxygen threshold for reminder, 80-95
SetHRLowThr	String	60	Set the minimum threshold for heart rate reminder, 40-70
SetHRHighThr	String	120	Set the maximum threshold for heart rate reminder, 70-200
SetOxiSwitch	String	0	Set Blood oxygen reminder switch, vibration/sound: 0 off, 1 on vibration+sound: 0 vibration off, sound off 1 vibration on, sound off 2 vibration off, sound on 3 vibration on, sound on
SetHRSwitch	String	0	Set Heart rate reminder switch, vibration/sound: 0 off, 1 on vibration+sound: 0 vibration off, sound off 1 vibration on, sound off 2 vibration off, sound on 3 vibration on, sound on
SetMotor	String	20	Set sound/vibration intensity among 0-20, 20-40, 40-60, 60-80, 80-100 for O2Ring, 0-5, 5-10, 10-17, 17-22, 22-35 for BabyO2

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SetBuzzer	String	20	Set sound among 0-20, 20-40, 40-60, 60-80, 80-100 for checkO2Plus (This setting is effective when both sound and vibration devices support it simultaneously)
SetPedtar	String	800	Set steps goal for vibration

Reply package of Set the parameters:

Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command
ACK_PKT_NR	0xZZZZ	2	Package number
ACK_BUF_SIZE	4	2	Size of ACK_BUF
ACK_ BUF	ERROR code	ACK_BUF_SIZE	It returns ERROR code(4 bytes) if failed
ACK_CRC8	CRC checksum	1	CRC checksum

4.5 Get real-time data

Get real-time data command:

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_GET_RT_DATA	0x17	1	command
~ CMD_GET_RT_DATA	~0x17	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	0	2	Size of CMD_BUF
CMD_ BUF	N/A	N/A	N/A

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CMD_CRC8	CRC checksum	1	CRC checksum

Reply package of Get real-time data:

Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command
ACK_PKT_NR	0xZZZZ	2	Package number
ACK_BUF_SIZE	13	2	Size of ACK_BUF
ACK_ BUF	Data content	ACK_BUF_SIZE	Data content (Normal data format), it returns ERROR code(4 bytes) if failed
ACK_CRC8	CRC checksum	1	CRC checksum

Descriptions for data content:

Offset	Content (size)	Description
0	SpO2 (1byte)	Real-time blood oxygen saturation
1-2	PR (2byte)	Real-time pulse rate
3-6	Steps (4byte)	Real-time step count
7	Remaining battery capacity (1byte)	Remaining battery capacity, e.g. the Remaining battery capacity is 90%, then the value is 0x5A
8	Current charging status (1byte)	Current charging status, 0 indicates no charging, 1 for charging and 2 for fully charged
9	1 byte	Sum of 3-axis acceleration, max is 255
10	1 byte	PI
11	1 byte	Current state, 1 is wear, 0 is take off.
12	Reserved	Reserved

Note: All contents are little-endian

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4.6 Get real-time waveform

Get real-time waveform command

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_GET_RT_WAVE	0x1B	1	command
~ CMD_GET_RT_WAVE	~0x1B	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	1	2	Size of CMD_BUF
CMD_ BUF	0-1	CMD_BUF_SIZE	Sample rate，0 is 125Hz，1 is 62.5Hz
CMD_CRC8	CRC 值	1	CRC checksum

Reply package of real-time waveform

Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command
ACK_PKT_NR	0xZZZZ	2	Package number
ACK_BUF_SIZE	4/waveform pack length	2	Size of ACK_BUF
ACK_ BUF	ERROR code/waveform content	ACK_BUF_SIZE	It returns ERROR code(4 bytes) if failed
ACK_CRC8	CRC checksum	1	CRC checksum

WaveformData {

unsigned char spo2;

```
    unsigned short pr;
    unsigned char battery;
    unsigned char charge_state;
    unsigned char reserved[5];
    unsigned short waveform _len;
    unsigned char waveform_data[wav_len];     // pulse sound mark when the value is -100
};
```

4.7 Get raw data(PPG data)

Get raw data command:

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_GET_RT_PPG	0x1C	1	command
~ CMD_GET_RT_PPG	~0x1C	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	1	2	Size of CMD_BUF
CMD_ BUF	0x00	1	0x00
CMD_CRC8	CRC checksum	1	CRC checksum

Reply package of get raw data command:

Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command
ACK_PKT_NR	0xZZZZ	2	Package number

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ACK_BUF_SIZE	4/ACK_BUF size	2	Size of CMD_BUF
ACK_ BUF	Error code/ PPG data	ACK_BUF_SIZE	
ACK_CRC8	CRC checksum	1	CRC checksum

```
PPG data {
    unsigned short rawData_len;
    rawData[rawData_len];
}
rawData {
    int ir;                    // ppg raw data - Infrared light
    int red;                   // ppg raw data - red light
    unsigned char motion;
}
```

4.8 Factory reset

Factory reset command：

Variable	Content	Size(bytes)	Description
CMD_Header	0xAA	1	Package header
CMD_FACTORY_RESET	0x18	1	command
~ CMD_FACTORY_RESET	~0x18	1	Negated the value of command
CMD_PKT_NR	0xZZZZ	2	Package number
CMD_BUF_SIZE	0	2	Size of CMD_BUF
CMD_ BUF	N/A	N/A	N/A
CMD_CRC8	CRC checksum	1	CRC checksum

Reply package of Factory reset:

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Variable	Content	Size(bytes)	Description
ACK_Header	0x55	1	Package header
ACKCMD_OK/ACKCMD_BAD	0x00/0x01	1	command
~ACKCMD_OK/~ACKCMD_BAD	~0x00/~0x01	1	Negated the value of command
ACK_PKT_NR	0xZZZZ	2	Package number
ACK_BUF_SIZE	4	2	Size of ACK_BUF
ACK_ BUF	ERROR code	4	It returns ERROR code(4 bytes) if failed
ACK_CRC8	CRC checksum	1	CRC checksum

5 Sample

To obtain the device information, write to the Characteristic(UUID: 8B00ACE7-EB0B-49B0-BBE9-9AEE0A26E1A3) with hex value : (0xaa 0x14 0xeb 0x00 0x00 0x00 0x00 0xc6).

Then you can get JSON format content like this:

{"Region":"CE","Model":"6632","HardwareVer":"A","SoftwareVer":"5.2.0","LanguageVer":"1","CurLanguage":"English","FileVer":"1.0","SPCPVer":"1.0","SN":"14010101022"} .

The iOS code looks like:

```
self = [super init];
if (self) {
    U8 buf[8]; //  包的长度   (8)
    memset(buf, 0, 8);
    buf[0] = 0xAA;
    buf[1] = 0x14;
    buf[2] = ~0x14;

    buf[8-1] = [PublicUtils CalCRC8:buf bufSize:8-1];
    _buf = [NSData dataWithBytes:buf length:8];
}
return self;
```

源动保密