|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | 文件级别：机密 | | | |
| 项目代号:  **XXXX** | | | | | | |
| 文件名称/编号:  **1A 2.0无线传输协议说明/RD-5B-M3-032** | | | | | | |
| 相关文档 | | | | | | |
| 版本 | 文件编号 | | | 文件名称 | | |
|  |  | | |  | | |
|  |  | | |  | | |
|  |  | | |  | | |
|  |  | | |  | | |
| 文档记录 | | | | | | |
| 版本 | 描述 | 编制/日期 | | | 审核/日期 | 批准/日期 |
| 1.0.0 | 初始版本 |  | | |  |  |
|  |  |  | | |  |  |
|  |  |  | | |  |  |
|  |  |  | | |  |  |
|  |  |  | | |  |  |
|  |  |  | | |  |  |
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# 1参考文献

# 2历史记录

|  |  |  |
| --- | --- | --- |
| Version | Date | Description |
| 1.0.0 | 2019-08-27 | First version |
| 1.0.1 | 2020-03-26 | 去除呼吸2数据包，去除通用数据应答包 |
| 1.0.2 | 2020-06-23 | 修改拆分通用包，增加固件升级包 |
| 1.0.3 | 2020-06-28 | 修改拆分后通用包,控制长度小于202Byte |
| 1.0.4 | 2020-11-27 | 增加血压测量指令、结果上传指令；增加腹呼吸数据 |
| 1.0.5 | 2020-12-17 | 增加流速仪数据包 |

# 3产品介绍

|  |  |  |  |
| --- | --- | --- | --- |
| **参数** | **分辨率（bit）** | **发送采样率（Hz）** | **原始采样率（Hz）** |
| ECG 波形 | 10 | 200 | 200 |
| Respiration波形 | 16 | 25 | 25 |
| 体动 | 10 | 25 | 25 |

# 4.通讯概述

## 4.1基本的信息格式

“请求消息”的发起方为设备，“设置消息”的发起方为服务器。

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 除包头剩余字节总长度 | | | | | | | | 高字节 |
| 3 | 除包头剩余字节总长度 | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | FrameType | | | | | | | |  |
| 载荷数据段 | 9  ~  N | 数据包的载荷部分，实际长度根据包类型确  定。 | | | | | | | |  |
| 校验和 | N+1 | SUM | | | | | | | | 前面所有字节顺序累加的结果 |

## 4.2传播媒介

4.2.1蓝牙协议

# 5标准信息

## 5.1设备注册

5.1.1请求信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x10 | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x01 | | | | | | | |  |
| 设备型号 | 9 | DEVICE\_MODEL\_H | | | | | | | | 高字节 |
| 10 | DEVICE\_MODEL\_L | | | | | | | | 低字节 |
| 设备硬件版本 | 11 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |  |
| HardVerH | | | HardVerM | | | HardVerL | |
| 设备软件版本 | 12 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |  |
| FirmVerH | | | FirmVerM | | | FirmVerL | |
| 设备时间 | 13 | TimeByte1 | | | | | | | | MSB字节 |
| 14 | TimeByte2 | | | | | | | |  |
| 15 | TimeByte3 | | | | | | | |  |
| 16 | TimeByte4 | | | | | | | | LSB字节 |
| 校验和 | 17 | SUM | | | | | | | |  |

注：设备时间格式采用Unix时间戳(Unix timestamp)，或称Unix时间(Unix time)、POSIX时间(POSIX time)，是一种时间表示方式，定义为从格林威治时间1970年01月01日00时00分00秒起至现在的总秒数，即为一个32位的数据类型，分成4个字节发送。

5.1.2应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0D | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x02 | | | | | | | |  |
| 注册结果 | 9 | Result | | | | | | | | 0xff表示成功 |
| 当前时间 | 10 | TimeByte1 | | | | | | | | MSB字节 |
| 11 | TimeByte2 | | | | | | | |  |
| 12 | TimeByte3 | | | | | | | |  |
| 13 | TimeByte4 | | | | | | | | LSB字节 |
| 校验和 | 14 | SUM | | | | | | | |  |

注：当前时间格式采用Unix时间戳(Unix timestamp)，或称Unix时间(Unix time)、POSIX时间(POSIX time)，是一种时间表示方式，定义为从格林威治时间1970年01月01日00时00分00秒起至现在的总秒数，即为一个32位的数据类型，分成4个字节发送。

## 5.2删除日志文件

5.2.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x0A | | | | | | | |  |
|  | 9 | 0x00 | | | | | | | |  |
|  | 10 | 0x00 | | | | | | | |  |
|  | 11 | 0x00 | | | | | | | |  |
|  | 12 | 0x00 | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

5.2.2应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
|  | 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x0A | | | | | | | |  |
| 当前时间 | 9 | Result | | | | | | | | 0xff表示删除成功, 0x00表示删除失败 |
|  | 10 | 0x00 | | | | | | | |  |
|  | 11 | 0x00 | | | | | | | |  |
|  | 12 | 0x00 | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

## 5.3设置RTC日期/时间

5.3.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x09 | | | | | | | |  |
| 当前时间 | 9 | TimeByte1 | | | | | | | | MSB字节 |
| 10 | TimeByte2 | | | | | | | |  |
| 11 | TimeByte3 | | | | | | | |  |
| 12 | TimeByte4 | | | | | | | | LSB字节 |
| 校验和 | 13 | SUM | | | | | | | |  |

5.3.2应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x09 | | | | | | | |  |
| 当前时间 | 9 | TimeByte1 | | | | | | | | MSB字节 |
| 10 | TimeByte2 | | | | | | | |  |
| 11 | TimeByte3 | | | | | | | |  |
| 12 | TimeByte4 | | | | | | | | LSB字节 |
| 校验和 | 13 | SUM | | | | | | | |  |

## 5.4设备注销

5.4.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x0C | | | | | | | |  |
| 设备时间 | 9 | TimeByte1 | | | | | | | | MSB字节 |
| 10 | TimeByte2 | | | | | | | |  |
| 11 | TimeByte3 | | | | | | | |  |
| 12 | TimeByte4 | | | | | | | | LSB字节 |
| 校验和 | 13 | SUM | | | | | | | |  |

5.4.2应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
|  | 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x0C | | | | | | | |  |
| 注册结果 | 9 | Result | | | | | | | | 0xff表示成功,0x00失败 |
|  | 10 |  | | | | | | | |  |
| 11 |  | | | | | | | |  |
| 12 |  | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

## 5.5状态提示开关控制

5.5.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x0B | | | | | | | |  |
|  | 9 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |  |
| 蓝牙流速仪开关控制位（0关，1开） | 蓝牙血压计开关控制位（0关，1开） | 蓝牙血氧计开关控制位（0关，1开） | 蓝牙体温计开关控制位（0关，1开） | 体温计电量低绿灯闪烁（0关，1开） | 锂电池电量低震动关闭（0关，1开） | 锂电池电量低绿灯闪烁开关（0关，1开） | 体温计断开蓝灯闪烁开关（0关，1开） |
|  | 10 | 0x00 | | | | | | | |  |
|  | 11 | 0x00 | | | | | | | |  |
|  | 12 | 0x00 | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

5.5.2应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x0B | | | | | | | |  |
| 操作状态 | 9 | Result | | | | | | | | 0xff成功,  0x00失败 |
|  | 10 | 0x00 | | | | | | | |  |
|  | 11 | 0x00 | | | | | | | |  |
|  | 12 | 0x00 | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

## 5.6蓝牙外设控制

5.6.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x10 | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x0D | | | | | | | |  |
| 操作类型 | 9 | 0x01下发MAC / 0x02查询MAC | | | | | | | |  |
| 设备类型 | 10 | 0x00：体温计  0x01：血氧仪  0x02：血压计  0x03：流速仪 | | | | | | | |  |
| 蓝牙设备MAC地址 | 11 | MAC\_ADDR1 | | | | | | | |  |
| 12 | MAC\_ADDR2 | | | | | | | |  |
| 13 | MAC\_ADDR3 | | | | | | | |  |
| 14 | MAC\_ADDR4 | | | | | | | |  |
| 15 | MAC\_ADDR5 | | | | | | | |  |
| 16 | MAC\_ADDR6 | | | | | | | | LSB字节 |
| 校验和 | 17 | SUM | | | | | | | |  |

5.6.2 应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x10 | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x0D | | | | | | | |  |
| 注册结果 | 9 | Result | | | | | | | | 0xff表示成功,0x00失败 |
| 设备类型 | 10 | 0x00：体温计  0x01：血氧仪  0x02：血压计  0x03：流速仪 | | | | | | | |  |
| 蓝牙设备MAC地址 | 11 | MAC\_ADDR1 | | | | | | | |  |
| 12 | MAC\_ADDR2 | | | | | | | |
| 13 | MAC\_ADDR3 | | | | | | | |
| 14 | MAC\_ADDR4 | | | | | | | |
| 15 | MAC\_ADDR5 | | | | | | | |
| 16 | MAC\_ADDR6 | | | | | | | |
| 校验和 | 17 | SUM | | | | | | | |  |

## 5.7蓝牙外设配对使能

5.6.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x10 | | | | | | | |  |
|  | 9 |  | | | | | | | |  |
| 10 |  | | | | | | | |  |
| 11 |  | | | | | | | |  |
| 12 |  | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

5.6.2 应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x10 | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x10 | | | | | | | |  |
| 配对结果 | 9 | Result | | | | | | | | 0xff表示成功,0x00失败 |
| 设备类型 | 10 | 0x00：体温计  0x01：血氧仪  0x02：血压计 | | | | | | | |  |
| 蓝牙设备MAC地址 | 11 | MAC\_ADDR1 | | | | | | | |  |
| 12 | MAC\_ADDR2 | | | | | | | |
| 13 | MAC\_ADDR3 | | | | | | | |
| 14 | MAC\_ADDR4 | | | | | | | |
| 15 | MAC\_ADDR5 | | | | | | | |
| 16 | MAC\_ADDR6 | | | | | | | |
| 校验和 | 17 | SUM | | | | | | | |  |

## 5.7设备信息设置

5.6.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x11 | | | | | | | |  |
|  | 9 | DID1 | | | | | | | | 型号 |
| 10 | DID2 | | | | | | | | ID |
| 11 | DID3 | | | | | | | |
| 12 | DID4 | | | | | | | |
| 校验和 | 13 | SUM | | | | | | | |  |

5.6.2 应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x11 | | | | | | | |  |
| 操作状态 | 9 | Result | | | | | | | | 0xff成功,  0x00失败 |
|  | 10 | 0x00 | | | | | | | |  |
|  | 11 | 0x00 | | | | | | | |  |
|  | 12 | 0x00 | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

## 5.8 固件升级包

5.8.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x04 | | | | | | | | 高字节 |
| 3 | 0x0E | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x20 | | | | | | | |  |
| 起始包序列号 | 9 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 最后一个数据包时，结束标志置1；其他数据包时为0 |
|  |  |  | 结束标志 | DataPacketSN高4位 | | | |
| 10 | DataPacketSN低8位 | | | | | | | |  |
| 固件数据 | 11 | 第0个字节 | | | | | | | | 每包填充bin文件的128个字节 |
| 12 | 第1个字节 | | | | | | | |
| … … |  | | | | | | | |
| 137 | 第126个字节 | | | | | | | |
| 138 | 第127个字节 | | | | | | | |
| 校验和 | 139 | SUM | | | | | | | |  |

5.8.2应答消息

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | | |  |
| 1 | 0xAA | | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | | |  |
| 6 | DID3 | | | | | | | | |  |
| 7 | DID4 | | | | | | | | | 低字节 |
| 包类型 | 8 | 0x20 | | | | | | | | |  |
| 包序列号 | 9 | 7 | | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 最后一个数据包时，结束标志置1；其他数据包时为0 |
|  | |  |  | 结束标志 | DataPacketSN高4位 | | | |
| 10 | DataPacketSN低8位 | | | | | | | | |  |
| 应答结果 | 11 | 0xff表示响应成功；  0x00表示导联正常，不支持升级，升级需重来；  0x01表示响应失败，升级需重来 | | | | | | | | |  |
|  | 12 | 0 | | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | | |  |

## 5.9血压测量指令

5.9.1设置消息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x21 | | | | | | | |  |
|  | 9 |  | | | | | | | | 型号 |
| 10 |  | | | | | | | | ID |
| 11 |  | | | | | | | |
| 12 |  | | | | | | | |
| 校验和 | 13 | SUM | | | | | | | |  |

5.9.2 响应应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x21 | | | | | | | |  |
| 操作状态 | 9 | Result | | | | | | | | 0xff成功,  0x00失败 |
|  | 10 | 0x00 | | | | | | | |  |
|  | 11 | 0x00 | | | | | | | |  |
|  | 12 | 0x00 | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

## 5.10血压测量结果上传指令

5.10.1设置消息（若一直接收不到应答，最多发送30次）

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x22 | | | | | | | |  |
| 血压计数据段 | 9 | 01（测量错误时值如右列） | | | | | | | | E-E EEPROM异常 血压计异常,联系你的经销商  E-1 人体心跳信号太小或压力突降  E-3 充气时间过长  E-4 测得的结果异常  E-C 校正异常  E-B 电源低电压 |
| 10 | SYS=高压 | | | | | | | |
| 11 | DIA=低压 | | | | | | | |
| 12 | PUL=心跳 | | | | | | | |
| 13 | PAD=心律不齐 | | | | | | | |
| 14 | YEARH | | | | | | | |
| 15 | YEARL | | | | | | | |
| 16 | MONTH | | | | | | | |
| 17 | DAY | | | | | | | |
| 18 | HOUR | | | | | | | |
| 19 | MINUTE | | | | | | | |
| 校验和 | 20 | SUM | | | | | | | |  |

5.10.2 响应应答信息

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Byte/Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 说明 |
| 包头 | 0 | 0x55 | | | | | | | |  |
| 1 | 0xAA | | | | | | | |  |
| 长度 | 2 | 0x00 | | | | | | | | 高字节 |
| 3 | 0x0C | | | | | | | | 低字节 |
| 设备ID | 4 | DID1 | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | |  |
| 6 | DID3 | | | | | | | |  |
| 7 | DID4 | | | | | | | | 低字节 |
| 包类型 | 8 | 0x22 | | | | | | | |  |
| 操作状态 | 9 | Result | | | | | | | | 0xff成功,  0x00失败 |
|  | 10 | 0x00 | | | | | | | |  |
|  | 11 | 0x00 | | | | | | | |  |
|  | 12 | 0x00 | | | | | | | |  |
| 校验和 | 13 | SUM | | | | | | | |  |

# 6周期性的数据包

## 6.1通用数据包

6.1.1请求消息 （此消息一旦启用数据包定期1s传送，分3次发送，间隔100ms）

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Byte/Bit | 7 | | 6 | | | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | | 说明 |
| 包头 | | 0 | 0x55 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 1 | 0xAA | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 长度 | | 2 | 0x00 | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 3 | 0xC3 | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 设备ID | | 4 | DID1 | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 6 | DID3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 7 | DID4 | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 包类型 | | 8 | 0x03 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 包序列号 | | 9 | DataPacketSN1 | | | | | | | | | | | | | | | | | | | | | | | | | | MSB |
| 10 | DataPacketSN2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 11 | DataPacketSN3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 12 | DataPacketSN4 | | | | | | | | | | | | | | | | | | | | | | | | | | LSB |
| 小包序号 | | 13 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 设备时间 | | 14 | TimeByte1 | | | | | | | | | | | | | | | | | | | | | | | | | | MSB字节 |
| 15 | TimeByte2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 16 | TimeByte3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 17 | TimeByte4 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 18 | 毫秒高位 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 19 | 毫秒低位 | | | | | | | | | | | | | | | | | | | | | | | | | | LSB字节 |
| 胸呼吸波形数据 | | 20 | RWV0MSB | | | | | | | | | | | | | | | | | | | | | | | | | | 第01个呼吸波形 |
| 21 | RWV0LSB | | | | | | | | | | | | | | | | | | | | | | | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 68 | RWV24MSB | | | | | | | | | | | | | | | | | | | | | | | | | | 第25个呼吸波形 |
| 69 | RWV24LSB | | | | | | | | | | | | | | | | | | | | | | | | | |
| 心电波形1数据高2Bit | | 70 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV3H | | | | | | | EWV2H | | | | | | | EWV1H | | | | | | EWV0H | | | | | |
| 71 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV7H | | | | | | | EWV6H | | | | | | | EWV5H | | | | | | EWV4H | | | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 81 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV47H | | | | | | | EWV0H | | | | | | | EWV0H | | | | | | EWV0H | | | | | |
| 82 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
|  | | | | | | |  | | | | | | | EWV49H | | | | | | EWV48H | | | | | |
| 心电波形1数据低8Bit | | 83 | EWV0L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 84 | EWV1L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 132 | EWV49L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 心电波形2数据高2Bit | | 133 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV3H | | | | | | | EWV2H | | | | | | | EWV1H | | | | | | EWV0H | | | | | |
| 134 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV7H | | | | | | | EWV6H | | | | | | | EWV5H | | | | | | EWV4H | | | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 144 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV47H | | | | | | | EWV0H | | | | | | | EWV0H | | | | | | EWV0H | | | | | |
| 145 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
|  | | | | | | |  | | | | | | | EWV49H | | | | | | EWV48H | | | | | |
| 心电波形2数据低8Bit | | 146 | EWV0L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 147 | EWV1L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 195 | EWV49L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 校验和 | | 196 | SUM | | | | | | | | | | | | | | | | | | | | | | | | | | 从参数包一包头所有字节顺序累加的结果 |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 包头 | | 0 | 0x55 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 1 | 0xAA | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 长度 | | 2 | 0x00 | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 3 | 0xB3 | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 设备ID | | 4 | DID1 | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 6 | DID3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 7 | DID4 | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 包类型 | | 8 | 0x03 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 包序列号 | | 9 | DataPacketSN1 | | | | | | | | | | | | | | | | | | | | | | | | | | MSB |
| 10 | DataPacketSN2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 11 | DataPacketSN3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 12 | DataPacketSN4 | | | | | | | | | | | | | | | | | | | | | | | | | | LSB |
| 小包序号 | | 13 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 心电波形3数据高2Bit | | 14 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV3H | | | | | | | EWV2H | | | | | | | EWV1H | | | | | | EWV0H | | | | | |
| 15 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV7H | | | | | | | EWV6H | | | | | | | EWV5H | | | | | | EWV4H | | | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 25 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV47H | | | | | | | EWV0H | | | | | | | EWV0H | | | | | | EWV0H | | | | | |
| 26 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
|  | | | | | | |  | | | | | | | EWV49H | | | | | | EWV48H | | | | | |
| 心电波形3数据低8Bit | | 27 | EWV0L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 28 | EWV1L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 76 | EWV49L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 心电波形4数据高2Bit | | 77 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV3H | | | | | | | EWV2H | | | | | | | EWV1H | | | | | | EWV0H | | | | | |
| 78 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV7H | | | | | | | EWV6H | | | | | | | EWV5H | | | | | | EWV4H | | | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 88 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| EWV47H | | | | | | | EWV0H | | | | | | | EWV0H | | | | | | EWV0H | | | | | |
| 89 | 7 | | | | 6 | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
|  | | | | | | |  | | | | | | | EWV49H | | | | | | EWV48H | | | | | |
| 心电波形4数据低8Bit | | 90 | EWV0L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 91 | EWV1L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 139 | EWV49L | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 腹呼吸波形数据 | | 140 | RWV0MSB | | | | | | | | | | | | | | | | | | | | | | | | | | 第01个呼吸波形 |
| 141 | RWV0LSB | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 188 | RWV24MSB | | | | | | | | | | | | | | | | | | | | | | | | | | 第25个呼吸波形 |
| 189 | RWV24LSB | | | | | | | | | | | | | | | | | | | | | | | | | |
| 校验和 | | 190 | SUM | | | | | | | | | | | | | | | | | | | | | | | | | | 从参数包一包头所有字节顺序累加的结果 |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 包头 | | 0 | 0x55 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 1 | 0xAA | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 长度 | | 2 | 0x00 | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 3 | 0xBA | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 设备ID | | 4 | DID1 | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 6 | DID3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 7 | DID4 | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 包类型 | | 8 | 0x03 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 包序列号 | | 9 | DataPacketSN1 | | | | | | | | | | | | | | | | | | | | | | | | | | MSB |
| 10 | DataPacketSN2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 11 | DataPacketSN3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 12 | DataPacketSN4 | | | | | | | | | | | | | | | | | | | | | | | | | | LSB |
| 小包序号 | | 13 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 加速度波形数据字节 | | 14 | 7 | 6 | | | | | 5 | | | | 4 | | | 3 | | | | 2 | | | 1 | | 0 | | |  | |
| VMU\_X3\_H | | | | | | VMU\_X2\_H | | | | | | | VMU\_X1\_H | | | | | | | VMU\_X0\_H | | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 20 | 7 | 6 | | | | | 5 | | | | 4 | | | 3 | | | | 2 | | | 1 | | 0 | | |  | |
|  | | | | | | | | | | | | | | | | | | | |  | | | | |
| 21 | VMU\_X0\_L | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 45 | VMU\_X24\_L | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 46 | 7 | | | | | 6 | | | | 5 | | | 4 | | | | 3 | | | 2 | | 1 | | | 0 |  | |
| VMU\_Y3\_H | | | | | | | |  | | | | | | | VMU\_Y1\_H | | | | | | VMU\_Y0\_H | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 52 | 7 | | | | | 6 | | | | 5 | | | 4 | | | | 3 | | | 2 | | 1 | | | 0 |  | |
|  | | | | | | | | | | | | | | | | | | | | |  | | | |
| 53 | VMU\_Y0\_L | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 77 | VMU\_Y24\_L | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 78 | 7 | | | | | 6 | | | | 5 | | | 4 | | | | 3 | | | 2 | | 1 | | | 0 |  | |
| VMU\_Z3\_H | | | | | | | |  | | | | | | | | VMU\_Z1\_H | | | | | VMU\_Z0\_H | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 84 | 7 | | | | | 6 | | | | 5 | | | 4 | | | | 3 | | | 2 | | 1 | | | 0 |  | |
|  | | | | | | | | | | | | | | | | | | |  | | | | | |
| 85 | VMU\_Z0\_L | | | | | | | | | | | | | | | | | | | | | | | | |  | |
|  | … … … | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 109 | VMU\_Z24\_L | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| 血氧波形数据字节 | | 110 | SWV0 | | | | | | | | | | | | | | | | | | | | | | | | | | D7:脉搏搏动标志 0 无搏动 1 有搏动 D6~D0:波形数据， 范围（0~127） |
| 111 | SWV1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| … | … … … | | | | | | | | | | | | | | | | | | | | | | | | | |
| 159 | SWV49 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~~体温时间~~ | ~~160~~ | | ~~TimeByte1~~ | | | | | | | | | | | | | | | | | | | | | | | | | | MSB字节 |
| ~~161~~ | | ~~TimeByte2~~ | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| ~~162~~ | | ~~TimeByte3~~ | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| ~~163~~ | | ~~TimeByte4~~ | | | | | | | | | | | | | | | | | | | | | | | | | | LSB字节 |
| 参数高位 | 164 | | 7 | | | 6 | | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| 腹呼吸连接标志（0~~连接）~~ | | | 胸呼吸连接标志（0连接） | | | | ~~设备功耗过高标志~~ | | | |  | | |  | | | | 体温1  Bit8 | | 脉率bit8 | | |  | | |
| 血氧信号强度 | 165 | | 血氧信号强度 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 胸呼吸系数 | 166 | | 胸呼吸系数 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 腹呼吸系数 | 167 | | 腹呼吸系数 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 体温1 | 168 | | 体温1 bit7 ~ bit0 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 血氧  饱和度 | 169 | | SPO2% | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 设备状态 | 170 | | 7 | | | 6 | | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | | 0为正常;  1为告警;  开机标志在开机第一包数据该位置1,其他数据包该位置0;  时间设置标志开机置1,在接收到时间设备指令后置0. |
| 开机标志 | | | 时间设置标志 | | | | ~~流速仪连接断开标志~~ | | | | 血压连接断开标志 | | | 血氧连接断开标志 | | | | 体温连接断开标志 | | 血氧探头脱落标志 | | | 心电导联脱落标志 | | |
| 电量提示 | 171 | | 发送第n包 | | | | | | | | | | | ~~流速仪电量低~~ | | | ~~蓝牙血压计电量低~~ | | | | 蓝牙血氧计电量低 | | ~~蓝牙体温计电量低~~ | | | 电池电量低 | | | 0为正常;  1为告警 |
| 状态开关 | 172 | | 7 | | | 6 | | | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| ~~蓝牙流速仪开关位~~ | | | ~~蓝牙血压计开关位~~ | | | | 蓝牙血氧计开关位 | | | | ~~蓝牙体温计开关位~~ | | | ~~蓝牙设备~~  ~~电量低~~  ~~绿~~  ~~闪~~ | | | | 锂电池电量低  震动 | | 锂电池电量低  绿闪 | | | 蓝牙连接断开  蓝闪 | | | 0为关;  1为开 |
| 电量 | 173 | | 0：内部电池  1：外部电池 | | | | | | | | | | | | | | | | | | | | | | | | | | 对应531字节内容 |
| 内部电池V | 174 | | 1. V = [15,255], 电压 = 3200+(V-15)\*5; 2. V = 0； 电压 = 0； | | | | | | | | | | | | | | | | | | | | | | | | | | 单位:mV |
| 外部电池电量V | 1. V = [15,255], 电压 = 3200+(V-15)\*5;   2、V = 0； 电压 = 0； | | | | | | | | | | | | | | | | | | | | | | | | | | 单位:mV |
| ~~WiFi信号强度~~ | 175 | |  | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 脉率 | | 176 | 脉率bit7 ~ bit0 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| ~~AP的MAC地址~~ | | 177 |  | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 178 |  | | | | | | | | | | | | | | | | | | | | | | | | | |
| 179 |  | | | | | | | | | | | | | | | | | | | | | | | | | |
| 180 |  | | | | | | | | | | | | | | | | | | | | | | | | | |
| 181 |  | | | | | | | | | | | | | | | | | | | | | | | | | |
| 保留字节1 | | 182 | 7 | | | | | 6 | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | | 固件版本 |
| FirmVerH | | | | | | | | | | | FirmVerM | | | | | | | | | FirmVerL | | | | | |
| 保留字节2 | | 183 | 7 | | | | | 6 | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| 心率bit7 ~ bit0 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 保留字节3 | | 184 | 7 | | | | | 6 | | 5 | | | | 4 | | | 3 | | | | 2 | | 1 | | | 0 | | |  |
| 心率bit8 | | | | | 呼吸率 | | | | | | | | | | | | | | | | | | | | |  |
| 保留字节4 | | 185 | *~~Gesture-姿态（躺、站立）~~* | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 保留字节5 | | 186 | 电池电量格数 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 校验和 | | 187 | SUM | | | | | | | | | | | | | | | | | | | | | | | | | | 从参数包一包头所有字节顺序累加的结果 |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 包头 | | 0 | 0x55 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 1 | 0xAA | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 长度 | | 2 | 0x00 | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 3 | 0x8A | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 设备ID | | 4 | DID1 | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 5 | DID2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 6 | DID3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 7 | DID4 | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 包类型 | | 8 | 0x03 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 包序列号 | | 9 | DataPacketSN1 | | | | | | | | | | | | | | | | | | | | | | | | | | MSB |
| 10 | DataPacketSN2 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 11 | DataPacketSN3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 12 | DataPacketSN4 | | | | | | | | | | | | | | | | | | | | | | | | | | LSB |
| 小包序号 | | 13 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 流速仪数据第0组 | | 14 | 吹/吸气 0/1 | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 15 | 实时流速值ml/s | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 16 | 实时流速值ml/s | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 17 | 实时容积ml | | | | | | | | | | | | | | | | | | | | | | | | | | 高字节 |
| 18 | 实时容积ml | | | | | | | | | | | | | | | | | | | | | | | | | | 低字节 |
| 流速仪数据第1-24组 | | 19~138 | --- --- | | | | | | | | | | | | | | | | | | | | | | | | | |  |
| 校验和 | | 139 | SUM | | | | | | | | | | | | | | | | | | | | | | | | | | 从包头所有字节顺序累计的结果 |

注：一、体温时间格式采用Unix时间戳(Unix timestamp)，或称Unix时间(Unix time)、POSIX时间(POSIX time)，是一种时间表示方式，定义为从格林威治时间1970年01月01日00时00分00秒起至现在的总秒数，即为一个32位的数据类型，分成4个字节发送。

二、

1、每包呼吸波形数据（每包的25个数据）公用一个呼吸系数，胸呼吸系数为第518字节，腹呼吸系数为第519字节；

2、每个胸呼吸数据还原公式：胸呼吸原始数据[i] = [ 胸呼吸系数\*10000 + (65535- RWV[i]) ]\*胸呼吸倍数；（胸呼吸倍数为1.25）

3、呼吸原始数据值与胸围（腹围）大小呈反比。

# 7固定的消息类型

无

# 8信息概述

无