**Oviphone G618L LoRaWAN Device Protocal**

**欧孚通信G618L LoRaWAN设备协议**

**（V1.1）2024-08-23**

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本协议合适用于欧孚G808L LoRaWAN设备。若需要下行确认（全双工模式）或其他协议，请咨询欧孚通信（欧孚通信有其他定制协议的应用）。

This protocol use for Oviphone G808L LoRaWAN device) .

If you need downlink confirmation (full-duplex mode) or other protocols, please check with Oviphone.

设备功能的不断完善和丰富，本协议会不断更新，请从服务器下载最新版本。This document will continue updape, please download the newest version. <https://oviphone.cn/APIAPP/>

手表加网方式（wristband register network）：

1：Activation by Personalization (激活方式 OTAA-CLASSA)

Default APPSKEY： 2B7E151628AED2A6ABF7158809CF4F3C

If you need special KEY, please contact with Oviphone

2：另一种ABP入网模式

CAPPSKEY - EF6D6E2503F57AE2FA151CDA87455F18

CNWKSKEY - 2E8C8650B4041672BBB9A399F2DEB427

# 协议数据包结构(Protocol packet structure)

一条基本的协议数据包结构(A basic protocol data packet structure)



说明(Description）：

hearder ： BDBDBDBD（固定值，Fixed）

messageID： 协议id号

payload: 具体消息内容，里面的变量均为小端模式( message content, all the message use little endian)

CK： 校验和所加内容包括payload(The content of the checksum includes the payload)

其算法如下所示，其中Buffer[N]表示需要累加的数据

(The algorithm is shown below, where Buffer[N] represents the data that needs to be accumulated)

Ck\_sum = 0

For(i=0; i<N; i++)

{

ck\_sum = ck\_sum + Buffer[i]

ck\_sum = ck\_sum % 0x100

}

Ck\_sum = 0xFF – ck\_sum

Return ck\_sum

# 报文(Message)

## 电量上传(BatteryPower upload)（MSGID=0XF9）

payload contents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Byte offset | Format | Name | Scale | Unit | Decription |
| 1 | U8 | Bat\_type |  |  | 电量类型0 4级制 1 5级制2 百分比3电压值 |
| 2 | u16 | Bat\_volt |  | -/- | 电量值 |
| 1 | U8 | Signal\_type |  |  | 信号类型0 百分比  1 5级制2：CSQ值 |
| 2 | I16 | Signal\_strength |  |  | 信号强度 |
| 1 | U8 | other\_type |  |  | 扩展类型0全量记步 1增量记步2 震动 |
| 4 | U32 | num |  |  | 扩展值 |
| 4 | U32 | timestamp | -/- | -/- | utc时间戳 |

Example：bdbdbdbd f9 01 0300 00 6400 00 94040000 28F2CD5F 2a

F9 : MSGID

01: 5级制电量类型

0300 : 小端（littele Endian），电量3格(Battery Level 3).

Value 0 - 4 Mean 20% - 100% (20% 40% 60% 80% 100%)；

 00: 信号类型 百分比

 6400： 小端（littele Endian） 0x0064: 100%

00: 全量记步

94040000： 小端（littele Endian），0x00000494：Prodometer 1172步 (step)；

28F2CD5F： 时间戳：北京时间2020-12-07 17:13:12 (Timestamp: Beijing time2020-12-07 17:13:12)

2a： 校验(check)

## GPS位置上传(GPS Location upload)（MSGID=0X03）

payload contents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Byte offset | Format | Name | Scale | Unit | Decription |
| 8 | Double | lon |  | -/- | longitude |
| 8 | Double | lat |  | 　 | latitude |
| 1 | U8 | north\_south |  |  | /\*N or S\*/ |
| 1 | U8 | east\_west |  |  | /\*E or W\*/ |
| 1 | U8 | status |  |  | /\*A or V\*/ |
| 4 | U32 | Timestamp  |  |  | 时间戳(Timestamp) |

Example：bdbdbdbd0322fb20cb827a5c4021ea3e00a99536404e4541cf084e5f13

03: MSGID

22fb20cb827a5c40 : 小小端（littele Endian），0x405c7a82cb20fb22，数据为double类型，需要转为浮点数，longitude值为：113.9142330000000 （dd.dddd格式）；(Double type, need change the data to Floating point

21ea3e00a9953640 : 小端（littele Endian），0x403695a9003eea21，数据为double类型，需要转为浮点数，longitude值为：22.5846100000000（dd.dddd格式）；(Double type, need change the data to Floating point)

4E : ASCII 编码表述，南、北纬度，范围为/\*N or S\*/，表示为：N（北纬）；

(ASCII code, south and north latitude, the range is /\*N or S\*/,: N (north latitude))

45 : ASCII 编码表述，东、西经度，范围为/\*E or W\*/，表示为：E（东经）；

 (ASCII code, east and west longitude, range is /\*E or W\*/: E (east longitude))

41 : ASCII 编码表述，定位状态，范围为/\*A or V\*/，表示为：A（有效）；

 (ASCII code representation, positioning status, range is /\*A or V\*/, expressed as: A (valid))

cf084e5f : 小端（littele Endian），0x5f4e08cf，Unix时间戳转换后，值为：2020/9/1 16:39:43 ；

13 : 校验(check)

## 设置周期定位（Set periodic positioning）（MSGID=0X17）

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Byte offset  |  Format  |  Name  | Scale  |  Unit  |  Decription | 　 |
| 1 | u8 | 　enable | -/- | -/- | 是否启用(Enable or not) | 　时间段1(period 1) |
| 2 | U16 | Interval |  |  | 时间间隔（分钟）(Period Minutes) |
| 1 | u8 | time\_start\_h | 　 | 　 | -时Hour |
| 1 | u8 | time\_start\_m | 　 | 　 | -分Minute |
| 1 | u8 | time\_end\_h | 　 | 　 | -时Hous |
| 1 | u8 | time\_end\_m | 　 | 　 | -分Minutes |
| 1 | u8 | 　enable | -/- | -/- | 是否启用(Enable or not) | 时间段2(period 2) |
| 2 | U16 | Interval |  |  | 时间间隔（分钟）(Period Minutes) |
| 1 | u8 | time\_start\_h | 　 | 　 | -时Hour |
| 1 | u8 | time\_start\_m | 　 | 　 | -分Minute |
| 1 | u8 | time\_end\_h | 　 | 　 | -时Hous |
| 1 | u8 | time\_end\_m | 　 | 　 | -分Minutes |
| 1 | u8 | 　enable | -/- | -/- | 是否启用(Enable or not) | 时间段3(period 3) |
| 1 | U16 | Interval |  |  | 时间间隔（分钟）(Period Minutes) |
| 1 | u8 | time\_start\_h | 　 | 　 | -时Hour |
| 1 | u8 | time\_start\_m | 　 | 　 | -分Minute |
| 1 | u8 | time\_end\_h | 　 | 　 | -时Hous |
| 1 | u8 | time\_end\_m | 　 | 　 | -分Minutes |
| 1 | u8 | 　enable | -/- | -/- | 是否启用(Enable or not) | 时间段4(period 4) |
| 1 | U16 | Interval |  |  | 时间间隔（分钟）(Period Minutes) |
| 1 | u8 | time\_start\_h | 　 | 　 | -时Hour |
| 1 | u8 | time\_start\_m | 　 | 　 | -分Minute |
| 1 | u8 | time\_end\_h | 　 | 　 | -时Hous |
| 1 | u8 | time\_end\_m |  | 　 | -分Minutes |
|  |  |  |  |  |  |  |

Example：

bd bd bd bd 17 01 03 00 00 00 13 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 dd

0点到19点，每隔3分钟定位一次(0 o'clock to 19 o'clock, positioning once every 3 minutes)

## 蓝牙定位信息(LBE Location)（MsgId=0xD6）

 Payload:

|  |  |  |  |
| --- | --- | --- | --- |
| Format | Name | Scale | Description |
| U8 | Type | 1 | 目前固定为0 (Fix value 0) |
| U8 | Total\_groups | 1 | 总组数,可能有多组信息,每组里可能有多个ibeacon (The total number of groups, there may be multiple groups of information, and there may be multiple ibeacons in each group) |
| Int32 | Utc | 4 | Utc时间戳 (the UTC timestamp of the first group) |
| U8 | Total\_PackCount | 1 | 当前时间的包总数 (the ibeacon’s count of the first group) |
| U16 | Major0 | 2 | Major |
| U16 | Minor0 | 2 | Minor |
| S8 | Rssi0 | 1 | Rssi |
| U16 | MajorN | 2 | Major |
| U16 | MinorN | 2 | Minor |
| S8 | RssiN] | 1 | Rssi |
| Int32 | Utc | 4 | Utc时间戳(UTC timestamp of the second group) |
| U8 | Total\_PackCount | 1 | 当前时间的包总数(the ibeacon’s count of current group) |
| U16 | Major0 | 2 | Major |
| U16 | Minor0 | 2 | Minor |
| S8 | Rssi0 | 1 | Rssi |
| U16 | MajorN | 2 | Major |
| U16 | MinorN | 2 | Minor |
| S8 | RssiN] | 1 | Rssi |

Example：

bdbdbdbdd60001be20315f0443271794ac43273094aa4327b956a54327fe94a56a

**bdbdbdbd - header**

**d6 - msgID**

**00 - type**

**01 -- 只有一组ibeacon数据（total groups of beacons data :1）**

be20315f -- 第一组beacon时间戳 ( the first group’s timestamp): 0x5f3120be=1597055166

04 --第一组 有4个beacon信息 （the beacon’s count of this group: 4 ）

4327 --- major : 0x2743 = 10051

1794--- minor: 0x9417 = 37911

ac--- rssi: 0xac = -84

4327 --- major: 0x2743 = 10051

3094--- minor:0x9430 = 37936

aa--- rssi:-86

4327 --- major: 0x2743 = 10051

b956--- minor:0x56b9 = 22201

a5--- rssi:-91

4327 --- major: 0x2743 = 10051

fe94--- minor:0x94fe=38142

a5--- rssi:-91

6a --校验码（checksum）

## 报警数据上传(Alarm message)（MsgId=0x02）

Payload contents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Byte Offset | Format | Name | Scale | Unit | Drscription |
| 2 | x16 | Upl\_warn | - | - | Bitfield see below |
| 4 | Int32 | timestamp |  |  | 时间戳timestamp |

Bitfield WRN:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15 |  |  |  |  |  |  | 8 |  |  |  | 4 |  |  | 1 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| Bit | Name | Description | Value |
| 7 | SOS 取消 | SOS 取消 | 128 |
| 2 | 关机 | 关机 | 4 |
| 1 | SOS | SOS | 2 |
| 0 | 低电量 | 低电量 | 1 |
| 14 | 跌落报警 | 跌落报警 | 16384 |

Example**：**

关机报文（Power off） BDBDBDBD02040028F2CD5F C1

低电报文（Low battery） BDBDBDBD02010028F2CD5F C4

## 各种警告（0XC7）

payload contents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Byte offset | Format | Name | Scale | Unit | Decription |
| 0 | U16 | 类型 |  |  |  |

类型

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 低字节 | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|  |  | 定位失败 |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 高字节 | Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 | Bit8 |
|  |  |  |  |  |  |  |  |

BDBDBDBDC72000FF 定位失败

# 服务器时间同步信息(Server time synchronization)

## 请求时间校准数据指令(Request time calibration data command)

|  |  |  |  |
| --- | --- | --- | --- |
| Byte offset  |  Format  |  Name  |  Decription |
| 1 | U8 | HEADER | 填充：0xFF |
| 1 | U8 | 　SeqId | 填充：0x00 |
| 1 | U8 | End | 填充：0xFF |

 Example：FF00FF

## 时间校准请求数据回复格式(Time calibration request data reply format)

|  |  |  |  |
| --- | --- | --- | --- |
| Byte offset  |  Format  |  Name  |  Decription |
| 1 | U8 | HEADER | 填充：0xFF  |
| 1 | U8 | SeqId | 填充：0x10 |
| 2 | U16 | years | 年份数据  |
| 1 | U8 | month | 月份数据  |
| 1 | U8 | Day | 日，数据 |
| 1 | U8 | time | 时钟，数据  |
| 1 | U8 | Minute | 分钟，数据 |
| 1 | U8 | Seconds | 秒钟，数据 |
| 1 | U8 | End | 填充：0xFF |

Example：FF1007E409020B1B28FF

FF : Header

10 : Seqid

07E4: Year（2020）

09 : Month，（09）

02 : Day，（02）

0B : Hour，（11）

1B : Minitus，（27）

28 : Second，（40）

FF : End

注明：设备开机后，会自动发送请求时间同步指令。需要收到同步指令后回复同步时间数据帧进行设备时间同步

（Note：After the device is turned on, it will automatically send a request time synchronization command. Need to reply to the synchronization time data frame after receiving the synchronization instruction to synchronize the device time)