ROV 上位机通讯协议

# 一、版本记录

1.1 修改记录

|  |  |  |
| --- | --- | --- |
| 修改时间 | 修改内容 | 修改人 |
|  |  |  |
|  |  |  |
| 22/09/20 | 1. 创建通用版协议 | ynx |
| 23/8/1 | 2.添加设备 | 郝亮亮 |

# 二、规范引用文件

📌下列文件对于本文件的应用是必不可少的。凡是注日期的引用文件，仅注日期的版本适用于本文件，凡是不注日期的引用文件，其最新版本（包括所有的修改单）适用于本文件。

# 三、应用层报文格式

# 3.1 帧结构

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 字节序 | 代码 | 字节数 | 说明 | 备注 |
| [0] | 0x55 | 1 | 帧头高位 |  |
| [1] | 0xAA | 1 | 帧头低位 |  |
| [2] | CmdType | 1 | 命令类型(） |  |
| [3] | DateLen | 1 | 有效长度（数据区内容） DateLen+7= 整帧长度 |  |
| [4] | Command | 1 | 子命令 |  |
| [4+N] | Date | N | 数据：没有特殊说明均为HEX 码（N≥4） | date 区至少存在两个字节 |
| [...] | ... | ... | ...... |  |
| [4+N+1] | CheckSu m | 1 | 校验和，Command+Date |  |
| [4+N+2] | 0x0D | 1 | 帧尾高位 |  |
| [4+N+3] | 0x0A | 1 | 帧尾低位 |  |

📌通用地址： 如果命令类型为通用地址主板不用判别地址，直接可以返回响应帧；

📌广播地址： 不用返回；

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 本体基本信息上报 |  |  |  |  |  |
| [4] | 子命令（1byte) | 0x01 |  |  |  |  |  |
| [5] | 功能（1byte) | 0x01 |  |  |  |  |  |
| [6] | 预留（1byte) | 0x00 |  |  |  |  |  |
| [7]-[10] | 校准后加速度X/g float(4byte) | 0x8E  0xAC  0xDA  0xBB |  |  |  |  |  |
| [11]- | 校准后加速度Y/g | 0x6D |  |  |  |  |  |
| [14] | float(4byte) | 0xC6 |
|  |  | 0xE2 |
|  |  | 0x3D |
| [15]- | 校准后加速度Z/g | 0x6B |  |  |  |  |  |
| [18] | float(4byte) | 0x41 |
|  |  | 0x7B |
|  |  | 0xBF |
| [19]- | 静止偏差校准后 | 0x70 |  |  |  |  |  |
| [22] | 的陀螺仪 I 数据 | 0x30 |
|  | X/dps | 0xBB |
|  | float(4byte) | 0xBB |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| [23]- | 静止偏差校准后 | 0xB4 |  |  |  |  |  |
| [26] | 的陀螺仪 I 数据 | 0x61 |
|  | Y/dps | 0x07 |
|  | float(4byte) | 0xBC |
| [27]- | 静止偏差校准后 | 0x40 |  |  |  |  |  |
| [30] | 的陀螺仪 I 数据 | 0x93 |
|  | Z/dps | 0x68 |
|  | float(4byte) | 0xBA |
| [31]- | 欧拉角数据 | 0xE8 |  |  |  |  |  |
| [34] | X/degree | 0x44 |
|  | float(4byte) | 0xCE |
|  |  | 0xC0 |
| [35]- | 欧拉角数据 | 0xB4 |  |  |  |  |  |
| [38] | Y/degree | 0x4E |
|  | float(4byte) | 0xA9 |
|  |  | 0xBE |
| [39]- | 欧拉角数据 | 0x12 |  |  |  |  |  |
| [42] | Z/degree | 0x9A |
|  | float(4byte) | 0x95 |
|  |  | 0x3C |
| [43]- | 深度 | 0x56 |  |  |  |  |  |
| [46] | H/m | 0x55 |
|  | float(4byte) | 0xD5 |
|  |  | 0x40 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | ~~舵机角度~~ ~~theta/degree~~ ~~char(1byte)~~ ~~(-30°-30°)~~ | ~~0x00~~ |  |  |  |  |  |
|  | ~~LED 亮暗程度~~ ~~u8（1byte）~~ ~~0%-100%~~ | ~~0x00~~ |  |  |  |  |  |
| [47]- | 推机器左前转速 | 0x00 |  |  |  |  |  |
| [50] | speed/(rad/m) | 0x00 |
|  | int（4byte） | 0x00 |
|  | -1000-1000 | 0x00 |
| [51]- | 推机器右前转速 | 0x00 |  |  |  |  |  |
| [54] | speed/(rad/m) | 0x00 |
|  | int（4byte） | 0x00 |
|  | -1000-1000 | 0x00 |
| [55]- | 推机器左上转速 | 0x00 |  |  |  |  |  |
| [58] | speed/(rad/m) | 0x00 |
|  | int（4byte） | 0x00 |
|  | -1000-1000 | 0x00 |
| [59]- | 推机器右上转速 | 0x00 |  |  |  |  |  |
| [62] | speed/(rad/m) | 0x00 |
|  | int（4byte） | 0x00 |
|  | -1000-1000 | 0x00 |
| [63]- | 温度 | 0x00 |  |  |  |  |  |
| [66] | （°C) | 0x00 |
|  | int（4byte） | 0x00 |
|  | 0-100 | 0x00 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| [67] | 金属探测器感应强度  u8（1byte） 0%-100% | 0x00 |  |  |  |  |  |
| [68]-  [70] |  |  |  |  |  |  |  |
|  | 内容 |  |  |  |  |  |  |
|  | 说明 |  |  |  |  |  |  |

👉参考报文：

📍主板主动上报：imu 数据

上行(50)：55 AA 01 2F 01 01 00 8E AC DA BB 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

### ~~00 00 00~~ 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ~~D1 0D 0A~~

55 AA 01 2B 01 01 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

### 00 00 00 00 00 00 00 02 0D 0A

55 AA 01 2B 01 01 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

### 00 00 00 41 A0 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

### 00 00 00 00 00 00 00 02 0D 0A

下行：无

# .3.3、工控发送命令类型及对应命令；

📌通用地址： 如果命令类型为通用地址主板不用判别地址，直接可以返回响应帧；

📌广播地址： 不用返回；

## 3.3.1、0x11 速度运动控制命令；

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 本体基本运动控制 |  |  |  |  |  |
| 子命令（1byte) | 0x01 |  |  |  |  |  |
| 功能（1byte) | 0x01 |  |  |  |  |  |
| 预留（1byte) | 0x00 |  |  |  |  |  |
| 定艏（1byte) 1/ 定艏|0/ 不定艏 | 0x00 |  |  |  |  |  |
| 定深（1byte) 1/ 定尾|0/ 不定尾 | 0x00 |  |  |  |  |  |
| LED 百分比亮度 u8（1byte） 0%-100% | 0x00 |  |  |  |  |  |
| 舵机旋转角度 char（1byte）  -30°-30° | 0x00 |  |  |  |  |  |
| 运动控制X float(4byte) | 0x00  0x00  0x00  0x00 |  |  |  |  |  |
| 运动控制Z float(4byte) | 0x00  0x00  0x00  0x00 |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 运动控制浮动F float(4byte) | 0x00  0x00  0x00  0x00 |  |  |  |  |  |
| 预留 int(4byte) | 0x00  0x00  0x00  0x00 |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 内容 |  |  |  |  |  |  |
| 说明 |  |  |  |  |  |  |

👉参考报文：

📍速度控制命令：

上行(50)：55 AA 11 15 01 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

### 00 00 00 00 02 0D 0A

下行：无

附录、预留