

mqtt(消息队列遥测传输)是ISO 标准(ISO/IEC PRF 20922)下基于客户端-服务器的消息发布/订阅传输协议。Atris机器人使用mqtt协议与上位机进行通信,为此Atris机器人同时运行了一个mqtt服务器程序以及一个mqtt客服端程序。下文为上位机如何使用mqtt协议与Atris机器人进行通信的说明。

@[TOC]

## 1. 上位机与Atris建立mqtt通信

### 1. 使用Atris上mqtt服务器

Atris上部署了mqtt服务器,上位机要使用此服务器与Atris建立mqtt通信,可按如下步骤:

- 上位机连接Atris的wifi
- 设置连接mqtt服务器ip为10.20.18.2,端口号为1883

### 2. 使用互联网mqtt服务器

如果使用互联网mqtt服务器,客服端要与Atris建立mqtt通信,需要修改Atris配置参数,然后重启机器人,具体过程如下:

- 浏览器输入地址: <http://10.20.18.2>,输入用户名和密码登录到web部署应用,修改信令服务下的服务器地址、服务端口、信令加密等参数配置,如下图所示:
- 保存参数配置并重启机器人

### Welcome to Robot

本体管控

参数配置

诊断信息

回充房

房子宽度:  厘米

保存修改

设备地址

云台相机:

云台盒子:

四路相机:

保存修改

信令服务

服务地址:

服务端口:

信令加密:  (加密=1,明文=0)

心跳间隔:  秒

保存修改

## 2. Atris上线下线状态

当Atris建立mqtt连接时,表示机器人上线,Atris断开mqtt连接时,表示下线。机器人上线或者下线会发送如下消息:

- 消息topic:Atris/{robotn}/status
- 上线消息内容: online

- 下线消息内容：offline

### 3. mqtt命令消息topic格式

- 1. 下行消息topic:  
Atris/{accid}/{robotsn}/{request\_title}
- 2. 上行消息Topic:  
Atris/{robotsn}/{accid}/{response\_title}  
Atris/{robotsn}/{accid}/{notify\_title}

| 字段             | 说明                                 | 示例                    |
|----------------|------------------------------------|-----------------------|
| accid          | 上位机账号id                            | admin                 |
| robotsn        | 机器人的sn号                            | DAF001UBT90000001     |
| request_title  | 请求命令title字段：前缀为request_，后面是具体命令名   | request_switch_light  |
| response_title | 回复命令title字段：前缀为response_，后面是具体命令名  | response_switch_light |
| notify_title   | 机器人主动上报title字段：前缀为notify_，后面是具体状态名 | notify_light_status   |

### 4. mqtt消息内容描述

上位机与Atris通信的消息内容是包含title和content关键字段的json字符串，具体内容大致包括：

- 请求命令title字段：前缀为request\_，后面是具体命令名
- 回复命令title字段：前缀为response\_，后面是具体命令名
- 主动上报title字段：前缀为notify\_，后面是具体状态
- accid发送者的账号id，如：机器人sn或上位机账号
- 命令内容包含在content字段

如下是示意的json协议格式：

- 请求命令示意：

```
{
  "title": "request_xxx ",
  "accid": "admin",
  "content": {
    "id": string,      // 标识命令的UUID，数据类型为string
    "timestamp": long  // 标识命令发起的时戳，单位毫秒，数据类型为long
  }
}
```

- 回复命令示意：

```
{
  "title": "response_xxx ",
  "accid": "DAA001UBT90000001",
  "content": {
    "id": string,          // 同步命令此id与请求命令id一致
    "timestamp": long,     // 同步命令与请求命令的时戳保持一致
    "result": string // [success, fail_invalid_data, fail_inner_error] 指令处理结果
  }
}
```

- 主动上报状态示意：

```
{
  "title": "notify_xxx ",
  "accid": "机器人sn",
  "content": {
    "id": string,          // 标识命令的UUID，数据类型为string
    "timestamp": long      // 标识命令发起的时戳，单位毫秒，数据类型为long
  }
}
```

注意：上位机发送给Atris请求命令的content数据类型一定要严格按照协议要求\*\*

## 5. mqtt消息内容具体说明

下文是对上位机与机器控制协议的具体描述：

### 绑定机器人

- 上位机请求绑定机器人命令：

```
{
  "title": "request_bound_robot",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "channel": string,
    "account": string,      // abi账号
    "pwd": string,          // 密码(对原始密码进行sha1加密)
    "bindmode": int,        // 0: 在线; 1: 离线
    "token": string,
    "phoneNum": string      // 上位机给定的VOIP号码
  }
}
```

**注：**绑定机器之前需要在abi鉴权后台添加账号和密码

- 机器人回复绑定响应:

```
{
  "title": "response_bound_robot",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "bindmode": int           // 0: 在线; 1: 离线
    "companyid": string,      // 离线绑定时为用户所属的企业号, 在线时为空
    "camera_reg_id": string,  // 机器人sn号
    "result": string // [success,
                        fail_invalid_pwd,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error,
                        fail_abi_offline,

                        fail_invalid_user]
  }
}
```

## 解绑机器人

上位机不需要控制机器人之后需要对机器人解除绑定, 否则其它账号无法绑定此机器人

- 上位机请求绑定机器人命令:

```
{
  "title": "request_unbound_robot",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
    "account": string, // 登录ABI用户名
    "pwd": string,    // 密码(对密码进行sha1加密)
    "bindmode": int, // 0: 在线; 1: 离线
    "token": string
  }
}
```

- 机器人回复解绑响应:

```
{
  "title": "response_unbound_robot",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_pwd,
                        fail_other_bound,
                        fail_invalid_data,
```

```

fail_inner_error,

fail_abi_offline]

}
}

```

## 重置机器人

如果某账号去绑定机器人时提示fail\_other\_bound，表示机器人已被其他账号所绑定，此时此账号想去绑定机器人，需重置绑定机器人，将绑定机器人的账号强制解除绑定后，此账号才可以去绑定机器人。

- 请求重置机器人命令：

```

{
  "title": "request_reset_robot",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "token": "",
    "clear": int, // [0, 1, 2] 0: 重置绑定关系; 1: 重置绑定关系并恢复出厂设置;
                  // 2: 重置绑定关系, 恢复出厂设置并清除数据
    "account": string, // 登录ABI管理员
    "pwd": string, // 密码(对密码进行sha1加密),
    "bindmode": int // 0: 在线; 1: 离线
  }
}

```

- 机器人回复请求重置机器人：

```

{
  "title": "response_reset_robot",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "clear": int, // [0, 1, 2] 0: 重置绑定关系; 1: 恢复出厂设置;
    "result": string // [success,
                      fail_invalid_user,
                      fail_invalid_pwd,
                      fail_invalid_data,
                      fail_inner_error,
                      fail_abi_offline,
                      fail_abi_invalid_robot]
  }
}

```

- 机器人上报被重置状态：

```
{
  "title": "notify_other_unbound",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "client": string, // 抢绑上位机账号
    "sn": string // 抢绑机器人序列号
  }
}
```

## 升级机器人版本

- 升级机器人版本命令:

```
{
  "title": "request_sw_upgrade",
  "accid": "abi账号",
  "content": {
    "id": string,
    "log_serial": string, "20200223171625154",
    "timestamp": long,
    "url": string // 基于http服务链接升级包下载地址
  }
}
```

- 机器人回复升级响应:

```
{
  "title": "response_sw_upgrade",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "log_serial": string, "20200223171625154",
    "timestamp": long,
    "version": string // "xxxx", // 固件版本
    "progress": float, // 0~100
    "status": string, // [started, downloading, firmware_upgrading,
finished, imx_upgrading, online, sys_monitor_start,
sys_monitor_end, chassis_control_start, chassis_control_end]
    "result": string // [ success,
fail_atris_family,
fail_invalid_data,
fail_firmware_upgrading,
fail_imx_upgrading,
fail_no_download,
fail_downloading,
fail_no_found_tar,
fail_untar,
fail_no_found_swu,
fail_no_found_swu_md5,
fail_check_md5,
fail_unknown,
fail_do_upgrade_script]
```

```
}  
}
```

## 控制灯开关命令

---

- 上位机控制机器人上灯开关命令：

```
{  
  "title": "request_switch_light",  
  "accid": "abi账号",  
  "content": {  
    "id": string,  
    "timestamp": long,  
    "lamp": int, // 0:照明灯,1:红蓝爆闪灯  
    "switch": int // [0: 关, 1: 开]  
  }  
}
```

- 机器人回复灯开关响应：

```
{  
  "title": "response_switch_light",  
  "accid": "abi账号或机器人sn",  
  "content": {  
    "id": string,  
    "timestamp": long,  
    "result": string // [success,  
                        fail_no_bound,  
                        fail_other_bound,  
                        fail_invalid_data,  
                        fail_inner_error]  
  }  
}
```

## 获取灯开关状态

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- 上位机获取机器人上灯开关状态命令：

```
{  
  "title": "request_get_light_status",  
  "accid": "abi账号",  
  "content": {  
    "id": string,  
    "timestamp": long  
  }  
}
```

- 机器人回复灯开关状态响应:

```
{
  "title": "response_get_light_status",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "w_light": int, //[0: 关, 1: 开]照明灯
    "rb_light": int, //[0: 关, 1: 开]红蓝爆闪灯
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 控制声波驱散开关

---

- 上位机控制机器人声波驱散开关命令:

```
{
  "title": "request_sonic_disperse",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开]
  }
}
```

- 机器人回复声音驱散开关响应:

```
{
  "title": "response_sonic_disperse",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```



## 获取声波驱散开关状态

---

- 上位机获取机器人声波驱散开关状态命令：

```
{
  "title": "request_get_sonic_disperse_status",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复灯开关状态响应：

```
{
  "title": "response_get_sonic_disperse_status",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int, // [0: 关, 1: 开]
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 同步宣传文件给机器人

---

- 上位机控制机器人同步宣传文件给机器人命令：

```
{
  "title": "request_music_transport",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "list": [
      {
        "name": string, // 同步文件名, 如test.mp3
        "url": string // 基于http服务链接mp3文件下载地址,
                      // 如http://xx/test.mp3
      }
    ]
  }
}
```

- 机器人回复同步宣传文件响应:

```
{
  "title": "response_music_transport",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "url": string, // 基于http服务链接mp3文件下载地址,
                  // 如http://xx/test.mp3
    "name": string, // 同步文件名, 如test.mp3
    "type": "music", // [music]
    "progress": float, // 0~100
    "status": string, // [started, downloading, finished]
    "result": string // [success,
                      fail_download_error,
                      fail_no_bound,

                      fail_out_limits,
                      fail_other_bound,
                      fail_invalid_data]
  }
}
```

## 重命名宣传播报文件

- 上位机控制机器人重命名宣传播报文件命令:

```
{
  "title": "request_music_rename",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "name": string,
    "rename": string
  }
}
```

- 机器人回复重命名宣传播报文件响应:

```
{
  "title": "response_music_transport",
  "accid": "abi账号或机器人sn",
  "result": string // [success,
                    fail_no_bound,
                    fail_other_bound,
                    fail_invalid_data]
}
```

## 删除宣传播报文件

- 上位机设置机器人删除宣传播报文件命令：

```
{
  "title": "request_music_remove",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "list": ["test1.mp3", "test2.mp3"] //需要删除的宣传文件列表
  }
}
```

- 机器人回复删除宣传播报文件命令：

```
{
  "title": "response_music_remove",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 获取宣传播报文件列表

- 上位机设置机器人获取宣传播报文件列表命令：

```
{
  "title": "request_music_list",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复获取宣传播报文件列表命令：

```
{
  "title": "response_music_list",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "list": ["test1.mp3", "test2.mp3", "test3.mp3"],
    "result": string // [success,
                        fail_no_bound,
```

```

fail_other_bound,

fail_invalid_data,
fail_inner_error]

}

}

```

## 播放宣传播报文件

- 上位机控制机器人播放宣传播报1文件命令：

```

{
  "title": "request_music_play",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "action": string, // [play, pause, resume, stop]
    "mode": string, // [recycle, recycle_no]
    // action为pause, resume, stop时mode可以为空
    "play_interval": int // 播报间隔,单位秒,最大3600s,默认为0s
    "play_list": ["test1.mp3", "test2.mp3"]
    // action为pause, resume, stop时play_list可以为空
  }
}

```

- 机器人回复播放宣传播报文件响应：

```

{
  "title": "response_music_play",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "name": string,
    "action": string,
    "position": long, // milliseconds
    "duration": long, // milliseconds
    "status": string, // action为play时status赋值为:
    // [started, playing, finished]
    "result": string // [success,
    fail_voice_chated,
    fail_play_error,
fail_no_play,
    fail_invalid_data,
    fail_no_bound,
    fail_other_bound]
  }
}

```

## 设置宣传播报间隔

- 上位机设置机器人宣传播报间隔命令：

```
{
  "title": "request_set_play_interval",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "play_interval": int // [0~3600秒]
  }
}
```

- 机器人回复设置机器人宣传播报间隔命令：

```
{
  "title": "response_set_play_interval",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "list": ["test1.mp3", "test2.mp3", "test3.mp3"],
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 获取获取宣传播报间隔

- 上位机获取机器人宣传播报间隔：

```
{
  "title": "request_get_play_interval",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复获取机器人宣传播报间隔命令：

```
{
  "title": "response_music_list",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "play_interval": int // [0~3600秒],
    "result": string // [success,
```

```

        fail_no_bound,
        fail_other_bound,

        fail_invalid_data,
        fail_inner_error]
    }
}

```

## 控制机器人移动命令

- 上位机控制机器人移动命令：

```

{
  "title": "request_robot_move",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "v_linear": float, //浮点数0~1 m/s, 正数向前, 负数向后
    "v_angular": float //浮点数0~1 m/s    正数向左, 负数向右
  }
}

```

- 机器人回复控制机器人移动命令：

```

{
  "title": "response_robot_move",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [on_gs_ctrl, on_rf_ctrl]
    //正在被导航控制, 正在被遥控器控制, PC控制时不回复
  }
}

```

## 设置机器人行驶速度

- 上位机设置机器人行驶速度命令：

```

{
  "title": "request_set_speed",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "speed": float
  }
}

```

- 机器人回复设置行驶速度命令：

```

{
  "title": "response_set_speed ",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error]
  }
}

```

## 读取机器人音频音量

- 上位机读取机器人音频音量命令：

```

{
  "title": "request_get_volume",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}

```

- 机器人回复读取音频音量命令：

```

{
  "title": "response_get_volume",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "volume": int, // [0~100]
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound]
  }
}

```

## 设置机器人音频音量

- 上位机设置机器人音频音量命令：

```
{
  "title": "request_set_volume",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "volume": int // [0~100]
  }
}
```

- 机器人回复设置音频音量命令：

```
{
  "title": "response_set_volume",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound]
  }
}
```

## 设置云台旋转抓拍

- 上位机设置机器人的云台旋转抓拍命令：

```
{
  "title": "request_start_rotate_camera",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
    "interval": int, //旋转抓拍的频率，毫秒
    "verticalangel": int,
    "horizontalangel": int,
    "defaultpoint": int //旋转抓拍开始的预置点
  }
}
```

- 机器人回复云台旋转抓拍命令：



```

{
  "title": "response_start_rotate_camera",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
fail_other_bound,
                        fail_inner_error]
  }
}

```

## 停止云台旋转抓拍

- 上位机机器人停止云台旋转抓拍：

```

{
  "title": "request_stop_rotate_camera",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}

```

- 机器人回复停止云台旋转抓拍命令：

```

{
  "title": "response_stop_rotate_camera",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
fail_other_bound,
                        fail_inner_error]
  }
}

```

## 云台旋转抓拍状态查询

- 上位机查询机器人云台旋转抓拍状态：

```
{
  "title": "request_rotate_camera_status",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复云台旋转抓拍状态：

```
{
  "title": "response_rotate_camera_state",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "status": int, // 0: 未开始, 1: 旋转抓拍中
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
fail_other_bound,
                        fail_inner_error]
  }
}
```

## 设置TTS播报语言

- 上位机设置机器人TTS播报语言：

```
{
  "title": "request_set_tts_language",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "language": int // 0: 中文; 1: 英文
  }
}
```

- 机器人回复设置TTS播报语言命令：

```
{
  "title": "response_set_tts_language",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [ success,
                        fail_invalid_data]
  }
}
```



## 开始TTS播报

- 上位机设置机器人开始TTS播报命令：

```
{
  "title": "request_tts_play_start",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "text": string, // 中文或者英文播报文字
    "loop": int, // 1: 循环播报; 0: 单次播报
    "interval": int // 单位秒, 循环播报间隔
  }
}
```

- 机器人回复设置开始TTS播报命令：

```
{
  "title": "response_tts_play_start",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [ success,
                      fail_invalid_data]
  }
}
```

## 停止TTS播报

- 上位机设置机器人停止TTS播报命令：

```
{
  "title": "request_tts_play_stop",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复停止TTS播报命令：

```
{
  "title": "response_tts_play_stop",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [ success,
                      fail_invalid_data]
  }
}
```

## 获取机器人完整信息

- 上位机获取机器人完整信息命令：

```
{
  "title": "request_robot_info",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复完整信息命令：

```
{
  "title": "response_robot_info",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string,
    "robot_info": {
      "base": {
        "binded": string, // abi账号, 没有绑定则为空
        "company": string, // 企业名
        "sn": string, // 机器人sn
        "run_mode": int, //运行模式 0空闲,1任务模式、2紧急定位模式、3后台遥控模式（标注出当前获取控制权的账号）、4手持遥控模式,5低电量返航模式,6空闲返航模式
        "worktime": string //hh:mm:ss
        "machine_status": //0:空闲,1:待机模式
      },
      "4g": {
        "error": int, // -1: 设备异常; 0: 正常
        "level": int // 信号强度值
      },
      "doublecom": {
        "level": int //多倍通信号状态 0~3 0:无信号(level>-87dbm),1:(-80dbm<level <=-87dbm) 2:(-73dbm<level<=-80dbm) 3:(-73dbm<=level)
      },
      "navigation": {
        "navtype": int, // [0=空闲, 1=巡逻, 2=导航到点, 3=普通返回, 4=低电量返回 5=自动巡逻]
        "nav_status": int, //[0=空闲,1=运行,2=暂停]
        "ao_mode": int // 避障模式设定 0: 绕行避障 1: 原地等待
      }
    },
    "battery": { // 电池
      "alarm": int, //其他告警信息 0-无; 1级: 严重; 2级: 轻微
      "bat_num": int, //电池串数
      "charge_cnt": int, // 充电次数, ΔSOC≥10则
        // 认为充电一次
      "cstatus": int, // 电流告警信息
      "current": int, // 电池电流
      "discharge_cnt": int, // 放电次数, ΔSOC≥10则
        // 认为放电一次
      "health": int, //健康度: %
    }
  }
}
```

```

        "level": int, //电量信息 单位：%
        "relay_status": int, //继电器状态, 0-断开, 1-吸合
        "status": int, // 电池充放电状态: 0:空闲 1:充电 2:放电 4:满充
        "temp_max": int, // 电池最高温度,单位 ℃
        "temp_min": int, // 电池最低温度,单位 ℃
        "tstatus": int, // 温度告警信息
        "voltage": int, // 电池电压
        "vstatus": int, // 电压告警信息
        "error":int //0 正常, 1: 高温, 2,电流异常, 3,电压异常, 4健康异常
    },
    "brake": { 急停
        "button": int, // 急停按钮状态 0: 未按下 1: 按下
        "charge": int, //行程开关状态0:弹起 1:按下
        "charge_bumper": int, // 充电防撞条状态 0: 未触发
// 1: 触发
        "front_bumper": int, // 前防撞条状态 0: 未触发
// 1: 触发 2:异常或未接
        "rear_bumper": int, // 后防撞条状态 0: 未触发
// 1: 触发 2:异常或未接
        "front_bumper_type": string, //前防撞条类型:
// "normally_open": 常开防撞条
"normally_closed": 常闭防撞条
        "rear_bumper_type": string // 后防撞条类型:
// "normally_open": 常开防撞条
"normally_closed": 常闭防撞条
        "control": { // 急停控制输出
            "CMotor_brake" : int, // 软刹车: 0: 未刹车,
// 1: 刹车
            "CEmergency_brake": int, // 履带急停状态:
// 0: 正常, 1: 急停
            "W_software_brake": int // 轮式急停状态:
// 0: 正常, 1: 急停
        },
        "source": { // 急停触发源
            "reboot": int, // 重启触发急停:
// 0: 正常, 1: 急停
            "front_bumper": int, // 前防撞条触发急停:
// 0: 正常, 1: 急停
            "rear_bumper": int, // 后防撞条触发急停: // 0: 正常,
1: 急停
            "charge_bumper": int, // 充电桩触发急停:
// 0: 正常, 1: 急停
            "charge": int, // 充电枪触发急停:
// 0: 正常, 1: 急停
            "can": int, // 上位机触发急停:
// 0: 正常, 1: 急停
            "iap": int, // 升级触发急停急停:
// 0: 正常, 1: 急停
            "button": int, // 急停按钮触发急停:
// 0: 正常, 1: 急停
        }
    },
    "camera": { // 云台
        "nvr_ip": string, // 四路摄像头ip地址(1代有效)
        "ptz_ip": string, // 云台ip地址
        "pan_angle": float, //云台水平角度
        "tilt_angle": float, //云台垂直旋转角度
        "zoom_value": float, //放大倍数,1~32

```

常

良好

```
"light_status":int, //0 关闭,1:开启
"wiper_status":int , //0 关闭,1:开启
"status": int, //旋转抓拍 0: 未开启; 1: 开启
"error": int //0:正常, 1:异常。网络能够ping通即为正常, 否则为异常
},
"charge": { // 回充状态
    "bluetooth": 0, // 蓝牙 0: 未配对; 1: 配对成功
    "electrodes_status": 0, //电极片状态状态值 // 0:未接触 1:接触

    "electrodes_voltage": 0, //电极片检测电压
    "switch": 0 //行程开关状态值 0:弹起 1:按下
},
"chassis_driver": { // 底盘驱动器
    "bat_voltage": int, // 电池电压
    "bat_current": int, // 电池电流
    "error": int, // 诊断错误信息: 0 正常
        // 1故障 (bit0: 过热 bit1: 过压
        // bit2: 欠压 bit3: 短路
        // bit4: 紧急停止, 需断电再启动
        // bit5: Sepex励磁故障
        // bit6: MOSFET故障
        // bit7: 启动配置故障)
    "motor_current": int, // 电机电流
    "temp_ic": int, // ic 温度
    "temp_motor_left": int, // 左电机温度
    "temp_motor_right": int, // 右电机温度
    "type": string // 底盘类型 J: 极创 M: 玛西尔
},
"disperse": { // 声波驱散
    "status": int // 1: 开, 0: 关
},
"fan": { // 风扇异常信息
    "bottom": {
        "error": int, // 0:正常
            // 1: 异常 bit0-风扇1 bit1-风扇2
            // bit2-风扇3 bit3-风扇4
        "speed_in": int, // 0: 关闭, 1~3: 风扇进风挡数
        "speed_out": int // 0: 关闭, 1~3: 风扇出风挡数
    },
    "middle": {
        "error": int, // 0:正常
            // 1: 异常 bit0-风扇1 bit1-风扇2
            // bit2-风扇3 bit3-风扇4
        "speed_in": int, // 0: 关闭, 1~3: 风扇进风挡数
        "speed_out": int // 0: 关闭, 1~3: 风扇出风挡数
    }
},
"gps": { // gps
    "error": int, // -1 设备故障; 0 正常; 1精度太差
    "alti": string, // 海拔
    "lati": string, // 纬度
    "long": string // 经度
},
"imu":{
    "error":int // -1: 异常, 0: 正常
},
"ads":{
```

```

        "error":int //-1: 异常,0:正常
    },
    "gyro": { // 陀螺仪
        "error": int // -1 通信异常; 0正常;
                // 1 设备异常; 2 数据不可用
    },
    "intercom": { //语音对讲
        "status": int //语音对讲 0: 关 1: 开
    },
    "light": { //灯组状态
        "rb_status": int, //爆闪灯 0: 关 1: 开
        "w_status": int //照明灯 0: 关 1: 开
    },
    "main_lidar": { // 主雷达
        "error": int // -1: 设备异常 0:正常
    },
    "odom": { // 里程计
        "error": int, // -1 通信异常; 0 正常 1 数据不可用
        "odo": float, //总里程, 单位: m
        "speed_linear": float, // 前进后退速度 m/s,
                        // 正数: 前进, 负数: 后退
        "speed_theta":float // 左/右弯速度 m/s,
                        // 正数: 左, 负数: 右
    },
    "patrol": { // 巡逻状态
        "status": int // 1: 巡逻中 0: 未巡逻
    },
    "power": { // 电源通电状态, 0未通电 1通电
        "disperse": int, //
        "fan_in": int,
        "fan_out": int,
        "gps": int,
        "gs": int,
        "imx": int,
        "ks106": int,
        "ks136": int,
        "m_fan_in": int,
        "m_fan_out": int,
        "main_lidar": int,
        "netswitch": int,
        "slave_lidar": int,
        "yuntai": int
    },
    "ppplay": { //宣传播报
        "duration": int, //播报文件时长
        "interval": int, //播报间隔
        "name": string, //宣传文件名称
        "pts": int, //当前播报时间点
        "status": int // 0空闲; 1 播放; 2 暂停; 3等待
    },
    "sensor_hall": { // 霍尔电流传感器
        "hall1": int, // 24v 供电模块电流
        "hall2": int, // 12v 供电模块电流
        "hall3": int// 12v 供电模块电流
    },
    "sensor_liquid": { // 液体传感器
        "status": int // 0未浸水 1浸水
    },

```



```

"slave_lidar": { // 副雷达
    "error": int // -1 通信异常 0正常
},
"speed": { // 机器人速度
    "value": float // 单位m/s
},
"temp_humi": { // 温湿度传感器
    "gaussian": float, //
    "humi_env": float, //湿度值单位: 0.1%RH
    "imx": float, // imx 板温度
    "kuangshi": float, // 旷世盒子温度
    "motor_left": int, // 左电机温度
    "motor_right": int, // 右电机温度
    "temp_env": float // 壳体温度
},
"ultrasound": { //超声
    "data": [1120, 738, 546, 546,
              546, 546, 283, 546], //数据 单位cm
    "error": int // -1 通信异常: 0正常
},
"upgrade": { //升级状态
    "status": int // 1 升级中; 0未升级
},
"version": { // 软件版本信息
    "battery_monitor": string, //电池监控板
    "bms": string, // bms版本信息
    "gs": string, // 高仙固件版本
    "imx": string, //主控板版本
    "power": string//电源板固件版本
},
"volume": { //静音、音量
    "muted": int, // 0:静音关 1: 静音开
    "value": int //音量 0~100
}
"voip":{ //voip 属性
    "switch":int, //0:关闭 1: 开启
    "volume": int // 音量[1~9]
}
}
}
}

```

- 机器人回复开始巡逻命令：

```
{
  "title": "response_switch_patrol",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int, //[0: 关, 1: 开/恢复, 2:暂停]
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 获取机器人巡逻状态命令

- 上位机获取机器人巡逻状态命令：

```
{
  "title": "request_get_patrol_status",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
  }
}
```

- 机器人回复控制机器人开始巡逻命令响应：

```
{
  "title": "response_get_patrol_status",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int, //[0: 关, 1: 开/恢复, 2:暂停]
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 删除机器人地图

- 上位机删除机器人地图命令：

```
{
  "title": "request_del_map",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "name": ["map1", "map2"] //需要删除的地图列表
  }
}
```

- 机器人回复删除机器人地图命令：

```
{
  "title": "response_del_map",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "name": ["map1", "map2"], //删除成功的地图列表
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error,
                        map_not_exist]
  }
}
```

## 设置机器人地图

- 上位机设置机器人地图命令：

```
{
  "title": "request_set_map",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "name": string
  }
}
```

- 机器人回复设置地图命令：

```
{
  "title": "response_set_map",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error,
```

```

        map_not_exist]
    }
}

```

## 同步机器人地图

- 上位机同步机器人地图命令：

```

{
    "title": "request_sync_map",
    "accid": "abi账号或机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "maps": [
            {
                "name": "map1",
                "url": "http://video.ubtrobot.com/[md5].map"
            }
        ]
    }
}

```

- 机器人回复同步地图命令：

```

{
    "title": "response_sync_map",
    "accid": "abi账号或机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "name": string,
        "url": "http://video.ubtrobot.com/[md5].mp3",
        "type": "music", // [music],
        "progress": float, // 0~100
        "status": string, // [started, downloading,
        finished, fail_upload]
        "result": string // [ success,
                                fail_no_bound,
                                fail_download_error ,
                                fail_invalid_data,
                                fail_other_bound,
                                fail_inner_error]
    }
}

```

## 重命名机器人地图

- 上位机设置机器人重命名地图命令：

```
{
  "title": "request_rename_map",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "name": string,
    "newname": string
  }
}
```

- 机器人回复重命名地图命令：

```
{
  "title": "response_rename_map",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error,
                        map_not_exist]
  }
}
```

## 获取机器人地图列表

- 上位机获取机器人地图列表命令：

```
{
  "title": "request_get_maps",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复获取地图列表命令：

```
{
  "title": "response_get_maps",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "map_using": string,
    "maps": string[map1,map2,map3...],
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
```

```

        fail_inner_error,
        map_not_exist]
    }
}

```

## 下载机器人地图

- 上位机发送下载机器人地图命令：

```

{
    "title": "request_load_map",
    "accid": "abi账号",
    "content": {
        "id": string,
        "timestamp": long,
        "maps": string[map1,map2,map3...]
    }
}

```

- 机器人回复下载地图命令：

```

{
    "title": "response_load_map",
    "accid": "abi账号或机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "maps": [
            { "name": string
              "url": string
            },
            ...
            { "name": string
              "url": string
            }
        ],
        "url": string,
        "result": string // [success,
                             fail_no_bound,
                             fail_download_error ,
                             fail_invalid_data,
                             fail_other_bound,
                             fail_inner_error]
    }
}

```

## 获取地图位置信息命令

- 上位机获取机器人地图位置信息命令：

```
{
  "title": "request_robot_pose",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
  }
}
```

- 机器人回复获取地图位置信息响应：

```
{
  "title": "response_robot_pose",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "x": Float,
    "y": Float,
    "z": Float,
    "theta": Float,
    "result": string // [success,
                        fail_no_bound,
                        fail_other_bound,
                        fail_invalid_data,
                        fail_inner_error,
                        not_located]
  }
}
```

## 一键回到出发点

- 上位机设置机器人一键返回命令：

```
{
  "title": "request_return",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开/恢复, 2: 暂停]}
  }
}
```

- 机器人回复设置机器人一键返回命令：

```
{
  "title": "response_return",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开/恢复, 2: 暂停]
    "result": string // [success,
                        fail_no_bound,
```

```

        fail_invalid_data,
        fail_other_bound,
        fail_inner_error,
        map_not_exist]
    }
}

```

## 机器人自动巡逻

- 上位机控机器人自动巡逻命令：

```

{
  "title": "request_auto_patrol_enable",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "enable": [0/1]
  }
}

```

- 机器人回复自动巡逻命令：

```

{
  "title": "response_auto_patrol_enable",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_download_error ,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}

```

## 获取机器人上的巡逻方案

- 上位机获取机器人巡逻方案命令：

```

{
  "title": "request_get_scheme",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "mapname": string
  }
}

```

- 机器人回复获取巡逻方案命令：

```

{

```



```

        "title": "response_get_scheme",
        "accid": "abi账号或机器人sn",
        "content": {
            "id": string,
            "timestamp": long,
            "url": string, //长度为0表示没有巡逻方案
            "result": string // [success,
                                fail_no_bound,
                                fail_download_error ,
                                fail_invalid_data,
                                fail_other_bound,
                                fail_inner_error]
        }
    }
}

```

## 删除机器人上的巡逻方案

- 上位机删除机器人上的巡逻方案命令：

```

{
    "title": "request_del_scheme",
    "accid": "abi账号",
    "content": {
        "id": string,
        "timestamp": long,
        "mapname": string,
        "schemename": string
    }
}

```

- 机器人回复删除巡逻方案命令：

```

{
    "title": "response_del_scheme",
    "accid": "abi账号或机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "result": string // [success,
                            fail_no_bound,
                            fail_download_error ,
                            fail_invalid_data,
                            fail_other_bound,
                            fail_inner_error]
    }
}

```

## 机器人设置巡逻方案

- 上位机控制机器人设置巡逻方案命令：

```
{
  "title": "request_set_scheme",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "mapname": string,
    "schemename": string
  }
}
```

- 机器人回复设置巡逻方案命令：

```
{
  "title": "response_set_scheme",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_download_error ,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}
```

## 机器人导航定位

- 机器人导航定位：

```
{
  "title": "request_auto_patrol_enable",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int, // [0取消/1开始定位]
    "type": int, // 定位类型[0:不转圈定位, 1:转圈定位, 2:自定义定位]
    "name": string, //定位点名称
    "angle": float,
    "x": int,
    "y": int
  }
}
```

- 机器人回复导航定位命令：

```
{
  "title": "response_auto_patrol_enable",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
```

```

        "switch": int, // [0取消/1开始定位]
        "x": int,
        "y": int,
        "angle": float,
        "state": int,
        "result": string // [success,
                                fail_no_bound,
                                fail_download_error ,
                                fail_invalid_data,
                                fail_other_bound,
                                fail_inner_error]
    }
}

```

## 定点导航

- 上位机发送点导航请求命令：

```

{
    "title": "request_nav_to",
    "accid": "abi账号",
    "content": {
        "id": string,
        "timestamp": long,
        "angle": float,
        "x": int,
        "y": int,
        "switch": int //[0: 关, 1: 开/恢复, 2:暂停]
    }
}

```

- 机器人回复发送点导航请求命令：

```

{
    "title": "response_nav_to",
    "accid": "abi账号或机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "switch": int, //[0: 关, 1: 开/恢复, 2:暂停]
        "result": string // [success,
                                fail_no_bound,
                                fail_download_error ,
                                fail_invalid_data,
                                fail_other_bound,
                                fail_inner_error]
    }
}

```

## 上报导航错误状态信息

- 机器人上报导航错误状态信息：

```

{
  "title": "response_state",
  "accid": "abi账号或机器人sn",
  "content": {
    "navtype": int, // [1=巡逻, 2=导航到点, 3=普通返回,
                    4=低电量返回 5=自动巡逻]
    "reason": string, //信息内容
    "state": int//是错误信息, 正常信息标识位, -1: 错误, 0:正常
  }
}

```

## 机器人上报导航状态以及位置等信息

- 机器人上报导航状态以及位置等信息：

```

{
  "title": "response_nav_state",
  "accid": "abi账号或机器人sn",
  "content": {
    "x": int,
    "y": int,
    "angle": float,
    "state": int,
    "navtype": int
    // [1=巡逻, 2=导航到点, 3=普通返回, 4=低电量返回
    // 5=自动巡逻 6=回充 7=定位]
  }
}

```

## 上报自动回充电量

- 机器人上报自动回充电量：

```

{
  "title": "response_nav_state",
  "accid": "abi账号或机器人sn",
  "content": {
    "battery": int,
    "result": string // [success,
                       fail_no_bound,
                       fail_invalid_data,
                       fail_other_bound,
                       fail_inner_error]
  }
}

```

## 一键让机器人返回充电

- 上位机设置一键让机器人返回充电命令：

```
{
  "title": "request_recharge",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开/恢复, 2:暂停]}
}
```

- 机器人回复一键让机器人返回充电命令：

```
{
  "title": "response_recharge",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开/恢复, 2:暂停]
    "result": string //[ success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}
```

## 获取机器人日志

- 上位机获取机器人日志命令：

```
{
  "title": "request_mcb_log",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复获取机器人日志命令：

```
{
  "title": "response_mcb_log",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "url": string,
    "result": string // [ success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}
```

```
}
```

## 机器人紧急制动

- 上位机设置机器人紧急制动命令：

```
{
  "title": "request_emergency_stop",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 急停关闭, 1: 急停打开]
  }
}
```

- 机器人回复紧急制动命令：

```
{
  "title": "response_emergency_stop",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int, //急停状态[0: 急停关闭, 1: 急停打开]
    "result": string // [ success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
} a
```

## 摇晃机器人

- 上位机设置摇晃机器人命令：

```
{
  "title": "request_shake_down",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复摇晃命令：

```
{
  "title": "response_shake_down",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
```

```

        fail_already_shaked,
        fail_no_bound,
        fail_invalid_data,
        fail_other_bound,
        fail_inner_error]
    }
}

```

## 摇醒机器人

- 上位机设置摇醒机器人命令：

```

{
    "title": "request_shake_up",
    "accid": "abi账号",
    "content": {
        "id": string,
        "timestamp": long
    }
}

```

- 机器人回复摇醒命令：

```

{
    "title": "response_shake_up",
    "accid": "abi账号或机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "result": string // [success,
                           fail_no_shaked,
                           fail_no_bound,
                           fail_invalid_data,
                           fail_other_bound,
                           fail_inner_error]
    }
}

```

## 摇毙机器人

- 上位机设置摇毙机器人命令：

```

{
    "title": "request_shake_die",
    "accid": "abi账号",
    "content": {
        "id": string,
        "timestamp": long
    }
}

```

- 机器人回复摇毙命令：

```

{
  "title": "response_shake_die",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}

```

## 设置voip设备属性

- 上位机设置机器人voip设备属性命令：

```

{
  "title": "request_set_voip_attributes",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "volume": int // 音量[1~9]
  }
}

```

- 机器人回复设置voip设备属性命令：

```

{
  "title": "response_set_voip_attributes",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}

```

## 获取voip设备属性

- 上位机获取机器人voip设备属性命令：



```
{
  "title": "request_get_voip_attributes",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "volume": int // 音量[1~9]
  }
}
```

- 机器人回复获取voip设备属性命令：

```
{
  "title": "response_get_voip_attributes",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "volume": int, // 音量[1~9]
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}
```

## 上传底库imsi文件

- 上位机设置机器人上传底库imsi文件命令：

```
{
  "title": "request_imsi_file_transport",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "list": [
      {
        "name": " ",
        "url": "http://video.ubtrobot.com/test.xlsx"
      }
    ]
  }
}
```

- 机器人回复上传底库imsi文件命令：

```
{
  "title": "response_imsi_file_transport",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "url": "http://video.ubtrobot.com/test.xlsx",
  }
}
```

```

        "name": "test.xlsx",
        "progress": float, // 0~100
        "status": string, // [started, downloading, finished]
        "result": string // [ success,
                                fail_download_error,
                                fail_no_bound,
                                fail_out_limits,
                                fail_other_bound,
                                fail_invalid_data]
    }
}

```

## 获取检测imsi文件地址

- 上位机获取机器人检测imsi文件地址命令：

```

{
    "title": "request_get_detection_imsi_file_url",
    "accid": "abi账号",
    "content": {
        "id": string,
        "timestamp": long
    }
}

```

- 机器人回复获取检测imsi文件地址命令：

```

{
    "title": "response_get_detection_imsi_file_url",
    "accid": "abi账号或机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "url": string,
        "result": string // [success,
                                fail_no_bound,
                                fail_invalid_data,
                                fail_other_bound,
                                fail_inner_error]
    }
}

```

## 通用CAN指令协议

- 上位机发送CAN指令：

```

{
  "title": "request_can_command",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "channel": int,
    "size": int, // size: ≥1 && ≤8
    "data": [] // 数据格式[cmd, data0, data1, data2, data3, data4,
data5, data6]
  }
}

```

- 机器人回复CAN指令处理结果：

```

{
  "title": "response_can_command",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}

```

## 获取机器人上的巡逻方案列表

- 上位机获取机器人巡逻方案列表命令：

```

{
  "title": "request_get_schedule_list",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "mapname": string
  }
}

```

- 机器人回复获取巡逻方案列表命令：

```

{
  "title": "response_get_schedule_list",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "schedules": [
      "schedule1_name", "schedule2_name", ...
    ]
    "result": string // [success,

```

```

fail_no_bound ,
fail_invalid_data,
fail_other_bound,
fail_inner_error]

    }
}

```

## 获取机器人上的巡逻方案（报文格式）

- 上位机获取机器人巡逻方案命令：

```

{
  "title": "request_get_schedule",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "mapname": string,
    "schedule_name": string
  }
}

```

- 机器人回复获取巡逻方案命令：

```

{
  "title": "response_get_schedule",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "schedule_data": {
      巡逻方案具体内容(单一方案)
    },
    "result": string // [success,
                        fail_no_bound ,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}

```

## 同步巡逻方案

(报文格式) 到机器人(目前采取全量同步方式)

- 上位机同步巡逻方案命令：

```
{
  "title": "request_sync_schedule",
  "accid": "abi账号",
  "content": {
    "id": string,
    "timestamp": long,
    "mapname": string
    "schedule_data": {
      巡逻方案具体内容(如果有多个方案, 则多个方案都包含进来)
    }
  }
}
```

- 机器人回复同步巡逻方案命令:

```
{
  "title": "response_sync_schedule",
  "accid": "abi账号或机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_no_bound ,
                        fail_invalid_data,
                        fail_other_bound,
                        fail_inner_error]
  }
}
```

版本变更:

2020.9.11

1.地图上传接口保持和一代一样。

2020.9.3

1.点位信息和一键返航去除charge点, charge点不从后台获取, 机器人直接从导航供应商获取。

2.增加返航结束主动响应告知后台

2020.9.3

1.新增任务(暂停、终止)超时通知接口。

2020.9.2

1.巡检过程上报(notify\_task\_status)下的"taskStatus"字段 新增一个"pause"状态。

2.新增实时监控页面部分协议: 控制机器人任务模式命令、一键返航、紧急定位。

3.点位信息里增加一个位置点的id(该id来源于导航供应商接口)

TODO:

- 1、任务模板的点位修改后的下发
- 2、模板对应的单次任务的点位信息修改下发

- 3、后台提供查看获取巡检任务是否修改的api
  - 4、开机从后台获取要使用哪张地图（后台提供）
  - 5、主动上报消息接口（1.位置信息 2.gps信息 3.诊断信息 4.事件信息（遥控模式....））
  - 6、机器上报排序后的巡检点点集给后台
  - 7、机器上报全局规划路径的点集给后台
  - 8、部署工具通知机器人上传地图至后台
- 

## 云台运动控制

---

- 上位机发送云台运动控制指令：

```
{
  "title": "request_ptz_move_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "direction": int // [0,1,2,3] up/down/left/right
  }
}
```

- 机器人回复云台运动控制处理结果：

```
{
  "title": "response_ptz_move_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                      fail_invalid_data,
                      fail_inner_error]
  }
}
```

## 云台停止运动控制

---

- 上位机发送云台停止运动控制指令：

```
{
  "title": "request_ptz_stop_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
  }
}
```

- 机器人回复云台停止运动控制处理结果：

```
{
  "title": "response_ptz_stop_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 云台抓拍

---

- 上位机发送云台抓拍指令：

```
{
  "title": "request_ptz_capture",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
  }
}
```

- 机器人回复云台抓拍处理结果：

```
{
  "title": "response_ptz_capture",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "visible_light_url" : string, // 可见光 图片文件
    名"202011111111111111.jpg"
    "infrared_url" : string,      // 红外光 图片文件
    名"202011111111111111.bmp" 或"202011111111111111_ir.jpg"
    "result": string // [success,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 云台变焦

---

- 上位机发送云台变焦指令：

```
{
  "title": "request_ptz_focus_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "operation": int // [0,1] add/dec
  }
}
```

- 机器人回复云台变焦处理结果：

```
{
  "title": "response_ptz_focus_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                      fail_invalid_data,
                      fail_inner_error]
  }
}
```

## 云台变倍

---

- 上位机发送云台变倍指令：

```
{
  "title": "request_ptz_zoom_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "operation": int // [0,1] add/dec
  }
}
```

- 机器人回复云台变倍处理结果：

```
{
  "title": "response_ptz_zoom_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                      fail_invalid_data,
                      fail_inner_error]
  }
}
```



## 云台录制

- 上位机发送云台录制指令：

```
{
  "title": "request_ptz_record",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int // [0,1,2] 开始录制/结束录制/取消录制
  }
}
```

- 机器人回复云台录制处理结果：

```
{
  "title": "response_ptz_record",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "url" : string, // 录制的视频url
    "visible_light_video_url" : string, // 可见光
20201112111200000__rp.mp4
    "infrared_video_url" : string, // 红外20201112111200000__rp_ir.mp4
    "switch_ret": int // [0,1,2] 关/开/取消录制反馈
    "result": string // [success,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 回放列表上报

```
{
  "title": "notify_replay_video_list",
  "accid": "机器人SN",
  "content": {
    "id": string,
    "timestamp": long,
    "url_visiable": string, // 可见光视频 20201112111200000_rp.mp4
    "url_ir": string // 红外光视频20201112111200000__rp_ir.mp4
  }
}
```

## 云台雨刷控制

---

- 上位机发送云台雨刷控制指令：

```
{
  "title": "request_switch_ptz_wiper",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int // [0,1] 关/开
  }
}
```

- 机器人回复云台雨刷控制处理结果：

```
{
  "title": "response_switch_ptz_wiper",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                      fail_invalid_data,
                      fail_inner_error]
  }
}
```

## 云台补光灯控制

---

- 上位机发送云台雨刷控制指令：

```
{
  "title": "request_switch_ptz_light",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int // [0,1] 开始/停止
  }
}
```

- 机器人回复云台控制处理结果：

```
{
  "title": "response_switch_ptz_light",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 云台ptzf值请求

---

- 上位机发送云台ptzf值请求指令：

```
{
  "title": "request_ptz_param",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long
  }
}
```

- 机器人回复云台控制处理结果：

```
{
  "title": "response_ptz_param",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "pan": float, //水平绝对角度 [0 -- 360]
    "tilt": float, //垂直绝对角度[-90 -- 90]
    "zoom": int, //[1 - 32]
    "focus": unsigned int, //[0-100000] 聚焦参数
    "result": string // [success,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

## 机器人运动控制

---

- 上位机控制机器人运动命令：

```
{
  "title": "request_robot_move_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "operation": int // [0, 1, 2, 3, 4] 前进(w)/后退(s)/左转(a)/右转(d)/停止(stop)
  }
}
```

- 机器人回复控制机器人运动命令(异常时回复，正常不回复):

```
{
  "title": "response_robot_move_control",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [on_rf_ctrl] //正在被遥控器控制， web控制时不回复
  }
}
```

## 声音录制

- 上位机发送声音录制指令:

```
{
  "title": "request_sound_record",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int // [0,1,2] 关/开/取消录音
  }
}
```

- 机器人回复声音录制处理结果:

```
{
  "title": "response_sound_record",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "url" : string, // 录制声音文件的url
    "switch_ret": int // [0,1,2] 关/开/取消录音反馈
    "result": string // [success,
                      fail_invalid_data,
                      fail_inner_error]
  }
}
```

## 红外指定画面区域温度上报

---

- 下发指定区域起始坐标和终点坐标

```
{
  "title": "request_ptz_ir_temperature_info",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "start_point": {
      "x": float,
      "y": float
    },
    "end_point": {
      "x": float,
      "y": float
    }
  }
}
```

- 机器人回复控制机器人运动命令(异常时回复, 正常不回复):

```
{
  "title": "response_ptz_ir_temperature_info",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "temperature_max": float,
    "temperature_min": float,
    "temperature_ave": float,
    "temperature_diff": float,
    "result": string // [on_rf_ctrl] //正在被遥控器控制, web控制时不回复
  }
}
```

## 发起巡逻

---

- 上位机发送发起巡逻指令:

```
{
  "createTime": 1597137543411,
  "accid": "机器人sn",
  "messageId": "5fb4b6ce36a0437b914cfff4d172c9ed",
  "title": "request_new_task",
  "content": {
    "timestamp": 1597137530659,
    "id": "d69180e6acc34f7e827dbb4e3be731d7",
    "mapId": 100, //地图id
    "mapName": "", //地图名称
  }
}
```

```

        "schemeName": "变电站1全面巡检20200707105618", //巡逻方案名称
        "taskMouldId": 21, //任务模板id
        "taskType": "all", //执行任务类型:全面巡检 all, 例行巡检 routine,
        专项巡检 earmark, 特殊巡检 special
        "operationType": "now", //执行时间类型: now 立即, timing 定时, loop 周期
        "execTime": null, //‘按执行周期’类型执行时间, (timestamp格式)
        "execType": "", //‘按执行周期’执行类型: day每天, week每周, month
        每月
        "fixedTime": null //‘按固定日期’类型执行日期: (timestamp格式) 逗号分隔
        "intervalCount": "", //‘按间隔时间’类型循环次数
        "intervalDay": "", //‘按间隔时间’类型间隔天数
        "loopFlag": "", //周期循环类型: exec按执行周期, fixed按固定日期,
        interval按间隔时间
        "loopStartTime": null, //周期执行类型第一次执行的时间(timestamp格式)
        "nowStartTime": null, //立即执行类型执行时间(timestamp格式)
        "timingStartTime": null, //定时执行类型执行时间(timestamp格式)
        "schemes": "http://10.10.18.85:19000/udfs-server/stroage-
        01/2020/08/11/1597137463395Q9NeB.json" //巡逻方案点位文件
    }
}

```

## • 机器人回复发起巡逻结果:

```

{
  "accid": "机器人sn",
  "title": "response_new_task",
  "content": {
    "id": "38d009bc451248a48ccfd5583e07de66",
    "timestamp": long,
    "result": string // [success,
                        fail_invalid_data,
                        fail_inner_error,
                        fail_task_conflict]
  }
}

```

## • 下发巡逻样例

```

{
  "createTime": 1597137543411,
  "accid": "机器人sn",
  "messageId": "5fb4b6ce36a0437b914cfff4d172c9ed",
  "title": "request_new_task",
  "content": {
    "timestamp": 1597137530659,
    "id": "d69180e6acc34f7e827dbb4e3be731d7",
    "mapId": 100,
    "mapName": "",
    "schemeName": "变电站1全面巡检20200707105618",
    "taskMouldId": 21,
    "taskType": "all",
    "operationType": "now",
    "nowStartTime": 1597137531000,
    "schemes": "http://10.10.18.85:19000/udfs-server/stroage-
    01/2020/08/11/1597137463395Q9NeB.json"
  }
}

```

```
}  
}
```

- **schemes文件模板**

```
{  
  "pointInfo": [  
    {  
      "pointBaseId": 2961, //巡检点id(此id来源于后台)  
      "mapPointId": 1234, //位置点id(此id来源于导航系统)  
  
      "locationName": "11",  
      "locationX": "10",  
      "locationY": "100",  
      "locationOrientation": "110",  
  
      "cameraFoucs": 0,  
      "cameraHangle": 0,  
      "cameraVangle": 0,  
      "cameraZoom": 0,  
  
      "temperatureFramePoint": "a2"; //测温框选位置坐标  
      "deviceFramePoint": "a10"; //设备框位置坐标  
  
      "captureInfrared": false,  
      "captureVisibleLight": true,  
  
      "heatType": "current_heating_type",  
  
      "meterType": "gear_table",  
      "recognitionType": "infrared_thermometry",  
  
      "recordSound": false,  
      "recordVideo": false,  
  
      "saveType": "visible"  
    },  
    ...  
  ]  
}
```

- **巡检最优规划路径上报**

```
{  
  "title": "notify_optimal_path",  
  "accid": "机器人sn",  
  "content": {  
    "id": string,  
    "timestamp": long,  
    "path": [  
      {  
        "locationX": "100",  
        "locationY": "100",  
        "mapPointId": 123, //位置点id  
      },  
      {  

```

```

        "locationX": "10",
        "locationY": "100",
        "mapPointId": 1235, //位置点id
    },
    ....
]
}
}
```

- **机器位置实时上报**

```
{
  "title": "notify_robot_pose",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "locationX": "10000.01",
    "locationY": "100.02"
  }
}
```

## 删除巡逻任务

- **上位机发送删除巡逻任务指令：**

```
{
  "title": "request_remove_task",
  "accid": "DAA001UBT9000005",
  "content": {
    "id": "d208ac1ce6874bc5b0e433f159050260",
    "mapName": "",
    "taskMouldId": 21,
    "schemeName": "",
    "timestamp": 1594091188907
  }
}
```

- **机器人回复删除巡逻任务结果:**

```
{
  "accid": "机器人sn",
  "title": "response_remove_task",
  "content": {
    "id": "38d009bc451248a48ccfd5583e07de66",
    "timestamp": 1594091188907
    "result": string // [success,
                        fail_invalid_data,
                        fail_inner_error,
                        fail_no_task,
                        fail_task_running]
  }
}
```



# 状态上报

## • 巡检点状态上报

```
{
  "title": "notify_task_point_status",
  "accid": "DAX000UBT00000000",
  "content": {
    "id": "10001",
    "timestamp": 1594196285631,
    "mapName": "testMap",
    "schemeName": "变电站3全面巡检20200708161149",
    "taskType": "now",
    "taskMouldId": 21,
    "taskTimestamp": "1594195977000",

    "pointBaseId": null, //巡检点id
    "pointName": string, //巡检点名称

    "recognitionType": int, //识别类型: 1:红外测温+设备外观查看（可见光图片保存） 2: 表计读取 3:位置状态识别 4:设备外观查看（数据自动判断）5:设备外观查看（可见光图片保存）6:红外测温 7:声音检测
    "meterType": "", // 表计类型

    "meterResult": "", // 表计读取结果(TODO:考虑字符表/指针表/...等不同描述方式) "on" / "off" 开关位置状态结果 "30.444" // 红外测温结果
    "audioStatus": bool, // false: 异常 true: 正常
    "visiblePicUrl": "文件url地址", --可见光图片url
    "thermometryPicUrl": "60.1", --红外图片url
    "audioUrl": "60.1", --音频URL
    "videoUrl": "60.1" --视频url
  }
}
```

## • 巡检过程状态上报

```
{
  "title": "notify_task_status",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "mapName": string,
    "schemeName": string, //巡检任务方案名称
    "taskType": "",
    "taskMouldId": null,
    "taskTimestamp": "", //巡逻任务计划执行时间
    "taskStatus": string // "overdue", "running", "pause",
    "termination", "finish" // 超期、正在执行、暂停、终止、已执行完
  }
}
```

## 控制机器人任务模式命令

---

- 上位机控制机器人任务模式命令：

```
{
  "title": "request_switch_patrol",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int, //[0: 关, 1: 恢复, 2:暂停]
  }
}
```

- 机器人回复控制任务模式命令：

```
{
  "title": "response_switch_patrol",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string // [success,
                        fail_invalid_data,
                        fail_inner_error]
  }
}
```

- 机器人通知超时命令：

```
{
  "title": "notify_timeout_switch_patrol",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 2:暂停]
  }
}
```

## 一键返航

---

### 一键让机器人返回充电

---

- 上位机设置一键让机器人返回充电命令：

```
{
  "title": "request_return_recharge",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开/恢复, 2:暂停]}
}
```

- 机器人回复一键让机器人返回充电命令:

```
{
  "title": "response_return_recharge",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开/恢复, 2:暂停]
    "result": string //[ success、
                        fail_invalid_data,
                        fail_other_bound]
  }
}
```

## 紧急定位模式

- 上位机发送紧急定位模式请求命令:

```
{
  "title": "request_emergency_task",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开/恢复, 2:暂停]
    "PointInfo": {
      "locationX": "10",
      "locationY": "100",
      "locationOrientation": "110",
      "pointBaseId": 2961, //巡检点id
      "mapPointId": 1234, //位置点id(此id来源于导航系统)

      "cameraFoucs": 0,
      "cameraHangle": 0,
      "cameraVangle": 0,
      "cameraZoom": 0,

      "captureInfrared": false,
      "captureVisibleLight": true,
      "heatType": "current_heating_type",
      "meterType": "gear_table",
      "recognitionType": "infrared_thermometry",
      "recordSound": false,
    }
  }
}
```

```

        "recordVideo": false,
        "saveType": "visible"
    }
}

```

- 机器人回复发送紧急定位模式请求命令：

```

{
    "title": "response_emergency_task",
    "accid": "机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "switch": int, // [0: 关, 1: 开/恢复, 2: 暂停]
        "result": string // [success,
                           fail_invalid_data,
                           fail_inner_error]
    }
}

```

- 上位机同步机器人地图命令：

```

{
    "title": "request_sync_map",
    "accid": "机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "maps": [
            {
                "name": "map1",
                "url": "http://video.ubtrobot.com/[md5].map"
            }
        ]
    }
}

```

- 机器人回复同步地图命令：

```

{
    "title": "response_sync_map",
    "accid": "机器人sn",
    "content": {
        "id": string,
        "timestamp": long,
        "name": string,
        "url": "http://video.ubtrobot.com/[md5].mp3",
        "type": "map", // [map],
        "progress": float, // 0~100
        "status": string, // [started, downloading,
                           finished, fail_upload]
        "result": string // [ success,
                           fail_no_bound,

```

```

fail_download_error ,
fail_invalid_data,
fail_other_bound,
fail_inner_error]

    }

}

```

- 返航结束主动响应告知后台：

```

{
  "title": "notify_return_recharge",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long
  }
}

```

## 一键下桩

- 上位机设置一键让机器人下桩命令：

```

{
  "title": "request_leave_pile",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开]}
  }
}

```

- 机器人回复一键让机器人下桩命令：

```

{
  "title": "response_leave_pile",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "switch": int //[0: 关, 1: 开]
    "result": string //[ success、
                        fail_invalid_data]
  }
}

```

- 上下桩回充状态上报

```
{
  "title": "notify_udock_state",
  "accid": "机器人sn",
  "content": {
    "id": string,
    "timestamp": long,
    "state": int  [0 正在上桩
                  1 上桩成功
                  2 上桩失败
                  3 充电成功
                  4 充电失败
                  5 正在下桩
                  6 下桩成功
                  7 下桩失败]
  }
}
```

## 请求机器人休眠

- 向机器人发出休眠请求:

```
{
  "title": "request_robot_standby_mode",
  "accid": "机器人SN",
  "content": {
    "id": string,
    "timestamp": long,
  }
}
```

- 机器人响应休眠请求:

```
{
  "title": "response_robot_standby_mode",
  "accid": "机器人SN",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string [success,
                     fail_invalid_data,
                     ]
  }
}
```

## 唤醒机器人

- 向机器人发起唤醒请求

```
{
  "title": "request_robot_wake_up",
  "accid": "机器人SN",
  "content": {
    "id": string,
    "timestamp": long,
  }
}
```

- 响应唤醒请求

```
{
  "title": "response_robot_wake_up",
  "accid": "机器人SN",
  "content": {
    "id": string,
    "timestamp": long,
    "result": string [success,
                      fail_invalid_data,
                      ]
  }
}
```