**DDS HP热泵应用通信协议**

**V1.1**

# 概述

该文档为 DDS HP 热泵应用通信协议文档, 定义 DDS HP 和上位机应用(手机APP)之间的通信协议.

通信支持一问一答, 主动上报模式.

当前支持连接方式: UDP.

# UDP 连接

|  |  |  |
| --- | --- | --- |
| **项目** | **数值** | **说明** |
| 端口号 | 8101 | 默认UDP通信端口, 不可修改 |
| AP模式IP | 192.168.1.1 | AP模式通信IP地址, 不可修改 |
| Station 模式IP | \* | 通过DHCP 获取到的 IP地址, 需要应用端通过接口获取 |

# 通信协议

## 请求帧格式

|  |  |  |
| --- | --- | --- |
| **字段** | **数据类型** | **备注** |
| op | 字符串 | 命令 |
| seq | 整数 | 数据包序号, 配对请求/响应, 建议每条命令不同 |
| isAck | 整数 | 请求=0, 响应=1 |
| data | Json对象 | 可选数据体, 比如为操作所需的各种参数 |
| token | 字符串 | 服务端返回的token,需要跟服务端内部一致,gettoken命令除外, |
| sign | 字符串 | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

## 回复帧格式

|  |  |  |
| --- | --- | --- |
| **字段** | **数据类型** | **备注** |
| op | 字符串 | 命令 |
| seq | 整数 | 数据包序号, 配对请求/响应 |
| isAck | 整数 | 请求=0, 响应=1 |
| data | Json对象 | 可选数据体, 比如为操作所需的各种参数 |
| errorCode | 整数 | 0-无错误, 其它-错误代码 |
| errorMsg | 字符串 | 错误代码字符串 |
| token | 字符串 | 服务端返回的token,需要跟服务端内部一致,gettoken命令除外, |
| sign | 字符串 | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

## OP操作码

|  |  |  |
| --- | --- | --- |
| **操作码** | **功能** |  |
| gettoken | 获取token |  |
| get\_device\_status | 获取设备状态 |  |
| device\_control | 控制设备 |  |
| set\_config\_common | 设置common配置 |  |
| set\_config\_deviceList | 设置设备列表 |  |
| set\_config\_sceneList | 设置情景配置 |  |
| set\_config\_scheduleList | 设置日程配置 |  |
| get\_config\_common | 获取common配置 |  |
| get\_config\_deviceList | 获取设备列表 |  |
| get\_config\_sceneList | 获取情景配置 |  |
| get\_config\_scheduleList | 获取日程配置 |  |
| get\_points | 获取点位信息 |  |
| set\_points | 设置点位信息 |  |

## 一问一答

应用层主动发起请求, DDS HP 按照协议解析并且回复. 通信数据报文采用 JSON 格式, 数据包单包不超过 1500 字节.

## 主动上报

DDS HP 可以主动上报数据, 提高系统响应速度, 主动上报.

# 协议指令

## 获取token

### 请求

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | gettoken | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 0 | Int | 请求=0, 响应=1 |
| token | xxx | String | 应用端生成初始 token 值 |
| sign | xxx | String | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

### 回复

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | gettoken | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 1 | Int | 请求=0, 响应=1 |
| token | xxx | String | 应用端生成初始 token 值 |
| sign | xxx | String | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

### 示例

请求: {"op": "gettoken","seq":1,"isAck":0,"token": "123456", "sign": "xxxxxxxx"}

回复:{"op": "gettoken","seq":1,"isAck":1,"name":"xxxx","token": "xxxxxxxx", "sign": "xxxxxxxx"}

## 网关DDS配置设置

### 请求

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | set\_config\_common | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| data | Json对象 | String | 配置参数 |
| isAck | 0 | Int | 请求=0, 响应=1 |
| token | xxx | String | 应用端生成初始 token 值 |
| sign | xxx | String | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

data :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **层级1** | **层级2** | **层级3** | **数据类型** | **说明** | **必须** |
| data | wifi\_sta | on | Int | 打开/关闭 0:关闭 1:打开 | N |
| ssid | String | 连接的 AP 名称 |
| pwd | String | 连接的 AP 密码 |
| time | timestamp | String | Unix 时间戳 | N |
|  | timezone | String | 时区 |

### 回复

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | set\_config\_common | String | 命令 |
| seq | 整数 | Int | 数据包序号, 配对请求/响应 |
| isAck | 1 | Int | 请求=0, 响应=1 |
| errorCode | 整数 | Int | 0-无错误, 其它-错误代码 |
| errorMsg | 字符串 | String | 错误代码字符串 |

### 示例

请求:

设置 wifi ssid 和密码:

{"op":"set\_config\_common","seq":1,"isAck":0,"data":{"wifi\_sta":{"ssid":"test\_AP","pwd":"test123456"}},"token":"xxxxxxxx","sign":"xxxxxxxx"}

关闭wifi:

{"op":"set\_config\_common","seq":1,"isAck":0,"data":{"wifi\_sta":{"on":"0"}},"token":"xxxxxxxx","sign":"xxxxxxxx"}

时间设置:

{"op":"set\_config\_common","seq":1,"isAck":0,"data":{"time":{"timestamp":"1723599941","timezone":"8"}},"token":"xxxxxxxx","sign":"xxxxxxxx"}

回复:

{"op":"set\_config\_common","seq":1,"isAck":1,"errorCode":0}

{"op":"set\_config\_common","seq":1,"isAck":1,"errorCode":1,"errorMsg":"unhandled config"}

## 网关DDS配置获取

### 请求

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | get\_config\_common | String | 命令  数据类型: |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 0 | Int | 请求=0, 响应=1 |
| token | xxx | String | 应用端生成初始 token 值 |
| sign | xxx | String | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

### 回复

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | get\_config\_common | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 1 | Int | 请求=0, 响应=1 |
| data | Json对象 | String | 配置参数 |
| errorCode | 0 | Int | 0-无错误, 其它-错误代码 |
| errorMsg | xxx | String | 错误代码字符串 |

Data 示例:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **层级1** | **层级2** | **层级3** | **数据类型** | **说明** |
|  | wifi\_sta | on | Int | 打开/关闭 0:关闭 1:打开 |
| ssid | String | 连接的 AP 名称 |
| time | timestamp | String | Unix 时间戳 |
| timezone | String | 时区 |

### 示例

请求:

{"op":"get\_config\_common","seq":72,"isAck":0,"token":"85D23C42869F4233","sign":"5b9d2c5484ed9d7e0f43e41745e92d3e"}

回复:

{"op":"get\_config\_common","seq":72,"data":{"wifi\_sta":{"on":1,"ssid":"MK-001"},"time":{"timestamp":"1724745523979","timezone":"CST-8"}},"errCode":0}

## 网关DDS状态获取

### 请求

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | get\_device\_status | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 0 | Int | 请求=0, 响应=1 |
| token | xxx | String | 应用端生成初始 token 值 |
| sign | xxx | String | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

### 回复

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | get\_device\_status | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 1 | Int | 请求=0, 响应=1 |
| data | Json对象 | String | 配置参数 |
| errorCode | xxx | Int | 0-无错误, 其它-错误代码 |
| errorMsg | xxx | String | 错误代码字符串 |

Data 示例:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **层级1** | **层级2** | **层级3** | **数据类型** | **说明** |
| data | wifi\_sta | internet | Int | 英特网状态 0. 无法连接;   1. 连接正常; |
| on | Int | 打开/关闭 0:关闭 1:打开 |
| ssid | String | 连接的 AP 名称 |
| time | timestamp | String | Unix 时间戳 |
| timezone | String | 时区 |
| eth | internet | Int | 英特网状态 0. 无法连接;   1. 连接正常; |
| ip | String | 以太网IP |
| netmask | String | 以太网netmask |
| gateway | String | 以太网gateway |
| ibuilding | uri | String | 接入ibuilding链接 |
| connect | Int | 连接状态 0. 未连接;   1. 已连接未注册; 2. 已注册成功; 3. 已连接注册失败; |
| dev\_info | sn | String | 网关SN |
| sw\_ver | String | 网关版本号 |

### 示例

请求:

{"op":"get\_device\_status","seq":72,"isAck":0,"token":"85D23C42869F4233","sign":"5b9d2c5484ed9d7e0f43e41745e92d3e"}

回复:

{"op":"get\_device\_status","seq":72,"data":{"wifi\_sta":{"internet":0,"on":1,"ssid":"MK-001"},"time":{"timestamp":"1724745069813","timezone":"CST-8"},"eth":{"internet":0,"ip":"192.168.100.129","netmask":"255.255.255.0","gateway":"192.168.100.1"},"ibuilding":{"url":"mqtts://ecs3.mideaibp.com:18883","connect":0},"dev\_info":{"sn":"11223344556677889900aabbccdd","sw\_ver":"V1.0\_202408281510"}},"errCode":0}

## 设备控制

### 请求

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | device\_control | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| data | Json对象 | String | 配置参数 |
| isAck | 0 | Int | 请求=0, 响应=1 |
| token | Xxx | String | 应用端生成初始 token 值 |
| sign | xxx | String | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

data :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **层级1** | **层级2** | **层级3** | **数据类型** | **说明** | **必须** |
| data | dev | power | Int | 电源 1. 重启 | N |

### 回复

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | device\_control | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 1 | Int | 请求=0, 响应=1 |
| errorCode | 0 | Int | 0-无错误, 其它-错误代码 |
| errorMsg | xxx | String | 错误代码字符串 |

### 示例

请求:

{"op":"device\_control","seq":72,"isAck":0,"data":{"dev":{"power":1}},"token":"85D23C42869F4233","sign":"5b9d2c5484ed9d7e0f43e41745e92d3e"}

回复:

{"op":"device\_control","seq":1,"isAck":1,"errorCode":0}

## 获取DDS点位数据

### 请求

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | get\_points | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| data | Json对象 | String | 配置参数 |
| isAck | 0 | Int | 请求=0, 响应=1 |
| token | xxx | String | 应用端生成初始 token 值 |
| sign | xxx | String | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

data :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **层级1** | **层级2** | **数据类型** | **说明** | **必须** |
| data | offset | Int | 点位请求的起始, 从0开始.用于点位较多,无法单次完整回复所有点位数据时, offset 根据回复到的最后一个数据位置, 调整下次发送请求的 offset 值. | Y |
| type | Int | 请求数据的类型   1. 所有数据全量信息,一般用于第一次建立连接时,包含 n+name+v+rw+statu+min+max; 2. 所有数据当前信息, 用于已经获取到数据全量信息, 包含 n+v+statu; 3. 单个点位数据的当前信息,用于只查询某个点位数据,包含n+v+statu; | Y |

### 回复

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | get\_points | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 1 | Int | 请求=0, 响应=1 |
| data | Json对象 | String | 点位数据信息 |
| errorCode | 0 | Int | 0-无错误, 其它-错误代码 |
| errorMsg | xxx | String | 错误代码字符串 |

data :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **层级1** | **层级2** | **层级3** | **数据类型** | **说明** | **必须** |
| data | offset | / | Int | 当前回复点位的起始下标 | Y |
| total | / | Int | 所有点位总个数 | Y |
| points | n | Int | 点位下标, 从0开始 | Y |
| name | String | 点位名称, 区分大小写 | N |
| v | Double | 点位当前值 | Y |
| rw | Int | 读写属性  0只读, 1 读写 | N |
| statu | Int | 状态  0离线, 1在线 | Y |
| min | Double | 数值范围最小值, 具有写属性的点才有这个属性点 | N |
| max | Double | 数值范围最大值, 具有写属性的点才有这个属性点 | N |

### 示例

请求:

{"op":"get\_points","seq":1,"isAck":0,"data":{"offset":0,"type":1},"token":"85D23C42869F4233","sign":"5b9d2c5484ed9d7e0f43e41745e92d3e"}

回复:

{"op":"get\_points","seq":1,"isAck":1,"data":{"offset":0,"total":368,"points":[{"n":0,"v":0,"statu":0,"name":"ModbusOnOffStatus","rw":0,"min":2.2250738585072014e-308,"max":1.79769313486232e+308},{"n":1,"v":0,"statu":0,"name":"onOffStatus","rw":0,"min":2.2250738585072014e-308,"max":1.79769313486232e+308},{"n":2,"v":0,"statu":0,"name":"waterFlowTempAreaOnOff1","rw":0,"min":2.2250738585072014e-308,"max":1.79769313486232e+308},{"n":3,"v":0,"statu":0,"name":"dhwOnOff","rw":0,"min":2.2250738585072014e-308,"max":1.79769313486232e+308},{"n":4,"v":0,"statu":0,"name":"waterFlowTempAreaOnOff2","rw":0,"min":2.2250738585072014e-308,"max":1.79769313486232e+308},{"n":5,"v":0,"statu":0,"name":"modeSetting","rw":0,"min":2.2250738585072014e-308,"max":1.79769313486232e+308}]},"errCode":0}

## 设置DDS点位数据

### 请求

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | set\_point | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| data | Json对象 | String | 配置参数 |
| isAck | 0 | Int | 请求=0, 响应=1 |
| token | xxx | String | 应用端生成初始 token 值 |
| sign | xxx | String | seq+token+user+password+op+isAck组成的字符串的md签名,签名正确才给予响应. |

data :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **层级1** | **层级2** | **层级3** | **数据类型** | **说明** | **必须** |
| data | point | n | Int | 点位下标, 从0开始 | Y |
| v | Double | 点位当前值 | Y |

### 回复

|  |  |  |  |
| --- | --- | --- | --- |
| **字段** | **数据** | **数据类型** | **备注** |
| op | set\_point | String | 命令 |
| seq | 1 | Int | 数据包序号, 配对请求/响应 |
| isAck | 1 | Int | 请求=0, 响应=1 |
| errorCode | 整数 | Int | 0-无错误, 其它-错误代码 |
| errorMsg | 字符串 | String | 错误代码字符串 |

### 示例

请求:

{"op":"set\_point","seq":1,"isAck":0,"data":{"n":0,"v":100},"token":"xxxxxxxx","sign":"xxxxxxxx"}

回复:

{"op":"set\_point","seq":1,"isAck":1,"errCode":0,"errorMsg":"success"}

# 错误码表

|  |  |  |
| --- | --- | --- |
| 错误码 | 描述 | 其它 |
| 0 | 正确 |  |
| -1 | 通用错误 |  |
| -100 | 超数据范围 |  |
| -101 | 数据只读 |  |