Communication protocol

Airios Climate control system

# Symbols & Characters

|  |  |  |
| --- | --- | --- |
| Symbols & Characters | Name | Meaning |
| # | Number Sign | Start character, initiate the start of the message. |
| & | Ampersand | Split message character, split up the initiated words per message. |
| { | Open Curly Braces | Payload start character, initiate the start of the payload state/value. |
| } | Closed Curly Braces | Payload end character, initiate the end of a payload state/value. |
| | | Vertical Bar | Split payload character, split up the initiated state/values per payload. |
| ; | Semicolon | End character, initiate the end of a message line. |

# Type of Messages

## System ID

Since the system will use the Wi-fi as its communication device, the system will have their MAC address as their default device ID. However, this ID can be renamed, preferred by the users later on in the output implementation. The system ID can be the name of the room or something else during that implementation.

In example:

Default ID: 00:00:2a:00:72:ff

Preferred ID: Bedroom

## Device ID

Device ID is the identifier for each device that implemented in this system. For example:

|  |  |
| --- | --- |
| Device Name / Device Type | Device ID |
| Ventilation Box | VB |
| User Interface | UI |
| Sensor | SENSOR |

## Payload Type

Payload type is a word that explains the kind of the payload inside of the message.

For example:

1. TVOC sensor = VOC

2. CO2 sensor = CO2

3. Temperature sensor = TMP

4. Humidity sensor = HUM

5. Fan Speed sensor = FAN

## Payload State

Payload state is a status of the message type. For example, if the payload value came in from the sensor automatically, the state will be **READ**. If the payload value came from the UI, the state will be **WRITE**. If the payload is a feedback of the previous message, the state will be **REPLY**. And if the payload is a feedback error from the previous message, the state will be **ERROR**.

## Payload Value

It is the value of each payloads that carried by each message. **The values here are basically written as a string in a message line**. However, it could be changed into a float or integer type to be implemented by the system after it is received. For a reply, the value can be written as **ACK** or **NACK**.

# Line of A Message

**#<System\_ID>&<Device\_ID>&<Payload\_Type>{<Payload\_state>|<Value>};**

Example:

#**BEDROOM**&**SENSOR**&**TEMP**{**READ**|**20**};

Meaning:

The temperature sensor in the bedroom is reading 20 degree Celsius.

# Error Types

|  |  |  |
| --- | --- | --- |
| No. | Error Type | Error Message |
| 1. | Unknown System ID/Device ID/Payload Type/Payload State | 404 |
| 4. | Payload Unaccepted | 406 |
| 5. | Multiple Message Lines | 429 |
| 6. | Messages Process Conflicted | 409 |

Example:

#**BEDROOM**&**VB**&**VOC**{**ERROR**|**406**};

Meaning:

The ventilation box detected an unaccepted payload of TVOC sensor in the bedroom.